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MTA CONSULTANT CONTRACT 2014.103
GENERAL ENGINEERING CONSULTANT CONTRACT

SCOPE OF SERVICES
FOR
PORTLAND AREA MAINLINE (PAM) NEEDS ASSESSMENT

February 2, 2017

This document details the scope of services to complete a needs assessment for the area of the Maine Turnpike mainline from Exit 44 in Scarborough to Exit 52 in Falmouth (Study Area) for the Maine Turnpike Authority (MTA). This scope of services will be completed in three phases:

- Phase 1 – Safety and Capacity Evaluation. This phase will build on the work of the Safety and Capacity Study, conducting a detailed analysis and document the current and future safety and capacity needs of the Maine Turnpike between Exits 44 and 52.

- Phase 2 – Alternatives Evaluation. Based on the findings from Phase 1, a list of reasonable and feasible alternatives will be identified and evaluated that address the documented safety and capacity needs consistent with the Army Corps of Engineers (ACOE) 404(b)(1) Guidelines, the Maine Natural Resources Protection Act, the Maine Sensible Transportation Policy Act (STPA), and the Public Outreach process identified in this scope of services below.

- Phase 3 – Findings, Recommendations, and Next Steps. Based on the information documented in Phase 2, a summary of findings will be developed. These findings will be presented and discussed with MTA staff and then presented to the MTA Board with a recommendation or series of recommendations. This is anticipated to result in the selection of alternative(s) to advance to the permitting and design phase. Phase 3 will also include documentation of next steps needed to advance the identified alternative.

Project Management is also included in this scope of services for overall management of the study team and liaison with the MTA throughout each phase of the Needs Assessment

The following is a description of the work tasks that will be performed as part of the Needs Assessment.

Phase 1 – Safety and Capacity Evaluation

Task 1: Review Previous Studies

Task 1.1 Review Previous Studies
This task will review existing studies and documents that may be used to support the Needs Assessment and provide relevant data and information that may offset some data collection needs. The following studies are anticipated to be reviewed:

- 2016 PACTS Destination 2040/Regional Transportation Plan Update
- 2015 MTA Safety and Capacity Study
- 2012 Gorham East-West Corridor Study
- 2014 PACTS Regional Collector Road Study
- 2014 PACTS Transit Passenger Survey
- 2010 MTA Origin/Destination Study

Relevant data from these studies will be utilized for the Needs Assessment.

Task 2 Existing Conditions

Following a review of all current relevant studies in the site environs, HNTB will develop a comprehensive data collection program. The data collection program will entail collection of traffic, land use, transit, and other planning data, as well as historic growth data to establish a baseline condition for 2016.

The existing conditions will cover topics such as daily traffic volumes, peak hour traffic flows, traffic variation (seasonal, daily and hourly), origin-destination (O-D) patterns, survey, wetland, resource, land use, and other relevant data. The aim of this task is to identify current conditions and deficiencies and assist in the process of formulating the project need.

Task 2.1 Data Collection
The following describes the data collection program envisioned for the Needs Assessment:

Task 2.1.1 Roadway Geometry
HNTB will conduct a field reconnaissance of roadway geometry for the mainline turnpike, the ramps at interchanges and intersecting streets at ramp termini. The field reconnaissance will collect data such as number of lanes, lane width, shoulder width, roadway grades, speed limits, ramp lanes and widths, sight distances, traffic control and toll booth characteristics. These data will be used in the analysis of current traffic operations. Much of this data was collected during the 2015 Safety and Capacity Study, so the field reconnaissance is assumed to validate existing information.

Task 2.1.2 Traffic Volumes
HNTB will make use of the MTA traffic count station information to establish base line (assumed 2016) AM and PM peak hour (PM peak hour assumed to be 30th highest hour) flows on the corridor. Select Automatic Traffic Recorder (ATR) data will be collected at up to 5 locations on MTA mainline and ramp locations to assist in developing calibrated base line peak hour flows and validating MTA count station data. Supplemental ATR counts will be conducted at up to 5 locations on arterials adjacent to the Maine Turnpike as required if recent (2 years or less) data is not available from either PACTS or MaineDOT. The product of this task is a base year AM and PM peak hour traffic flow network for the Study Area.

Turning movement counts are assumed to be available at intersections immediately adjacent to the Maine Turnpike (Exit 46, 47, and 48) from MaineDOT as part of recent development projects. This data will be used to develop 2016 intersection turning movement volumes used in existing and future capacity analysis.

