



MEMORANDUM

Date: May 22, 2013

Contract #: 11.53166
TO-2

To: El Dorado County Community Development Agency Transportation Division

From: Jim Damkowitz, Kittelson & Associates Inc.

Project: El Dorado County DOT Engineering On-Call

Subject: El Dorado County DOT Travel Model Development Peer Review

1. REQUEST FOR INFORMATION

Per the request of the El Dorado County Community Development Agency Transportation Division (Division), Kittelson & Associates has performed a peer review of the draft El Dorado County Travel Model Development and supporting documentation (Kimley-Horn and Associates, April 15, 2013). The Division recognizes the need for accurate and defensible travel demand forecasting capabilities to predict changes in travel patterns and measure the utilization of the transportation system in response to changes in regional development, demographics, and transportation supply. The update to the Division's Travel Demand Model (TDM) will provide the Division the capability to generate technical information pertinent to the understanding of travel behavior and transportation network performance within the county. This information is critical to the development, updating and monitoring of the county's transportation Capital Improvement Program (CIP), update of the Traffic Impact Mitigation (TIM) Fee program, analysis of specific transportation projects and programs, development of transportation strategies and policies, and monitoring environmental factors such as air quality and climate change.

The following model checks were performed.

- Land Use Summary Check – Countywide and by traffic analysis zone (TAZ): Baseline to General Plan (GP) out year trend;
- External traffic growth assumption check;
- Trip Purpose and Trip Generation check (productions and attractions);
- Verify person trip vs. vehicle trip Origin-Destination (OD) matrix;
- 5-D Application assessment;
- Zone connector checks and volume plot to identify if any connectors are carrying zero volume;
- Identify network improvements and check/verify network coding conventions – check against County's CIP list;

- Baseline vs. Out-Year volume difference plots – check logical link volume growth;
- Volume comparisons for up to 10 key facilities relative to past forecasts; and,
- Check and verify static validation statistics (if available and documented);

Findings, suggested improvements, and modifications, if any, are provided below. General observations and recommendations are provided in the Summary section.

1. LAND USE SUMMARY CHECK

The 2010 baseline and 2035 forecast housing and employment inputs and were checked for consistency across all TAZs.

- Two TAZs showed negative growth in households (HH) between 2025 and 2035 (-81 HH in TAZ 432 and -46 HH in TAZ 364). A logical explanation should be provided (i.e., demolition, redevelopment etc.).
- One TAZ showed loss of non-retail office employment between 2025 and 2035 (-154 employment in TAZ 432). A logical explanation should be provided (i.e., demolition, redevelopment etc.).
- Between 2010 and 2025 a 42 percent growth in countywide multi-family HH is projected which drops to less than 2 percent from 2025 to 2035. An explanation for this growth rate sequencing should be provided in the model documentation.
- Between 2010 and 2025 a 23 percent and 30 percent growth is projected in countywide K-12 students and college students respectively. Between 2025 and 2035 no growth is assumed for either. An explanation for this growth rate sequencing should be provided in the model documentation.
- The new model's 2035 out-year housing inputs reflect 2,500 more HH and 5,000 more employment than in the previous model build-out of the General Plan.
- Model documentation needs to provide better explanation of land use development by analysis year. Simply referencing the SACMET model is not adequate.

2. EXTERNAL TRAFFIC GROWTH ASSUMPTION CHECK

- External TAZ 668 representing Amador County has link attributes of a roadway rather than a centroid. This is inconsistent with coding convention.
- Summing across all model gateways that have modeled volumes, an annual average growth rate of 1.3 percent between 2010 and 2035 is assumed by the model.
- Gateways with modeled volumes were checked relative to the SACMET07 model and the Statewide Travel Model and were found to be generally consistent.
- Many model gateways do not have traffic volume assigned on them.

3. TRIP PURPOSE AND TRIP GENERATION CHECK

- All trip rates for the model were borrowed from the SACMET07 model which are based on the 2000 Household Travel Survey. Not only are these trip production and attraction rates based on survey information over 13 years old – they reflect the trip making characteristics of the six-county SACOG region as whole. The following data sources are available for updating the model trip generation specific to El Dorado County:
 - 2010 Census
 - 2010 American Community Survey (ACS)
 - 2010 Census Transportation Planning Products (CTPP)
 - Household Travel Surveys
 - California Household Travel Survey (CHTS), 2010
 - National Household Travel Survey (NHTS), 2009
- Model documentation needs to describe the balancing of trip productions and attractions. For instance, the SACMET model balances to productions for all trip types except for Home Based Work which balances to attractions.
- At a minimum, to verify the model trip distribution step is accurately emulating actual trip behavior in El Dorado County, the Model Documentation Report needs to report for each trip purpose the model derived trip length frequency distribution relative to circa 2010 home based survey (Census, ACS, CHTS, NHTS) empirical trip length frequency distribution. This can be reflected in a single graph for each trip purpose.

4. VERIFY PERSON TRIP VS. VEHICLE TRIP OD MATRIX

- Model begins with a person trip OD table and converts to a vehicle trip OD table after Mode Choice. This is the preferred approach.

