San Joaquin County

2015 TRAFFIC IMPACT MITIGATION FEE UPDATE

August 2015

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San Joaquin County

2015 Traffic Impact Mitigation Fee Update

San Joaquin County, California

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Section 1 Introduction and Results

INTRODUCTION AND RESULTS

This report provides the requisite technical documentation and nexus analysis to support the adoption of the San Joaquin County Traffic Impact Mitigation Fee (TIMF) update. The TIMF has been updated with input and guidance from the County of San Joaquin and is based on the most recent growth projections and infrastructure requirements available at the time of its development. The TIMF update is consistent with the most recent relevant case law and principles of AB1600 or Government Code Section 66000 et seq. (Mitigation Fee Act). Except where specific citations are provided, this statute will be referred to in this report as AB1600.

PROPOSED TIMF PROGRAM UPDATE PURPOSE

This TIMF update provides funding for transportation improvements required to serve new development within the unincorporated areas of San Joaquin County while ensuring that the County's adopted level of service standards are maintained. While the TIMF program is structured to fully recover the unincorporated area's share of these costs through the planning horizon, the fee cannot fund existing development's or incorporated area's share of the costs. It is expected that the County's TIMF funding program will be augmented by other revenue sources to meet overall funding requirements, particularly Measure K funding and state and federal grants.

The information contained in this report should be periodically reviewed by the County to ensure its continued accuracy and to enable adequate programming and funding resource availability. To the extent that improvement requirements, costs, or development potential changes over time, the TIMF program will need to be updated periodically.

The following provides background information on the existing TIMF program and describes the key factors which triggered the need for this update.

Background

Originally adopted in February 1990 by the San Joaquin County Board of Supervisors (Resolution R-90-304), the San Joaquin County Traffic Impact Mitigation Fee (TIMF) Program was developed to help finance transportation improvements needed to accommodate new and expanding development - including residential, commercial, and industrial projects - within the unincorporated areas of San Joaquin County. Since its inception, the County has revised the Program as necessary for clarification, conformance to the County's General Plan, and to better serve the unincorporated communities. The latest revision to the program occurred in 2008 and consolidated the number of Fee Benefit Zones from twelve to four larger zones to promote equity and facilitate implementation. The four zones are comprised of the County's 12 Planning Areas.

Although an unincorporated area, the community of Mountain House has its own mutually exclusive fee collection program and process. Since 2000, existing development agreements

prevented the application of the TIMF within this area with the exception of approximately $2 million of the County's regional share for two legacy projects (Byron Road and Mountain House Expressway) which were included in both the Mountain House Mitigation Program and the TIMF. As such, TIMF fees have been collected within Mountain House since 2000 for up to - but not cumulatively exceeding - this amount. Given that the County is nearing the end of the amount allowed to be collected under the original Mountain House Master Plan, this update will be structured to completely remove Mountain House from the TIMF.

Similarly, the 2008 TIMF update modified the program so that TIMF-funded projects are mutually exclusive of the SJCOG Regional Traffic Impact Fee (RTIF) program. This TIMF update continues to support exclusivity with the RTIF.

The County's TIMF fees are collected at the time of building permit issuance and are collected by means of four established TIMF Fee Benefit Zones. The four TIMF Fee Benefit Zones within the unincorporated area of San Joaquin County are shown in **Figure 1**. Each of these zones is unique in terms of the degree of urban development and regional access. For this reason, fees vary by Fee Benefit Zone. Mountain House is a separate fifth zone in the unincorporated area given that it has its own development impact fee for transportation improvements.

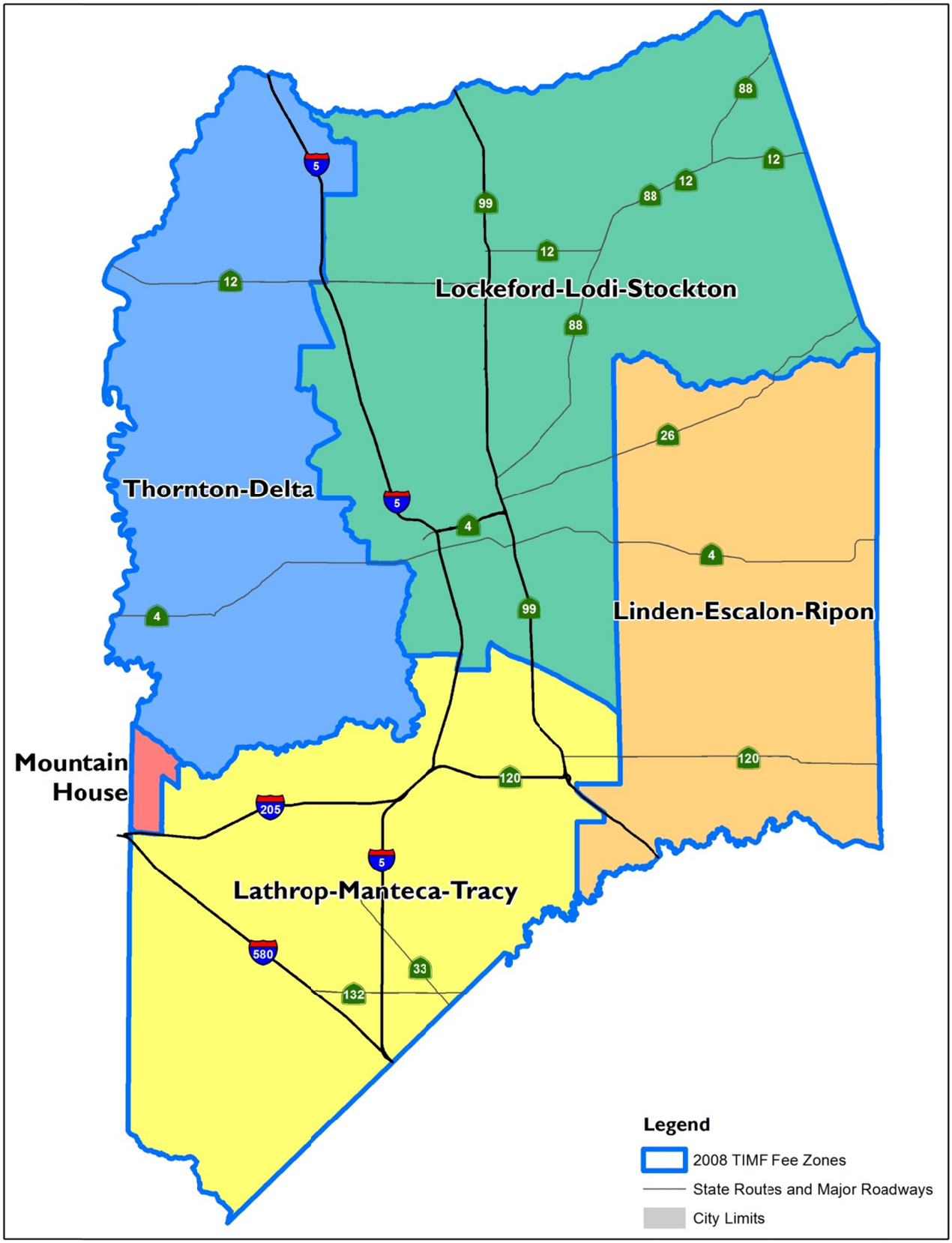
When fees are collected they are allocated into the following fee accounts:

- Local (one for each of the four zones);
- Regional; and,
- Alternative Modes.

The local component of the fee collected for each zone is spent on projects and programs located within each zone. For example, local fees collected in the Lockeford-Lodi-Stockton Fee Benefit Zone only fund improvements in that zone and do not pay for improvements in any other zone. The regional component of the fee collected in each zone is pooled in a single account, and spent on any TIMF project that benefits more than a single zone. This fee component represents the share of costs associated with trips between zones. The alternative mode component of the fee is derived by adding a share equal to five percent of the total fee to fund transit, pedestrian, and bicycle improvements. Another five percent is added to pay for administering the program.

TIMF fees have been based on the estimated costs of infrastructure to support new development within the unincorporated portions of each respective Fee Benefit Zone. The foundation of this fee is the future cost of the facilities needed to provide adequate transportation improvements in the unincorporated areas of the county to accommodate traffic demands from new development within the unincorporated area.

Figure 1. San Joaquin County Fee Benefit Zones



Purpose for Updating the TIMF

The following are key factors establishing the need for this TIMF update:

- Ensure consistency with the San Joaquin County General Plan

  Adoption of the County's draft General Plan and Draft Environmental Impact Report (GPU and DEIR) update is anticipated in 2015/16. The existing County TIMF program is based on development growth assumed as part of the existing General Plan which is based on pre-recession growth projections within and outside of the unincorporated areas. To more accurately reflect the anticipated growth within the unincorporated areas of San Joaquin County, and allow for a more seamless transition to an appropriate fee structure once the General Plan update is adopted, a full update to the existing TIMF program based on all anticipated changes recommended in the General Plan update was desired.

- Ensure consistency with the SJCOG 2014 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) including:

  - Adoption of the 2035 growth projections by SJCOG and its member agencies.

    The existing County TIMF is based on 2030 growth projections within both the incorporated areas and unincorporated areas of the county. As previously described, future growth within the unincorporated areas of the County will be based on the County's proposed 2035 General Plan. To better reflect future growth within the incorporated areas, a full update to the existing TIMF program using the most recently adopted socio-economic growth projections from SJCOG's 2014 Regional Transportation Plan/Sustainable Communities Strategy was desired.

  - Development of the 2035 Traffic Forecast model by SJCOG.

    The existing County TIMF is based on 2030 traffic growth projections. To better reflect future traffic growth and infrastructure improvement needs, a full update to the existing TIMF program based on a 2035 traffic forecast was desired.

- Ensure consistency with jurisdictional boundaries. Since adoption of the previous 2008 TIMF, several annexations have occurred. Reasons to update the TIMF to reflect these annexations include:

  - Annexations modify the boundaries of the existing Fee Benefit Zones and County Planning Areas.
  - Annexations result in jurisdictional changes from previously TIMF fee applicable unincorporated areas to not-applicable incorporated areas. They also result jurisdictional changes to portions of the roadway network serving annexed areas.

- Ensure the continued mutual exclusivity with the RTIF program (SJCOG, October 2011) by the San Joaquin Council of Governments (SJCOG).

  The RTIF is a fee program administered by SJCOG that applies to regionally designated roadways (state highways and principal arterials) within San Joaquin County. The RTIF roadway network has also been designated as the Regional Congestion Management Program (CMP) roadway network – per California Code Section 65089. The RTIF is a development fee collected by all cities and the County. Regional facilities that prior to the 2008 TIMF update were included in the County's TIMF are now addressed separately as part of this program. This TIMF update continues to ensure no overlap between the two programs. Projects may be funded by one of the programs but not both to ensure that development is not double-charged for the same improvement. The TIMF may fund projects on the CMP network if the roadway has not been incorporated into the RTIF program.

  The RTIF network was amended (i.e., augmented) in 2011 and again in 2014 by SJCOG. This TIMF update accounts for the following additions to the RTIF network:

  - Roth Road (I-5 to Airport Way);
  - McKinley Expressway (SR-120 to SR-99) (new roadway); and,
  - Navy Drive (SR 4 Extension to Washington Street).

- Ensure that the TIMF reflects the most recent AB1600 legislative changes, relevant case law and principles codified in Government Code Section 66000 et seq ("Mitigation Fee Act").

  - Per California Code Section 66005.1 (effective January 1, 2011), housing development projects that satisfy specific "smart growth" characteristics shall be provided a discounted fee. Although at this time no areas within the unincorporated areas of San Joaquin County meet the criteria - a discounted fair share of 15% for new residential projects that locate in areas that meet the specific criteria is recommended as part of this update. The discounted fee amount is based on and is consistent with SJCOG's 2011 RTIF update.

- As the TIMF Program has matured, the County's experience administrating the program has increased. Strategies to streamline the implementation, administration, and effectiveness of the County's TIMF have been identified. This TIMF update examined: methods for greater public transparency; methods to better address agricultural facilities; and, methods to address land uses that generate significant STAA-sized truck trips.

  Based on the developments described above, the County has developed this comprehensive update to its TIMF program. This update satisfies the requisite AB1600 nexus requirements or fee programs in the State of California while adequately addressing the key factors described above.

SUMMARY NEXUS ANALYSIS

To satisfy the AB1600 requirements governing the imposition of developer fees, a reasonable nexus must be established between the proposed fees and the cost of facilities. The approach taken to establish such a nexus for this TIMF update entailed the following analysis steps:

1) Develop a comprehensive traffic count inventory to establish baseline traffic conditions and identify existing roadway deficiencies within the unincorporated areas;
2) Develop a 2035 travel model forecast using a 2035 hybrid of the 2014 RTP/SCS and the proposed San Joaquin County draft General Plan Update land uses to establish future traffic conditions and identify future roadway deficiencies within the unincorporated areas;
3) Identify needed improvements to remedy existing and future roadway deficiencies and estimate the costs of these improvements;
4) Modify the estimated improvement costs to:
    a. proportion future developments fair share contribution for existing deficiencies; and,
    b. exclude costs associated with deficient roadway segments located within the Mountain House Planning Area;
5) Identify the share of new vehicle trip growth generated by unincorporated, incorporated, and out of county development;
6) Apply the unincorporated percentage to the sum of project costs;
7) Estimate a fee per new unincorporated area trip (unincorporated share of improvement costs divided by the unincorporated growth in trips); and,
8) Convert the fee per unincorporated area trip to fee per dwelling unit and fee per non-residential square foot floor space.

This analysis excludes one-half of trips whose origin or destination are from incorporated areas (and Mountain House) or areas outside San Joaquin County (I-X or X-I trips) and completely excludes trips which do not have an origin or destination within the county (X-X). For trips with at least one trip end within the unincorporated county, a more reasonable relationship is established between the TIMF fees collected and the impacts expected from development occurring specifically within the unincorporated areas of San Joaquin County.

SUMMARY OF PROPOSED FEES

The TIMF update identified 21 unincorporated roadway deficiency needs totaling over $177 million in needed capital improvement projects through the 2035 planning horizon. Of those costs, nearly $39 million are eligible to be funded by the TIMF, leaving approximately $138 million to be funded by other revenue sources. Costs associated with deficient roadway segments located within Mountain House Planning Area were excluded in this update. This allows Mountain House to be mutually exclusive of the County's TIMF fee structure and treated similar to an incorporated area.

A summary of the proposed fees to pay for the approximately $39 million fair share of capital improvement costs are summarized in **Table 1**. These fees were calculated to generate sufficient revenue to cover the fair share of total capacity improvement costs needed to accommodate new development within the unincorporated areas of the County. In general, the proposed fees are in line with the existing TIMF fees for most land use categories – although there are exceptions. Explanations for why the TIMF fee update resulted in similar fees relative to the existing program include: increases in construction costs were off-set by lower overall growth in the unincorporated areas of the County and less capacity needs being identified. Consequently, this resulted in the updated fees being relatively stable compared to the previous TIMF fee structure.

Table 1. Summary of Proposed Fees

	DUE	TIM Fee Benefit Zone			
		Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Cost per DUE		$ 1,285	$ 1,285	$ 1,296	$ 1,296
Residential (per Dwelling Unit)					
Single Family	1.00	$ 1,285	$ 1,285	$ 1,296	$ 1,296
Multi Family	0.62	$ 797	$ 797	$ 804	$ 804
Non-Residential (per Thousand Square Feet)					
Retail	1.86	$ 2,384	$ 2,384	$ 2,404	$ 2,404
Service Commercial	1.76	$ 2,264	$ 2,264	$ 2,283	$ 2,283
Office	0.97	$ 1,245	$ 1,245	$ 1,255	$ 1,255
Manufacturing	0.62	$ 797	$ 797	$ 804	$ 804
Warehouse	0.27	$ 350	$ 350	$ 353	$ 353

IMPLEMENTATION AND LEGAL CONSIDERATIONS

AB1600 Requirements

AB1600 stipulates that local agencies requiring payments of a fee make the following specific program information available to the public annually within 180 days of the last day of the fiscal year:

- A description of the type of fee in the account;
- The amount of the fee;
- The beginning and ending balance of the fund;
- The amount of fees collected and interested earned;
- Identification of the improvements constructed;

- The fees expended to construct the improvement; and,
- The percent of total costs funded by the fee.

If sufficient fees have been collected to fund the construction of an improvement, the agency must specify the approximate date for construction of that improvement.

If any portion of a fee remains unexpended or uncommitted in an account for five years or more after deposit of the fee, the local agency shall make findings once each year: 1) to identify the purpose to which the fee is to be put; 2) to demonstrate a reasonable relationship between the fee and the purpose for which it was charged; 3) to identify all sources and amounts of funding anticipated to complete financing of incomplete improvements; and, 4) to designate the approximate dates on which the funding identified in (3) is expected to be deposited into the appropriate fund.

RTIF and Proposed TIMF Coordination

Of the 21 future deficiencies identified by this TIMF update, none are currently part of SJCOG's RTIF fee structure. However, several are part of the RTIF network and are potentially eligible for RTIF fees. Given that improvements to these deficiencies are not reflected in the RTIF capital improvement cost estimate (San Joaquin Regional Transportation Impact Fee 2011 Update, Final Report, December 2011), no fee redundancy exists with the current RTIF fee by including them in the TIMF.

As part of future RTIF updates, these facilities could be considered for RTIF funding. As regional needs and priorities are annually reassessed by SJCOG and its member agencies, it is possible that a County TIMF segment may be considered for future inclusion in the RTIF project list. It is recommended that following any action by the SJCOG board to amend the RTIF capital improvement project list to include an unincorporated segment of roadway already listed in the County's TIMF project list, a resolution to execute a memorandum of understanding (MOU) be made between the County, SJCOG, and possibly other affected jurisdictions to define what improvements will be funded by each respective program (RTIF & TIMF). This will ensure that both fee programs remain mutually exclusive in the event a given roadway segment is included in both the TIMF and RTIF project lists.

In addition, any RTIF/TIMF MOU should be supported by a nexus report per Government Code 66000. The nexus report should describe the differences in technical approach, assumptions, and proportionate fair share responsibility results between the TIMF and RTIF nexus analyses. It should also include either a new nexus analysis that supersedes the existing fair share assessments or recommend which of the two existing analyses is most applicable. Should the SJCOG fail to provide the necessary MOU and supporting nexus report for the addition of the project to the RTIF, then the County would need to cease collecting the County TIMF for its project(s) on the same road

segment until a nexus report can be produced supporting the collection of both the RTIF and County TIMF for that segment of road.

Alternative Funding

As stated previously, the proposed TIMF revenue estimate of $39 million is itself not sufficient to fund the full amount of the TIMF capital projects estimated at $177 million. To facilitate implementation of the TIMF program, the County will have to obtain funding from other sources (e.g., Measure K, Proposition 1B, Proposition 42, and other state and federal funding programs/grants) and pay for improvements not covered by impact fee revenue.

The existing unspent TIMF fees collected by the County of San Joaquin will be carried over to fund improvements identified under this proposed TIMF update. Eight of the 21 projects funded through the updated TIMF program are on the existing TIMF project list. Therefore a reasonable relationship continues to exist between the use of these fund balances and their application to the updated TIMF project list.

PUBLIC OUTREACH AND STAKEHOLDER INVOLVEMENT

Public outreach and stakeholder involvement for this TIMF update was performed in coordination with the County. Noticed public workshops were held on September 4, 2014 and on March 19, 2015. In addition, a project website and newsletter were developed to keep the public and stakeholders informed of each step taken throughout the project.


San Joaquin County
Transportation Impact Mitigation Fee Program

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ABOUT THE FEE PROGRAM | LIBRARY AND BACKGROUND INFORMATION | MARCH 19, 2015 PUBLIC WORKSHOP | CONTACT US

What is the Transportation Impact Mitigation Fee Progam?

San Joaquin County established its Transportation Impact Mitigation Fee Program in February 1990. Its purpose is to help finance transportation facilities needed to accommodate new and expanded development (residential/commercial/industrial) within the unincorporated areas of the County. In simple terms, the Fee Program asks developers and builders to pay their fair share for capacity improvements for local roadway systems that will be impacted by their projects. The County last updated the Fee Program in 2008.

As part of this update, the fee rates and schedule will be revised to reflect the latest land use projections for San Joaquin County. This will be a combination of the County's Preferred Land Use scenario for the unincorporated areas as currently developed as part of the update to the County's General Plan as well as SJCOG's Regional Transportation Plan & Sustainable Communities Plan preferred alternative (also currently under development) for the incorporated areas of the county.
The update should be completed in late 2014.

Frequently Asked Questions

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The project website was launched July 2014 and remains active to support the implementation of the TIMF program. Since its launch, the site has averaged over 100 unique site visits a month. The website includes: background materials, an FAQ, draft/final project documents; on-line engagement opportunities including virtual workshops; and, an eNews sign up. During the update process, periodic eBlasts were sent to over 200 stakeholders notifying them of news and events. This included news media and key stakeholders such as the Building Industry Association (BIA), the Farm Bureau, and other organizations with economic interests in the county (Chambers of Commerce).

Section 2 TIMF Growth Projections

TIMF GROWTH PROJECTIONS

This section describes the information sources and analysis approach used to establish the amount of residential and non-residential land use development anticipated to occur in the unincorporated areas of San Joaquin County through the year 2035. These estimates are used for the following purposes in the fee calculation:

- Estimates of existing and future development are used to evaluate future traffic levels and determine the need for transportation improvements within the unincorporated areas of the county; and,
- Estimates of future development are used to allocate the costs of required transportation improvements and ultimately to calculate a fee per unit of new growth.

The following sections describe the development projections and key assumptions.

TIMF PLANNING HORIZON

To properly differentiate between existing versus new development, as well as existing versus future roadway deficiencies, a new baseline analysis year was established for this TIMF update. This required the existing SJCOG baseline land use data to be updated to reflect conditions within the unincorporated areas of the County as of 2014.

To establish a future year horizon, a jurisdiction's General Plan and the related environmental impact analysis typically provide the data for an impact fee nexus study. The update to the San Joaquin County General Plan (adoption anticipated in 2015/16) and SJCOG's adopted 2014 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) are both based on a 2035 forecast horizon. Consistency with these documents is desired given that both specify priority regional transportation projects as well as household and employment projections for the unincorporated and incorporated areas of the San Joaquin County respectively.

Based on the shared planning horizon of these two documents, a planning horizon of 2035 was chosen for the TIMF update. A 2035 planning horizon is considered long enough to plan for long-term infrastructure needs, yet short enough to represent reasonably anticipated growth based on current land use policy. It also puts the county in line with typical debt financing plans of 20 to 30 years. A 2035 horizon year also makes this TIMF update consistent with the RTIF and the RTP/SCS's capital programs and associated growth projections.

TIMF LAND USE ASSUMPTIONS

County-wide household and employment projections were derived using a hybrid approach. Growth projections for the unincorporated areas of San Joaquin County were based on the

anticipated changes recommended in the County's General Plan update (adoption anticipated in 2015/16). For the incorporated cities, the 2035 regional growth forecasts for households and employment were based on SJCOG's 2014 RTP/SCS. This approach was taken to ensure that growth assumptions within the unincorporated areas remained consistent with the County's impending General Plan update while growth in the incorporated areas remained consistent with the adopted regional growth forecasts for the county as a whole. Household growth projections were used to estimate future residential development, while employment growth projections were used to estimate future retail and commercial/industrial development.

Land Use Categories

The TIMF currently charges fees for the following land use categories:

- Single Family (Dwelling Unit)
- Multi-Family (Dwelling Unit)
- Office (One Thousand Square Feet)
- Retail Service (One Thousand Square Feet)
- Warehouse (One Thousand Square Feet)
- Service Commercial (One Thousand Square Feet)
- Manufacturing (One Thousand Square Feet)

A typical strategy to streamline the administration of a fee program is to combine land use categories. Conversely, if a particular land use type is not adequately captured by the fee structure the roadway impacts it causes will ultimately be subsidized by others. Consideration for adding categories may be appropriate when a particular land use type that once was insignificant emerges to play a more prevalent role in a region's economy. In these cases, the existing fee structure may not reflect the emerging use, allowing insufficient fees to be collected to address the impacts.

Upon review of San Joaquin County's TIMF land use categories relative to other fee programs in the region, it was confirmed that the current fee categories continue to adequately differentiate between the impacts of different development project types. However, given the emergence of wineries, agri-business, and agri-tourism in the region, an examination of best practices for agricultural land use fee schedules in the San Joaquin Valley was examined. It was determined that at this time most fee schedules in the San Joaquin Valley do not specifically identify how agricultural land uses are addressed in their fee schedules. As shown in **Table 2**, exceptions include Merced County's Regional Traffic Impact Fee which combines agricultural processing with industrial land use and Fresno County which includes an Agriculture Facility Exemption Definition as part of its fee.

Based on this information, it was determined that agriculture facilities could best be addressed by amending the San Joaquin County TIMF Operating Agreement to include an Agriculture Facility Exemption Definition similar to Fresno County. In the event an agricultural facility is determined to be non-exempt (and therefore subject to the TIMF), the Warehouse category would be applied.

Other atypical land use types examined included mining (i.e., extraction industries) and recreational facilities. These land uses are considered atypical given that their trip generation characteristics occur outside the typical AM/PM peak hours and/or on weekends. Input from the County and a review of past County fee appeals revealed that the majority of fee issues occur when the expected trip generation for a specific project does not match or align with the project's program defined land use category's trip generation. As a result, the County includes a fee per daily trip option (per the 2008 TIMF update) to address these types of circumstances. Since 2008, the fee per daily trip option has been frequently used to resolve such issues. Given this, it was determined that adding land use categories for mining and recreational uses was not considered necessary.

Based on these findings, the existing fee land use categories were retained as part of this update. The current TIMF appeal process will continue to allow for special consideration of the impacts of unique projects that do not fit well under the standard categories. It will also continue to include an updated fee per daily trip alternative that can be used in lieu of the traditional land use specific fee.

Table 2. Development Impact Fees & Agricultural Land Uses in Southern San Joaquin Valley Counties

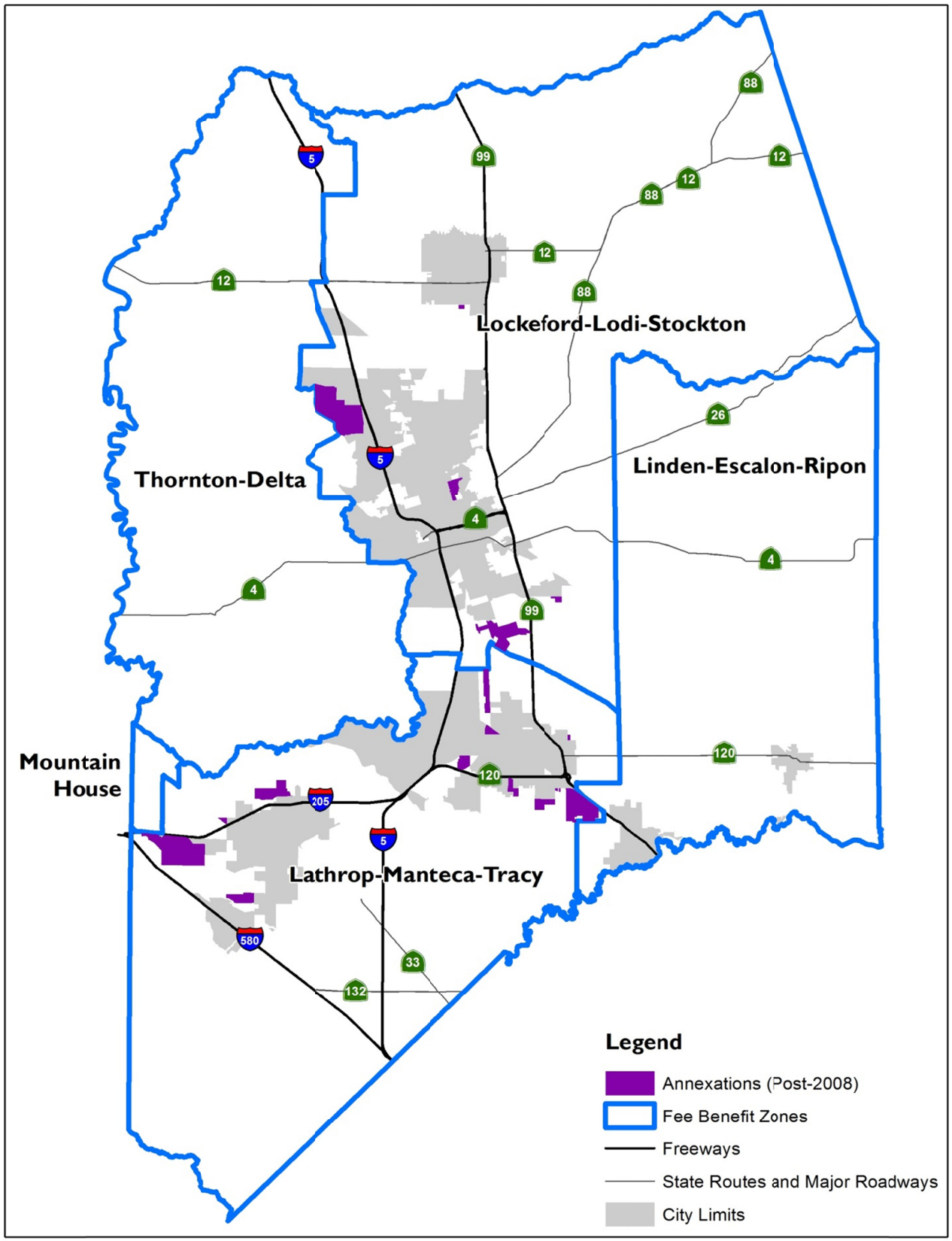
Fee	Application To Agricultural Land Uses	Source
Fresno County, Public Facilities Impact Fee	No agricultural land uses in fee schedule. Exemption for agricultural uses defined as "construction qualifying as a detached building or structure intended for exclusive agricultural uses, which will not be fully enclosed on at least one side (e.g. three-sided barn, with no door, gate, or other means of enclosure on the fourth side), and will not be on commercial or industrial zoned land, or on land where a land use application has been approved for use as a commercial or industrial use; provided however, a building or structure constructed under this provision shall not be used as a place of human habitation, employment, processing of farm products, or for private or public admittance; employees removing or returning farm equipment, farm crops and supplies, or the feeding of poultry, livestock or similar feeding of animals may be permitted."	Fresno County Code, Chapter 17.90.030(o)
Fresno COG, Regional Transportation Mitigation Fee	No agricultural land uses in fee schedule. See also "RTMF Administrative Manual Version M".	http://www.fresnocog.org/regional-transportation-mitigation-fee-rtmf.
Kern County, Transportation Impact Fee	No agricultural land uses in fee schedule and no specific exemptions for agricultural uses. Only related exemption is for "construction of accessory buildings or structures which will not produce additional vehicular trips over and above those produced by the principal building or use of the land."	County Code, Chapter 17.60.090(A)(2).
Kings County	Not applicable (no unincorporated area impact fees)	
Madera County, Road Impact Fee	No agricultural land uses in fee schedule. Exemption for agricultural uses defined as "miscellaneous agricultural outbuildings which will be used primarily for the storage of farm equipment and supplies."	County Code, Chapter 14.70.040(B).
Merced County, Regional Transportation Impact Fee	Fee schedule includes "industrial/agricultural processing" land use. No specific exemption for agricultural uses.	County Code, Chapter. 5.68.060(D).
Tulare County	Not applicable (no unincorporated area impact fees)	

TIMF BASELINE LAND USE

The operative baseline land use data available during this TIMF update was the 2010 base year travel demand model land use data used in San Joaquin County's General Plan update. To ensure that the TIMF update isolates only the traffic impacts associated with new development, the 2010 baseline data was updated to reflect 2014 conditions. A socio-economic data file was developed by "growing" the 2010 model base year land use file with County building permit data issued between 2010 and January 1, 2014. Given that only the County's permit data was processed, the baseline land use assumptions for the incorporated areas remained as defined in SJCOG's 2010 forecast land use file.

