STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
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ALBANY, N.Y. 12232
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April 27 2011

Request for Information (RFI)
for
New York Best Practice Model 2.0 (NYBPM 2.0)
Model Development Services

ANNOUNCEMENT NUMBER ONE

The New York State Department of Transportation (NYSDOT), and the New York Metropolitan Transportation Council (NYMTC) hereby announce that the Deadline for Receiving Informational Responses to the Request for Information to gather information to assist NYMTC to determine desired system structure and modeling capabilities with respect to NYMTC's New York Best Practice Model 2.0 (NYBPM 2.0) Model Development Project are now due:

Friday, July 15, 2011

Please note that this is only an informational RFI – this is NOT a competitive Request for Proposals.

Please e-mail all questions to the following contact persons:

- NYSDOT Contract Management: Al Hasenkopf: ahasenkopf@dot.state.ny.us
- NYMTC: Ismet Apdiroglu: iapdiroglu@dot.state.ny.us

Sincerely,

Original signed by: Alfred P. Hasenkopf, for
WILLIAM A. HOWE, P.E.
Director,
NYSDOT Contract Management

Request for Information (RFI)
for
New York Best Practice Model 2.0 (NYBPM 2.0) Model Development Services

April 13, 2011

New York State Department of Transportation
Contract Management, Suite 1CM
50 Wolf Road, Albany NY 12232

on behalf of

New York Metropolitan Transportation Council
199 Water St., 22nd Fl.
New York, New York 10038

New York State Department of Transportation, on behalf of the New York Metropolitan Transportation Council (NYMTC), hereby issues this Request for Information (RFI) to gather information to assist NYMTC to determine desired system structure and modeling capabilities with respect to NYMTC's New York Best Practice Model 2.0 (NYBPM 2.0) Model Development Project. **Please note that this is only an RFI – this is NOT a Request for Proposals.**

INTRODUCTION

NYMTC is interested in receiving information pertaining to the development and implementation of the second generation of the NYBPM which serves as the regional travel demand model that provide fundamental inputs to facilitate informed decision-making about future transportation investments in the greater New York City metropolitan region. Specifically, NYMTC is interested in information pertaining to best practices of model techniques to address technical and policy issues in various Metropolitan Planning Organizations (MPOs), promising research on related topics, and new software development with better algorithms and features that can make NYMTC's and other MPOs models more efficient and effective.

NYSDOT's overall goal is to assist NYMTC by releasing this RFI and directing responses to both NYSDOT and NYMTC. NYMTC will be the primary beneficiary of the information received. NYSDOT, which prepares and hold all of NYMTC's contracts, will also benefit.

NYMTC's metropolitan transportation planning process requires them to maintain, apply and periodically improve its traffic modeling and forecasting procedures. Within practical and budgetary limits, NYMTC continuously maintains and applies a sophisticated model that is representative of the state of the practice in travel demand forecasting for a large metro area with significant modal choice, and equips the MPO, its policy board and members, and local jurisdictions the support that is needed for informed transportation planning decision making.

NYMTC recognizes that major model improvement associates with significant efforts in data collection, model estimation, calibration and validation. With respect to the NYBPM 2.0, NYMTC and its members desire a solution that moves the model forward in an appropriate direction and make the best use of the limited funds available for improving and operating the model for future planning and air quality efforts.

AMINISTRATIVE GUIDANCE FOR RESPONDENTS

Interested Entities are encouraged to submit a written Expression of Interest, including a signed cover letter on company letterhead, highlighting specific areas of interest and relevant company background. Sharable information pertaining to ideas, high level concepts, design issues and practical knowledge gained from relevant model development experiences is being sought. Additionally, responses to the questions and inquiries listed in Section 3.0 are requested.

NYMTC may, at its discretion, invite interested entities to visit its main office at 199 Water St., 22nd Fl., New York, New York, for further one-on-one discussions.

Note: This IS NOT a Request for Proposals. It is an invitation to provide NYMTC and NYSDOT with information regarding current techniques and practices to accomplishing objectives with respect to the NYBPM 2.0. Additionally, responses will be used to gauge the level of interest in the NYBPM 2.0 Project. Information obtained may be used to develop a needs requirement upon which future procurement might be based. Neither NYSDOT nor NYMTC are obligated to provide RFI respondents with feedback regarding how their input was considered. However, any solicitation which may arise would reflect RFI input.