5. 5-D APPLICATION ASSESSMENT

- Several agencies have implemented adjustment processes, most commonly referred to as “5D”. A common issue when applying “D” adjustments is the tradeoff between automation versus transparency i.e., the more you let the model do the more difficult it may be to track exactly what it is doing. Although trip and VMT reductions are identified - it is unclear which trips and what trip types and at what trip lengths have been factored out of the model OD table. Empirically, person trips should not be factored or removed from the trip table. In reality, the 5D’s, Smart Growth, Transit Oriented Design etc., do not eliminate person trips – rather, fewer or shorter vehicle trips are made. This can result in accountability issues i.e., trips are simply factored out (disappear) and the model could be considered a black box by stakeholders (Caltrans). Kittelson & Associates has found that travel models can have much of the required sensitivity to smart growth if TAZs are small

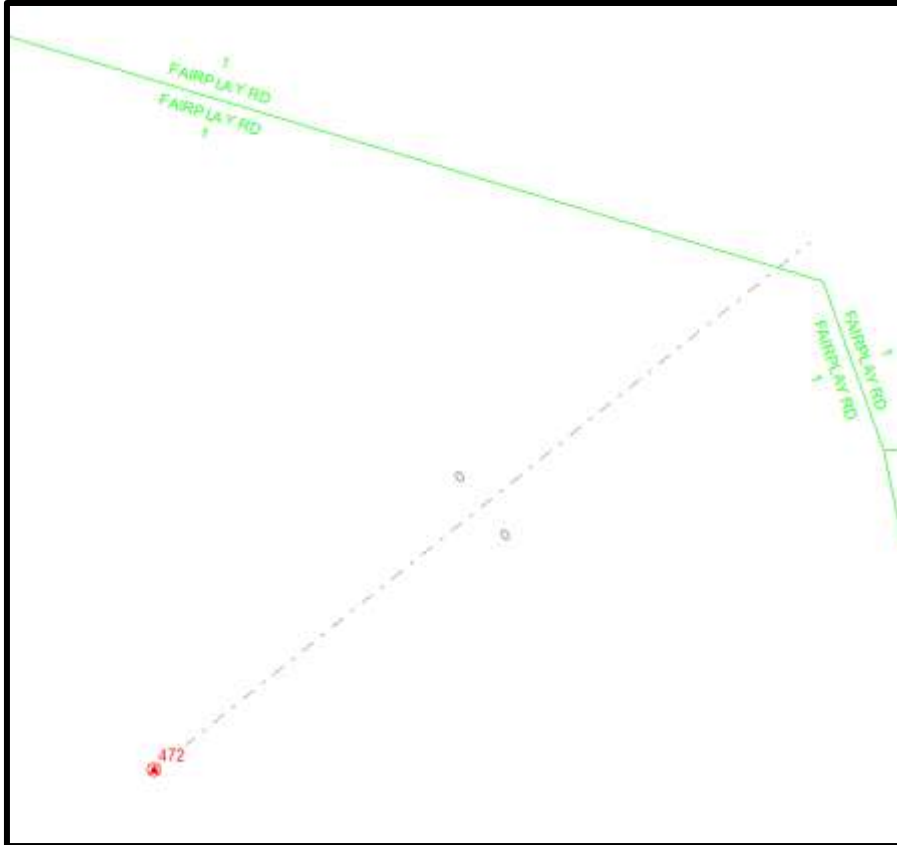
enough in areas of interest to represent good access for transit and walk/bike trips, and if the model is appropriately sensitive to short trips and non-motorized modes. Detailed geographic representation of TODs enable the model to pick up many of the Ds' effects such as density (small TAZs can represent the shorter walk distances in dense areas), diversity (small TAZs can represent the short distances between mixed uses) and destinations. However, travel models (including activity-based models) are generally insensitive to specific urban design features which encourage alternative modes.

- A number of TAZs (149, 152, 157, 160, 169, 173, 184, 185, 187, 188, 256, 261, 284, 355, 362, 395, 401, 422, 424, 433, 453 and 624) in the 5D land use files (TOT5D) were not derived correctly. They were all given too high a reduction 10% versus 2% per the calculation conventions described in the model documentation Exhibit 10 (p. 23).
- A summary with- and with-out 5D comparative trip generation (productions, attractions and intra-zonal trips) should be performed and documented for those TAZs that recorded high 5D composite scores.
- For better transparency, the model script should be revised to generate total trips and VMT before and after the 5D adjustment.
- To check – total trips and vehicle miles of travel (VMT) were summed for a model run without the 5D processor and with the 5D processor. As shown below, the average trip length for vehicle trips reduced by the 5D process are twice as long as the average trip length for the model as a whole. Given that the 5Ds should typically reduce shorter trip lengths (walking, biking, intra-city transit) this is not an intuitive result. As stated previously, although trip and VMT reductions are identified - it is unclear which trips and what trip types and at what trip lengths have been factored out of the model OD table.

	2035	2035_5D	DIFFERENCE
VT (from OD)	2,067,560	2,049,151	18,409
VMT (Net File)	10,101,659	9,921,871	179,788
AVG_TRIP_LENGTH	4.89	4.84	9.77
* excludes zone connectors			