Updating the baseline land use was also driven by annexations that have occurred since 2008. This resulted in a significant amount of development growth that previously had been designated as unincorporated development to be re-designated as incorporated area development. These annexations are shown on **Figure 2**.

Figure 2. San Joaquin County Annexations since 2008



TIMF FUTURE LAND USE

The most recent land use growth forecasts within the County were examined for this TIMF update. As previously stated, growth within the incorporated areas of the County was based on SJCOG's 2014 RTP/SCS 2035 land use projections while the unincorporated area growth forecasts were based on all anticipated changes recommended in the County's General Plan update.

Based on this analysis, a 2035 hybrid land use scenario of the San Joaquin County General Plan and 2014 RTP/SCS land use forecasts was developed. The 2035 hybrid land use was processed and input into the SJCOG's travel demand model. This was considered the most reasonable basis for the TIMF update for the following reasons:

- The pending County General Plan update provides the most recent vision and for land use growth within the unincorporated portions of the County; and,
- The RTP/SCS forecast provides land use growth forecasts with input from the County's incorporated jurisdictions.

Table 3 displays unincorporated area demographic estimates in San Joaquin County, by Fee Benefit Zones, for 2014 and 2035. **Table 4** shows the unincorporated growth increment for each fee benefit zone, derived from **Table 3**.

Figure 3 compares the current housing unit and employment projections for the unincorporated areas of the county relative to the previous 2008 TIMF projections. Reasons for the dramatic decrease in projected housing unit growth include: 1) there is less planned development growth in unincorporated areas associated with the County's new General Plan; 2) annexations from 2008 to 2015 shifting significant growth to city jurisdictions; and, 3) the 2014 RTP/SCS land use assumes more growth is concentrated in or near urban/developed areas.

Figure 3. San Joaquin County Housing Unit and Employment Forecasts

Table 3. Unincorporated Estimates and Projections by Planning Area

Time Period and Land Use	TIM Fee Benefit Zone 1 Thornton - Delta	2 Stockton-Lodi-Lockeford - Clements	3 Tracy-Lathrop-Manteca	4 Linden-Escalon-Ripon	5 Mountain House	Total
2014 (Existing)						
Residential (DU-dwelling units)						
Single Family	846	9,442	4,252	2,962	2,649	20,151
Multi Family	863	2,475	799	513	272	4,922
Total	1,709	11,917	5,051	3,475	2,921	25,073
Non-Residential (employment)						
Retail	46	1,060	550	511	34	2,201
Service	246	3,254	973	543	103	5,119
Other	2,575	6,979	2,374	3,714	-	15,642
Total	2,867	11,293	3,897	4,768	137	22,962
Non-Residential (KSF-thousand building square feet)						
Retail	17	399	207	192	13	828
Service	185	2,450	733	409	78	3,855
Other	1,939	5,255	1,788	2,797	-	11,779
Total	2,141	8,104	2,728	3,398	91	16,462
2035 (Forecast)						
Residential (DU-dwelling units)						
Single Family	976	20,564	9,614	3,484	13,400	48,038
Multi Family	967	4,279	1,698	606	4,971	12,521
Total	1,943	24,843	11,312	4,090	18,371	60,559
Non-Residential (employment)						
Retail	52	1,658	784	864	1,909	5,267
Service	479	12,607	2,785	668	3,740	20,279
Other	3,081	10,481	3,513	3,714	8,328	29,117
Total	3,612	24,746	7,082	5,246	13,977	54,663
Non-Residential (KSF-thousand building square feet)						
Retail	20	623	295	325	718	1,981
Service	361	9,493	2,097	503	2,816	15,270
Other	2,320	7,892	2,645	2,797	6,271	21,925
Total	2,701	18,008	5,037	3,625	9,805	39,176

Table 4. Unincorporated Growth by Planning Area

Time Period and Land Use	TIM Fee Benefit Zone 1 Thornton-Delta	2 Stockton-Lodi-Lockeford-Clements	3 Tracy-Lathrop-Manteca	4 Linden-Escalon-Ripon	5 Mountain House	Total
Growth (2010-2035)						
Residential (DU-dwelling units)						
Single Family	130	11,122	5,362	522	10,751	27,887
Multi Family	104	1,804	899	93	4,699	7,599
Total	234	12,926	6,261	615	15,450	35,486
Non-Residential (employment)						
Retail	6	598	234	353	1,875	3,066
Service	233	9,353	1,812	125	3,637	15,160
Other	506	3,502	1,139	-	8,328	13,475
Total	745	13,453	3,185	478	13,840	31,701
Non-Residential (KSF-thousand building square feet)						
Retail	3	224	88	133	705	1,153
Service	176	7,043	1,364	94	2,738	11,415
Other	381	2,637	857	-	6,271	10,146
Total	560	9,904	2,309	227	9,714	22,714

SQUARE FEET PER EMPLOYEE

To convert employees to thousands of square feet of building space a conversion factor is used. The factors are displayed in **Table 5**, and are consistent with the factors used in the previous TIMF update. Estimates of net square feet per employee are increased by a vacancy factor to estimate gross square feet per employee. This adjustment was necessary because the trip generation rates used in the nexus analysis reflect gross square fee.

Table 5. Square Feet per Employee

Land Use	Net Square Feet per Employee	Vacancy Rate	Gross Square Feet per Employee
Retail	350	7%	376
Service	700	7%	753
Other	700	7%	753

DWELLING UNIT EQUIVALENT (DUE) FACTORS

The TIMF is allocated to different types of development based on the trip generation characteristics of a given land use type or category. Dwelling Unit Equivalent (DUE) factors compare the trip generation rates, by land use, to a single-family dwelling unit as a common metric for analysis. The trip generation factors used in the TIMF analysis are presented in **Table 6** and are consistent with the DUE factors used in the previous TIMF update except that the trip generation rates for each land use were updated to the 9th edition of the *ITE Trip Generation Manual*. The percent of new trips was based on surveys conducted in San Diego which identified the proportion of diverted trips (pre-existing trips) relative to entirely "new" trips attributable to a particular new development.

Table 6. Dwelling Unit Equivalency (DUE) Factors

Land Use	ITE Code	Peak Hour Trip Rate	Unit	Percent New Trips	Dwelling Unit Equivalent
Residential (per Dwelling Unit)					
Single Family	210	1.00	DU	100%	1.00
Multi Family	220	0.62	DU	100%	0.62
Non-Residential (per Thousand Square Feet)					
Retail	820	3.71	KSF	50%	1.86
Service Commercial*	826	2.71	KSF	65%	1.76
Office	710	1.49	KSF	65%	0.97
Manufacturing	140	0.73	KSF	85%	0.62
Warehouse	150	0.32	KSF	85%	0.27
*The ITE code switched from 814 to 826 with the 9th Edition of the ITE Trip Generation Manual.					

Sources: Institute for Transportation Engineers, *Trip Generation 9th Edition*, 2012; San Diego Association of Governments, *Brief Guide of Vehicular Trip Generation Rates*, April 2002.

The peak hour trip rates from the *ITE Trip Generation Manual 9th Edition* include all vehicles including heavy duty trucks. The traffic counts used for this TIMF update were also adjusted based on truck classification counts to reflect passenger car equivalencies (PCE). These steps are typically taken to ensure that the added roadway capacity requirements to accommodate STAA-size trucks (48-52 feet from kingpin to rear axle) are addressed. Given the predominant use of STAA-sized vehicles by non-residential development including warehouse, manufacturing retail and agriculture in San Joaquin County, a literature search was performed to examine the breadth of applied land use based truck trip generation factors for possible consideration as part of this update. Several sources were examined including: *NCHRP 298 Truck Trip Generation Data: A Synthesis of Highway Practice (FHWA, 2001);* and up to ten other research or applied practice articles. These are listed in **Appendix 1**. The literature review revealed several trip generation studies of possible applicability to the San Joaquin Region but these demonstrated significant variance in rates. In addition, no studies were applicable to how the rates could be applied to a fee program. Based on this finding it

was determined that the application of specific truck trip generation rates not be pursued at this time. Development or use of truck specific trip generation rates can be re-examined as part of future TIMF updates. The County could also consider applying a PCE adjustment directly to the ITE rates prior to the DUE calculation to better capture the effect of STAA-size trucks.

Table 7 shows the dwelling unit equivalent growth by Fee Benefit Zone. For nonresidential land uses, the projection of employees is converted to thousands of square feet of building space using the factors presented in **Table 5**.

Figure 4 compares the DUE growth by Fee Benefit Zone for the unincorporated areas of the county relative to the previous 2008 TIMF projections. Similar to the demographic projection comparisons presented earlier and for similar reasons, generally lower DUE growth is being projected relative to the 2008 TIMF. Two fee benefit zones in particular, Thornton-Delta and Linden-Escalon-Ripon, show very little DUE growth. Note that growth in Mountain House is not factored into the TIMF fee structure.

Figure 4. Dwelling Unit Equivalent Growth (2014-2035) by Fee Benefit Zone (Existing vs. Proposed)

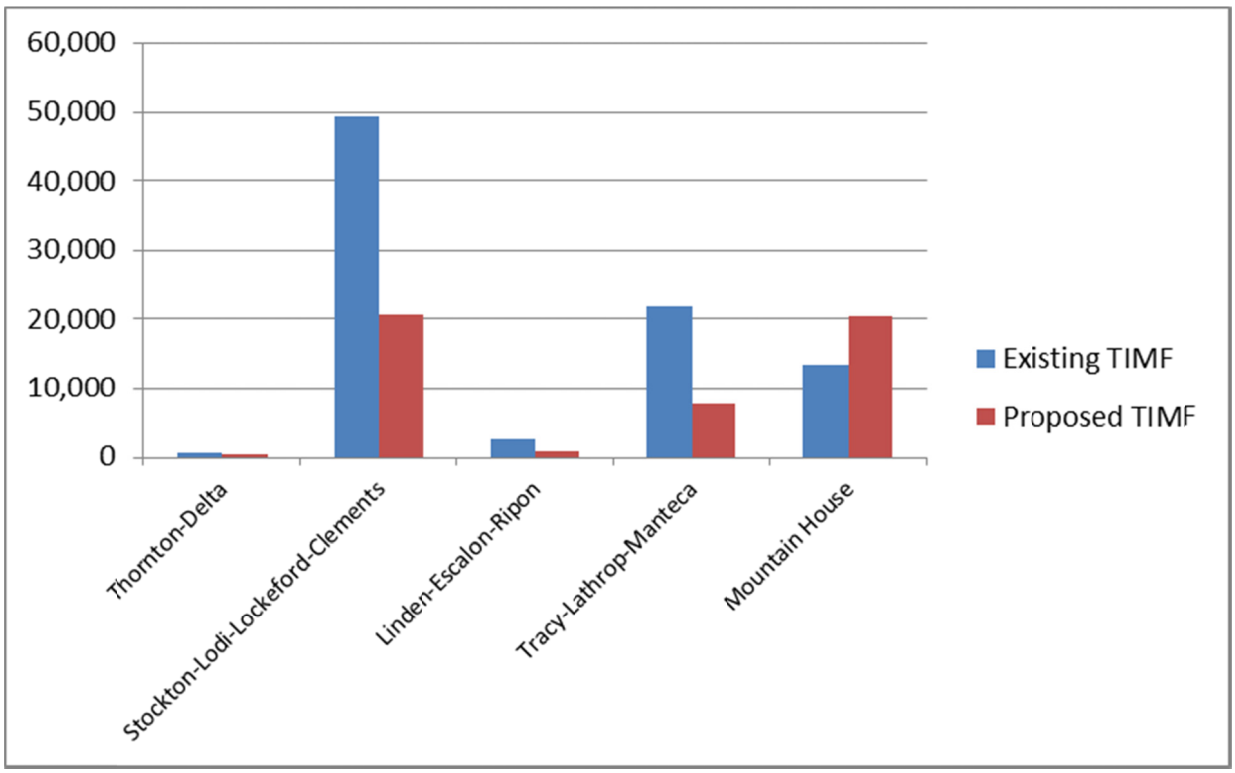


Table 7. Dwelling Unit Equivalent Growth (2014-2035)

Land Use	TIM Fee Benefit Zone					Total
	1	2	3	4	5	
	Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon	Mountain House	
Single Family						
Dwelling Units	130	11,122	5,362	522	10,751	27,887
DUE Factor	1.00	1.00	1.00	1.00	1.00	1.00
DUE	130	11,122	5,362	522	10,751	27,887
Multi Family						
Dwelling Units	104	1,804	899	93	4,699	7,599
DUE Factor	0.62	0.62	0.62	0.62	0.62	0.62
DUE	64	1,118	557	58	2,913	4,710
Retail						
Sq. Ft. (1,000s)	3	224	88	133	705	1,153
DUE Factor	1.81	1.81	1.81	1.81	1.81	1.81
DUE	5	405	159	241	1,276	2,086
Service						
Sq. Ft. (1,000s)	176	7,043	1,364	94	2,738	11,415
DUE Factor	0.97	0.97	0.97	0.97	0.97	0.97
DUE	170	6,821	1,321	91	2,652	11,055
Other						
Sq. Ft. (1,000s)	381	2,637	857	-	6,271	10,146
DUE Factor	0.45	0.45	0.45	0.45	0.45	0.45
DUE	171	1,187	386	-	2,822	4,566
Total DUE Growth	**540**	**20,653**	**7,785**	**912**	**20,414**	**50,304**

Note: The Retail DUE factor is the average of the Retail and Service Commercial factors, the Service DUE factor is equal to the Office DUE factor, and the Other DUE factor is the average of the Manufacturing and Warehouse factors (see Table 6).

Section 3 DEFICIENCY ANALYSIS & CAPITAL IMPROVEMENT PROGRAM

DEFICIENCY ANALYSIS & CAPITAL IMPROVEMENT PROGRAM

This section describes the analysis approach used to identify roadway deficiencies required to develop the TIMF Capital Improvement Program (CIP) list of projects.

TIMF TRAFFIC DATA COLLECTION

As part of the TIMF update, a comprehensive inventory of existing traffic counts was performed. Three traffic count data sources were used to develop the existing count inventory:

1. San Joaquin County 2014 TIMF Update Count Data (40 segment counts)
2. San Joaquin County General Plan Update Count Data[1]
3. SJCOG Regional Congestion Management Program Monitoring Count Data[2]

All 24-hour counts were based on 72-hour continuous ADT segment counts (Tues-Thurs) and adjusted to reflect passenger car equivalencies (PCE). Intersection turning movement counts are not addressed as part of this deficiency analysis. Combined, a total of 91 roadway segment counts on unincorporated roadways throughout San Joaquin County were used as part of this TIMF update. This sample size was considered adequate for determining existing travel demand on unincorporated county roadways.

These data were used to for the following two purposes:

1. To identify existing deficiencies; and,
2. To adjust future year "raw" link volumes as generated by the SJCOG travel model used to determine future year deficiencies.

BASE YEAR ANALYSIS

The 2014 base year model land use file was developed for the following purposes:

- Determine number of trips generated by new development within each Fee Benefit Zone (necessary for the $/trip fee estimate);
- Allow a new baseline traffic model to be developed; and,
- Develop traffic model baseline difference adjustment factors used for adjusting "raw" 2035 forecast traffic volumes.

[1] Counts were collected in 2008 and analyzed for adjustments as appropriate. Given the recession, an analysis of the 2008 counts was performed as part of the 2035 General Plan Update EIR. A comparison of published state highway volumes was performed which determined that the 2008 traffic counts in San Joaquin County still reasonably reflect 2013-14 traffic conditions (See **Appendix 2**).

[2] Counts were collected in 2013.

Identification of existing deficiencies was based on the traffic count information described above. Only unincorporated roadways were evaluated - excluding those facilities listed in the RTIF project list and roadways located within the incorporated areas of San Joaquin County.

Identification of existing deficiencies was based on the following two methodologies listed in priority order:

1. Comparing roadway segment daily traffic counts to San Joaquin County's ADT Thresholds by County Functional Classification[3]; and,
2. Identifying all counts shown to have an AM/PM peak hour volume-to-capacity (v/c) ratio of .75 or higher. This v/c ratio represents the midpoint between LOS C/D.

All roadway segments currently on the TIMF capital improvement list were reanalyzed for LOS using the more recent traffic count data. For roadways shown to be deficient in the baseline, only the degree of future degradation, as measured by the share of new daily traffic growth impacting the facility, is applicable to the TIMF. This is described in a subsequent section of this report.

2035 FORECAST ANALYSIS

The 2035 model land use file and network, developed using the County's General Plan Update roadway network, and a hybrid of the County's proposed General Plan land use in the unincorporated areas and the SJCOG's 2014 RTP/SCS land use in the incorporated areas, provided the basis for the 2035 travel forecast. The model network was coded with unique link ID numbers on those links that represent RTIF projects. Upon determining the list of deficient county roadways, a similar link ID exercise was performed for the TIMF capital improvement list. The need for additional network specificity within the unincorporated areas was also evaluated and performed as appropriate.

As part of the deficiency analysis, all future planned or programmed unincorporated roadway improvements were removed from the SJCOG model network while planned or programmed improvements located within the incorporated areas and/or on state/regional roadways (i.e., RTIF system) were retained. Most of the unincorporated planned or programmed improvements were identified in SJCOG's FTIP and 2014 RTP/SCS financially constrained (i.e., Tier I) capital improvement list. Additional non-regional improvements were identified by developing 2014 and 2035 network difference plots that allowed links that reflect more lanes in 2035 than in 2014 to be identified. Conversely, all currently programmed improvements on the regional RTIF network and incorporated area network of roadways remained as part of the 2035 TIMF network.

Over 90 county roadway segments were analyzed as part of the unincorporated area deficiency analysis. Roadway segment selection was based on the existing TIMF project list, raw 2035 travel

[3] Source: San Joaquin County draft 2035 General Plan.

model forecast results using a variety of screening criteria (e.g., County ADT LOS C thresholds; LOS C modeled v/c ratios; and, >2.0% annual average growth rates), and segments with recent existing traffic counts. With the exception of segments specifically identified in the RTIF project list, several county-owned roadways on the designated RTIF network were also analyzed.

All 2035 SJCOG model forecasts were adjusted based on the *Highway Traffic Data for Urbanized Area Project Planning and Design* report (NCHRP Report 255, 1982). NCHRP 255 adjustments entail measuring the difference (in absolute and ratio terms) between base year model volumes and the base year traffic counts and applying this mathematical relationship to adjust model forecasts. Mathematical conditions were established to ensure that the most reasonable adjustment - the difference method, ratio method, or the average between the two - was systematically selected. The adjusted baseline counts and adjusted 2035 daily volumes are provided in **Appendix 3**.

The final adjusted segment volumes were then compared against the County's draft 2035 General Plan ADT capacity thresholds to determine needed capacity improvements. The County's ADT LOS Thresholds define a "target" LOS of C. Capacities are determined by functional classification of roadway and are provided in **Table 8** below.

Table 8. San Joaquin County ADT Thresholds (LOS C)

Functional Class	Lanes	Capacity Threshold Daily
Major Arterial	2	12,500
	3	15,000
	4	30,100
	5	35,000
	6	45,000
Minor Arterial	2	12,500
	3	15,000
	4	25,000
Collector, Commercial/Industrial	2	10,000
Collector, Residential	2	7,000
Local, Commercial/Industrial	2	7,000
Local, Residential	2	2,000

Source: San Joaquin County General Plan

Basing the TIMF deficiency analysis on these capacity thresholds of the impending County General Plan update establishes a stronger relationship between the County's TIMF and General Plan. Based on a comparative analysis between the County's planning level ADT thresholds and other known sources of published thresholds, the San Joaquin County ADT thresholds appear to be in reasonable agreement with other documented thresholds. For the 4-lane Major Arterial and 2-lane Collector

(Commercial/Industrial) categories, the County's thresholds are set slightly higher (less stringent) to other published thresholds.

Identification of existing and future roadway deficiencies was based on San Joaquin County's ADT capacity thresholds. In addition to the capacity threshold analysis, the following secondary deficiency screens were also used to identify deficient conditions:

1. Available traffic studies developed within the county were reviewed. Several studies identified future peak hour deficiencies based on more detailed operational analyses. These studies included: SR-88 Bypass Project Study Report, North County Landfill Expansion Traffic Study, and the Port Access Feasibility Study II Traffic Analysis to name a few. County roadways identified as being deficient based on the cumulative plus project traffic analyses were included in the list of deficient segments.
2. Based on select link analysis, several county roadways were shown to function as parallel routes to congested RTIF segments (i.e., state and regional facilities identified on the RTIF system). Given that these parallel segments provide additional capacity that serves several prominent regional origin-destination pairs, they were included in the list of future improvement needs.
3. Given the potential model error associated with long-term 20+ year travel forecasts, a 5 percent error tolerance was used if a given segment's daily forecast fell just shy of the ADT capacity threshold.
4. Identifying all 2035 daily traffic volumes shown to have an AM/PM peak hour volume-to-capacity ratio of 0.75 or higher as defined by the SJCOG Travel Model Daily 2035 forecast.
5. Segments identified as exceeding the County's ADT capacity thresholds in the draft environmental analysis of the draft 2035 General Plan were considered deficient.

The TIMF deficiency analysis results are shown in **Table 9**. Roadway segments are classified as either a forecasted deficiency or a screening deficiency (as described by bullets 1 – 5). A total of 25 roadway segments were identified as deficient in 2035. Four of the 25 segments were shown to be deficient in the 2014 base year. Two of the identified deficiencies at Benjamin Holt Drive and Lower Sacramento Road were not carried forward to the CIP development stage due to recent improvements to the segment or other funding sources already having been secured for an improvement project at the deficient location. The remaining 23 segments formed the basis for developing the TIMF capital improvement program list described in the following section.

Deficient segments located entirely within the Mountain House Planning Area were removed from consideration given that these are already subject to the Mountain House Transportation Improvement Fee.

CAPITAL IMPROVEMENT PROGRAM LIST OF PROJECTS

To establish contiguous project limits, each deficient segment listed in **Table 9** was reviewed relative to its respective SJCOG travel demand model link volume-to-capacity results and jurisdictional boundaries (RTIF and City Limit Boundary GIS layers). In some cases, intermediate non-deficient segments were combined with deficient segments to preclude gaps and establish logical continuity in terms of project limits. Based on these assessments, the 23 segments were combined to form 21 improvement project segments.

Once project limits were established, the minimum amount of capacity to remedy the deficiency was determined (i.e., widening for one continuous shared left turn lane or providing an additional through lane in each direction). In this way, right-of-way (ROW) costs could be more accurately estimated and minimized to the greatest extent possible when estimating total project costs. Note that as part of the 2008 TIMF update, only the two-lane widening improvement option was considered.

The number of existing structures for each CIP project was determined based on the County's GIS structures layer. Based on this analysis, the exact number of affected structures of a given TIMF CIP project could be determined and costs estimated.

The TIMF project list is shown in **Table 10** and graphically shown on **Figure 5**. The TIMF project numbers shown in **Figure 5** correspond to the "ID #" field in **Table 10**.

Table 9. San Joaquin County TIMF ADT Deficiency Analysis

Fee Benefit Zone	Street Name	Location/Limits	Existing Functional Class	Count Year	Lanes	Existing ADT	2035 ADT	ADT Threshold	V/C AM (PM)[1]	Improvement Lanes Needed	Base Year Deficiency	Forecast Deficiency	Secondary Forecast Deficiency	Secondary Forecast Deficiency Screen[2]
Lathrop-Manteca-Tracy	Chrisman Rd[3]	North of Schulte Rd	Minor Arterial	2008	2	11,200	17,100	12,500	--	3			YES	5
Lathrop-Manteca-Tracy	Tracy Blvd[3]	Clifton Court Rd to Grimes Rd	Major Collector	2008	2	5,600	5,800	7,000	--	3			YES	5
Lathrop-Manteca-Tracy	Tracy Blvd[3]	South of Finck Rd	Major Collector	2008	2	7,200	10,800	7,000	--	3			YES	5
Linden-Escalon-Ripon	Copperopolis Rd	Dietrich Rd to Drais Ave	Major Collector	2008	2	1,300	3,100	7,000	0.76 (0.78)	3			YES	4
Linden-Escalon-Ripon	Escalon-Bellota Rd	Mahon Ave to Magnolia Ln	Major Collector	2008	2	8,600	11,400	7,000	--	3	YES	YES		
Linden-Escalon-Ripon	Mariposa Rd	Van Allen Rd to Carrolton Rd	Major Collector	2013	2	5,500	8,700	7,000	0.99 (0.99)	3		YES	YES	4
Linden-Escalon-Ripon	McHenry Ave[3]	Jones to County Boundary	Minor Arterial	2008	3	13,100	19,500	15,000	--	4			YES	5
Linden-Escalon-Ripon	River Rd	Ripon City Limits to Santa Fe Rd	Major Collector	2014	2	1,900	3,900	10,000	--	3			YES	2
Linden-Escalon-Ripon	Sante Fe Rd	Orange Ave to River Rd	Major Collector	2008	2	5,300	7,900	7,000	--	3		YES		
Stockton-Lodi-Lockeford	Benjamin Holt Dr[4]	Harrisburg Pl to Pershing Ave	Minor Arterial	2014	3	14,900	17,900	15,000	--	4		YES		
Stockton-Lodi-Lockeford	Harney Ln	SR-99 to SR-88	Major Collector	2014	2	4,600	4,621	10,000	--	3			YES	1
Stockton-Lodi-Lockeford	Lower Sacramento Rd[4]	Marlette Rd to Bear Creek Levee	Principal Arterial	2008	2	11,200	13,800	12,500	--	3		YES		
Stockton-Lodi-Lockeford	Main St	SR-99 to Gillis Rd	Minor Arterial	2014	2	4,700	6,100	12,500	0.79 (0.84)	3			YES	4
Stockton-Lodi-Lockeford	Newton Rd	Wilson Wy to Cherokee Rd	Major Collector	2008	2	12,800	13,400	10,000	--	3	YES	YES		
Stockton-Lodi-Lockeford	Turner Rd	I-5 to Lodi City Limits	Major Collector	2014	3	3,700	3,800	7,000	--	4			YES	2
Stockton-Lodi-Lockeford, Latrhop-Manteca-Tracy, Linden-Escalon-Ripon	French Camp Rd	SR-99 to SR-120	Minor Arterial	2014	2	4,500	7,800	12,500	0.80 (0.87)	3		YES	YES	1,2,4
Lathrop-Manteca-Tracy	Corral Hollow Rd	County Boundary to Manteca City Limits	Major Collector	2008	2	3,000	4,200	7,000	0.76 (0.83)	3			YES	4
Lathrop-Manteca-Tracy	Grant Line Rd	El Rancho Rd to Bird Rd	Major Collector	2008	2	8,400	9,500	10,000	--	3			YES	3
Lathrop-Manteca-Tracy	Lathrop Rd	Airport Wy to Lathrop City Limits	Principal Arterial	2008	2	12,000	13,100	12,500	0.91 (0.94)	3		YES	YES	4
Lathrop-Manteca-Tracy	Valpico	Corral Hollow to Tracy City Limits	Principal Arterial	2014	2	9,900	15,400	12,500	--	4		YES		
Lathrop-Manteca-Tracy	W. Byron Rd	Hansen Rd to Reeve Rd	Minor Arterial	2014	2	12,800	21,100	12,500	--	4	YES	YES		
Lathrop-Manteca-Tracy	W. Schulte Rd	Macarthur Dr to Chrisman Rd	Local	2014	2	4,300	10,200	7,000	--	3		YES		
Lathrop-Manteca-Tracy	Yosemite Ave/Guthmiller Rd	SR-120 to Manteca City Limit	Minor Arterial	2008	2	15,700	15,700	12,500	0.79 (0.83)	4	YES	YES	YES	4
Lathrop-Manteca-Tracy, Linden-Escalon-Ripon	Jack Tone Rd	French Camp Rd to SR-120	Major Collector	2008	2	4,600	7,800	7,000	--	3		YES		
Lathrop-Manteca-Tracy, Linden-Escalon-Ripon	Jack Tone Rd	Leroy Ave to Graves Rd	Major Collector	2008	2	4,500	7,600	7,000	--	3		YES		

1 Only reported when the volume-to-capacity ratio threshold (0.75) was exceeded in the forecast year

2 Secondary Deficiency Screens:

- 1 - Traffic Study Deficiency
- 2 - Parallel Facility to Regional Roadway
- 3 - Model Error Tolerance
- 4 - Forecast Volume-to-Capacity Deficiency
- 5 - San Joaquin General Plan Update Deficiency

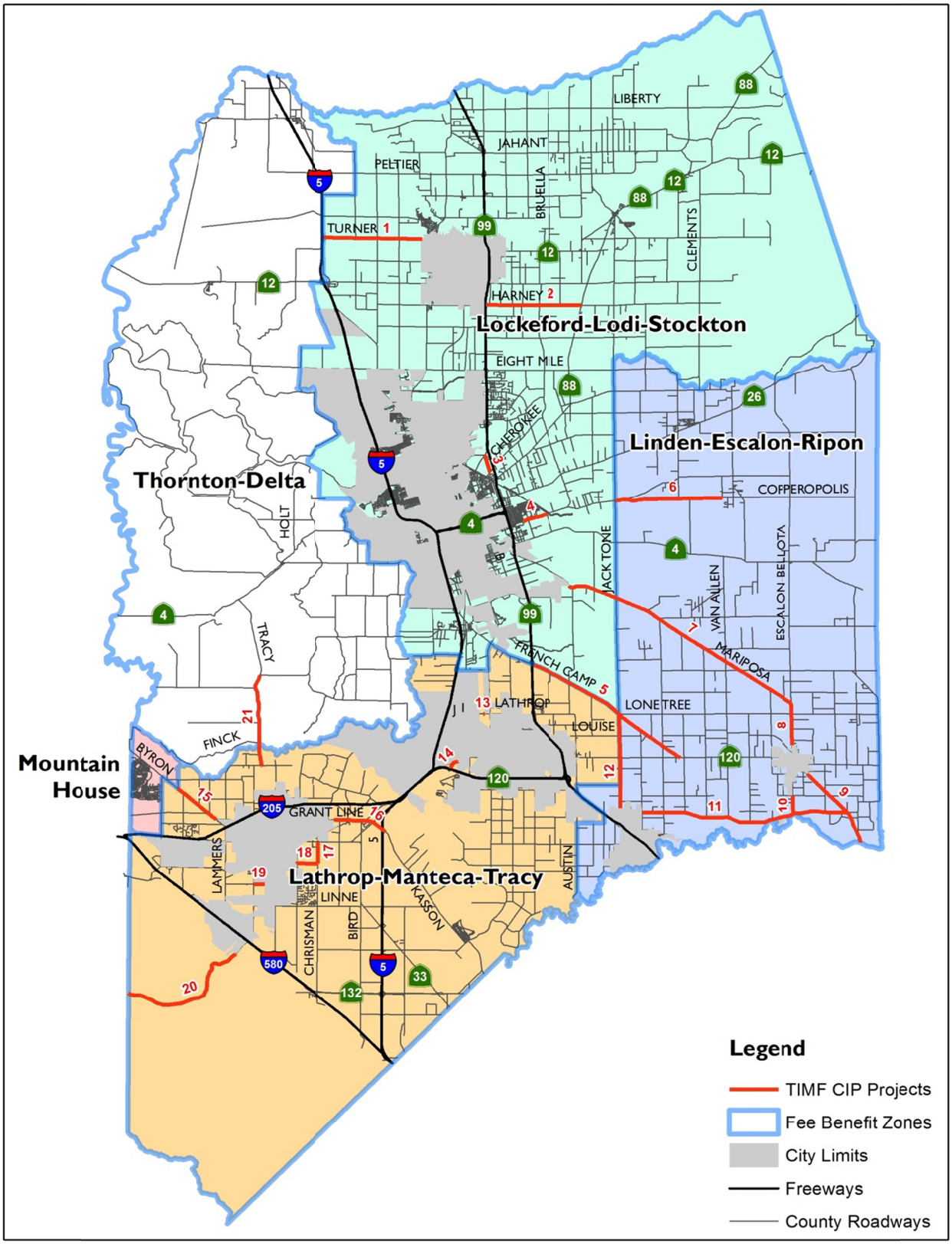
3 ADT based on the draft San Joaquin County General Plan Update DEIR Modeling (Secondary Screen Overrides)

4 Deficient segments not carried forward into capital improvement project development due to recent improvements to the segments or other funding sources already secured for an improvement project.

