Chapter II

CIRCULATION SUPPORT DOCUMENTATION

TRAFFIC ANALYSIS

To confirm the need for transportation improvements identified in the Circulation Element, a forecast of traffic volumes and Level of Service is prepared based upon the level of growth anticipated by the year 2030, the planning horizon for the General Plan. The forecast is based on the latest population, housing and employment projections prepared by StanCOG, the agency designated by the State to prepare these forecasts. These forecasts were adjusted to reflect additional growth anticipated by the cities or the County since the adoption of the StanCOG forecast. The traffic study is provided Appendix A.

AIR QUALITY ANALYSIS

The air quality analysis of the proposed improvements contained within this Circulation Element is provided in Appendix B. The federal Clean Air Act and federal transportation conformity rule require each transportation improvement program to demonstrate conformance with the federal air quality attainment plans. This analysis demonstrates that the regional emissions generated by the Circulation Element are consistent with the assumptions built into those air quality attainment demonstrations.

DESCRIPTION OF STATE HIGHWAYS

Following are brief descriptions of the State Highways that traverse Stanislaus County:

State Route 4
This State highway serves as a transportation link for travelers with origins and destinations in other counties. This route crosses the northern portion of the County in an east-west direction approximately six miles north of Woodward Reservoir. This route is important to recreational travelers from other areas in the State. Route 4 starts at Highway 80 in Hercules and terminates at Highway 89 near Markleeville.

Interstate 5
Interstate 5 provides a major service for north-south travelers and serves the interregional travel needs of Stanislaus County residents. Highway 132 and east-west county corridors provide access to this freeway. This freeway is also designated as the only scenic highway in Stanislaus County and is designated as a route for the transportation of radioactive materials. For further information concerning the transportation of radioactive materials, please consult the Safety Element.

State Route 33
This State highway serves as an important transportation link for residents in Grayson, Westley, Patterson, Crows Landing, and Newman since it passes through or near these cities or unincorporated communities. Route 33 runs generally parallel to I-5 in a north-south direction. This route originates in San Joaquin County and terminates in Ventura County.

State Route 99
This State route is the major north-south artery of the State, connecting Stanislaus County with the north and south central San Joaquin Valley areas. Route 99 passes through the most populated areas of the County including the Salida, Modesto, Ceres, Keyes, and Turlock urban areas. This includes linkage with State Routes 108, 132, 165, 219, Briggsmore Avenue, Hatch Road, Whitmore Avenue, Keyes Road, West Main Street, and other major county roads.

State Route 108
State Route 108 carries a high volume of traffic, particularly in the Modesto urbanized area. It begins in Modesto and is known locally as McHenry Avenue. The route changes direction at Patterson Road where it proceeds easterly through Riverbank to Oakdale. In Oakdale, Route 108 merges with Route 120 to carry travelers from Stanislaus County and other areas of the State to recreational areas of the Sierra Nevada and beyond.

State Route 120
State Route 120 begins at I-5 in San Joaquin County. In Oakdale, the route merges with State Route 108. This route is an important east-west link for travelers destined for the recreation centers of the Sierra Nevada. Severe traffic congestion within the City of Oakdale at the intersecting point of State Routes 108 and 120 has given rise to discussion concerning the possibility of a bypass. A preferred alternative route has been selected for the bypass.

State Route 132
State Route 132 is one of the main east-west routes of travel from I-5/580 that passes through the cities of Modesto, Waterford, and the town of La Grange. This route is primarily a two-lane road that is important to recreational travelers enroute to Modesto Reservoir, Turlock Reservoir, Lake Don Pedro, and the Sierra Nevada. Since1975, approximately 270 acres held as future right-of-way for an improved Route 132.

State Route 165
State Route 165 (Lander Avenue) begins in Turlock at State Route 99, travels south through Los Banos and connects with Interstate 5. This is a two-lane road primarily used as an agricultural truck route.

State Route 219
State Route 219 is the shortest State route within Stanislaus County. This route, only 4.7 miles long, begins at State Route 99 in Salida and ends at State Route 108. Businesses and commuters located in Salida, Modesto, Riverbank and Oakdale use this route.

J Routes
The "J" system is a state numbering and lettering system for interconnecting roads between two or more counties. Because roads and streets change names from one jurisdiction to the next, and in many cases change within a county, this system was established to allow routes to be shown on road maps more clearly using symbols rather than road names.

The counties immediately adjacent to Stanislaus County use the letter "J", whereas in counties further north and south, letters such as "A" and "N" are used. The individual counties install and maintain the signing for "J" routes without any direct assistance from the state.

The primary purpose of this system was for identification of county roads and gives continuity to streets and roads with changing names. The numbers used in conjunction with the established letter was set at the program's inception. While this system is not extensively used, it does provide easier transition between counties to the traveler.

WATER, PIPE AND UTILITY CONVEYANCE SYSTEMS

Introduction

Stanislaus County is threaded with a network of waterways, pipe and utility lines used to transport oil, natural gas, water, and electrical energy. To evaluate the circulation system, it is important to consider all forms of transport including those forms which move commodities through fixed systems.

Waterways

Important natural and constructed waterways are depicted in Figure II-1.

California Aqueduct:

The California Aqueduct, which begins about 30 miles east of San Francisco and passes through Stanislaus County parallel to Interstate 5, terminates near Riverside. It is the principal water conveyance facility of the State Water Project.

The principal purpose of the California Aqueduct is the delivery of water from a normally abundant source in Northern California to arid portions of Southern California to be used for irrigation and domestic purposes.

Delta-Mendota Canal:

The Delta-Mendota Canal is a federally owned project which was developed to aid flood control, enhance recreation and increase irrigation alternatives. This facility originates in San Joaquin County. It parallels I-5 and ends at the Mendota Slough in Fresno County. Several water districts within Stanislaus County contract with the Bureau of Reclamation for irrigation water from this canal.

Hetch-Hetchy:

The Hetch-Hetchy Aqueduct is an underground, enclosed system carrying domestic water from the Hetch-Hetchy Reservoir through the northern portion of the County, across the valley to San Francisco, as well as neighboring communities in most of San Mateo County and parts of Santa Clara and Alameda counties. Farmers have been given permission to farm within the Hetch-Hetchy right-of-way. However, no permanent structures are permitted within the right-of-way.

Irrigation Canals:

There are many miles of canals and ditches that distribute irrigation water to the farmlands of Stanislaus County. Presently, there are nineteen (19) irrigation and/or water districts formed to use and maintain this system.

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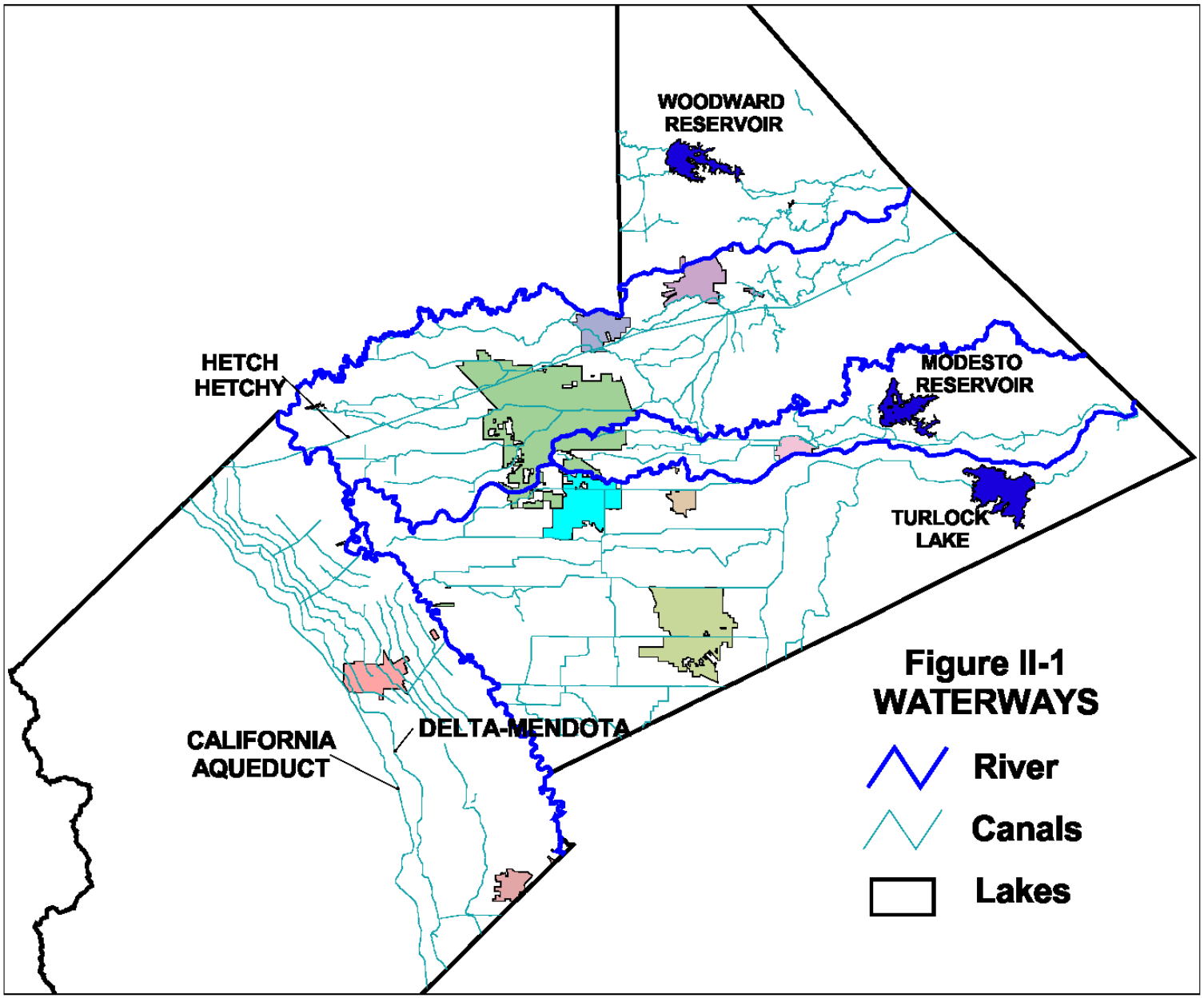
WOODWARD
RESERVOIR
HETCH
HETCHY
MODESTO
RESERVOIR
TURLOCK
LAKE
CALIFORNIA
AQUEDUCT
DELTA-MENDOTA
Figure II-1
WATERWAYS
River
Canals
Lakes

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Electric

The service area boundaries for the three major electric utility providers- Pacific Gas and Electric, Modesto Irrigation District, and Turlock Irrigation District- are shown in Figure II-2. Major electrical transmission lines and substations located in Stanislaus County are shown in Figure II-3.

