# North Carolina Statewide
## Model Users' Group Meeting – October 25, 2005
3.5 PDH's

Rhett Fussell (DOT) started the meeting at about 1 pm with informal introductions. Attendees introduced themselves with their name, education and work background. (See sign-in sheet for more information). He asked the attendees to inform him if they were interested in either learning or sharing about specific topics at the next meeting. He also mentioned that the next Model Users Group meeting in spring will be scheduled in April and that it will be stand alone session and most probably held in Charlotte. The meeting concluded on time at 5 pm.

The focus of the day's session was on Transit Modeling and data available for modeling purposes. Six speakers spoke on these topics.

**Report on TRB Special Committee (B0090) Determination of the State of the Practice in Metropolitan Area Travel Forecasting - Lori Cove/Tim Padgett – NCDOT**

Lori Cove started with an introduction of the members on the Committee and then proceeded to talk about the results of the survey. She informed that attendees that the purpose of the committed was to "gather, organize, describe and interpret information on the current state of the art practices in Travel Demand Modeling".

Federal Highway Administration and Transportation Research Board were the clients of this committee. A questionnaire with about 90 questions with multiple parts was prepared to identify unique practices in Travel Demand Modeling and distributed to MPO's nation wide. The draft report of the finding was submitted on September $2^{nd}$ with 57% surveys completed and returned.

It was found that the majority of the models in the country are based on the traditional four step process, some are tour based and that most omit model choice.

Survey included questions about the following but were not limited
- Units of travel
- Trip Generation
- Gravity Model
- Mode Choice
- Assignment &
- Feedback of highway and transit times

The survey revealed that the best features that a model can possess are
- Use and flexibility, &
- Well calibrated and validated model

The survey also revealed that the worst features a model can possess are

- Poor land use forecasting
- Lack of feedback loop

Next Steps of the Committee include
- Contact non-responders to get their feedback
- Collect available documentation for each model
- Develop a more detailed questionnaire based on initial responses
- Clean survey data
- Cross tab information
- Clarify State vs. MPO responsibilities
- Add literature review to the report, &
- Compile final report by October 2006

It was also discussed if Model choice and other standards will be detrimental for most areas.

Lessons from Tim Padgett – Tim was responsible at NCDOT to put together these surveys and he said that there was a need for greater co-ordination between NCDOT and MPO's. He also said that he was maintaining this information is s spreadsheet format so that data can be easily updated and is easily accessible for everyone.

**Report on the American Community Survey (Census Bureau Travel Data), Rhett Fussell – NCDOT**

The American Community Survey (ACS) will provide about 800 samples for NC every year for the next 10 years. With the long form of census eliminated ACS should provide valuable information. The National Transportation Survey (NTS) will provide a statistically significant data and can be updated more often than the ACS.

The NTS is a statewide survey at DOT level with an add-on for each region with higher proportions of rural samples to see if travel characteristics vary in different regions. The existing surveys for the triangle and triad region will be included to get a bigger picture.

This survey can be used in areas where there is no data available. The survey will cost about $150 per HH for each of the additional 5000 samples that NC has requested for. He survey is going to me be more like the census long form process and with the elimination for the census long form process this will probably be a good source of information.

The understanding is that the NTS will get cheaper with FHWA funding in future years and that this database will be updated instead of starting from new surveys.

Rhett also announced that the NCLOS CD was ready and available for anybody who is interested. He bought along a few CD's with him for the attendees of the model user's group meeting.

**Estimating Area Types – Srinivas Varanasi, PART**

Srinivas shared his recent experiences in developing Area types for the Triad region with the user's group.

Area type classifications are used to develop roadway capacities, stratifying trip attractions, and in the mode choice model. Area type models are also easier to forecast than land use and socio-economic data are hence are a very useful tool.

Srinivas started his work by putting together a subjective target map with rural, urban and central business district (CBD). Area type of a TAZ depended on its Population Density (PD), Employment Density (ED) and on the land use of surrounding areas.

3 approaches were tested for surrounding zones
    1) Zones within a distance specified by
        o User
        o Adjacent zones
        o A multiple (F) of zonal units
          ZU=sqrt(Area)

The third approach resulted in a better distribution than just using PD vs. ED. After conducting various discriminant classification tests it was observed that a "F" value of 1.5 worked best.