Table 10. TIMF Capital Improvement Program Project List

ID #	Street Name	Limits	Fee Benefit Zone	Length (Miles)	Existing Lanes	Improvement Lanes Needed	Number of Structures	Length of Structure (feet)
1	Turner Rd	I-5 to Lodi City Limits	Lockeford-Lodi-Stockton	4.5	2	4	2	55
2	Harney Ln	SR-99 to SR-88	Lockeford-Lodi-Stockton	4.5	2	3	5	226
3	Newton Rd	Wilson Wy to Cherokee Rd	Lockeford-Lodi-Stockton	0.8	2	3		
4	Main St	Del Mar Ave to Gillis Rd	Lockeford-Lodi-Stockton	1.1	2	3		
5	French Camp Rd	SR-99 to SR-120	Lockeford-Lodi-Stockton, Linden-Escalon-Ripon, Lathrop-Manteca-Tracy	8.1	2	3		
6	Copperopolis Rd	Jack Tone Rd to Dietrich Rd	Linden-Escalon-Ripon	5.0	2	3	3	82
7	Mariposa Rd	Stockton City Limits to Escalon-Bellota Rd	Linden-Escalon-Ripon	11.9	2	3	5	216
8	Escalon-Bellota Rd	Mariposa Rd to Escalon City Limits	Linden-Escalon-Ripon	1.8	2	3	2	90
9	Santa Fe Rd	Escalon City Limits to County Boundary	Linden-Escalon-Ripon	4.1	2	3	1	8
10	McHenry Ave	Jones Rd to County Boundary	Linden-Escalon-Ripon	0.9	2	4		
11	River Rd	Ripon City Limits to Santa Fe Rd	Linden-Escalon-Ripon	9.7	2	3	3	31
12	Jack Tone Rd	French Camp Rd to Ripon City Limits	Linden-Escalon-Ripon, Lathrop-Manteca-Tracy	4.3	2	3	2	17
13	Lathrop Rd	East of UPRR Overcrossing to Manteca City Limits	Lathrop-Manteca-Tracy	0.1	2	3		
14	Yosemite Ave/Guthmiller Rd	SR-120 to Manteca City Limits	Lathrop-Manteca-Tracy	0.5	2	4		
15	W. Byron Rd	Wicklund Rd to E. Grant Line Rd	Lathrop-Manteca-Tracy	2.3	2	4		
16	Grant Line Rd	Tracy City Limits to Mancuso Rd	Lathrop-Manteca-Tracy	2.5	2	3		
17	Chrisman Rd	Schulte Rd to Tracy City Limits	Lathrop-Manteca-Tracy	1.0	2	3		
18	W. Schulte Rd	MacArthur Dr to Chrisman Rd	Lathrop-Manteca-Tracy	1.0	2	3		
19	Valpico Rd	Corral Hollow Rd to Tracy City Limits	Lathrop-Manteca-Tracy	0.5	2	4		
20	Corral Hollow Rd	County Boundary to Tracy City Limits	Lathrop-Manteca-Tracy	6.4	2	3	6	335
21	Tracy Blvd	Howard Rd to Lammers Rd	Thornton-Delta, Lathrop-Manteca-Tracy	4.3	2	3	2	568

Figure 5. TIMF Capital Improvement Program Project Locations



*Link ID numbers match "ID #" presented in Table 10.

Section 4 TIMF Project Cost

TIMF PROJECT COST

Capital improvement unit cost estimates from the 2008 TIMF were updated to reflect 2014 price conditions for construction. The Caltrans Price Index was used to establish percentage changes in material costs. The updated cost per linear foot of improvements for widening from a two-lane to a three-lane facility (i.e., adding a continuous shared left turn lane) is as follows:

Roadway Widening (1 lane)	$84
Traffic Signals	$154
Sub-Total	*$238*
25% Engineering, Administration & Planning	$60
10% Miscellaneous[4]	$24
20% Contingency	$48
5% Inflation	$12
Cost per Linear Foot of Street	*$382*
5% Right of Way Cost	$19
Total Cost per Linear Foot of Street	**$401**

The updated per linear foot cost of improvements for widening from a two-lane to a four-lane facility (i.e., adding an additional through lane in each direction) is as follows:

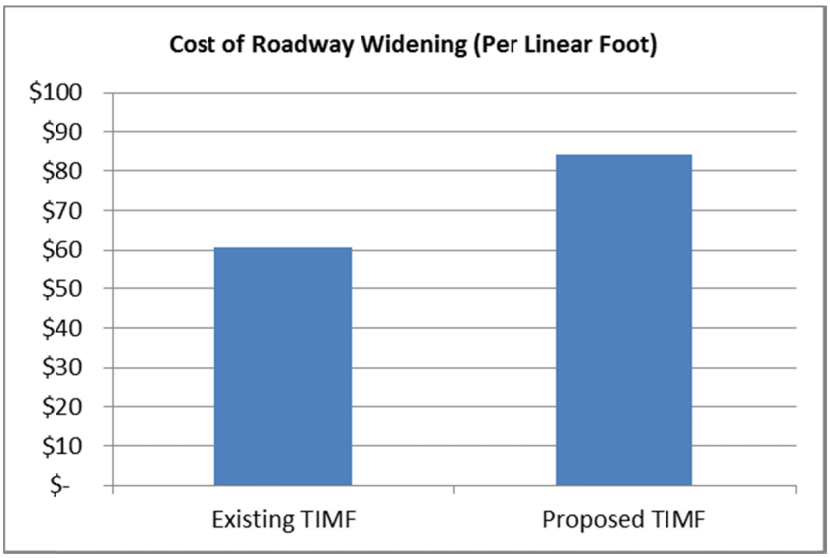
Roadway Widening (2 lanes)	$168
Traffic Signals	$154
Sub-Total	*$322*
25% Engineering, Administration & Planning	$81
10% Miscellaneous	$33
20% Contingency	$65
5% Inflation	$17
Cost per Linear Foot of Street	*$518*
20% Right of Way Cost	$104
Total Cost per Linear Foot of Street	**$622**

These per lineal foot cost adjustments reflect a 38% increase in roadway construction relative to the original 2008 per unit cost estimates developed for the 2008 TIMF (excluding structures, right-of-way, signals, or engineering costs). This comparison is illustrated in **Figure 6**.

A detailed description of the cost per linear foot of street improvement update is provided in **Appendix 4**.

[4] Miscellaneous costs cover mandatory items that routinely come up on widening projects including: driveway, mailbox, road sign, and ditch relocation; imported borrow; survey monument adjustment/relocation; cross-drain extensions, etc.

Figure 6. Per Lineal Foot Construction Cost (Existing vs Proposed)



Roadbed only excluding structures, right-of-way, signals, or engineering costs.

To more accurately determine roadway improvement costs that entail reconstruction of structures (e.g., bridges, canal crossings, railroad lines), specific costs for structures were developed. The per linear foot cost for each structure reconstruction associated with a roadway widening is as follows:

Bridge Reconstruction/Widening	$7,200
25% Engineering, Administration & Planning	$1,800
10% Miscellaneous	$800
20% Contingency	$1,500
5% Inflation	$400
Cost per Linear Foot of Street	*$11,700*
20% Right of Way Cost	$2,400
Total Cost per Linear Foot of Street	**$14,100**

These cost estimates reflect roadway widening, intersection signalization improvements at intermediate locations within project limits (spot improvements), roadway shoulder improvements, as well as a separate reconstruction of structures (bridges, railroad and canal/creek crossings) cost. Intersection improvements are assumed to occur every one-half mile of roadway widening.

A detailed description of the structure and ROW costs are provided in **Appendix 4**.

Based on the unit costs above, **Table 11** provides the total unadjusted TIMF project costs for each improvement. Summing over all projects, the total TIMF project costs is approximately $177 million.

Table 11. Total TIMF CIP Project Costs

Benefit Zone / ID #	Project	Total Project Costs
Stockton-Lodi-Lockeford-Clements		
1	Turner Rd.	10,361,541
2	Harney Ln.	12,051,149
3	Newton Rd.	1,675,350
4	Main St.	2,298,443
	Subtotal	**26,386,483**
Linden-Escalon-Ripon		
6	Copperopolis Rd.	11,001,065
7	Mariposa Rd.	26,479,440
8	Escalon-Bellota Rd.	4,786,110
9	Santa Fe Rd.	8,349,498
10	McHenry Ave.	2,124,150
11	River Rd.	20,932,050
12	Jack Tone Rd.	8,944,465
	Subtotal	**82,616,778**
Tracy-Lathrop-Manteca		
5	French Camp Rd.	16,271,550
13	Lathrop Rd.	136,935
14	Yosemite Ave/Guthmiller Rd.	1,376,175
15	W. Byron Rd.	6,589,173
16	Grant Line Rd.	5,091,458
17	Chrisman Rd.	2,105,303
18	W. Schulte Rd.	2,323,778
19	Valpico Rd.	1,587,060
20	Corral Hollow Rd.	16,902,235
	Subtotal	**52,383,667**
Thornton-Delta		
21	Tracy Blvd.	15,519,480
	Subtotal	**15,519,480**
Total TIMF CIP Cost		**176,906,408**

TIMF PROJECT COST ADJUSTMENTS

Adjustments to the costs presented in **Table 11** are required for projects identified as being deficient under existing baseline conditions.

For existing deficiencies, only the share attributable to new growth can be applicable to the TIMF. The degree of future degradation, as measured by the share of new daily traffic growth, established the basis for estimating the improvement cost to mitigate the incremental impact of new development. As shown previously in **Table 9**, four segments were shown to be deficient in the 2014 base year. The percentage of the incremental impact of new development traffic is shown below in **Table 12**.

Table 12. Existing Deficiency Growth Allocation

ID #	Project	Project Limit	Existing ADT	2035 ADT	ADT Threshold	Growth Allocation
3	Newton Rd.	Wilson Wy to Cherokee Rd	12,800	13,400	10,000	18%
8	Escalon-Bellota Rd.	Mariposa Rd to Escalon City Limits	8,600	11,400	7,000	64%
14	Yosemite Ave.	SR-120 to Manteca City Limits	15,700	15,700	12,500	0%
15	W. Byron Rd.	Wicklund Rd to E. Grant Line Rd	12,800	21,100	12,500	97%

Reflecting the cost adjustments for existing deficiencies yields a total combined cost for the 21 TIMF capital improvement projects of **$172,235,771**.

Section 5 Cost Allocation and Fee Estimation

COST ALLOCATION AND FEE ESTIMATION

TRIP ALLOCATION

To compute the percentage of trip ends applicable to the County's TIMF, trip ends that originate from incorporated and external Traffic Analysis Zone (TAZ) must be removed from consideration. To determine this as "cleanly" as possible, the exterior boundaries of the County's 12 Planning Area boundaries were first modified ("smoothed") to conform to the applicable SJCOG model TAZ boundaries (**Figure 7**). The 12 Planning Areas were then combined to form the County's four TIMF Fee Benefit Zones (plus Mountain House) shown in **Figure 8**.

For each deficient roadway segment to be improved, the model identified total growth in trips from 2014-2035 and total growth in trips from unincorporated areas for the same time period. The CUBE select link script automatically computes total new unincorporated trips by Fee Benefit Zone through application of a TAZ correspondence table. The link volume delta (or difference) between these model runs represents "new" trips generated by future growth. Of the unincorporated share of growth in trips, the traffic model was used to determine the percentage of external, incorporated, or unincorporated travel of trips originating or destined to a given Fee Benefit Zone.

To differentiate trips on deficient roadways as being regional or local, a model select link analysis was performed to determine the share of new trips from each of the four Fee Benefit Zones that traverse a given deficient roadway. The select link analysis excludes one-half of trips whose origin or destination are from incorporated areas (and Mountain House) or areas outside San Joaquin County (I-X or X-I trips) and completely excludes trips which do not have an origin or destination within the county (X-X). For trips with at least one trip end within the unincorporated county, a more reasonable relationship is established between the TIMF fees collected and the impacts expected from development occurring specifically within the unincorporated areas of San Joaquin County.

The resulting percentages for each TIMF roadway improvement, which reflect the fair share of the improvement costs to new development by Fee Benefit Zone, is shown in **Table 13**. This link-based fair share approach supports the TIMF nexus requirements. The Mountain House Planning Area is excluded from the fair share allocations shown in the table given that deficient roadway segments located within the Mountain House Planning Area were excluded in this analysis. As such, the Mountain House Planning Area's share of costs is excluded from the fee calculation in the subsequent sections.

Figure 7. Revised San Joaquin County Planning Area Geography

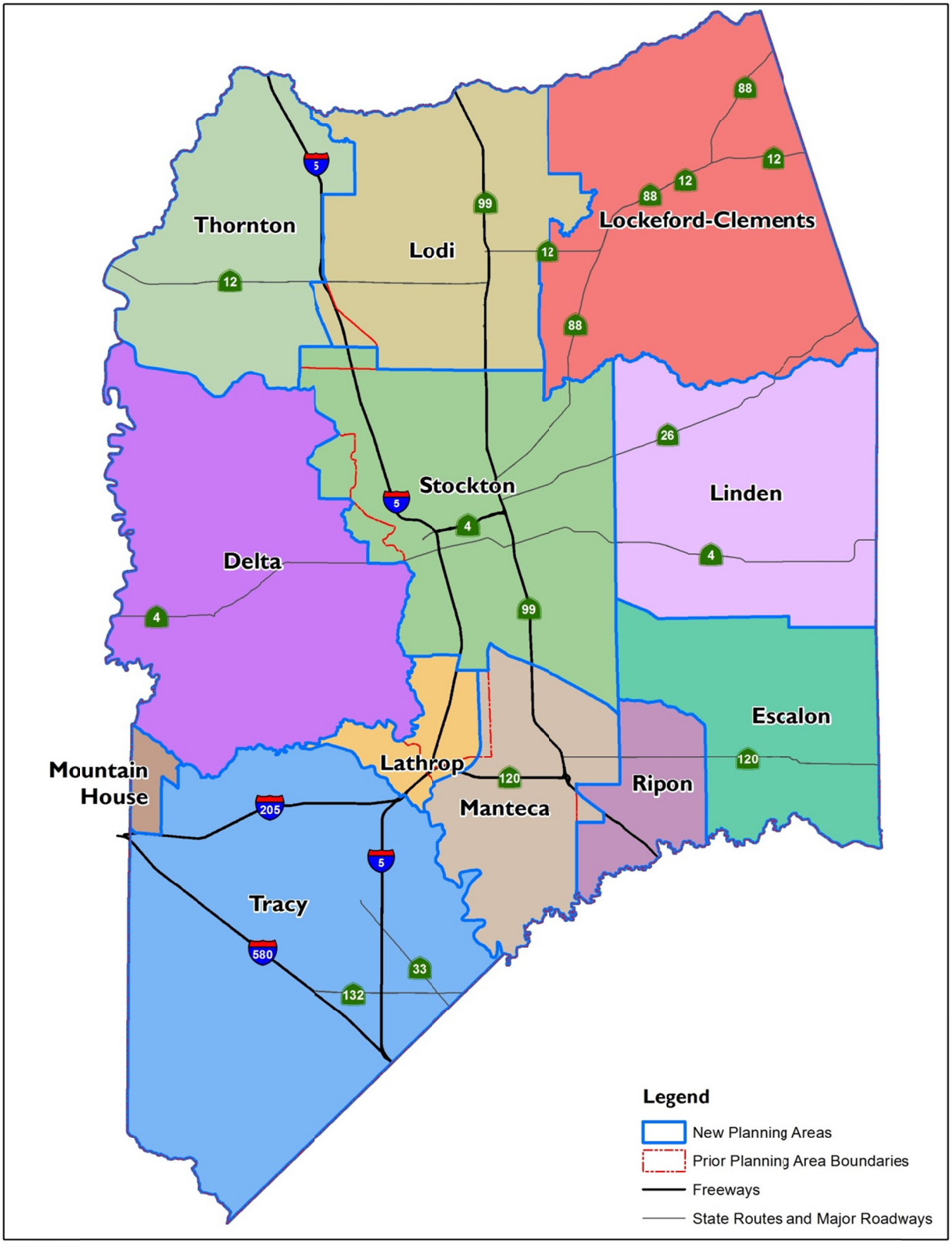
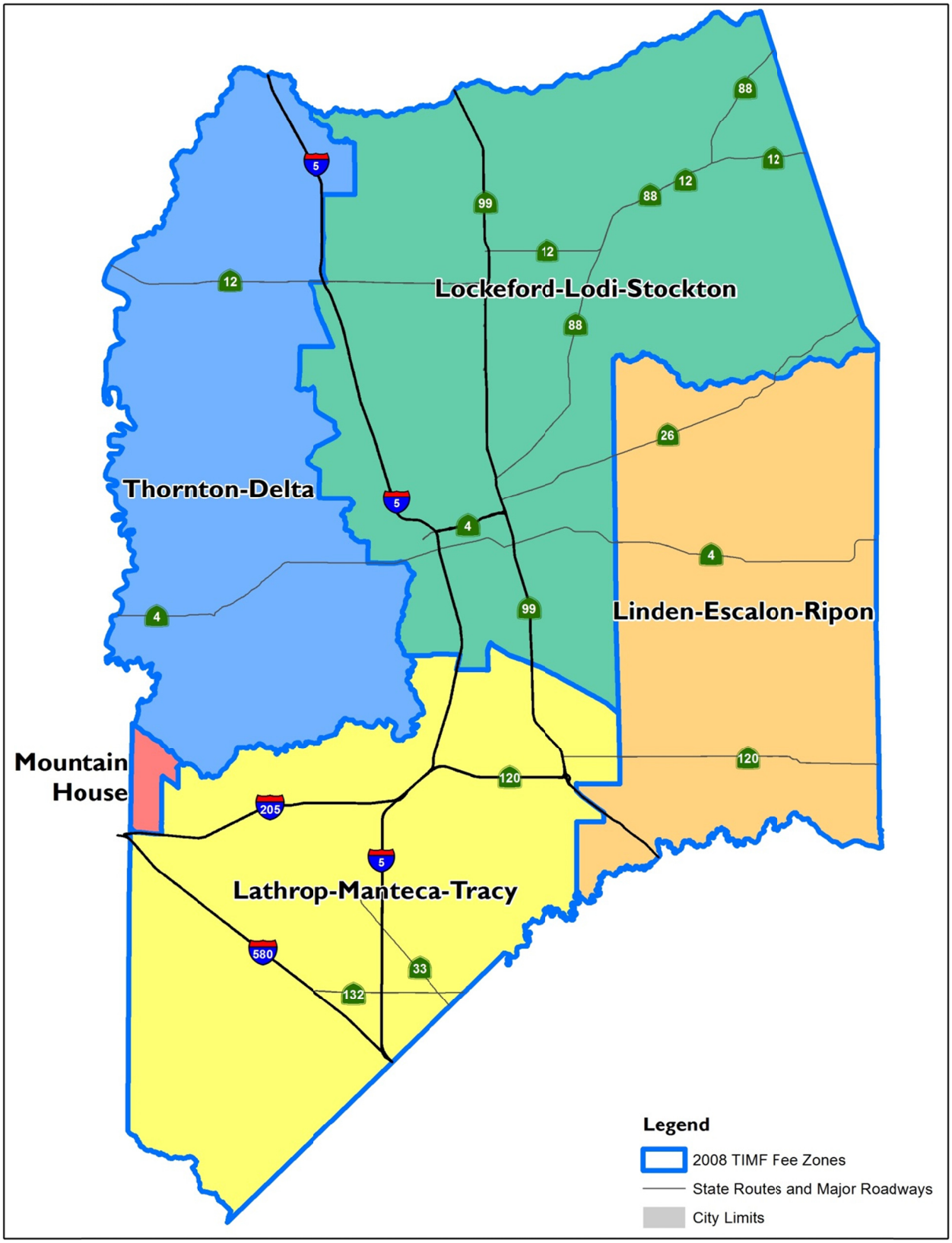


Figure 8. Revised San Joaquin County TIMF Fee Benefit Zone Geography



DISCOUNTED FAIR SHARE

Per California Code–Section 66005.1 (effective January 1, 2011), housing development projects that satisfy all of the following "Smart Growth" characteristics shall be provided a discounted fee:

- The housing development is located within one-half mile of a transit station and there is direct access between the housing development and the transit station along a barrier-free walkable pathway not exceeding one-half mile in length.
- Convenience retail uses, including a store that sells food, are located within one-half mile of the housing development.
- The housing development provides either the minimum number of parking spaces required by the local ordinance, or no more than one onsite parking space for zero- to two-bedroom units, and two onsite parking spaces for three or more bedroom units, whichever is less.

A discounted fee amount of 15% has been established based on Smart Growth Trip Generation Study (SANDAG, June 2010). This study compared the vehicle trip generation characteristics of seven development projects in the San Diego region with similar "smart growth" characteristics identified above. The average reduction in trip generation was shown to be approximately 15% relative to the Institute of Transportation Engineers (ITE) based trip generation factors for housing developments without these characteristics.

As used in this section, "housing development" means a development project with common ownership and financing consisting of residential use or mixed use where not less than 50 percent of the floor space is for residential use.

For the purposes of this section, "transit station" has the meaning set forth in paragraph (4) of subdivision (b) of Section 65460.1. "Transit station" includes planned transit stations otherwise meeting this definition whose construction is programmed to be completed prior to the scheduled completion and occupancy of the housing development. Transit headway criteria of 10 minutes or less at a transit hub served by three or more transit service lines is defined as cumulative headway versus individual service line headways.

The applicant/developer will be responsible for conducting the initial analysis of the relationship of the new project to the criteria in order to consider eligibility for the discount. The County will need to verify accuracy for final determination of project's eligibility for the discount on a case by case basis. It is recommended that the County coordinate with SJCOG who has included the same discount in the RTIF program. SJCOG has developed GIS layers that show the current condition of existing transit stations in San Joaquin County with a half-mile radius to assist is assessing eligibility. These GIS layers, along with corresponding criteria, will be updated on a basis as information becomes available.

COST ALLOCATION

The share of costs attributable to unincorporated development (shown as "Total Unincorporated Share" in **Table 13**) is multiplied by the total adjusted cost of each project to determine the cost of each project attributable to growth in the unincorporated areas of the County. The unincorporated share of the costs, per segment, is then multiplied by the fair share percentage for each planning area in **Table 13** to determine the cost of all projects attributable to the unincorporated areas of each planning area. **Table 14** shows the calculation of the unincorporated share of the improvement cost and the fair share allocation to each planning area of the unincorporated area share for each project as identified through traffic modeling.

As presented in **Table 14**, holistically dividing unincorporated daily trip growth relative to total daily trip growth yields a 22% unincorporated share. This results in an unincorporated share of total TIMF project cost of $38,703,972. Adjusting for existing fund balances as of December 31 2014 yields a net TIMF funding need of $34,667,742.

Table 13. Trip Allocation – Fair Share Percentage

ID #	Project		Location (Fee Benefit Zone)	Total TIMF Fair Share			Fair Share TIMF Percentages by Fee Benefit Zones				
				Total Unincorporated Share	Existing Deficiency Adjustment	Net TIMF Share	Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon	Total
1	Turner Rd.	I-5 to Lodi City Limits	Lockeford-Lodi-Stockton	32%	NA	32%	0%	28%	36%	36%	100%
2	Harney Ln.	SR-99 to SR-88	Lockeford-Lodi-Stockton	67%	NA	67%	6%	82%	6%	6%	100%
3	Newton Rd.	Wilson Wy to Cherokee Rd	Lockeford-Lodi-Stockton	1%	18%	0%	NA	NA	NA	NA	NA
4	Main St.	Del Mar Ave to Gillis Rd	Lockeford-Lodi-Stockton	10%	NA	10%	0%	81%	9%	10%	100%
5	French Camp Rd.	SR-99 to SR-120	Lathrop-Manteca-Tracy1	11%	NA	11%	6%	28%	39%	27%	100%
6	Copperopolis Rd.	Jack Tone Rd to Dietrich Rd	Linden-Escalon-Ripon	7%	NA	7%	3%	38%	4%	55%	100%
7	Mariposa Rd.	Stockton City Limits to Escalon-Bellota Rd	Linden-Escalon-Ripon	55%	NA	55%	0%	100%	0%	0%	100%
8	Escalon-Bellota Rd.	Mariposa Rd to Esacalon City Limits	Linden-Escalon-Ripon	2%	64%	1%	14%	21%	18%	47%	100%
9	Santa Fe Rd.	Escalon City Limits to County Boundary	Linden-Escalon-Ripon	9%	NA	9%	14%	21%	18%	47%	100%
10	McHenry Ave.	Jones Rd to County Boundary	Linden-Escalon-Ripon	9%	NA	9%	15%	20%	15%	50%	100%
11	River Rd.	Ripon City Limits to Santa Fe Rd	Linden-Escalon-Ripon	4%	NA	4%	0%	0%	0%	100%	100%
12	Jack Tone Rd.	French Camp Rd to Ripon City Limits	Linden-Escalon-Ripon1	47%	NA	47%	13%	27%	24%	36%	100%
13	Lathrop Rd.	East of UPRR Overcrossing to Manteca City Limits	Lathrop-Manteca-Tracy	55%	NA	55%	0%	0%	100%	0%	100%
14	Yosemite Ave/Guthmiller Rd.	SR-120 to Manteca City Limits	Lathrop-Manteca-Tracy	2%	0%	0%	NA	NA	NA	NA	NA
15	W. Byron Rd.	Wicklund Rd to E. Grant Line Rd	Lathrop-Manteca-Tracy	16%	97%	16%	24%	25%	27%	24%	100%
16	Grant Line Rd.	Tracy City Limits to Mancuso Rd	Lathrop-Manteca-Tracy	53%	NA	53%	9%	9%	74%	8%	100%
17	Chrisman Rd.	Schulte Rd to Tracy City Limits	Lathrop-Manteca-Tracy	5%	NA	5%	23%	27%	28%	22%	100%
18	W. Schulte Rd.	MacArthur Dr to Chrisman Rd	Lathrop-Manteca-Tracy	1%	NA	1%	24%	27%	25%	24%	100%
19	Valpico Rd.	Corral Hollow Rd to Tracy City Limits	Lathrop-Manteca-Tracy	3%	NA	3%	25%	25%	25%	25%	100%
20	Corral Hollow Rd.	County Boundary to Tracy City Limits	Lathrop-Manteca-Tracy	0%	NA	0%	NA	NA	NA	NA	NA
21	Tracy Blvd.	Howard Rd to Lammers Rd	Thornton-Delta1	0%	NA	0%	NA	NA	NA	NA	NA

[1] Project borders or extends into multiple zones. The zone shown represents the zone receiving the greatest benefit.
Source: San Joaquin County Traffic Model; Kittelson & Associates.

Table 14. Cost Allocation by Fee Benefit Zone

Fee Benefit Zone / ID #	Project	TIMF Cost Allocation				Cost Allocation By TIM Fee Benefit Zone			
		Total Project Cost ($)	Net TIMF Share	Programmed Funding	TIMF Fair Share ($)	Thornton-Delta	Stockton-Lodi Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Stockton-Lodi-Lockeford-Clemens									
1	Turner Rd.	10,361,541	32%	-	3,315,693	-	928,395	1,193,649	1,193,649
2	Harney Ln.	12,051,149	67%	-	8,074,270	484,456	6,620,902	484,456	484,456
3	Newton Rd.	1,675,350	0%	-	-	-	-	-	-
4	Main St.	2,298,443	10%	-	229,844	-	186,174	20,686	22,984
	Subtotal	**26,386,483**	**44%**	**-**	**11,619,807**	**484,456**	**7,735,471**	**1,698,791**	**1,701,089**
Linden-Escalon-Ripon									
6	Copperopolis Rd.	11,001,065	7%	-	770,075	23,102	292,629	30,803	423,541
7	Mariposa Rd.	26,479,440	55%	-	14,563,692	-	14,563,692	-	-
8	Escalon-Bellota Rd.	4,786,110	1%	-	47,861	6,701	10,050	8,615	22,495
9	Santa Fe Rd.	8,349,498	9%	-	751,455	105,204	157,805	135,262	353,184
10	McHenry Ave.	2,124,150	9%	-	191,174	28,676	38,235	28,676	95,587
11	River Rd.	20,932,050	4%	-	837,282	-	-	-	837,282
12	Jack Tone Rd.	8,944,465	47%	-	4,203,899	546,507	1,135,052	1,008,936	1,513,404
	Subtotal	**82,616,778**	**26%**	**-**	**21,365,438**	**710,190**	**16,197,463**	**1,212,292**	**3,245,493**
Tracy-Lathrop-Manteca									
5	French Camp Rd.	16,271,550	11%	-	1,789,871	107,392	501,164	698,050	483,265
13	Lathrop Rd. (exclude, funded by RTIF)	136,935	55%	75,314	-	-	-	-	-
14	Yosemite Ave/Guthmiller Rd.	1,376,175	0%	-	-	-	-	-	-
15	W. Byron Rd.	6,589,173	16%	-	1,054,268	253,024	263,568	284,652	253,024
16	Grant Line Rd.	5,091,458	53%	-	2,698,473	242,863	242,862	1,996,870	215,878
17	Chrisman Rd.	2,105,303	5%	-	105,265	24,211	28,422	29,474	23,158
18	W. Schulte Rd.	2,323,778	1%	-	23,238	5,577	6,274	5,810	5,577
19	Valpico Rd.	1,587,060	3%	-	47,612	11,903	11,903	11,903	11,903
20	Corral Hollow Rd.	16,902,235	0%	-	-	-	-	-	-
	Subtotal	**52,383,667**	**11%**	**75,314**	**5,718,727**	**644,970**	**1,054,193**	**3,026,759**	**992,805**
Thornton-Delta									
21	Tracy Blvd.	15,519,480	0%	-	-	-	-	-	-
	Total	**176,906,408**	**22%**	**75,314**	**38,703,972**	**1,839,616**	**24,987,127**	**5,937,842**	**5,939,387**
	Local				**14,007,723**	**-**	**7,735,471**	**3,026,759**	**3,245,493**
	Regional				**24,696,249**	**1,839,616**	**17,251,656**	**2,911,083**	**2,693,894**
Fund Balance (12/31/2014)									
	Total				4,036,230	-	2,305,571	1,518,955	211,704
	Local				1,946,333	-	1,111,782	732,464	102,087
	Regional				2,089,897	-	1,193,789	786,491	109,617
Net TIMF Funding Need									
	Total	**176,906,408**	**22%**	**75,314**	**34,667,742**	**1,839,616**	**22,681,556**	**4,418,887**	**5,727,683**
	Local				**12,061,390**	**-**	**6,623,689**	**2,294,295**	**3,143,406**
	Regional				**22,606,352**	**1,839,616**	**16,057,867**	**2,124,592**	**2,584,277**

FEE CALCULATION

To determine the cost per DUE, the fair share costs per Fee Benefit Zone is divided by the projected growth in DUE. **Table 15** shows the cost per DUE by Fee Benefit Zone. Given the extremely small growth increments in the Thornton-Delta and Linden-Escalon-Ripon zones compared to the other two zones, the fee calculation for the Thornton-Delta and Stockton-Lodi-Lockeford-Clements zones and the Tracy-Lathrop-Manteca and Linden-Escalon-Ripon zones were averaged together. The averaging of these zones is depicted in **Figure 9.**

The cost per DUE is equal to the fee for a single-family residential unit. The cost per DUE is allocated between a local component (the fair share of costs allocated to the zone in which the project is located) and a regional component (for all other projects, representing fair share obligations between zones). The local component of projects occurring in two zones is the zone that has the greatest benefit (fair share allocation). The local component of the fee revenues would be kept in separate accounts to fund projects in that zone. The regional component would be consolidated into a single account to fund the regional share of projects across all zones.

