March 1. 2014

Honorable Norma Santiago
Chairman of the Board of Supervisors
El Dorado County, Ca

RE: EDC traffic model and impact fees

There are many different types of forecasting from guessing to statistical trend and observation gathering. There are however required methodologies for constructing and evaluating transportation models.

Attached is the FED DOT sponsored guidebook on transportation model validation and calibration.

An essential model validation is the temporal validation (per guidebook) - especially with a declining trip trend line. One of the validation criteria is a backcast test as opposed to a forecast test. The model must reflect historical data modeling backwards. This presents a problem for the model consultant because that year is 2003 (trip counts higher than now). If we use the model to forecast from 2010 thru 2013, then it should also balance backcasting to 2003 according to the FED DOT guidelines.

In 2003, there were more trips than now on many roads including HWY 50 on/off ramps . To validate the model it would have to show increasing trips going back in time and decreasing trips going forward in time - as is the reality according to EDC's trip counts (ten years). The backcast test ferrets out the incorrect assumptions in the forecast model. If the model cannot perform the backcast validation function it should not be used to calculate mitigation fees or justify a nexus.

This model (TDM) is now specifically purposed to justify and set a certain level impact fee. Accurate up to date data should be used and it has not been. For instance, an old study is used (2000 Household Survey) and skews mitigation fees upward. Student populations are assumed to have a 30% growth when declining (county CBED's). Historical data for trip counts was not used. These observations expose the prejudices and flaws in the model. These prejudices drive impact fees higher.

Enclosed please find attachments of links to resource documents regarding transportation model validation. All models use cross checks across multiple categories for validation purposes. The model "must tell a coherent story" (FTA). The model may be submitted for review at the federal clearinghouse level (free).

The attached model validation guide (link directly below) reflects a model validation going back seven years for a backcast validation. The model consultant related no historical trip data was used in validating the model. This is an attempt to hide existing deficiencies.

EDC's transportation model must quantify existing deficiency data and "reflect reality as closely as possible". Our county is not a new subdivision as the model reflects.

EDC's jobs forecast derived from the model conflicts with reality – EDC has lost 5,786 jobs from 2007 to 2011(SACOG REGIONAL TRANSPORTATION MONITORING REPORT , AUG. 2013). Since 2001, we have added only 2,300 jobs in EDC. The transportation model predicts monumental job growth.

The model is not validated accordingly.

Respectfully,
Henry Batsel

FED DOT sponsored Guidebook on model validation and calibration- by Cambridge Systematics, Inc
https://connect.ncdot.gov/projects/planning/tpb%20training%20presentations/fhwa%20model%20validation%20handbook.pdf

Federal Highway Admin.
fhwa.dot.gov/planning/tmip/resources/sponsored_reports.cfm

The Travel Model *Improvement* Program

Travel Model Validation and Reasonability Checking Manual Second Edition

Helping Agencies Improve Their Planning Analysis Techniques

TMIP

Travel Model Improvement Program

2.3.1 Assessing Currently Available Validation Data

We have good historical counts

How well the validation data represent reality is a primary validation question. This question can be illustrated by a review of the veracity of commonly used validation data, traffic counts. Counts are often collected from multiple sources using multiple counting techniques. They may be stored as raw counts or factored counts, such as average annual daily traffic (AADT). Developing a validation dataset of average weekday traffic (AWDT) may be difficult due to the different sources, different counting methods (one-day, two-day, permanent traffic recorder), and reporting methods (raw axle counts, raw counts divided by average axle factors, AADT estimated from raw counts).

Even when traffic counts are collected and stored in a consistent manner, there can be substantial variation in day-to-day counts. Figure 2.4 summarizes data collected in 1994 from 21 continuous count stations in Florida. The number of count days at the sites ranged from 210 to 353. The counts were used to estimate the average annual daily traffic (AADT) for each site along with the standard deviations around those means. Figure 2.4 shows an "error bar" representing ±1.96 standard deviations as a percent of the AADT for each of the count sites. While it is not precisely correct in terms of statistics, roughly 95 percent of the daily counts should be expected to be within ±1.96 standard deviations of the AADT.

