Summary Report of the Peer Review Panel for the North Jersey Transportation Planning Authority Travel Model Improvement Effort

October 27-28, 2005
Newark, New Jersey

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Travel Model Improvement Program (TMIP)
Summary Report of the Peer Review Panel
for the North Jersey Transportation Planning Authority
Location: Newark, New Jersey

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EXECUTIVE SUMMARY

This report summarizes the results of the two-day peer review meeting conducted at the request of the North Jersey Transportation Planning Authority (NJTPA) through the Travel Model Improvement Program (TMIP) sponsored by the Federal Highway Administration (FHWA). NJTPA requested that the panelists assess the current travel demand model and recommend both near-term and long-term model enhancements. NJTPA has a standard four-step transportation model using TRANPLAN software.

The peer review panel felt that the NJTPA should keep its near-term focus on using the validated Phase I model for the spring 2006 conformity analysis. Since time constraints limit major improvements for the spring 2006 conformity analysis, it should concentrate on improving basic model elements such as networks and travel times. Other recommendations made by the panel include:

- The household data be more extensively used
- NJTPA must carefully examine highway output speeds and compare them to currently collected data.
- The network should be commensurate with the traffic analysis zone detail.
- For trip purposes the Panel made five recommendations:
  - Adopt tour based modeling for work trips rather than using "work-based other."
  - Incorporate subarea studies.
  - University trips should be a separate trip purpose.
  - The current model should be used for airport trips.
  - To increase sensitivity total person trips should be generated for non-motorized allocation.
- The current and the proposed models need to further examine the sensitivities of the nesting coefficients to the logsum.

The Panel suggested the use of composite impedance for trip distribution along with the reduction of the number of K factors. If K factors have to be used, they should be limited to work trips and their use justified.

I. BACKGROUND

The North Jersey Transportation Planning Authority (NJTPA) is the metropolitan planning organization (MPO) for the thirteen county Northern and Central New Jersey region. Comprising 384 municipalities, it is the nation's fifth largest planning region. Bordered by the Atlantic Ocean and the Delaware and Hudson Rivers, it stretches from the New York border in the north to Great Bay at the southern tip of Ocean County. The region has 6.5 million residents in approximately 4,200 square miles, making it one of the most densely populated areas in the United States. By 2030, the population is projected to reach 7.6 million. The region currently has 3.1 million jobs, with anticipated growth to 3.8 million over the next 25 years.

Eighty-five percent of people in the region commute to work by automobile; 74 percent of commuters drive alone. The transit system attracts 11 percent of total work trips, a large percentage relative to most regions in the country. The highway network is close to built out, with few new road construction projects expected. Future expansion to the transportation system will focus on transit, including new rail lines and bus rapid transit systems.

NJTPA requested a peer review panel to examine its existing model and plans for model enhancements recommended by its consultants (URS and AECOM). It wanted the panel to pay particular attention the trip distribution and mode choice models. It also wanted feedback on traffic analysis zones (TAZ), network calibration and validation, post processing, and model maintenance.

NJTPA's current model, the North Jersey regional transportation model (NJRTM), is a standard four-step transportation model using TRANPLAN software. It was developed in the late 1980s by the New Jersey Department of Transportation (NJDOT) and NJTPA, and subsequently enhanced during the 1990s.

The NJRTM is a tool to help analyze projects, develop the NJTPA long-range plan, and determine air quality compliance. NJDOT also uses the NJRTM for a variety of applications, including part of the larger New Jersey statewide travel model.

NJTPA is in the midst of a major model enhancement effort, known as the North Jersey regional transportation model enhancement (NJRTME) project. This effort will expand, integrate, and enhance the region's multi-modal travel forecasting models. It includes coordinating the modeling needs of NJTPA, the NJDOT, and NJ Transit, the state's primary transit agency. The enhanced model must provide analytical capabilities for an extensive and complex transportation system, in a region that is already densely populated, and still growing. Phase 1 of this effort was completed in 2005 when the NJRTM was structurally integrated with NJ Transit's model.

