

National Capital Region Transportation Planning Board

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MEMORANDUM

TO: TPB Scenario Study Task Force

FROM: Robert E. Griffiths,
Technical Services Director,
Department of Transportation Planning

SUBJECT: New Transportation Analysis Zone System

DATE: April 10, 2008

One of the issues raised at the February TPB Scenario Study Task Force meeting was the need for smaller Transportation Analysis Zones that would permit more detailed modeling and analysis of the local level impacts of alternative land use and transportation scenarios. The purpose of this memorandum is to provide the members of the TPB Scenario Task Force with a status report on current efforts to develop such a more detailed Transportation Analysis Zone (TAZ) system for the TPB modeled area.

Background

The current 2191-TAZ system for the TPB modeled area was developed more than a decade ago. This current TAZ system has fairly small area TAZs in the central jurisdictions of the District of Columbia, Arlington and Alexandria, but much larger TAZs in the outer suburban jurisdictions and in most areas outside the Beltway. The primary reason for this hybrid large area/small area TAZ system was because of the limitations of computer technology at that time. The maximum number of zones that could be run in the transportation modeling software of that era was limited to a total of a little more than 2,000 TAZs. Thus, in the development of this TAZ system, smaller TAZs were allocated to the areas of existing concentrated development and to areas in immediate proximity of planned Metrorail stations.

Advances in computer technology and transportation modeling software have now virtually eliminated the previous barrier on the total number of TAZs that can be run in the transportation model. While in theory an unlimited number of TAZ could be run in the model, there are still some practical limitations that must be considered. First, the total processing time required for a model run is directly related to the number of TAZs that are being modeled. The more zones there are, the longer the transportation model takes to run. Currently, with our 2191-TAZ system, a typical model run requires 15-16 hours of processing time, although this processing time has now recently been reduced through the use of newer and faster computer chips. A second and more important consideration is that local planning staff must be able develop reliable data and forecasts for more and smaller area TAZs. For areas in the region that are already more developed and have well-defined plans, this is a fairly straightforward task. However, for areas of the region that are not fully developed and for which there are currently only general plans in terms of future land use, this is a much more difficult task.

The New TAZ System

TPB and COG staffs have been working with local jurisdiction planning staff for the past several months to develop a new and updated TAZ system for the TPB modeled area. The key objectives of this effort are to:

- Balance the needs for transportation modeling of smaller geographic areas with the practical requirements for developing reliable land use data and forecasts for these smaller geographical units (Cooperative Forecasting)
- Create smaller TAZs for Regional Activity Centers, transit station areas, and areas of expected increased or planned future development
- Strive for uniformity in zone size throughout the TPB modeled area ,taking into account likely development patterns (present and future)
- Design a new zone structure that will be usable and meaningful until the next TAZ update (10+ years from now)

Based on current efforts, we expect that the new TAZ system will double the total number of TAZs from 2,200 now to about 4,400 in the new system. The increase in the number of new TAZs being created will vary by jurisdiction. Jurisdictions that already have small area TAZs will not see many changes. Those jurisdictions having a larger TAZ structure will see the greatest increase in the number of new TAZs. For example, the number of TAZs in Arlington County will only increase from 82 today to 109 (a 33% increase) in the new system. The number of TAZs in Prince George's County, which currently has a mixture of large and small area TAZs, will increase from 381 now to 649 (a 70% increase). The number of TAZs in Prince William County, which currently has a larger TAZ structure, will increase from 142 now to 367 (a 158% increase).

Figures 1 through 3 illustrates some of the proposed new TAZs for Regional Activity Centers in Arlington County, Prince George's County and Prince William County.