It should be noted that the 2015 Safety and Capacity established 2014 baseline volumes along this section of the MTA corridor. However, it is understood from 2015 and 2016 MTA traffic count data that peak hour volumes during these years are notably higher than the 2014. As such, it is proposed that updated peak hour volumes will be developed.

Task 2.1.3 Origin-Destination Data
HNTB will assemble existing O-D data (2010 Study data and current E-ZPass data) from the MTA for the primary Study Area. The O-D data will identify entrance and exit patterns of motorists. It is important to identify not only which segments of the mainline motorists are traveling but also the trip purpose. Since the primary Study Area involves the City of Portland, it is important to discern between commuters, commercial and recreational patterns. Based on the review of the current O-D data, supplemental data will be collected as needed.

Task 2.1.4 Interstate 295 Data
HNTB will gather available data for I-295 from MaineDOT as part of their ongoing safety study within the Study Area. Available data is assumed to consists of recent traffic volumes, crash records, and available origin-destination information. It will be important that I-295 data used for this Needs Assessment is consistent with the I-295 safety study. Hours under this task are assumed to summarize data only.

Task 2.1.5 Survey Data
HNTB will utilize existing aerial photogrammetry for the Maine Turnpike corridor between Exits 44 and 52. This will be supplemented with available aerial Lidar data assumed to be available from GPCOG. Existing survey data is

assumed to be at a level of accuracy necessary to complete conceptual design for cost estimating purposes.

Task 2.1.6 Resource Mapping
HNTB will gather current, available resource mapping from Maine Office of GIS and GPCOG to develop GIS mapping of the Study Area. Resource mapping will include land use, known natural and environmental resources, and notable features. The following resource mapping will be generated:

- Wetlands
- Natural Resources
- Archeological features
- Historic
- Land Use
- Zoning
- Bus/Rail/Transit/Pedestrian facilities
- Water/Sewer/Utilities (may also be available from MTA)

HNTB will also send letters to municipalities and resource agencies to confirm the data being gathered and summarized is the most recent resource data. Mapping will be generated at an appropriate scale to be used in documenting existing conditions and identifying order-of-magnitude quantity of impacts.

Task 2.1.7 Other Data
HNTB will collect other data need for the Needs Assessment under this task. These data may be related to future traffic forecasts. Other Study Area data to be collected from available sources is assumed as follows:

- Economic (from MTA and State)
- Bicycle/Pedestrian
- GoMaine/Rideshare programs
- Park and Ride lot capacity and occupancy
- Mass Transit ridership

Task 2.2 Existing Traffic Operations
This task provides for a complete analysis of the current traffic operations along the MTA and other major facilities in the site environs.

Task 2.2.1 Develop Design Hour Traffic Volumes
Based on the data collected in Task 2.1, HNTB will compute 2016 design hour traffic volumes for the Study Area. The design hour volumes will be developed based on the seasonal, daily and hourly variations. These traffic volumes will be used in the analysis of current traffic operations in the Study Area.

Task 2.2.2 Summary of Traffic Composition
HNTB will further identify the major trip purpose for the design hour traffic flows. As mentioned previously, the identification of commuter trip patterns is an essential component of the Needs Assessment.

Task 2.2.3 Traffic Operations Analysis
HNTB will use the data collected and assembled in Task 2.1 and the design hour traffic volumes to conduct an analysis of current traffic operations. HNTB will use current traffic engineering analysis tools for this purpose. Level of Service, delays and vehicle queues will be estimated for:

- mainline traffic
- merges and diverges at interchanges
- local street intersections

Highway Capacity Software (HCS) will be used for merge and diverge analysis. VISSIM will be used for local street intersections, mainline and toll plaza traffic analysis and to confirm HCS analysis due to the closely spaced interchanges in the Study Area. HCS files are already established for the Study Area from the 2015 Safety and Capacity Study and will be used with updated 2016 volumes.

Task 2.2.4 Summary of Current Deficiencies
Based on the results of Task 2, a summary of the current traffic operations in the Study Area will be identified.

Task 2.3 Summary of Existing Conditions
A summary of the existing conditions will be prepared under this task with suitable graphic and tabular summaries. Graphical and tabular summaries will be prepared for the following information within the Study Area:

- Traffic conditions
- Relevant land use
- Economic
- Alternative modes
- Resource quantification

This summary will provide the basis for an Alternatives Evaluation to be conducted in Phase 2 assuming a safety and/or capacity need is documented.

Task 3 Existing Traffic Safety

An integral component of the analysis of current traffic conditions is the evaluation of current safety characteristics. The safety analysis makes use of the data collected in Task 2 as well as collection of specific crash information.

