SAN LUIS OBISPO COUNCIL OF GOVERNMENTS

STAFF REPORT

MEETING DATE:	**February 7, 2007**
SUBJECT:	**Draft Regional Traffic Model**

SUMMARY

The purpose of this staff report is to submit the Final Regional Traffic Model for Board review and approval. Development of the model began in FY 03/04 when the SLOCOG Board approved a contract with the transportation consulting firm Fehr & Peers develop a "*State of the Art*" Geographic Information System (GIS) based Regional Traffic Model. Since then the firm has worked closely with SLOCOG, Caltrans and local agencies to carry out a complex and comprehensive model development process. A complete draft (current and future 2015 and 2030 year) model was completed by the consultant last month. A full report on the model building process and its results was distributed to everyone (Caltrans and all local agencies) involved in its development in the first week on January and a meeting of the Model Development Team was held on January 22. SLOCOG staff also conducted a complete review of the document and provided detailed comments to the consultants to complete the model are prepares a final report.

The discussion section provides a summary of the major transportation infrastructure assumptions used in developing the 2015 and 2030 versions of the model. This is followed by an executive summary of the Model Development Report which summarizes the purpose of the model, the area and periods it covered and development of the base and future year versions. Attached with this agenda is the Model Development Report, which describes in step by step detail how it was developed, what data and sources were used, and the validation and calibration process. The model has been determined to be complete and in conformity with all the requirements identified in the scope of work. It is a "state of the art" GIS based model, and a significant tool for the analysis of proposed land use changes and transportation system improvements.

RECOMMENDATION

Staff: Adopt Regional Traffic Model
TTAC/ CTAC: Concur with staff recommendation
Model Development Team : Support

BACKGROUND

In FY 2003/04 SLOCOG Board approved a contract with *Fehr and Peers* to help develop a *"State of the Art*" Geographic Information System (GIS) based Regional Traffic Model. The development effort was divided into a series of work tasks carried out over four fiscal years (FY 2003-04 to 2006-07). Detailed work on the model that began in FY 03/04 included project scoping, data compilation and integration, and most of the calibration and validation of the base year model. Data on commercial and industrial building sizes being compiled by SLOCOG staff from the County Assessor's Office, and a socioeconomic projections study were developed by an Economic Research Associates (ERA) in FY 2005/06 which provided future growth scenario for the Regional Traffic Model. The final calibration and validation of the future year ("build-out") model was completed last month. The draft model results and report were reviewed and commented were received from the Model Development Team which consist of all the County, Caltrans, APCD and local jurisdictions staff.

DISCUSSION

Development of the future year (2015 and 2030) model scenarios required determining the changes in land use that were expected to occur and what major transportation infrastructure improvements were expected to be constructed for each time frame. Following allocation of the population and employment projections developed by the economic consultant (ERA) to the traffic zones used in the model, SLOCOG staff reviewed the results for completeness with planning staff from each city and the county and made adjustments as necessary. Following are the major state highway and interchange improvements estimated to be in place by 2015 and 2030 (widening of Route 101 to six lanes is not included).

Major State Highway and Interchange Improvements

South County:

2015

- Construct Route 101 operational improvements (Phases 1A, 1B, 1C & 2A)
- Modify Brisco/Halcyon Road interchange
- Construct Willow Road Interchange

2030

- Construct Route 101 operational improvements (Phase 2B)

Central County:

2015

- Construct Prado Road extension to Route 227
- Construct SB off/on-ramps for future Prado Road IC (assumes 50% buildout of Dalidio project)
- Construct Los Osos Valley Road interchange improvements

2030

- Construct full Prado Road interchange (assumes 100% buildout of Dalidio project)

North County:

2015

- Construct Route 46E/101 Ops Improvements and off/on-ramps at 17th St.
- Widen Route 46 East to four lanes from Airport Road to Shandon
- Signalize intersection of Airport Road and Route 46 East
- Construct roundabout on west side of Route 46 W interchange
- Realign Theater Drive and Vine Street and move intersection west

2030

- Construct interchange at intersection of Route 46E and Airport Road
- Widen Route 46E to four lanes from Shandon to one mile east of the 41/46 Junction
- Construct roundabout on east side of Route 46 W interchange

Model Development Report Executive Summary

Purpose of the Model

The San Luis Obispo Council of Governments (SLOCOG) is the designated regional planning agency for San Luis Obispo County, conducting long-range planning studies to ensure that the future county transportation system will be adequate to accommodate demand.