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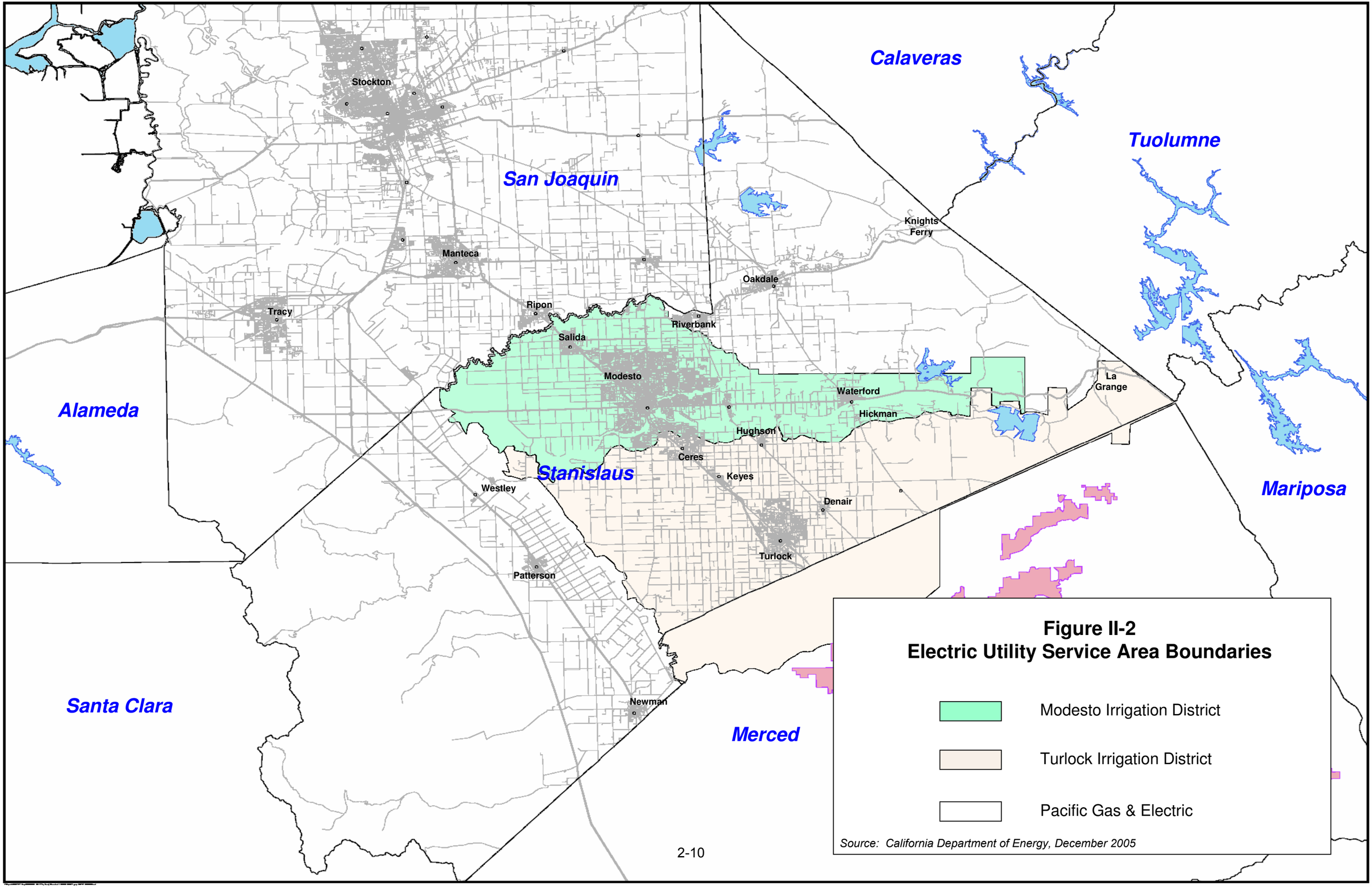
Calaveras
Tuolumne
San Joaquin
Stockton
Manteca
Tracy
Ripon
Salida
Modesto
Riverbank
Oakdale
Knights Ferry
Waterford
Hickman
La Grange
Hughson
Ceres
Keyes
Denair
Turlock
Stanislaus
Westley
Patterson
Newman
Alameda
Santa Clara
Merced
Mariposa
Figure II-2
Electric Utility Service Area Boundaries
Modesto Irrigation District
Turlock Irrigation District
Pacific Gas & Electric
Source: California Department of Energy, December 2005

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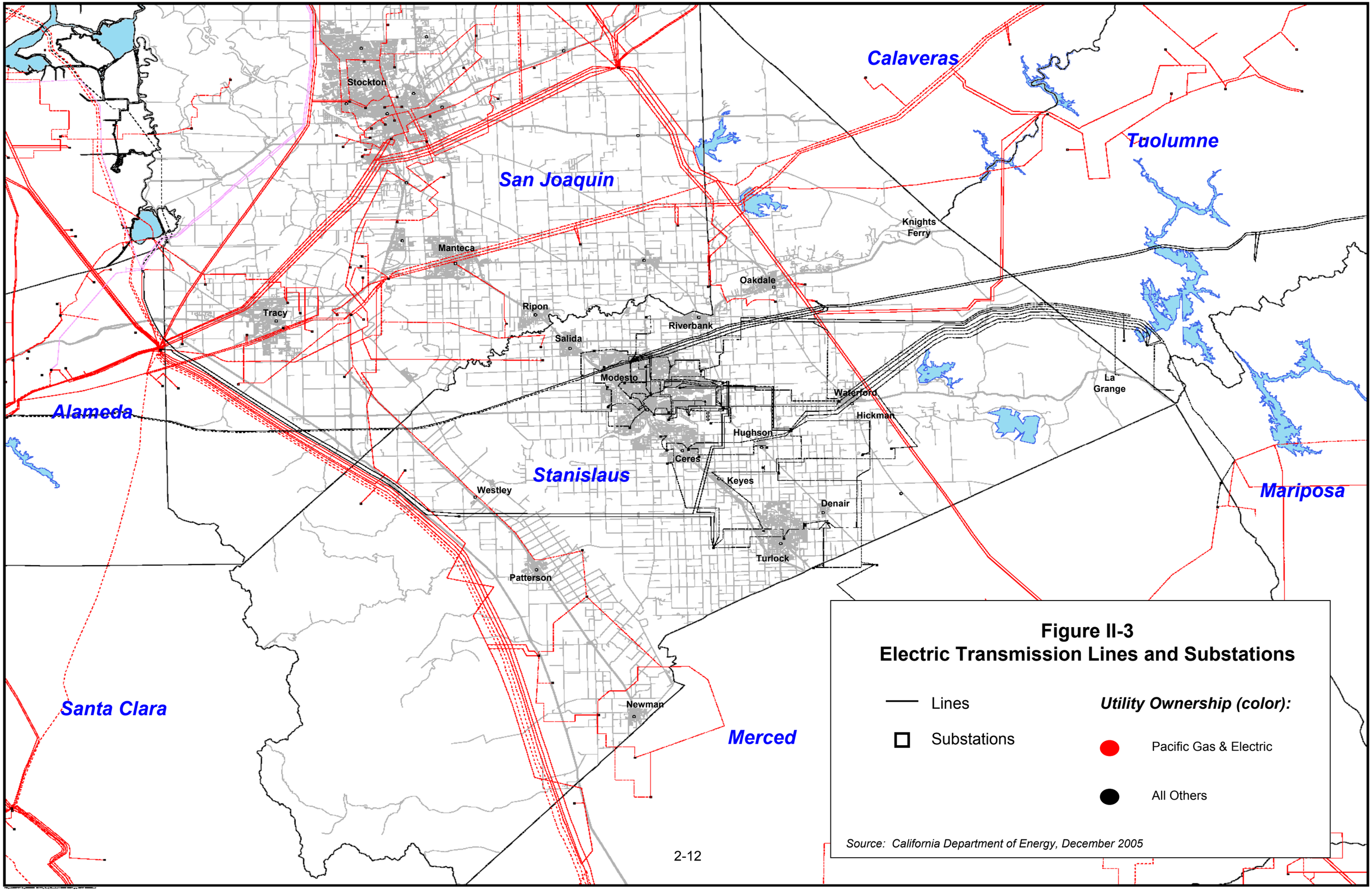

Figure II-3
Electric Transmission Lines and Substations

Source: California Department of Energy, December 2005

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Gas and Oil

Pipelines within Stanislaus County carry natural gas and crude oil, generally along highways and railroad lines (Figure II-4).

The crude oil pipelines traversing Stanislaus County are owned by Tosco, Kinder Morgan Energy Partners, Shell Pipeline, and Chevron Pipe Line companies. These lines run parallel to Interstate 5, State Route 33 and State Route 99.

Natural gas lines that traverse the County are owned and operated by Pacific Gas and Electric Company. The major supply line parallels Interstate 5. This line transports natural gas produced elsewhere to Stanislaus County residents and beyond.