Task 3.1 Crash Data Collection
HNTB will collect the most recent three years of crash data from the MTA and Maine DOT for the Maine Turnpike and selected key arterials in the Study Area. If more recent data is available from the MTA and MaineDOT than identified in the 2015 Safety and Capacity Study, this data will be collected and summarized. Crash data from MaineDOT's I-295 safety study is assumed to be available and incorporated.

Task 3.2 Safety Analysis
The following tasks are included under this task:

Task 3.2.1 Assessment of Roadway Geometry
Using the data collected in Task 2 and supplemental information for the remainder of the Maine Turnpike, HNTB will provide an assessment of the current roadway conditions along the Maine Turnpike. In addition to a general assessment of the Maine Turnpike, a more specific investigation of the Study Area will be prepared. Items such as merge area, acceleration and deceleration lanes, sight distance and traffic control will be included.

Task 3.2.2 Evaluation of Crash Statistics
HNTB will provide summaries of crash data trends and statistics based on the data collected in Task 3.1. Characteristics such as monthly variation, severity, collision type, time of day, weather and other environmental factors will be summarized and presented in tabular or graphical format. Crashes that could be reduced as a result of possible capacity mitigations will be identified.

Task 3.2.3 Identification of High Crash Locations
Based on the data collected from Maine DOT, HNTB will identify any high crash locations both on the Maine Turnpike and at other key locations in the Study Area. The High Crash Locations will be defined according to Maine DOT as experiencing eight crashes and the Critical Rate Factor (CRF=accident rate divided by expected accident rate) exceeds 1. A further summary of crash patterns and trends will be presented for all High Crash Locations focusing on causes, patterns and remedial actions if available.

Task 3.2.4 Sensitivity Analysis
A sensitivity analysis of the Study Area's crash experience as compared to the remainder of the Maine Turnpike and relevant sections of I-295 will be conducted. The focus of the analysis will be on the recently completed widened section from milepost 12 to exit 46. Further comparisons of crash data between the Maine turnpike and other similar facilities will also be conducted.

Task 3.3 Summary
A summary of the overall safety conditions along the Maine Turnpike and in the Study Area will be provided.

Task 4 Future Traffic Projections and Analysis

This task involves developing a future analysis of the Maine Turnpike under current physical geometry. There are several steps involved in this task, as presented below:

Task 4.1 Refinement of the Forecast Year(s)
Typically, transportation investments are evaluated against future conditions. Major investments such as capital expenditures for highways, highway widening, mass transportation rolling stick such as buses and rail vehicles use 20-year planning horizons. Other investments such as traffic signals, major signing contracts might use a 10-year horizon.

The previous widening Study prepared in April 1997 used a 20-year planning horizon. Under this task, HNTB and MTA will review and identify the planning horizon to be used in the Needs Assessment.

Task 4.2 Traffic Demand Forecasting
There are many means to predict future traffic flows. Some involve simple application of growth factors developed from historical trends, while others involve detailed models based on a wide array of variables such as households, population, employment and commercial space. The complexity of the Study Area as well as the level and types of improvement typically dictate the procedures that are best employed for this task.

The consultant will use the PACTS Travel Demand model to develop traffic forecasts for the Maine Turnpike Needs Assessment. Kevin Hooper Associates is currently making significant improvements to the PACTS model. The updated model is scheduled to be complete in June 2017. The following are the expected changes to be made to the PACTS model for this assessment.

The PACTS model will produce daily, AM peak period, and PM peak period traffic forecasts for current (year 2015) and year 2040 conditions. For the Maine Turnpike Assessment, the base year will be updated to the year 2016.

The PACTS model forecasts travel during typical fall conditions. For the Maine Turnpike Assessment, the forecast timeframe will be a summer weekday. This will require the model to reflect summer data for seasonal households (campgrounds, summer camps, seasonal homes, hotel and motel, and bed & breakfast) and for summer employment.

GPCOG is preparing year 2040 population, household, and employment forecasts. The municipal and TAZ-level forecasts are constrained to county-level forecasts developed by Maine Center for Business and Economic Research. These forecasts will be revisited and refined as appropriate to reflect the latest perspectives of staff for municipalities in the immediate area of the study corridor (Portland, South Portland, Scarborough, Westbrook, and Falmouth).

The Authority will provide the following information about vehicle volumes for the base year (2016):

- Vehicle volumes are needed along all mainline segments and ramps along Maine Turnpike between Exits 32 and 63 and along I-295 from its southern terminus through its interchange with the Falmouth Spur.