Issues with Central Business District (CBD)
- Not properly separated from Urban areas
- TAZ's outside the target CBD's have high employment densities
- Not contiguous
- Network density is used as an additional variable.

Outlying Zones – 70% of surrounding TAZ's are of different area types
The area type model can also be used to predict other roadway attribute data like parking etc. to come up with roadway capacities.

**Lessons Learned in Transit Route System Coding - Liza Runey, ITRE**

Liza Runey shared her recent experiences with TransCAD's route system coding. She emphasized the importance of "Reload", "Verify", "Archive" & "Documenting" edits frequently. Liza detailed the various steps involved in the route editing process which are

    ➢ Line and node layer editing
    ➢ Network layer editing
    ➢ Route system editing
    ➢ Route stop layer editing

Key points to remember
- Open the .rts file and check for the right line layer and make edits to it.

- Keeps the route system dialog box or route editing box open to get important prompts.
- Two methods of route editing – click segments and shortest path method.
- Always check direction of flow
- All loop routes need special attention and may need to be coded by direction.
- Multiple routes overlaying on each other can be edited at the same time.
- The route system warnings are a good tool to find missing links.
- Assign unique ID's to the route system as TransCAD assigns new ID's after each edit.
- Use TransCAD's automatic stop tool to put nodes on local routes – make sure that the dwell times are accurate.
- Achieve a balance between dwell times and number of stops.

In essence Liza's suggestions were to limit edits, use the latest version of TransCAD, always work with the .rts file to bring up the corresponding network layer and always reload, verify, archive and document.

**Transit Modeling in Asheville – Nathaniel Grier, MAB**

Nat highlighted the features if the Asheville model and informed that the mode choice model was developed with borrowed coefficients and that the base year transit network has 14 routes of fare free, fixed free and pulsed time transit systems. Below are the salient features of this model, some experiences and lessons learnt that Nat shared with everyone

How was it modeled?
- Shortest path method
- High headways coupled with pulsed at downtown
- Since TransCAD calculates zonal fares on a link basis rather than the entire trip; a fixed fare system was used. Correct fares were used in the model choice model.
- Bus only links were included
- Special walk only centroid connectors were added in several instances to these transit only links.

Future Year Transit
- Black mountain feeder routes
- Switched to mixed fare system – manual adjustments due to bugs in TransCAD.

LRTP Transit Scenarios
- High growth scenario for LRTP
- Complete overhaul of route structure
- Addition of express bus service
- Addition of park and ride.

Coding
- Five transit modes plus walk

- Park and ride locations identified
- Modes coded with additional detail
    - Dwelling time
    - Initial wait times
    - Transfer Penalties

Park & Ride Modeling
- Walk times were developed across the network (and cleaned)
- Included separate field for different times
- Two sets of assignment for walk or drive to transit needed.

Next Steps
- Expand Asheville Model to French Broad River, Henderson, Haywood and Transylvania County
- Model local and intercity transit service
- Include possible rail service
- Focused survey to revise local coefficients & weights

Lessons Learned
- Not too difficult to develop full mode choice model
- Park & Ride can bring noticeable shifts
- Always check skim outputs
- Combine walk & drive to transit to get total flows

Benefits from Transit Models
- Don't have to start from scratch
- Mode choice model is necessary for scenario testing
- Model allows us to confirm that transit share is small enough not to affect roadway projects
- Individual transit scenarios are easy to test

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**Highway Data Management in Western, NC - Beverly Williams**

Beverly shared with the group her experiences & lessons learnt in collecting roadway data for the French Broad River MPO with consultants MAB in a supporting role. Below are some of the main points

- There was no correlation between TIGER roads and DOT roads.
- Attribute data was collected by MPO staff
- How much of this data is available at state level?
    - Pavement Management website – gives important information about number of lanes, lane widths
    - Traffic Counts – Historical traffic counts on CD
    - Signal locations
- MPO staff was trained to update this data and data was also geocoded so that it can be shared with others easily.
- She also suggested that such information to be shared with non modelers so that they can help in data collection and maintenance; so that modelers can focus their attention on validation and other four step process.
- 911 fire and rescue is a fairly up to date database but the centerlines don't match. DOT shapefile.
- She also found that it was difficult to drive at speed limit on rural curvy roads – and notes were taken in such areas.
- Beverly also suggested that time stamping all data and its revisions are a very good practice.