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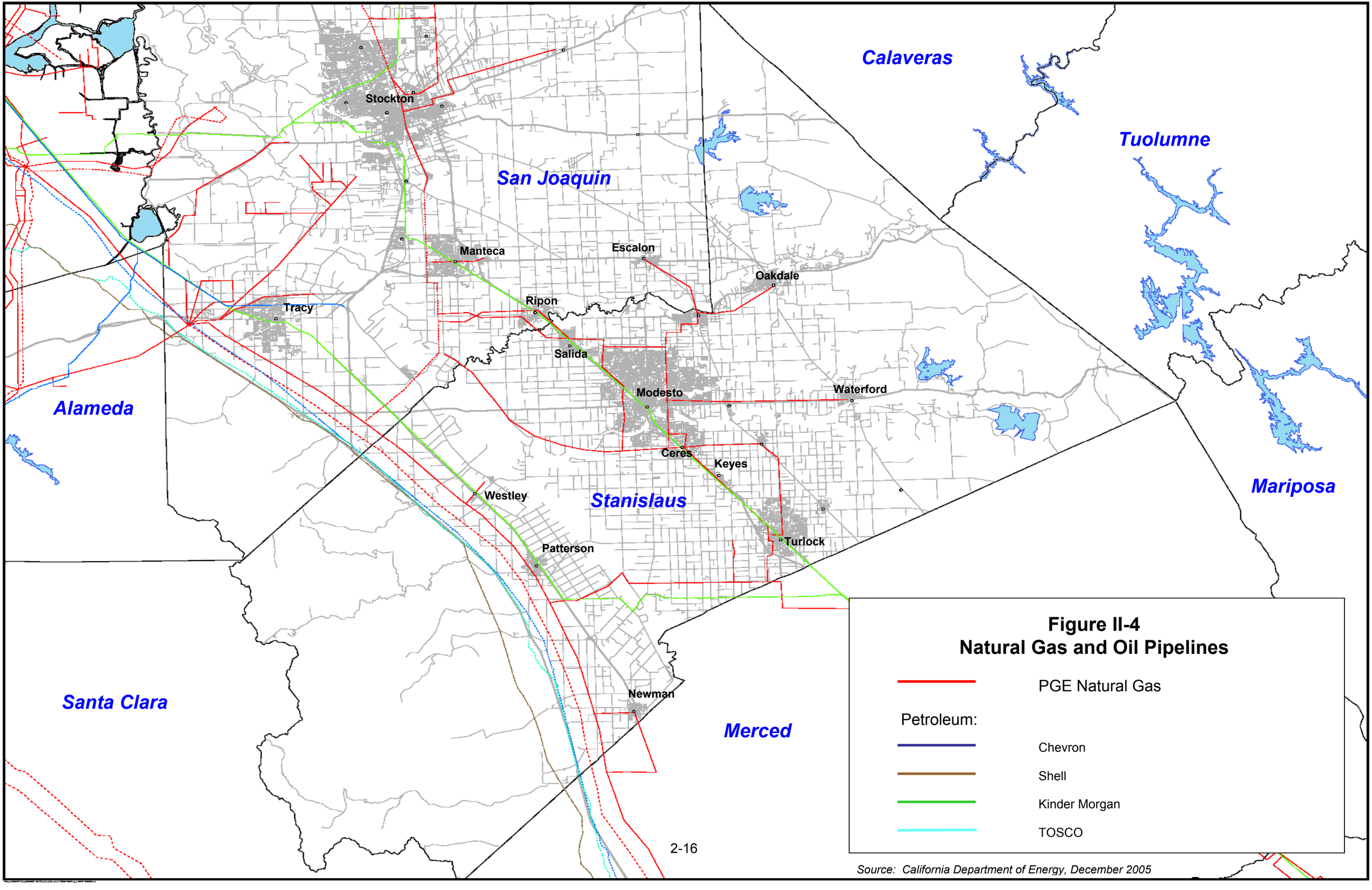

Source: California Department of Energy, December 2005

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APPENDIX A

TRAFFIC ANALYSIS

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Report for:

Traffic Analysis of Stanislaus County's Circulation Element

Prepared for:

Stanislaus County, Planning Department

November 26, 2005

Submitted by:

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Background

This report presents the results of a traffic analysis for the Program EIR for Stanislaus County's Circulation Element. This report documents the analysis comparing the traffic conditions of five scenarios using overall measures of effectiveness. The study uses a roadway link-based methodology to provide analysis of the projected traffic conditions for the various analysis scenarios.

The five scenarios analyzed include the following:

1. Existing Conditions
2. "No-Build" (of roadway system) Conditions
3. "Financially Constrained RTP" Conditions
4. "Financially Unconstrained RTP" Conditions
5. "Project" or Stanislaus County's Circulation Element

Approach

Preparation of StanCOG Models

The StanCOG 2000 and 2030 traffic models were obtained and modified to reflect the land use and network assumptions for each scenario. A detailed description of the network and land use used for each scenario is specified below:

- **Existing Conditions.** For this scenario, the model assumes the 2000 Land Use scenario (population, housing and employment projections) and the 2000 street and road network.
- **"No-Build" Conditions.** For this scenario, the model assumes the 2030 Land Use scenario and the Base Year 2000 street network. The StanCOG 2030 Land Use was modified to reflect the recent work done for the SR99 Interchanges PSR's. The households and employment used in the Salida Community Plan were aggregated to the current zone system in the 2030 StanCOG model. In addition, a 217% growth in employment and 154% growth in households in the build out conditions as specified in the Hughson General Plan were applied to the 2030 StanCOG forecast. This updated Land Use was used in all the forecast

scenarios. A summary of the households, population and employment is shown in Table 1.

- **"Financially Constrained" Conditions.** For this scenario, the model assumes the 2030 Land Use scenario and the 2030 street and roadway network. The 2030 street and road network used for this scenario assumes only capacity-increasing projects that would be built if StanCOG approves no other projects, as identified in the 1998 RTP. This scenario is equivalent to the project alternative identified as the "No-Project" or "Current Plan" Alternative in the StanCOG RTP EIR.
- **"Financially Unconstrained" Projects.** For this scenario, the model assumes the 2030 Land Use scenario and the 2030 street and road network, which would encompass all projects included in the No-Project scenario plus all projects submitted to StanCOG by member agencies, Caltrans, and other entities.
- **Circulation Element ("Project").** For this scenario, the model assumes the 2030 Land Use scenario and the 2030 street and road network as provided by the County Staff. Inside the Cities, all unconstrained projects were included as part of the 2030 network. In the County region, Stanislaus County Staff reviewed all roadway lanes and classification assumptions. Some network improvements and new roadway additions were also included like the direct connection from Claribel Ave to Highway 120 via Warnerville Road and Kiernan Ave to Hammett Rd.
-

Table 1: Projected Increases in Population, Households and Employment in Stanislaus County

	Estimated 2000	Projected 2030
Population	445,315	821,715
Households	145,154	264,974
Single Family	106,356	191,506
Multi Family	38,798	73,468
Total Employment	174,066	296,931

Source: StanCOG Land Use Projections 2004

Roadway Classification

The roadway network in the Stanislaus County Circulation Element is categorized into the following classifications:

- **Freeways –** A freeway may be defined as a divided highway with full control of access and two or more lanes in each direction for the exclusive use of high traffic volumes. These types of facilities serve primarily regional through trips and connect to other regional and interregional facilities.

- **Expressways –** An expressway has limited access to land uses via local streets and serves both regional and local trips. Expressways are further classified as Class A Expressway, Class B Expressway and Class C Expressway based on the capacity and access to local streets.

- **Major Streets –** Majors are assumed as 4-lane roadways and carry high volumes of local traffic. Local Streets feed into arterials that in turn feed into regional facilities such as expressways and freeways.

- **Collector Streets –** Collectors are 2-lane local streets that carry light to moderate traffic and serve adjacent land uses. They collect and distribute traffic from residential or local roadways to higher volume facilities like arterials.

Figure 1 shows the number of lanes assumed for the Circulation Element, while the roadway classification by Freeway, Expressway, Major, and Collector is shown in Figure 2.

Capacity Levels and LOS Criteria for Link Type

The capacity in vehicles per lane per hour and maximum number of lanes for each link type in the Circulation Element scenario was estimated based on discussions with the County Staff and using the StanCOG model capacity classes. Table 2 shows the facility type and capacity assumed for the analysis. Further, free flow speeds by facility classification and V/C ratio criteria for LOS standards were determined based on HCM 1994 as shown in Table 3. The County staff was consulted to confirm the impact threshold criteria to be used in the analysis.

The LOS standard in the current Stanislaus County General Plan is LOS C or better for all roadways. When measuring LOS, Stanislaus County uses the criteria established in the current edition of the Highway Capacity Manual published by the Transportation Research Board. Several of the cities in the county, including Newman, Riverbank, Oakdale, and Patterson have also adopted LOS C as a standard for all of their roadways. Turlock has adopted LOS C standards for freeways and expressways, and LOS D for arterials and collector streets. Modesto has a minimum threshold of LOS D.

Table 2: Capacity by Facility Type and Lanes

	CAPACITY (vehicles per lane)			
Classification	***2 lanes***	***4 lanes***	***6 lanes***	***8 lanes***
Freeways		1800	1800	1800
Class A Expressway		1500	1500	
Class B Expressway		1250	1250	
Class C Expressway		1000	1000	
Majors	1000	900	900	
Collectors	500	500		

Table 3: V/C Criteria for LOS Standards by Classification and Lanes

	Freeways[a]		Express-ways[b]	Majors		Collectors	
LOS	4 lanes	6+ lanes		2 lanes[c]	4+ lanes[d]	2 lanes[e]	4+ lanes[d]
A	0.32	0.30	0.30	0.07	0.28	0.07	0.28
B	0.51	0.49	0.50	0.19	0.47	0.19	0.47
C	0.75	0.71	0.70	0.34	0.66	0.34	0.66
D	0.92	0.88	0.84	0.59	0.79	0.59	0.79
E	1.00	1.00	1.00	1.00	1.00	1.00	1.00

a - Assuming 70 mph free flow speed for freeways (1994 HCM , Table 3-1, page 3-9)
b - Assuming 50 mph free flow speed for multilane highways (1994 HCM, Table 7-1 , page 7-8)
c - Assuming 60% No passing, Level Terrain for 2-lane road (1994 HCM, Table 8-1, page 8-5)
d - Assuming 45 mph freeflow speed for multiple highways for 4 or more lanes (1994 HCM, Table 7-1, page 7-8)
e - Assuming 60% No Passing, Level Terrain for 2 lanes (1994 HCM, Table 8-1, page 8-5)

Analysis of Each Scenario

The StanCOG model jobstream script was used to run the model for each of the 5 scenarios. The daily volumes produced by the model runs were used to estimate the volume to capacity (V/C) ratio, level of service (LOS), vehicle miles traveled (VMT), and vehicle hours traveled (VHT) and total vehicles for each scenario.