- The vehicle volumes should represent the AM peak period, PM peak period, and 24-hour period for the summer day that contains the design hour.
- The vehicle volumes should be split into two vehicle classifications: personal passenger vehicles and commercial trucks.
- For personal passenger vehicles, vehicle occupancy is needed.
- Each vehicle volume should be split into two ETC categories: EZ-Pass and cash-paying customers

The quantity of traffic entering and exiting the region is higher in the summer than in the fall. Likewise, the patterns of origins and destinations are different in the summer. These factors will be updated with the aid of Maine Turnpike counts and origin-destination data collected as part of the development of the Maine Statewide Travel Demand Model.

The Authority will provide entry-exit trip origin-destination matrices for the Maine Turnpike between and including Exits 32 and 63. Separate matrices will be provided by vehicle classification (personal passenger vehicles and commercial trucks). The separate vehicle class matrices will be further split into EZ-Pass and cash customers.

The Authority will also provide information on EZ-Pass ownership by place of residence (or similar). It is understood that this information is available aggregated by Zipcode. Model calibration and its ability to reflect the effects of different levels of EZ-Pass ownership penetration on traffic volumes will be improved if ownership quantities are disaggregated to TAZ levels. The Consultant can provide necessary GIS files or address-matching capabilities for the Authority to perform these calculations without the Consultant ever having access to raw address information.

The consultant will use origin-destination data compiled as part of the Maine Statewide Model update. MaineDOT contracted with a private company, AirSage, to provide data on the location and movement of persons throughout Maine, based on an analysis of cellular phone signaling data. The AirSage data are extracted from wireless carrier networks, as generated by devices in the normal course of operation. Mobile devices communicate with the network through control channel messages during use and frequently when the device is in idle mode. The data stream is anonymized (ensuring complete user privacy).

Within the PACTS region, the AirSage cell phone origin-destination data are compiled to 14 origin-destination districts (Portland is divided into three districts). Separate datasets are available for both weekday and weekend travel during August 2013.

The AirSage data splits trips into three types (home-based work, home-based other, and non-home-based), each of which has a unique origin-destination pattern. The data is also particularly useful in the understanding of trip distribution patterns for trips that pass through the region and trips with only one end in the modeled region.

Traffic forecasts will be developed for the year 2036. Consultant will develop traffic forecasts for all future year scenarios for which the travel demand model is appropriate.

These are assumed to be the following and are consistent with the alternatives identified in Task 5:

- Two (2) future base conditions with a defined set of current planned and programmed transportation system improvements in place. This will include conditions with and without a possible Gorham Connector.
- One (1) transit service alternative that expand/change service areas, change service frequency, change fares, improve service and fare coordination between transit providers, or provide preferential treatment at intersections
- Up to (2) carpool/rideshare alternatives such as toll incentives (reduced rates), preferential lanes on Maine turnpike or I-295
- Up to (2) tolling alternatives such as congestion pricing or preferential treatment to encourage shifting to transit or ridesharing (limited to two alternatives for scoping purposed)
- One (1) off-Turnpike roadway capacity change alternative
- One (1) turnpike capacity change alternative, assumed to be either with or without the Gorham Connector.

Limited forecasts for variations within and combinations between these individual concepts are also expected.

Task 4.3 Future Operations

This task provides for a complete analysis of the future traffic operations along the MTA and other major facilities in the site environs.

Task 4.3.1 Develop Future Hour Traffic Volumes

Volume changes (Base to Future year) from the traffic demand forecasting effort in Task 4.2 will be added to the 2016 design hour volumes developed in Task 2.2 to develop future design hour traffic volumes (assumed 2036) for the Study Area. These traffic volumes will be used in the analysis of future traffic operations in the Study Area.

Task 4.3.2 Traffic Operations Analysis

HNTB will use the future design hour traffic volumes to conduct an analysis of future traffic operations. HNTB will use current traffic engineering analysis tools for this purpose. Level of Service, delays and vehicle queues will be estimated for:

- mainline traffic
- merges and diverges at interchanges
- local street intersections

HCS will be used for merge and diverge analysis. VISSIM will be used for local street intersections, mainline and ramp traffic analysis and to confirm HCS analysis due to the closely spaced interchanges in the Study Area.

Task 4.3.3 Summary of Future Deficiencies
Based on the results of Task 4.3, a summary of the future traffic operations in the Study Area will be identified.

Task 4.4 Summary of Future Operations
A summary of the expected future conditions will be prepared under this task with suitable graphic and tabular summaries. This summary (along with data from Tasks 2 and 3) will provide the basis for an Alternatives Evaluation to be conducted in Phase 2 assuming a safety and/or capacity need is documented.