II. PRESENTATIONS AND DISCUSSION

The meeting consisted of presentations on the region's existing travel demand models, followed by panel discussion and recommendations for NJTPA's model enhancement project. The first presentation, summarized in the following section, covered the NJ Transit demand forecasting model

A. North Jersey Transit Demand Forecasting Model

NJ Transit, the state's public transportation corporation, has a model known as the NJ Transit demand forecasting model (NJTDFM) for transit demand throughout and beyond the Northern New Jersey region. NJ Transit uses NJTDM for project planning towards major service expansion projects. NJ Transit has also created other related models for specialized capital planning and programming activities.

Given that New York City is the focal point of regional transit, the NJTDFM includes New York City zones internally. Rather than using a full four-step model, it uses trip generation and distribution patterns based on a survey-based synthetic trip table. These features make the model unsuitable for air quality conformity testing.

NJ Transit's current model was developed in 1997 using MINUTP and FORTRAN routines. The model uses survey-based trip tables for mode choice and assignment. It was enhanced in 2001 where MINUTP routines were converted to TP+. The current model replaced the synthetic model used for the Hudson-Bergen Light Rail Transit (NB-LRT). This model had problems with trip distribution and multi-modal trips to Manhattan and major points in New Jersey. It could not be easily used for project and major service related forecasting.

1. Uses of the NJTDFM

The NJTDFM is used to develop new projects and draft environmental impact statements by:

- Developing ridership and revenue estimates for new rail/light rail transit projects, including the proposed trans-Hudson rail tunnel;
- Estimating the need for station parking and other access;
- Estimating the need for facilities, including rolling stock for new projects; and
- Estimating user benefits and Federal Transit Administration (FTA) requirements for New Starts funding.

The model forecasts station and service enhancements on existing transit systems, including new stations, parking demand, and major service changes (rail, light rail, express bus, and local bus). It also evaluates parking pricing alternatives, impacts of external events (such as dramatic gas price changes or improvements to other transportation modes), and rail rolling stock plans. The model is also used for alternatives analyses as well as regional transportation and specialized studies.

To aid in conducting regional transportation studies, NJ Transit has provided versions of its model to other agencies including the Port Authority of New York and New Jersey, the Delaware Joint Toll Bridge Commission, the New Jersey Meadowlands Commission, and NJDOT.

2. Description of the NJTDFM

The NJTDFM encompasses 33 counties, including the 13-county NJTPA region, and uses over 2,000 TAZs. Its recent updates are validated for a baseline year of 2000. It uses a logit mode choice model with auto and 11 combinations of transit modes and 11 geographic-specific submarkets. The model generates forecasts for 2015, 2025, and 2030 using demographic estimates from the New York Metropolitan Transit Commission (NYMTC), NJTPA, and the Delaware Valley Regional Planning Commission (DVRPC).

The model includes peak and off-peak time periods, and four regular and four airport trip purposes. It forecasts trans-Hudson trips using actual survey data. It includes group-based transfer penalties and commuter rail wait curves. The model will continue to be updated as new information becomes available. The current version ("D") incorporates FTA-sponsored research on ferries and trip table adjustments.

The transit network has all Northern New Jersey/Northeastern Pennsylvania transit services, including rail, PATH, HB-LRT, bus (NJ Transit and private services) and ferries. It includes all transit service detail west of the Hudson River, New York City subways, and limited New York bus and commuter rail services. The NJTDFM uses the highway network derived from NJTPA 2000 and 2025 highway networks, with details on east of Hudson.

For trip generation and distribution, the NJTDFM trip tables are derived from:

- On-board surveys for all transit modes;
- Trans-Hudson automobile survey;
- NJTPA automobile trips within Northern New Jersey;
- Census Transportation Planning Package for automobile travel to and from fringe areas; and
- FRATAR process using regional demographics from three MPOs plus adjustments from "minor civil divisions" (MCD) journey-to-work data and other census data.