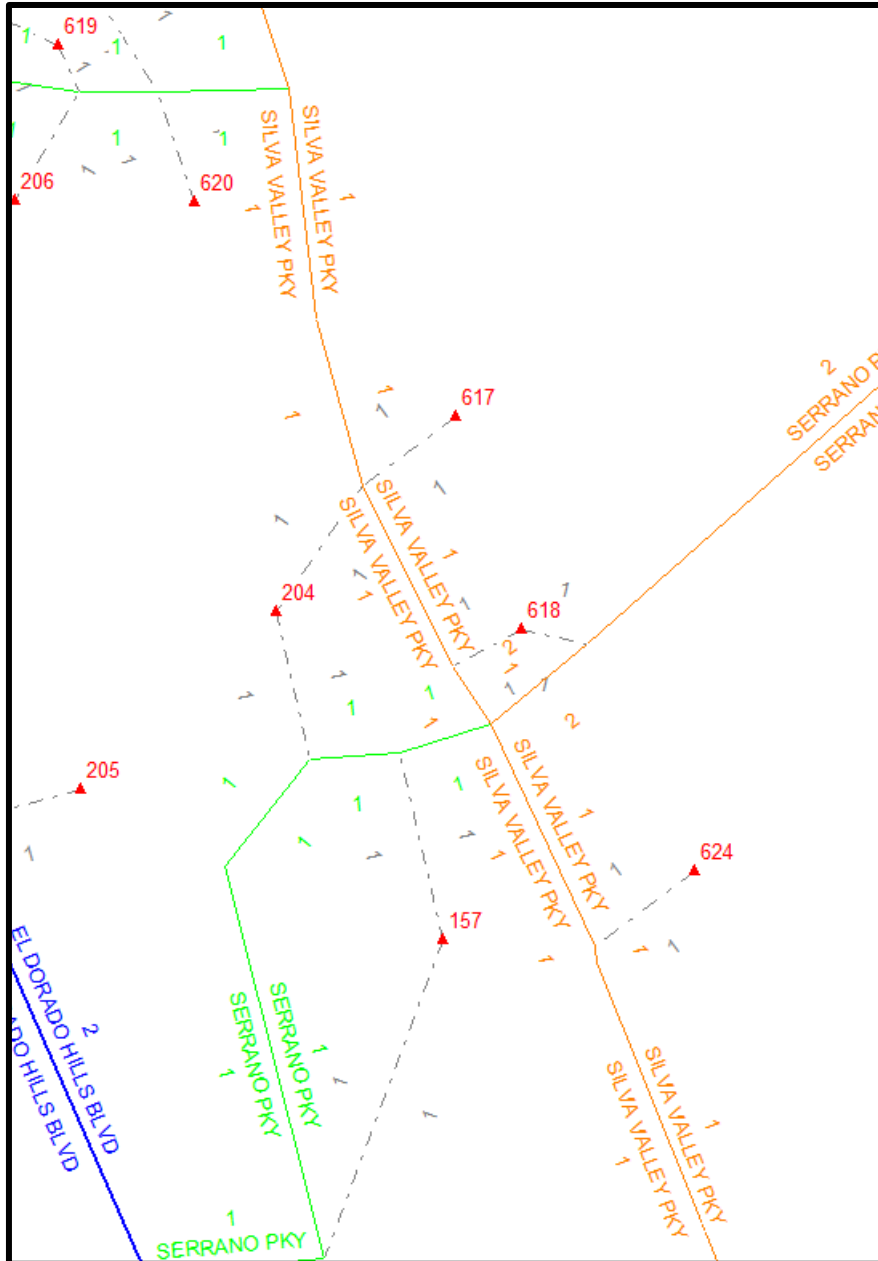
6. ZONE CONNECTOR CHECKS

- Three TAZs were found not to be connected to the model network (TAZ 472, 573, 606). This error precludes trips originating from these zones from loading onto the model network or attracting trips to these zones. See screen shot of a disconnected TAZ 472.
- Intra-zonal trips account for approximately 9.2% of total trips. This is reasonable.