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Figure 1: Roadway Classification for the Stanislaus County Circulation Element

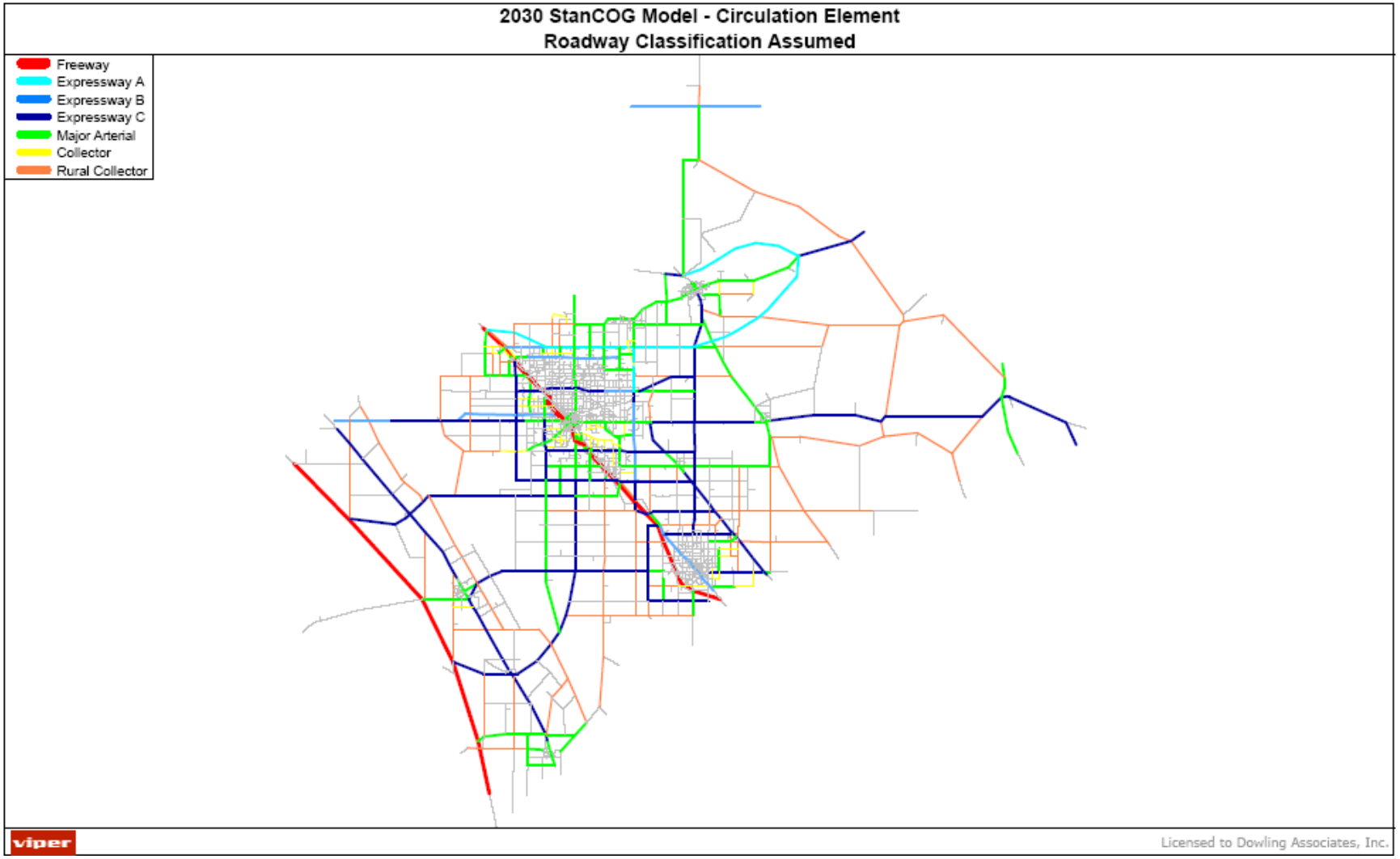

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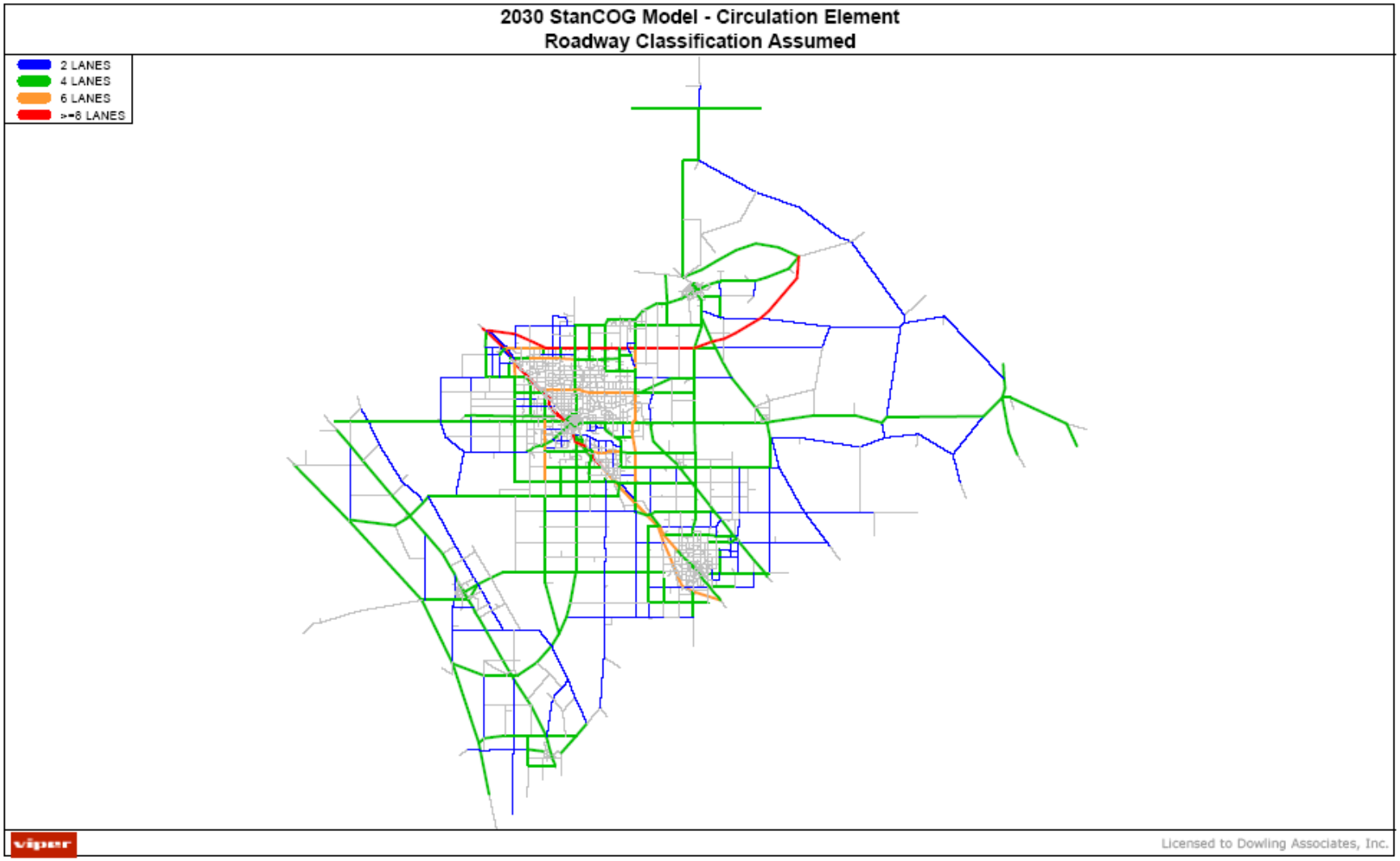
Figure 2: Lanes Assumed for the Stanislaus County Circulation Element



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Results

Measures of Effectiveness

The households and population in Stanislaus County are projected to increase by 85% and the employment by 70%. This results in an increase of trips made by people living in or working in Stanislaus County by about 80% by 2030. A comparison in person and vehicle trips is shown in Table 4.

Table 4: Person Trips and Vehicle Trips in Stanislaus County

	2000 Existing	2030 No-Build	2030 Constrained	2030 Unconstrained	2030 Project
Person Trips	1,720,105	3,121,265	3,121,627	3,121,631	3,121,632
Vehicle Trips	1,207,730	2,166,030	2,165,634	2,165,518	2,165,646
Percent Change in vehicle trips		79%	79%	79%	79%

The increase in person and vehicle trips causes an increase in vehicle miles traveled (VMT). The VMT also depends on the streets network available for vehicles and the congestion on the roadways. The Circulation Element roadway system is built out with increased lanes and some additional streets compared to the constrained and unconstrained scenarios, as seen in the comparison of lane miles in Table 5. As a result, people drive farther to avoid congested roadway sections. Table 5 compares the lane miles, VMT, vehicle hours traveled (VHT), and Average Speed. The average speed for the Circulation Element scenario is higher than other forecast scenarios due to the increase in lane miles and lower congestion. Table 6 shows the VMT by roadway classification.