While the standard deviations shown in Figure 2.4 should have been less if only weekday traffic had been considered, the analysis underscores the issue of variability associated with all observed data collected using sampling procedures. Unfortunately, it is not always obvious how data have been collected or how much sampling error is inherent in the data.

Similar issues and concerns can be raised with many other types of data used for model validation purposes. Thus, as shown in Figure 2.3, an assessment of the data quality as well as the data availability should be performed for the development of any model validation plan.

2.3.2 Prioritizing Validation Data Collection Needs

The assessment of validation data coupled with the development of the checks to be included in the model validation plan can guide the setting of priorities for validation data collection. Specifically, if validation test priorities are established in the validation plan (see Figure 2.1), the data required for the highest-priority tests can be reviewed for availability and quality. Decisions can then be made regarding which data collection efforts will be most cost effective for improving overall model validation.

realized until the system validation is performed and modeled versus observed vehicle-miles of travel comparisons are performed.

Validation sequence should be considered in the validation plan specification. It is impossible to complete the model system validation prior to the completion of the model component validations. Establishing a sequence, where a model component is initially validated and applied for an initial full system "validation" using existing model components for the subsequent steps, might be an efficient approach. It is inevitable that some iteration will be required in the validation sequence for model components and the overall model system.

Types of Validation Checks

Four broad categories of validation checks will be used in this manual:

1. **Comparisons of base year model results to observations** might be considered "traditional" validation. The comparisons might be of model results to disaggregate data such as data from a supplementary survey not used for model estimation or to aggregate data such as traffic counts or transit boardings. Comparing base year model results to different aggregations of the data used to estimate or calibrate a model is not as sound of a validation practice as comparing to independent data. However, for some validation tests, the data used for model estimation or calibration are the only data available.

2. **Temporal validation** is an important aspect of model validation since, by definition, it implies comparing model results to data not used in model estimation. Both backcasts and forecasts may be used for model validation. For example, if a model is estimated using 2007 survey data, the model could be used to backcast to 2000 conditions, and compared to year 2000 traffic counts, transit boardings, Census Transportation Planning Package (CTPP) data, or other historical data. Likewise, if a model was estimated or calibrated using 2005 survey data, a "forecast" validation could be performed against 2008 data.

3. **Model sensitivity testing** includes several important types of checks including both disaggregate and aggregate checks. Disaggregate checks, such as the determination of model elasticities, are performed during model estimation. Aggregate sensitivity testing results from temporal validation. Sensitivity testing can also include model application using alternative demographic, socioeconomic, transportation supply, or policy assumptions to determine the reasonability of the resulting travel forecasts.

4. **Reasonableness and logic checks** include the types of checks that might be made under model sensitivity testing. These checks also include the comparison of estimated (or calibrated) model parameters against those estimated in other regions with similar models. Reasonableness and logic checks may also include "components of change" analyses and an evaluation of whether or not the models "tell a coherent story" as recommended by the FTA for New Starts analysis.