In 2003 SLOCOG commissioned the development of a computerized traffic model for use in developing the county's long-range Regional Transportation Plan and establishing a funding mechanism to finance future transportation infrastructure. There were already several different traffic models covering parts of SLO County at the time that the new model was commissioned. These models were of varying ages and quality, and used four different software packages. None of the existing models was capable of providing reliable estimates of traffic on roads of county-wide significance, which necessarily includes estimating traffic demand in areas not covered by local models.

Filling this gap in the planning process is the primary goal the SLOCOG Traffic Model. A secondary goal of the SLOCOG Traffic Model is to enable local jurisdictions to develop new city-wide models relatively cheaply and easily. All local streets in the county are already included in the model, as are the traffic analysis zones of existing city-wide models. Cities need only re-calibrate the model to local traffic counts to have their own state-of-the-art model that is fully functional and completely compatible with the regional model.

Area and Periods Covered by the Model

The study area for the SLOCOG Traffic Model encompasses SLO County in its entirety as well as a small portion of Santa Barbra County. The network file includes every road in the county, even local roads. Because of the necessarily coarse nature of the traffic analysis zones, many links in the network will have no traffic assigned to them.

Nevertheless it is useful to include these links to make it easier for users to orient themselves to locations in the network and also because some future user of the model may wish to use these links to study a local project.

The year 2004 was selected as the Base Year for the Model because it was the most recent year for which both land use and traffic count information was available at the start of the model development process. The model's future years are 2015 and 2030.

The model produces traffic forecasts for daily, AM peak-hour (7:00-8:00), and PM peak-hour (16:00-17:00) conditions. The peak hours were selected based on 24-hour traffic counts at twenty-three sites on state highways in SLO County.

The model is calibrated to traffic counts for what is conventionally termed a "typical workday", which is defined as a Tuesday, Wednesday, or Thursday in a week with no holidays when local schools are in session.

Base Year Version of the Model

Key validation standards based on the Caltrans guidelines for the SLOCOG traffic model are summarized below.

- All screen lines between major catchment areas are within Caltrans' maximum desirable deviation, which ranges from approximately 15 to 60 percent depending on total volume (the larger the volume, the less deviation is permitted)
- At least 75 percent of the roadway links should be within the maximum desirable deviation, which ranges from approximately 15 to 60 percent depending on total volume (the larger the volume, the less deviation is permitted).
- The two-way sum of the volumes on all roadway links for which counts are available should be within 10 percent of the counts.
- The correlation coefficient between the actual ground counts and the estimated traffic volumes should be greater than 88 percent.

Caltrans validation guidelines are explicitly applicable only to daily model results. However, the peak hour models is also checked against the same guidelines for informational purposes. Traffic Thirty-two sites traffic counts sites (sixty-four directional counts) were used to validate the SLOCOG model. The results for daily and peak hour conditions are summarized in Table 12 below. As can be seen from Table 12, the SLOCOG traffic model exceeds each of Caltrans' calibration criteria for all time periods.