Summary of future operations will include snapshots at 5, 10, 15, and 20 years forecast periods to determine when specific sections of the Maine Turnpike reach capacity.

Phase 2 – Alternatives Evaluation

The purpose of Phase 2 will be to identify and evaluate feasible and reasonable transportation alternatives to address the identified safety and/or capacity need identified in Phase 1 consistent with the ACOE 404(b)(1) Guidelines, the Maine Natural Resources Protection Act, the Maine Sensible Transportation Policy Act (STPA) and the Public Outreach process identified in the scope of services below.

Alternatives anticipated to be considered as part of this evaluation will include:

- No Build/No Action Alternative
- Transportation Demand Management (TDM)/Transportation System Management (TSM) Alternatives
- Tolling Strategies
- Land Use Alternatives
- Widening/Capacity Expansion Alternative

The level of quantitative or qualitative assessment of each alternative will be consistent with the anticipated level of improvement to be provided.

Task 5 Alternatives Evaluation

This task will provide an evaluation of various improvement scenarios to address the intent of the STPA in evaluating a full range of feasible and reasonable alternatives. The STPA sets forth various options that must be considered as a minimum prior to investment of transportation funds.

The following describes the alternatives that will be considered and evaluated in the Needs Assessment:

Task 5.1 No Action

The no action or do nothing alternative essentially uses the traffic operations analyses from Task 4 as a means to establish a benchmark for evaluating other actions. As a means for establishing a benchmark for the future of the Maine Turnpike in the Study Area, HNTB proposes to provide the following:

Task 5.1.1 Frequency of Future Congestion

To assist the MTA in determining the effectiveness or the consequences of no action, HNTB will provide estimates on the frequency of future congestion. Working with the projected traffic demand and the traffic variation profile collected under the existing conditions, the number of hours the Turnpike will experience congestion in the Study Area will be estimated. The estimates will be conducted for each planning horizon included in the Needs Assessment.

Task 5.1.2 Projected Demand and Capacity

HNTB will compare the estimated demand to current capacity along the mainline for each planning horizon. The result of this process is to determine the number of vehicles above capacity on the roadway which translates to unmet demand. Again this exercise is useful in determining the results of no action.

Task 5.1.3 Time of Day Travel Shifts

To the extent possible, HNTB will provide a sensitivity analysis on the potential for motorists to shift their travel times to avoid congestion.

Task 5.2 Transportation Demand Management (TDM)/Transportation System Management (TSM) Alternatives

This task will evaluate established TDM programs, such as carpool, vanpool or transit, and TSM strategies related to improvements that are not capital intensive and provide improvements to traffic flow and traffic operations at reasonable costs. HNTB is expected to evaluate the following alternatives for this option.

Task 5.2.1 Carpool, Vanpool, Bus Transit Alternative

This task will evaluate the applicability of shifting the travel mode of travelers. The shifts in traffic may involve rideshare programs and/or bus transportation. The overall minimal length of the Study Area (7.3 miles) and lack of availability of rail service along this corridor makes it unlikely that rail will serve as a potential mode shift and therefore is not included. One (1) alternative incorporating feasible carpool, vanpool, and bus transit will be evaluated using the travel demand model. Additional carpool, vanpool, and bus transit alternatives may be evaluated using existing data through a qualitative analysis.

For this task, HNTB will evaluate current rideshare programs such as Go Maine and other programs as appropriate. Enhanced or expanded bus transit alternatives will be explored through METRO, RTP, South Portland Transit, Zoom and others as appropriate. Recent studies have indicated that additional transit service is

likely to yield limited additional ridership, but is included in this alternative evaluation.

The result of this task will be estimates of reduction in peak traffic demand on the Maine Turnpike in the Study Area. This will be accomplished using sketch planning techniques and the trip tables from the PACTS model. It is expected that the results will be presented in the form of a range of potential mode shift trips.

Task 5.2.2 Tolling Strategies
Tolling provides an opportunity to manage traffic along the Maine Turnpike. The following tolling options will be considered as part of this Task:

- Congestion Pricing
- Tolling alternate routes
- Regional tolls

For congestion pricing, the MTA Widening Study of 1997 considered congestion pricing as a component of the TDM component. Congestion pricing is a tolling strategy that would seek to reduce traffic volumes by adjusting toll rates during peak travel times. The analysis was based on a two-year study prepared by the MTA in 1995. While the program offered a modest reduction in peak hour traffic, there was not sufficient evidence to support congestion pricing as a stand-alone TDM approach. Given this finding, HNTB will conduct a limited review the previous study to determine the if there have been any major changes that indicate congestion pricing would be an effective and feasible approach under today's conditions. It is anticipated that, while effective to the Turnpike mainline, implementing congestion pricing would significantly impact alternate routes that are not designed to handle the high volume of through traffic in the region.

