I-295 Corridor Study Highlights for Public Comment

January 2008

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MaineDOT

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The Maine Department of Transportation, in conjunction with the Portland Area Comprehensive Transportation Committee (PACTS) and other stakeholders, has been conducting a study of Interstate 295. The purpose of the study is to evaluate the long-term needs of the I-295 Corridor between Scarborough and Brunswick and to identify a set of recommendations to provide safe and efficient transportation service through the Year 2025. The long-range plans of both MaineDOT: *Connecting Maine* and PACTS: *Destination Tomorrow* recognize the need for a highly functioning Interstate System as the backbone of the transportation network statewide and in the Greater Portland Area. The recommendations contained in this study are consistent with both long-range plans. This document summarizes the findings and recommendations of the I-295 Corridor Study and is prepared for public review and comment.

Background

I-295 was constructed as part of the National System of Interstate and Defense Highways (Interstate Highway System), established by Congress in 1956. Most of I-295 through Falmouth, Cumberland, Yarmouth, Freeport, and Brunswick was constructed in the late 1950s and early 1960s and was designated as I-95. In the 1970s, I-295 through South Portland and Portland was constructed to provide Interstate access to the Portland Peninsula and other locations in those two cities. I-95 was extended in the 1970s from Brunswick to Gardiner, which for the most part completed the Interstate Highway System in southern and central Maine. In 2004, the Interstate between Falmouth and Gardiner was redesignated as I-295, while the entire length of the Maine Turnpike was designated as I-95.

Since the 1950s, traffic volumes on I-295 have grown tremendously. I-295 in South Portland and Portland has become the most heavily traveled Interstate in Maine, with most sections carrying between 70,000 and 85,000 vehicles per day. I-295 traffic between Falmouth and Brunswick has grown to 50,000 vehicles per day.

Recognizing in 2000 the increasing strain that higher traffic volumes were placing on I-295, the Joint Standing Committee on Transportation of the 119th Legislature directed MaineDOT to begin looking at opportunities to relieve traffic pressures on I-295, particularly in South Portland and Portland. This effort was followed by a more extensive study, the I-295 Corridor Study.

In 2006, PACTS published its long-range plan, titled *Destination Tomorrow*. One of the four implementation-plan highlights contained in *Destination Tomorrow* is written as follows:

"Continue support of MaineDOT and Maine Turnpike Authority efforts to:

- make necessary investments to provide safe and efficient transportation service on the Interstates through the Year 2025; and
- maintain I-295 as the primary route for intra-regional traffic, and the Maine Turnpike as the major route for traffic traveling through the region."

PACTS' full plan can be found at:
http://www.pactsplan.org/destination_tomorrow/currentdt2006.php

Over the past three years MaineDOT has engaged stakeholders from all over the State in efforts to develop its long-range plan entitled *Connecting Maine.* This plan is constructed around five goals:

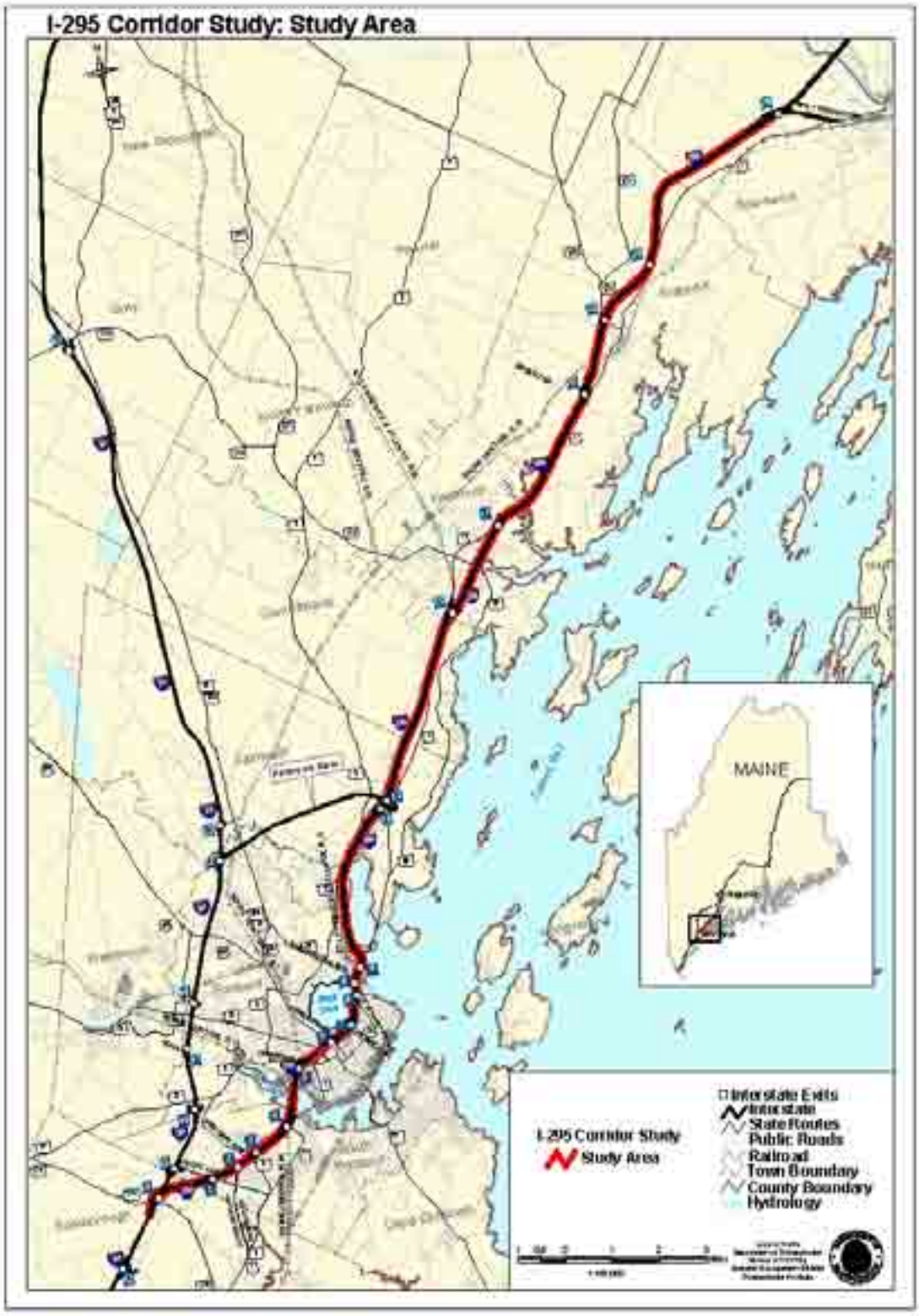
I. *Ensure a safe and secure transportation system.*
II. *Ensure the sustainability of Maine's transportation system.*
III. *Promote economic viability and competitiveness.*
IV. *Enhance quality of life by developing and implementing transportation programs that enhance communities and Maine's natural environment.*
V. *Enhance public awareness and participation.*

Connecting Maine also identified Maine's interstate system as a critical factor in the health of Maine's economy and identified it as a strategic investment area.
The highlights of *Connecting Maine* can be found at
http://www.maine.gov/mdot/planning-documents/pdf/conn_maine_120607a1.pdf

Purpose and Need

As stated earlier, the purpose of the study is to evaluate the long-term needs of the I-295 Corridor between Scarborough and Brunswick and to identify a set of recommendations to provide safe and efficient transportation service through the Year 2025. With the growth of traffic over the years, the capacities of some portions of the corridor have been severely tested, resulting in chronic traffic congestion and delay, particularly in South Portland and Portland. Incidents anywhere along the highway create traffic hazards that temporarily reduce highway capacity and produce lengthy traffic backups. On- and off-ramps designed nearly 50 years ago are operating poorly under today's traffic volumes. The goal of the I-295 Corridor Study is to provide a direction for future investments in this corridor to address these deficiencies and ensure that I-295 can function effectively into the future.