Survey data for interstate auto and transit modes (rail, PATH, HB-LRT, and interstate bus service) come primarily from 1998-2002. Adjustments were made to account for travel anomalies related to Y2K and the September 11, 2001 terrorist attacks. Intra-west-of-Hudson automobile trips are derived from the NJTPA model. Intrastate rail and express bus trip tables to Newark and Jersey City are derived from surveys. Local bus data come from 1990 surveys adjusted to 2000. Information on ferry travel comes from 2000 operator surveys.

The NJ Transit plans to update its mode choice model parameters to account for changes in travel patterns since 1990 due to the new Hudson-Bergen light rail service. This update will also ensure that the model is consistent with FTA SUMMIT analyses, which are required for estimating project user benefits.

Following the presentation on NJ Transit's model, NJTPA staff presented details for its model enhancement program. This is described in the next section.

B. North Jersey Regional Transportation Model Enhancement

1. Background

NJDOT and NJTPA developed the NJRTM—the area's regional transportation model—in 1989 using TRANPLAN and FORTRAN routines in a conventional four-step model. NJTPA uses the NJRTM for regional planning, including air quality conformity analyses and long range plans. It is also used for project planning and conducting corridor and subarea analyses. The 1989 NJRTM was modified in 1992 and again in 1996. Improvements included:

- A nested logit for mode choice;
- Distribution with composite impedance; and
- Model convergence – feedback processing.

Following these improvements, the NJRTM enhancement project began. Phase 1 of this project focused on structurally combining the NJRTM with the NJTDFM model. Close coordination of NJTPA's and NJ Transit's models is especially important in the NJTPA's planning region because, unlike most planning regions, it lacks a central business district, since much of the commuter traffic heads to New York City. Therefore, NJTPA needs to model an area beyond its jurisdiction. This increases the coordination necessary between NJDOT, NJTPA, NJ Transit, and adjacent MPOs. It also increases the challenges involving data transfers, and ease of model maintenance and updates.

In 2005, Phase 1 of the NJRTM enhancement project took place, structurally combining the NJRTM with the NJTDM. The two models have been coordinated, including:

- A common highway network, originally derived using NJTPA's model;
- A common zone system in the NJTPA area, which facilitates comparisons of socio-economic data and allows the NJRTM model to use the NJTDFM's trip tables; and
- Common trip table elements, including intra-NJTPA travel estimated by NJTPA's model, and New Jersey – New York trips estimated by NJ Transit's model.

The enhanced model uses CUBE for the display and application of the model, and TP+/VOYAGER for routine processing. The model also makes limited use of FORTRAN for transit fare estimation and transit use statistics. The outputs from each module are reported as:

- Execution information: basic information related to execution and files;
- Data information: fatal conditions, warnings, and information related to data;
- System level summary: data for monitoring runs and quality assurance; and
- Detail level summary: disaggregated summary data for more comprehensive analysis.

Following on the heels of the recently completed Phase 1 improvements, NJTPA's current model enhancement project focuses on improving the model's capabilities. This project has four objectives:

- Provide a common model structure;
- Expand the modeled region;
- Improve the model's usability and transparency; and
- Establish interface capability with other planning programs, including PPSUITE, SUMMIT, and NJDOT's congestion management system.

To provide additional compatibility between models from different agencies, allow for comprehensive planning analyses, and facilitate comparisons and data transfer, the enhanced NJRTM must:

- Use a single modeling package familiar to each user agency;
- Facilitate ease of use and/or automated operation;
- Minimize model maintenance needs; and
- Minimize outside routines, including FORTRAN and MAPINFO

The current trip generation model uses four trip purposes: home-based work, home-based shopping, home-based other, and non-home-based. The trip production model calculates rates by trip purpose, income group, and household size. Trip production estimation is based on cross-classification, segmented by household size (1, 2,3,4,5, and 6+ persons per household). There are five household income groups defined by modal share characteristics. The household income share submodel determines the percentage of households by income group using the ratio of

median zonal income to median regional income. Trip rates are derived from NJTPA household survey data.