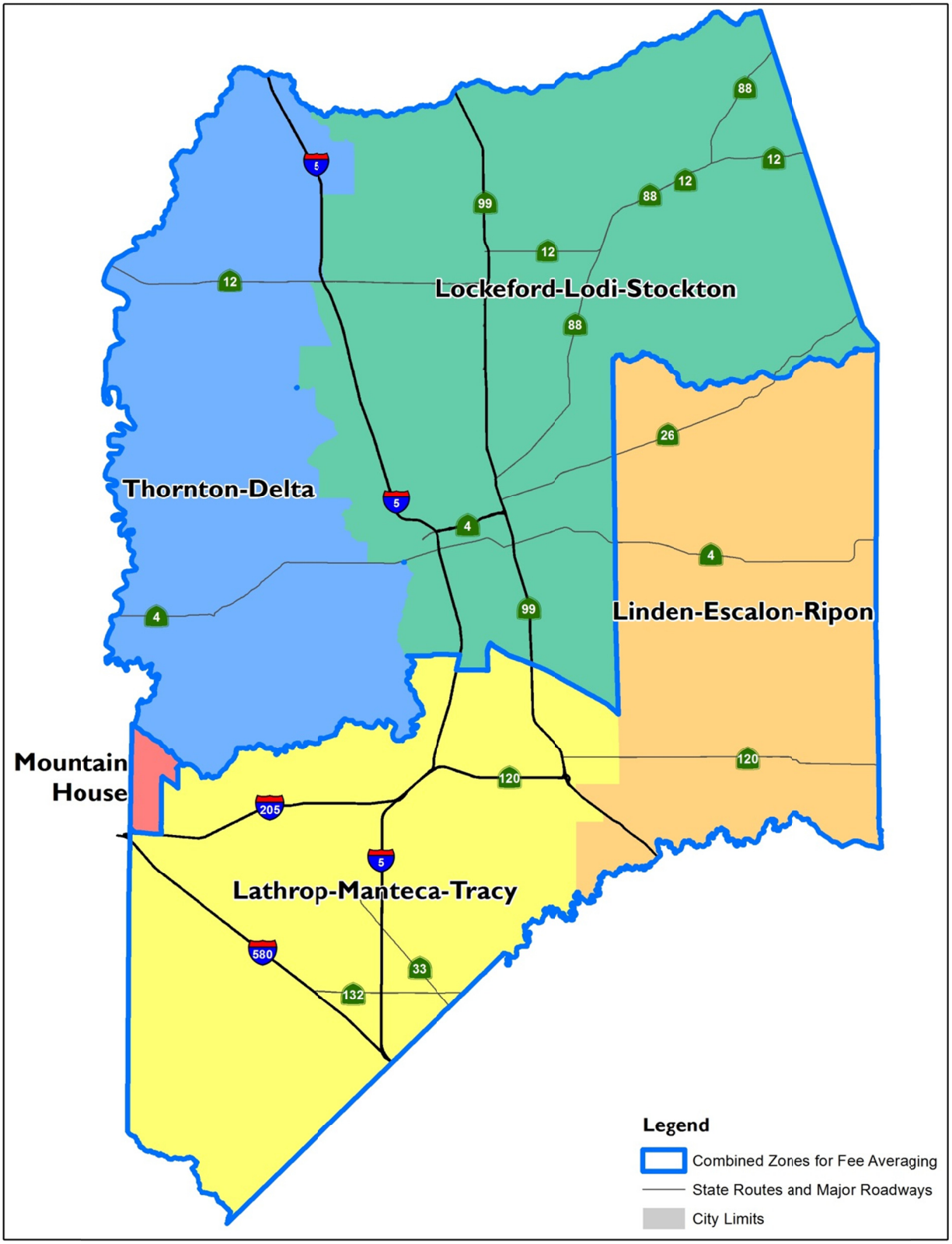
Due to the combining of zones, the County could consider spending the local fee revenue component for projects located in either the Thornton-Delta zone or Stockton-Lodi-Lockeford-Clements zones, and similarly for either the Tracy-Lathrop-Manteca or Linden-Escalon-Ripon zones.

Table 15. Cost Per DUE by Fee Benefit Zone

	TIM Fee Benefit Zone			
	Thornton-Delta	**Stockton-Lodi-Lockeford-Clements**	**Tracy-Lathrop-Manteca**	**Linden-Escalon-Ripon**
New Development (DUEs)	21,193	21,193	8,697	8,697
Costs				
Local Projects	$ 6,623,689	$ 6,623,689	$ 5,437,701	$ 5,437,701
Regional Projects	$ 17,897,483	$ 17,897,483	$ 4,708,869	$ 4,708,869
Cost per DUE				
Local Projects Share	$ 313	$ 313	$ 625	$ 625
Regional Projects Share	$ 844	$ 844	$ 541	$ 541
Alternative Modes	$ 64	$ 64	$ 65	$ 65
Administrative Fee	$ 64	$ 64	$ 65	$ 65
Total Cost per DUE	$ 1,285	$ 1,285	$ 1,296	$ 1,296

Note: For this nexus update the Thornton-Delta and Stockton-Lodi-Lockeford-Clements zones are combined, and the Tracy-Lathrop-Manteca and Linden-Escalon-Ripon zones are combined.

Figure 9. Combination Fee Benefit Zones for Averaging Fees



In addition to the local and regional costs, five percent (5%) of the total cost per DUE is allocated to fund alternative modes of transportation. This is supported in two ways. The first is approximately five percent of commuters in the unincorporated areas of the County use alternative modes to work (see **Table 16**). Secondly, given that roadway LOS is projected to decline below existing levels even with the planned improvements, the need for additional investments to accommodate growth justifies the imposition of an alternative modes fee. For administration, the current allocation of five percent of the total cost per DUE was not revised.

Table 16. Unincorporated San Joaquin County Journey to Work Mode Share

Alternative Mode	% Mode Share
Public Transit	1.05%
Ferry	0.00%
Bicycle	0.47%
Walked	3.22%
Taxi/Motorbike/Other	0.78%
Total	**5.52%**

Source: 2013 American Community Survey

The total cost per DUE is translated into a full fee schedule using the DUE factors.The full fee schedule corresponding with **Table 15** is summarized in **Table 17**.

Table 17. Four Fee Benefit Zone Schedule Summary - Total Fee

	DUE	TIM Fee Benefit Zone			
		Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Cost per DUE		$ 1,285	$ 1,285	$ 1,296	$ 1,296
Residential (per Dwelling Unit)					
Single Family	1.00	$ 1,285	$ 1,285	$ 1,296	$ 1,296
Multi Family	0.62	$ 797	$ 797	$ 804	$ 804
Non-Residential (per Thousand Square Feet)					
Retail	1.86	$ 2,384	$ 2,384	$ 2,404	$ 2,404
Service Commercial	1.76	$ 2,264	$ 2,264	$ 2,283	$ 2,283
Office	0.97	$ 1,245	$ 1,245	$ 1,255	$ 1,255
Manufacturing	0.62	$ 797	$ 797	$ 804	$ 804
Warehouse	0.27	$ 350	$ 350	$ 353	$ 353

Table 18 shows the fee revenue allocation for each fee zone to regional, local, alternative modes, and administrative costs.

Table 18. TIMF Fee Allocation Percentages

Fee Allocation	TIM Fee Benefit Zone			
	Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Local Projects Share	24%	24%	48%	48%
Regional Projects Share	66%	66%	42%	42%
Alternative Modes	5%	5%	5%	5%
Administrative Fee	5%	5%	5%	5%

For comparative purposes, the TIMF fees from the 2008 update are provided in **Table 19** Comparisons of the fees charged per year since the 2008 TIMF update with the updated fees are provided for each land use type in **Figure 10** through **Figure 16**. As shown, the updated fees are generally lower than the current fees established during the 2008 TIMF update (subject to annual adjustments since 2008). The primary explanations for why this TIMF update has resulted in generally lower fees relative to the existing program are fewer needed improvements, fewer additional lanes added as part of the improvements, less ROW costs, and more accurate structure costs (assumed number of affected structures per mile was dropped for actual number). The issue of tracking the incorporated share of TIMF projects is addressed in the following section.

Table 19. 2008 TIMF Fee Benefit Zone Schedule Summary

	DUE	TIM Fee Benefit Zone			
		Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Cost per DUE		$ 1,251	$ 1,559	$ 894	$ 883
Residential (per Dwelling Unit)					
Single Family	1.00	$ 1,251	$ 1,559	$ 894	$ 883
Multi Family	0.61	$ 768	$ 957	$ 554	$ 542
Non-Residential (per Thousand Square Feet)					
Retail	1.86	$ 2,322	$ 2,894	$ 3,353	$ 1,639
Service Commercial*	1.74	$ 2,179	$ 2,715	$ 2,419	$ 1,538
Office	0.96	$ 1,200	$ 1,495	$ 1,332	$ 847
Manufacturing	0.63	$ 790	$ 984	$ 671	$ 557
Warehouse	0.50	$ 621	$ 774	$ 527	$ 438

Figure 10. Historic Fee Comparison by Fee Benefit Zone - Single Family Residential

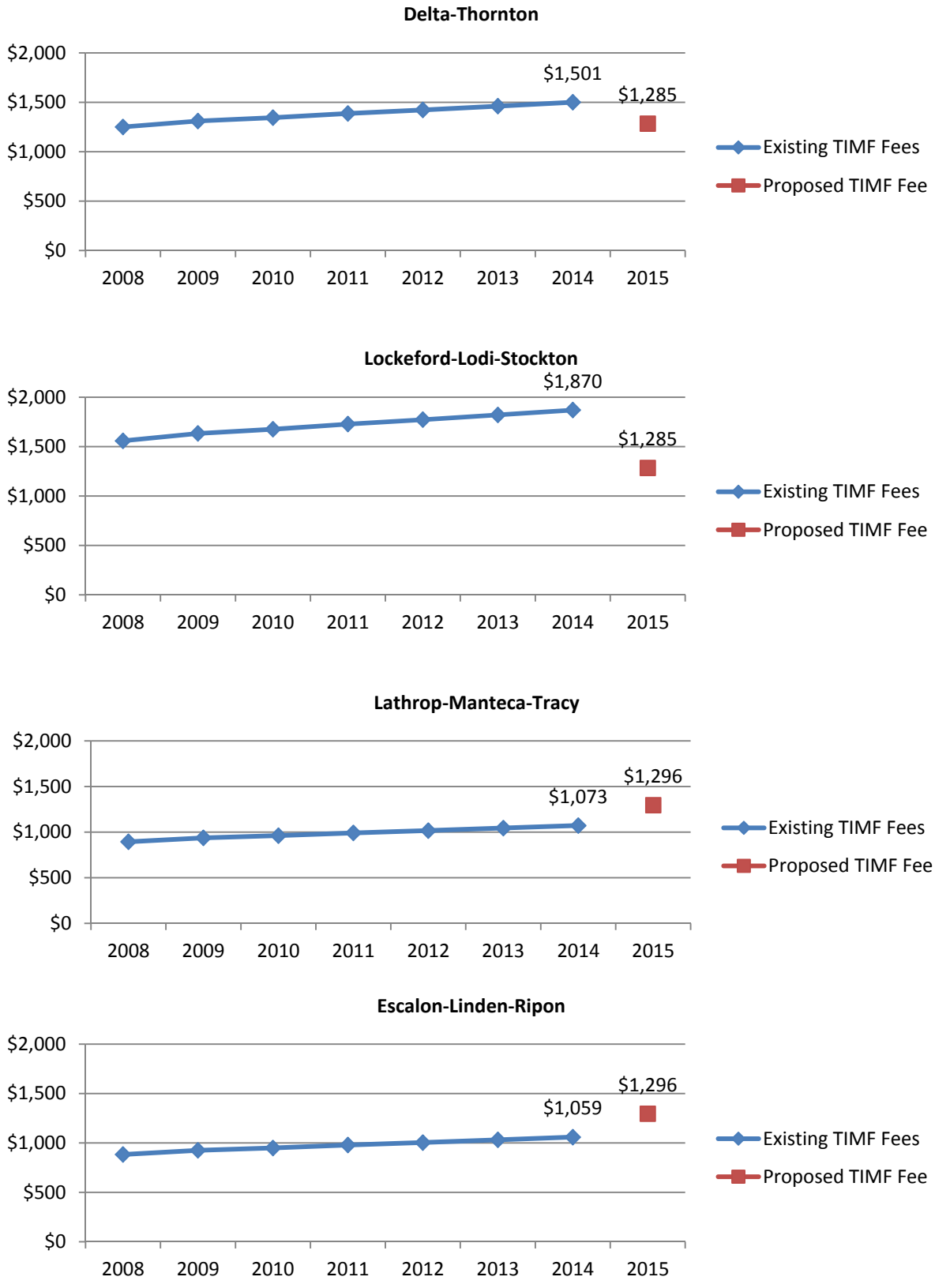


Figure 11. Historic Fee Comparison by Fee Benefit Zone – Multi-Family Residential

