

# Memorandum

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**To:** Kimberly Kerr, Assistant Chief Administrative Officer

**Cc:** Natalie Porter, PE, TE  
Shawna Purvines, AICP  
Claudia Wade, PE

**From:** Michael Schmitt, AICP, PTP

**Re:** DRAFT Technical Memorandum #4: TAZ Development and Considerations  
El Dorado County Travel Demand Model Update

**Date:** June 12, 2012

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The purpose of this memorandum is to present information on the development of the Traffic Analysis Zones (TAZs) for the on-going update to the El Dorado County (EDC) Travel Demand Model (TDM). TAZs are an essential part of the TDM that serve multiple purposes including:

- Provides the basic unit for converting spatial area data into tabular data for use by the TDM,
- Used to aggregate homogenous or discrete land use for analysis purposes,
- Used to manage interactions between internal land uses,
- Basis for channeling trip loading onto the model roadway network,
- Serves as a repository for land use, employment, population, socio-economic, and other data,
- Provides a tool to facilitate understanding of spatial differences between geographical areas, different land use scenarios, and analysis periods; and
- Used to display information related to land use, employment, population, socio-economic, and other data.

## **I. Review of Available TAZ Data**

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Kimley-Horn and Associates, Inc. (Kimley-Horn) reviewed the following TAZ data sets provided by EDC and the Sacramento Area Council of Governments (SACOG) in preparation for developing the updated EDC TAZ structure:

1. **Current EDC TAZ Structure** – The current 267 zone system is available as a Geographical Information System (GIS) layer from EDC and includes data attributes related to two different residential types and three employment types. Information is provided for the entirety of El Dorado County, except the area of the Tahoe Basin covered by the Tahoe Regional Planning Agency (TRPA).
2. **Draft 2010 EDC TAZ Structure** – This 934 zone system is available as a GIS layer from EDC but does not include any data attributes. This interim work product was not finalized and was not utilized in EDC model forecasting activities.
3. **SACOG SACMET07 TAZ Structure** – The current TAZ structure is available as a GIS layer and has 1,528 zones, of which 126 are in El Dorado County. Similar to the current EDC TAZ structure, this source does not provide coverage for the Tahoe Basin covered by TRPA.

Each of these TAZ structures were reviewed to determine their alignment with the planned base year roadway network, coverage of existing EDC development, and GIS topology. Based on this review and input from EDC staff, it was determined that the Draft 2010 EDC TAZ Structure was of sufficient detail that it would best serve as a starting point for developing a TAZ structure for use in the TDM update.

## II. TAZ Development Process

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Although the judgment of the practitioner as well as comments received from EDC staff were critical to determining the spatial organization of the Draft TAZs, the general layout of TAZs was approached with the following considerations in mind:

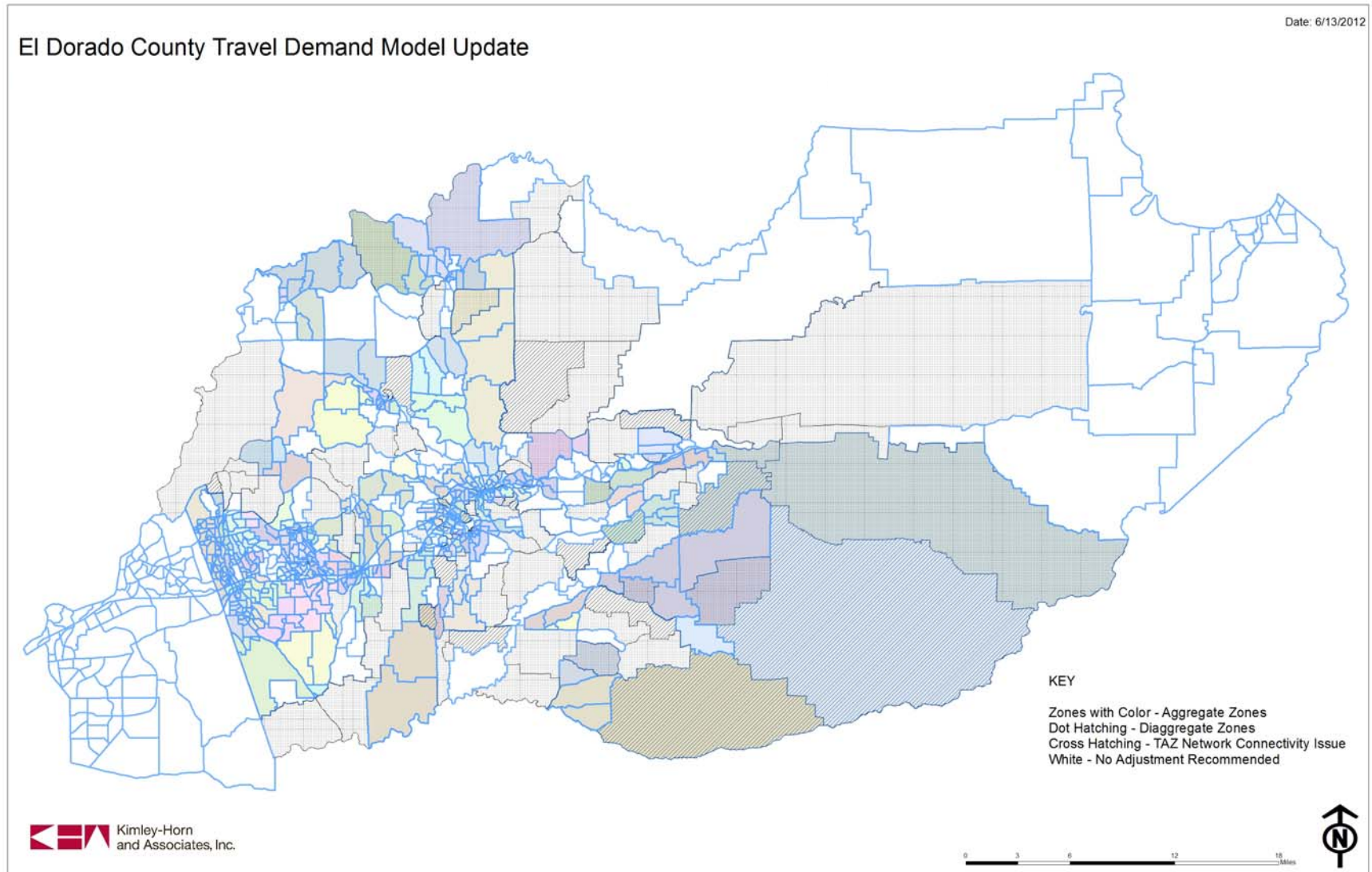
1. **The overriding consideration of TAZ development is that the resultant network loading support logical travel demand forecasts.** This global consideration serves as a reminder that the principle function of the TAZ is to serve as a necessary element of the TDM work-flow and operation.
2. **The TAZ structure should reflect overall model accuracy and limitations.** Primarily this consideration was applied in a manner to avoid situations where zones would be sufficiently disaggregated that they would suggest to the casual user a higher level of accuracy than reasonable for the TDM. Additionally, unnecessarily small zones can increase the opportunities for miscoding, significantly impact processing time, and impede logical traffic loadings onto the network.
3. **Large developments should be disaggregated.** This consideration was particularly applied to large residential concentrations which, although homogenous in character, would by virtue of their size function load the network as though they were smaller spatial units. Particular consideration was given to the placement of physical “gates” and/or distance to primary travel corridors when dividing larger communities (supports Consideration 2 above).
4. **Highly concentrated urban zones should be reasonably sized.** Although loosely applied, this consideration was intended to avoid situations where zones would become unnecessarily small (supports Consideration 2 above).
5. **TAZ borders should follow network roadways/physical constraints.** Given that one of the critical functions of TAZs is channeling trips onto the network, it is important that they are both adjacent to and follow the contours of the roadway network and other physical attributes to allow for logical network loading.
6. **TAZs must have direct access to the roadway network.** One of the paramount considerations of the development of TAZs was that all TAZs were required to directly load onto the roadway network.
7. **The TAZ structure should be understandable to laypeople.** Although a TAZ’s appearance or its consistency with other TAZs is not necessarily required to yield reasonable TDM results, an effort was given to provide a logical, consistent approach to TAZ development to avoid their spatial construction becoming a distraction (supports Considerations 1-6).

Based on the above described considerations and approach, the Draft 2010 EDC TAZ structure was reviewed and modifications to TAZs were recommended. **Figure 1** depicts the draft working document that was provided to EDC staff for review and comment. As shown in Figure 1, the extent of the initial recommended modifications included the following:

- 576 zones were recommended for aggregation resulting in 145 new zones (some of which were identified for further disaggregation and/or had network connectivity issues that needed to be addressed)
- 286 zones were recommended to be kept “as is”
- 58 zones were recommended to be redrawn to address network connectivity issues
- 14 zones were recommended for disaggregation

Subsequently, Kimley-Horn staff met with EDC staff to discuss recommended TAZ modifications and the considerations listed above.

**Figure 1 – Recommended Changes to Draft 2010 TAZ Structure**



Based on the comments received from EDC staff, and based on further analysis, the revised draft TAZs shown in **Figure 2** were developed. The current version of the EDC TAZ structure includes 626 zones.

### **III. Finalizing TAZs**

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Although the revised draft TAZs will be used to continue on-going model development, a minor number of TAZ modifications are anticipated in response to the following:

- **Public/additional EDC staff comments** – the revised draft TAZs will be circulated among several EDC Technical Committees and the public as part of an upcoming Board of Supervisors Meeting.
- **Evaluation of future land use** – Concurrent with the development of the TAZs, on-going analysis of future land uses may necessitate additional changes to the TAZ structure. These changes would most likely be in response to the need to disaggregate select TAZs that are currently largely undeveloped as a result of forecasted new development.
- **TAZs outside of EDC** – Although the EDC TDM is intended to only forecast trips within EDC (excluding the Tahoe Basin), a limited number of TAZs will be developed/incorporated outside of the County (primarily to reflect significant destinations in adjacent jurisdictions) to improve model performance.
- **Validation/calibration challenges** – Given the effect that TAZs have on channeling trips onto the roadway network, it may be appropriate for purposes of calibration/validation to further refine the TAZ structure.
- **Transit network requirements** – Although not anticipated, future transit routes could require changes to the roadway network subsequently requiring further refinement of the TAZs.
- **Unique land uses (mixed uses/special generators)** – To accurately reflect the internal capture associated with certain mixed use developments, or to accurately reflect trips from unique land uses, additional refinement of the TAZs may need to occur.
- **Other** – Technical requirements or additional analysis requirements outside of the TDM workflow may require further refinement of the TAZ structure.

Figure 2 – Revised Draft Traffic Analysis Zones