El Dorado County School Districts
CBEDS Retrospect
October 3, 2012

DISTRICT	2007	% of change from PY	2008	% of change from PY	2009	% of change from PY	2010	% of change from PY	2011	% of change from PY	2012	% of change from PY	enrollment change from PY
Black Oak Mine	1,847	-3.9%	1,743	-5.6%	1,650	-5.3%	1,636	-0.8%	1,570	-4.0%	1,420	-9.6%	
Buckeye Union	4,794	1.0%	4,792	0.0%	4,744	-1.0%	4,721	-0.5%	4,636	-1.8%	4,733	2.1%	97
CA Montessori Project	307	0.7%	308	0.3%	331	7.5%	352	6.3%	361	2.6%	+ 366	1.4%	5
Camino Union	450	0.9%	438	-2.7%	426	-2.7%	449	5.4%	473	5.3%	513	8.5%	40
El Dorado HS	7,284	-0.8%	7,259	-0.3%	7,061	-2.7%	6,966	-1.3%	6,908	-0.8%	6,873	-0.5%	
Gold Oak	692	-0.4%	633	-8.5%	589	-7.0%	550	-6.6%	493	-10.4%	445	-9.7%	
Gold Trail	552	0.5%	552	0.0%	542	-1.8%	541	-0.2%	543	0.4%	568	4.6%	25
Indian Diggings	31	-8.8%	26	-16.1%	23	-11.5%	18	-21.7%	22	22.2%	18	-18.2%	
Lake Tahoe	4,182	-2.5%	4,077	-2.5%	3,965	-2.7%	3,878	-2.2%	3,856	-0.6%	3,793	-1.6%	
Latrobe	197	-2.5%	181	-8.1%	178	-1.7%	171	-3.9%	170	-0.6%	150	-11.8%	
Mother Lode	1,450	-1.8%	1,386	-4.4%	1,356	-2.2%	1,225	-9.7%	1,196	-2.4%	1,141	-4.6%	
Pioneer	440	-2.2%	428	-2.7%	403	-5.8%	397	-1.5%	342	-13.9%	312	-8.8%	
Placerville	1,140	-3.5%	1,169	2.5%	1,211	3.6%	1,258	3.9%	1,278	1.6%	1,268	-0.8%	
Pollock Pines	768	-1.5%	745	-3.0%	720	-3.4%	699	-2.9%	704	0.7%	694	-1.4%	
Rescue	4,089	3.9%	4,108	0.5%	4,116	0.2%	4,065	-1.2%	3,994	-1.7%	3,899	-2.4%	
Silver Fork	19	5.6%	18	-5.3%	16	-11.1%	12	-25.0%	14	16.7%	10	-28.6%	
EDCOE	1,078	3.0%	1,041	-3.4%	1,077	3.5%	1,122	4.2%	1,079	-3.8%	1,029	-4.6%	
TOTAL	29,320	-0.4%	28,904	-1.4%	28,408	-1.2%	28,060	-1.2%	27,639	-1.5%	27,232	-1.5%	

Change from PY

1 up
17 down

1 up
3 below 2006
1 below 2003
12 below 2001

2001
2012
592
612
756
645
38
5489
192
16663
599
13415
935
3346
17
773

Montessori

total student population
2001 - 29,104
2012 - 27,232

down from 2001

CBEDS 2012 FINAL (2).xlsx,Retrospect,5/3/2013

El Dorado County
School Districts
CBEDS Retrospect
October 2008

DISTRICT	% of change from PY	2001	% of change from PY	2002	change from PY	2003	% of change from PY	2004	% of change from PY	2005	% of change from PY	2006	% of change from PY	2007	% of change from PY	2008	% of change from PY	enrollment change from PY
Black Oak Mine	1.1%	2,012	0.5%	2,022	0.5%	2,016	-0.3%	1,943	-3.6%	1,979	-3.6%	1,922	-2.9%	1,847	-3.9%	1,743	-5.6%	(104)
Buckeye Union	3.6%	4,100	3.4%	4,213	2.8%	4,279	1.6%	4,527	5.8%	4,623	5.8%	4,748	2.7%	4,794	1.0%	4,792	0.0%	(2)
CA Montessori Project												305	0.0%	307	0.0%	308	0.3%	1
Camino Union	3.8%	592	3.0%	555	-6.3%	521	-6.1%	507	-2.7%	492	-2.7%	446	-9.3%	450	0.9%	438	-2.7%	(12)
El Dorado HS	0.7%	6,612	2.9%	6,858	3.7%	6,981	1.8%	7,248	3.8%	7,411	3.8%	7,344	-0.9%	7,284	-0.8%	7,259	-0.3%	(25)
Gold Oak	-6.2%	756	-0.4%	756	0.0%	727	-3.8%	747	2.8%	716	2.8%	695	-2.9%	692	-0.4%	633	-8.5%	(59)
Gold Trail	0.9%	645	-2.3%	645	0.0%	610	-5.4%	553	-9.3%	543	-9.3%	549	1.1%	552	0.5%	552	0.0%	-
Indian Diggings	44.0%	38	5.6%	36	-5.3%	40	11.1%	40	0.0%	39	0.0%	34	-12.8%	31	-8.8%	26	-16.1%	(5)
Lake Tahoe	-1.2%	5,489	-3.9%	5,238	-4.6%	5,094	-2.7%	4,771	-6.3%	4,520	-6.3%	4,291	-5.1%	4,182	-2.5%	4,077	-2.5%	(105)
Latrobe	-2.8%	192	9.7%	203	5.7%	196	-3.4%	215	9.7%	210	9.7%	202	-3.8%	197	-2.5%	181	-8.1%	(16)
Mother Lode	-3.0%	1,663	1.5%	1,611	-3.1%	1,629	1.1%	1,574	-3.4%	1,550	-3.4%	1,477	-4.7%	1,450	-1.8%	1,386	-4.4%	(64)
Pioneer	4.0%	589	-0.3%	556	-5.6%	554	-0.4%	539	-2.7%	492	-2.7%	450	-8.5%	440	-2.2%	428	-2.7%	(12)
Placerville	-0.2%	1,345	2.9%	1,304	-3.0%	1,290	-1.1%	1,294	0.3%	1,210	0.3%	1,181	-2.4%	1,140	-3.5%	1,169	2.5%	29
Pollock Pines	-0.5%	935	-6.6%	851	-9.0%	804	-5.5%	799	-0.6%	797	-0.6%	780	-2.1%	768	-1.5%	745	-3.0%	(23)
Rescue	5.1%	3,346	4.0%	3,529	5.5%	3,624	2.7%	3,695	2.0%	3,811	2.0%	3,936	3.3%	4,089	3.9%	4,108	0.5%	19
Silver Fork	-41.2%	17	70.0%	17	0.0%	10	-41.2%	17	70.0%	16	70.0%	18	12.5%	19	5.6%	18	-5.3%	(1)
EDCOE	-5.4%	773	7.8%	754	-2.5%	708	-6.1%	899	27.0%	927	27.0%	1,047	12.9%	1,078	3.0%	1,041	-3.4%	(37)
TOTAL	0.7%	29,104	1.1%	29,148	0.2%	29,083	-0.2%	29,368	1.0%	29,336	-0.1%	29,425	0.3%	29,320	-0.4%	28,904	-1.4%	(416)

