

# VTM Connection

## Virginia's Travel Modeling Newsletter

### **Large Turnout for the FHWA Overview of Travel Demand Modeling Course**

Over 150 state, MPO, and local staff from a variety of transportation backgrounds, e.g., planning, engineering, location & design, etc., attended the 1-day course at three locations: Northern Virginia, Richmond, and Roanoke. Due to high interest in northern Virginia, the course was offered there on May 1<sup>st</sup> in addition to the original May 2<sup>nd</sup> date. The Richmond and Roanoke classes were conducted on May 9<sup>th</sup> and May 11<sup>th</sup>.

Participants listened to instructor Brian Betlyon, of the FHWA Resource Center in Baltimore, describe the purpose of travel demand models, explain the traditional 4-step process, and identify the key parts of the modeling process that are relevant to transportation professionals. This course is designed for transportation professionals who want to learn more about the usage and application of travel demand forecasting models, but are not hands on travel demand modelers, and is offered periodically by FHWA by request.



Instructor Brian Betlyon teaching the Roanoke course.

### **Update on National Personal Transportation Survey Add-On Program**

Despite the likely cancellation of the National Personal Transportation Survey (NPTS), the NPTS Add-On program is still scheduled to continue in Virginia and other participating areas in the 2008-2009 timeframe. The Add-On program will enable Virginia to purchase household travel surveys for all eleven MPO areas within Virginia. Data from these surveys will be used to support both metropolitan and statewide travel demand modeling and other transportation planning application efforts.

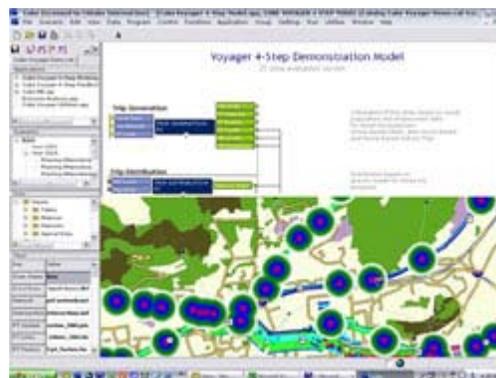
To date, several states and MPOs are planning to participate in the NPTS Add-On program including California, New York, Florida, and several other southeastern states. Overall Add-On participation is expected to be significantly greater than in 2001 when the Add-On program was offered for the first time. The Federal Highway Administration (FHWA) is planning to release more detailed information on the Add-On program this summer. Look for updates on the NPTS Add-On program in future editions of the VTM Connection.

## Virginia moves to CUBE/Voyager Software Platform

The Virginia Department of Transportation is upgrading the state's travel demand modeling software platform to Citilabs' CUBE Base/Voyager. CUBE Base replaces VIPER as the software interface and network editor used by Citilabs' users. Voyager replaces TP+, TRIPS, TRANPLAN, and MINUTP as the software engine used to run models using Citilabs' software. Voyager's scripting language is generally similar to TP+ with the exception of that used for transit. The Voyager upgrade will still enable users to run models in TP+ format.

This upgrade will provide users with several benefits:

1. CUBE Base has enhanced GIS capabilities compared to VIPER and will be fully integrated with ARC-GIS when CUBE Base version 5.0 is released later this year.
2. Voyager contains enhanced ability to perform select link analysis compared to TP+.
3. Voyager contains a new transit module called Public Transport (PT) which has many advantages over the TRNBUILD transit module used by TP+.



Existing models will gradually be converted into Voyager format over the next few years. Look for updates in future editions of the VTM Connection.

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## Update on the Next Census Transportation Planning Package (CTPP)

The CTPP is a census data product specifically developed for transportation planning which contains demographic information by residence, by workplace, and Journey to Work flow at the Transportation Analysis Zone (TAZ) level. The CTPP is used to support a variety of transportation planning applications including long range plan development and Home-Based Work calibration for travel demand models.