Table 5: Comparison of VMT, VHT and Lane Miles

	2000 Existing	2030 No-Build	2030 Constrained	2030 Unconstrained	2030 Project
Lane Miles (miles)	3471	3471	3776	4271	4869
VMT (vehicle miles)	9,744,680	16,617,205	17,179,834	17,947,244	18,995,364
VHT (hours)	267,714	620,602	575,776	548,531	533,273
Average Speed (mph)	36	27	30	33	36

Table 6: Projected VMT by Roadway Class

Roadway Class	2000 Existing	2030 No-Build	2030 Constrained	2030 Unconstrained	2030 Project
Freeway	2,589,175	3,895,385	4,058,193	4,143,211	3,871,888
Expressway	0	0	0	0	6,915,383
Major	5,801,461	10,143,693	10,296,039	10,968,907	6,419,994
Collector	999,261	1,860,745	2,080,313	2,092,466	1,082,085
Local	354,783	717,382	745,289	742,660	706,014
Total	9,744,680	16,617,205	17,179,834	17,947,244	18,995,364

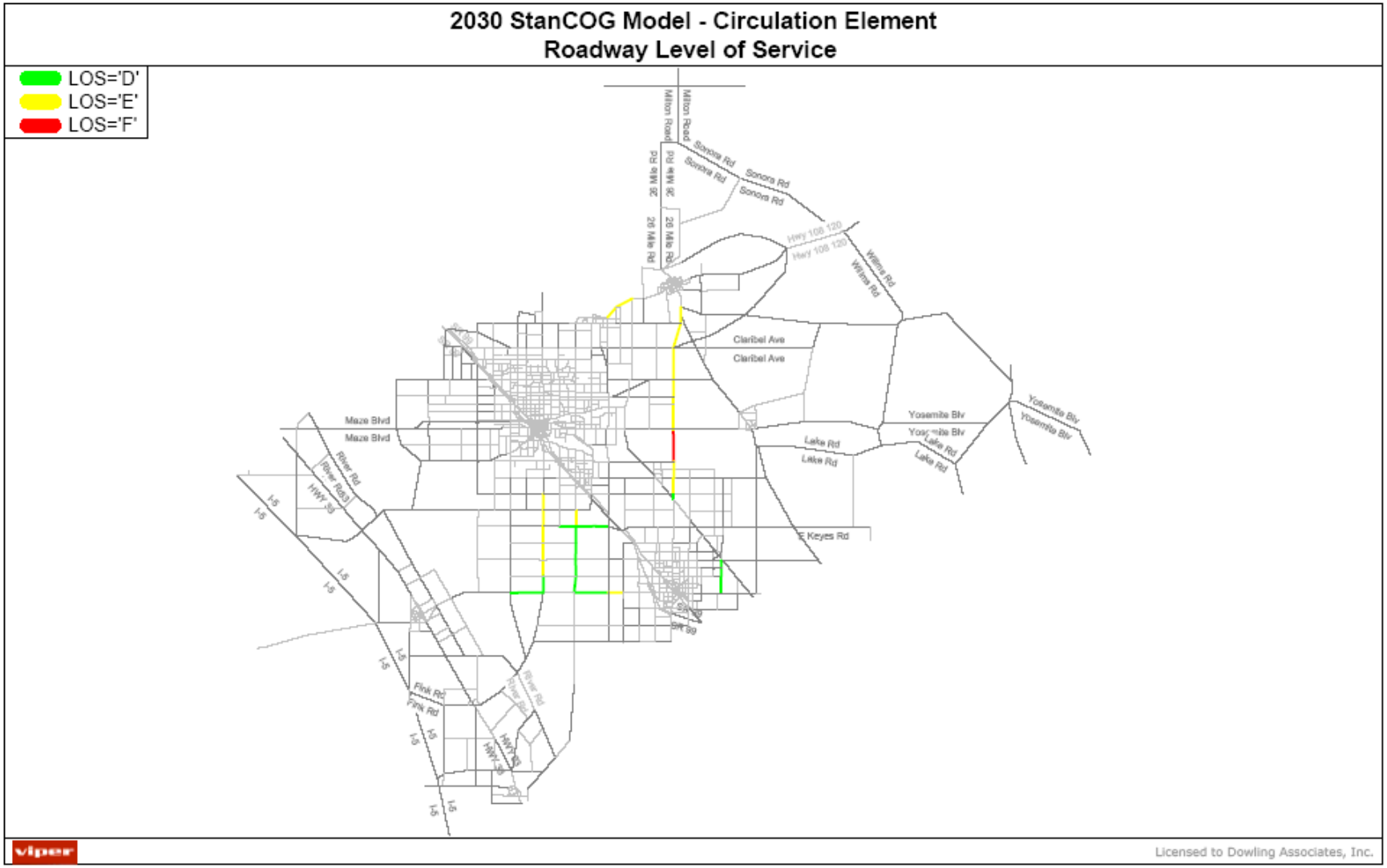
Impacts

The level of service (LOS) on roadways for the project was calculated based on the daily volumes and a daily capacity calculated from the peak hour capacity per lane. The acceptable level of service for Stanislaus County is C. Figure 3 shows the roadways in the Stanislaus Circulation Element with levels of service above C. A few minor model links showed up with worse than LOS C conditions, but these were excluded as impacts because it was determined that they were the direct result of the model's inadequate network representation or limitations in the model's zone structure.

The following roadways in Stanislaus County would operate at levels of service below LOS C in the Circulation Element scenario:

1. Highway 108 between Riverbank and Oakdale - LOS E
2. Albers Road between Oakdale and Yosemite Blvd – LOS E
3. Geer Road between Yosemite Blvd and Santa Fe – LOS D-F
4. Gratton Road between East Ave and E. Monte Vista Ave – LOS D
5. Keyes Road between Faith Home Rd and Morgan Rd – LOS D
6. Crows Landing Rd between W. Service Rd and West Main – LOS D-E
7. Central Ave between Grayson Rd and West Main – LOS D
8. West Main between Carpenter and Faith Home Rd - LOS D

Figure 3: Level of Service on Roadways for the Stanislaus County Circulation Element



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Mitigation Measures

Measures to mitigate the impacts for the Stanislaus County Circulation Element are discussed below:

Highway 108 between Riverbank and Oakdale – This section of Highway 108 is planned as a 4-lane major roadway, but is projected to carry a high level of traffic volume and operate with LOS E conditions. The other constraint for this section is the lack of any parallel or alternate route directly from Riverbank to Oakdale. Proposed mitigations would include widening to 6 lanes. This would result in LOS C or better future conditions. Further detailed analysis is expected to be performed in the planned SR-108 study

Geer Road between Oakdale and Santa Fe – Albers Road between Oakdale and Turlock is planned as a 4-lane Class C Expressway with a capacity of 1000 vehicles per lane per hour. Widening to 6 lanes would improve the projected Level of Service from E/F to C. Another possible solution would be to improve the facility to Class A Expressway standards, with 1500 vehicles per lane per hour.

Gratton Road between East Ave and E. Monte Vista Ave – Gratton Road in Denair is a 2-lane rural collector street projected to carry medium traffic loads. With the proposed Circulation Element and the forecasted development in East Turlock, it would operate with level of service D conditions. In order to improve conditions to LOS C, this section would need to be expanded to a 4-lane major arterial. Alternately, considering the rural nature of the roadway, intersection improvements to allow unobstructed through traffic flow might be sufficient to increase the LOS to C. Detailed analysis is expected to be performed in the future General Plan Update.

Keyes Road between Faith Home Rd and Morgan Rd – Keyes Rd west of SR 99 is planned to be a 2-lane collector. Traffic flowing to and from Crows Landing and N. Central Rd is projected to combine to exceed the 2-lane LOS C capacity east of N. Central. To achieve LOS C this facility would need to be expanded to a 4-lane Major.

Crows Landing Rd between W. Service Rd and West Main – This planned 4-lane Class C Expressway connects Modesto to Patterson, Newman, Gustine, and Highway 33 and is projected to carry heavy traffic. Suggested mitigation includes upgrading to a 6-lane Class C Expressway.

Central Ave between Grayson Rd and West Main – Central Ave runs parallel to Crows Landing Rd. and is planned as a 2-lane rural arterial projected to operate with LOS D conditions. In order to meet the County LOS C standard it would need be to upgrade to a 4-lane Major.

West Main Street between Carpenter and Faith Home Rd – West Main is a major east-west facility between Patterson and Turlock. West Main is planned to be a 4-lane Class C Expressway. In order to achieve Level of Service C, West Main should be expanded to a 6-lane Class C Expressway.

Summary of Results

The Stanislaus County Circulation Element includes build out of the County's roadway system with a resulting increase in vehicle trips, VMT, and lane miles. Despite these increases in travel indicators, the average speed would be higher compared to the constrained and unconstrained project scenarios. This represents overall lower delay for vehicles with the proposed Circulation Element. The impacts identified for the proposed Circulation Element using the County's LOS standard can be mitigated as described below:

Expand Highway 108 between Riverbank and Oakdale to 6 lanes between Riverbank and Oakdale

Upgrade Geer Road between Oakdale and Santa Fe to a 6-lane Class C Expressway or alternatively to a Class A Expressway

Enhance intersection operations on Gratton Road between East Ave. and E. Monte Vista Ave.

Expand Keyes Road between Faith Home Road and Morgan Road to a 4-lane Major

Upgrade Crows Landing Road between W. Service Road and West Main to a 6-lane Class C Expressway

Widen Central Avenue between Grayson Road and West Main to a 4-lane Major

Upgrade West Main Street between Carpenter and Faith Home Road to a 6-lane Class C Expressway

APPENDIX B

AIR QUALITY ANALYSIS

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ONROAD MOBILE SOURCES EMISSIONS ANALYSIS FOR THE STANISLAUS COUNTY'S CIRCULATION ELEMENT

November 26, 2005

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APPENDIX B Emission Calculations

OVERVIEW

Stanislaus County is preparing a Circulation Element that contains four scenarios. Onroad mobile source emissions have been estimated for each scenario to assess their impact on transportation conformity within Stanislaus County. This report documents the onroad mobile source emissions assessment.

The National Ambient Air Quality Standards (NAAQS) were established by the Federal Clean Air Act of 1970, as amended in 1977 and 1990. Areas exceeding the NAAQS are designated as nonattainment areas. Stanislaus County, located in the San Joaquin Valley is currently designated as a federal nonattainment area for carbon monoxide (CO), ozone (O_3), and particulate matter equal to or smaller than 10 microns in diameter (PM-10).

EPA has issued two new air quality standards: an 8-hour ozone standard that is more stringent than the current 1-hour ozone standard, and PM-2.5 which is more strict and addresses particulate matter smaller than 2.5 microns. EPA designated the San Joaquin Valley a Serious Nonattainment area for the new 8-hour ozone standard, effective June 15, 2004. In addition, EPA's nonattainment area designations for the new PM2.5 standards became effective on April 5, 2005 for most areas.

