

Maine Turnpike Authority
Impact Fee Policy
05/27/10

Whereas, as required by Maine's Sensible Transportation Act planning requirements, as well as internal planning and financing objectives, the Maine Turnpike Authority plans and budgets for capital improvements in ten and twenty year cycles;

Whereas, the Authority utilizes recognized traffic forecasting methods to predict with the greatest possible accuracy when capital improvements due to capacity constraints will be required on the mainline and interchanges of the Maine Turnpike;

Whereas, this method of planning allows for the Authority to meet its predictable capital needs without disruption, unforeseen events occur including, but not limited to, development in the vicinity of an MTA interchange that are not conducive to the MTA's ability to anticipate capital needs;

Whereas, development in the vicinity of an interchange, including a singular big-box type development, will cause increases in traffic volumes which have the potential to deplete an interchange's remaining toll plaza and roadway capacity, or cause capacity constraints that can only be fixed with major infrastructure improvements such as adding lanes to bridges or ramps;

Whereas, the MaineDOT has legal responsibility for development traffic movement permits, including the responsibility to collect traffic impact fees for developments when appropriate and has recognized the impacts that developments may have on the Turnpike system by assessing impact fees for Turnpike impacts on developments in Biddeford and Scarborough, since 2005;

Whereas, the Authority and the MaineDOT have agreed to consult in future situations when a development requiring a traffic movement permit may have significant impacts on the capacity of a Turnpike interchange;

Whereas, municipalities, MaineDOT, and developers have asked for a formal policy from the Authority that would provide them with guidance and direction and would further help to avoid situations where the last developer in a series of developers pays to mitigate an impact that is in part due to the cumulative impacts of past development;

Whereas, the Authority's consulting engineers and staff have assembled a report on impact fees and the turnpike system ("the 2010 Impact Fee Report"), including the benefit of such fees and methodologies for computing them, and the Authority's Long Range Planning Subcommittee has studied said report in particular and the subject of impact fees in general;

Now, Therefore, Be it Resolved as Follows:

1. That the policy of the Maine Turnpike Authority shall be to cooperate with the Maine Department of Transportation in the future study of impacts of proposed developments on the Turnpike system and the Authority will recommend to the Department that impact fees be assessed for impacts on the Turnpike system when a proposed development meets the criteria contained within this policy.
2. MTA staff will recommend that impact fees be considered for proposed development that meet either of the following criteria:
 - (a) The development as proposed will cause an increase of 100 or more trips as determined by MaineDOT methodology entering the Turnpike during any single hour; or
 - (b) The development as proposed will generate traffic using more than 1/3 of a Turnpike toll plaza's estimated remaining capacity.
 - (c) The development will affect MTA owned infrastructure in a manner that would warrant the imposition of an impact fee under MaineDOT criteria and methodologies.
3. Each development will be reviewed on a case by case basis to determine actual impacts and needs.
 - (a) Calculation of impact fees in regard to toll plazas will be calculated by subtracting the volume of current peak hour toll plaza entering traffic from toll plaza capacity to generate a Reserve Capacity and then dividing the Reserve Capacity by the estimated cost of improvements to generate a Fee Per Trip. Fee Per Trip Toll Plaza costs are provided in the attached Appendix A as a reference for developers to use to estimate potential fees. These fees will be reviewed and updated by Authority staff every five years from the adoption of this policy. Fees may also be adjusted annually based on construction cost inflation.
 - (b) Additional impacts such as intersection improvements, ramp widening, bridge widening, or signage and traffic control will also be reviewed and new cost estimates will be generated based on MaineDOT methodologies. Fees will be apportioned to each development based on that development's proportional role in increasing traffic and the resulting infrastructure improvement requirements.

- (c) The actual infrastructure improvement project(s) necessitated by the increased traffic may be performed by the developer in lieu of a fee, though typically toll plaza improvements will be performed by Authority forces. Final determination of this will be made by the Authority. If improvements are not required immediately, the Authority will collect the fee and plan to construct the project accordingly once enough fees are collected or other funds are secured. If the Authority does not use or obligate the fees collected as part of this policy within 10 years from the date the fee is received by the Authority, the fees will be returned to the developer if the developer makes application for refund of the fee within 180 days of the anniversary date of the impact fee payment.
4. The Authority will evaluate infrastructure improvement needs annually and identify any improvements required as a result of proposed or completed development.

APPENDIX A

CALCULATING IMPACT FEES

There are three variables needed to calculate an impact fee at a Turnpike Interchange Toll Plaza:

- 1) **The current Toll Plaza entering volume:** the number of vehicles served by each toll plaza during the peak hour. (Only entering volumes to the toll plaza will be used in these calculations)
- 2) **The Toll Plaza capacity:** the number of entering vehicles that each toll plaza can possibly handle without causing excessive queuing and delays.
- 3) **The cost:** the approximate cost to expand each toll plaza by one entering lane.

By subtracting the current volume from the capacity, the **Reserve Capacity (RC)** can be calculated. When the total cost of the improvements is divided by the RC a fee/trip is established. This number will be used as an impact fee. There is an example of this calculation provided on the following page.

An important component of any impact fee is the accuracy of the variables. The details of how the three variables were derived at each interchange are as follows:

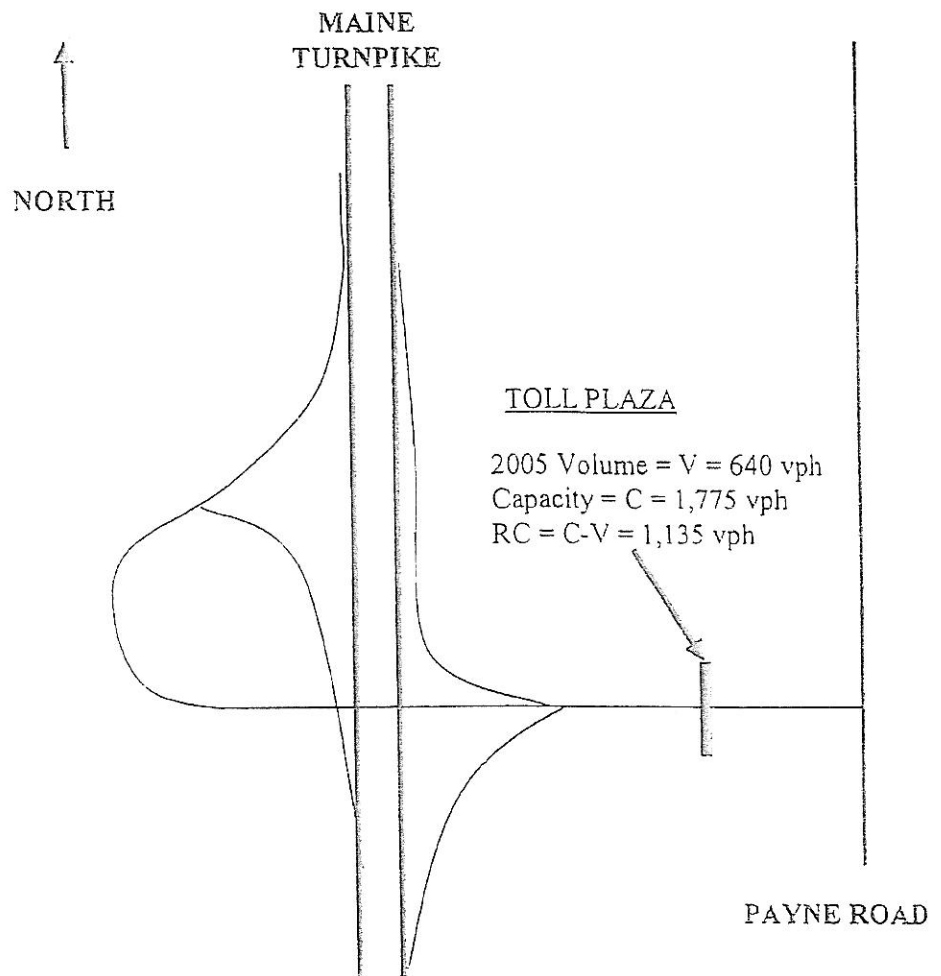
- 1) The current volume is provided by the Authority, and is derived from the daily traffic count data. Each ramp and toll plaza along the Maine Turnpike is equipped with a traffic counter that operates 24 hours a day throughout the year. Data was collected for the entire year of 2005 and the 30th highest peak hour of the year was determined. This number is the 30th in a list of traffic volumes ranked from highest to lowest at a given location throughout the year. The 30th highest hour is commonly used in design criteria for roadways.
- 2) The capacity of a toll plaza lane was calculated using historical data. The Turnpike toll plazas have been able to process a given number of vehicles per hour when traffic is at the highest volumes experienced. These numbers are:
 - 275 vehicles per hour (vph) for Manual Lanes, also known as cash lanes;
 - 405 vph for Automated Coin Machine Lanes (ACM), also known as Coin lanes;
 - and
 - 900 vph for Electronic Toll Collection (ETC) lanes, also known as E-ZPass Lanes.

These capacity numbers will be reevaluated and updated (if necessary) every five years.

- 3) The cost to expand a toll plaza is also based on historical data. Cost calculations to expand a toll plaza (per lane type) would be developed by the MTA every five years and adjusted annually based on construction cost inflation.

An example using these three essential variables to determine an impact fee is shown in Figure 1.

Figure 1 – Example Impact Fee Calculations
SCARBOROUGH – EXIT 42



TOLL PLAZA LANE CALCULATIONS

The cost (based on 2009 dollars) to add a lane to any side toll plaza is: \$595,390 – the breakdown of this cost is based on the proposed installation for an additional toll lane at the Saco Toll Plaza and is for a manual toll lane and construction of queue and recovery lane and the associated tapers for those lanes. The costs are as follows:

Additional lane toll booth and equipment - \$250,000
Addition roadway lane construction - \$345,390

To calculate the Impact Fee this total cost must be divided by the RC resulting in a Fee/Trip. The calculations below detail how the Reserve capacity is calculated for the Scarborough interchange.

The Current Volume comes from the 30th highest hour volume, which is 640 vph.

The Capacity is calculated by the toll lane configuration, and the historical percentage use of each type of lane and for Scarborough is as follows:

a. Toll plaza configuration - The current configuration is as follows:

1. 1pm-7pm, Mon-Fri	1 ACM – 2 Attended
2. 11am-7pm, Sat-Sun	1 ACM – 2 Attended
All other times	1 ACM – 1 <i>E-Z Pass</i> - 1 Attended

b. Toll Payment composition: it is assumed that peak hour traffic will be as follows:

1. Cash Cars	21.8%
2. <i>E-Z Pass</i> Cars	45.7%
3. ACM Cars	25.1%
4. Cash Trucks	2.4%
5. <i>E-Z Pass</i> Trucks	5.0%

This is consistent with current composition of peak hour traffic at the Exit 42 toll plaza.

c. Toll booth capacity: It was assumed that each individual toll booth can operate at the following rates:

1. Cash vehicles	275 vph
2. ACM vehicles	405 vph
3. <i>E-Z Pass</i> vehicles	900 vph

These values are consistent with the capacities used in the toll plaza analysis for the Maine Turnpike Authority's Safety and Capacity Study.

d. The maximum future capacity of the toll plaza will depend on the extent to which *E-Z Pass* is utilized. The 2006 capacity for Exit 42 with 51% *E-Z Pass* utilization is approximately 1450 vph. The projected future use for the build out year is as follows:

2008 – Projected *E-Z Pass* use at 54% - estimated toll plaza capacity of 1500 vph
The Developer will receive 275 vph credit for the manual toll lane to be added,
bring the plaza capacity to 1775 vph

The Reserve Capacity (RC) is the Capacity minus the Current Volume – 1775 - 640 = 1135 vph

The Fee/Trip is the Cost of construction divided by the RC – \$595,390/1135 vph = *\$525/trip*