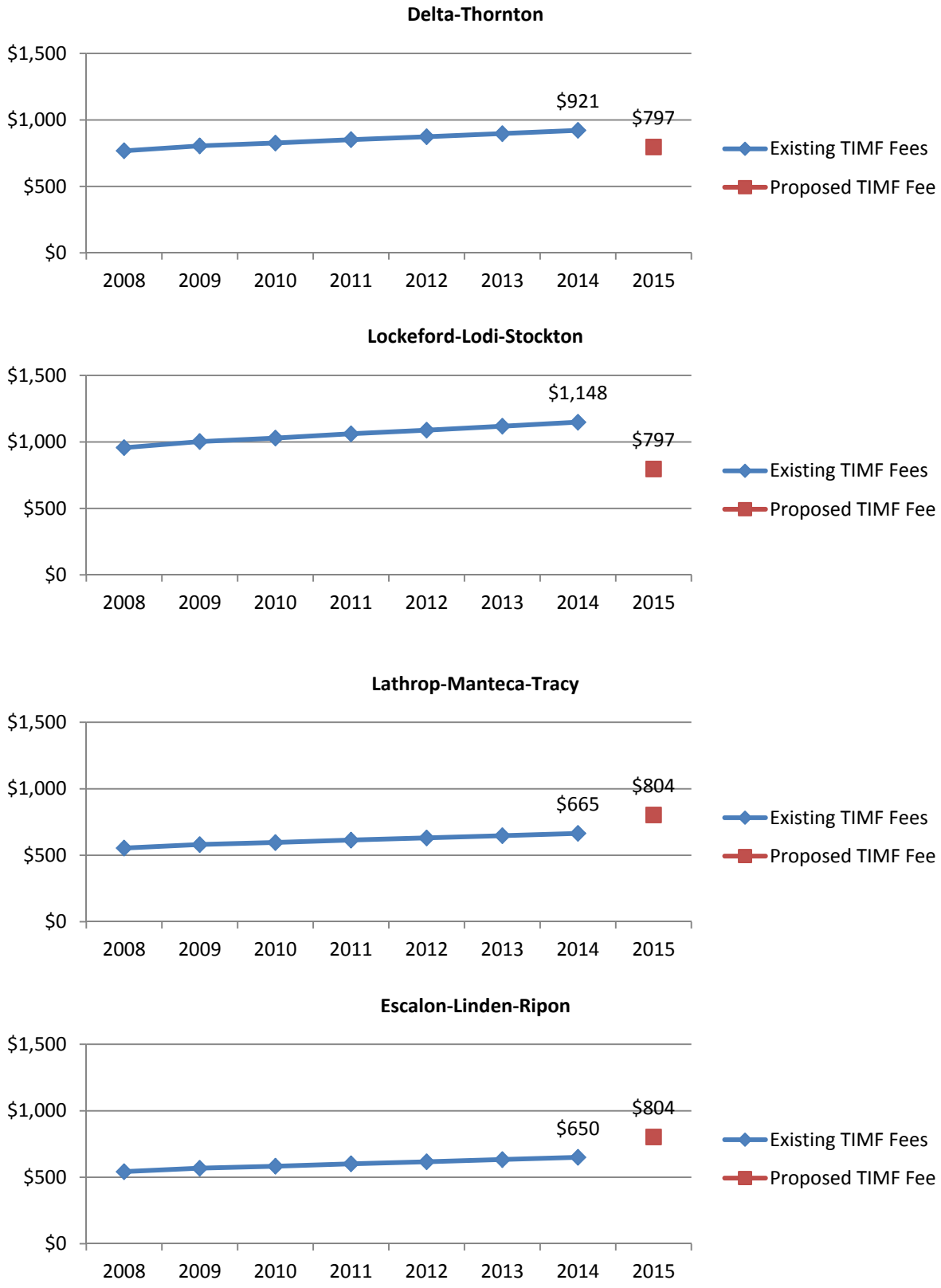


Figure 12. Historic Fee Comparison by Fee Benefit Zone – Retail

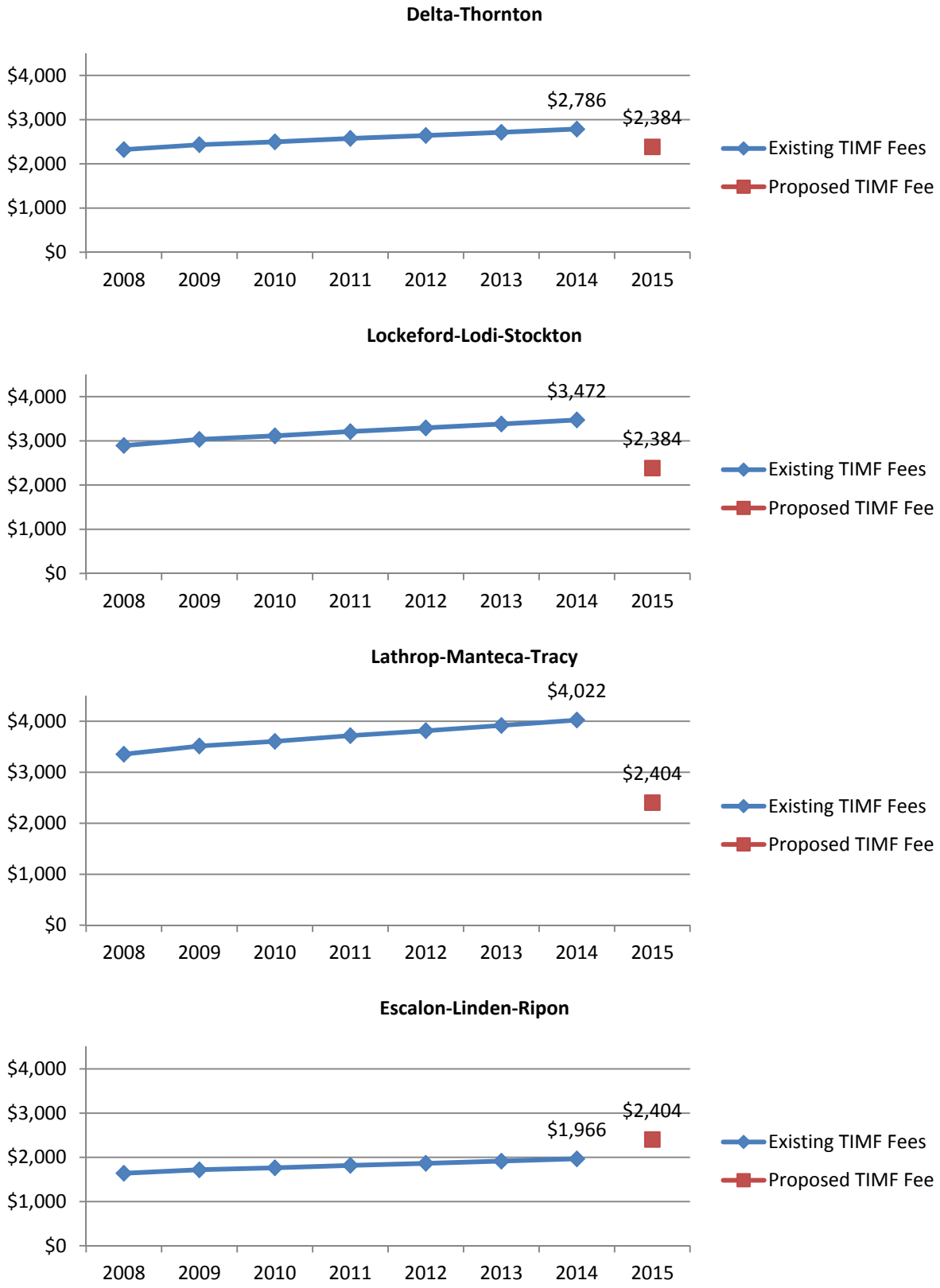


Figure 13. Historic Fee Comparison by Fee Benefit Zone – Service Commercial

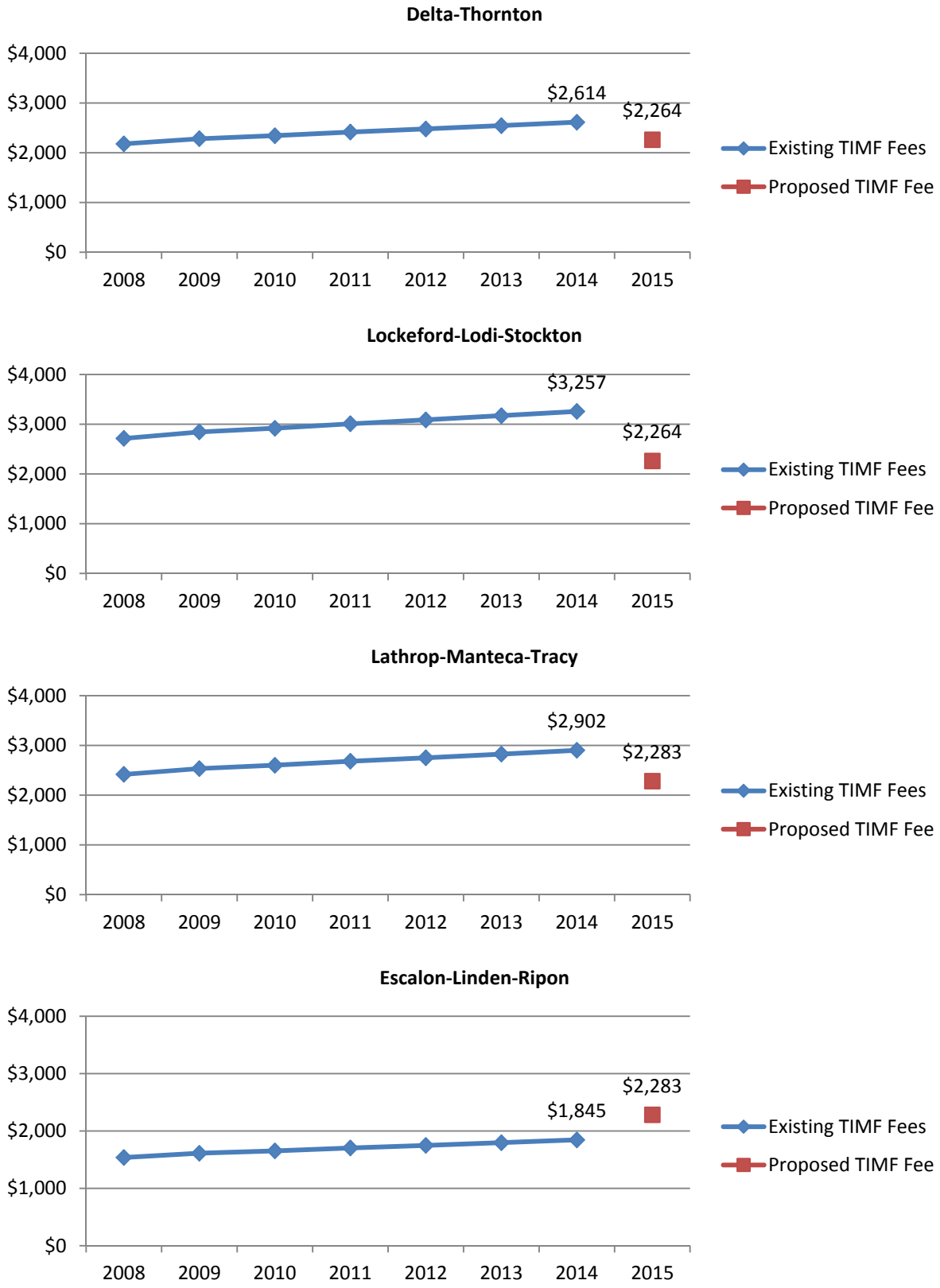


Figure 14. Historic Fee Comparison by Fee Benefit Zone – Office

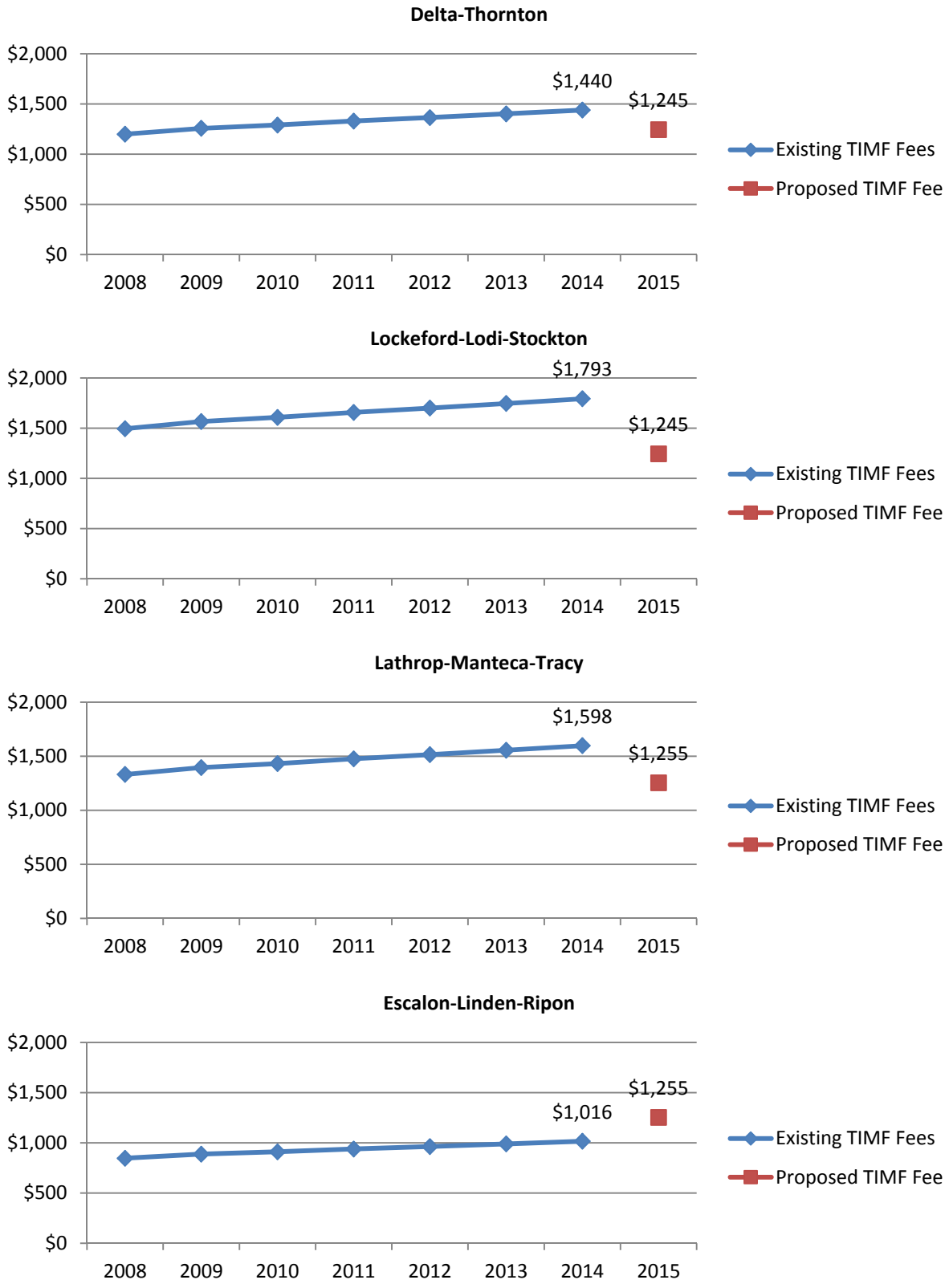


Figure 15. Historic Fee Comparison by Fee Benefit Zone – Manufacturing

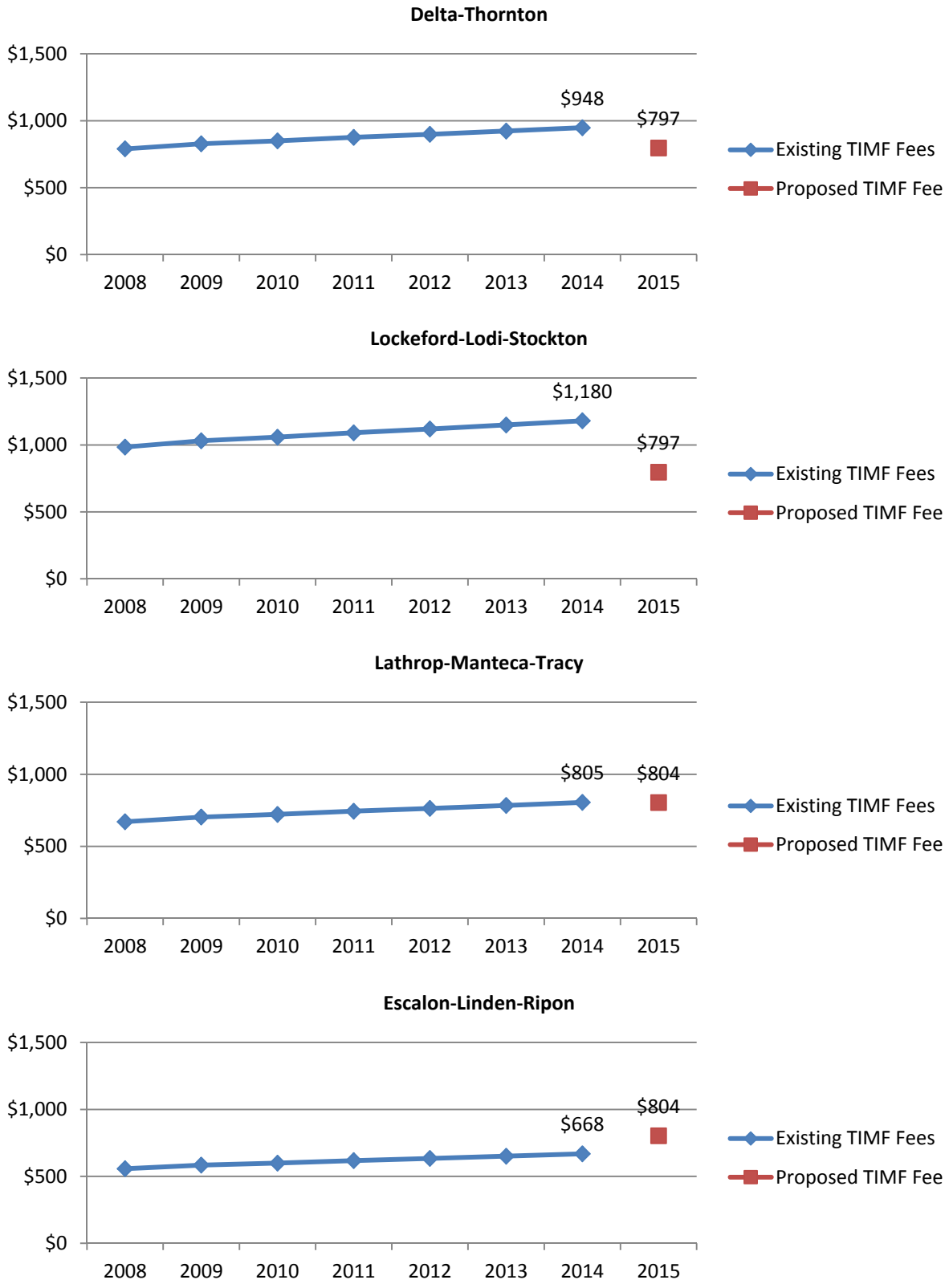
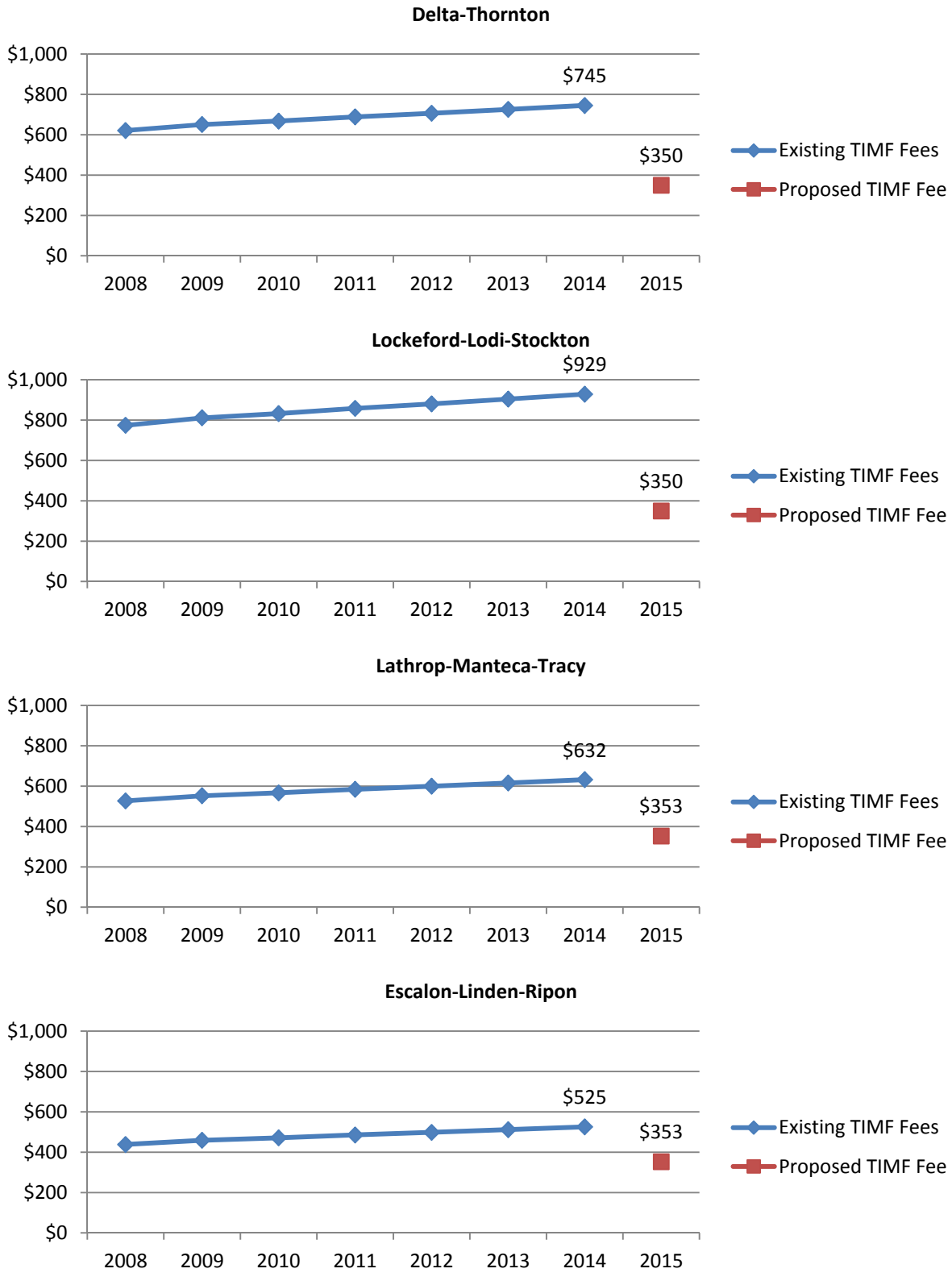


Figure 16. Historic Fee Comparison by Fee Benefit Zone – Warehouse



Section 6 Alternative Funding Sources

ALTERNATIVE FUNDING SOURCES

The TIMF update is designed to fully recover the share of transportation improvement costs in the unincorporated area associated with unincorporated growth through the 20-year planning horizon. This section describes alternative (non-impact fee) funding sources that could fund the share of project costs not funded by the TIMF update.

As described in the prior section, the TIMF update identified approximately $177 million in transportation capital projects needed to accommodate growth countywide. Of those total costs the TIMF update will fund approximately $39 million leaving $138 million to be funded by alternative sources.

COUNTY TRANSPORTATION FUNDING PLANS

Countywide transportation planning in San Joaquin County is the responsibility of SJCOG. SJCOG is a Metropolitan Planning Organization (MPO)[5], the agency responsible under federal law for coordinating state and federal transportation funding programs at the regional level. SJCOG is responsible for producing the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and the Regional Transportation Improvement Program (RTIP), two planning documents that identify needed capital projects and program available funds.

The RTP/SCS is a long-range transportation planning document. The RTP/SCS is designed to satisfy state and federal requirements so that capital projects listed in the RTP/SCS can be eligible for state and federal funding. The San Joaquin RTP/SCS is a countywide plan designed to address the needs of the unincorporated area and the seven cities in the County. The recently adopted 2014 RTP/SCS has a 26-year planning horizon (2014-2040), similar to the 20-year horizon of the TIMF update (2015-2035).

The RTIP is a five-year capital improvement program with projects drawn from the RTP/SCS. State statutes require regional transportation planning agencies (such as SJCOG) to prepare and submit an RTIP to the California Transportation Commission (CTC) for approval. The RTIP is used to budget state, federal, and other transportation funding sources to capital projects in the near-term for the unincorporated area and the seven cities in the County.

Projects included in the TIMF update that are in the 2014 RTP/SCS include:

- Mariposa Road (project ID #7). The 2014 RTP/SCS includes a 2.3-mile segment (Stockton city limits/Austin Road to Jack Tone Road) of this 11.8-mile TIMF project.

[5] MPOs are regional transportation planning organizations required by federal law to coordinate transportation planning in metropolitan areas. SJCOG is the MPO for San Joaquin County.

- Escalon-Bellota Road (project ID #8). The 2014 RTP/SCS includes the entire a 1.9-mile TIMF project.

- Lathrop Road (project ID #13). A 2014 RTP/SCS segment connects to the short (0.1 mile) TIMF segment. The 2014 RTP/SCS project is also included in the Regional Transportation Impact Fee (RTIF) program. The TIMF update assumes that the TIMF segment will be incorporated into a future RTIF update and does not allocate any cost to the TIMF program.

- Grant Line Road (project ID #16). The 2014 RTP/SCS includes a 1.8 miles segment (Tracy city limits to 11th Street) of this 2.2-mile TIMF project.

Table 20 summarizes the current alternative funding allocated to TIMF update projects.

Table 20. Current Alternative Funding Allocated To TIMF Projects

ID. No	Project	TIMF Total Project Cost	2014 RTP/SCS		
			Project Segment[1]	TIMF Alternative Funding Share	Alternative Funding Estimate (2015 $)
7	Mariposa Rd.	26,479,440	19%	45%	2,263,992
8	Escalon-Bellota Rd.	4,786,110	100%	99%	4,738,249
13	Lathrop Rd.[2]	136,935	100%	100%	136,935
16	Grant Line Rd.	5,091,458	83%	47%	1,986,178
Total		36,493,943			9,125,354

[1] Calculated based on segment length included in 2014 RTP/SCS compared to TIMF update.
[2] Lathrop Road is included in RTIF program. The TIMF project is an extension of the RTIF project limits. The TIMF update assumes that this additional segment will be added to the RTIF program and RTIF funding is included in the alternative funding share.

Sources: San Joaquin Council of Governments, *Regional Transportation Plan/Sustainable Communities Strategy for San Joaquin County, 2014-2040 (2014 RTP/SCS)*, 2014, Appendix F, Table 6-3; TIMF update project descriptions and Table 8.

Alternative funding sources potentially available for roadway capacity improvement projects such as those included in the TIMF update are described in the following sections. These funding sources were derived from the 2014 RTP/SCS. The 2014 RTP/SCS provided a total estimate for the Plan's 26-year planning horizon in current (inflated) dollars. For the TIMF update these estimates were discounted to an annual average amount in 2015 dollars, multiplied by the TIMF update 20-year planning horizon, and allocated to the unincorporated area. At the end of this chapter the total 20-year estimate is compared to the total TIMF update alternative funding need that is also expressed in 2015 dollars.

LOCAL FUNDING SOURCES FOR CAPACITY IMPROVEMENTS

Measure K

Measure K provides funding countywide for transportation programs in San Joaquin County from a half-cent sales tax. In 2006 voters approved a 30-year extension of the measure to 2041 (the measure would have sunset in 2011). The implementing ordinance allocates 32.5 percent of total funding to congestion relief project that could be used for TIMF projects. The remainder is used for local street repairs and roadway safety projects, railroad crossing safety projects, and passenger rail, bus, and bicycle projects.

The 2014 RTP/SCS also assumes that voters will approve a ¼-cent increment to Measure K in 2016 to address the Measure K funding gap caused by the recent Great Recession. This Measure K increment is included in the alternative funding estimates for the TIMF update.

The 2014 RTP/SCS estimates that Measure K will generate $2.280 billion and $1.132 billion over the 26-year planning horizon for the current half-cent sales tax and proposed increment, respectively. The TIMF update assumes that 32.5 percent of the combined annual average amount could be allocated to local roadway capacity projects. The annual discount rate used to convert the 2014 RTP/SCS estimate to 2015 dollars is equal to the assumed growth rate of 6.35 percent. The unincorporated area is assumed to receive 21 percent of total funding based on the 2015 population share.

Mountain House Mitigation Program

No projects in the TIMF project list overlap with projects in the Mountain House Mitigation Program so no funding from Mountain House is included in the alternative funding estimates for the TIMF update.

STATE FUNDING SOURCES FOR CAPACITY IMPROVEMENTS

State Transportation Improvement Program (STIP)

The STIP is primarily funded by state and federal taxes on gasoline collected in the State Highway Account (SHA). The STIP funds two types of rolling five-year capital programs: (1) Regional Transportation Improvement Programs (RTIPs) developed by each regional transportation planning agency in the state (including SJCOG), and (2) the Interregional Transportation Improvement Programs (ITIPs) developed by the California Department of Transportation (Caltrans). The California Transportation Commission (CTC) programs available STIP funds from the SHA after allocations to the State Highway Operation and Protection Plan (SHOPP) for state highway maintenance, several other local programs, and non-capital outlays.

STIP funds are allocated 75 percent to RTIPs and 25 percent to ITIPs. RTIP funds are further allocated by formula to regional transportation planning agencies for projects nominated in their respective RTIPs. Caltrans nominates projects for the ITIPs.

The 2014 RTP/SCS estimates that STIP funding will generate $599 million over the 26-year planning horizon. The TIMF update assumes that the RTIP share or 75 percent of the annual average amount could be allocated to local roadway capacity projects. The annual discount rate used to convert the 2014 RTP/SCS estimate to 2015 dollars is equal to the assumed growth rate of two percent. The unincorporated area is assumed to receive 21 percent of total funding based on the 2015 population share.

No TIMF projects are included in the most recent 2014 RTIP (FY 2015-2019) for San Joaquin County. Although their project limits overlap, the scope of the improvements for the McHenry Avenue Improvements project (2014 RTIP scheduled for completion in FY 2015) differ from those scoped as part of the McHenry Avenue TIMF project (project ID #10). None of the projects included in this TIMF update are eligible for ITIP funding. The county unincorporated area competes with the cities within the county for STIP funding so the unincorporated area may receive more or less than its fair share funding depending on the merits of each project relative to projects submitted by other jurisdictions.

State Gas Tax Subvention

Funding estimates are based on the revised gasoline "price-based excise tax" subvention that began in 2011 and codified in the California Streets and Highways Code Section 2103. Also called the "fuel tax swap", the rate per gallon of this subvention is recalculated annually by the State Board of Equalization to estimate the amount that would be generated by the five percent state sales tax rate. Forty-four percent of revenues are allocated to local streets and roads with the remainder allocated to the STIP and SHOPP programs. This gas tax subvention is separate from the "base excise tax" on gasoline that is allocated primarily to cities and counties and is primarily used for local road maintenance (Sections 2104-2108 of the Streets and Highways Code).

The 2014 RTP/SCS estimates that the Section 2103 gas tax subvention funding will generate $943 million over the 26-year planning horizon. The TIMF update assumes that the entire amount could be allocated to local roadway capacity projects. The annual discount rate used to convert the 2014 RTP/SCS estimate to 2015 dollars is equal to the assumed growth rate of two percent. The unincorporated area is assumed to receive 21 percent of total funding based on the 2015 population share.

State Transportation Bond (Proposition 1B)

The Highway Safety, Traffic Reduction, Air Quality, and Port Security Fund of 2006 (Proposition 1B) provided $19.9 billion from state bond sales for a variety of projects include roadway expansion.

The state legislature has allocated nearly all bond funds. Although funding may become available for TIMF update projects, such as from cost savings within Proposition 1B programs, the TIMF update does not assume any alternative funding from this source.

Future State Discretionary Programs

Additional funding may be available from future bond measures if proposed by the state legislature and approved by California voters. The TIMF update assumes that any alternative funding from this source would be focused on highway and interchange projects and not the local roadways identified for TIMF projects.

FEDERAL FUNDING SOURCES FOR CAPACITY IMPROVEMENTS

Regional Surface Transportation Program (RSTP)

The Regional Surface Transportation Program (RSTP) utilizes federal Surface Transportation Program Funds identified in Section 133 of Title 23 of the United States Code. After deducting several small allocations from the total available funding, half percent of the state's RSTP funds are allocated based on population. For Fiscal Year 2014, 80 percent of this amount was allocated to 11 urbanized areas in California with populations greater than 200,000 people, including San Joaquin County. Use of RSTP funds is highly flexible and could fund TIMF projects.

The 2014 RTP/SCS estimates that the RSTP program will generate $297 million over the 26-year planning horizon. The TIMF update assumes that the entire amount could be allocated to local roadway capacity projects. The annual discount rate used to convert the 2014 RTP/SCS estimate to 2015 dollars is equal to the assumed growth rate of 3.5 percent. The unincorporated area is assumed to receive 21 percent of total funding based on the 2015 population share.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The Federal Highway Administration and the Federal Transit Administration jointly administer the CMAQ program. Congress adopted the CMAQ program to support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief. Funding is targeted to areas that do not meet the National Ambient Air Quality Standards (non-attainment areas) as well as former non-attainment areas that are now in compliance (maintenance areas).

The Moving Ahead for Progress in the 21st Century Act (MAP-21) reauthorized the program in July 2012. Project eligibility remains basically the same as prior acts. The formula for distribution of funds considers an area's population by county and the severity of its ozone and carbon monoxide

problems within the non-attainment or maintenance area. Greater weight is given to areas that are both carbon monoxide and ozone non-attainment/maintenance areas.

The 2014 RTP/SCS estimates that the CMAQ program will generate $290 million over the 26-year planning horizon. The TIMF update assumes that the entire amount could be allocated to local roadway capacity projects. The annual discount rate used to convert the 2014 RTP/SCS estimate to 2015 dollars is equal to the assumed growth rate of 3.5 percent. The unincorporated area is assumed to receive 21 percent of total funding based on the 2015 population share.

The CMAQ program is competitive in which eligible projects are ranked and selected for programming based on their air quality benefits. Consequently the unincorporated area may receive more or less than its fair share of funding depending on the air quality merits of its projects relative to projects submitted by other jurisdictions.

Federal Demonstration/Earmarks

Additional funding may be available from future federal demonstration projects or earmarks. The TIMF update assumes that any alternative funding from this source would be focused on highway and interchange projects and not the local roadways identified for TIMF projects.

ALTERNATIVE FUNDING SUMMARY

Table 21 estimates total revenue of $365 million from the alternative funding sources described above through the TIMF planning horizon of 2035. The funding sources and amounts shown in the table represent the full spectrum of funding potentially available for TIMF update projects. Revenue estimates are based on (1) continuation of current state and federal transportation funding policies and formulas, and (2) allocation of countywide funds to the unincorporated area based on 2015 population.

The bottom of **Table 21** compares the total estimate of alternative funding to the alternative funding need for the TIMF update projects based on the fair share amounts shown in Table 8. Total project costs equal $177 million of which $39 million could be funded by the TIMF program, leaving a need for $138 million in alternative funding. This amount equals 38 percent of the total estimate of $365 million. Of this total amount $9 million is already allocated to TIMF update projects through the 2014 RTP/SCS.

The alternative funding need for the TIMF update represents a minority share of the potentially available funds (38 percent) indicating that sufficient funding should be available to complete the projects on the TIMF update list. However, the County will need to be aggressive to secure all the funding needed. First, the 2014 RTP/SCS already allocates this funding to other projects (except for the $9 million discussed above). Second, the County will likely need funding for projects in addition

to those on the TIMF update list. Consequently, the County must work closely with SJCOG and the other local jurisdictions to prioritize TIMF update projects in future updates to the RTP/SCS.

Table 21.TIMF Update Alternative Funding Source

RTP/SCS Funding Sources Potentially Allocable To Local Roadway Capcity Improvements	Countywide Annual Average (2015 $)[1]	Unincorporated Area Share	
		Annual[2]	25-Year Total
Local Sources			
Measure K Sales Tax Renewal Program[3]	$11,000,000	$2,300,000	$57,500,000
Measure K Sales Tax Renewal Program Increment[2]	5,500,000	1,200,000	30,000,000
State Sources			
State Transportation Improvement Program (STIP)[4]	12,700,000	2,700,000	67,500,000
State Gas Tax Subvention (HUTA)	26,700,000	5,600,000	140,000,000
State Transportation Bond	4,800,000	Negligible[5]	
Future State Discretionary Programs	9,600,000	Negligible[5]	
Federal Sources			
Regional Surface Transportation Program (RSTP)	6,800,000	1,400,000	35,000,000
Congestion Mitigation and Air Quality Program (CMAQ)	6,600,000	1,400,000	35,000,000
Federal Demonstration/Earmarks	4,900,000	Negligible[5]	
Total Alternative Funding	$88,600,000	$14,600,000	$365,000,000
Total TIMF Alternative Funding Need		5,500,000	138,100,000
Alternative Funding Need Share of Potential Funding		38%	

Note: Sources only include those available for roadway capacity improvements. Excludes Regional Transportation Impact Fee (RTIF) and Mountain House Mitigation Program because project lists do not overlap with TIMF.

[1] Calculated from 2014 RTP/SCS projection for 26-year total (2014-2040) discounted to 2015 $ based on revenue growth rate assumptions.
[2] Based on 21 percent share of countywide population in 2014.
[3] Funding share represents 32.5% Measure K allocation to Congestion Relief Projects.
[4] Funding share represents 75% allocation to Regional Transportation Improvement Program (RTIP).
[5] Current bond funds are nearly fully allocated. Future state discretionary programs such as additional bond measures and federal demonstration/earmarks are assumed to be allocated to highway and interchange projects and not available for local roadway capacity expansion projects.

Sources: San Joaquin Council of Governments, *Regional Transportation Plan/Sustainable Communities Strategy for San Joaquin County, 2014-2040 (2014 RTP/SCS)*, 2014, Figure 4.1, p. 4-3 and Appendix G.

Section 7 Implementation

IMPLEMENTATION

This section provides guidelines for implementation of the TIMF update. The County should consider these guidelines in the context of its experience with its current TIMF program and modify them accordingly. These guidelines are not a substitute for legal advice. The County should consult with its legal counsel regarding compliance with the Mitigation Fee Act.

IMPACT FEE PROGRAM ADOPTION PROCESS

Impact fee program adoption procedures are found in the California Government Code Section 66016. Adoption of an impact fee program requires the boards of supervisors to follow certain procedures including holding a public meeting. A 14-day mailed public notice is required for those registering for such notification. Data, such as an impact fee report, must be made available at least 10 days prior to the public meeting. After adoption there is a mandatory 60-day waiting period before the fees go into effect. This procedure must also be followed for fee increases in the future.

FEE COLLECTION

The County will calculate and collect the fee at the issuance of a building permit. To ensure a reasonable relationship between each fee and the type of development paying the fee, the fee schedule distinguishes between different land use types. The land use types used in the TIMF update are:

- Single family
- Multi-family
- Retail
- Office
- Warehouse
- Service Commercial
- Manufacturing

Some developments may include more than one land use type, such as a business park that includes retail uses or a planned unit development with both single and multi-family uses. In these cases the TIMF would be calculated separately for each land use type.

The characteristics of some developments may not fall cleanly within the seven land use categories listed above. In these cases the County's existing fee ordinance provides administrative discretion to calculate the TIMF fee based on empirical survey data or ITE trip generation rates more reflective of the proposed development. A fee per daily trip table is provided in **Appendix 5** which that is to be used in such cases.

The existing TIMF ordinance also provides for an appeals process. The appeals process allows a project proponent to demonstrate with an adequate technical study acceptable to the County that a different

trip generation rate should apply to the project. These existing TIMF ordinance provisions will continue as part of this TIMF update.

INFLATION ADJUSTMENT

The impact fee rates documented in this report generally reflect 2014 to 2015 costs for capital projects to be funded by fee revenues. Consequently, the fees should be adjusted annually for cost inflation to maintain the purchasing power of the revenue stream. The County has identified an appropriate inflation index for making annual updates to the fee. The TIMF schedule is adjusted annually based on the Engineering News-Record Construction Cost Index in effect on July 1 of each year.

COMPREHENSIVE FEE PROGRAM UPDATES

Annual fee updates using inflation indexes are only appropriate for the short term to ensure that fee revenues keep pace with capital project cost increases. Periodically the County should conduct a comprehensive TIMF Program update to adjust for changes in:

- growth projections;
- impacts on the transportation system;
- capital projects needed to accommodate growth; and,
- capital project costs.

It is recommended that these comprehensive updates occur approximately every five years or whenever the countywide transportation model is updated, whichever occurs sooner.

REPORTING REQUIREMENTS

The County currently complies with the annual and five-year reporting requirements of the Mitigation Fee Act. Because a combination of development impact fees and other revenues will fund the planned improvements, identification of the source and amount of the non-fee revenues is essential. Identification of the timing of receipt of other revenues to fund the facilities is also important.

CREDITS AND REIMBURSEMENTS

The County currently allows credit and reimbursement procedures as part of the current TIMF. Procedures for applying credits and reimbursements are necessary for capital projects funded by the fee that are constructed privately by developers and dedicated to the County. A “credit” is the consideration given for costs up to the developer’s fee obligation. A “reimbursement” is the consideration given for costs that exceed the developer’s fee obligation.

The following credit and reimbursement procedures should be continued by the County as part of this TIMF update:

- Credit or reimbursement amounts should not exceed the estimated project cost contained in the current TIMF report.
- During the annual capital improvement budget process, the County should continue to allocate a specified share of anticipated fee revenue to fund credits and reimbursements. The amount allocated considers current and anticipated credit and reimbursement obligations while maintaining sufficient cash flow needed to fund non-developer projects. The share allocated to credits and reimbursements should be no more than 30 percent of a fee district's total annual estimated revenues.
- Credits may receive higher priority for funding than reimbursements to minimize situations where a developer is both paying the impact fee and funding a capital project. Typically, credits are allowed up to the developer's fee obligation as building permits are issued. Reimbursements, however, are paid over time following completion of the project as funds are budgeted for this liability.
- The timing of reimbursements will depend on the phasing of the capital project in the RTIP and the amount of budgeted reimbursement funds. Reimbursements are made annually on a first-come - first-served basis. Projects scheduled in the current RTIP are eligible for reimbursements based on budgeted funds. Reimbursement for projects not scheduled in the current RTIP will be subject to negotiation.
- The County enters into an agreement with each developer eligible for credits or reimbursement to ensure that terms are adequately documented. Reimbursements are paid with interest.

REVENUE ALLOCATION AND EXPENDITURES BY ZONE

The 2008 TIMF update resulted in a new account structure to reflect the merging of 12 zones into four zones. This account structure should be continued with the proposed update and includes the following six fee accounts:

- Four "local" accounts (one for each fee zone);
- One "regional" account for all inter-zone project cost shares; and,
- One "alternative modes" account for all alternative modes projects.

Allocations of a fee payment to each account should be based on the percentages shown in **Table 18** in the prior section. Interest should be credited separately to each account based on the account balance. Fund balances may be lent and borrowed among accounts as long as a record of credit and debits is maintained.

The administrative component of the fee may be transferred directly into the appropriate fund to reimburse for TIMF program administrative expenditures, such as the Road Fund. The County should track its administrative expenditures and adjust the five percent fee allocation as appropriate to avoid over- or under-collecting this administrative charge.

The use of six fee accounts will maintain a reasonable relationship between the development project paying the fee and the benefit received from the expenditure of fee revenues. Expenditures from the

"local" and "regional" accounts should be for those projects identified in **Table 14** in the prior section. Expenditures from the local fee zone account should be limited to projects within that zone. Expenditures from the regional account may be used for any project listed in **Table 14**. As explained in Section 5 above, funds in the local accounts for the Thornton-Delta and Stockton-Lodi-Lockeford-Clements zones may be spent on projects in either area without considering this a debit/credit, and similarly for the Tracy-Lathrop-Manteca and Linden-Escalon-Ripon zones.

Expenditures from each of these six accounts need not be constrained to the project-by-project cost shares shown in **Table 14**. To deliver projects efficiently and effectively the County may combine funds from the applicable local account with the regional account in shares that may vary from those shown in **Table 14**. The account structure, by segregating local cost shares from regional cost shares and by identifying which specific projects may be funded by each zone, maintains a reasonable relationship between the development project paying the fee and the benefit received from the expenditure of fee revenues. This relationship is maintained without the need to be constrained to the precise cost allocation analysis used to develop the fee schedule for each local account and the regional account. Expenditures from the alternative modes account should be limited to alternative modes projects that expand capacity to accommodate new development.

Section 8 Mitigation Fee Act Findings

MITIGATION FEE ACT FINDINGS

Traffic impact fees are one-time fees typically paid when a building permit is issued and imposed on development projects by local agencies responsible for regulating land use (cities and counties). To guide the widespread imposition of public facilities fees, the State Legislature adopted the Mitigation Fee Act (the Act) with Assembly Bill 1600 in 1987 and subsequent amendments. The Act, contained in California Government Code §§66000-66025, establishes requirements on local agencies for the imposition and administration of fee programs. The Act requires local agencies to document five findings when adopting a fee.

The five statutory findings required for adoption of the maximum justified fee documented in this report described below and supported in detail by this report. All statutory references are to the Act.

PURPOSE OF FEE

For the first finding the County must:

> *Identify the purpose of the fee. (§66001(a)(1))*

The San Joaquin County Traffic Impact Mitigation Fee (TIMF) program has been established to finance transportation facilities that mitigate the impacts due to new or expanded development within the unincorporated areas of San Joaquin County.

USE OF FEE REVENUES

For the second finding the County must:

> *Identify the use to which the fee is to be put. If the use is financing public facilities, the facilities shall be identified. That identification may, but need not, be made by reference to a capital improvement plan as specified in Section 65403 or 66002, may be made in applicable general or specific plan requirements, or may be made in other public documents that identify the public facilities for which the fee is charged.* (§66001(a)(2))

The traffic impact fee will be used to either construct new development's fair share of the traffic improvements described herein or to reimburse a private developer for the actual cost of improvements included in this study that are funded by the developer.

BENEFIT RELATIONSHIP

For the third finding the County must:

> *Determine how there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed.* (§66001(a)(3))

Section 3 of this TIMF Update identifies a list of improvements necessary to support projected development in unincorporated San Joaquin County based on the impacts of that development. Improvements funded by the fee will be limited to those listed projects, adding capacity to the network of transportation infrastructure and benefiting new development. Thus, there is a reasonable relationship between the use of fee revenues and the residential and nonresidential types of new development that will pay the fee.

BURDEN RELATIONSHIP

For the fourth finding the County must:

> *Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed.* (§66001(a)(4))

Increases in residential dwelling units and nonresidential building square footage are an indicator of the demand for traffic facilities needed to accommodate growth. As new dwelling units or building square footage is created, the occupants of the new structures will place additional burdens on the traffic facilities. The need for the fee is based on the analysis described in Section 3 of this TIMF Update that estimated the expected traffic impacts of new development. When accounting for the projected impacts of new development, any road segments that will experience daily volumes is in excess of the County's ADT Thresholds (LOS C) or trigger one of several secondary deficiency screens are to be deemed in need of improvement or expanded capacity and included in the fee program.

Thus, there is a reasonable relationship between the need for the planned improvements, the scope of the improvements, and the development that will pay the fee.

PROPORTIONALITY

For the fifth finding the County must:

> *Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.* (§66001(b))

There is a reasonable relationship between the traffic impact fee for a specific development project and the cost of the facilities attributable to that development based on the estimated vehicle trip demand the development will generate in the County. The total fee for a specific development is based on the amount of additional dwelling units or planned square footage. Larger projects of a certain land use type will have a higher trip generation and pay a higher fee than smaller projects of the same land use type. Thus, the fee schedule ensures a reasonable relationship between the traffic impact fee for a specific development project and the cost of the facilities attributable to that project.