Please e-mail the contact persons listed below should any questions arise:

A. Questions:
- NYSDOT Contract Management: Al Hasenkopf: ahasenkopf@dot.state.ny.us
- NYMTC: Ismet Apdiroglu: iapdiroglu@dot.state.ny.us

B. E-mail RFI Responses to:

- NYSDOT Contract Management: Al Hasenkopf: ahasenkopf@dot.state.ny.us
- NYMTC: Ismet Apdiroglu: iapdiroglu@dot.state.ny.us

- NYMTC: Ali Mohseni: amohseni@dot.state.ny.us

C. Response Requirements:

- MS Word and/or PDF Format.
- Due Date: **Wednesday, May 18, 2011 (***Please be advised that although a deadline for receipt of responses has been set, NYSDOT/NYMTC will consider extending the due date should interested parties require more time to respond. Please inform the contact person should such a need arise.)*
- Two page cover letter page limit. Please identify: name, affiliation, position, phone number and e-mail address for each key person.
- No page limit for main body of RFI response.
- Limit the use of outside links, to access information not presented between the covers of your RFI response. Should links be necessary, please provide additional directions to relevant information, to navigate the site.
- E-mail the contact persons beforehand should you consider offering any cost information.

BACKGROUND

The NYMTC is the federally-mandated MPO for the downstate New York region. The NYMTC region includes New York City, Long Island and the lower Hudson Valley. It encompasses an area of 2,440 square miles and a population of 11.3 million, approximately 65% of New York State's population. NYMTC consists of voting and advisory members:

Voting Members
Counties of Nassau, Putnam, Rockland, Suffolk, Westchester Metropolitan Transportation Authority
New York City Department of Planning
New York City Department of Transportation
New York State Department of Transportation

Advisory Members
Federal Highway Administration
Federal Transit Administration
New Jersey Transit
New York State Department of Environmental Conservation
North Jersey Transportation Planning Authority
Port Authority of New York & New Jersey
U.S. Environmental protection Agency

NYMTC's members and Central Staff conduct comprehensive long-range transportation planning and annually oversee several billion dollars in transportation investments for the

most dynamic and complex transportation systems in the nation. NYMTC sponsors and conducts studies, assists member planning agencies, and provides a forum for interagency cooperation and public input into funding decisions.

Current long-range transportation planning efforts utilize traditional travel demand models that include trip generation, trip distribution, mode split, and 24-hour and vehicular traffic assignment for the metropolitan areas. NYMTC has identified a need to update the basic travel information for developing and calibrating the trip generation and distribution models used for transportation planning. Additional travel information is also required to drive air quality models component of the modeling process. NYMTC, as an MPO, would like to provide monitoring and analysis of transportation (and related) statistics that is essential to effectively measure the performance of transportation system and understand travel pattern and travel behavior. NYMTC also would like to provide visual component, as required by SAFETEA-LU, using state-of-the art tools with emerging technology to provide just-in-time integrated information for elected officials, principals, planners, engineers, and other stakeholders.

1. TOPICS AND QUESTIONS

NYMTC is seeking information relating to the framework as well as components for activity-based modeling that would improve the modeling capabilities of NYMTC to facilitate decision-makings in transportation investment as well as to address emerging issues such as congestion pricing, raising fuel price, and greenhouse gas emissions etc. Specifically, NYMTC is seeking information pertaining to the following areas:

- Flexible zoning system and networks that also can deal with greater details in attributes;
- Advanced highway modeling techniques in tour generation, activity scheduling, destination choice, mode choice and traffic assignment;
- Advanced transit modeling in addressing transit access modes, transit congestion estimation, and highway-transit feedback, etc;
- Non-resident travel and special generators modeling;
- Non-motorized travel modeling;
- Freight/commercial trip modeling;
- A mechanism that enables the representation and analysis of pricing scenarios; and
- Improved techniques in land use forecasting.

1.1 ZONING SYSTEM AND NETWORKS

The current NYBPM study area covers 28 counties across the states of New York, New Jersey, and Connecticut. The model system has 3,586 internal zones and 111 external

zones. The NYBPM highway network includes more than 52,000 links. Its transit network covers a wide range of transit modes including about 100 NYC subway routes, 900 commuter rail routes, 2,300 bus routes, 73,000 transit stops, and 50 ferry routes. The network also includes sidewalk network in Manhattan, walk access/egress links, and Park - and – Ride facilities.

NYMTC is seeking to build the capability of employing flexible and hierarchical zoning system and network system that can easily be updated and improved without being constrained by the model itself.