Figure 2. Per Trip Toll Plaza Impact Fees

Interchange No.	Area/Town Immediately Accessible by Interchange	TOLL PLAZA ANALYSIS		
		Cost to add one lane*	Capacity Remaining in 2005***	Associated Cost/Trip
19	Wells	\$ 595,390	905	\$ 658
25	Kennebunk - NB	\$ 595,390	1045	\$ 570
	Kennebunk - SB	\$ 595,390	820	\$ 726
32	Biddeford	\$ 595,390	380	\$ 1,567
36	Saco**	\$ 595,390	635	\$ 938
42	Scarborough	\$ 595,390	1135	\$ 525
45	South Portland (Maine Mall)	\$ 595,390	665	\$ 1,343
46	Portland (Jetport) - NB	\$ 595,390	580	\$ 1,540
	Portland (Jetport) - SB	\$ 595,390	355	\$ 1,677
47	Rand Road	\$ 595,390	410	\$ 1,452
48	Riverside Street	\$ 595,390	935	\$ 637
53	West Falmouth	\$ 595,390	1110	\$ 536
63	Gray	\$ 595,390	1000	\$ 595
75	Auburn		N/A	
80	Lewiston			
86	Sabattus			
102	West Gardiner			

* Cost Estimate is based on 2009 Dollars

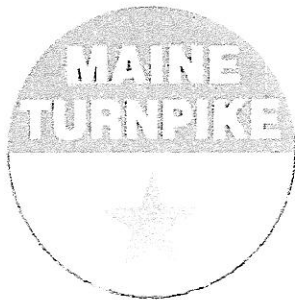
** This analysis assumes that an additional entering toll lane has already been added to the Saco plaza (proposed to happen in 2009)

***The remaining capacity is based on the added capacity of a manual toll lane that the impact fee will be used to construct.

Maine Turnpike Impact Fee Report & Analysis

Prepared for:

Maine Turnpike Authority



Prepared by:

HNTB

May 2010

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INTRODUCTION

The Maine Turnpike Authority (MTA) does not have a formal process or the mechanism (MaineDOT's Traffic Movement Permit) to independently charge impact fees at interchanges or toll plazas. Currently, impact fee opportunities are through invitation from the MaineDOT as part of their Traffic Movement Permit process when a development is shown to impact Turnpike operation. The assessment of an impact fee by the MaineDOT on behalf of the MTA has occurred twice, once at the Biddeford (Exit 32) Interchange in 2005, and once at the Scarborough (Exit 42) Interchange in 2007. Details of the Scarborough impact fee will be presented later in this report as an example.

PURPOSE

The purpose of this report is to: (1) provide a brief history of impact fees, particularly MaineDOT's established practices and (2) present documentation to support the Maine Turnpike Authority issuing fair and reasonable impact fees when Turnpike interchanges are affected by development.

The final report is expected to serve as a public resource document which will be available for all potentially effected parties to consult when development is being considered within the corridor of the Maine Turnpike.

BACKGROUND

The formal definition of an impact fee is *a charge on new development to pay for the construction or expansion of off-site capital improvements that are necessitated by and benefit the new development.*¹

There are legal guidelines associated with impact fees which are imposed by the State of Maine Impact Fee Act (Title 30-A: Part 2: Subpart 6A: Chapter 187: Subchapter 3: §4354) and more clearly defined by Federal Supreme Court decisions. Through multiple Supreme Court decisions, the assessment of an impact fees must meet the "rational nexus" and "rough proportionality" tests. These tests are:

- 1) There must be a reasonable connection between the need for additional facilities and the new development.
- 2) It must be shown that the fee payer will benefit in some way from the fee.
- 3) Calculation of the fee must be based on a proportionate fair share formula.²

¹ www.impactfees.com

² www.impactfees.com

STATE OF MAINE

There are a number of restrictions surrounding the implementation of impact fees which vary slightly by State. These restrictions seek to make the implementation of impact fees fair, well processed and uniform. For local municipalities, the restrictions from the State of Maine Impact Fee are recorded as follows:

- The amount of the fee must be reasonably related to the development's share of the cost of infrastructure improvements made necessary by the development, or, if the improvements were constructed at municipal expense prior to the development, the fee must be reasonably related to the portion of percentage of the infrastructure used by the development.
- The municipality shall expend the funds solely for the purposes for which they were collected.
- The ordinance must establish a reasonable schedule under which the municipality is required to use the funds in a manner consistent with the capital investment component of the comprehensive plan.
- The ordinance must establish a mechanism by which the municipality shall refund impact fees, or that portion of impact fees, actually paid that exceed the municipality's actual costs or that were not expected according to the schedule under the subsection.³
- Impact Fees may not be used for operations and maintenance. This includes paying salaries.
- Impact Fees may not be used to pay for improvements required to cure existing deficiencies in public facilities.

A wide range of roadway fees have been charged throughout the country and the State of Maine in the past three decades since impact fees have become common. A few examples of fees recently charged in towns across the State of Maine are:

- Scarborough
 - Five different areas along Payne Road are charged fees which vary from \$96.35/trip to \$1,024.52/ trip.
 - Dunstan Corner on Route 1: \$1,741/trip.
- Freeport
 - For new construction over 1,000 sq. ft. a one-time impact fee of \$250 to \$30,000 may be applied, depending on size.
- Augusta
 - Cony Circle was paid for using four separate impact fees ranging from \$100,000 to \$200,000 total.
- Bangor
 - A 218,000 sq. ft. big-box store was charged a total of \$3.5 million in roadway and traffic impact fees.⁴
- Sanford, Brunswick, Topsham and Ellsworth all have or are in the process of implementing traffic impact fees.