Figure 1 Study Area



Study Process

After the definition of a study purpose, one of the first steps in the study process was to define a study area for I-295. The I-295 Corridor Study Area extends from the I-295 toll booths at I-95 Exit 44 in Scarborough to the Exit 28 ramps in Brunswick, a distance of 28 miles. This 28-mile length was chosen because it encompasses the most heavily traveled portions of I-295: the urban mileage in South Portland and Portland, and the heavily traveled rural mileage between Portland and Brunswick. The I-295 Corridor Study Area is shown in Figure 1.

The study process has two major components: a technical analysis, and public participation. The technical analysis includes a review of existing conditions, a forecast of future conditions, and an analysis of alternative strategies and actions. The technical analysis assesses safety, mobility, cost, and environmental issues. Public participation includes three elements: a corridor advisory committee representing public stakeholders throughout the study area, a series of public meetings for direct exchange of information with the general public, and a study Web site serving as a resource to share information about the study. The Web site is accessible from the MaineDOT home page at http://www.maine.gov/mdot-stage/major-planning-studies/i295corridorstudy/index.php.

Existing Conditions

The analysis of existing conditions provides a detailed description of the current physical and operating characteristics of the I-295 Corridor. This evaluation required the development of a comprehensive inventory of existing conditions in terms of traffic volume and composition, level of service (LOS), physical conditions, and crash history. It also serves as a benchmark for analyzing future conditions and comparing potential improvement alternatives. An important product of the existing conditions analysis is the identification of physical and operational deficiencies in the I-295 corridor that adversely affect its ability to operate safely and efficiently.

The existing conditions analysis identified several deficiencies that have an adverse effect on the function of I-295. Physically, I-295 has many on- and off-ramps that have inadequate acceleration and deceleration lanes for the volume of traffic that uses them. This results in a poorer level of service at the junctions of these ramps with the I-295 mainline. Some locations in the corridor are considered high crash locations, which have a frequency of crashes that is significantly higher than what would be expected on Interstate highways in Maine. Some locations in the I-295 corridor are operating at or near capacity during the AM and PM peak hours. This results in poor levels of service (E and F) and significant traffic congestion. Tables 1 and 2 summarize the number of locations operating at various levels of service during the AM and PM peak hours today.

Related to both safety and congestion is the frequent occurrence of traffic incidents in the I-295 corridor. These incidents, which may be a stalled vehicle or a major traffic accident, reduce the capacity of the roadway, create traffic backups, and increase the risk of further serious incidents.

Table 1
2002 LOS AM Peak

		2002 Level of Service AM Peak					
		A	B	C	D	E	F
On/Off Ramps	Southbound	2	2	18	9	1	0
	Northbound	2	18	10	2	1	0
Segments Between On/Off Ramps	Southbound	3	2	8	6	1	0
	Northbound	2	13	4	2	0	0

Table 2
2002 LOS PM Peak

		2002 Level of Service PM Peak					
		A	B	C	D	E	F
On/Off Ramps	Southbound	2	8	13	7	1	1
	Northbound	1	3	1	23	5	0
Segments Between On/Off Ramps	Southbound	1	9	5	4	1	0
	Northbound	1	2	7	9	2	0

Future Conditions

To evaluate the impact of future travel on the Corridor Study Area, 2025 hourly traffic volume conditions were projected by Portland Area Comprehensive Transportation System (PACTS) Travel Demand Model. The PACTS Travel Demand Model is based on anticipated growth of population and employment in the Greater Portland area. In general, the traffic volume on I-295 is predicted to increase 20% in the next 20 years.