The desired zoning system would have the following features:

- A mechanism to incorporate the zone system from other agencies or other projects if needed for certain type of analysis without significant modification to the modeling system
- A flexible total number of TAZs, which means if detailed analysis (zones) is warranted for one area, the level of detail for other areas will not be compromised
- A hierarchical structure of zones that can be used for analysis at different level of details

The desired highway and transit network system would be able to reasonably represent and deal with:

- Parking supply and policy
- Park-and-ride and kiss-and-ride facilities
- Incorporating with other agencies' GIS networks for roadway and transit systems
- Adopting or incorporating (portions of) networks from other agencies or projects if needed without significant modifications to the modeling system
- Hierarchical structure of network that can be used for analysis at different level of details

Response Request

1. Describe in detail your knowledge relevant to the development of zones and network system with the preferred features. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe, in your experience, the complexities involved with the desired flexibility in zoning system and networks.
3. Describe how other GIS networks and its attributes for highway and transit systems can be used to build the NYBPM 2.0 system.
4. What, in your experience, are the advantages and disadvantages of the desired zoning and network system?
5. What modifications to the preferred concept would you recommend to address disadvantages, reduce project risks and increase the likelihood of project success?
6. If you believe from experience that an alternative approach is superior in terms of better serving the modeling needs, please describe the alternative(s) in detail and explain why you believe the alternative is superior.

1.2 HIGHWAY MODELING

1.2.1 Travel/Activity Generation

The current NYBPM employs a household synthesizer to simulate travelers characteristics, based on which multinomial logit models are applied to estimate journey generation by person type.

NYMTC is considering the daily activity scheduling framework, which deals with a daily activity pattern with time and space constraints as well as explicit representation of intra-household interactions.

Response Request:

1. Describe in detail your knowledge relevant to daily activity scheduling approach. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe the complexities involved with the desired approach.
3. What are the advantages and disadvantages of the desired daily activity scheduling approach?
4. If you believe that an alternative approach is superior in better meeting the modeling needs, please describe the alternative(s) in detail and explain why the alternative is superior.

1.2.2 Destination Choice Model

With an establishment survey planned to take place, NYMTC seeks to improve its destination choice model to adjust production-attraction balance and accommodate the effect of multiple level-of-service measures and the attraction-end characteristics across different socio-demographic groups.

Response Request:

1. Describe in detail your knowledge relevant to destination choice model, attraction model, and/or establishment survey. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What information, in your experience, would benefit the improvement of the attraction model that can be obtained from the context of an establishment survey?
3. Described your recommended approach to developing the destination choice model taking full advantage of the information obtained through the establishment survey.

1.2.3 Geographic Segmentation

Given the size and complexity of the region's population as well geographic area, it is almost impossible to represent the mode choice behavior using one formula for the whole

region. NYMTC has been exploring alternative model structures and specifications that can incorporate geographic segmentation to improve the mode choice model.

Response Request:

1. Describe in detail your knowledge relevant to mode choice model and geographic segmentation. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What, in your experience, are the advantages and disadvantages of the desired approach?
3. What modifications to the preferred concept would you recommend to address disadvantages, reduce project risks and increase the likelihood of project success?
4. If you believe from experience that an alternative approach is superior in terms of better serving the modeling needs, please describe the alternative(s) in detail and explain why you believe the alternative is superior.

1.2.4 Time of Day Model

A common method used in time of day choice or departure time choice modeling is multinomial logit, in which the departure time alternatives are usually represented by temporally discrete time periods from 15 minutes to several hours. Another approach is continuous choice model that overcomes the limitations of discrete choice models. As indicated in section 3.2.1, NYMTC is also exploring the approach of daily activity scheduling framework, which would have a time of day component. The response to this section can be linked with section 3.2.1 or stand alone.

Response Request:

1. Describe in detail your knowledge relevant to time of day choice model. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What, in your experience, are the advantages and disadvantages of discrete choice model and continuous choice model in the context of time of day modeling.

1.2.5 Dynamic Network

Dynamic network is gaining increasing interest recently because of the ability to reflect time-dependent demand and congestion delay, as well as the potential to evaluate Intelligent Transportation Systems (ITS) technologies. NYMTC is exploring approaches to dynamic assignment which can be feasibly implemented within the scale of a regional model with the size and complexity comparable to this region.

Response Request:

1. Describe in detail your knowledge relevant to dynamic assignment. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe your recommended approach to dynamic assignment, as well as the complexities involved with the recommended approach.
3. What, in your experience, are the advantages and disadvantages of the recommended approach in terms of modeling capabilities and implementation difficulties?
4. If you believe from experience that an alternative approach is superior to dynamic assignment in terms of better meeting the modeling needs, please describe the alternative(s) in detail and explain why you believe the alternative is superior.

1.2.6 Micro-Simulation

Micro-simulation models are responsive to operation factors (intersection capacity and delay, queuing, and turning movements, etc) that traditional travel demand models are not capable of. Due to its ability in simulating queuing conditions, Micro-simulation has been widely used in analyzing traffic operations in urban area or on congested network. NYMTC is pursuing opportunities to incorporate the regional travel demand model with a micro-simulation model, if feasible.

