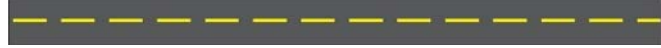




## **Portland Area Mainline Needs Assessment**



**DRAFT**

# **Alternative 8 – Land Use Scenario**

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## 8.1 Overview

Changes in land use patterns (density, diversity, design, destination) can result in both a reduction in travel demand and an increase in transit ridership. Land use is primarily under control of each municipality, but recent efforts as part of a regional partnership known as *Sustain Southern Maine*<sup>1</sup>, funded by the U.S. Department of Housing and Urban Development (HUD) and administered by the Greater Portland Council of Governments (GPCOG), have sought to address the decentralization of urban centers that lead to such critical issues as rising personal transportation costs, limited transportation options, and lack of diverse and affordable housing. The *Sustain Southern Maine* work focused on identifying centers of opportunity throughout the region - areas where an existing level of density and/or commercial activity could, with the appropriate zoning, act as a catalyst to increase growth within a more contained area. These denser, village-like centers would then lend themselves to be part of a more efficient public transit system.

As part of the Portland Area Mainline (PAM) Needs Assessment, the Study Team assessed the benefits of an alternative pattern of growth and development that was originally identified and quantified under the Gorham East-West Corridor Study<sup>2</sup>. The key components of this alternative consist of:

- Allocation of current population and employment forecasts into specific growth areas within the Portland Area Comprehensive Transportation System (PACTS) region identified in the Gorham East-West Corridor Study<sup>3</sup>. These allocations were based on a modified distribution of population and employment growth designated as the Urban and Rural form;
- Estimate of reduction in future (2040) travel demand and increase in transit share based on the Urban and Rural land use scenario; and
- Change in vehicular demand on the Maine Turnpike in the Portland Area and other benefits within the PACTS region (assuming land use changes have been mostly implemented).

## 8.2 Key Assumptions

The analysis of this alternative follows a methodology that is based on the approach followed under the Gorham East-West Corridor Study and is consistent with the approach used to create multiple pilot centers in *Sustain Southern Maine*.

### 8.2.1 Distribution of Employment, Population and Housing Growth

In order to estimate the maximum potential benefit, future distribution of job, population, and dwelling unit growth identified as the Urban and Rural form as part of the Gorham East-West Corridor Study,<sup>4</sup> was used as the demographic base for the PACTS travel demand model. This allocation of jobs, population, and dwelling unit growth compared to the current, low density form trends is shown in Table 8.1 below.

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<sup>1</sup> <http://sustainsouthernmaine.org/about-us/>

<sup>2</sup> Maine Turnpike Authority, *Gorham East-West Corridor Feasibility Study*, (HNTB, March 2010)

<sup>3</sup> Ibid.

<sup>4</sup> Ibid, page 3-5 and 3-6

**Table 8-1: Distribution of Growth<sup>5</sup>: Current Low-Density Form vs. Urban and Rural Form**

	Targeted Shares of Regional Growth		
	Urban Communities	Inner Suburbs	Outer Suburbs
Job Growth: current low-density trend	66% (16,500)	30% (7,400)	4% (1,000)
Job Growth: Urban and Rural form	65% (16,200)	30% (7,400)	5% (1,300)
Population Growth: current low-density form	5% (3,500)	61% (39,400)	34% (21,600)
Population Growth: Urban and Rural form	34% (21,900)	49% (31,800)	17% (10,800)
Dwelling Unit Growth: current low-density form	9.5% (3,300)	52% (18,200)	38.5% (13,400)
Dwelling Unit Growth: Urban and Rural form	35% (12,200)	45% (15,700)	20% (7,000)

As seen from Table 8-1, there would be a sizable increase in population and dwelling unit growth in the Urban communities under the Urban and Rural form. Conversely, there would be a notable decrease in population and dwelling unit growth in the Inner and Outer suburbs. Distribution of job growth was not assumed to change by any notable measure.

Using this Urban and Rural form distribution, the PACTS travel demand model was run with current job, population, and housing growth to determine the transportation impacts/benefits and increases in transit ridership for the Maine Turnpike and non-Turnpike roadways, as well as increased transit ridership for Year 2040.

### 8.2.2 Estimate of Reduced Vehicle Demand and Increased Transit Trips

The Gorham East-West Corridor Study determined that improved land use can reduce travel demand and increase transit ridership by notable amounts. Key 2040 vehicle and transit demand findings for this alternative are:

- Anticipated increase in transit ridership of 225 riders during the peak hour<sup>6</sup>; and
- Reduction in almost 100 peak hour trips on Maine Turnpike between Exits 44 and 53.

Additional benefits are noted below.

While the quantified benefits of improved land use are identified here and in numerous other studies locally and nationally, the needed land use change would be sizable and the timetable to implement unknown. Achieving the needed shifts in population and housing growth identified in Table 8-1 by Year 2040 will be unlikely and require aggressive municipal land use change.

<sup>5</sup> Years 2009-2035

<sup>6</sup> Assumes improved transit connections to identified growth areas

### 8.3 Capital and Operation Costs

The capital costs to implement the Land Use Scenario were based upon an assumed cost to update existing PACTS region municipal land use ordinances and zoning to be consistent with the proposed distribution. Estimated cost for these updates were approximately \$2.5 million in 2018 dollars. With these additional miles, the additional operating and maintenance costs for this alternative would be \$80,000.

### 8.4 Findings

The total potential number of vehicle trips that could be decreased from the Turnpike is approximately 92 trips during the peak hour. With this reduction, the volume to capacity ratio would still be greater than one in 2040 (1.34). 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:

#### 8.4.1 Key Benefits

The key benefits of Alternative 8 – Land Use are the following:

- Anticipated crash rate reduction of 1.8% on the Maine Turnpike;
- A peak hour demand reduction of 92 vehicles on the Turnpike;
- A reduction of 59.9 miles of roadway in the region that are near or over capacity;
- 4.1% reduction in regional vehicle miles traveled (VMT);
- 4.4% reduction in regional vehicle hours traveled (VHT);
- Potential increase in transit ridership of 23%;
- Significant reduction in NOx (-4.1%) and HC (-4.3%), improving air quality;
- A decrease in regional roadway impervious pavement of 618 acres;
- No potential wetland impacts; and
- Has a Benefit/Cost ratio of 2.2.

#### 8.4.2 Key Impacts

The key impacts and challenges of Alternative 8 – Land Use are the following:

- A volume to capacity ratio (v/c) that is still greater than one (1.34) on the Maine Turnpike;
- Potential for lost revenue on Maine Turnpike; and
- Timeframe to implement is unknown. Local municipalities would need to adopt aggressive land use and zoning changes.