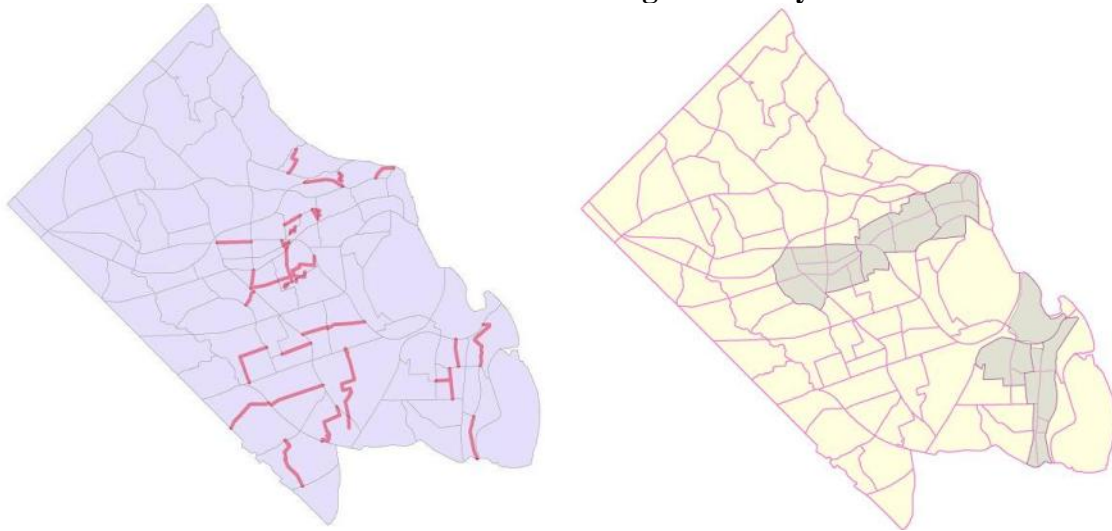
New Data for the New TAZ System

The new travel behavior data collected in the 2007 Household Travel Survey, the Spring 2007 Metrorail Passenger Survey, the Fall 2007 Air Passenger Survey and the Spring 2008 Regional Bus Survey will all be geocoded to this new more detailed TAZ system. Additionally, the local jurisdiction planning staffs who prepare the Cooperative Forecasts of future growth have committed to develop new small area population, household and employment forecasts for this new TAZ system for the "Round 8" Cooperative Forecasts that are to be developed in FY 2010. Also, TPB staff will begin developing a more detailed highway and transit network to go along with this new TAZ system in FY 2009.

Schedule for Development of the New TAZ System

TPB, COG and local jurisdiction planning staffs have been working on the development of the structure for the new TAZ system during the past 9-months. A few jurisdictions have almost completed their work and others are well on their way. We expect to have the new TAZ structure in place for the entire TPB modeled area by June 30, 2008. TPB staff will then geocode the new travel survey data to this new TAZ system starting in July. TPB staff will also begin development of new highway and transit networks to go with this new TAZ structure shortly thereafter and also begin transportation model

Figure 1
New TAZs for Arlington County



Current TAZs with Recommended Zone Splits by Arlington County Planning Staff

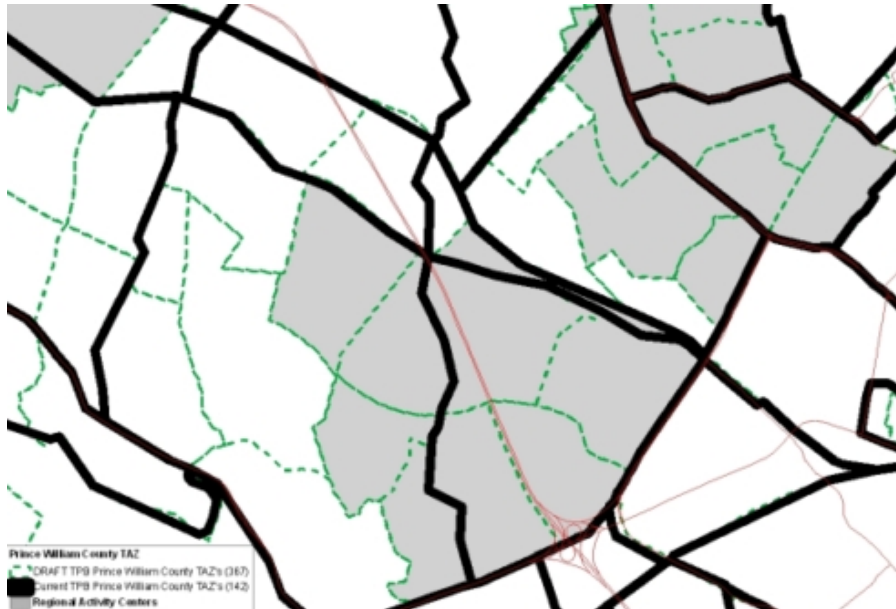
Resulting New 103 TAZs for Arlington with TAZs that will map exactly to COG Regional Activity Center Boundaries

Figure 2
New TAZs for Prince George's County Largo Regional Activity Center



The Current 8 TAZs (Heavy Dark Lines) Defining the Largo Regional Activity Center have now been split into 17 New TAZs (Dashed Green Lines)

Figure 3
New TAZs for Prince William County Innovation Regional Activity Center



The Current 3 TAZs (Heavy Dark Lines) Defining the Innovation Regional Activity Center have now been split into 9 New TAZs (Dashed Green Lines)

recalibration using the new travel survey in early 2009. COG Cooperative Forecasting staff will prepare the data and run an updated regional econometric model to provide benchmark projections of population, households and employment growth for the development of “Round 8” Cooperative Forecasts by the fall of 2009. At the same time, local jurisdiction planning staff will begin development of new small area growth forecasts for the new TAZ system. Reconciliation of the regional econometric model forecasts with the local jurisdiction small area forecasts will then take place in between September and December of 2009 and draft “Round 8” TAZ level forecasts would be approved by the Metropolitan Development Policy committee in early 2010.

If all work stays on schedule we would have the new TAZ system in production with new “Round 8” Cooperative Forecasts ready for the major update the TPB’s Constrained Long Range Plan in 2010. We would also be performing the travel demand analysis for this update using much more detailed highway and transit networks and an updated transportation model that has been recalibrated and validated with new, recently collected travel survey data.