O:\Joni Campos\Web Page Links\CBEDS\Copy of CBEDS 2008 041509.xlsx

 — NOTE CURRENT DATA SOURCE

Table 1. Jobs and Employed Residents by County, 2000-2011

County	2001	2003	2005	2007	2009	2011	2012	Changes '01 to '07	Changes '07 to '11	Changes '11 to '12
Jobs†										
El Dorado	45,234	47,745	51,079	53,303	49,040	47,517	n/a	+8,069	-5,786	
Placer	119,531	129,289	135,945	139,928	126,151	128,189	n/a	+20,397	-11,739	
Sacramento	574,454	583,581	608,602	623,764	583,320	558,640	n/a	+49,310	-65,124	
Sutter	25,458	26,591	26,894	28,943	27,297	26,765	n/a	+3,485	-2,178	
Yolo	93,838	95,300	99,853	103,269	97,937	94,970	n/a	+9,431	-8,299	
Yuba	17,480	16,471	17,515	17,667	15,868	14,973	n/a	+187	-2,694	
Total	875,995	898,977	939,888	966,874	899,613	871,054	n/a	+90,879	-95,820	
Employed Residents‡										
El Dorado	80,500	83,200	86,800	85,800	81,600	79,500	81,100	+5,300	-6,300	+1,600
Placer	133,500	146,000	157,400	164,500	161,100	158,800	162,000	+31,000	-5,700	+3,200
Sacramento	596,400	618,300	632,500	640,000	604,900	596,500	608,400	+43,600	-43,500	+11,900
Sutter	34,700	35,300	36,200	37,100	34,900	34,700	35,300	+2,400	-2,400	+600
Yolo	83,800	86,100	87,400	92,100	87,700	85,500	87,200	+8,300	-6,600	+1,700
Yuba	22,700	22,700	23,400	24,800	23,500	22,700	23,100	+2,100	-2,100	+400
Total	951,600	991,600	1,023,700	1,044,300	993,700	977,700	997,100	+92,700	-66,600	+19,400

Source: SACOG, August 2013, based on data from California Employment Development Department.

† These estimates of jobs are based on unemployment insurance records submitted by employers, and omits some types of employment sites, such as home-based businesses. Location is based on the recorded location of the employer.

‡ These estimates of employed workers area based on surveys of residents in each county, and their employment status in the survey year. Location is based on the residence location of the respondent

TREND 5 YR NET 10 YR +2300 JOBS

11 YRS = +600 employed Res '11 to '12