Appendix 1 Truck Trip Generation Literature Review Source: NCHRP Synthesis 298 Appendix C

APPENDIX C

Tables Containing Relevant Trip Generation Rates

SECTION C-1 ITE TRIP GENERATION HANDBOOK

TABLE C-1A
DAILY TRUCK TRIP GENERATION RATES BY LAND USE (AUSTRALIA)

Truck Trips Per 1,000 GSF Development Type	Courier Vans	Light Rigid Trucks	Heavy Rigid Trucks	Articulated Trucks	Total
Office	1.9	0.4	0.0	0.2	2.5
Retailing*					
Regional Center	0.4	0.9	0.6	0.1	2.0
Major Supermarket	0.2	0.4	0.4	0.2	1.2
Local Supermarket	0.1	0.9	0.5	0.2	1.7
Department Store	0.2	0.5	0.9	0.1	1.7
Other	0.7	0.9	0.4	0.0	2.0
Manufacturing	0.1	0.1	0.1	0.2	0.5
Warehouse	0.1	0.0	0.2	0.2	0.5
Light Industry & High Technology	1.9	0.6	0.5	0.1	3.1
Truck Depots	0.9	0.9	1.4	3.7	6.9

Source: Ogden 1992 (as presented in ITE *Trip Generation Handbook).*
*Rate for retail is expressed in truck trips per 1,000 square feet of Gross Leasable Area.
Note: GSF = gross square feet.

TABLE C-1B
DAILY TRUCK STOPS BY LAND USE (SUBURBAN BALTIMORE)

Land Use	Number of Sites	Daily Truck Trips per 1,000 GSF		
		Low	Average	High
Prepared Foods	24	0.7	3.9	61.4
Variety/Pharmacy	8	0.1	0.6	10.9
Personal Services	22	0.5	2.3	5.7
Office Building	9	0.1	0.2	4.0
Soft Retail	14	0.4	2.0	16.7
Retail Food	18		5.2	

Note: GSF = gross square feet.

TABLE C-1C
TRUCK TRIP RATES (12-HOUR) PER EMPLOYEE IN TAMPA

Land Use	Number of Observations	Low	Average	High
Commercial				
Light	5 sites	0.071	0.178	0.432
Heavy	5 sites	0.009	0.047	0.075
Office				
Light	5 sites	0.019	0.038	0.075
Heavy	5 sites	0.003	0.009	0.015
Industrial				
Light	5 sites	0.077	0.285	0.718
Heavy	5 sites	0.039	0.164	0.335

TABLE C-1D
WEEKDAY DAILY TRUCK TRIP GENERATION RATES (Fontana, CA)

Land Use	Independent Variables	2- & 3-Axle Trucks	4- to 6-Axle Trucks	All Trucks
Warehouse				
Light	1,000 gsf	0.17	0.21	0.38
Heavy	1,000 gsf	0.1	0.27	0.38
Industrial				
Light	1,000 gsf	0.33	0.27	0.6
Heavy*	1,000 gsf	0.19	0.38	0.57
Heavy*	acre	11.9	8.63	20.53
Industrial Park	1,000 gsf	0.21	0.15	0.36
Truck Terminal	acre	7.34	28.47	35.81
Truck Sales & Leasing	1,000 gsf	6.95	1.79	8.74

*Results based on only two data points.

TABLE C-1E
WEEKDAY MORNING ADJACENT STREET PEAK HOUR TRUCK TRIP GENERATION RATES (Fontana, CA)

Land Use	Independent Variables	2- & 3-Axle Trucks	4- to 6-Axle Trucks	All Trucks
Warehouse				
Light	1,000 gsf	0.01	0.02	0.03
Heavy	1,000 gsf	0.01	0.01	0.02
Industrial				
Light	1,000 gsf	0.03	0.02	0.05
Heavy*	1,000 gsf	0	0.02	0.02
Heavy*	acre	0	0.03	0.03
Industrial Park	1,000 gsf	0.01	0	0.01
Truck Terminal	acre	0.39	0.92	1.31
Truck Sales & Leasing	1,000 gsf	0.64	0.11	0.75

*Results based on only two data points.

TABLE C1-F
WEEKDAY EVENING ADJACENT STREET PEAK HOUR TRUCK TRIP GENERATION RATES (Fontana, CA)

Land Use	Independent Variables	2- & 3-Axle trucks	4- to 6-Axle trucks	All Trucks
Warehouse				
Light	1,000 gsf	0.01	0.02	0.03
Heavy	1,000 gsf	0	0.01	0.01
Industrial				
Light	1,000 gsf	0.01	0	0.01
Heavy*	1,000 gsf	0.03	0.03	0.06
Heavy*	acre	0.58	0.08	0.66
Industrial Park	1,000 gsf	0.02	0.02	0.04
Truck Terminal	acre	0.36	1.66	2.02
Truck Sales & Leasing	1,000 gsf	0.52	0.08	0.6

*Results based on only two data points.

TABLE C1-G
WEEKDAY TRUCK TRIP GENERATION RATES FOR THE SITE PEAK HOUR
(Fontana, CA)

Land Use	Independent Variables	2- & 3-Axle Trucks	4- to 6-Axle Trucks	All Trucks
Warehouse				
Light	1,000 gsf	0.03	0.03	0.06
Heavy	1,000 gsf	0.01	0.03	0.04
Industrial				
Light	1,000 gsf	0.03	0.02	0.05
Heavy*	1,000 gsf	0.02	0.03	0.05
Heavy*	acre	0.08	0.08	0.16
Industrial Park	1,000 gsf	0.01	0	0.01
Truck Terminal	acre	0.67	1.73	2.4
Truck Sales & Leasing	1,000 gsf	1.22	0.25	1.47

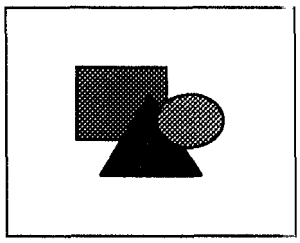
Note: Site peak hour is based on all trips not just truck trips.
*Results based on only two data points.

SECTION C-2

TABLE C-2
SKAGIT COUNTYWIDE AIR, RAIL, WATER, AND PORT TRANSPORTATION SYSTEM STUDY

Sector	Employment	Ann. Total Tons	Ann. Ton Rate*	Ann. Loaded Truck Trips	Ann. Total Truck Trips*	Weight Factor*	Annual Trip Rate**	Daily Trip Rate**
Agriculture/Logging	2,290	744,742	672.81	37,170	74,340	20.04	65.57	0.18
Logging		796,000		37,905	75,810	21.00		
Mining	702	1,938,300	2,761.11	88,913	177,826	21.80	253.31	0.69
Construction	2,686	536,619	199.78	40,046	80,092	13.40	29.82	0.08
Food & Kindred Products	1,318	399,279	302.94	22,182	44,364	18.00	33.66	0.09
Lumber & Wood Products	746	949,448	1,272.72	52,747	105,494	18.00	141.41	0.39
Chemicals & Allied Products	124	467,814	3,772.69	23,990	47,980	19.50	386.94	1.06
Petroleum & Coal Products	753	1,472,484	1,955.49	77,499	154,998	19.00	205.84	0.56
Other Manufacturing	1,506	115,057	76.40	6,768	13,536	17.00	8.99	0.02
Rail/Water/Air	286	1,197,577	4,187.33	70,231	140,462	17.05	491.13	1.35
Wholesale Trade	1,844	1,485,525	805.60	100,373	200,746	14.80	108.86	0.30
Retail Trade	8,238	2,051,440	249.02	213,692	427,384	9.60	51.88	0.14

*Values are calculated by MJF (Michael J. Fischer).
**Trips per employee.



TRIP GENERATION SUMMARY TABLES

The following tables contain the detailed daily trip generation rates for each location, land-use type, and truck classification. The tables are grouped into the following four sections:

D-1) Trip generation rates per employee;
D-2) Trip generation rates per 1,000 square feet of office space;
D-3) Trip generation rates per acre; and
D-4) Trip generation regression formulas.

Within each of these sections, trip generation rates are summarized according to the following land use types (SIC numbers enclosed in parentheses—See Appendix C):

a) Agriculture, Mining, and Construction (1–19);
b) Manufacturing, Transportation/Communications/Utilities, and Wholesale Trade (20–51);
c) Retail Trade (52–59);
d) Offices and Services (60–88); and
e) Unclassified (89)

Note that some of the trip generation rates shown in the table, specifically those obtained from the Puget Sound Region (i.e., Washington State counties) are expressed in truckload equivalents (TLEs). Rates expressed in TLEs not only include freight transportation by trucks, but also freight moved by other modes including rail and waterways (which has been converted into “equivalent” truckloads).

TABLE D-1a
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER EMPLOYEE FOR AGRICULTURE, CONSTRUCTION & MINING INDUSTRIES (SIC 1–19)

Location	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
King County, Washington	Mining (10–14)	—	—	—	—	213.835	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Kitsap County, Washington	Mining (10–14)	—	—	—	—	108.295	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Pierce County, Washington	Mining (10–14)	—	—	—	—	306.395	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Snohomish County, Washington	Mining (10–14)	—	—	—	—	409.525	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Median	SIC (10–14)					260.115	—	TLE
Average	SIC (10–14)					259.512	—	TLE
Minimum	SIC (10–14)					108.295	—	TLE
Maximum	SIC (10–14)					409.525	—	TLE
King County, Washington	Construction (15–19)	—	—	—	—	11.770	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Kitsap County, Washington	Construction (15–19)	—	—	—	—	12.120	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Pierce County, Washington	Construction (15–19)	—	—	—	—	10.355	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Snohomish County, Washington	Construction (15–19)	—	—	—	—	11.730	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Median	SIC (15–19)					11.750	—	TLE
Average	SIC (15–19)					11.494	—	TLE
Minimum	SIC (15–19)					10.355	—	TLE
Maximum	SIC (15–19)					12.120	—	TLE

Notes: TLE = truckload equivalents; SIC = Standard Industrial Classification.

TABLE D-1b
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER EMPLOYEE FOR MANUFACTURING, TRANSPORTATION/COMMUNICATIONS/UTILITIES, AND WHOLESALE TRADE (SIC 20–51)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Phoenix, Arizona (1.7 million)	Manufacturing (20–39)	0.641	0.100	0.050	0.150	0.790	1992	See notes 2 and 5.
Knoxville, Tennessee (450,000)	Truck Transportation (42)	0.050	0.160	0.465	0.625	0.675	1979	—
Modesto, California (216,000)	Truck Transportation (42)	0.060	0.193	0.562	0.755	0.815	1979	—
Rochester, New York (1,040,000)	Truck Transportation (42)	—	—	—	—	0.575	1979	—
Saginaw, Michigan (235,000)	Truck Transportation (42)	—	—	—	—	0.955	1979	—
Phoenix, Arizona (1.7 million)	Transportation, Communication, and Utilities (40–49)	0.763	0.106	0.075	0.181	0.944	1992	See notes 2 and 5.
Knoxville, Tennessee (450,000)	Wholesale Operations (50–51)	—	—	—	—	0.195	1979	—
Modesto, California (216,000)	Wholesale Operations (50–51)	0.075	0.136	0.129	0.265	0.340	1979	—
Rochester, New York (1,040,000)	Wholesale Operations (50–51)	0.048	0.088	0.084	0.172	0.220	1979	—
Saginaw, Michigan (235,000)	Wholesale Operations (50–51)	0.031	0.056	0.053	0.109	0.140	1979	—
Median	SIC (20–51)	0.060	0.106	0.084	0.181	0.625	—	Truck Trips
Average	SIC (20–51)	0.238	0.120	0.203	0.322	0.565	—	Truck Trips
Minimum	SIC (20–51)	0.031	0.056	0.050	0.109	0.140	—	Truck Trips
Maximum	SIC (20–51)	0.763	0.193	0.562	0.755	0.955	—	Truck Trips
King County, Washington	Manufacturing (20–39)	—	—	—	—	5.580	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Kitsap County, Washington	Manufacturing (20–39)	—	—	—	—	3.525	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)

Notes: TLE = truckload equivalents; SIC = Standard Industrial Classification.

TABLE D-1c
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER EMPLOYEE FOR RETAIL TRADE (SIC 52–59)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Knoxville, Tennessee (450,000)	Retail—Downtown (52–59)	0.075	0.032	0.009	0.040	0.115	1979	—
Modesto, California (216,000)	Retail Trade (52–59)	0.214	0.091	0.025	0.116	0.330	1979	—
Phoenix, Arizona (1.7 million)	Retail—Downtown (52–59)	0.591	0.133	0.037	0.169	0.760	1992	See notes 2 and 5.
Rochester, New York (1,040,000)	Retail—Downtown (52–59)	0.039	0.016	0.004	0.021	0.060	1979	—
Saginaw, Michigan (235,000)	Retail—Downtown (52–59)	—	—	—	—	0.150	1979	—
Median	SIC (52–59)	0.145	0.061	0.017	0.078	0.150	—	Truck Trips
Average	SIC (52–59)	0.230	0.068	0.019	0.087	0.283	—	Truck Trips
Minimum	SIC (52–59)	0.039	0.016	0.004	0.021	0.060	—	Truck Trips
Maximum	SIC (52–59)	0.591	0.133	0.037	0.169	0.760	—	Truck Trips
King County, Washington	Retail Trade (52–59)	—	—	—	—	14.540	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Kitsap County, Washington	Retail Trade (52–59)	—	—	—	—	17.690	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Pierce County, Washington	Retail Trade (52–59)	—	—	—	—	17.040	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Snohomish County, Washington	Retail Trade (52–59)	—	—	—	—	17.770	1994	See note 4. Rates are TLEs and include all modes (truck, rail, air, etc.)
Median	SIC (52–59)					17.365	—	TLEs
Average	SIC (52–59)					16.760	—	TLE's
Minimum	SIC (52–59)					14.540	—	TLE's

Notes: TLE = truckload equivalents; SIC = Standard Industrial Classification.

TABLE D-1d
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER EMPLOYEE FOR OFFICES AND SERVICES (SIC 60–88)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Phoenix, Arizona (1.7 million)	Office and Services (60–87)	0.309	0.021	0.003	0.024	0.334	1992	See notes 2 and 5.
Phoenix, Arizona (1.7 million)	Medical & Government (80)	—	0.006	0.024	0.030	0.325	1992	See notes 2 and 5.
Median	SIC (60–88)	0.309	0.014	0.014	0.027	0.329	—	Truck Trips
Average	SIC (60–88)	0.309	0.014	0.014	0.027	0.329	—	Truck Trips
Minimum	SIC (60–88)	0.309	0.006	0.003	0.024	0.325	—	Truck Trips
Maximum	SIC (60–88)	0.309	0.021	0.024	0.030	0.334	—	Truck Trips

TABLE D-1e
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER EMPLOYEE FOR OTHER LAND USE TYPES (UNCLASSIFIED—SIC 89)

Location/ (Population)	Land Use Type	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Phoenix, Arizona (1.7 million)	Group Quarter Households	—	7.523	—	7.523	7.523	1992	See notes 2 and 5.
Phoenix, Arizona (1.7 million)	Resident Households	0.040	—	0.003	0.003	0.043	1992	See notes 2 and 5. Rates per unit household.
Phoenix, Arizona (1.7 million)	Residential—Total Households	—	—	—	—	0.236	1992	See notes 2 and 5. Rates per unit household.
Washington D.C. (3.5 million)	Government Warehouse and Garage	0.074	0.072	0.084	0.155	0.229	1977	See note 1. Washington D.C. government warehouse and garages averaged to get trip generation rates.
Washington D.C. (3.5 million)	Government Office	—	—	—	—	0.006	1977	See note 1. Washington D.C. government offices averaged to get trip generation rates.

TABLE D-2b
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER 1,000 SQUARE FEET (TSF) OF BUILDING SPACE FOR MANUFACTURING, TRANSPORTATION/COMMUNICATIONS/UTILITIES, AND WHOLESALE TRADE (SIC 20–51)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	Single Unit	Combination Unit	All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
Australia	Manufacturing (20–39)	0.092	0.046	0.090	0.136	0.228	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Australia	Warehouse (20–39)	0.047	0.090	0.090	0.180	0.227	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Boston, Massachusetts (4.6 million)	Manufacturing (20–39)	—	—	—	0.350	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Warehouse (20–39)	—	—	—	0.440	—	1992	Summed various trucks to get total truck trips/TSF.
Fontana, California (>100,000)	Industrial—Heavy (20–39)	—	—	0.190	—	0.280	1994	See note 8.
Fontana, California (>100,000)	Industrial—Light (20–39)	—	—	0.135	—	0.300	1994	See note 8.
Fontana, California (>100,000)	Industrial Park (20–39)	—	—	0.075	—	0.180	1994	See note 8.
Fontana, California (>100,000)	Warehouse—Heavy (20–39)	—	—	0.135	—	0.185	1994	See note 8.
Fontana, California (>100,000)	Warehouse—Light (20–39)	—	—	0.105	—	0.185	1994	See note 8.
Median	SIC (20–39)	0.070	0.068	0.105	0.265	0.227	—	Truck Trips
Average	SIC (20–39)	0.070	0.068	0.117	0.276	0.226	—	Truck Trips
Minimum	SIC (20–39)	0.047	0.046	0.075	0.136	0.180	—	Truck Trips
Maximum	SIC (20–39)	0.092	0.090	0.190	0.440	0.300	—	Truck Trips
Australia	Truck Transportation (42)	0.920	0.700	1.800	2.500	3.420	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Fontana, California (>100,000)	Truck Transportation (42)	—	—	0.895	—	4.370	1994	See note 8.
Knoxville, Tennessee (450,000)	Truck Transportation (42)	0.118	0.573	1.669	2.242	2.360	1979	—
Modesto, California (216,000)	Truck Transportation (42)	0.054	0.264	0.767	1.031	1.085	1979	—
Rochester, New York (1,040,000)	Truck Transportation (42)	0.052	0.255	0.742	0.998	1.050	1979	—
Saginaw, Michigan (235,000)	Truck Transportation (42)	0.135	0.655	1.905	2.560	2.695	1979	—
Median	SIC (42)	0.118	0.573	1.282	2.242	2.528	—	Truck Trips
Average	SIC (42)	0.256	0.489	1.296	1.866	2.497	—	Truck Trips
Minimum	SIC (42)	0.052	0.255	0.742	0.998	1.050	—	Truck Trips
Maximum	SIC (42)	0.920	0.700	1.905	2.560	4.370	—	Truck Trips
Knoxville, Tennessee (450,000)	Wholesale Trade (50–51)	0.032	0.058	0.055	0.113	0.145	1979	—
Modesto, California (216,000)	Wholesale Trade (50–51)	0.106	0.192	0.182	0.374	0.480	1979	—
Rochester, New York (1,040,000)	Wholesale Trade (50–51)	0.044	0.080	0.076	0.156	0.200	1979	—
Saginaw, Michigan (235,000)	Wholesale Trade (50–51)	0.015	0.028	0.027	0.055	0.070	1979	—
Median	SIC (50–51)	0.038	0.069	0.066	0.135	0.172	—	Truck Trips
Average	SIC (50–51)	0.049	0.090	0.085	0.175	0.224	—	Truck Trips
Minimum	SIC (50–51)	0.015	0.028	0.027	0.055	0.070	—	Truck Trips
Maximum	SIC (50–51)	0.106	0.192	0.182	0.374	0.480	—	Truck Trips

Notes: TLE = truckload equivalents; SIC = Standard Industrial Classification.

TABLE D-2c
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER 1,000 SQUARE FEET (TSF) OF BUILDING SPACE FOR RETAIL TRADE (52–59)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	Single Unit	Combination Unit	All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
Australia	Retail Trade—Other (52–59)	0.830	0.190	0.000	0.190	1.020	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Australia	Retailing—Regional Center (52–59)	0.650	0.280	0.460	0.740	1.390	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Baltimore, Maryland—Suburban Area	Retail Trade—Soft (52–59)	—	—	—	—	2.000	1987	See note 5.
Boston, Massachusetts (4.6 million)	Retail—Major (52–59)	0.005	—	—	0.075	0.080	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	Retail—Major (52–59)	—	—	—	0.300	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Retail—Storefront (52–59)	0.282	—	—	0.114	0.396	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	Retail—Storefront (52–59)	—	—	—	0.170	—	1992	Summed various trucks to get total truck trips/TSF.
Knoxville, Tennessee (450,000)	Retail—Downtown (52–59)	0.062	0.026	0.007	0.033	0.095	1979	—
Modesto, California (216,000)	Retail—Downtown (52–59)	0.413	0.175	0.048	0.222	0.635	1979	—
Rochester, New York (1,040,000)	Retail—Downtown (52–59)	0.065	0.028	0.008	0.035	0.100	1979	—
Saginaw, Michigan (235,000)	Retail—Downtown (52–59)	0.078	0.033	0.009	0.042	0.120	1979	—
Boston, Massachusetts (4.6 million)	Retail—Convenience (53,59)	—	—	—	0.440	—	1992	Summed various trucks to get total truck trips/TSF.
Australia	Retail—Local Supermarket (54)	0.506	0.230	0.090	0.320	0.826	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Australia	Retail—Major Supermarket (54)	0.280	0.190	0.090	0.280	0.560	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Baltimore, Maryland—Suburban Area	Foods—Prepared (54)	—	—	—	—	3.900	1987	See note 5. Converted from one way (trip ends) to total trips.
Australia	Retail Trade—Department Store (56)	0.320	0.460	0.046	0.506	0.826	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Boston, Massachusetts (4.6 million)	Food—Fast (58)	—	—	—	0.770	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Restaurant/Club (58)	—	—	—	0.770	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Restaurants (58)	0.714	—	—	0.494	1.209	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Baltimore, Maryland—Suburban Area	Variety/Pharmacy (59)	—	—	—	—	0.600	1987	See note 5.
Median	SIC (52–59)	0.301	0.190	0.046	0.280	0.635	—	Truck Trips
Average	SIC (52–59)	0.350	0.179	0.084	0.324	0.917	—	Truck Trips
Minimum	SIC (52–59)	0.005	0.026	0.000	0.033	0.080	—	Truck Trips
Maximum	SIC (52–59)	0.830	0.460	0.460	0.770	3.900	—	Truck Trips

TABLE D-2d
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER 1,000 SQUARE FEET (TSF) OF BUILDING SPACE FOR OFFICE AND SERVICES (SIC 60–88)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	Single Unit	Combination Unit	All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
Baltimore, Maryland—Suburban Area	Office Buildings (60–67)	—	—	—	—	0.200	1987	See note 5.
Boston, Massachusetts (4.6 million)	Office (60–67)	0.022	—	—	0.037	0.059	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	Office (60–67)	—	—	—	0.110	—	1992	Summed various trucks to get total truck trips/TSF. Converted from one way (arrivals) to two way (total trips).
Boston, Massachusetts (4.6 million)	Hotel (70)	0.012	—	—	0.022	0.034	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	Hotel (70)	—	—	—	0.040	—	1992	Summed various trucks to get total truck trips/TSF.
Baltimore, Maryland—Suburban Area	Personal Services (72)	—	—	—	—	2.300	1987	See note 5.
Boston, Massachusetts (4.6 million)	Theater (78)	—	—	—	0.006	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Recreation—Outdoor (79)	—	—	—	0.006	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Office—Medical (80)	—	—	—	0.110	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Hospital (80)	0.005	—	—	0.004	0.009	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	Hospital (80)	—	—	—	0.014	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Laboratory (80)	—	—	—	0.110	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	School (82)	—	—	—	0.018	0.018	1992	Summed various trucks to get total truck trips/TSF. See note 7.
Boston, Massachusetts (4.6 million)	School—Public (82)	—	—	—	0.010	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	School—College (82)	—	—	—	0.015	—	1992	Summed various trucks to get total truck trips/TSF.
Boston, Massachusetts (4.6 million)	Library (82)	—	—	—	0.050	—	1992	Summed various trucks to get total truck trips/TSF.
Median	SIC (60–88)		0.012		0.020	0.046	—	Truck Trips
Average	SIC (60–88)		0.013		0.039	0.437	—	Truck Trips
Minimum	SIC (60–88)		0.005		0.004	0.009	—	Truck Trips
Maximum	SIC (60–88)		0.022		0.110	2.300	—	Truck Trips

Note: SIC = Standard Industrial Classification.

TABLE D-2e
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER 1,000 SQUARE FEET (TSF) OF BUILDING SPACE FOR OTHER LAND USES (UNCLASSIFIED—SIC 89)

Location/ (Population)	Land Use Type	4-Tire Commercial Vehicles	Single Unit	Combination Unit	All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
Washington D.C. (3.5 million)	Government Warehouse and Garage	0.022	0.021	0.025	0.047	0.069	1977	See note 1. Washington D.C. government warehouses and garages averaged to get trip generation rate.
Australia	Industry (Light)/High Tech	1.210	0.230	0.046	0.276	1.486	1989	Summed various trucks to get total truck trips/TSF. See note 6.
Boston, Massachusetts (4.6 million)	Residential	—	—	—	0.011	—	1992	Summed various trucks to get total truck trips/TSF.
Washington D.C. (3.5 million)	Government Office	0.011	0.008	0.003	0.011	0.022	1977	See note 1. Washington D.C. government offices averaged to get trip generation rates.

TABLE D-3a
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER ACRE FOR AGRICULTURE, MINING, AND CONSTRUCTION (SIC 1–19)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Columbus, Ohio (810,000)	Agriculture and Vacant (1,2,7)	0.005	—	0.000	0.000	0.005	1964	Summed various trucks to get total truck trips/acre. See note 9.
Racine, Wisconsin (136,952)	Agriculture and Related (1–9)	0.005	—	0.000	0.000	0.005	1972	Summed various trucks to get total truck trips/acre. See note 10.
Kenosha, Wisconsin (99,664)	Agriculture and Related (1–9)	0.010	—	0.000	0.000	0.010	1972	Summed various trucks to get total truck trips/acre. See note 10.
Columbus, Ohio (810,000)	Mining (10–14)	—	0.005	—	—	0.005	1964	Summed various trucks to get total truck trips/acre. See note 9.
Median	SIC (1–14)	0.005	0.005	0.000	0.000	0.005	—	Truck Trips
Average	SIC (1–14)	0.007	0.005	0.000	0.000	0.006	—	Truck Trips
Minimum	SIC (1–14)	0.005	0.005	0.000	0.000	0.005	—	Truck Trips
Maximum	SIC (1–14)	0.010	0.005	0.000	0.000	0.010	—	Truck Trips

Note: SIC = Standard Industrial Classification.

TABLE D-3b
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER ACRE FOR MANUFACTURING, TRANSPORTATION/COMMUNICATIONS/UTILITIES, AND WHOLESALE TRADE (SIC 20–51)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Chicago, Illinois (8 million)	Manufacturing (20–39)	—	—	—	—	3.600	1979	—
Richmond, Virginia	Manufacturing (20–39)	—	—	—	—	2.800	1979	—
Baton Rouge, Louisiana	Manufacturing (20–39)	—	—	—	—	1.300	1979	—
Columbia, South Carolina	Manufacturing (20–39)	—	—	—	—	1.500	1979	—
Monroe, Louisiana	Manufacturing (20–39)	—	—	—	—	5.900	1979	—
Little Rock, Arkansas	Manufacturing (20–39)	—	—	—	—	0.400	—	—
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Manufacturing (20–39)	—	—	—	—	1.805	1981	—
Flint, Michigan (470,000)	Manufacturing (20–39)	5.185	1.030	1.080	2.110	7.295	1966	Summed various trucks to get total truck trips/acre.

Note: SIC = Standard Industrial Classification.

TABLE D-3c
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER ACRE FOR RETAIL TRADE (SIC 52–59)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Flint, Michigan (470,000)	Retail (52–59)	5.925	2.800	0.565	3.365	9.290	1966	Summed various trucks to get total truck trips/acre.
Median	SIC (52–59)	5.925	2.800	0.565	3.365	9.290	—	Truck Trips
Average	SIC (52–59)	5.925	2.800	0.565	3.365	9.290	—	Truck Trips
Minimum	SIC (52–59)	5.925	2.800	0.565	3.365	9.290	—	Truck Trips
Maximum	SIC (52–59)	5.925	2.800	0.565	3.365	9.290	—	Truck Trips

Note: SIC = Standard Industrial Classification.

TABLE D-3d
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER ACRE FOR OFFICE AND SERVICES (SIC 60–88)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Flint, Michigan (470,000)	Services (70–89)	2.464	0.595	0.090	0.685	3.149	1966	Summed various trucks to get total truck trips/acre.
Flint, Michigan (470,000)	Cultural, Recreation, Entertainment (79)	0.155	0.050	0.005	0.055	0.210	—	—
Racine, Wisconsin (136,952)	Recreation (79)	0.015	—	—	0.010	0.025	1972	Summed various trucks to get total truck trips/acre. See note 10.
Kenosha, Wisconsin (99,664)	Recreation (79)	—	—	—	—	0.005	1972	Summed various trucks to get total truck trips/acre. See note 10.
Columbus, Ohio (810,000)	Recreation, Open Space (79)	0.015	0.150	0.115	0.265	0.280	1964	Summed various trucks to get total truck trips/acre. See note 9.
Richmond, Virginia	Services—Schools, Government (82)	—	—	—	—	4.000	1979	—
Baton Rouge, Louisiana	Services—Schools, Government (82)	—	—	—	—	2.600	1979	—
Columbia, South Carolina	Services—Schools, Government (82)	—	—	—	—	2.300	1979	—

Note: SIC = Standard Industrial Classification.

TABLE D-3e
TRIP GENERATION SUMMARY—DAILY COMMERCIAL VEHICLE TRIPS PER ACRE FOR OTHER LAND USES (UNCLASSIFIED—SIC 89 OR COMBINATION OF VARIOUS SICS)

Location/ (Population)	Land Use Type (SIC)	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	Date	Notes/Comments
			Single Unit	Combination Unit				
Kenosha, Wisconsin (99,664)	Commercial Wholesale and Storage	0.970	0.500	0.020	1.520	2.490	1972	Summed various trucks to get total truck trips/acre. See note 10.
Racine, Wisconsin (136,952)	Commercial Wholesale and Storage	1.345	1.695	0.065	1.760	3.105	1972	Summed various trucks to get total truck trips/acre. See note 10.
Richmond, Virginia	Retail—Wholesale (50–59)	—	—	—	—	10.300	1979	—
Baton Rouge, Louisiana	Retail—Wholesale (50–59)	—	—	—	—	33.600	1979	—
Little Rock, Arkansas	Retail—Wholesale (50–59)	—	—	—	—	16.000	1979	—
Columbia, South Carolina	Retail—Wholesale (50–59)	—	—	—	—	20.300	1979	—
Monroe, Louisiana	Retail—Wholesale (50–59)	—	—	—	—	35.000	1979	—
Chicago, Illinois (8 million)	Commercial	—	—	—	—	14.250	1975	See note 5.

TABLE D-4a
TRIP GENERATION SUMMARY—REGRESSION FORMULAS FOR DAILY COMMERCIAL VEHICLE TRIPS FOR AGRICULTURE, MINING, AND CONSTRUCTION (1–19)

Location	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
Leake and Gan (unknown), London?	Road Haul Contractors (17)	1973	—	—	—	—	1.69 + (1.73 * N) – (.02 * N^2)	0.58	N = Total non-office floor area in 1,000 sq. ft. See note 4.

Note: SIC = Standard Industrial Classification.