A description of transportation conformity, onroad mobile source emissions, and summary of results are provided below.

An onroad mobile source emissions analysis is needed for a Program EIR for Stanislaus County's Circulation Element. A Traffic Analysis of the four scenarios for the Stanislaus County's Circulation Element was prepared by Dowling Associates. The onroad mobile source emissions impact analysis was conducted to evaluate the impact of the four scenarios on transportation conformity. The analysis estimated onroad mobile emissions consistent with StanCOG's 2004 Conformity Analysis and the recent 8-Hour Air Quality Conformity Analysis. Onroad mobile source emissions have been estimated for carbon monoxide (CO), ozone (ROG and Nox), and PM-10. The results of the quantitative assessment indicate that onroad mobile emissions resulting from the scenarios would result in a positive conformity determination.

TRANSPORTATION CONFORMITY

The Clean Air Act and federal transportation conformity rule requires that each new regional transportation plan (RTP) and transportation improvement program (TIP) must be demonstrated to conform before the RTP/TIP is approved by the MPO or accepted by DOT. The four scenarios for the Stanislaus County's Circulation Element have been analyzed to assess the impact on future transportation conformity determinations.

The conformity rule applies nationwide to "all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan". Currently, the San Joaquin Valley (or portions thereof) is designated as nonattainment areas with respect to federal air quality standards for three criteria pollutants, carbon monoxide (CO), ozone, and particulate matter under ten microns in diameter (PM-10).

In the San Joaquin Valley, the conformity test specified in the federal transportation conformity rule is the emissions budget test. Predicted emissions for the TIP/RTP must be less than or equal to the motor vehicle emissions budget specified in the approved air quality implementation plan (SIP) or the emissions budget found to be adequate for transportation conformity purposes.

APPLICABLE SIPS

- Carbon monoxide motor vehicle emission budgets are established for Stanislaus County in the *1996 Carbon Monoxide Redesignation Request and Maintenance Plan*. EPA proposed direct, final approval for this plan, and promulgation of the SIP on March 31, 1998, which became effective on June 1, 1998.

  NOTE: ARB submitted the 2004 Revision to the California State Implementation Plan for Carbon Monoxide on November 8, 2004. New conformity budgets have been established for 2003 and 2018. EPA has posted the conformity budgets for adequacy review. If new budgets are determined to be adequate or approved, a new budget test would apply.

- Ozone is a secondary pollutant, generated by chemical reactions in the atmosphere involving reactive organic gases (ROG) and nitrogen oxides (NOx). The motor vehicle emissions budgets for ROG and NOx are specified in the Extreme Ozone Attainment Demonstration Plan in tons per average summer day. EPA published the notice of adequacy determination in the February 15, 2005 Federal Register, effective March 2, 2005.

- The Amended 2003 PM-10 Plan that was submitted to EPA in December 2003 contains motor vehicle emission budgets for PM-10. EPA signed the final approval notice on April 28, 2004. The final approval notice includes PM-10 and NOx motor vehicle emissions budgets for conformity. In addition, the final approval includes the trading mechanism.

The motor vehicle emissions budget for PM-10 includes regional reentrained dust from travel on paved roads, vehicular exhaust, travel on unpaved roads, and road construction. Motor vehicle emissions budgets are also established for the precursor NOx.

The PM-10 SIP allows trading from the motor vehicle emissions budget for the PM-10 precursor NOx to the motor vehicle emissions budget for primary PM-10 using a 1.5 to 1 ratio. The trading mechanism allows the agencies responsible for demonstrating transportation conformity in the San Joaquin Valley to supplement the 2010 budget for PM-10 with a portion of the 2010 budget for NOx, and use these adjusted motor vehicle emissions budgets for PM-10 and NOx to demonstrate transportation conformity with the PM-10 SIP for analysis years after 2010.

The trading mechanism will be used only for conformity analyses for analysis years after 2010. To ensure that the trading mechanism does not impact the ability to meet the NOx budget, the NOx emission reductions available to supplement the PM-10 budget shall only be those remaining after the NOx budget has been met.

NOTE: The SJV Air District is currently developing a 2006 PM-10 Plan. However, onroad mobile emission inventories and corresponding conformity budgets are not available at this time for evaluation.

NEW STANDARDS

EPA designated the San Joaquin Valley a Serious Nonattainment area for the new 8-hour ozone standard, effective June 15, 2004. Conformity for the 8-hour ozone standard applies one year after the effective date (June 15, 2005). EPA issued a final rule on July 1, 2004 that amended the transportation conformity rule to include criteria and procedures for the new 8-hour ozone national ambient air quality standard.

The conformity rule indicates that 8-hour areas with adequate or approved 1-hour budgets must use these budgets for 8-hour conformity before 8-hour budgets are available. The budget test using the existing 1-hour ozone SIP budgets fulfills the regional emissions analysis requirement for the 8-hour ozone standard.

In these areas, conformity must generally be demonstrated using the budget test with the 1-hour SIP budgets. In the San Joaquin Valley, the SIP has identified subarea budgets for each MPO in the nonattainment area.

Under the existing conformity rule, regional emissions analyses for ozone areas must address NOx and VOC precursors. The budget test requirements for 8-hour areas will be generally implemented in the same manner as in 1-hour areas.

NOTE: The 8-hour SIP is due in June 2007. Onroad mobile emission inventories and corresponding conformity budgets are not available at this time for evaluation.

EPA's nonattainment area designations for the new PM2.5 standards became effective on April 5, 2005 for most areas. Conformity for a given pollutant and standard applies one year after the

effective date of EPA's initial nonattainment designation. Therefore, conformity for the PM2.5 standards will begin to apply on April 5, 2006. The San Joaquin Valley, which consists of eight counties, was designated nonattainment.

The San Joaquin Valley Transportation Planning agencies are scheduled to have draft procedures and documentation for addressing the PM2.5 conformity requirements available for inter-agency consultation in October 2005.

NOTE: The PM2.5 SIP is due in February 2008. Onroad mobile emission inventories and corresponding conformity budgets are not available at this time for evaluation.

ONROAD MOBILE SOURCE EMISSIONS

TRANSPORTATION DATA

A Traffic Analysis of the four scenarios for the Stanislaus County's Circulation Element was prepared by Dowling Associates. Traffic data needed for the onroad mobile source emissions assessment include:

- VMT by speed bin
- VMT by facility type
- Total lane miles

This data was provided for the following scenarios (see Appendix A):

- 2030 No Build
- 2030 Constrained
- 2030 Unconstrained
- 2030 Project

ONROAD MOBILE EMISSION ESTIMATES

EMFAC2002 (April 23, 2003)

The EMFAC model (short for EMission FACtor) is a computer model that can estimate emission rates for motor vehicles for calendar years from 1970 to 2040 operating in California. Pollutant emissions for hydrocarbons, carbon monoxide, nitrogen oxides, particulate matter, lead, sulfur oxides, and carbon dioxide are output from the model. Emissions are calculated for passenger cars, eight different classes of trucks, motorcycles, urban and school buses and motor homes.

EMFAC is used to calculate current and future inventories of motor vehicle emissions at the state, county, air district, air basin, or county within air basin level. EMFAC contains default vehicle activity data that can be used estimate a motor vehicle emission inventory in tons/day for a specific day, month, or season, and as a function of ambient temperature, relative humidity, vehicle population, mileage accrual, miles of travel and speeds.

The Transportation Conformity Rule requires the use of the latest emission estimation model in the development of conformity determinations. EMFAC2002 is the latest update to the EMFAC model for use by California state and local governments to meet Clean Air Act (CAA) requirements. On April 1, 2003 EPA announced the availability of this latest version of the California EMFAC model for use in state implementation plan (SIP) development in California. The notice also established a 3-month grace period before EMFAC2002 is required to be used statewide in all new transportation conformity analyses in California; the grace period ended on June 30, 2003.

Since the transportation conformity rule (40 CFR 93.110) requires areas to use the latest information for estimating vehicle activity, EPA also approved the CARB methodology for

updating the default vehicle activity data in EMFAC2002. CARB's methodology, ''Recommended Methods for Use of EMFAC2002 to Develop Motor Vehicle Emission Budgets and Assess Conformity,'' explains how vehicle activity data should be updated. The methodology explains how each parameter associated with vehicle activity was originally developed in EMFAC, how each parameter is related, and how each can be updated when new data becomes available. These relationships are important when adjusting vehicle trips or VMT (vehicle miles traveled). For example, VMT in EMFAC2002 is directly related to vehicle population and mileage accrual rate. Similarly, start and evaporative vehicle emissions are also related to vehicle population levels. If new VMT data is available, CARB suggests modifying the input vehicle population levels, instead of directly inputting new VMT data, so that start and evaporative emissions are revised appropriately. Updated vehicle activity data can also be input to EMFAC using the WIS interface.

Guidelines to update speed distributions in EMFAC2002 by allocating VMT percentage to speed bin with the most recent output from individual MPO traffic models are available on the Fresno COG website (www.fresnocog.org). Using these guidelines, the speed distributions (VMT by speed bin) for an average weekday were used to update EMFAC input file for each scenario. Source: Traffic Analysis for the Stanislaus County's Circulation Element prepared by Dowling Associates.

ADDITIONAL PM-10 ESTIMATES

PM-10 emissions for reentrained dust from travel on paved and unpaved roads will be calculated separately from roadway construction emissions. It is important to note that with the final approval of the Amended 2003 PM-10 plan, EPA approved a methodology to calculate PM-10 emissions from paved and unpaved roads in future San Joaquin Valley conformity determinations. This AQ Analysis used these methodologies to estimate construction-related PM-10 emissions consistent with the Amended 2003 PM-10 plan. The National Ambient Air Quality Standards for PM-10 consist of a 24-hour standard and an annual average standard, both represented by the motor vehicle emissions budgets established in the Amended 2003 PM-10 Plan. The PM-10 emissions calculated for the conformity analysis represent emissions on an annual average day and are used to satisfy the budget test.