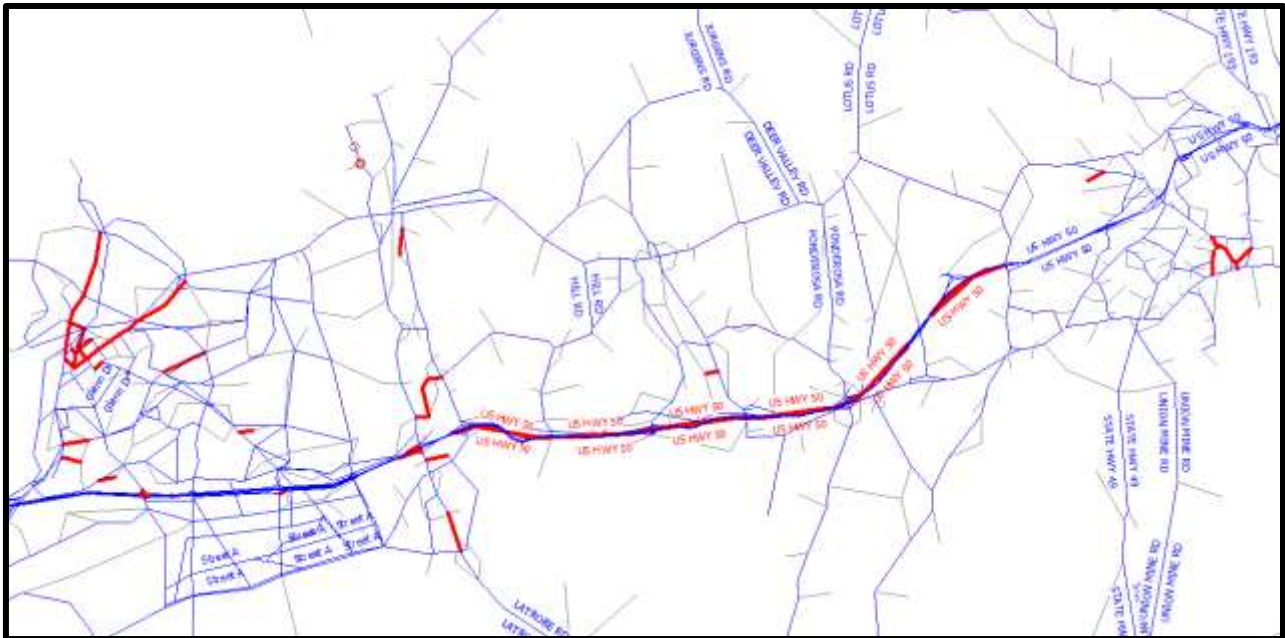
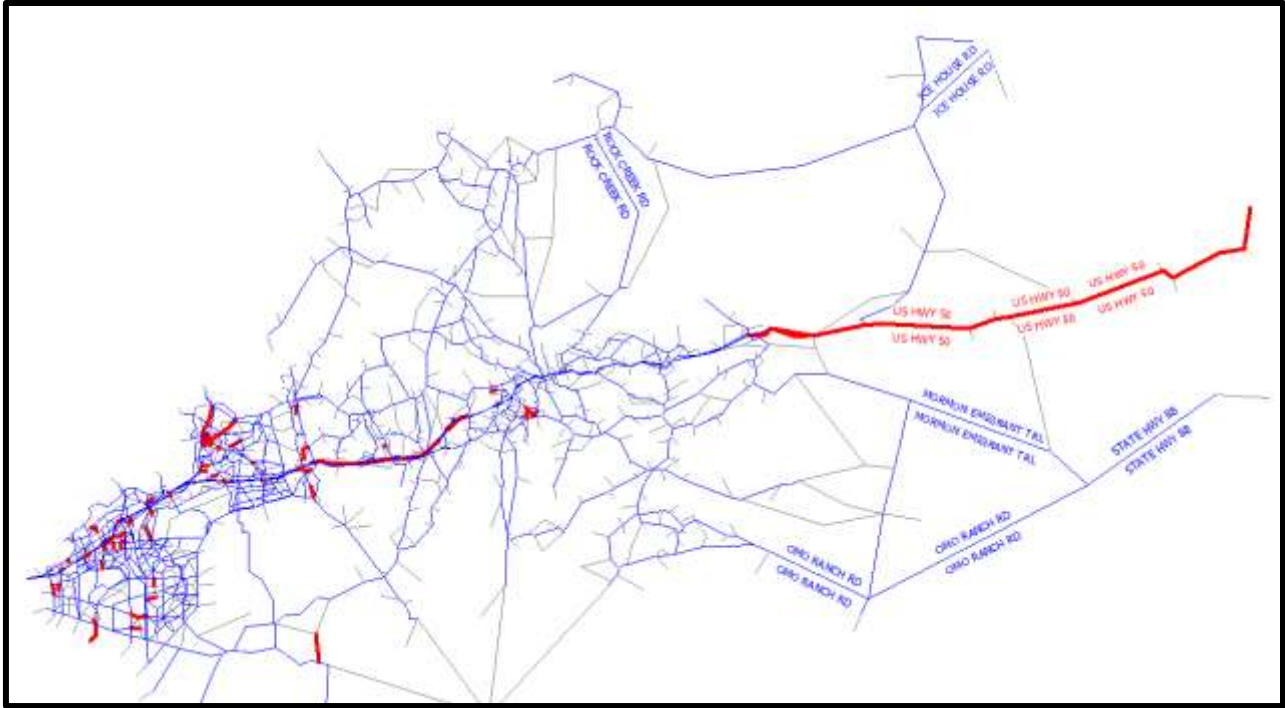
7. MODEL NETWORK AND COUNTY CIP CHECK

- One improvement that is currently constructed is not reflected in the model network. Silva Valley Parkway (Entrada Drive to Harvard Way) widening from 2 to 4 lanes is not reflected in either the baseline or future year network. Network screenshot below shows the number of lanes coded in each direction on Silva Valley Parkway.



8. BASELINE VS. OUT-YEAR VOLUME CHECK

- A number of roadways show negative growth between 2010 and 2035. These include various portions of US 50. Although there can be logical explanations for roadways showing less volume in the future than present i.e., new businesses come in that allure customers from existing businesses etc. – to see this on the major freeway connection is a potential red flag and requires further explanation. See volume difference plots – links shown in red have at least 100 fewer trips under future conditions relative to baseline.



9. VOLUME COMPARISONS FOR UP TO 10 KEY FACILITIES

- As documented in Exhibit 27 on the draft Model Development Report – several county roadway segments do not meet minimum accuracy criteria for validation. The following includes roadways that carry > 20,000 ADT:

- El Dorado Hill Blvd s/o Saratoga Way
- Latrobe Road n/o White Rock
- Missouri Flat Road (Forni to Plaza Drive)

The following includes roadways that carry > 9,000 ADT:

- Cameron Park Drive n/o Robin Lane
- Serrano Parkway e/o Silva Valley Parkway
- Cambridge Road at US50 Over-crossing
- Green Valley Road w/o Cameron Park Drive
- White Rock Road w/o Latrobe Road

9. CHECK AND VERIFY STATIC VALIDATION STATISTICS

- All baseline model volumes reported in the Model Documentation Report (April 15, 2013) for validation purposes could not be replicated. KAI re-ran the baseline model using both networks provided and with- and with-out 5D were unsuccessful in replicating the results reported in the Model Documentation Report.
- Until cited model volumes are reproducible the veracity of the validation results cannot be determined.
- All links cited during validation should include the link ID for easy verification.
- The Model Documentation Report should provide complete information on the AM and PM peak period validation – include AM and PM peak period traffic counts.
- In addition to the typical link-based validation analysis, several dynamic validation exercises should be performed to ensure that the model properly responds to changes in inputs, i.e., that the magnitude and direction of model behavior makes sense. Such exercises include:
 - Addition and deletion of housing units within highest populated areas (given the relatively low population density, several adjacent TAZs can be selected);
 - Addition and deletion of the number of employees at one or two high employment centers; and,
 - To test network sensitivity, a hypothetical bypass can be coded.

