Solano-Napa Travel Demand Model User's Guide (excerpts)

SNTDM Phase 2 Model Overview

Travel demand models are complex tools used for predicting future travel behavior on transportation facilities and the future adequacy or congestion of these facilities. Base conditions must be established and calibrated to reflect real-world conditions before making any predictions. The resulting traffic flows are then validated by comparing them to actual sample traffic counts.

Both Solano and Napa Counties independently developed travel models in the late 1980s through the early 1990s with later refinements. These efforts fulfilled the need to examine traffic forecasts in a variety of settings and satisfied Congestion Management Program (CMP) requirements. The resulting models and forecasts addressed the transportation planning requirements of the CMP and associated studies. The models are fully functional; however, their age and lack of interregional trip making created the need for updates to reflect current conditions.

The SNTDM Phase 2 Model addresses these needs by adding the following improvements to its modeling capabilities:

- More Traffic Analysis Zones (TAZ): The previous Napa County model had 161 TAZ and the prior Solano County model had 559. Improved computer capabilities allow much more granular data modeling and the SNTDM now contains a total of 1372 TAZ.

- The SNTDM was created in Cube/TP+ software to enable easier control and operation. SNTDM travel networks are aligned to actual roadway configurations. Adding new geographic information also allowed the adding street names added to the roadway segment data to help readers identify the locations in the SNTDM.

- The SNTDM includes networks and traffic analysis zones from nine Bay Area counties, the Sacramento Region, San Joaquin County, and Lake County. This blending of models allows Napa and Solano Counties to be a "focus" of the SNTDM as opposed to other parts of Northern California. These external regions provide a context for trip generation but do not replicate travel in areas far removed from the study area.

- The overall model structure involves several detailed steps, depicted in Figures 3.1 through 3.4on the following pages. The diagrams show data from several regional models and local city land use files being assimilated into a standard structure and then merging together to create the SNTDM.

Traffic Analysis Zone (TAZ) Structure

The SNTDM Phase 2 model contains 1,372 traffic analysis zones (TAZ), which are generally structured as shown in Table 4.1. The number of TAZ was later expanded to 1702.
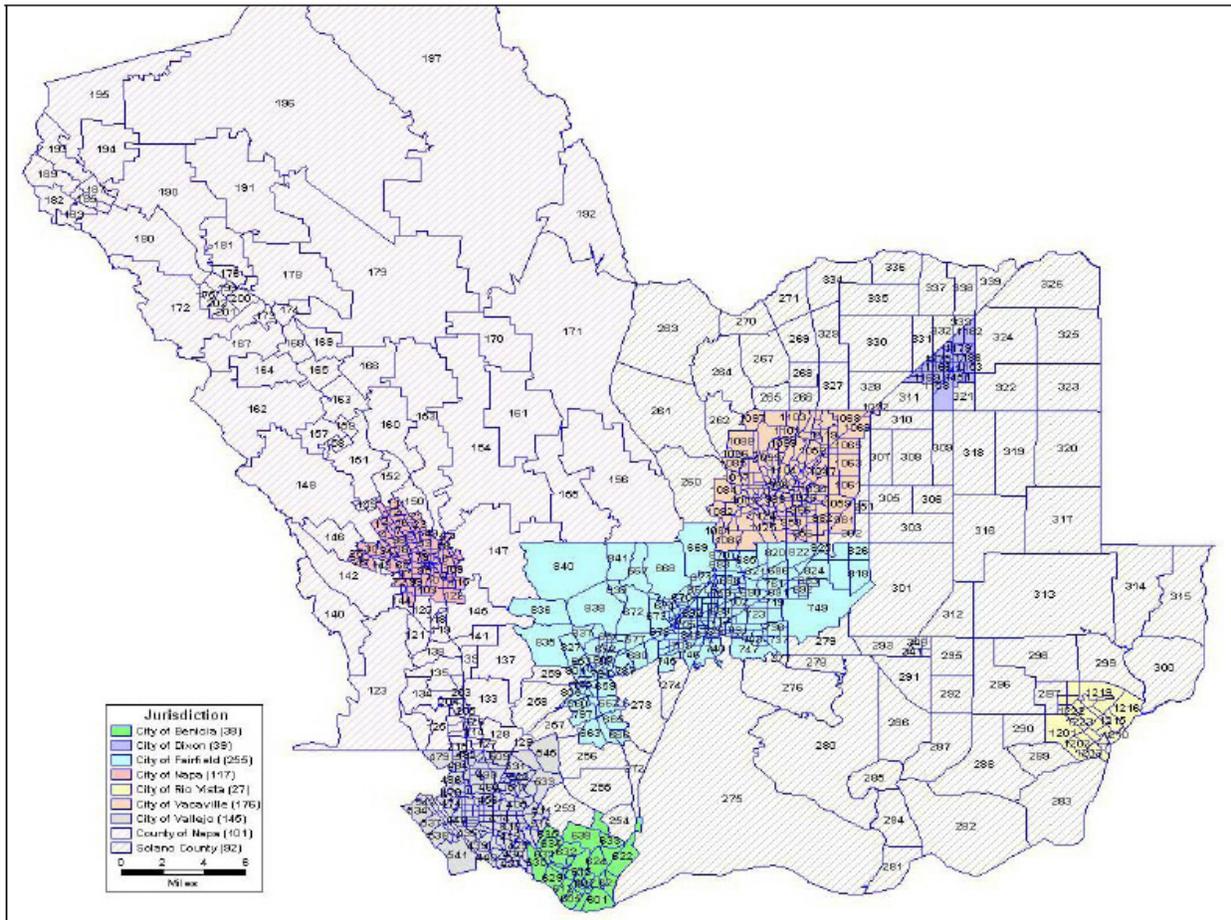
Table 4.1 TAZ Structure

Jurisdiction	Original Solano Model TAZs	Original Napa Model TAZs	New Model TAZs
Vallejo	55	0	115
Benicia	24	0	38
Suisun City	13	0	35
Fairfield	86	0	221
Vacaville	65	0	176
Dixon	23	0	39
Rio Vista	17	0	27
Solano County (Unincorporated)	86	0	91
Napa County (includes City of Napa)	151	218	218
Other Counties	39	12	412
Total	559	230	1,372

Source: DKS Associates, 2008.

TAZ sizes get larger the further one moves away from Solano and Napa Counties, with the smallest TAZs being located in the two counties. TAZs in western Sonoma County, northern Contra Costa County, and Yolo County are also kept at a finer level. Future development of mode choice models is also facilitated by using smaller TAZs in dense employment areas, such as Downtown Oakland, the northeast Quadrant of San Francisco, and Downtown Sacramento. Other areas represented in the data use larger TAZs. Please see Appendix A for a summary listing of the TAZ numbering and the associated county.

Figure 4.1   Diagram of TAZs in Napa and Solano Counties