³ <http://janus.state.me.us/legis/statutes/30-A/title30-Asec4354.html>; Title 30-A

⁴ PolicyOne- Research Inc., Impact Fee Assessment - City of Auburn - Phase I, 26 Oct 2007

MaineDOT

The Traffic Movement Permit Rule were passed by the legislature (23 M.R.S.A. § 704-A(2) 17-229 C.M.R. 305) in May of 2000, and established a mechanism for MaineDOT to assess impact fees through the Traffic Movement Permit process. The MaineDOT may impose impact fees on developers in addition to and/or in lieu of mitigation. An impact fee is typically assessed as a pro-rata share of mitigation where cost to complete the required mitigation is not reasonable for the size of a single development or there are other developments planned or occurring in the same area. It is this methodology that the MTA has adopted to calculate impact fees for the interchanges that could be overburdened by unexpected development. The following is an excerpt from Traffic Movement Permit Rules regarding Impact Fees:

11. Implementation of off-site traffic improvements. Required improvements to roads or intersections in the vicinity of the proposed development must be implemented prior to initial occupancy of the development except where the following occurs as provided in (A), (B), (C) or (D) below:
 - A. A Municipal impact fee is applied. The applicant demonstrates the following:
 - (1) Impact fee ordinance. The municipality in which improvements are needed has adopted an impact fee ordinance pursuant to 30-A M.R.S.A. § 4354;
 - (2) Impact fee payment. The applicant has paid or will pay an impact fee pursuant to the ordinance;
 - (3) Impact fee use. The impact fee will be used to make the improvements required by the Department;
 - (4) Department approval. The improvement plan has been reviewed and approved for implementation by the Department; and
 - (5) Schedule. The improvements are scheduled for implementation within three years of the initial occupancy of the development; or
 - B. A Non-municipal funding mechanism is applied. The applicant demonstrates the following:
 - (1) Mechanism established. A non-municipal funding mechanism has been established to apportion the cost of the needed improvements;
 - (2) Pro-rata share. The applicant has contributed or will contribute a pro-rata share of the cost of the improvements;
 - (3) Fund sufficient. The amount of the fee, together with fees reasonably expected from other developers and government agencies will be sufficient to fully fund the improvements;
 - (4) Department approval. The improvement plan has been reviewed and approved for implementation by the Department;
 - (5) Local approvals. The improvement plan has received all necessary local approvals, including funding authorizations; and
 - (6) Schedule. The improvements are scheduled for implementation within three years of the initial occupancy of the development; or
 - C. An M.D.O.T. Imposed Impact Fee is applied.
 - (1) The Department may impose impact fees on developers in addition to and/or in lieu of mitigation;
 - (2) The Department may impose impact fees on the applicant for their impact at critical intersections; or
 - D. Where Improvements are to be implemented by Department. The applicant demonstrates that the necessary traffic improvements have been identified by the Maine Department of Transportation (MDOT) as improvements which MDOT will be implementing within three years of the initial occupancy of the development.

MAINE TURNPIKE AUTHORITY

The Maine Turnpike Authority (MTA) was formed in 1942 and its sole source of revenue since inception has been tolls. The MTA receives no Federal, State, or Local funds for capital improvements or operating expenses. When the MTA needs funds for capital improvements, it can either use toll revenue or bonds to fund the improvements. If bonds are issued, the bonds will be paid off with toll revenues over time. The MTA is a self sustaining not-for-profit quasi-government (Budgetary oversight by the Maine State Legislature) agency that has been in operation for over 60 years, making it one of the oldest operating turnpikes.

The MTA uses two budgetary planning mechanisms to manage and allocate revenue. The first is the 10 Year Plan, which identifies project that will be scheduled in the next ten years and allocates funds to those capital and maintenance projects. The typical breakdown of capital versus maintenance funding is 25% to 75%, respectively. Toll plaza improvements fall under capital improvements. The Second is the 20 Year Plan that identifies projects beyond the ten year horizon and the funding needed for these projects. With this in mind, the un-programmed need for mitigation to the Maine Turnpike due to development is not something the MTA can generally predict or react to financially.

The intent of a MTA imposed Impact Fee is to alleviate the cost of expanding a toll plaza due to unexpected development near an interchange. The only large-scale system improvement that will be routinely analyzed and a set impact fee developed, is toll plaza expansion. Other impacts to Maine Turnpike facilities and interchanges will be reviewed on a case by case basis.

It should be noted that the interchanges without toll plazas, Auburn (Exit 75), Lewiston (Exit 80), Sabattus (Exit 86) and West Gardiner (Exit 102), will not be exempt from interchange analysis. If a development meets the threshold volumes for analysis at an interchange with a plaza, the developer will be required to analyze the interchange to determine their impact at the interchange without a toll plaza, and if needed, mitigate their impact. At these open interchanges, each development will be examined on a case-by-case basis, and no set impact fee will be offered; however, an impact fee may be considered in lieu of mitigation.

Currently, toll plaza improvements are scheduled based on an anticipated failing level of service. These specifics can be found for each Turnpike structure in the '*Maine Turnpike Needs Assessment – Systemwide Traffic operation and Safety Study - 2007*', more commonly termed the Safety and Capacity Study. The Study will be reviewed and amended as needed every five years. This study is the basis for the Authority's 10 Year Plan – a document which forecasts which Turnpike infrastructures will need to be improved, expanded and upgraded within the next 10 years. The 10 Year Plan is adjusted annually based on revenue forecasts which are determined by annual traffic Volumes. By using the study as a planning tool the Authority is careful to forecast construction far into the future and ensure that money will be available when needed.

Recently, it has become evident that large developments can quickly deplete an entire toll plazas reserve capacity at any given interchange. The development creates an unexpected increase in traffic volumes which cannot be forecasted using the typical methods (based on historical growth and the Consumer Price Index). When this occurs the Authority cannot immediately expand the infrastructure to accommodate the sudden need.

CALCULATING IMPACT FEES

There are three variables needed to calculate an impact fee at a Turnpike Interchange Toll Plaza:

- 1) **The current Toll Plaza entering volume:** the number of vehicles served by each toll plaza during the peak hour. (Only entering volumes to the toll plaza will be used in these calculations)
- 2) **The Toll Plaza capacity:** the number of entering vehicles that each toll plaza can possibly handle without causing excessive queuing and delays.
- 3) **The cost:** the approximate cost to expand each toll plaza by one entering lane.