The Year 2025 No-Build assumptions in the PACTS Model include the I-295 Connector in Portland and other improvements, expanded local bus and van pool service, intercity (AMTRAK) passenger rail south of Portland and north to Brunswick, but no change to the toll collection structure and no widening of the Turnpike north of Exit 44 to six lanes.

The Baseline or No-Build strategy would maintain the existing corridor infrastructure, but would not make any improvements to I-295 or any parallel transportation route that could affect transportation operations on I-295. The No-Build strategy was used as a base for comparison to other alternatives.

As in the existing conditions analysis, the AM and PM levels of services were evaluated at locations throughout the I-295 corridor. Tables 3 and 4 summarize the number of locations operating at various levels of service during the AM and PM peak hours. These tables show that, when compared to Tables 1 and 2, the number of locations operating at levels of service E and F under the No-Build strategy would be much higher in 2025 than in 2002.

Table 3 2025 No-Build LOS AM Peak

		2025 No-Build Level of Service AM Peak					
		A	B	C	D	E	F
On/Off Ramps	Southbound	0	4	5	15	7	1
	Northbound	0	13	9	6	3	2
Segments Between On/Off Ramps	Southbound	1	2	6	6	4	1
	Northbound	1	10	4	4	1	1

Table 4 2025 No-Build LOS PM Peak

		2025 No-Build Level of Service PM Peak					
		A	B	C	D	E	F
On/Off Ramps	Southbound	0	8	7	10	1	6
	Northbound	1	2	1	8	17	4
Segments Between On/Off Ramps	Southbound	0	6	7	2	3	2
	Northbound	1	1	2	6	8	3

Many of the locations with poor levels of service would be in the Portland and South Portland areas, where traffic volumes are highest. The worst levels of service are found on the inbound direction (toward Portland) in the AM and in the outbound direction in the PM. Also, in the more northerly rural parts of the I-295 Corridor, ramp levels of service are often worse than the mainline levels of service.

External Factors and Trends

The analysis of 2025 traffic projections in the I-295 Corridor provides a reasonable estimate of future traffic conditions based on anticipated growth of population and employment in the Greater Portland area. However, some external factors and trends, as discussed below, could have a substantial impact on future traffic volumes and congestion levels.

Aging Population
The population of the United States is aging. As the wave of baby boomers, born between 1945 and 1965, enter their 60s, 70s, and 80s, the driving habits of a large segment of our population will change. Older people drive less and rely on public transportation more. This trend will tend to slow the growth of automobile travel.

New Technology
Changes in technology continue in the transportation field. Automobiles are increasingly equipped with GPS and sensor technology that allows greater automation in the navigation and control of the vehicle. Automatic sensors and communication devices in highways are providing better information to drivers about conditions ahead. Electronic toll collection without toll booths is available now and spreading across the country. The combination of more intelligent vehicles and highways may lead to greater automation of the driving task and allow the closer spacing of vehicles, and greater vehicular capacities, on controlled-access highways.

Energy Costs
Recent experience in 2005 and 2006 has shown that increases in the price of gasoline can reduce automobile travel. The future price of motor fuels is difficult to predict, but rising demand for fuel in rapidly growing economies in China, India, and other parts of the developing world will put increasing pressure on petroleum supplies and upward pressure on energy prices. These pressures will push transportation in the United States more toward alternative fuels, fuel-efficient vehicles, and other modes of transportation.

Transportation Funding
Transportation funding by conventional motor fuel taxes is becoming less able to keep up with financial demands of maintaining and improving the highway system. Recent trends of higher fuel prices and less dependence on gasoline and diesel fuels, coupled with rising highway and bridge construction costs, are creating a widening gap between revenues and needed expenditures. These trends will push policy makers to find new means of collecting revenue for transportation.

Strategies

To address the existing and future needs of the I-295 Corridor, a broad range of strategies was analyzed. Each strategy represents a different approach toward solving the problems in the I-295 Corridor. Some strategies are oriented toward specific locations in the Corridor while others are corridor-wide. Some are directed at physical improvements to the highway corridor while others are directed at relieving the traffic demand on the corridor.