SUMMARY AND RECOMMENDATIONS

Based on the above reviews and evaluations, KAI has a number of recommendations to improve the El Dorado County Travel Demand Model. These recommendations have been broken down into three categories: immediate clean-up items, follow-up checks and validation, and big picture recommendations. These recommendations are detailed below:

- Clean-Up Items:
 - Revise external zone 668 representing Amador County link attributes consistent with centroids.
 - Update 5D trip reductions in the 5D land use file to reflect the scoring given in Exhibit 10 in the Model Documentation Report (TAZs 149, 152, 157, 160, 169, 173, 184, 185, 187, 188, 256, 261, 284, 355, 362, 395, 401, 422, 424, 433, 453 and 624).
 - Connect the three TAZs currently disconnected from the model network (TAZs 472, 573, 606).
 - Update baseline and/or future model networks to reflect the existing number of lanes on Silva Valley Parkway
 - Update the 5D script to include VMT and trips reductions

- Follow-Up Checks and Validation:
 - Check TAZ 432 and TAZ 364 for future land use to verify existing negative growth from 2025.
 - Verify K-12 and College Student growth, as well as low density multifamily households to ensure that low- and zero-growth rates are correct.
 - Check model gateways that have no volume.
 - Validate negative volume growth from 2010 to 2035 to ensure appropriate assignment and volume growth, particularly for segments currently estimated to have reduced trips in 2035 relative to the baseline.
 - Verify replication of model volumes and validation statistics used for the static validation to ensure the model meets the FHWA and Caltrans MOEs for model validation.
 - Test the validity of the model using dynamic validation techniques to ensure that the model responds to changes in the expected manner.
 - Examine model in relation to the identified high-volume roadways that did not meet minimum accuracy criteria. The following includes roadways that carry > 20,000 ADT:
 - El Dorado Hill Blvd s/o Saratoga Way
 - Latrobe Road n/o White Rock
 - Missouri Flat Road (Forni to Plaza Drive)The following includes roadways that carry > 9,000 ADT:
 - Cameron Park Drive n/o Robin Lane
 - Serrano Parkway e/o Silva Valley Parkway
 - Cambridge Road at US50 Over-crossing

Green Valley Road w/o Cameron Park Drive
White Rock Road w/o Latrobe Road

- Model Documentation Clean Up:
 - Model documentation needs to provide better explanation of land use development by analysis year. Simply referencing the SACMET model is not adequate. For instance, the 2035P Land Use File reflects a decrease in 2,601 households. What is the basis for this land use scenario and how will it be used?
 - Model documentation needs to describe PA balancing. For instance, the SACMET model balances to productions for all trip types except for HBW which balances to attractions.
 - Model Documentation Report needs to report for each trip purpose the model derived trip length frequency distribution relative to circa 2010 survey (Census, ACS, CHTS, NHTS) empirical trip length frequency distribution. This can be reflected in a single graph for each trip purpose.
 - All baseline model volumes reported in the Model Documentation Report (April 15, 2013) for validation purposes could not be replicated. KAI re-ran the baseline model using both networks provided and with- and with-out 5D were unsuccessful in replicating the results reported in the Model Documentation Report.
 - A summary with- and with-out 5D comparative trip generation (productions, attractions and intra-zonal trips) should be performed and documented for those TAZs that recorded high 5D composite scores.
 - Document dynamic validation exercise (see follow up actions).

- Over-arching Recommendations
 - Do not carry forward two versions of the model network.
 - Do not carry forward two versions of the model land use file
 - Develop trip generation and attraction rates based on 2010 survey information specific to El Dorado County (not 2000 survey data borrowed from SACMET07)
 - Do not employ the 5D Processor for model validation. Continue to perform refined checks and document that the 5D Process is producing empirically reasonable results.
 - Re-validate model after clean-up and follow-up checks have been performed
 - Update the Model Documentation Report accordingly.



COMMUNITY DEVELOPMENT AGENCY

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Phone (530) 621-5900, Fax (530) 626-0387

August 23, 2013

Michael Schmitt
Kimley-Horn & Associates, Inc.
11919 Foundation Place
Suite 200
Gold River, CA 95670-6600

Subject: County of El Dorado Travel Demand Model Documentation Comments

Dear Mr. Schmitt,

In accordance to Task 1.14, Kimley-Horn & Associates will finalize user's manual based on one complete set of consolidated comments from the County. Based on revisions made to contract, County agreed that all comments to Technical Memorandums would be incorporated into the final user's manual and model documentation. These comments are provided below.

Task 1.4/1.9 – Technical Memorandum #1: Existing Land Use and Socio Economic Data
Technical Memorandum #6: Trip Generation & Distribution

Page 2

1. Under Developing Base 2010 Model Inputs, #2, Should we try to differentiate the vacant homes from the occupancy rates for each TAZ?

Page 4

2. The last bullet point, it states “manufacturing/other.” Is this correct? Should it be 2 separate categories?

Page 5

3. Under Trip Distribution, 2nd paragraph, 1st line, eliminate “to” after “gravity model.”
4. Under Trip Distribution, 2nd paragraph, 5th line, should “model choice” read “modal choice” or “mode choice”?

Page 8

5. On Exhibit 3 – Circulation Element /2025 Model Network Comparison, 1) is this the correct title, or should it read 2035? 2) Is this truly a network comparison?

Page 9

6. Verify that the values in Exhibit 4 – Analysis of Base Year Household and Employment Estimates (1) reflect the final values for consistency purposes.