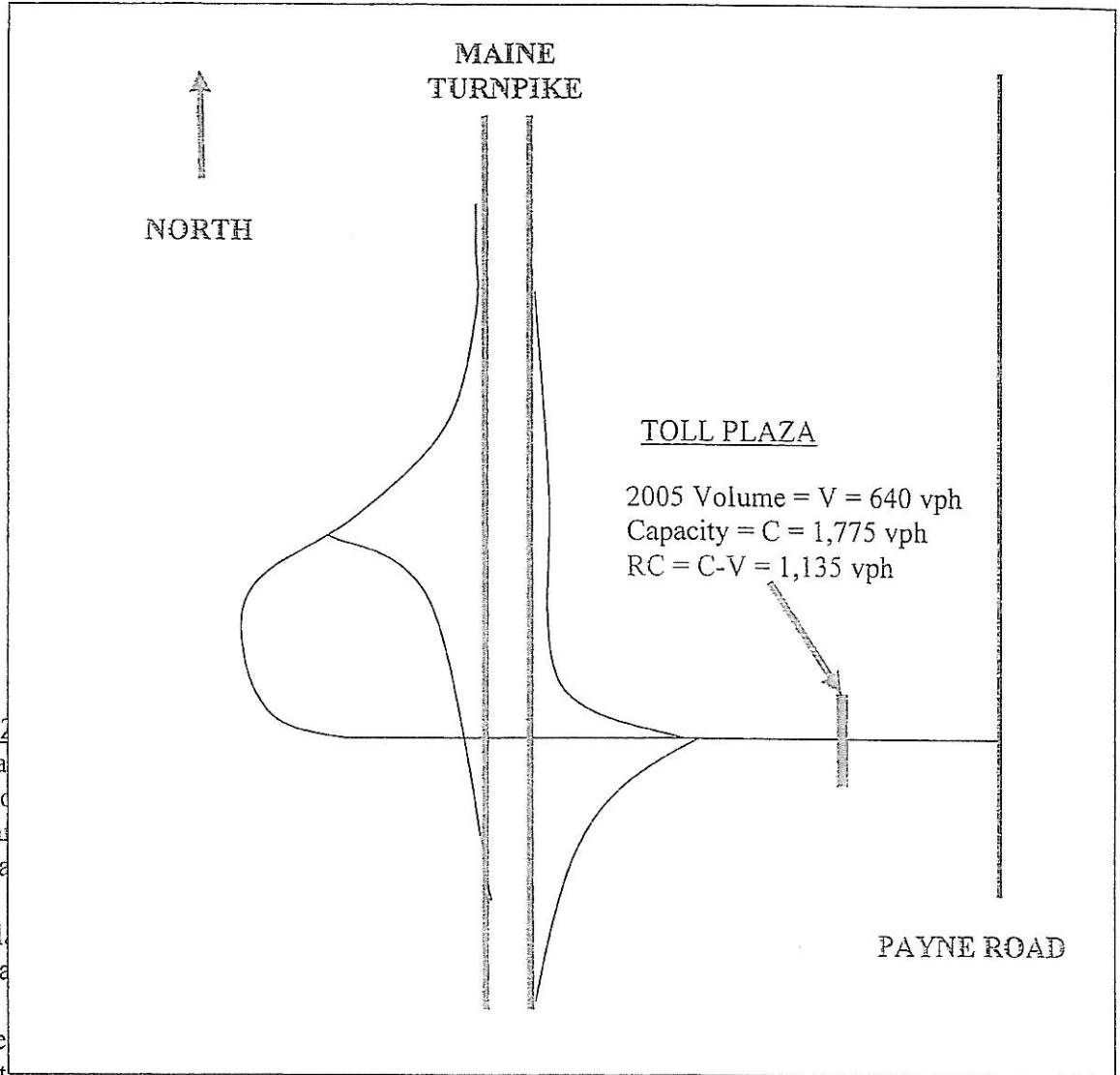
By subtracting the current volume from the capacity, the **Reserve Capacity (RC)** can be calculated. When the total cost of the improvements is divided by the RC a **fee/trip** is established. This number will be used as an impact fee. There is an example of this calculation provided on the following page.

An important component of any impact fee is the accuracy of the variables. The details of how the three variables were derived at each interchange are as follows:

- 1) The **current volume** is provided by the Authority, and is derived from the daily traffic count data. Each ramp and toll plaza along the Maine Turnpike is equipped with a traffic counter that operates 24 hours a day throughout the year. Data was collected for the entire year of 2005 and the 30th highest peak hour of the year was determined. This number is the 30th in a list of traffic volumes ranked from highest to lowest at a given location throughout the year. The 30th highest hour is commonly used in design criteria for roadways.
- 2) The **capacity** of a toll plaza lane was calculated using historical data. The Turnpike toll plazas have been able to process a given number of vehicles per hour when traffic is at the highest volumes experienced. These numbers are:
 - 275 vehicles per hour (vph) for Manual Lanes, also known as cash lanes;
 - 405 vph for Automated Coin Machine Lanes (ACM), also known as Coin lanes; and
 - 900 vph for Electronic Toll Collection (ETC) lanes, also known as E-ZPass Lanes.
- 3) The **cost** to expand a toll plaza is also based on historical data. Both of these cost calculations (approximate cost to construct a lane-mile, approximate cost to expand a plaza by one lane) are included in Appendix A. Cost to expand a toll plaza would be adjusted annually based on a 5 years rolling average for percentage of cost increase (or decrease)

An example using these three essential variables to determine an impact fee is shown in Figure 1.

Figure 1 – Example Impact Fee Calculations
 SCARBOROUGH – EXIT 42



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 The calculations below detail how the Reserve Capacity is calculated for the Scarborough interchange.

The Current Volume comes from the 30th highest hour volume, which is 640 vph.