Within each strategy, there may be one or more actions. The actions are specific projects or programs to address the deficiencies in the I-295 Corridor. Most of these actions are location-specific. Table 5 shows the strategies and actions analyzed for the I-295 Corridor Study.

Table 5 Strategy Characteristics

Strategies	Characteristics
Auxiliary Lanes	• Relatively low cost • Targeted toward specific interchange ramps or short highway segments • For improved efficiency and safety at on-ramps and off-ramps • **Example actions:** weaving section improvements, improved acceleration and deceleration lanes at interchange ramps
Intelligent Transportation Systems	• Relatively low cost • Applies improved technology and communications • For improved efficiency of existing facilities • **Example actions**: variable message signing, traffic surveillance installations, service patrols
Transportation Demand Management	• For relief of travel demand in the corridor • Involves incentives to change driver behavior • **Example actions:** HOV lanes, carpool incentives, toll changes
Commuter Transit	• For relief of travel demand in the corridor • Involves alternative transportation facilities and services • **Example actions:** commuter bus, commuter rail
Interchange Improvements	• Major improvements at specific interchanges • **Example actions:** new ramp configurations, additional ramps
New Highway Capacity (within existing right-of-way; possible minor exceptions)	• For added vehicular capacity • Involves construction of additional lanes for use by general traffic • **Example actions:** new thru lanes

The effectiveness of the strategies in 2025 is summarized in Table 6. Measures of effectiveness include changes in peak hour volume, vehicle-hours traveled (VHT) and vehicle-miles traveled (VMT), safety, capacity, level of service, access, and parking

demand. Effectiveness measurements in green represent beneficial effects. Measurements in red represent negative effects. Most strategies would have the benefits of reduced VHT as well as other benefits. Interchange and new capacity actions would tend to increase VMT while commuter transit actions would tend to decrease VMT.

Table 6 Strategy Effectiveness in 2025

Strategies	**Actions**	**Measurements of Effectiveness**			
		Peak Hour Volume Change	VHT Change (for year)	VMT Change (for year)	Other
Auxiliary Lanes	Weaving section improvements in South Portland and Portland		Reduction		Improved capacity and level of service
	Acceleration and deceleration lane improvements at various locations from Falmouth to Freeport		Reduction		Improved level of service
Intelligent Transportation Systems	Traffic surveillance and variable message signing in Portland and South Portland		Reduction		Shorter and fewer incidents
	Service patrols		-270000		Shorter and fewer incidents
Transportation Demand Management	High-occupancy-vehicle lanes		Increase or no effect		
	Carpool incentives	-200			-200 in Portland parking demand
	Differential tolls	-250	-540000	+1.2 M	
Commuter Transit	Commuter bus service to Portland from north and south	-250 (inbound)	-820000	-8.5 M	-250 in Portland parking demand
	Commuter rail service to Portland from north and south	-400 (inbound)	-1.4 million	-27.0 M	-400 in Portland parking demand
Interchange Improvements	Added ramps at Exit 4		-50000	+230000	Improved access
	Added ramps at Exit 11		-110000	+200000	Improved access
	Added ramp at Exit 15		Reduction		Improved access and improved safety at HCL
	Reconfigure Exit 6	+100	-520000	+380000	Improved safety at HCL
New Highway Capacity (within existing right-of-way; possible minor exceptions)	Added thru lanes on I-95 in Portland and South Portland (MTA)	-350	-1.7 million	+470000	Improved capacity for lane closures
	Added thru lanes on I-295 in Portland and South Portland	+250	-1.9 million	+850000	Improved capacity for lane closures
	Added thru lanes on I-295 from Falmouth to Brunswick		-1.4 million		Improved capacity for lane closures

Coordinated Strategies

A coordinated strategy is a combination of individual strategies that complement each other toward a common objective. Examples of coordinated strategies include low-cost improvements, improved interchange access to I-295, reduction in travel demand on I-295, and capacity increase on I-295. Table 7 shows how the individual actions can be combined into coordinated strategies.