For tolling alternate routes, such as I-295, a brief summary of existing restrictions to tolling interstate facilities will be documented. For regional tolling, the results of a previous MTA study considering regional tolling will be reviewed and summarized.

Up to two (2) tolling strategies will be evaluated using the travel demand model. Additional tolling strategies identified above will evaluate using existing data through a qualitative analysis.

Task 5.2.3 Intelligent Transportation Systems (ITS)
HNTB will review current ITS technologies, such as ramp metering, driver information systems, and local/interstate changeable message signs, vehicle detection systems, autonomous vehicle technology, and variable speed control to see if these can significantly and reliably help alleviate congestion and improve traffic safety independently or in conjunction with other alternatives being evaluated.

Task 5.2.4 Enforcement and Incident Management
HNTB will review enforcement and incident management activities with the MTA and State Police to determine if current policies and procedures can be improved and enhanced to help alleviate congestion. These strategies may help to alleviate congestion and improve traffic safety.

Task 5.2.5 Summary
HNTB will provide a summary of the TDM/TSM Alternatives and the impacts that are realized through these efforts.

Task 5.3 Land Use Alternatives
Land use is implemented and managed at the municipal level in Maine. Accordingly, the MTA does not have the power or authority to control or alter local land use decisions. However, specific land use strategies can be suggested that would help preserve interchange and connecting local road capacity and mobility.

To the extent reasonable, HNTB will review the land use along and adjacent to the Study Area to determine if there are suggestions that can be made to local municipalities to enhance the land use and transportation investment interaction. This will be a qualitative assessment and is not anticipated to address the safety and capacity deficiencies identified, however, may be opportunities to maximize the life of any improvements proposed.

Task 5.4 Widening/Capacity Expansion Alternatives
For purposes of the Needs Assessment, the capacity expansion alternatives are primarily related to the MTA mainline widening and capacity improvements to the local roadway network that would divert trips away from the MTA that would essentially eliminate the need to widen the MTA mainline. The following is a description of the tasks involved under this alternative.

Task 5.4.1 Widen Mainline Maine Turnpike
HNTB will evaluate one (1) option of widening the mainline of the turnpike from Exit 44 to 52 in the Study Area from four lanes to six lanes using the PACTS travel demand model. The following are the major elements to be included, as a minimum:

- traffic impact
- secondary impacts
- capital and operating costs

Traffic impacts will be identified through traffic operations analyses similar to Tasks 2, 4 and the no action analysis. The secondary analyses will be qualitative and view the potential widening from a broader more regional perspective.

As part of the analysis, HNTB will examine any means to promote transportation efficiency in the Study Area. Park and Ride Lot opportunities and HOV lanes are included in this approach.

Task 5.4.2 Capacity Improvements to Local Street Facilities
The improvements to local roadway network to "offset" the need for widening of the mainline will be conducted using the same technical procedures used throughout the Needs Assessment. HNTB will evaluate one (1) local roadway improvement alternative using the PACTS travel demand model. Improvement impacts will be expressed in terms of travel time saved as compared to using the Maine Turnpike with no widening. The capacity improvements to the local roadway system may involve such considerations as:

- signal optimization
- intersection widening
- local street widening

It is anticipated that addressing the documented need through capacity improvements to local streets is not likely due to the non-existence of a parallel or near parallel street network, ROW impacts, cost, and the land-use, human, and economic impacts of widening local roadway streets and intersections.

Task 5.4.3 New Local Road Alignments
Given the definition of the proposed project, the new alignment option will not be studied as part of this project.

Task 5.5 Alternative Traffic Operations
For each alternative evaluated using quantitative analysis above, a corresponding traffic operations analysis will be performed to identify measure of effectiveness and ability to address safety and congestion deficiencies identified. This task provides for a complete analysis of the future alternatives traffic operations along the MTA and other major facilities in the site environs and a comparison to the no-build alternative to determine the level of improvement. Alternatives traffic operations are anticipated to be performed for the following:

- TDM alternatives (up to 2)
- TSM alternatives (up to 2)
- Capacity Expansion alternatives (up to 2)

Task 5.5.1 Develop Future Hour Traffic Volumes
Volume changes (future no-build vs. future alternative) will be added to the 2036 no-build design hour volumes developed in Task 4.3 to develop future alternative design hour traffic volumes (assumed 2040) for the Study Area. These traffic volumes will be used in the analysis of future traffic operations in the Study Area.