The Capacity is calculated by the toll lane configuration, and the historical percentage use of each type of lane and for Scarborough is as follows:

- a. Toll plaza configuration - The current configuration is as follows:

1. 1pm-7pm, Mon-Fri	1 ACM – 2 Attended
2. 11am-7pm, Sat-Sun	1 ACM – 2 Attended
All other times	1 ACM – 1 <i>E-Z Pass</i> - 1 Attended

- b. Toll Payment composition: it is assumed that peak hour traffic will be as follows:

1. Cash Cars	21.8%
2. <i>E-Z Pass</i> Cars	45.7%
3. ACM Cars	25.1%
4. Cash Trucks	2.4%
5. <i>E-Z Pass</i> Trucks	5.0%

This is consistent with current composition of peak hour traffic at the Exit 42 toll plaza.

c. Toll booth capacity: It was assumed that each individual toll booth can operate at the following rates:

1. Cash vehicles	275 vph
2. ACM vehicles	405 vph
3. <i>E-Z Pass</i> vehicles	900 vph

These values are consistent with the capacities used in the toll plaza analysis for the Maine Turnpike Authority's Safety and Capacity Study.

d. The maximum future capacity of the toll plaza will depend on the extent to which *E-Z Pass* is utilized. The 2006 capacity for Exit 42 with 51% *E-Z Pass* utilization is approximately 1450 vph. The projected future use for the build out year is as follows:

2008 – Projected *E-Z Pass* use at 54% - estimated toll plaza capacity of 1500 vph
 The Developer will receive 275 vph credit for the manual toll lane to be added, bring the plaza capacity to 1775 vph

The Reserve Capacity (RC) is the Capacity minus the Current Volume – 1775 - 640 = 1135 vph

The Fee/Trip is the Cost of construction divided by the RC – \$595,390/1135 vph = \$525/trip

Maine state law requires that developments expected to generate more than 100 trips during the peak hour submit a Traffic Movement Permit application to the MaineDOT. It is intended that the number of trips used to determine the final fee would be taken from the final submitted MaineDOT Traffic Movement Permit (TMP). The TMP would show the number of trips entering the Turnpike through the toll plaza.

Considering this same example, if a development in Scarborough was expected to generate 400 trips during a peak hour and 105 of those new trips would be entering the Turnpike, an impact fee of 105 trips x \$525 = \$55,125 would be allocated for the toll plaza improvements.

There are four (4) interchanges on the Maine Turnpike which are not served by side toll plazas; Auburn (Exit 75), Lewiston (Exit 80), Sabattus (Exit 86) and West Gardiner (Exit 102). In these locations the largest capacity constraint is the ramp system. Due to the efficiency of the current system and the large volume increase that would be necessary to cause a failing Level of Service at these locations, preset impact fees will not be offered at this time, however analysis for the interchange and related intersection will still be required if threshold volumes are met, and mitigation or an impact fee may be required. Any mitigation or impact fee would need to be accessed on a case-by-case basis. Calculation for ramp, bridge, and site specific impact fee have been included in the appendix of this report; however, these fees would not be implemented for

the majority of the development occurring in Maine, these impact fees would be implemented on a case-by-case basis for large scale development only.

For all other interchanges the fee/trip based on side toll plaza mitigation has been calculated. These costs are organized in the Table in Figure 2. All fees were calculated using the previously described methods and organized into a table format. To calculate a total impact fee from this table the number of trips is multiplied by the cost/trip. Except at the above mentioned open interchanges, all impact fees will be used to add an additional entering toll lane at the impacted interchange for which the fee was collected.

The impact fee funds will be used or obligated within a 10 year period from the date when the impact fee was collected. If the funds from a specific developer are not used within the 10 year time frame, the developer will be entitled to a refund of the impact fee paid by making application to the MTA for a refund of the impact fee. The application for refund of the impact fee must be made within 180 days of the anniversary date of the collection of the impact fee.

Figure 2 – Toll Plaza Impact Fees by Intersection

Interchange No.	Area/Town Immediately Accessible by Interchange	TOLL PLAZA ANALYSIS		
		Cost to add one lane*	Capacity Remaining in 2005***	Associated Cost/Trip
19	Wells	\$ 595,390	905	\$ 658
25	Kennebunk - NB	\$ 595,390	1045	\$ 570
	Kennebunk - SB	\$ 595,390	820	\$ 726
32	Biddeford	\$ 595,390	380	\$ 1,567
36	Saco**	\$ 595,390	635	\$ 938
42	Scarborough	\$ 595,390	1135	\$ 525
45	South Portland (Maine Mall)	\$ 595,390	630	\$ 945
46	Portland (Jetport) - NB	\$ 595,390	410	\$ 1,452
	Portland (Jetport) - SB	\$ 595,390	935	\$ 637
47	Rand Road	\$ 595,390	1385	\$ 430
48	Riverside Street	\$ 595,390	1000	\$ 595
53	West Falmouth	\$ 595,390	690	\$ 862
63	Gray	\$ 595,390	490	\$ 1,215
75	Auburn	N/A		
80	Lewiston			
86	Sabattus			
102	West Gardiner			

* Cost Estimate is based on 2009 Dollars

** This analysis assumes that an additional entering toll lane has already been added to the Saco plaza (proposed to happen in 2009)

***The remaining capacity is based on the added capacity of a manual toll lane that the impact fee will be used to construct.

RECOMMENDATIONS

Impact fees assessed for the MTA should be considered when a traffic movement permit is submitted to the MaineDOT or municipality proposing a development that would have significant impact on a Turnpike interchange.

Once the MTA is notified of the process two criteria must be met before an impact fee would be considered. The proposed development must EITHER:

- Propose to cause an increase of 100 or more trips entering the Turnpike during any single hour OR
- Propose to use more than one-third (1/3) of the toll plaza's remaining capacity.

This methodology ensures that impact fees are only being collected when (1) substantially large developments are proposed OR (2) the toll plaza reserve capacity is at risk of being depleted to a point where there may be safety concerns and excessive delays.

By using these criteria the MTA is ensuring that any funds collected through impact fees will be used for improvements that otherwise would not be necessary within the 10 year time frame.

To illustrate the process of meeting these criteria the Scarborough interchange will again be referred to:

- First, a development must be proposed within a reasonable distance (TMP requirement would be one mile or when intersection threshold volumes no longer apply) of the Scarborough toll plaza.
- Second, the development must generate 100 or more trips during the peak hour to trigger the Maine DOT traffic permit application process.
- Third, the development must be generating 100 new trips to ENTER the Maine Turnpike during any given peak hour. (287 is one-third of the reserve capacity).
- If all of these criteria are met, the development would be charged the appropriate fee based on the number of additional trips added during the peak hour and the associated cost per trip shown in Figure 2.
- The impact fee would be assessed through the MaineDOT Traffic Movement Permit, and paid to the MTA specifically for adding a toll lane to the Toll Plaza within a ten year time frame.