TABLE D-4b
TRIP GENERATION SUMMARY—REGRESSION FORMULAS FOR DAILY COMMERCIAL VEHICLE TRIPS FOR MANUFACTURING, TRANSPORTATION/ COMMUNICATIONS/ UTILITIES, AND WHOLESALE TRADE (20–51)

Location/ (Population)	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Manufacturing (20–39)	1981	163.4 + (95.16*MANL)	933.5 + (31.01*MANL)	255.8 + (28.2*MANL)	—	1.69 + (1.73*N) – (0.02*N^2)	0.07 to 0.48	MANL = Manufacturing land in the district. See note 5.
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Manufacturing (20–39)	1981	253.8 + (2.1*MANEMP)	257.6 + (5.11*MANEMP)	271.6 + (2.3*MANEMP)	529.2 + (7.41*MANEMP)	730.6 + (9.7*MANEMP)	0.25 to 0.58	MANEMP = Employment at manufacturing sites. See note 5.
Starkie, London–Industrial Suburb	Manufacturing and Engineering (20–39)	1967	—	—	—	—	26.96 + (0.0377*E)	0.24	E = Employment. See note 4.
Starkie, London–Industrial Suburb	Manufacturing and Engineering (20–39)	1967	—	—	—	—	19.44 + (0.0003*FA)	0.36	FA = Floor area. See note 4.
Fontana, California (>100,000)	Industrial—Heavy (20–39)	1994	—	—	78 – (0.652*TSF)	—	127.3 – (1.09*TSF)	—	TSF = Building area in thousands of gross sq. ft. See note 8.
Fontana, California (>100,000)	Industrial–Light (20–39)	1994	—	—	3.39 + (0.0877*TSF)	—	13.94 + (0.148*TSF)	0.98	TSF = Building area in thousands of gross sq. ft. See note 8.
Fontana, California (>100,000)	Industrial Park (20–39)	1994	—	—	–0.93 + (0.16*TSF)	—	24.87 + (0.208*TSF)	0.3	TSF = Building area in thousands of gross sq. ft. See note 8.
Fontana, California (>100,000)	Warehouse—Heavy (20–39)	1994	—	—	37.75 + (0.2249*TSF)	—	57.653 + (0.2891*TSF)	—	TSF = Building area in thousands of gross sq. ft. See note 8.
Fontana, California (>100,000)	Warehouse—Light (20–39)	1994	—	—	11.43 + (0.1406*TSF)	—	30.44 + (0.1785*TSF)	0.6	TSF = Building area in thousands of gross sq. ft. See note 8.
Leake and Gan (unknown), London?	Industrial (Other) Materials and Mach. (20–39)	1973	—	—	—	—	5.29 + (22.9*S) – (2.4*S^2)	0.32	S = Site area in acres. See note 4.
Columbus, Ohio (1.1 million)	Industry-Oriented (35)	1980	—	—	—	—	16.2 + (0.28*INE) + (0.18*CTUE)	0.26	INE = Industrial non–manufacturing employment; CTUE = Communication, transportation, and utility employment. See note 5.
Flint, Michigan (593,000)	Industry-Oriented (35)	1980	—	—	—	—	37.6 + (0.2*OE) + (0.13*ME)	0.73	OE = Other employment; ME = Manufacturing employment. See note 5.
Saginaw, Michigan (236,000)	Industry-Oriented (35)	1980	—	—	—	—	6.12 + (0.36*TCE) + (0.09*TE)	0.64	TCE = Transportation and communications empl. TE = Total empl. See note 5.

TABLE D-4b *(Continued)*

Location/ (Population)	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
Fontana, California (>100,000)	Truck Sales and Leasing (37)	1994	—	—	–2.8 + (1.89*TSF)	—	–189.4 – (1.53*TSF)	0.21	TSF = Building area in thousands of gross sq. ft. See note 8.
NE Illinois/NW Indiana—Eight Counties (>8 million)	Transportation, Communications, Utilities (40–49)	1981	279.3 + (7.77*TCUEMP)	—	390.4 + (10.5*TCUEMP)	—	1384.1 + (10.3*TCUEMP)	0.21 to 0.65	TCUEMP = Employment at transportation, communications, utilities. See note 5.
NE Illinois/NW Indiana—Eight Counties (>8 million)	Transportation, Communications, Utilities (40–49)	1981	—	540.6 + (11.51*TCUL)	—	—	—	0.16	TCUL = Transportation, communications, utilities land in the district. See note 5.
Fontana, California (>100,000)	Truck Transportation (42)	1994	—	—	–72 + (38.2*TSF)	—	–108 + (50.6*TSF)	0.1	TSF = Building area in thousands of gross sq. ft. See note 8.
Nashville, Tennessee (770,000)	Truck Transportation (42)	1990	—	—	—	—	(2.0552*TE) – 3.4407	0.726	TE = Number of terminal employees.
Leake and Gan (unknown), London?	Wholesale Distribution–Food, Drink (51)	1973	—	—	—	—	–1.88 + (1.75*N)	0.81	N = Total non-office floor area in 1,000 sq. ft. See note 4.

TABLE D-4c
TRIP GENERATION SUMMARY—REGRESSION FORMULAS FOR DAILY COMMERCIAL VEHICLE TRIPS FOR RETAIL TRADE (SIC 52–59)

Location/ (Population)	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
Leake and Gan (unknown), London?	Builders and Agriculture Supplies (52)	1973	—	—	—	—	$1.69 + (1.73*N) - (0.02*N^2)$	0.83	F = Total floor area in 1,000 sq. ft. See note 4.
Gastonia, North Carolina (166,000)	Goods (52–59)	1980	—	—	—	—	$50.1 + (1.1*RE) + (0.33*LIDU)$	0.37	RE = Retail employment; LIDU = Low-income dwelling units. See note 5.

TABLE D-4d
TRIP GENERATION SUMMARY—REGRESSION FORMULAS FOR DAILY COMMERCIAL VEHICLE TRIPS FOR OFFICE AND SERVICES (SIC 60–88)

Location/ (Population)	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
Gastonia, North Carolina (166,000)	Service (70–89)	1980	—	—	—	—	$1.69 + (1.73*N) - (0.02*N^2)$	0.27	HE = Highway employment; TE = Total employment. See note 5.

TABLE D–4e
TRIP GENERATION SUMMARY—REGRESSION FORMULAS FOR DAILY COMMERCIAL VEHICLE TRIPS FOR OTHER LAND USES (UNCLASSIFIED—SIC 89)

Location/ (Population)	Land Use Type (SIC)	Date	4-Tire Commercial Vehicles	6+ Tire Commercial Vehicles		All 6+ Tire Commercial Vehicles	All Commercial Vehicles	R^2	Notes/Comments
				Single Unit	Combination Unit				
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Commercial	1981	—	—	515.7 + (18.9*COML)	—	1.69 + (1.73*N) – (0.02*N^2)	0.17 to 0.22	COML = Commercial land in the district. See note 5.
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Commercial	1981	1,112.2 + (9.76*COMEMP)	2,492.1 + (3.6*COMEMP)	305.7 + (2.2*COMEMP)	—	2,252.7 + (23.7*COMEMP)	0.18 to 0.50	COMEMP = Employment at commercial sites. See note 5.
Columbus, Ohio (1.1 million)	Commercial Oriented	1980	—	—	—	—	54.6 + (0.51*INE) + (0.18*CGE)	0.35	INE = Industrial non–manufacturing employment; CGE = Commercial and government employment. See note 5.
Flint, Michigan (593,000)	Commercial Oriented	1980	—	—	—	—	73.3 + (0.59*CE) + (0.36*TDU)	0.47	CE = Commercial employment; TDU = Total dwelling units. See note 5.
Saginaw, Michigan (236,000)	Commercial Oriented	1980	—	—	—	—	11.9 + (0.38*TDU) + (0.37*TE)	0.65	TDU = Total dwelling units; CE = Commercial employment. See note 5.
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Residential (88)	1981	762.7 + (5.43*DU)	—	—	—	416.7 + (16*DU)	0.21 to 0.37	DU = Dwelling units. See note 5.
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Residential (88)	1981	–188.8 + (35.38*RESL) + (2.86*DU)	—	—	—	1078.6 + (56.5*RESL) + (11.7*DU)	0.54 to 0.55	RESL = Residential land in the district; DU = Dwelling units. See note 5.
NE Illinois/ NW Indiana—Eight Counties (>8 million)	Public Buildings	1981	196.5 + (20.92*PB)	—	—	—	112.6 + (73.6*PB)	0.17 to 0.43	PB = Public buildings in the district. See note 5.

NOTES (Trip Generation Summary Tables)
1. Commercial vehicles distributed accordingly:
   – Auto/pickup/truck/van = 4-tire commercial vehicles.
   – Single-unit truck = 6+ tire single unit.
   – Semi-trailer = 6+ tire combination unit.
2. Commercial vehicles distributed accordingly:
   – 0–8,000 lb commercial vehicles = 4-tire commercial vehicles.
   – 8,000–28,000 lb commercial vehicles = 6+ tire single unit.
   – 28,000+ lb commercial vehicle = 6+ tire combination unit.
3. Commercial vehicles distributed accordingly:
   – 2-axle commercial vehicle = 4-tire commercial vehicles.
   – 3-axle commercial vehicle = 6+ tire single-unit truck.
   – 4+ axle commercial vehicle = 6+ tire combination unit.
4. Assuming trip rate includes all commercial vehicles.
5. No time period indicated; assumed daily.
6. Commercial vehicles distributed accordingly:
   – Courier vans plus light rigid trucks = 4-tire commercial vehicles.
   – Heavy rigid trucks = 6+ tire single-unit truck.
   – Articulated trucks = 6+ tire combination unit.
7. Light commercial vehicles (4-wheeled trucks and vans) = 4-tire commercial vehicles.
8. 4+ axle trucks = 6+ tire combination unit.
9. Commercial vehicles distributed accordingly:
   – Light trucks (panel and pickup) = 4-tire commercial vehicles.
   – Medium trucks (all other commercial trucks except combination) = 6+ tire single-unit truck.
10. Light [under 8,000 lb except farm (under 10,000 lb)] = 4-tire commercial vehicles.

SECTION C-4 DEVELOPMENT OF URBAN COMMERCIAL VEHICLE TRAVEL MODEL AND HEAVY-DUTY VEHICLE EMISSIONS MODEL FOR ATLANTA REGION

Sub-Model	Industrial Employment	Retail Employment	Office Employment	Population
Light Truck	0.4823	0.6426	0.2315	0.0559
Heavy Truck	0.1439	0.2463	0.0829	0.0147

Note: International model trip rates (per employee or per person).

Model	Constant	Population (xT^x)	Government Employment (xT^x)	Industrial Employment (xT^x)	Retail Employment (xT^x)	R^2
Light w/constant	7.27	0.081	0.146	0.342	—	0.14
Final		0.088	1.039	0.596	—	NA
Heavy w/constant	15.14	0.0002	0.0126	0.0487	0.0439	0.36
Final		0.0013	0.057	0.057	0.0461	NA

Notes: External truck trip regression equations.
NA = not available.
Light truck time exponent is –1.15.
Heavy truck time exponent is –0.35.

SECTION C-5 MAG (PHOENIX AREA)

	GVWR (lb)				
Independent variable*	0–8,000	8–28,000	28–64,000	64,000+	28,000+
Total households	0.15433	0.06859	0.00671	0.0059	0.0126
Retail employment	0.59091	0.13253	0.03075	0.00609	0.03685
Industrial employment	0.64087	0.09972	0.0321	0.01781	0.04991
Public employment	0.29491	0.00596	0.01349	0.01049	0.02398
Office employment	0.30925	0.02119	0.00225	0.00095	0.0032
Other employment	0.76348	0.10567	0.04026	0.035	0.07527
Resident households	0.04004		0.00288		0.00288
Group quarter households		7.52348			
Total area (acres *100)				0.00365	0.00365
Vehicles				0.00062	0.00062

Notes: MAG = Maricopa Association of Governments; GVWR = Gross vehicle weight rating.
*Household trip rates are per household; all other trip rates are trips per employee.

SECTION C-6 ALAMEDA

	Trips per 1,000 employees		
	2-axle trucks	3-axle trucks	4+ axle trucks
Internal Garage-Based Productions			
Manufacturing	11	2	4
Retail	14	—	—
Business Service	1	—	—
Other Employment	5	4	8
Internal Garage-Based Attractions			
Other Employment	—	5	14
Total Employment	23	—	—
Internal Linked Productions & Attractions			
Total Employment	32	4	7
Internal–External Productions			
Manufacturing	—	2	22
Other Employment	—	1	9
Total Employment	4	—	—

SECTION C-7 SCAG—INTERNAL TRIP RATES*

	Outbound				Inbound			
	LH	MH	HH	Subtotal	LH	MH	HH	Subtotal
Households	0.0390	0.0087	0.0023	0.0500	0.0390	0.0087	0.0023	0.0500
Agric./Mining/ Construction	0.0513	0.0836	0.0569	0.1919	0.0513	0.0836	0.0569	0.1919
Retail	0.0605	0.0962	0.0359	0.1925	0.0605	0.0962	0.0359	0.1925
Government	0.0080	0.0022	0.0430	0.0533	0.0080	0.0022	0.0430	0.0533
Manufacturing	0.0353	0.0575	0.0391	0.1319	0.0353	0.0575	0.0391	0.1319
Transportation	0.2043	0.0457	0.1578	0.4078	0.2043	0.0457	0.1578	0.4078
Wholesale	0.0393	0.0650	0.0633	0.1677	0.0393	0.0650	0.0633	0.1677
Service	0.0091	0.0141	0.0030	0.0262	0.0091	0.0141	0.0030	0.0262

Notes: SCAG = Southern California Association of Governments. LH = light-heavy (8,501–14,000 lb GVW); MH = medium-heavy (14,001–33,000 lb GVW); HH = heavy-heavy (>33,000 lb GVW).
*Household trip rates are trips per household; all other trip rates are trips per employee.

SECTION C-8 BUFFALO

Land Use at Trip Ends	Trip Rates (per person/employee)
HH (population)	0.00188
Manufacturing	0.07187
Retail	0.15091
Wholesale	0.08731
Other	0.00514
Parcel pickup and delivery	
Households	0.00665
Businesses	0.02762

SECTION C-9 WEST VIRGINIA

Land Use	SEV	Average Weekday Rates	Valid Results?	Weekday Traffic Project Range	Weekday Regression Results	Weekday K (%)	Trucks (%)
Light Industrial Parks	Acres	12.67	N	±2032	Poor	13	8
Poultry-Related Facilities	Employees	2.08	Y	—	Good	14	12.8
	1,000 SF GFA	8.94	Y	±597	Good	14	12.8
Timber Processing Facilities	Employees	4.39	Y	—	NRU	12	12.2
	1,000 SF GFA	2.03	Y	—	NRU	12	12.2

Notes: NRU = not recommended for use; N = no; Y = yes; — = not determined; SEV = socioeconomic variable.

SECTION C-10 VANCOUVER

	Sub-Area Light Truck Rates			
Variable	Area 0	Area 1	Area 2	Area 3
POP	0.0077		0.0037	0.0216
PRIM	0.0964		0.0130	0.1403
MANU	0.0688		0.0199	0.0863
CONS	0.0609		0.0075	0.1503
TCU	0.0709		0.0280	0.4944
WHOL	0.2292		0.0746	0.1725
RET	0.1425		0.0782	0.1287
FIRE+BUS	0.0429		0.0225	0.0200
EH&S	0.0210		0.0236	0.0260
AF&O	0.0450		0.0296	0.0732
TOTEMP		0.0378		

Light Truck Sub-Areas
Area 0 All zones not in Area 1, Area 2, or Area 3.
Area 1 Vancouver CBD.
Area 2 North Vancouver, Valley North, Valley South.
Area 3 West Vancouver, rest of Vancouver, Pitt Meadows/Maple Ridge.

Note: Population trip rates are per person; all other trip rates are trips per employee.

Variable	Sub-Area Heavy Truck Rates			
	Area 0	Area 1	Area 2	Area 3
POP	0.0006		0.0006	0.0016
PRIM	0.2023		0.0333	0.0840
MANU	0.0758		0.0342	0.0901
CONS	0.0421		0.0757	0.0436
TCU	0.0409		0.0376	0.1591
WHOL	0.0740		0.0612	0.1512
RET	0.0305		0.0257	0.0331
FIRE+BUS	0.0013		0.0014	0.0022
EH&S	0.0030		0.0041	0.0081
AF&O	0.0212		0.0095	0.0311
TOTEMP		0.0059		

Heavy Truck Sub-Areas
Area 0 All zones not in Area 1, Area 2, or Area 3.
Area 1 Vancouver CBD.
Area 2 Rest of Vancouver, Burnaby/New Westminster.
Area 3 Northeast Sector, South Delta, Pitt Meadows/Maple Ridge, Langleys.

Notes: POP = population; PRIM = primary industry (agriculture, forestry, mining); MANU = manufacturing; CONS = construction; TCU = transportation, communications, and utilities; WHOL = wholesale trades; RET = retail trade; FIRE + BUS = finance, insurance, and real estate + business services; EH&S = education, health, and social services; AF&O = accommodations, food, and other services; TOTEMP = total employment.

SECTION C-11 LANCASTER ENGINEERING

Sites	AM Peak Trip Rates	PM Peak Trip Rates	Daily Trip Rates
Fort James	0.038	0.028	0.574
Columbia Sportswear	0.049	0.036	1.151
Nike Distribution	0.100	0.098	2.009
Average rate	0.062	0.054	1.245
Trip Manual rate	0.450	0.510	4.960

Note: Trips per 1,000 square feet.

SECTION C-12 DESHAZO TANG & ASSOCIATES

Condition		Trip Generation Rate per 1,000 sq. ft. of Gross Floor Area	Inbound (% of total)	Trucks (%)	Outbound (% of Total)	Trucks (%)
AM Peak–Hour of Adjacent Street (6:30–7:30)	Alliance	0.233	73	51	27	56
	Railhead	0.4083	77	27	23	37
	Average	0.3208	75	39	25	46
	ITE—Industrial Park	0.89	82	NA	18	NA
	ITE—Light Industrial	0.92	88	NA	12	NA
Midday Site–Related Peak Hour (12:00–1:00)	Alliance	0.1645	51	61	49	55
	Railhead	0.5978	49	26	51	35
	Average	0.3811	50	43	50	45
	ITE—Industrial Park	0.82	86	NA	14	NA
	ITE—Light Industrial	NA	NA	NA	NA	NA
Afternoon Site–Related Peak Hour (3:30–4:30)	Alliance	0.2732	34	63	66	50
	Railhead	0.3701	39	24	61	37
	Average	0.3216	37	43	63	43
	ITE—Industrial Park	0.86	21	NA	79	NA
	ITE—Light Industrial	NA	NA	NA	NA	NA
PM Peak–Hour of Adjacent Street Traffic (5:00–6:00)	Alliance	0.1411	33	63	67	51
	Railroad	0.4711	40	28	60	60
	Average	0.3061	36	46	64	56
	ITE—Industrial Park	0.92	21	NA	79	NA
	ITE—Light Industrial	0.98	12	NA	88	NA

Notes: ITE = Institute of Transportation Engineers; NA = not available.

SECTION C-13 FLORIDA DOT FREIGHT TONNAGE GENERATION EQUATIONS

Production Equations

	Code Name/ Commodity Groups	Coefficient	Variable
1	Agricultural	89.420	SIC07
2	Nonmetallic Minerals	5193.245	SUM(SIC10-14)
3	Coal		
4	Food	412.200	SIC20
5	Non-Durable Mfg.	28.227	SUM(SIC21,22,23,25,27)
6	Lumber	381.813	SIC24
7	Chemicals	1031.52	SIC28
8	Paper	247.62	SIC26
9	Petroleum Products	1485.754	SIC29
10	Other Durable Mfg.	23.771	SUM(SIC30,31,33–39)
11	Clay, Concrete, Glass	2659.828	SIC32
12	Waste	0.164	TOTEMP
13	Misc. Freight	0.047	TOTEMP
14	Warehousing	184.297	SIC50&51

Attraction Equations

	Code Name/ Commodity Groups	Coefficient 1	Variable	Coefficient 2	Variable
1	Agricultural	40.328	SIC20		
2	Nonmetallic Minerals	2052.751	SIC28		
3	Coal	246.607	SIC49		
4	Food	136.983	SIC51		
5	Non-Durable Mfg.	30.257	SIC51		
6	Lumber	258.344	SIC25	0.469	Pop
7	Chemicals	102.57	SIC51		
8	Paper	29.56	SIC51		
9	Petroleum Products	0.248	Pop		
10	Other Durable Mfg.	57.888	SIC50		
11	Clay, Concrete, Glass	3.191	Pop		
12	Waste	115.988	SIC33		
13	Misc. Freight	1.478	SUM(SIC42,44,45)		
14	Warehousing	3.118	Pop		

Appendix 2 Baseline Assessment
Source: Draft San Joaquin County General Plan Appendix D

2.1 Baseline Assessment

Traffic counts were performed at 51 intersections and 60 roadway segments throughout unincorporated San Joaquin County in 2008 as part of the 2008 General Plan update. State highway traffic volumes for 2007 were also used which were the most recently published data at that time. These data informed the conclusions presented in this Environmental Impact Report (EIR). Typically, count and volume data five years old would not be considered reflective of current traffic conditions. However due to the Great Recession and based on the comparative analysis described below, San Joaquin County has experienced little to no growth in traffic volumes between 2007 and 2012.

Table 4.D-A1 shows published traffic volumes along state facilities in the county for 2007 and 2012. The county volumes were an average of 6% lower in 2012 than they had been in 2007 county-wide. This translates into a 6.3% reduction in VMT on the same segments. On segments that are entirely within the unincorporated portion of the county, volumes have declined more than 7%.

It is assumed for the purposes of this EIR that this is a representative sample of roadway segments for the county and that similar expectations can be applied to the county roadways that were counted in 2008. This would result in a conservative estimate of traffic impacts as estimated in future scenarios.

Table 4.D-A1
2007 – 2012 AADT Comparison

State Route	From	To	2007	2012	Change
4	CONTRA COSTA/SAN JOAQUIN COUNTY LINE	TRACY BOULEVARD	9,200	8,100	-14.1%
4	TRACY BOULEVARD	INLAND DRIVE	8,300	7,000	-7.2%
4	INLAND DRIVE	MAYBECK ROAD	8,500	7,700	0.0%
4	MAYBECK ROAD	ROBERTS ISLAND ROAD	10,600	7,700	-18.9%
4	ROBERTS ISLAND ROAD	FRESNO AVENUE	12,900	10,500	-17.8%
4	FRESNO AVENUE	NAVY DRIVE/STOCKTON STREET	16,000	13,400	-18.8%
4	NAVY DRIVE/STOCKTON STREET	STOCKTON, SOUTH JCT. RTE. 5	29,000	24,600	-15.2%
4	STOCKTON, SOUTH JCT. RTE. 5	STOCKTON, NORTH JCT RTE 5	17,200	14,700	-14.5%
4	STOCKTON, NORTH JCT RTE 5	STANISLAUS STREET	88,000	79,000	-11.4%
4	STANISLAUS STREET	STOCKTON, WILSON WAY	102,000	91,000	-5.9%
4	STOCKTON, WILSON WAY	STOCKTON, FILBERT STREET	101,000	89,000	-6.9%
4	STOCKTON, FILBERT STREET	NORTH JCT. RTE. 99	95,000	84,000	-6.3%
4	SOUTH JCT. RTE. 99	WALKER LANE	8,600	6,800	-1.2%
4	WALKER LANE	JACKTONE ROAD	4,300	3,050	-3.5%
4	JACKTONE ROAD	FARMINGTON	4,000	4,650	22.5%
4	FARMINGTON	SONORA ROAD (TO VALLEY HOME)	4,100	4,600	11.0%

Table 4.D-A1
2007 – 2012 AADT Comparison

State Route	From	To	2007	2012	Change
4	SONORA ROAD (TO VALLEY HOME)	SAN JOAQUIN COUNTY STANISLAUS COUNTY	4,000	8,800	8.8%
5	STANISLAUS/SAN JOAQUIN COUNTY LINE	JCT. RTE. 580 WEST	39,500	37,500	-5.1%
5	JCT. RTE. 580 WEST	JCT. RTE. 132	20,500	36,500	-8.8%
5	JCT. RTE. 132	JCT. RTE. 33 SOUTH	24,000	21,500	-5.0%
5	JCT. RTE. 33 SOUTH	KASSON ROAD INTERCHANGE	23,200	21,100	-5.2%
5	KASSON ROAD INTERCHANGE	OLD ROUTE 50; 11TH STREET	23,300	21,000	-5.6%
5	OLD ROUTE 50; 11TH STREET	JCT. RTE. 205 WEST	47,500	41,000	-5.3%
5	JCT. RTE. 205 WEST	JCT. RTE. 120 EAST	160,000	142,000	-5.0%
5	JCT. RTE. 120 EAST	LATHROP ROAD	106,000	104,000	-5.7%
5	LATHROP ROAD	FRENCH CAMP OVERCROSSING	104,000	98,000	-7.7%
5	FRENCH CAMP OVERCROSSING	MATHEWS ROAD	112,000	102,000	-10.7%
5	MATHEWS ROAD	FRENCH CAMP TURNPIKE INTERCHANGE	110,000	100,000	-9.1%
5	FRENCH CAMP TURNPIKE INTERCHANGE	STOCKTON, EIGHTH STREET	115,000	103,000	-8.7%
5	STOCKTON, EIGHTH STREET	STOCKTON, JCT. RTE. 4	131,000	131,000	0.0%
5	STOCKTON, JCT. RTE. 4	STOCKTON, JCT. RTE. 4	141,000	139,000	-0.7%
5	STOCKTON, JCT. RTE. 4	PERSHING AVENUE INTERCHANGE	140,000	137,000	-100.0%
5	PERSHING AVENUE INTERCHANGE	STOCKTON, MONTE DIABLO AVENUE INTERCHANGE	129,000	124,000	2.3%
5	STOCKTON, MONTE DIABLO AVENUE INTERCHANGE	COUNTRY CLUB BOULEVARD	116,000	100,000	-9.5%
5	COUNTRY CLUB BOULEVARD	PLYMOUTH RD/RYDE AVE	131,000	113,000	-9.2%
5	PLYMOUTH RD/RYDE AVE	STOCKTON, MARCH LANE	123,000	118,000	0.8%
5	STOCKTON, MARCH LANE	BENJAMIN HOLT DRIVE INTERCHANGE	118,000	113,000	0.8%
5	BENJAMIN HOLT DRIVE INTERCHANGE	STOCKTON, HAMMER LANE	110,000	105,000	0.9%
5	STOCKTON, HAMMER LANE	ATHERTON/EIGHT MILE ROADS INTERCHANGE	95,000	82,000	1.1%
5	ATHERTON/EIGHT MILE ROADS INTERCHANGE	JCT. RTE. 12	77,000	79,000	0.0%
5	JCT. RTE. 12	PELTIER ROAD	64,000	54,000	-17.2%
5	PELTIER ROAD	WALNUT GROVE ROAD	57,000	48,000	-12.3%
5	WALNUT GROVE ROAD	SAN JOAQUIN/SACRAMENTO COUNTY LINE	57,000	51,000	-7.0%
12	SACRAMENTO/SAN JOAQUIN COUNTY LINE	GLASSCOCK ROAD/TOWER PARKWAY	17,500	15,200	-13.1%
12	GLASSCOCK ROAD/TOWER PARKWAY	GUARD RD	18,700	16,000	-14.4%
12	GUARD RD	JCT. RTE. 5	18,200	16,400	-9.9%
12	JCT. RTE. 5	THORNTON ROAD	17,200	15,000	-12.8%
12	THORNTON ROAD	LOWER SACRAMENTO ROAD	15,400	12,200	-20.8%
12	LOWER SACRAMENTO ROAD	SOUTH HAM LANE	28,500	23,500	-17.5%
12	SOUTH HAM LANE	LODI, SOUTH HUTCHINS STREET	29,500	24,400	-17.3%
12	LODI, SOUTH HUTCHINS STREET	LODI, CENTRAL AVENUE	32,000	26,500	-18.8%
12	LODI, CENTRAL AVENUE	LODI, CHEROKEE LANE	24,400	20,900	-12.7%
12	LODI, CHEROKEE LANE	LODI, JCT. RTE. 99	23,000	19,700	-12.6%
12	LODI, JCT. RTE. 99	LODI, CLUFF AVENUE	12,400	10,300	-15.3%
12	LODI, CLUFF AVENUE	VICTOR BRUELLA ROAD	10,700	9,800	-6.5%

Table 4.D-A1 2007 – 2012 AADT Comparison					
State Route	From	To	2007	2012	Change
12	VICTOR BRUELLA ROAD	LOCKEFORD, JCT. RTE. 88	8,400	7,600	-7.1%
12	LOCKEFORD, JCT. RTE. 88	SAN JOAQUIN/CALAVERAS COUNTY LINE	7,700	6,400	-6.5%
26	JCT. RTE. 99	CARDINAL AVENUE	17,200	15,500	-9.9%
26	CARDINAL AVENUE	ALPINE RD	13,000	11,700	-10.0%
26	ALPINE RD	JACKTONE ROAD	9,600	8,600	-10.4%
26	JACKTONE ROAD	DUNCAN ROAD	7,000	6,600	-5.7%
26	DUNCAN ROAD	MILL STREET (LINDEN)	8,400	7,900	-6.0%
26	MILL STREET (LINDEN)	LINDEN, FLOOD ROAD/FRONT STREET	8,400	8,000	-4.8%
26	LINDEN, FLOOD ROAD/FRONT STREET	ESCALON/BELLOTA ROAD	6,400	5,200	-14.1%
26	ESCALON/BELLOTA ROAD	SAN JOAQUIN/CALAVERAS COUNTY LINE	6,000	4,400	-10.0%
33	STANISLAUS COUNTY SAN JOAQUIN COUNTY	VERNALIS, JCT. RTE. 132	1,800	1,300	-13.9%
33	VERNALIS, JCT. RTE. 132	NEW JERUSALEM, DURHAM FERRY ROAD	3,400	2,400	-14.7%
33	NEW JERUSALEM, DURHAM FERRY ROAD	JCT. RTE. 5	3,400	2,400	-14.7%
88	JCT RTE 99; STOCKTON WEST	WILCOX ROAD	26,800	24,100	-10.1%
88	WILCOX ROAD	WHITE LANE	20,000	17,000	-15.0%
88	WHITE LANE	FAIRCHILD LANE	14,300	12,300	-14.0%
88	FAIRCHILD LANE	WATERLOO, FERGUSON/ COMSTOCK ROADS	12,500	10,800	-13.6%
88	WATERLOO, FERGUSON/ COMSTOCK ROADS	EIGHT MILE ROAD	7,600	6,500	-14.5%
88	EIGHT MILE ROAD	HARNEY LANE	10,200	9,000	-11.8%
88	HARNEY LANE	LOCKEFORD, JCT RTE 12 WEST	11,200	9,800	-5.4%
88	LOCKEFORD, JCT RTE 12 WEST	JACKTONE ROAD	18,600	17,700	-4.8%
88	JACKTONE ROAD	ELLIOTT/TULLY ROADS	19,400	16,400	-20.1%
88	ELLIOTT/TULLY ROADS	DISCH ROAD	16,400	14,200	-17.7%
88	DISCH ROAD	MACKVILLE ROAD	13,800	11,500	-16.7%
88	MACKVILLE ROAD	CLEMENTS, JCT. RTE. 12 EAST	13,900	13,000	-7.9%
88	CLEMENTS, JCT. RTE. 12 EAST	LIBERTY ROAD	17,000	13,900	-13.5%
88	LIBERTY ROAD	SAN JOAQUIN/AMADOR COUNTY	10,400	8,550	-13.5%
99	STANISLAUS/SAN JOAQUIN COUNTY LINE	RIPON, MAIN STREET	114,000	109,000	-6.1%
99	RIPON, MAIN STREET	MILGEO AVENUE	118,000	113,000	-5.9%
99	MILGEO AVENUE	JACKTONE ROAD	119,000	125,000	-5.0%
99	JACKTONE ROAD	SOUTH JCT. RTE. 120	123,000	113,000	-10.6%
99	SOUTH JCT. RTE. 120	MANTECA, NORTH JCT. RTE. 120	88,000	83,000	-5.7%
99	MANTECA, NORTH JCT. RTE. 120	NORTH MANTECA INTERCHANGE	70,000	66,000	-5.7%
99	NORTH MANTECA INTERCHANGE	TURNER STATION/FRENCH CAMP ROAD	72,000	70,000	-6.9%
99	TURNER STATION/FRENCH CAMP ROAD	STOCKTON, MARIPOSA ROAD	70,000	69,000	-2.9%
99	STOCKTON, MARIPOSA ROAD	JCT. RTE. 4 EAST	91,000	87,000	-4.4%
99	JCT. RTE. 4 EAST	JCT. RTE. 26 WEST	98,000	94,000	-4.1%
99	JCT. RTE. 26 WEST	JCT. RTE. 4 WEST	100,000	96,000	-4.0%
99	JCT. RTE. 4 WEST	JCT. RTE. 26 EAST	106,000	99,000	-6.6%