Calculation Of Reentrained Dust From Paved Road Travel

The core methodology for estimating paved road dust emissions is based on the algorithm published in the 5th Edition of AP-42 (U.S. EPA) (http://www.epa.gov/ttn/chief/ap42/ch13/). ARB default assumptions for roadway silt loading by roadway class, rainfall correction factor average vehicle weight in the methodology will remain unchanged. Emissions are estimated for five roadway classes including freeways, arterials, collectors, local roads, and rural roads. Countywide VMT by facility type was used for scenario to prepare the emission estimates. Source: Traffic Analysis for the Stanislaus County's Circulation Element prepared by Dowling Associates.

Calculation Of Reentrained Dust From Unpaved Road Travel

The base methodology for estimating unpaved road dust emissions is based on an ARB methodology in which the miles of unpaved road are multiplied by the assumed vehicle miles traveled (VMT) and an emission factor. In the Amended 2003 PM-10 Plan, it is assumed that all non-agricultural unpaved roads within the SJV receive 10 vehicle passes per day. An emission factor of 2.0 lbs PM-10/VMT was used for the unpaved road dust emission estimates. Emissions were estimated for city/county maintained roads for Stanislaus County. It is important to note that the four scenarios for the Stanislaus County Circulation Element do not include paving of unpaved roads; therefore, there is no impact on this source of reentrained dust.

Calculation Of PM-10 From Roadway Construction

Section 93.122(d)(2) of the Transportation Conformity Rule requires that PM-10 from construction-related fugitive dust be included in the regional PM-10 emissions analysis, if it is identified as a contributor to the nonattainment problem in the PM-10 implementation plan. The emission estimates will be based on an ARB methodology in which the miles of new road built are converted to acres disturbed, which is then multiplied by a generic project duration (i.e., 18 months) and an emission rate. Emission factors are unchanged from the previous estimates at 0.11 tons PM-10/acre-month of activity. The emission factor includes the effects of typical control measures, such as watering, which is assumed to reduce emissions by about 50 percent. Total lane miles for each scenario was used to prepare the emission estimates. Source: Traffic Analysis for the Stanislaus County's Circulation Element prepared by Dowling Associates.

CONTROLS

Committed control measures in the applicable air quality plans that reduce mobile source emissions are included in this analysis as appropriate. The onroad mobile source modeling procedures and associated spreadsheets used for this analysis assume emission reductions consistent with the air quality plans for the 2004 and 2005 8-Hour Conformity Analyses.

SUMMARY OF PROCEDURES FOR ONROAD MOBILE SOURCE EMISSIONS ESTIMATES

Step-by-step onroad mobile source emissions modeling procedures, including instructions, references and controls, for the 2004 Conformity Analysis and the 2005 8-Hour Conformity Analysis are available on the Fresno COG website at http://www.fresnocog.org/training/tindex.html and http://www.fresnocog.org/aq-modeling/mcc_aqcm.htm, respectively. In addition, documentation of the onroad mobile source emission assessment is provided in Appendix B, including:

- EMFAC Spreadsheet
- Paved Road Spreadsheet
- Unpaved Road Dust Spreadsheet
- Construction Spreadsheet

- Trading Spreadsheet
- Totals Spreadsheet

QUALITY ASSURANCE

The Traffic Analysis for the Stanislaus County's Circulation Element prepared by Dowling Associates was compared to the StanCOG 2004 Conformity Analysis and recent EMFAC 2005 data submittal. VMT by speed bin, VMT facility type, and total lane miles for the scenarios were estimated to be within approximately one percent or less of the StanCOG data.

The EMFAC 2002 input files were reviewed for season, vehicle population, and VMT by speed bin. The EMFAC spreadsheet was reviewed to confirm that the appropriate emission totals were entered for each scenario. The Paved Road Dust spreadsheet was reviewed to confirm VMT by facility type for each scenario were entered correctly. Total lane miles for each scenario were confirmed in the Road Constructions spreadsheet. The Trading Spreadsheet was reviewed to confirm that the appropriate emission totals were entered for each scenario. Finally, the Totals spreadsheet was reviewed to confirm that the appropriate emission totals were entered for each scenario.

SUMMARY OF RESULTS

An onroad mobile source emissions analysis was conducted for four scenarios for the analysis year 2030 for each pollutant. For each scenario provided, separate tests were conducted for carbon monoxide (CO), ozone (VOC and NOx), and particulate matter under ten microns in diameter (PM-10 and NOx).

The model used to estimate emissions for carbon monoxide, ozone precursors, and PM-10 is EMFAC2002 (April 23, 2003). ARB emission factors for PM-10 have been used to calculate reentrained paved and unpaved road dust, and fugitive dust associated with road construction. For this assessment, model inputs not dependent on the Transportation Improvement Program or Regional Transportation Plan (RTP) are consistent with the applicable SIPs.

The major conclusions are:

• For carbon monoxide, the total regional vehicle-related emissions associated with the four scenarios for 2030 are projected to be less than the approved emissions budget established in the *1996 Carbon Monoxide Redesignation Request and Maintenance Plan*.

NOTE: the total regional vehicle-related emissions associated with the four scenarios for 2030 are projected to be less than the pending emissions budget established in the 2004 Revision to the California State Implementation Plan for Carbon Monoxide.

• For ozone, the total regional vehicle-related emissions (VOC and NOx) associated with the four scenarios for 2030 have been processed consistent with the Extreme Ozone Attainment Demonstration Plan and are less than the motor vehicle emissions budgets found adequate on February 15, 2005 (effective March 2, 2005).

• For PM-10, the total regional vehicle-related emissions (PM-10 and NOx) associated with implementation of the TIP/RTP for all years tested are less than the emission budgets using the approved PM-10 and NOx trading mechanism for transportation conformity purposes from the Amended 2003 PM-10 Plan.

NOTE: it is not possible to compare the scenarios to the 2006 PM-10 Plan currently under development. In addition, the scenarios cannot be evaluated for the new PM2.5 conformity requirements since the procedures are currently under development.

Table 1 presents results for CO, VOC/NOx, and PM-10/NOx, respectively, in tons per day for each scenario analyzed for the year 2030. The table demonstrates that all four scenarios would satisfy the current conformity emissions tests for all pollutants, as well as the pending carbon monoxide budgets.

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TABLE 1

Results Summary – STANISLAUS COUNTY

Pollutant	Scenario	Emissions Total (tons/day)		DID YOU PASS?	
		CO		CO	
	1993 Budget	177			
	Draft 2003 Budget	127			
Carbon Monoxide				1993 Budget	2003 Budget
	2030 No Build	21.3		YES	YES
	2030 Constrained	22.2		YES	YES
	2030 Unconstrained	22.8		YES	YES
	2030 Project	23.7		YES	YES
		ROG	NOx	ROG	NOx
	2005 Budget	10.4	21.2		
Ozone	2030 No Build	2.1	3.1	YES	YES
	2030 Constrained	2.2	3.3	YES	YES
	2030 Unconstrained	2.3	3.5	YES	YES
	2030 Project	2.5	3.7	YES	YES
		PM-10	NOx	PM-10	NOx
	2010 Adjusted Budget	7	13.6		
	2030 No Build	7	2.6	YES	YES
	2010 Adjusted Budget	7.5	12.8		
	2030 Constrained	7.5	2.8	YES	YES
PM-10					
	2010 Adjusted Budget	7.9	12.2		
	2030 Unconstrained	7.9	2.9	YES	YES
	2010 Adjusted Budget	8.4	11.5		
	2030 Project	8.4	3.2	YES	YES

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APPENDIX A

TRANSPORTATION DATA

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Stanislaus Council of Governments
Transportation Activity Data
VMT by Speed Bin

EMFAC Speed Bin Name	VMT Speed Bins Actual	2030 No Build Average Daily VMT	2030 No Build Average Daily %	2030 Constrained Average Daily VMT	2030 Constrained Average Daily %	2030 Unconstrained Average Daily VMT	2030 Unconstrained Average Daily %	2030 Project Average Daily VMT	2030 Project Average Daily %
5	0.0 - 7.50	2,708	0.0163%	728	0.0042%	698	0.0039%	2,956	0.0156%
10	7.51 - 12.50	931,604	5.6063%	569,607	3.3156%	403,064	2.2458%	306,525	1.6137%
15	12.51 - 17.50	1,259,712	7.5808%	1,310,462	7.6279%	978,867	5.4541%	882,379	4.6452%
20	17.51 - 22.50	870,507	5.2386%	631,059	3.6733%	622,316	3.4675%	388,616	2.0458%
25	22.51 - 27.50	1,302,786	7.8400%	1,191,044	6.9328%	1,150,458	6.4102%	823,941	4.3376%
30	27.51 - 32.50	1,482,640	8.9223%	1,627,460	9.4731%	1,303,706	7.2641%	1,260,095	6.6337%
35	32.51 - 37.50	1,656,196	9.9668%	1,581,420	9.2051%	1,459,658	8.1330%	1,616,719	8.5111%
40	37.51 - 42.50	2,259,881	13.5996%	1,958,650	11.4009%	1,676,036	9.3387%	1,629,299	8.5774%
45	42.51 - 47.50	4,007,943	24.1192%	4,325,784	25.1794%	4,795,656	26.7208%	4,568,641	24.0513%
50	47.51 - 52.50	969,344	5.8334%	1,788,069	10.4080%	2,416,020	13.4618%	1,059,195	5.5761%
55	52.51 - 57.50	370,534	2.2298%	665,718	3.8750%	1,324,014	7.3773%	4,896,753	25.7787%
60	57.51 - 62.50	782,879	4.7113%	584,638	3.4030%	350,261	1.9516%	384,579	2.0246%
65	62.51 - 67.50	720,471	4.3357%	945,195	5.5018%	1,466,490	8.1711%	1,175,666	6.1892%
70	67.51 - 72.50	0	0.0000%	0	0.0000%	0	0.0000%	0	0.0000%
75	72.51 - 77.50	0	0.0000%	0	0.0000%	0	0.0000%	0	0.0000%
80	77.51 - 82.50	0	0.0000%	0	0.0000%	0	0.0000%	0	0.0000%
85	82.51 - 87.50	0	0.0000%	0	0.0000%	0	0.0000%	0	0.0000%
90	87.51 - 92.50	0	0.0000%	0	0.0000%	0	0.0000%	0	0.0000%
	Total	**16,617,205**	**100.0000%**	**17,179,834**	**100.0000%**	**17,947,244**	**100.0000%**	**18,995,364**	**100.0000%**