The trip attraction estimation calculates the total zonal attractions (NJRTM-based) and stratifies them by income group. The total zonal attractions are a function of area type and socio-economic data. The trip attraction allocation estimates the zonal share of attractions by income group. It uses regression analysis in which share by income is the dependent variable, and accessibility, employment data, and fraction of trip production for each income group are the independent variables.

There are several regional adjustments made to the trip generation model. Trip ends are allocated into the modeled region. County-specific productions and attractions are scaled, with separate factors by trip purpose and income group. Further, the model is calibrated using observed and survey data at key cordon lines, the Hudson and Delaware Rivers, and other county-based boundaries

The commercial trip model uses an adopted modeling approach, where employment and household variables are used to estimate truck trips and distribution, calibrated using observed data from other sources. The NJDOT's statewide truck model uses an adopted model process, in which truck trips are stratified by type and grouped according to major generators, including ports, airports, and intermodal facilities. The variables for trip generation include truck terminals, warehouses, pipeline terminals, employment by type, and households. The facility data have not been updated recently.

The following sections present details about NJTPA's current model and plans for its enhancement.

2. Zone System

The Phase 1 model enhancement focused on the development of integrated modeling with selected components from the existing NJTPA and NJ Transit models. It expanded the modeled region from the original 13 NJTPA counties to the full 22-county area incorporating parts of New York City and eastern Pennsylvania. The buffer area for NJTPA's model was expanded to include all of New York City, Long Island, portions of South Jersey, portions of upstate New York, and portions of Eastern Pennsylvania. These buffer areas replaced external zones for trips to and from the NJTPA region. The model now has 2,553 TAZs, approximately 1,800 of which are in the NJTPA region.

The zone area types are determined using a uniform method across the regions. The structure varies by proximity to the NJTPA region and is consistent with Census geography and zones of adjacent MPOs. Additionally, zones are sensitive to the existing network and planned projects. Area type is determined using the 'floating zone" method which calculates the density of all zones within a one-mile radius of the "target" zone. This mitigates the isolated density variations of individual zones.

3. Highway and Transit Networks

The Phase 1 integration of the highway and transit networks from NJTPA's and NJ Transit's models forms the basis for the current highway network:

- All 500-series county routes and some 600-series county routes (mostly minor arterials with some collectors) in the New Jersey portion of the network
- Bifurcated divided highways in New Jersey to represent one-directional flow
- Greater detail for interchanges
- Conflated to a street layer to better represent shape, curves, and location
- Traffic counts coded directly onto network links for model validation
- Toll information and other relevant network data such as mileposts, functional classifications, and truck prohibitions
- NJ Transit network data, with a new node numbering system designed for the transit network

4. Model's Four Steps

NJTPA's Phase 1 model improvements include:

1. *Trip generation*: A fifth income group was added for trip generation equations. Individual adjustment factors are used to scale the productions and attractions by purpose for all counties in the model.
2. *Trip distribution:* The trip distribution model's sensitivity to changes in the network and demographic patterns has been improved. In addition, the procedure is now stratified by income group. The process is calibrated using the middle income ($35,000 - $74,000) composite impedance term for each trip purpose.
3. *Mode choice:* The FORTRAN-based NJTDFM mode choice modeling process was incorporated into the NJRTM. NJTPA modified the model to generate a logsum composite impedance term for each income group. This improvement modified the model to include a "minimal transit service" that tests for a walk-to-bus path and a walk-only transit path.
4. *Network assignment:* Highway assignment has four period-specific assignments: a.m. peak, p.m. peak, midday, and night. Other improvements include improved volume-delay calculations, and subroutines for handling additional trip purposes and a variety of toll collection methods. The transit assignment process from the NJ Transit's model was incorporated into the NJRTM.