Using the same methodology for calculating the toll plaza impact fee for the Scarborough Interchange, the following example calculation are offer for the Scarborough interchange ramps and the interchange bridge. These calculations are offered as an example only – any large scale development that would require the analysis of interchange ramps or bridges should consult with the MTA before using these calculations to determine an impact fee.

RAMP CALCULATIONS

The cost (based on 2009 dollars) to add a lane to any side toll plaza is: \$1,444,426 per mile of lane

To calculate the Impact Fee for the SB Diverge Ramp this total cost must be multiplied by the ramp length - .32 miles in this case. This results in a cost to add one lane of 0.32 miles x \$1,444,426 = \$462,216.

To establish a Fee/Trip the cost to add one lane is divided by the associated RC:

$$\begin{aligned} \text{Cost to add one lane / RC} &= \\ \$462,216/1,305 \text{ vph} &= \$354 \text{ per trip} \end{aligned}$$

This same methodology can be followed for each ramp to obtain the following results:

- SB Merge Fee/trip: \$313
- NB Merge Fee/trip: \$242
- NB Diverge Fee/trip: \$329

BRIDGE CALCULATIONS

In this particular situation the bridge is only necessary for access to the SB merge and diverge ramps. Each directional ramp has a specific lane across the bridge that may need to be expanded if the usage increases sharply. Each direction is analyzed separately.

From Figure 1 it is known that the SB diverge ramp has a RC of 1,305 vph. Based on the cost to expand a bridge by one lane = \$650,000 the Fee/ trip can be calculated.

$$\text{Fee/trip} = \$650,000 / 1,305 \text{ vph} = \$498$$

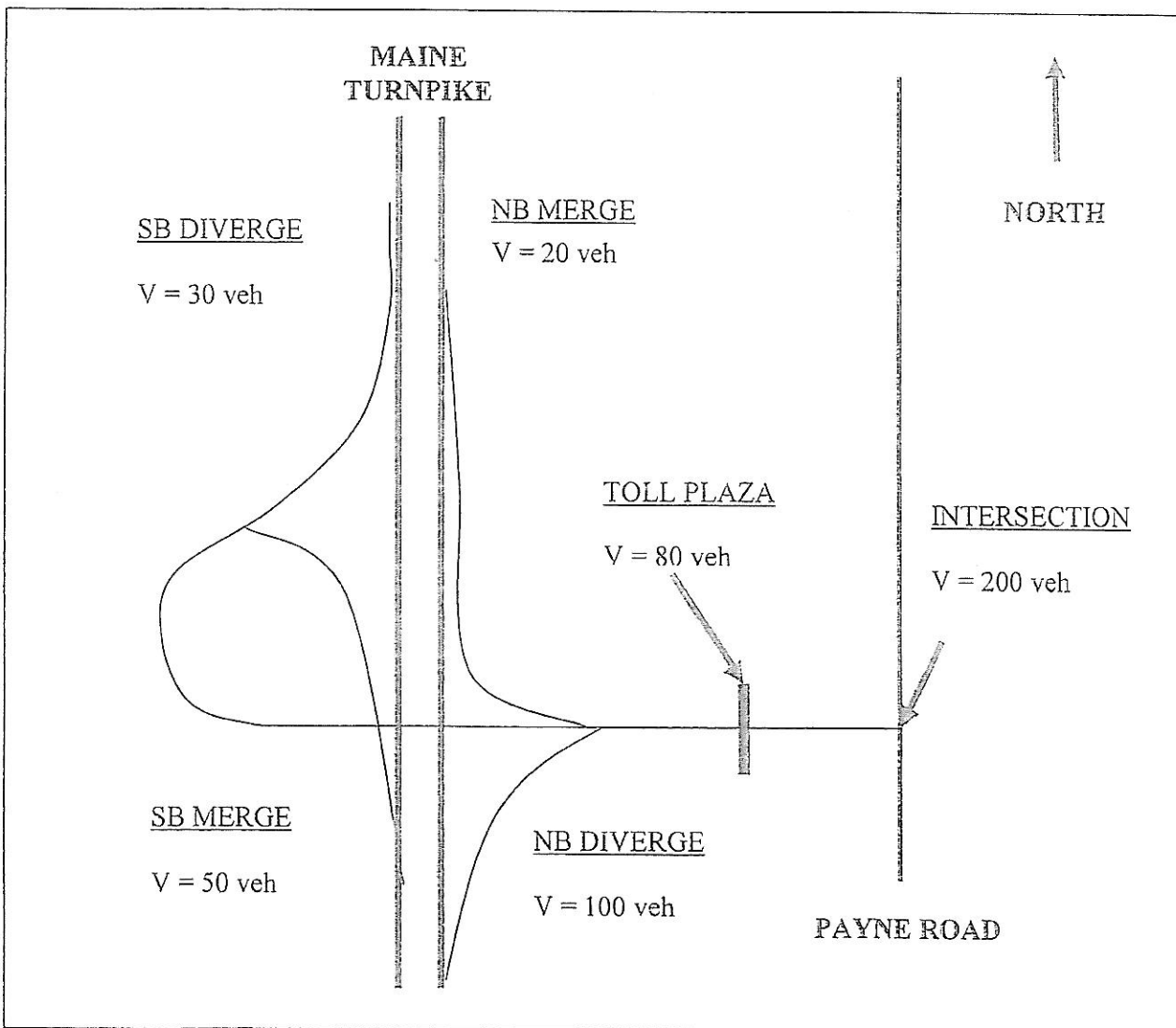
The same methodology can be found to calculate the Fee/trip for vehicles expected to travel on the SB merge ramp.

$$\text{Fee/trip} = \$650,000 / 1,245 \text{ vph} = \$522$$

TOTAL IMPACT FEE AT THE SCARBOROUGH INTERCHANGE

The total possible impact fee to be implemented at the Scarborough interchange is the sum of all the factors analyzed in the previous sections: toll plaza lanes, merge and diverge ramps, bridges and site specific concerns. The case-by-case comparison is necessary due to the ramp usage. If a vehicle is charged a fee for using the NB merge ramp it should not be charged an additional fee for using the SB merge ramp as well. To properly analyze each development a gravity model for each scenario. In our case the example in Figure 3 below will be used for further calculations.