Page 10

7. Verify that the values in Exhibit 5 – Model Comparison are still correct.

Task 1.5/1.10 – Technical Memorandum #2: Model Sensitivity to EDC Policies and Factors
Technical Memorandum #7: Mode Choice

Page 1

1. On the 1st paragraph, define the 5D's.

Task 1.6 Technical Memorandum #3: Revised Roadway Network

General Comment

1. See attached documents for revisions to roadway network.

Task 1.7 Technical Memorandum #4: TAZ Development and Consideration

Page 1

1. On Page 1, under the Review of Available TAZ Data, bullet point 1, verify the # of TAZ's is correct and that it is consistent with Exhibit 5 in Technical Memorandums #1 and #6.
2. On 2nd bullet point, 2nd sentence, revise “note” to “not”.

Page 5

1. Update Figure 2

Task 1.8 Technical Memorandum #5: Traffic Counts and Transit Ridership Data

Page 3

1. In Table B, it states that we have subway and railroad trips. Revise.

Task 1.11 Technical Memorandum #8: Assignments

Page 16

1. Under Section VIII- Validation of Peak Hour Assignments, what about transit data?
2. Under Section X – Validation Summary and Conclusions, reference the exhibit shown below for model wide validation criteria, bullet out any exceptions for the roadway class RMSE and percent error results.

Task 1.12 Technical Memorandum #9: Software Automation and Administration

General Comments

1. The directions preceded the example. Create separate pages in order for the directions to be on the same page as the example.
2. Will the changes proposed by Colby Brown revise any of the exhibits in Technical Memorandum #9?
3. The total # of pages in the footer require revision (i.e. Page 11 of 10)
4. For consistency, we should call the model the 2013 TDM update vs. 2012.

Task 1.14 User's Manual and Model Documentation (dated May 2013)

General Comments

1. For consistency, we should call the model the 2013 update vs. 2012. Revise as necessary
2. Provide an abbreviations list used throughout the document.
3. County has been given feedback that the User's Manual and Model Documentation is difficult to follow and not thorough. For example, locating the special tools or simple things such as how to print screenshots, or scenarios is not simple to figure out. It appears that there is a disconnect between the Draft user's manual dated January 31, 2013 and the model documentation dated May 2013. Some information is included in one document and not the other.
4. Formatting needs to be consistent. For example some Figure headings are bold, where others are not, or how exhibits are titled or referenced in the document. Revise for consistency.
5. Provide a glossary of terms used throughout the document.
6. Include the transit ridership data.

Page 1

7. Under Section 1.1, there is a discussion of Measure M, RCP and MPAH, however, those are not applicable to El Dorado County. Appears it is a cut and paste remnant.

Page 2

8. Under 2.1.1- Data Set Review, 2nd bullet, should be "not" instead of "note."

Page 6

9. Update Exhibit 2 to reflect the current TAZ map.

Page 10

10. Define CIP as Capital Improvement Program. This is the first time this is mentioned in document.

Exhibits 4 and 5

11. Show that Saratoga Way exists west of El Dorado Hills Boulevard. It does not connect to Iron Point at this time. The connection is a future road.

Exhibit 6

12. We need to include a representation of the Latrobe Connector which is mentioned in text, but not on map.

Page 16

13. On the 3rd bullet, add the following language: Although SACOG data was used, El Dorado County staff reviewed areas with significant non-residential uses and adjusted the retail and non-retail uses based on the actual use.

14. On Section 2.4, on the 5th line, insert “the” before “EDC Model”
15. On Section 2.4, 2nd paragraph, 1st line, eliminate “to” before “where” and add “an” prior to “origin”.
16. On Section 2.4, 2nd paragraph, 2nd line, eliminate “of the size.”
17. On Section 2.4, 2nd paragraph, 3rd and 4th lines, the sentence should read, “...the attractiveness of the destination as determined by travel distance or travel cost..”

Page 17

18. Under Section 2.5.1, the title should be “Mode Choice Model Review” or “Modal Choice Model Review.”

Page 19

19. Under Section 2.5.3 – Application of the 5D process, should an apostrophe be used when stating “5D’s”?

Page 31

20. Under Section 2.6- Model Assignment and Validation, the majority of the introductory paragraph is repeated in Section 2.6.1. Revise as necessary. Additionally the last sentence “the validation process as described in this memorandum,” however, the revised information will no longer be in a memorandum.
21. Under 2.6.1, 1st paragraph, define FHWA and Caltrans and MOEs.

Page 32

1. On the 2nd line, eliminate “are”.
2. Define RMSE and NCHRP.

Along with the revised document, please provide a response to comments so that we can track the revisions. In addition, please include your final responses to comments from the attached draft Kittelson & Associates peer review letter. If you have any questions or need clarification, call me at (530) 621-5977 or via e-mail at claudia.wade@edcgov.us. You may also contact Natalie Porter at (530) 621-5442 or via e-mail at Natalie.porter@edcgov.us.

Sincerely,

Natalie Porter, P.E, T.E.
Senior Civil Traffic Engineer
Community Development Agency, Long Range Planning Division

Attachments

c: David Defanti, Assistant Director of Community Development Agency
Claudia Wade, CDA Long Range Planning Division

El Dorado County Travel Demand Model 2012 Update

October 14, 2013

FINAL Consolidated Staff and Peer Review Comments Responses

Task 1.4/1.9 – Technical Memorandum #1: Existing Land Use and Socio Economic Data

Technical Memorandum #6: Trip Generation & Distribution

File Reviewed: KHA Technical Memorandum No 1 8_31_12_4.pdf

#	Comment	Page #	Resolution
1.	Under Developing Base 2010 Model Inputs, #2, Should we try to differentiate the vacant homes from the occupancy rates for each TAZ?	2	Vacancy rates by TAZ are provided in Exhibit 2. No update required.
2.	The last bullet point, it states “manufacturing/other.” Is this correct? Should it be 2 separate categories?	4	Manufacturing/Other is a stated employment category in SACMET. No update required
3.	Under Trip Distribution, 2nd paragraph, 1st line, eliminate “to” after “gravity model.”	5	Updated as noted.
4.	Under Trip Distribution, 2nd paragraph, 5th line, should “model choice” read “modal choice” or “mode choice”?	5	Updated to “mode choice”.
5.	On Exhibit 3 – Circulation Element /2025 Model Network Comparison, 1) is this the correct title, or should it read 2035? 2) Is this truly a network comparison?	8	Title updated to “SACOG Small Area Dataset Employment Rates”
6.	Verify that the values in Exhibit 4 – Analysis of Base Year Household and Employment Estimates (1) reflect the final values for consistency purposes.	9	Updated as noted.
7.	Verify that the values in Exhibit 5 – Model Comparison are still correct.	10	Verification completed.