5. Network Maintenance Procedures

The NJRTM uses a transaction method to incorporate new or improved facilities, with each improvement project represented by a single transaction file, using add and delete steps for links and nodes. Each network represents only one combination of elements. The transit network requires a separate review because bus route coding must be changed to account for changes in the highway network. Each step has an audit process for quality assurance. Phase 2 of the model enhancement project will retain the transaction approach and streamline transit revisions.

6. Planned Improvements

The integration effort completed during Phase 1 focused on platform conversion and development of the overall framework of the model. The current project, Phase 2, will focus on improvements to trip distribution and mode choice because of the complexity of multimodal travel in the region.

Trip Distribution

The impedance terms will be revised to reflect changes in the mode choice model. This introduces the need to recalibrate trip distribution for each trip purpose. Census journey-to-work data will be used to calibrate the home-based-work trips to a municipality-to-municipality level. Other trip purposes will be calibrated using the 1997/8 NJTPA/NYMTC household survey. Key markets such as trans-Hudson trips will be calibrated using survey-based trip information developed for the NJTDFM. Where possible, trip distribution will also be calibrated by key market segments, such as income groups. Additionally, K-factors will be examined and changed if necessary.

Improvements will also be made to time-of-day trip distribution. Currently, the mode choice model partitions each trip purpose into peak or off-peak submarkets using a uniform set of assumptions, which vary by area type. The feasibility of creating a more robust process for partitioning trips by time of day will be investigated. Another possibility is development of a simplified time-of-day model that partitions trips between the peak and off-peak periods based on differences between congested and uncongested travel times

Mode Choice

The mode choice model will be recalibrated and validated. Mode specific constants, which vary significantly across the different geographic market segments, will be standardized as much as possible. In addition, a new customized mode choice procedure will be developed for areas east of New York City, which are not currently included in the model. The enhanced model will also make use of vehicle occupancy data.

Trip Generation

New trip purposes may be added, including special generators such as Newark Liberty International Airport and major universities. In addition, non-home-based trips may be refined by dividing them into work-based-other and other-based-other. NJTPA is also considering revising the trip generation procedure to add non-motorized trips. This would be done by estimating person trips and using a logit or other model to partition the trips into motorized and non-motorized. This procedure would be applied immediately following trip generation. The primary variables would be population and employment density; area accessibility; auto availability; and urban area type (as a proxy for urban conditions such as the presence or absence of sidewalks.) This change would require the trip generation model to estimate total trip productions rather than only motorized trip productions.

Other Improvements

1. Improve network graphic display by:
   - Referencing the network to the underlying shape file, the NJDOT public roads geographic information system;
   - Enhancing the coding of limited access facilities, including:
     - Bifurcated coding; and
     - Interchange detail;
   - Introduce additional layers of background features, including:
     - Jurisdictional boundaries (TAZ, MCD, county);
     - Local street layer; and
     - Water layer.

2. Expand options for representing new facility types:
   - Highway network:
     - Truck-only facilities;
     - Different ramp facility types;
     - Toll facilities permitting only electronic toll collection;
     - Toll facilities with variable tolls depending on mode and congestion level; and
     - Toll facilities that assess tolls in a single direction
   - Transit network:
     - Lincoln Tunnel express bus lanes;
     - Exclusive bus rapid transit facilities; and
     - Bus priority treatments such as queue jumps.