Table 12: Summary of Assignment Validation Results

Validation Item	Criterion for Acceptance	Daily Model	AM Peak Model	PM Peak Model
% of Links within Caltrans' Deviation Standard	At Least 75%	82% ✓	78% ✓	77% ✓
Sum of 2-Way Volumes of All Counted Links	Within 10% of Actual	-6% ✓	+2% ✓	+1% ✓
Correlation between Counts and Model Forecast	At least 88%	96% ✓	92% ✓	94% ✓

Future Year Versions of the Model

The land use information used in the future year models were developed for SLOCOG by Economic Research Associates (ERA) and published in their report *Long-Range Socio-Economic Projections (Year 2030)*. Based on guidance from SLOCOG, the "Medium" growth projections were selected for use in the model. Table ES-1 summarizes the assumed changes in population, employment, and trips.

Table ES-1: Change in Trips Generated (including II, IX and XI)

	Base Year 2004	2015 Trips	Increase over Existing	2030 Trips	Increase over Existing
Total Population	260,727	288,426	10.6%	335,326	28.6%
Total Employment	97,500	116,700	19.7%	154,300	58.3%
Total Trips in Model	617,256	687,256	11.3%	854,275	38.3%

The future year model uses the same road network as the Base Year with modifications. The 2015 and 2030 model incorporates a number of changes in the roadway network from that used in the Base Year model.

For the year 2030 road network the model assumes an interchange will be built at the intersection of McMillan Road and Route 46 East and that Route 227 will be widened to four lanes from Los Ranchos Road to Price Canyon Road. Table ES-2 compares the daily volumes across six key screenlines for the three modeled years (see Figure ES-1).

Figure ES-1: Screenlines Used in Analysis

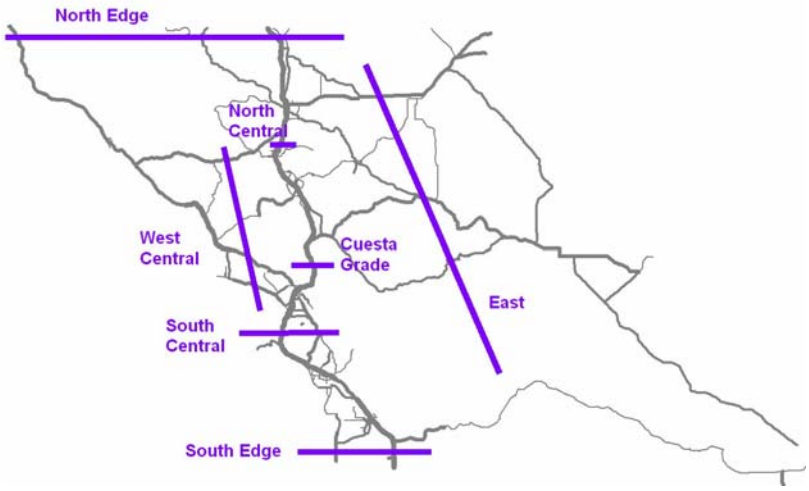

Table ES-2: Daily Volumes Across Screenlines for Three Modeled Years

	Base Year (2004)	2015	Increase over Existing	2030	Increase over Existing
North Edge	29,311	37,334	27%	57,016	95%
East	13,913	19,455	40%	28,991	108%
West Central	53,468	53,835	1%	67,385	26%
South Central	83,883	100,659	20%	140,663	68%
Cuesta Grade	41,112	56,492	37%	82,002	99%
South Edge	68,853	87,750	27%	128,530	87%

The differences in growth rates across the screenlines is mainly a function of the differences in the pace of development in different parts of the county. The relatively slow growth expected in Morro Bay and the northern coast are reflected in the low growth in traffic acre the west central screenline, while the rapid growth in Paso Robles and its vicinity are reflected in high growth rates shown for the northern, eastern, and Cuesta Grade screenlines.

The change in traffic conditions can also be seen by comparing Figures ES-2 and ES-3, which show the volume/capacity ratios for 2004 and 2030 conditions respectively.