*Task 1.5/1.10 – Technical Memorandum #2: Model Sensitivity to EDC Policies and Factors
 Technical Memorandum #7: Mode Choice
 File Reviewed: KHA DraftTechnical Memorandum_2-7_Mode_Choice_5D_112712.pdf*

#	Comment	Page #	Resolution
1.	On the 1st paragraph, define the 5D's.	1	Updated as noted.

*Task 1.7 – Technical Memorandum #4: TAZ Development and Consideration
 File Reviewed: KHA DraftTechnical Memorandum No 4 6_19_12b.pdf*

#	Comment	Page #	Resolution
1.	On Page 1, under the Review of Available TAZ Data, bullet point 1, verify the # of TAZ's is correct and that it is consistent with Exhibit 5 in Technical Memorandums #1 and #6.	1	Updated as noted.
2.	On 2nd bullet point, 2nd sentence, revise "note" to "not".	1	Updated as noted.
3.	Update Figure 2	5	Updated as noted.

*Task 1.8 – Technical Memorandum #5: Traffic Counts and Transit Ridership DataFile
 Reviewed: KHA Technical Memorandum No 5 7_30_12.pdf*

#	Comment	Page #	Resolution
1.	In Table B, it states that we have subway and railroad trips. Revise.	3	Values verified as being provided in Census. Table not updated to reflect this comment because the source would no longer be Census. Text updated to address this abnormality.

*Task 1.11 – Technical Memorandum #8: Assignments
 File Reviewed: KHA DraftTechnical Memorandum Validation 112112.pdf*

#	Comment	Page #	Resolution
1.	Under Section VIII- Validation of Peak Hour Assignments, what about transit data?	16	Discussion under Section I now addresses transit validation.
2.	Under Section X – Validation Summary and Conclusions, reference the exhibit shown below for model wide validation criteria, bullet out any exceptions for the roadway class RMSE and percent error results.	16	Updated as noted.

Task 1.12 – Technical Memorandum #9: Software Automation and Administration
File Reviewed: KHA Technical Memorandum_9_Automation_042513

#	Comment	Page #	Resolution
1.	The directions preceded the example. Create separate pages in order for the directions to be on the same page as the example.	N/A - General	Updated as noted.
2.	Will the changes proposed by Colby Brown revise any of the exhibits in Technical Memorandum #9?	N/A - General	Model enhancements recommended by Colby Brown could logically result in additional/revised documentation.
3.	The total # of pages in the footer require revision (i.e. Page 11 of 10)	N/A - General	Updated as noted.
4.	For consistency, we should call the model the 2013 TDM update vs. 2012.	N/A - General	Updated as noted.

Task 1.14 – User’s Manual and Model Documentation (dated May 2013)
File Reviewed: KHA Draft Model Report_052813_v2.doc

#	Comment	Page #	Resolution
1.	For consistency, we should call the model the 2013 update vs. 2012. Revise as necessary	N/A - General	Updated as noted.
2.	Provide an abbreviations list used throughout the document.	N/A - General	Glossary added as noted.
3.	County has been given feedback that the User’s Manual and Model Documentation is difficult to follow and not thorough. For example, locating the special tools or simple things such as how to print screenshots, or scenarios is not simple to figure out. It appears that there is a disconnect between the Draft user’s manual dated January 31, 2013 and the model documentation dated May 2013. Some information is included in one document and not the other.	N/A - General	Model descriptions, as requested by County staff, are provided in three distinct volumes. Please note that model documentation was limited to use of the EDC model and is not provided in lieu of existing CUBE or Window operating system literature. In response to other specific comments, several enhancements to documents that improve the usability of model documents have been completed.
4.	Formatting needs to be consistent. For example some Figure headings are bold, where others are not, or how exhibits are titled or referenced in the document. Revise for consistency.	N/A - General	First reference to an exhibit is shown in Bold, subsequent references to that exhibit are not bolded.
5.	Provide a glossary of terms used throughout the document.	N/A - General	Updated as noted.
6.	Include the transit ridership data.	N/A - General	Transit data has been added to an updated Technical Memorandum #5 which is being resubmitted at the same time.