There will be a major change affecting the next CTPP in that it will be based on the American Community Survey (ACS) instead of the census long form. The 2000 census was the last time that the long form was administered. The ACS is based on a moving 5-year average of data instead of the snapshot point in time used by the census long form. As a result, considerable research is planned for the coming years to compare ACS results with those from the long form to understand differences. Testing for the ACS began in the late 1990's and full implementation nationwide began in 2005. More information on the ACS is available at the website: <http://www.census.gov/acs/www/>

The AASHTO Standing Committee on Planning (SCOP) Census Data Workgroup met in Washington, DC on April 10-11<sup>th</sup> to discuss priority census data needs and develop recommendations for the next Census Transportation Planning Package (CTPP). The results of this meeting will be presented to AASHTO SCOP for consideration in June.

## Highlights on Travel Demand Modeling Activities by Model Region

No.	Model Region	Current/Recent Activities
1	Northern Virginia	The Washington MPO (MWCOG) is planning to do a \$2.0 million dollar Household Travel survey of 10,000 samples starting in mid-2006 and continuing through mid-2007.
2	Hampton Roads	Mode choice model being converted from FORTRAN into TP+ by a consultant. Model being converted from TP+ script into CUBE Catalog format by VDOT staff.
3	Richmond-Petersburg	Mode choice model being converted from FORTRAN into TP+ by a consultant.
4	Fredericksburg	Model converted from MINUTP into CUBE Catalog format by VDOT staff.
5	Roanoke	Base and future horizon year highway networks, land use, and modeled region being updated by PDC and VDOT staff in preparation for the next MPO long range plan.
6	Lynchburg	
7	Charlottesville	Model continues to be used for the US 29 Study by a consultant. Model being converted from MINUTP into CUBE Catalog format by VDOT staff.
8	Danville	
9	Harrisonburg	
10	Blacksburg	
11	Winchester	
12	Bristol	
13	Kingsport	
14	Statewide Model	

### VDOT completes modeling survey of nearby states

In late 2005 and early 2006, VDOT staff interviewed several states near Virginia for information on their existing modeling programs. Results of the survey have been presented to the Virginia Travel Model (VTM) workgroup and North Carolina DOT staff. Below are some of the key findings of this survey effort:

- Three and Four Step travel demand models are predominant. Larger MPO areas are moving towards advanced four-step modeling practice. No areas are planning to develop activity based models at this time.
- Increasing involvement of State Universities in modeling activities and research.
- Increased focus on statewide modeling.
- Increasing focus on model users' groups and peer exchanges.
- Metropolitan areas with populations under 500,000, generally have no MPO staff positions dedicated to travel demand modeling.

## **Travel Demand Modeling Policies & Procedures Manual**

VDOT staff has completed the Travel Demand Modeling Policies & Procedures Manual which establishes consistent minimum standards and guidelines for travel demand model development and application for MPO areas entirely within Virginia. The manual is being reviewed by the Virginia Travel Modeling (VTM) Working Group and is expected to be publicly available by this summer. The manual will be used to guide the next round of MPO model validations and updates. Look for updates on the manual in the summer edition of VTM Connection.

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### **Highway Ranking Model**