Staff report by Mike Harmon & Phillip Chu

Figure ES-2: 2004 Model Daily Volumes and Volume/Capacity Ratios

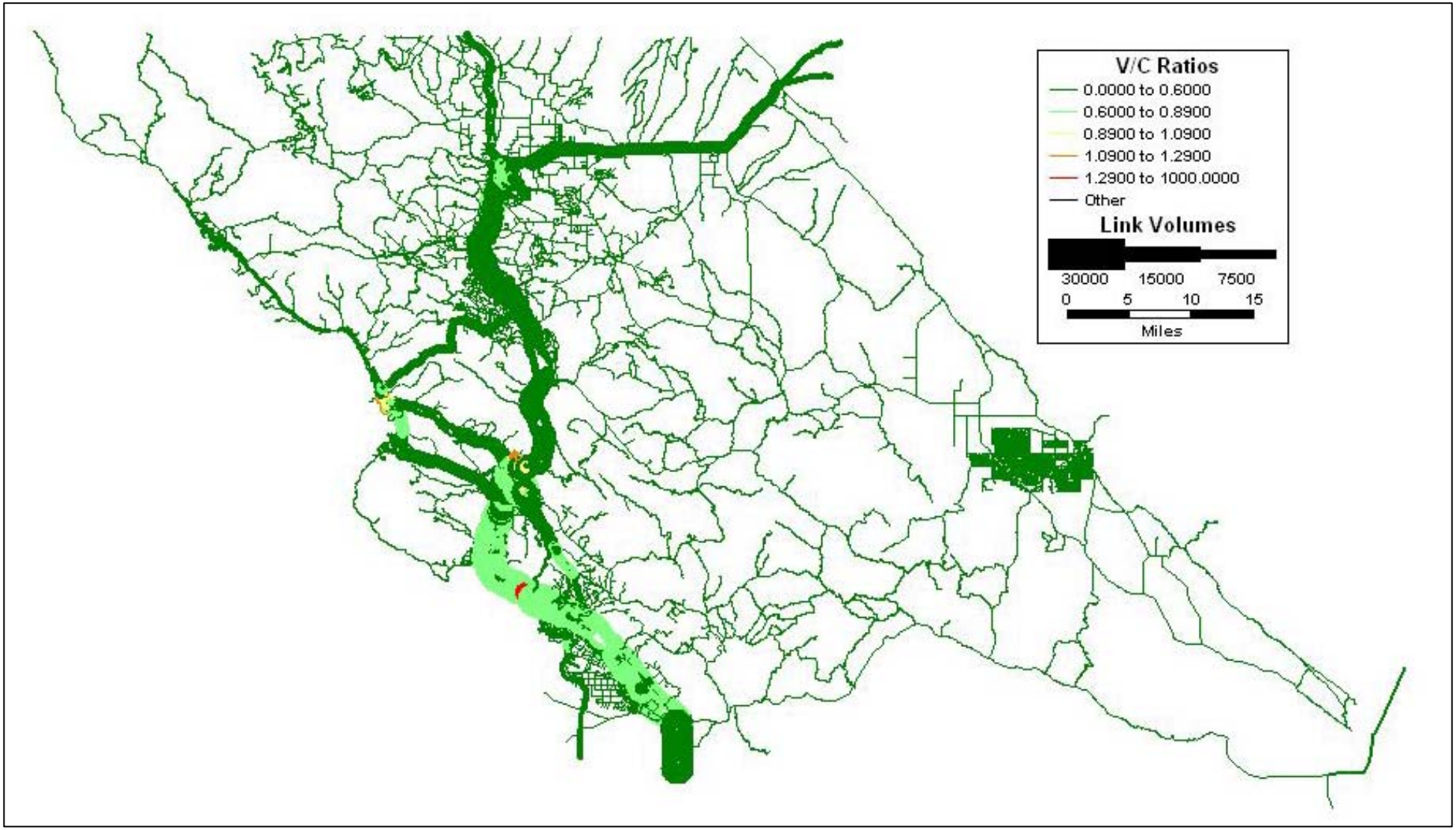

Figure ES-3: 2030 Model Daily Volumes and Volume/Capacity Ratios