3. Improve representation of speeds and capacity by:
   - Using the 2000 Highway Capacity Manual (HCM) procedures;
   - Setting initial values by facility and area type;
   - Implementing freeflow speeds sensitive to physical characteristics such as:
     - Number of lanes and lane width;
     - Shoulder clearances; and
     - Number of access points;
   - Determining capacity given traffic control conditions, including:
     - Signal cycles;
     - Turning lanes;
     - Terrain type; and
     - Parking;
   - Improving representation of congested speeds by utilizing:
     - Volume delay functions;
     - Optional queue delay feature applied to links where the volume-to-capacity ratio exceeds a given threshold; and
     - Dynamic scaling of period-specific capacity values, allowing multi-hour capacity values to reflect uniform demand levels of congested links at critical locations such as crossings to New York City.

4. Improve the mode choice model by:
   - Running mode choice prior to trip distribution so that composite impedance terms are generated for all origin-destination (O-D) zone pairs; and
   - Making use of vehicle occupancy data for all trip purposes.

<u>Highway and Transit Assignment</u>

The Phase 2 enhancement to the highway assignment process may include:

- Gathering data on observed speeds and the effect of traffic control devices (possibly using a “floating car” technique) to help choose the correct volume-delay functions for each type of facility. Further, the customized delay estimation routines may be refined and peak-spreading functions added. All subsequent modeling components will be recalibrated, possibly including the re-estimation of the highway transit speed lookup relationships;
- Restructuring generalized cost functions as combinations of time and distance to control the development of paths during the assignment iterations;

- Extending the peak periods, possibly to three hours each;
- Migrating some functions to CUBE-Voyager to make use of the universal select link feature; and
- Calibrating the highway assignment procedure using available data on roadway volumes.

Phase 2 enhancements to transit assignment will include assigning the auto-access transit trips to the model. This portion of the model needs to be migrated to the TP+ process, which requires modifications to the path-building procedures. The transit assignment procedure will be calibrated and validated using available transit volume data.

Model Validation and Sensitivity Testing

The model will use an iterative process for some data elements that will be placed in a feedback mechanism for calibration. Further, the entire model must be validated, including error checks in socio-economic data and highway and transit networks. Screenlines and cutlines will be created for testing the network. The results will be validated by facility and area type. Root mean square errors will also be estimated. Ultimately, the network must meet all criteria, including those identified by FHWA's 1997 Model Validation and Reasonableness Report.

Sensitivity tests will be designed and applied to determine how the model reacts to changes in certain parameters such as HOV lane additions or transit fare changes. Finally, the model will produce standardized reports with warnings and error messages.

III. PEER REVIEW PANEL RECOMMENDATIONS

The integration efforts that have already occurred and the current efforts underway to improve the model's forecasting capabilities were discussed at length during the peer review meeting. The NJTPA requested that the panel pay particular attention to the improvement efforts for the trip distribution and mode choice sections of the model. It also asked the peer review panel to address the following areas:

- Traffic analysis zones;
- Networks;
- Calibration and validation;
- Post processing, and
- Model maintenance.

The panelists made the following observations about NJTPA's mode choice model:

- NJ Transit's mode choice model, which uses the transportation system user benefit measure, pre-dates the current FTA guidance on travel demand forecasting models.
- The in-vehicle travel time coefficients for commuter rail and long distance ferry modes are 25 percent lower than those for other transit modes.
- A distance term (natural log of total trip distance), with different coefficients by mode is used.
- Geographic mode specific constants have been calibrated for 11 different geographic markets.

The panel's initial recommendation for NJTPA is to keep their near-term focus on using the validated Phase 1 model for the spring 2006 conformity analysis. Since the time constraint limits

major improvements for the spring 2006 conformity analysis, NJTPA should concentrate on improving basic model components such as networks and travel times.

The following recommendations relate to the longer-term Phase II model improvements. The panel was unanimous in each of the recommendations. They are organized into five categories: data collection, networks, trip purposes, mode choice, and trip distribution.

Issue 1: Data Collection

Recommendation 1
The panel felt that model estimation could better utilize the available survey data. It recommended that NJTPA use the NYMTC/NJTPA household survey data or even adopt NYMTC models developed from those data. The panel also noted that the model was too strongly focused on trips to and from Manhattan and needs more attention to travel within the NJTPA planning area.