#	Comment	Page #	Resolution
7.	Under Section 1.1, there is a discussion of Measure M, RCP and MPAH, however, those are not applicable to El Dorado County. Appears it is a cut and paste remnant.	1	Removed as noted.
8.	Under 2.1.1- Data Set Review, 2nd bullet, should be "not" instead of "note."	2	Updated as noted.
9.	Update Exhibit 2 to reflect the current TAZ map.	6	Updated as noted.
10.	Define CIP as Capital Improvement Program. This is the first time this is mentioned in document.	10	Updated as noted.
11.	Show that Saratoga Way exists west of El Dorado Hills Boulevard. It does not connect to Iron Point at this time. The connection is a future road.	Exhibit 4 and 5	Updated as noted.
12.	We need to include a representation of the Latrobe Connector which is mentioned in text, but not on map.	Exhibit 6	Updated as noted.
13.	On the 3rd bullet, add the following language: Although SACOG data was used, El Dorado County staff reviewed areas with significant non-residential uses and adjusted the retail and non-retail uses based on the actual use	16	Updated as noted.
14.	On Section 2.4, on the 5th line, insert "the" before "EDC Model"	16	Updated references to EDC model to EDC TDM for consistent terminology
15.	On Section 2.4, 2nd paragraph, 1st line, eliminate "to" before "where" and add "an" prior to "origin".	16	Updated as noted.
16.	On Section 2.4, 2nd paragraph, 2nd line, eliminate "of the size."	16	Updated as noted.
17.	On Section 2.4, 2nd paragraph, 3rd and 4th lines, the sentence should read, "...the attractiveness of the destination as determined by travel distance or travel cost.."	16	Updated as noted.
18.	Under Section 2.5.1, the title should be "Mode Choice Model Review" or "Modal Choice Model Review"	17	Updated to "Mode Choice"
19.	Under Section 2.5.1, the title should be "Mode Choice Model Review" or "Modal Choice Model Review"	19	Removed apostrophe.
20.	Under Section 2.6- Model Assignment and Validation, the majority of the introductory paragraph is repeated in Section 2.6.1. Revise as necessary. Additionally the last sentence "the validation process as described in this memorandum," however, the revised	31	Updated as noted.

#	Comment	Page #	Resolution
	information will no longer be in a memorandum.		
21.	Under 2.6.1, 1st paragraph, define FHWA and Caltrans and MOEs.	31	FHWA and Caltrans MOEs for validating the EDC TDM are summarized separately in Exhibits 19 – 22.
22.	On the 2nd line, eliminate “are”.	32	Updated as noted.
23.	Define RMSE and NCHRP.	32	Updated as noted.

Task 2.2 – Peer Review

File Reviewed: Model Files and other documentation not provided directly by KHA (unsure of version number)

Section	Comment	Resolution
1	Two TAZs showed negative growth in households between 2025 and 2035 (-81 HH in TAZ 432 and -46 HH in TAZ 364). A logical explanation should be provided (i.e., demolition, redevelopment etc).	Zones 364 and 432 are located within Placerville. Household and Employment for Placerville, as well as Rancho Cordova and Folsom in the model is based on SACMET data while the rest of the County is based on a detailed land use forecast developed for the EDC model. SACMET datasets show a decrease in HH between 2020 and 2035 for the two specified zones; as a result, the interpolated 2025 data reflects negative growth. The corrected zonal input file for 2025 reverts to the 2035 HH and EMP if 2025>2035.
1	One TAZ showed loss of non-retail office employment between 2025 and 2035 (-154 employment in TAZ 432). A logical explanation should be provided (i.e., demolition, redevelopment etc).	See response to comment above
1	Between 2010 and 2025 a 23 percent and 30 percent growth is projected in countywide K- 12 students and college students respectively. Between 2025 and 2035 no growth is assumed for either. This does not appear to be a reasonable growth pattern -a logical explanation should be provided.	Interpolated 2025 K12 and College students using the 2020 and 2035 SACMET datasets. Updated 2025zbas input file.
2	External zone 668 representing Amador County has link attributes of a roadway rather than a centroid. This is inconsistent with coding convention.	Changed link attributes to Centroid Connector.
2	Many model gateways do not have volume.	No change. Numerous gateways were created to represent possible locations where trips could enter/exit the EDC TDM study area. Similarly,

Section	Comment	Resolution
		the SACMET model also has gateways with zero volumes.
3	At a minimum, to verify the model trip distribution step is accurately emulating actual trip behavior in El Dorado County, the Model Documentation Report needs to report for each trip purpose the model derived trip length frequency distribution relative to circa 2010 home based survey (Census, ACS, CHTS, NHTS) empirical trip length frequency distribution. This can be reflected in a single graph for each trip purpose.	Trip length distribution graphs and discussion has been added to Technical Memorandum #8.
5	A number of TAZs (149, 152, 157, 160, 169, 173, 184, 185, 187, 188, 256, 261, 284, 355, 362, 395, 401, 422, 424, 433, 453, 624) in the 5D land use files (TOT5D) were not derived correctly. They were all given too high a reduction 10% versus 2% per the calculation conventions described in the model documentation Exhibit 10 (p. 23).	Corrected scoring threshold for the 10% reduction at a 5D composite score of ≥ 30 and < 40 .
6	Three TAZ were found not to be connected to the model network (TAZ 472, 573, 606). This error precludes trips originating from these zones from loading onto the model network or attracting trips to these zones. See screen shot of a disconnected TAZ 472.	Fixed centroid connectors
7	One improvement that is currently constructed is not reflected in the model network. Silva Valley Parkway (Entrada Drive to Harvard Way) widening from 2 to 4 lanes is not reflected in either the baseline or future year network. Network screenshot below shows the number of lanes coded in each direction on Silva Valley Parkway.	Updated networks as noted.
5	A summary with- and with-out 5D comparative trip generation (productions, attractions and intra-zonal trips) should be performed and documented for those TAZs that recorded high 5D composite scores. For better transparency, the model script should be revised to generate total trips and VMT before and after the 5D adjustment.	The 5D script applies the trip reduction to the vehicle trip table prior to highway assignment. The catalog has been updated so that a spreadsheet file is generated that summarizes the number of vehicle trips and VMT with (2010_ASSIGNED_VT_SUMMARY_5D.csv) and without (2010_ASSIGNED_VT_SUMMARY.csv) the 5D reduction in effect. The files are saved to the 5D application directory.