Table 7 I-295 Coordinated Strategies

Coordinated Strategies	Characteristics
Transportation Systems Management	• To improve the operation of the existing facilities • Includes intelligent transportation systems and auxiliary lane improvements • Relatively low cost • Relatively minor environmental issues • Compatible with all other coordinated strategies
I-295 Access Improvements	• To make physical improvements that enable more travelers to use I-295 interchanges • Mostly moderate in cost
I-295 Traffic Volume Reduction	• To redirect traffic to appropriate alternate routes • To encourage travelers to use vehicles with more than a single occupant • Includes transportation demand management, commuter transit, toll changes, increased capacity on the Maine Turnpike • Low to high in cost • Minor to major environmental issues
I-295 Highway Capacity Increases	• To add vehicular capacity through construction of new through lanes on I-295, generally within existing right-of-way • Relatively high in cost • Relatively major environmental issues

The actions within a coordinated strategy can reduce the need for, or the effectiveness of, actions that follow a different coordinated strategy. For example, an action that shifts commuters to transit can reduce the need for additional highway capacity. On the other hand, an action that increases highway capacity can reduce the incentive for commuters to shift from their automobiles to transit. Among the I-295 coordinated strategies, the strategies to reduce I-295 volumes and increase I-295 capacity have the least compatibility. However, both the volume reduction strategy and the increased capacity strategy can be effective strategies for the long term, and both are compatible with auxiliary lane improvements and improved interchange access.

Recommendations

The recommendations of the I-295 Corridor Study are a blend of several complementary strategies intended to achieve the study purpose of providing safe and efficient transportation service through the Year 2025. The near-term recommendations are a blend of specific projects to address the most immediate challenges. These near-term recommendations focus on getting the best operation possible out of the existing highway and making relatively low-cost improvements at specific locations most in need of attention. The long-term recommendations are a blend of improvements to existing infrastructure and new transportation service initiatives to address the needs of 2025. Included in the long-term recommendations are interchange improvements, actions that would divert portions of the I-295 traffic to other routes or transportation modes, and increases in highway capacity at targeted locations. The near-term and long-term recommendations are summarized in Figure 2.

The Need for Flexibility

External factors such as the aging population, new technology, energy costs, and the availability of transportation funding weigh heavily on the future of Maine's transportation system. These factors, along with trends in Maine's regional traffic, economic, and population growth, must be continually monitored to track their direction and anticipate future conditions. The recommendations for the I-295 Corridor must provide a path that gives the corridor the flexibility necessary to meet the needs of the traveling public, however that future unfolds.

Near-Term and Long-Term Recommendations

Near-term recommendations must respond to immediate needs, but they should also be compatible with at least three future scenarios: one that requires the management of the corridor as safely and efficiently as possible in a climate of scarce funds, one that requires an adequate response to move people and goods in a booming economy, and one that requires the corridor to adapt to an era of higher energy costs and greater environmental stewardship. The near-term recommendations for the I-295 Corridor consist of interchange and auxiliary lane improvements, to focus on some of the most problematic locations that can be addressed by reasonably affordable actions.

Long-term recommendations must be able to lead the corridor down the path to any of these three scenarios, which will become clearer as the future trends emerge. It is quite possible that the future of the I-295 Corridor will contain elements of all three scenarios. There will be a need to monitor conditions in the I-295 Corridor, as well as external factors and trends, to determine the direction of a long-term coordinated strategy.

Some long-term improvements are a continuation of the types of actions included in the near-term recommendations. However, several of the long-term recommendations include more detailed analysis of the proposed actions to assess the feasibility of their implementation and to understand their effect on the environment around them. Among those requiring further analysis are actions to implement commuter transit services, to create differential tolls on I-295 and I-95, and to increase capacity on portions of I-95 and/or I-295.

Figure 2 I-295 Corridor Study Recommendations