Task 5.5.2 Traffic Operations Analysis
HNTB will use the future alternative design hour traffic volumes to conduct an analysis of future traffic operations. HNTB will use current traffic engineering analysis tolls for this purpose. Level of Service, delays and vehicle queues will be estimated for:

- mainline traffic

- merges and diverges at interchanges
- local street intersections

HCS will be used for merge and diverge analysis. Synchro/Simtraffic will be used for local street intersections. VISSIM will be used for mainline traffic analysis and to confirm HCS analysis due to closely spaced interchanges in the Study Area.

Task 5.5.3 Identify Current Deficiencies
Based on the results of Task 5.5, a summary of the future traffic operations in the Study Area for each alternative will be identified.

Task 5.6 Summary of Alternative Traffic Operations
A summary of each Alternative traffic operations will be prepared under this task with suitable graphic and tabular summaries.

Task 5.7 Cost Estimate
Conceptual cost estimates for each feasible and reasonable alternative will be identified as part of the Needs Assessment. These conceptual cost estimates will be used to weigh the alternatives included as part of the Needs Assessment. It is assumed that up to six (6) conceptual cost estimates will be prepared.

Task 5.8 Air Quality Assessment
Potential Air Quality impacts for each feasible and reasonable alternative that adds additional roadway capacity will be identified as part of the Needs Assessment. A mesoscale analysis using area-wide emissions present a mechanism to weigh the alternatives included as part of the Needs Assessment. It is anticipated that the travel demand model output will be used to estimate air quality impacts. Up to two (2) air quality assessment are assumed to be prepared for roadway capacity improvement alternatives.

Task 5.9 Noise Assessment
High level noise impacts for the area for each feasible and reasonable alternative that adds roadway capacity will be identified and presented. Baseline noise data will be collected at/near sensitive receptors and noise model analysis conducted based on forecasted volumes. Up to two (2) noise assessments will be prepared for roadway capacity improvement alternatives.

Phase 3 – Public Outreach, Findings, and Recommendations

Task 6 – Public Outreach

The purpose of the public outreach effort for this Needs Assessment (a.k.a. “study”) is to provide the MTA with the opportunity to hear and understand public reactions to the facts and conclusions that will be generated during this process. Public Outreach will center around three primary efforts: 1) Public Advisory Committee (PAC) process, 2) Publicity

and Social Media, and 3) Needs Assessment coordination and other outreach. A public outreach consultant working as a subconsultant to HNTB, will lead the public outreach efforts under the direction of the MTA and HNTB. Based upon past experience and relationships with constituencies relevant to this study, it is anticipated that Carol Morris, Morris Communications will be the public outreach consultant. All public outreach efforts include preparation of necessary meeting presentations, materials, summary notes, graphics, and reports to support each of these efforts.

Task 6.1 – Public Advisory Committee (PAC) Process

A Public Advisory Committee (PAC) will help the MTA to better understand the points of view of the various stakeholders and constituencies and provide needed feedback so that MTA officials can make more informed decisions regarding Portland Area Mainline safety and capacity improvements. The PAC will provide a public forum for the PAM needs assessment and provide a focal point for public communication throughout the process. Because this Needs Assessment will focus on regional capacity and travel patterns, the goal of the recommendations will be to reduce congestion on currently congested roadways and intersections. Therefore, the PAC will represent a regional and diverse constituency. There will also be a robust outreach effort to make the public aware of the study and inviting them to comment and participate via a variety of methods.

Public Advisory Committee:

The public outreach consultant will draft an invitation letter for the MTA to send to individuals identified as desirable PAC members. The letter will include a compelling statement on the importance of the PAC member's role in representing each constituency, the requirement for the proposed PAC member to attend all meetings, the dates of the meetings and summary background materials.

The PAC will elect a chairman who, along with the public outreach consultant, will run the meetings so as to be civil, educational and productive. The goal of the meeting will be to present data and recommendations presented by the consultants, and solicit feedback so as to ensure that study outcomes meet traveler needs in accordance with community expectations to the maximum feasible extent. The chair and the public outreach consultant will work towards bringing the PAC to consensus on study recommendations. The PAC chair will speak for the committee as needed in public or media settings.

PAC Meetings:

Four two-hour meetings are anticipated for the needs assessment, with the PAC having the opportunity to ask for an additional meeting(s) should a majority feel that one is needed; in such case the scope will be amended to reflect this additional time. The meetings will be focused on 1) PAC Responsibilities, Purpose and Need Statement and Existing Conditions, 2) Initial Findings and Proposed Alternatives, 3) Alternatives Analysis/Proposed Recommendations and Draft Report, 4) Draft Final Recommendations and Draft Final Report.