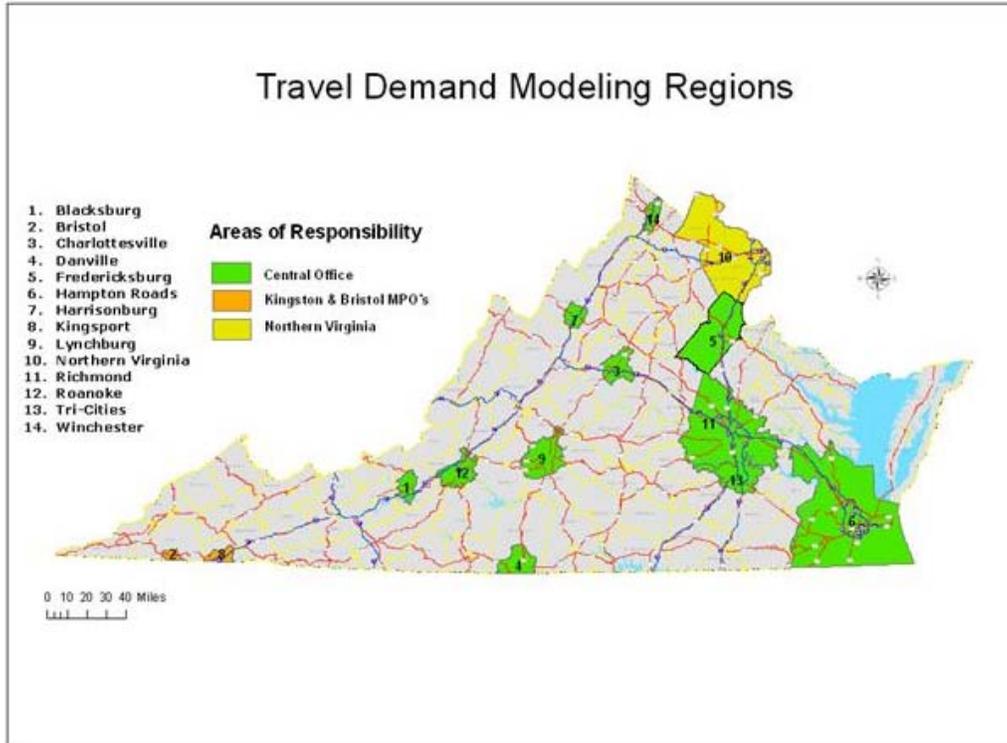
VDOT Northern Virginia District staff have developed a new model that objectively ranks all planned highway projects based on their ability to reduce congestion per cost for today and for any forecast year. Congestion reductions can be measured in terms of vehicle-hours-of-delay reductions or vehicle-miles-of-travel reductions below a user specified LOS. The model can be run for any of the 14 modeled regions in Virginia.

The model is not a new model formulation. Instead, it uses the MPO (or Statewide) model's networks and future year's trip tables to rank highway projects. To rank highway projects in the Six Year Improvement Program or the CLRP, the appropriate forecast year (2010 or 2030, for example) trip tables are suggested.

A recent example of running this model was taken from processing a list of 52 improvements identified by Central Office as candidates for including in a future SYIP for Northern Virginia. The model did a mutually exclusive test of each of the 52 improvements to get the vehicle hours of delay reductions (VHDR) for each one. The one with the best VHDR per cost was added to the base network to get a new permanent base. The remaining 51 improvements were tested mutually exclusively again to get the VHDR for each of these improvements compared to the "new" permanent base network to get the "best" one to add to the new base. This process was repeated over and over until all projects were ranked. For the Northern Virginia area, ranking these 52 improvements took thousands of capacity restrained traffic assignments (52+51+50+49+.....1) and ran for 6 days non-stop on a PC with an Intel 3.06 MHz processor. Updating the networks and submitting thousands of computer traffic assignments manually is impossible time-wise, even by a team of computer modelers. The results showed that 25 of these 52 improvements accounted for 98% of the total regional reductions in vehicle hours of delay.

The advantage of ranking all improvement projects is to make sure we use our limited resources to add capacity when and where it is most effective. Project A and Project B might both be excellent improvements by themselves in 2010, but if Project B goes first, then Project A may not reduce congestion any further on the regional system until post 2030. This model and the TTI model that is famous for ranking the Washington region as the third most congested area in the country produce similar results for this region.

For more information concerning the Highway Ranking Model, contact Bill Mann at (703) 383-2211 or [Bill.Mann@VDOT.Virginia.gov](mailto:Bill.Mann@VDOT.Virginia.gov)



## **VDOT Travel Modeling Contacts:**

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## **Key Travel Modeling Websites:**

**VDOT Travel Modeling** (Available for VDOT Intranet Users Only):

<http://insidenvdot/Planning/Document%20Library/Transportation%20Modeling%20Website.aspx>

**Hampton Roads PDC Travel Modeling:**

<http://www.hrpdc.org/transport/travdemand.shtml>

**Metropolitan Washington COG Travel Modeling:**

<http://www.mwcog.org/transportation/activities/models/>

**FHWA Travel Model Improvement Program (TMIP):** <http://tmip.fhwa.dot.gov/>