Figure 3 – Example Gravity Model
SCARBOROUGH – EXIT 42



Based on the gravity model shown in Figure 3 the following Fee/trip formula can be utilized:

Total impact fee = (Toll plaza x number of associated trips) + (SB diverge fee/trip x number of associated trips) + (SB merge fee/trip x number of trips) + (NB diverge fee/trip x number of associated trips) + (NB diverge x number of associated trips) + (Bridge fee/ trip x number of associated trips – both directions) + (Intersection x number of associated trips)

Using these formulas the total fee/trip for this example is:

$$\text{Total Impact Fee} = (\$692 \times 80 \text{ veh}) + (\$354 \times 30 \text{ veh}) + (\$313 \times 50 \text{ veh}) + (\$242 \times 20 \text{ veh}) + (\$498 \times 30 \text{ veh}) + (\$533 \times 50 \text{ veh}) + (\$170 \times 200 \text{ veh}) = \mathbf{\$162,060}$$

Maine state law requires that developments expected to generate more than 100 trips during the peak hour submit a Traffic Movement Permit application to the MaineDOT. It is intended that the number of trips used to determine the final fee would be taken from the final submitted Traffic Movement Permit (TMP).

There are four (4) interchanges on the Maine Turnpike which are not served by side toll plazas; Auburn (75), Lewiston (80), Sabattus (86) and West Gardiner (102). In these locations the largest capacity constraint is the ramp system. Due to the efficiency of the current system and the large volume increase that would be necessary to cause a failing Level of Service at these locations impact fees seem unlikely at this time. Again, if substantially large development were to occur in any of these areas the possibility of implementing an impact fee would need to be accessed on a case-by-case basis.

For all other interchanges the fee/trip has been calculated. These costs are organized Table 1. All fees were calculated using the previously described methods and organized into a table format. To simplify the calculations the length and reserved capacity of the ramps were summed to create an average fee/trip for ramp usage. To calculate a total impact fee from this table the number of trips for each movement is multiplied by the cost/trip for that movement.

CURRENT PLAN

The Authority currently tracks the reserve capacity (RC) of each ramp and toll plaza. The results are documented in the '*Maine Turnpike Needs Assessment – Systemwide Traffic operation and Safety Study-2007*'. . The Study will be reviewed and amended as needed every five years. This study is the basis for the Authority's 10 Year Plan – a document which forecasts which Turnpike infrastructures will need to be improved, expanded and upgraded within the next 10 years. The 10 year plan is adjusted annually based on revenue forecasts which are determined by annual traffic Volumes. By using the study as a planning tool the Authority is careful to forecast construction far into the future and ensure that money will be available when needed.

Recently it has been noted that large developments can quickly deplete the entire reserve capacity at any given interchange. The development creates an unexpected jump in traffic volumes which cannot be forecasted using the typical methods (based on historical growth and the Consumer Price Index). When this occurs the Authority cannot immediately expand the infrastructure to accommodate the sudden need.

One of the guidelines of Maine's Comprehensive Planning and Land Use Regulation Act is for municipal comprehensive plans to "develop a capital investment plan for financing the replacement and expansion of public facilities and services required to meet projected growth and development." The *Maine Turnpike Needs Assessment* and the 10 Year Plan are very detailed in these aspects and meet this guideline. These two documents result in assets being set aside for projects required due to growth pressures.

The intent of a Turnpike imposed Impact Fee is to alleviate the cost of expanding the Turnpike due to unexpected development near interchanges which will cause a decrease in the level of service. If large-scale system improvements become necessary before the forecasted date adequate funds may not be readily available and service levels will suffer. Significant delays and queuing are likely to develop in the area and hinder operations on the Turnpike as well as delaying access to the proposed and existing development in the area.

The *Maine Turnpike Needs Assessment Systemwide Traffic Operation and Safety Study* the approximate year when the replacement or major expansion of facilities will be need. This forecast is based on historical growth rates during the peak hour. The growth percentages determined and used in this report as well as in the Safety and Capacity report are 2.1% from mile 7 to mile 53 and 2.3% from mile 53-103.

The need for improvement is based on a failing level of service, as defined by the Highway Capacity Manual for each element. The forecasted dates for replacing entrance and exit ramps are outlined in Figure 4. Only ramps expected to need improvement before the year 2046 are shown. Trying to estimate a replacement or expansion schedule more than 40 years into the future based solely on historical growth rates results in a wide range or accuracy and provides few benefits.

Figure 3 – Forecasted Ramp Replacements

Exit #	Location	Ramp	Calendar Year When Forecasted to Reach Capacity
<i>Exit 32</i>	Biddeford	SB-Off	2023
<i>Exit 36</i>	Saco	NB-On	2009
		NB-Off	2045
		SB-On	2046
		SB-Off	2015
<i>Exit 45</i>	Maine Mall Road (South Portland)	NB-On	2036
		NB-Off	2030
<i>Exit 46</i>	Jetport (Portland)	SB-Off	2039
		NB-On	2035
<i>Exit 47</i>	Rand Road (Portland)	SB-Off	2028
<i>Exit 48</i>	Riverside (Portland)	NB-On	2039
		NB-Off	2040
<i>Exit 53</i>	West Falmouth	SB-On	2045
<i>Exit 63</i>	Gray	NB-Off	2033
		SB-On	2026
<i>Exit 75</i>	Auburn	SB-On	2046

Only 21 of the 406 Turnpike owned ramps will be in need of expansion within the next 40 years. This is due to large reserve capacities (RC) at most locations. Higher RC values significantly lower impact fees at any given location. A large amount of traffic would need to be added to many of these locations to cause a noticeable change in level of service.

Terms and Definitions

Toll Plaza – A Toll Plaza is the building or facility in which a toll is collected.

Interchange – An interchange is a collection of ramps, exits, and entrances between two highways

Reserve Capacity - The Reserve Capacity is the volume of additional vehicles in a peak hour that an interchange can accommodate without a failing level of service.

Open Interchange - An open interchange is an interchange without a side toll plaza, the open interchanges for the MTA are Auburn, Lewiston, Sabattus and West Gardiner.

Threshold Volume – The volume at which interchange analysis is required, this volume will vary by interchange.