These meetings will take place in late afternoon or early evening as determined by the MTA and the PAC. The MTA is assumed to provide light snacks and drinks. The MTA

will provide detailed written meeting minutes, which will be edited and certified as accurate by the consultant team. The public outreach consultant will also tape the minutes in order to have details on file.

The meetings will be open to the public and be actively publicized as such. The public shall be provided an opportunity to provide input at each meeting, usually at the end of each meeting. The public outreach consultant will collect any written questions or comments at the beginning of each meeting in order to ensure that the public is effectively heard. Comments and questions will also be taken online (see below: Publicity and Social Media).

PAC Meeting Preparation:
A two-hour team meeting will take place 2 to 3 weeks prior to each PAC meeting to confirm materials needs and to prepare for meeting presentations. Materials will be sent to PAC members one week before each meeting through the public outreach consultant. Conference calls/emails may also be needed during this approximate time period to firm up details and review final meeting materials. The public outreach consultant will be tasked with making sure meeting materials are understandable to a lay audience. The public outreach consultant will also ensure that PAC members receive at least three meeting reminders prior to each meeting. The public outreach consultant will also attend team meetings as needed to stay apprised of progress and keep the team aware of public outreach input.

Task 6.2 – Publicity and Social Media
Traditional media (press releases) on the launch of the Needs Assessment and the makeup of the PAC are important components of creating transparency around this process. Media alerts on each PAC meeting will also support this approach. The public outreach consultant can create these press releases for editing and release by MTA Public Relations staff, as well as provide content for the MTA website. Content would include meeting notices, summarized meeting reports, final meeting minutes, and any other key information generated during the process that would help the public understand how potential recommendations would affect the region. The consultant team would also create a study-specific Facebook page that can serve as a place to take informal comment and answer questions. This page would be managed by the public outreach consultant in partnership with MTA staff.

Task 6.3 – Coordination and Other Outreach
In any study such as this, unforeseen issues typically arise that require reaching out to stakeholders to better understand their point of view, provide answers and generally build strong relationships. The consultant team will manage this process personally, working with MTA staff to provide information and attention as needed, with a goal of making PAC meetings run smoothly, supporting an informed and lively discussion that will lead to respect and a mutual understanding of needs and concerns. As part of this, as needed, the consultant will create simple written materials (*What are the Goals for This Needs Assessment?* and *Frequently Asked Questions,* for example) to disseminate via traditional and social media that will lead to a broader understanding of the assessment's goals and

recommendations. Should specific issues arise, small meeting focus groups for specific stakeholder groups can provide insight into concerns, making for a stronger and more widely supported set of recommendations.

Task 7 - Findings, Recommendations, and Next Steps

HNTB will prepare a Draft and Final; Report for the MTA summarizing the findings and recommendations of the Needs Assessment. All components of the Needs Assessment will be presented in sufficient detail with graphics, charts and tables suitable for presentation to the steering committee, stakeholders and the general public.

The final recommendations of the Needs Assessment will be in close cooperation with the MTA, Maine DOT and the public.

The report will include the following major sections or chapters:

- Existing Transportation Conditions
- Future Transportation Conditions
- Alternatives Evaluation
- Recommendations
- Next Steps

Following ample opportunity for review from MTA, Maine DOT, and other stakeholders as well as the public, HNTB will prepare a Final Report incorporating comments and feedback.

Task 8 – Project Management

Task 8.1 Project Management

This task involves the overall management of the study team and liaison with the MTA throughout the duration of the Needs Assessment (Phases 1-3). This task includes progress meetings, study team meetings and briefings, MTA Long Range Planning Committee meetings, MTA Board meetings, preparation of progress reports, ad hoc briefings to key stake holders and other miscellaneous project administration items. A 12-month Needs Assessment duration is assumed. The following is assumed for project management:

- Regular bi-weekly (every other week) meetings with MTA staff to discuss Needs Assessment progress, including meeting summary notes
- Quarterly Study Team meetings (MTA staff, HNTB, Carol Morris, Kevin Hooper Associates) to discuss Needs Assessment progress, including meeting summary notes
- Two (2) MTA Long Range Planning Committee meetings
- One (1) MTA Board Meeting

Schedule

The work shall commence on the day that the task order is signed by the MTA and assumes a 12-month schedule to complete.

A detailed schedule with milestones will be submitted following identification and agreement of PAC process.