VMT by Facility Type(Daily Only)

Roadway Class	2030 No Build VMT	2030 Constr VMT	2030 Unconstr VMT	2030 Project VMT
Freeway	3895385	4058193	4143211	3871888
Expressway	0	0	0	6915383
Major Arterial	10143693	10296039	10968907	6419994
Collector	1860745	2080313	2092466	1082085
Local	717382	745289	742660	706014
Total	**16617205**	**17179834**	**17947244**	**18995364**

Lane Miles (Daily Only)

	2030 No Build	2030 Constrained	2030 Unconstrained	2030 Project
Lane Miles	3471	3776	4271	4869

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APPENDIX B

EMISSION CALCULATIONS

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EMFAC Emissions

STANISLAUS

Pollutant	Source	Description	Analysis Year				Notes
			2030 No Build	2030 Constrained	2030 Unconstrained	2030 Project	To be consistent with budget development, please note and DO NOT change formatting as listed below.
Carbon Monoxide	EMFAC 2002 (Winter Run)	CO Total Exhaust (All Vehicles Total)	21.34	22.21	22.78	23.71	
		Conformity Total	21.3	22.2	22.8	23.7	cells are formatted to 1 decimal place
Ozone	EMFAC 2002 (Summer Run)	ROG Total Exhaust (All Vehicles Total)	2.89	3.03	3.14	3.30	
	ARB	Minus I/M Improvement Benefit	0.36	0.36	0.36	0.36	
	ARB	State Measure Reductions	0.45	0.45	0.45	0.45	
		Conformity Total	2.1	2.2	2.3	2.5	cells are formatted to 1 decimal place
Ozone	EMFAC 2002 (Summer Run)	NOx Total Exhaust (All Vehicles Total)	4.36	4.53	4.71	4.97	
	ARB	Minus I/M Improvement Benefit	0.3	0.3	0.3	0.3	
	ARB	State Measure Reductions	0.94	0.94	0.94	0.94	
		Conformity Total	3.1	3.3	3.5	3.7	cells are formatted to 1 decimal place
PM-10	EMFAC 2002 (Annual Run)	PM-10 Total (All Vehicles Total) * includes tire & brake wear	0.790	0.840	0.860	0.890	cells are formatted to 3 decimal places
	ARB	State Measures	0.013	0.013	0.013	0.013	
		Conformity Total	0.777	0.827	0.847	0.877	formula included + limited to 3 decimal places
PM-10	EMFAC 2002 (Annual Run)	NOx Total Exhaust (All Vehicles Total)	4.59	4.77	4.96	5.23	cells are formatted to 2 decimal places
	ARB	Smog Check Reductions	0.61	0.61	0.61	0.61	
	District	ISR & Inc.	0.19	0.19	0.19	0.19	
	ARB	State Measures	1.22	1.22	1.22	1.22	
		Conformity Total	2.57	2.75	2.94	3.21	formula included + limited to 2 decimal places

Paved Road Dust Emissions

STANISLAUS 2030 No Build

			VMT Daily	VMT (million/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
Enter Freeway VMT ==>		Freeway	3,895,385	1,422	407.914	394.225	1.080	0.075	0.999
Enter Arterial VMT ==>		Arterial	10,143,693	3,702	1528.230	1476.945	4.046	0.282	2.905
Enter Collector VMT ==>		Collector	1,860,745	679	280.336	270.929	0.742	0.407	0.440
		Urban	456,972	167	290.125	280.389	0.768	0.324	0.519
Enter Total of Urban and Rural		Rural	260,410	95	470.634	454.840	1.246	0.090	1.134
Local VMT Here =>	717,382								
		Totals	**16,617,205**	**6,065**	**2977.239**	**2877.328**	**7.883**		**5.998**

STANISLAUS 2030 Constrained

			VMT Daily	VMT (million/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
Enter Freeway VMT ==>		Freeway	4,058,193	1,481	424.962	410.701	1.125	0.075	1.041
Enter Arterial VMT ==>		Arterial	10,296,039	3,758	1551.182	1499.127	4.107	0.282	2.949
Enter Collector VMT ==>		Collector	2,080,313	759	313.416	302.898	0.830	0.407	0.492
		Urban	474,749	173	301.412	291.297	0.798	0.324	0.539
Enter Total of Urban and Rural		Rural	270,540	99	488.942	472.534	1.295	0.090	1.178
Local VMT Here =>	745,289								
		Totals	**17,179,834**	**6,271**	**3079.914**	**2976.557**	**8.155**		**6.199**

STANISLAUS 2030 Unconstrained

			VMT Daily	VMT (million/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
Enter Freeway VMT ==>		Freeway	4,143,211	1,512	433.865	419.305	1.149	0.075	1.063
Enter Arterial VMT ==>		Arterial	10,968,907	4,004	1652.555	1597.098	4.376	0.282	3.142
Enter Collector VMT ==>		Collector	2,092,466	764	315.247	304.668	0.835	0.407	0.495
		Urban	473,074	173	300.348	290.269	0.795	0.324	0.538
Enter Total of Urban and Rural		Rural	269,586	98	487.218	470.867	1.290	0.090	1.174
Local VMT Here =>	742,660								
		Totals	**17,947,244**	**6,551**	**3189.233**	**3082.208**	**8.444**		**6.411**

STANISLAUS 2030 Project

			VMT Daily	VMT (million/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
Enter Freeway VMT ==>		Freeway	3,871,888	1,413	405.453	391.847	1.074	0.075	0.993
Enter Arterial VMT ==>		Arterial	13,335,377	4,867	2009.083	1941.661	5.320	0.282	3.819
Enter Collector VMT ==>		Collector	1,082,085	395	163.025	157.554	0.432	0.407	0.256
		Urban	449,731	164	285.528	275.946	0.756	0.324	0.511
Enter Total of Urban and Rural		Rural	256,283	94	463.176	447.633	1.226	0.090	1.116
Local VMT Here =>	706,014								
		Totals	**18,995,364**	**6,933**	**3326.265**	**3214.641**	**8.807**		**6.696**

Unpaved Road Dust Emissions

STANISLAUS 2030 No Build

	Miles	Vehicle Passes per Day	VMT (1000/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
City/County	47.02	10	171.6	171.623	148.585	0.407	0.333	0.272

STANISLAUS 2030 Constrained

	Miles	Vehicle Passes per Day	VMT (1000/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
City/County	47.02	10	171.6	171.623	148.585	0.407	0.333	0.272

STANISLAUS 2030 Unconstrained

	Miles	Vehicle Passes per Day	VMT (1000/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
City/County	47.02	10	171.6	171.623	148.585	0.407	0.333	0.272

STANISLAUS 2030 Project

	Miles	Vehicle Passes per Day	VMT (1000/year)	Base Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tpy)	Rain Adj. Emissions (PM10 tons/day)	District Rule 8061/ISR Control Rates	Control-Adjusted Emissions
City/County	47.02	10	171.6	171.623	148.585	0.407	0.333	0.272

Road Construction Dust

STANISLAUS

Description	Analysis Year							
	2030 No Build		2030 Constrained		2030 Unconstrained		2030 Project	
	Year	Lane Miles	Year	Lane Miles	Year	Lane Miles	Year	Lane Miles
Baseline	2000	3,471	2000	3471	2000	3471	2000	3471
Horizon	2030	3,471	2030	3,776	2030	4,271	2030	4,869
Difference	30	0.000	30	305.000	30	800.000	30	1,398.000
Lane Miles per Year		0.000		10.167		26.667		46.600
Acres Disturbed		0.000		39.434		103.434		180.752
Acre-Months		0.000		709.818		1,861.818		3,253.527
Emissions (tons/year)		0.000		78.080		204.800		357.888
Annual Average Day Emissions (tons)		0.000		0.214		0.561		0.981
District Rule 8021 Control Rates		0.290		0.290		0.290		0.290
Total Emissions (tons per day)		**0.000**		**0.152**		**0.398**		**0.696**

PM10 Emission Trading Worksheet

STANISLAUS CONFORMITY ESTIMATES

	2030 No Build		2030 Constrained		2030 Unconstrained		2030 Project	
	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx
Total On-Road Exhaust	0.777	2.570	0.827	2.750	0.847	2.940	0.877	3.210
Paved Road Dust	5.998	0.000	6.199	0.000	6.411	0.000	6.696	0.000
Unpaved Road Dust	0.272	0.000	0.272	0.000	0.272	0.000	0.272	0.000
Road Construction Dust	0.000	0.000	0.152	0.000	0.398	0.000	0.696	0.000
Total	**7.047**	**2.570**	**7.450**	**2.750**	**7.928**	**2.940**	**8.541**	**3.210**

Difference (2010 Budget - 2030)

	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx
2010	6.1	14.9	6.1	14.9	6.1	14.9	6.1	14.9
2030	7.0	2.6	7.5	2.8	7.9	2.9	8.5	3.2
Difference	**-0.9**	**12.3**	**-1.4**	**12.1**	**-1.8**	**12.0**	**-2.4**	**11.7**
* 1.5 (Adjustment to NOx Budget)	1.4		2.1		2.7		3.6	

1:1.5 PM10 to NOx Trading

	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx
2010 Budget	**6.1**	**14.9**	**6.1**	**14.9**	**6.1**	**14.9**	**6.1**	**14.9**

Adjusted 2010 Budget	**7.0**	**13.6**	**7.5**	**12.8**	**7.9**	**12.2**	**8.5**	**11.3**
2030 Conformity Total	**7.0**	**2.6**	**7.5**	**2.8**	**7.9**	**2.9**	**8.5**	**3.2**
Difference	**0.0**	**11.0**	**0.0**	**10.0**	**0.0**	**9.3**	**0.0**	**8.1**