Recommendation 2
The panel recommended that the model should decrease the size of the buffer area to reduce the burden of obtaining and maintaining data from this area. NJTPA should keep the Delaware River as the boundary, with external stations. Further, it must be careful to avoid expanding the modeled area without plans for data collection in the new areas.

Recommendation 3
The panel felt that an examination and analysis of demographic and economic data is required to refine area type definitions, particularly the urban area type. In addition, there is insufficient detail about how the demographic forecast is prepared and used.

Issue 2: Networks

Recommendation 1
The panel supported the provision to have data for Highway Capacity Manual analysis. In addition, NJTPA should undertake a careful examination of highway output speeds and compare them to the currently collected data.

Recommendation 2
The panel suggested that NJTPA ensure that the network is commensurate with the TAZ detail.

Issue 3: Trip Purposes

Recommendation 1
The panel felt that the "work-based other" trip purpose should be eliminated. At a minimum, it should be split into "work-based commute" and "work-based other" trips. The panel felt that it is better for NJTPA to adopt tour-based modeling for work trips and consider applicability of the NYMTC model towards the same.

Recommendation 2
The panel suggested that university trips should be added as a separate trip purpose. NJTPA should use the "home-based work" distribution and mode choice as defaults if better information is not available, since it may be too ambitious to expect that regional models incorporate sub-area studies.

Recommendation 3
The panel agreed with the existing airport trip model that NJTPA has in place and encouraged them to continue using it.

Recommendation 4
The panel recommended that the non-motorized trip allocation have greater sensitivity. Also, for the non-motorized trip estimation, the model must generate total person trips.

Issue 4: Mode Choice
Recommendation 1
The panel recognized that auto- ownership is an important component and NJTPA should examine the sensitivities of the nesting coefficients to the logsum.

Recommendation 2
Mode and geographic constants should be changed to reflect more realistic expectations for precision or replication. NJTPA should be careful not to get too involved in accurate calibration.

Recommendation 3
The panel recommended that, while university trips should be a separate trip purpose, the work purpose mode choice functions should be used for these trips. It also noted that for airport trips, NJTPA already has a mode choice model for use.

Issue 5: Trip Distribution
Recommendation 1
With regard to the composite impedance, the panel asked NJTPA to examine different functional forms, for example, different logsum components for distribution.

Recommendation 2
The panel strongly recommended that NJTPA keep the use of adjustment procedures (K factors) to a minimum. It added that wherever K factors are used, they should be limited to work trips. In addition, their use must always be justified.

Recommendation 3
The panel recommended that NJTPA make use of four-hour peak periods for trip distribution.

Appendix I: NJTPA Travel Model Improvement Plan Peer Review Agenda

Day One: Thursday, October 27th 2005

9:00 Welcome, Purpose of Meeting, Introductions, Schedule, NJRTM Applications (NJTPA, NJDOT, NJ Transit, NJTPA subregion: presenters to be determined)

9:30 Introduction to NJRTME project: Description of Zonal System and Data Requirements (Dave Schellinger, URS)

10:30 Break

10:45 Highway and Transit Networks (Dave Schellinger, URS)

11:45 Trip Generation

12:30 Working Lunch (Mode Choice) (Bill Woodford, AECOM)

1:45 Trip Distribution (Dave Schellinger, URS)

2:45 Break

3:00 Highway and Transit Assignment (Dave Schellinger, URS)

4:00 Model Sensitivity Testing and Validation (Dave Schellinger, URS)

5:00 Adjourn

Day Two: Friday, October 28th 2005

8:30 Panel Deliberations

11:30 Panel Presentation of Recommendations and Findings

12:00 Discussion of Recommendations

12:30 Adjourn

Appendix II: List of Attendees

Peer Review Panelists

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