Response Request:

1. Describe in detail your knowledge relevant to micro-simulation modeling. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe your recommended approach to prepare the regional model to be compatible with micro-simulation.
3. Describe your recommended approach and procedures for the agency to take advantage of various local studies that use micro-simulation to feedback to the regional model.

1.3 TRANSIT MODELING

NYMTC is seeking procedures to improve the transit component including network design, timetable setting, representing parking at park-and-ride and kiss-and-ride facilities, estimating transit congestion, linking bus operating delays to the highway network, etc.

Response Request:

1. Describe in detail your knowledge relevant to transit modeling. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.

2. Describe your recommended approach to transit project scenario management procedures that enables the staff to manage, view, and edit the transit projects and network coding.
3. Describe your recommended approach to transit modeling in meeting the above modeling needs.

1.4 NON-RESIDENT TRAVEL

As a region that attracts significant amount of non-resident travelers (visitors, tourists, and business travelers), it is critical for NYMTC to be able to reasonably represent the impacts/demand generated by non-resident travelers on the region's transportation system. This effort would also include forecasts of non-resident visitor profiles. The planned establishment survey will be collecting travel diary from non-resident visitors.

Response Request:

1. Describe in detail your knowledge relevant to visitor modeling. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What information, in your experience, is critical to the development of a visitor model that can be obtained from the context of an establishment survey?
3. Describe your recommended approach to visitor model.
4. Describe your recommended approach to forecasting non-resident visitor profiles.
5. Describe your recommended approach to handling airports and major transportation hubs in the region.

1.5 NON-MOTORIZED MODE

Non-motorized mode, such as bike and walk, represent a significant portion of travel in Manhattan. NYMTC is exploring procedures that are feasible for a regional model to handle non-motorized modes, which would include bike/walk network development, non-motorized mode (destination) choice, pedestrian behavior analysis, etc.

Response Request:

1. Describe in detail your knowledge relevant to non-motorized mode. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe your recommended approach to implementing non-motorized modeling for this region, as well as the complexities involved with the approach.

1.6 FREIGHT/COMMERCIAL MODELING

In the absence of a regional freight model, the NYBPM's existing commercial vehicle component produces commercial vehicle origin-destination trip table estimation based on OD survey, classification counts and assumptions on growth rates. With an establishment survey planned to take place, opportunities exist to improve the commercial vehicle component. Considering budget constraints, NYMTC is seeking information on procedures/models that can better estimate commercial vehicle movement in the region.

Response Request:

1. Describe in detail your knowledge relevant to freight/commercial vehicle modeling. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What information, in your experience, would benefit the improvement of the commercial vehicle model that can be obtained from the context of an establishment survey?
3. Describe your recommended approach to improving the region's commercial vehicle modeling, as well as the complexities involved with the approach.

1.7 PRICING

Given the concerns in increasing level of congestion and fuel price, NYMTC is seeking to improve its ability in dealing with pricing strategies in its travel demand modeling framework. More specifically, the desired features include but are not limited to:

- A mechanism to analyze different pricing scenarios;
- A mechanism to easily implement, update, and change tolls, fares, gas prices, and operation costs, etc;
- A mechanism to incorporate complex pricing structures into the model to reflect different payment method, and to represent managed lanes;
- Enable the assessment of the reasonableness of toll traffic forecasting.

Response Request:

1. Describe in detail your knowledge relevant to the above desired features. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. Describe your recommended approach to implementing the above features and/or other capabilities that you believe the agency will benefit from, as well as the complexities involved with the approach.

1.8 LAND USE FORECASTING

Land use forecasts are fundamental inputs to travel demand models. NYMTC produces population, household, labor force and employment forecasts at county level, which are then allocated to TAZs based on historical trends and other factors such as development inventory. The impacts of transportation on land use distribution are not explicitly represented. However, there are increasing needs in capturing the interactions between transportation and land use to facilitate analysis of livability measurements, smart growth, and land use scenarios.

NYMTC is exploring feasible methods to improve the agency's land use allocation practices.

Response Request:

1. Describe in detail your knowledge relevant to land use – transportation interaction. Cite examples, especially those of a size and complexity comparable to the NYBPM model system.
2. What, in your experience, are the pros and cons of developing a land use model linked with the NYBPM?
3. What recommendations are there for improving the current demographic allocation tool or for pursuing a new land-use forecasting model for alternative growth scenario testing?
4. What recommendations are there for improving the demographic forecast models?
5. What procedures can be implemented to facilitate travel demand analysis under different land use scenarios?