Table 4.D-A1
2007 – 2012 AADT Comparison

State Route	From	To	2007	2012	Change
99	JCT. RTE. 26 EAST	JCT. RTE. 88 NORTHEAST	101,000	105,000	-17.8%
99	JCT. RTE. 88 NORTHEAST	CHEROKEE ROAD INTERCHANGE	95,000	91,000	-17.9%
99	CHEROKEE ROAD INTERCHANGE	WILSON WAY	86,000	86,000	-33.7%
99	WILSON WAY	HAMMER LANE	96,000	96,000	-33.3%
99	HAMMER LANE	MORADA LANE	79,000	64,000	-19.0%
99	MORADA LANE	SOUTH LODI INTERCHANGE	75,000	75,000	-18.7%
99	SOUTH LODI INTERCHANGE	LODI, JCT. RTE. 12 WEST	67,000	67,000	-11.9%
99	LODI, JCT. RTE. 12 WEST	LODI, JCT. RTE. 12 EAST	65,000	65,000	0.0%
99	LODI, JCT. RTE. 12 EAST	LODI, TURNER ROAD	64,000	65,000	1.6%
99	LODI, TURNER ROAD	WOODBRIDGE ROAD	64,000	67,000	0.0%
99	WOODBRIDGE ROAD	ACAMPO ROAD INTERCHANGE	60,000	61,000	0.0%
99	ACAMPO ROAD INTERCHANGE	JAHANT ROAD	59,000	61,000	1.7%
99	JAHANT ROAD	SAN JOAQUIN/SACRAMENTO COUNTY LINE	59,000	60,000	0.0%
120	MOSSDALE, JCT. RTE. 5	YOSEMITE AVENUE UNDERCROSSING	77,000	78,000	-99.3%
120	YOSEMITE AVENUE UNDERCROSSING	AIRPORT WAY	63,000	63,000	20.6%
120	AIRPORT WAY	MANTECA ROAD/MAIN STREET	61,000	68,000	11.5%
120	MANTECA ROAD/MAIN STREET	SOUTH JCT. RTE. 99	70,000	73,000	2.9%
120	MANTECA, NORTH JCT. RTE. 99	AUSTIN ROAD	16,400	14,100	-14.0%
120	AUSTIN ROAD	JACKTONE ROAD	15,300	13,200	-13.7%
120	JACKTONE ROAD	FRENCH CAMP ROAD	9,400	13,400	42.6%
120	FRENCH CAMP ROAD	ESCALON, MAIN/KERN STREETS	12,400	11,500	-7.3%
120	ESCALON, MAIN/KERN STREETS	ESCALON, DAVID AVENUE	11,700	10,500	-10.3%
120	ESCALON, DAVID AVENUE	SAN JOAQUIN/STANISLAUS COUNTY	12,100	10,700	-11.6%
132	JCT. RTE. 580	CHRISMAN ROAD INTERCHANGE	20,100	13,200	-34.3%
132	CHRISMAN ROAD INTERCHANGE	JCT. RTE. 5	18,100	13,000	-28.2%
132	JCT. RTE. 5	VERNALIS, JCT. RTE. 33	18,300	14,100	-23.0%
132	VERNALIS, JCT. RTE. 33	SAN JOAQUIN COUNTY/STANISLAUS COUNTY	19,400	10,700	-20.1%
205	ALAMEDA/SAN JOAQUIN COUNTY LINE	PATTERSON PASS ROAD INTERCHANGE	112,000	108,000	-4.5%
205	PATTERSON PASS ROAD INTERCHANGE	OLD ROUTE 50	113,000	104,500	-7.5%
205	OLD ROUTE 50	TRACY, MAC ARTHUR DRIVE	95,000	82,000	-7.4%
205	TRACY, MAC ARTHUR DRIVE	JCT. RTE. 5	101,000	109,000	-6.4%
580	JCT. RTE. 5	JCT. RTE. 132 EAST	21,500	21,000	-2.3%
580	JCT. RTE. 132 EAST	CORRAL HOLLOW ROAD INTERCHANGE	37,000	30,000	-18.9%
580	CORRAL HOLLOW ROAD INTERCHANGE	SAN JOAQUIN/ALAMEDA CNTY LINE	41,000	29,000	-26.8%
All	**COUNTY ONLY SEGMENTS**		**1,267,200**	**1,171,950**	**-7.5%**
All	**STATE HIGHWAY SEGMENTS**		**6,540,700**	**6,145,750**	**-6.0%**

Highlighted rows represent segments that are entirely within the unincorporated county
Source: Caltrans

Appendix 3 Traffic Forecast NCHRP Process

NCHRP: 2035 Base

ID #	Source	Street Name	Orientation	Location/Limits	Lanes	2014 AADT	2014 Modeled Volume	2035 Modeled Volume	2014 Heavy-Duty Truck %	Peak Month Adjustment	2014 HDT Adj Volum	2035 HDT Adj Volume	2035 Ratio Volume	2035 Difference Volume	2035 Avg. Volume (ratio+diff/2)	2014-2035 Avg. Annual Growth	Ratio-Diff Method Difference	2035 Analysis Volume
6463121912196463	GPU	Airport Wy.		Lathrop Rd To Louise Ave	2	7,200	9,555	13,724	4%	1.000	9,937	14,273	10,341	11,536	10,939	1.76	-1,194	11,536
6949694869486949	GPU	Alpine Ave		I-5 To Mission Rd	4	7,900	6,929	7,759	0%	1.000	6,929	7,759	8,846	8,730	8,788	0.44	116	8,788
2550188618862550	2014 SJ TIMF Update	Ash		7th to French Camp	2	4,191	1,753	1,612	3%	1.000	1,806	1,660	3,854	4,046	3,950	-0.25	-192	4,191
2274255025502274	2014 SJ TIMF Update (REDO)	Ash St		El Dorado To Mckinley	2	5,101	7,285	8,377	3%	1.000	7,504	8,628	5,866	6,226	6,046	0.71	-360	6,046
2923124612462923	2014 SJ TIMF Update	Austin Rd		E Louise Ave to SR-120	2	2,985	795	1,740	3%	1.000	819	1,792	6,532	3,958	5,245	2.38	2,574	3,958
2250913491349225 09	2014 SJ TIMF Update	Austin Rd		Graves to Moffat	2	3,524	848	3,523	5%	1.000	890	3,699	14,640	6,333	10,487	4.65	8,308	6,333
2486183318332486	GPU	B St		E Fourth St To Ralph Ave	2	5,300	3,055	3,518	0%	1.000	3,055	3,518	6,103	5,763	5,933	0.47	340	5,933
2004200520052004	2014 SJ TIMF Update	Benjamin Holt Dr		Leesburg Pl To Pacific Ave	4	12,798	20,885	19,729	1%	1.000	21,094	19,926	12,090	11,630	11,860	-0.32	459	12,798
2781200020002781	2014 SJ TIMF Update	Benjamin Holt Dr		Plymouth Rd To Alexandria Pl	4	19,092	21,865	25,779	1%	1.000	22,084	26,037	22,510	23,045	22,778	0.74	-535	22,778
157872002200215787	2014 SJ TIMF Update	Benjamin Holt Dr		Harrisburg to Pershing	3	14,916	18,638	21,631	1%	1.000	18,824	21,847	17,312	17,939	17,625	0.70	-628	17,625
3147314631463147	GPU Addition	Bird Rd		Lovely Rd & Linne Rd (or Ahern Road)	2	2,207	4,013	6,435	5%	1.000	4,214	6,757	3,539	4,750	4,145	2.66	-1,211	4,750
520222298222985202	GPU	Byron Rd		County Line To Mt House Pkwy	2	8,300	5,142	14,554	10%	1.000	5,656	16,009	23,492	18,653	21,073	3.96	4,839	18,653
1168176717671168	GPU	Cardinal Ave		Sr 26/Fremont St To Hobart Ave	2	5,200	4,669	5,273	4%	1.000	4,856	5,484	5,873	5,828	5,850	0.49	45	5,850
2847198219822847	GPU Addition	Carter Rd		Henry Rd. & Escalon-Bellota	2	328	254	278	9%	1.000	277	303	359	354	357	0.35	5	357
4661171117114661	2014 SJ TIMF Update	Cherokee Rd		SR-99 to Canal	2	6,065	3,491	2,415	2%	1.000	3,561	2,463	4,196	4,967	4,582	-1.16	-772	6,065
7405171317137405	2014 SJ TIMF Update	Cherokee Rd		Sr-99 To Suburban Rd	2	3,860	10,955	9,737	9%	1.000	11,941	10,613	3,431	2,532	2,982	-1.07	898	3,860
46554653465346 55	GPU Addition	Cherokee Rd		Sanguinetti Ln. & Div. Canal	2	4,774	3,757	2,896	2%	1.000	3,832	2,954	3,680	3,896	3,788	-0.96	-216	4,774
137722426224261377	GPU	Chestnut St		Lodi City Limits To Mokelumne St	3	7,800	9,031	9,745	1%	1.000	9,121	9,842	8,417	8,521	8,469	0.34	-104	8,469
2387236423642387	GPU Addition	Copperopolis Rd		Dietrich Rd. & Drais Ave.	2	1,343	10,163	11,883	3%	1.000	10,468	12,239	1,570	3,115	2,342	2.34	-1,544	3,115
3091308630863091	GPU Addition	Corral Hollow		County Boundary & I-580	2	3,008	1,959	3,134	0%	1.000	1,959	3,134	4,812	4,183	4,498	1.69	629	4,498
2115211621162115	GPU	Country Club Blvd		Franklin Ave To Pershing Ave	2	7,300	10,234	10,807	5%	1.000	10,746	11,347	7,709	7,902	7,805	0.28	-193	7,805
2508201020102508	GPU	Douglas Rd		Pacific Ave To Pershing Ave	2	3,680	3,692	3,977	0%	1.000	3,692	3,977	3,964	3,965	3,965	0.31	-1	3,965
2740154015402740	2014 SJ TIMF Update	E Larch Rd		Corrall Hollow Rd To City Limit	2	2,889	7,469	10,190	1%	1.000	7,544	10,292	3,941	5,637	4,789	2.13	-1,696	5,637
2302166216622302	GPU Addition	Eight Mile Rd		Jack Tone Rd. & SR 88	2	1,768	2,454	3,659	4%	1.000	2,552	3,805	2,636	3,021	2,829	1.98	-385	2,829
7571183318337571	GPU Addition	Eighth St		B St. & D St.	2	5,576	4,484	4,061	1%	1.000	4,529	4,102	5,050	5,149	5,099	-0.37	-99	5,576
5953260626065953	2014 SJ TIMF Update	Elliott Rd		Peltier Rd To Sr-12/88	2	3,214	4,399	6,105	5%	1.000	4,619	6,410	4,460	5,005	4,732	1.63	-545	4,732
2830235823582830	GPU Addition	Escalon-Bellota Rd		Shelton Rd To Flood Rd	2	1,219	105	117	6%	1.000	111	124	1,358	1,232	1,295	0.25	127	1,295
2374237023702374	GPU Addition	Escalon-Bellota Rd		SR4 to Gawne Rd	2	2,751	1,139	1,977	5%	1.000	1,196	2,076	4,775	3,631	4,203	1.78	1,144	3,631
2972110711072972	GPU	Escalon-Bellota Rd		Mahon Ave To Magnolia Ln	2	8,600	7,889	10,644	2%	1.000	8,047	10,857	11,603	11,410	11,507	1.22	193	11,507
1756190619061756	GPU	Filbert St		Waterloo Rd To Roosevelt St	2	8,800	8,108	8,661	1%	1.000	8,189	8,748	9,400	9,359	9,379	0.27	42	9,379
1890263326331890	2014 SJ TIMF Update	French Camp Rd		Sr-99 To Sr-120	2	4,539	8,096	10,964	13%	1.000	9,148	12,389	6,147	7,780	6,964	1.80	-1,633	7,780
4790111811184790	GPU	Grant Line Rd		El Rancho Rd To Bird Rd	2	8,400	1,694	2,677	9%	1.000	1,846	2,918	13,274	9,471	11,373	1.27	3,803	9,471
6868168916896868	2014 SJ TIMF Update (REDO)	Hammer Ln		East of SR-99	2	4,015	18,224	16,515	1%	1.000	18,406	16,680	3,638	2,289	2,964	-1.26	1,350	4,015
2303234323432303	2014 SJ TIMF Update (REDO)	Harney Ln		Sr-99 To Jack Tone Rd	2	4,621	1,179	1,121	3%	1.000	1,214	1,155	4,394	4,562	4,478	-0.13	-168	4,621
2402234123412402	GPU Addition	Jack Tone Rd		Brandt Rd. & Kettleman Ln.	2	2,034	1,818	2,982	3%	1.000	1,873	3,071	3,336	3,233	3,285	2.02	103	3,285
1848181618161848	GPU Addition	Jack Tone Rd		Copperopolis Rd. & SR-4	2	3,092	2,552	4,616	8%	1.000	2,756	4,985	5,593	5,321	5,457	2.40	272	5,457
2350166316632350	GPU Addition	Jack Tone Rd		Live Oak Rd. & Eight Mile Rd.	2	2,650	2,488	3,578	3%	1.000	2,563	3,685	3,811	3,773	3,792	1.50	38	3,792
2231811101110223 18	GPU Addition	Jack Tone Rd		Marie Baker Rd. & Lone Tree Rd	2	3,149	2,152	4,073	7%	1.000	2,303	4,358	5,960	5,204	5,582	2.41	756	5,582
1865184818481865	GPU Addition	Jack Tone Rd		SR 4 & Mariposa Rd.	2	3,270	2,303	4,201	7%	1.000	2,464	4,495	5,965	5,301	5,633	2.29	664	5,633
2351234423442351	RCMP	Jack Tone Rd		Tokay Colony Rd./Live Oak Rd.	2	2,904	1,959	3,156	6%	1.000	2,077	3,345	4,678	4,173	4,426	1.77	506	4,426
114615634156341146	GPU	Jack Tone Rd.		French Camp Rd To Sr 120	2	4,600	3,007	5,988	8%	1.000	3,248	6,467	9,160	7,819	8,490	2.59	1,341	7,819
1186156331563 1186	GPU	Jack Tone Rd.		Leroy Ave To Graves Rd	2	4,500	6,074	8,820	12%	1.000	6,803	9,878	6,534	7,576	7,055	1.89	-1,041	7,576
1577768816881157 77	2014 SJ TIMF Update	Jahant Rd		East of SR-99	2	2,103	11,695	10,832	4%	1.000	12,163	11,265	1,948	1,205	1,576	-1.19	742	2,103
1133301930191133	2014 SJ TIMF Update	Kasson Rd		I-5 To Uprr	2	2,005	3,922	6,485	5%	1.000	4,118	6,809	3,316	4,696	4,006	2.93	-1,381	4,696
5905113211325905	2014 SJ TIMF Update	Kasson Rd		W 11th St to I-5	2	2,811	836	1,622	19%	1.000	995	1,930	5,454	3,746	4,600	2.07	1,708	3,746
1135113411341135	2014 SJ TIMF Update	Kasson Rd		W Linne Rd to Durham Ferry Rd	2	1,664	4,544	7,153	5%	1.000	4,771	7,511	2,619	4,403	3,511	3.16	-1,784	4,403
6313120012006313	GPU Addition	Lathrop Rd		Airport Wy. & McKinley Ave.	2	11,988	12,735	13,797	3%	1.000	13,117	14,211	12,988	13,082	13,035	0.35	-94	13,035
1213121012101213	2014 SJ TIMF Update	Lathrop Rd		East of SR-99	2	5,021	1,773	3,816	2%	1.000	1,808	3,892	10,806	7,105	8,955	2.44	3,701	7,105
6870230723076870	GPU	Liberty Ave		Sowels Rd To Elliott Rd	2	3,400	953	963	5%	1.000	1,001	1,011	3,436	3,411	3,423	0.03	25	3,423
2992230623062992	RCMP	Liberty Rd.		North Cherokee/Kennefick	2	3,912	773	856	7%	1.000	827	916	4,331	4,000	4,166	0.26	331	4,166
1644112211221644	GPU Addition	Linne Rd		Banta Rd & Chrisman Rd	2	3,872	5,348	6,251	13%	1.000	6,043	7,064	4,526	4,892	4,709	0.82	-367	4,709
3156164416443156	GPU	Linne Rd.		Chrisman Rd To Macarthur Dr	2	5,800	5,239	5,948	23%	1.000	6,444	7,316	6,585	6,672	6,628	0.56	-87	6,628
1500148414841500	GPU	Lower Sacramento Rd		Century Blvd To Kettleman Ln	2	15,300	10,786	16,249	5%	1.000	11,325	17,061	23,049	21,036	22,043	1.53	2,013	21,036
1936193519351936	GPU	Lower Sacramento Rd		Marlette Rd Bear Creek Levee	2	11,200	15,265	17,839	0%	1.000	15,265	17,839	13,089	13,774	13,431	0.76	-685	13,431
1925773077301925	GPU	Lower Sacramento Rd		Mettler Rd To Eight Mile Rd	2	13,000	15,272	19,412	0%	1.000	15,272	19,412	16,524	17,140	16,832	1.08	-616	16,832
3623137813783623	2014 SJ TIMF Update	Lower Sacramento Rd		Eilers to Academy	3	8,938	4,536	6,101	1%	1.000	4,581	6,162	12,022	10,519	11,271	0.97	1,503	10,519
2596223262232626 96	2014 SJ TIMF Update (REDO)	Lower Sacramento Rd		Peltier To Collier	2	4,632	3,514	5,458	2%	1.000	3,584	5,567	7,194	6,614	6,904	1.68	579	6,904
1811181218121811	2014 SJ TIMF Update	Main St		Sr-99 To Gillis Rd	2	4,697	13,267	14,639	3%	1.000	13,665	15,078	5,183	6,110	5,647	0.77	-927	5,647
2371284828482371	GPU	Mariposa Rd.		Sola Rd To Gawne Rd	2	6,500	13,337	16,224	8%	1.000	14,404	17,522	7,907	9,618	8,762	1.25	-1,711	9,618
6677237723776677	RCMP	Mariposa Rd.		Van Allen Rd/Carrolton Rd	2	5,537	12,022	14,937	10%	1.000	13,224	16,431	6,880	8,744	7,812	1.44	-1,864	8,744
3129227222723129	GPU Addition	Mathews Rd.		Bright Rd. & Delivery Dr.	2	3,515	2,676	4,080	4%	1.000	2,783	4,243	5,359	4,975	5,167	1.62	384	5,167
6812227322736812	2014 SJ TIMF Update (REDO)	Mathews Rd		I-5 To El Dorado St	2	6,326	9,605	11,220	9%	1.000	10,469	12,230	7,390	8,086	7,738	0.84	-697	7,738
2971111311132971	2014 SJ TIMF Update	Mountain House Pkwy		Schulte To I-580 W/I/C	4	13,317	4,370	10,928	19%	1.000	5,200	13,004	33,302	21,121	27,211	3.02	12,181	21,121
157501710171015750	GPU	Newton Rd		Wilson Wy To Cherokee Rd	2	12,800	3,444	4,005	2%	1.000	3,513	4,085	14,885	13,372	14,129	0.41	1,513	13,372
2239774927492223 97	2014 SJ TIMF Update (REDO)	Olive Avenue		Section Ave to E 4th St	2	636	2,129	980	1%	1.000	2,150	990	293	-524	-116	#NUM!	817	636
2500180518052500	2014 SJ TIMF Update	Oro Ave		Main St to Section Ave	2	5,451	6,193	5,379	1%	1.000	6,255	5,433	4,735	4,629	4,682	-0.63	106	5,451
7471747074707471	GPU Addition	Oro Ave		SR-26/Fremont St. & Main St.	2	3,387	6,612	5,882	1%	1.000	6,678	5,941	3,013	2,650	2,831	-0.74	363	3,387
7481232023207481	GPU Addition	Peltier Rd		Bruella Rd. & Elliot Rd.	2	2,786	2,125	3,204	4%	1.000	2,210	3,332	4,201	3,908	4,054	1.58	292	4,054
6880231823186880	RCMP	Peltier Rd.		Lower Sacramento Rd./UPRR	2	3,040	1,726	2,174	6%	1.000	1,830	2,304	3,829	3,515	3,672	0.79	314	3,672
2320231923192320	RCMP	Peltier Rd.		Dustin Rd./Kennefick Rd.	2	3,603	2,112	3,189	5%	1.000	2,218	3,348	5,440	4,733	5,086	1.45	706	5,086
1197334433441197	2014 SJ TIMF Update	River Rd		Ripon City Limits To Santa Fe Rd	2	1,855	2,102	4,085	4%	1.000	2,186	4,248	3,606	3,918	3,762	2.99	-312	3,762
2268226622662268	2014 SJ TIMF Update (REDO)	Roberts Rd		Howard Rd to SR 4	2	1,315	27	74	6%	1.000	29	78	3,605	1,365	2,485	2.69	2,240	1,365
2290499449942290	GPU	S. Tracy Boulevard		Clifton Court Rd To Grimes Rd	2	5,600	3,173	3,325	5%	1.000	3,332	3,491	5,868	5,760	5,814	0.16	109	5,814
1195297829781195	GPU	Sante Fe Rd.		Orange Ave To River Rd	2	5,300	3,556	6,101	3%	1.000	3,663	6,284	9,093	7,921	8,507	1.99	1,172	7,921
4401433543354401	2014 SJ TIMF Update (REDO)	Thornton		SR-12 to W Banner St	4	4,533	54	70	10%	1.000	59	77	5,877	4,551	5,214	0.58	1,326	4,551
1376137513751376	2014 SJ TIMF Update	Turner Rd		I-5 to Lodi City Limits	3	3,732	738	800	5%	1.000	775	840	4,045	3,797	3,921	0.21	248	3,921
1634289328931634	2014 SJ TIMF Update	Valpico		Corral Hollow To City Limit	2	9,890	5,161	10,640	1%	1.000	5,213	10,746	20,389	15,423	17,906	2.50	4,965	15,423
2892163416342892	2014 SJ TIMF Update (REDO)	Valpico Rd		Lammers Rd to Corral Hollow Rd	2	5,888	2,880	6,171	2%	1.000	2,938	6,294	12,616	9,244	10,930	2.61	3,371	9,244
1569615022150221 5696	2014 SJ TIMF Update	Von Sosten Rd		Mt House Parkway to Byron Rd	2	2,026	1,618	1,791	1%	1.000	1,634	1,809	2,242	2,200	2,221	0.38	42	2,221
522015023150235220	2014 SJ TIMF Update	W. Byron Rd		Hansen Rd To Reeve Rd	2	12,842	4,660	12,497	6%	1.000	4,940	13,247	34,440	21,150	27,795	3.27	13,290	21,150
2305688368832305	2014 SJ TIMF Update	W. Liberty Rd		Lower Sacramento Rd To Sr-99	2	3,472	858	1,438	3%	1.000	884	1,481	5,819	4,069	4,944	1.48	1,750	4,069
1630223462234616 30	2014 SJ TIMF Update	W. Schulte Rd		Macarthur To Chrisman Rd	2	4,307	3,757	9,610	1%	1.000	3,795	9,706	11,016	10,218	10,617	3.83	798	10,617
4659741574154659	2014 SJ TIMF Update (REDO)	Waterloo Rd		Filbert St To Sr-99	4	10,820	7,709	8,160	2%	1.000	7,863	8,323	11,453	11,280	11,367	0.21	173	11,367
1741174017401741	2014 SJ TIMF Update (REDO)	Waterloo Rd		E St to Filbert St	4	9,999	7,032	7,571	2%	1.000	7,173	7,722	10,766	10,549	10,657	0.27	217	10,657
1961194119411961	GPU	West Ln		Eight Mile Rd To Bear Creek Levee	4	16,500	3,797	4,405	0%	1.000	3,797	4,405	19,142	17,108	18,125	0.39	2,034	17,108
1508118411841508	GPU Addition	West Ln		Armstrong Rd & Harney Ln	4	14,591	3,330	4,688	0%	1.000	3,330	4,688	20,541	15,949	18,245	0.94	4,592	15,949
2648135113512648	GPU	West Ripon Rd.		Austin Rd To Kincaid Rd	2	3,000	3,375	3,853	3%	1.000	3,476	3,969	3,425	3,492	3,459	0.59	-67	3,459
6515114211426515	GPU	West Ripon Rd.		Tinnin Rd To Union Rd	2	1,600	1,402	2,079	5%	1.000	1,472	2,183	2,373	2,311	2,342	1.60	62	2,342
1252125312531252	GPU	Yosemite Ave		Sr 120 To Manteca City Limit	2	15,700	15,609	13,912	6%	1.000	16,546	14,747	13,993	13,901	13,947	-0.49	92	15,700

Appendix 4 Lineal Cost Update

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TECHNICAL MEMORANDUM

San Joaquin County Traffic Impact Mitigation Fee Update

Capital Improvement Costs

Date:	January 14, 2015	Project #: 17321
To:	Jeff Levers & Firoz Vohra	
From:	Matt Braughton, Jim Damkowitch, Sean Houck	

CAPITAL IMPROVEMENT COSTS

This memorandum documents the update of the 2008 TIMF per unit cost estimates to reflect 2014 price conditions for construction. This process was based on the Caltrans Price Index to establish percentage changes in material costs. The original per unit cost sheet from the 2008 TIMF is provided as an attachment for comparative purposes.

Per Unit Estimates

The construction costs are based on an existing outside lane width of 13 feet with a 4-foot paved shoulder.

Roadway Cost Per Linear Foot

The following assumptions were made for the roadway:

1. The 4-foot shoulder and 1-foot of the existing outside lane will be removed.
2. A 13-foot lane will be added utilizing the following design:
    a. 4” Asphaltic Concrete
    b. 12” Aggregate Base
3. A 4-foot wide shoulder will be added utilizing the following design:
    a. 2” Asphaltic Concrete
    b. 6” Aggregate Base

All TIMF unit costs were adjusted to reflect current dollar based on the percent change in the published Caltrans Price Index between 2005 and 2014 (Quarter 2).

Description	Unit	Unit Price
Excavation/Pavement Removal	CY	$23
Type B Asphaltic Concrete	Ton	$75
Class 2 Aggregate Base	Ton	$30
Earthwork	Station	$350

Using the above typical section for roadway widening, the following unit costs per linear foot will be used:

Description	Unit	Quantity
Type B Asphaltic Concrete	CY/LF	0.198
Class 2 Aggregate Base	CY/LF	0.592
Total (Excavation/Pavement Removal)		**0.790**
Earthwork	Station	0.01

Convert asphalt per cubic yards to tons (0.198 x 1.89 = 0.374 tons).

Description	Quantity	Unit Price	Cost/LF
Excavation/Pavement Removal	0.790	$23	$19
Type B Asphaltic Concrete	0.374	$90	$34
Class 2 Aggregate Base	0.592	$45	$27
Earthwork	0.01	$350	$4
Total Cost per Linear Foot of Roadway Widening			**$84**

The following assumptions were made for traffic signals:

1. $400,000 per signalized intersection
2. One traffic signal every 2,600 feet

Therefore, an estimated cost per linear foot for traffic signals will be: $154

Total cost per linear foot of street with one additional lane will be:

Roadway Widening (1 lanes)	$84
Traffic Signals	$154
Sub-Total	*$238*
25% Engineering, Administration & Planning	$60
10% Miscellaneous[1]	$24
20% Contingency	$48
5% Inflation	$12
Cost per Linear Foot of Street	*$382*
5% Right of Way Cost	$19
Total Cost per Linear Foot of Street	**$401**

[1] Miscellaneous costs cover mandatory items that routinely come up on widening projects including: driveway, mailbox, road sign, and ditch relocation; imported borrow; survey monument adjustment/relocation; cross-drain extensions, etc.

Total cost per linear foot of street with one additional lane in each direction will be:

Roadway Widening (2 lanes)	$168
Traffic Signals	$154
Sub-Total	*$322*
25% Engineering, Administration & Planning	$81
10% Miscellaneous	$33
20% Contingency	$65
5% Inflation	$17
Cost per Linear Foot of Street	*$518*
20% Right of Way Cost	$104
Total Cost per Linear Foot of Street	**$622**

Bridge Reconstruction/Widening Cost Per Linear Foot

The following assumptions were made for bridge reconstruction/widening:

1. 24' roadway widening.
2. $300 per SF for reinforced concrete slabs.

Therefore, an estimated cost per linear foot for each bridge reconstruction/widening will be: $7,200.00

Total cost per linear foot of bridge reconstruction/widening will be:

Bridge Reconstruction/Widening	*$7,200*
25% Engineering, Administration & Planning	$1,800
10% Miscellaneous	$800
20% Contingency	$1,500
5% Inflation	$400
Cost per Linear Foot of Street	*$11,700*
20% Right of Way Cost	$2,400
Total Cost per Linear Foot of Street	**$14,100**

ATTACHEMENTS: 2008 TIMF Cost Sheet

Road Name	Bridge #	MS #	Length (ft)	Notes
Turner Rd		W140	5	
		W142	50	Estimate from Google Earth
Harney Lane	29C-341		86	w/o SR88
	29C-342		114	w/o SR88
		W404	3.5	w/o SR88
		W446	18	e/o SR88
		W447	4	e/o SR88
Copperopolis Rd	29C-212		12	
	29C-213		65	
		W550	5	
Mariposa Rd	29C-174		27.5	
	29C-175		24	
	29C-176		74	
	29C-177		50	
	29C-178		40	
Escalon-Bellota Rd		W690	8	
		W694	81.4	
Santa Fe Rd		W990	8	
River Rd		W958	11.6	
		W959	11.25	
		W985	8	
Jack Tone Rd		W920	8	
		W922	9	
Corral Hollow Rd	29C-179		60	
	29C-180		52	
	29C-181		58.75	
	29C-182		52	
	29C-183		59.63	
	29C-184		51.75	
Tracy Blvd	29C-022		471.13	
	29C-028		96	

1,624.51	(Total LF of all structures)
$300.00	(cost per SF, reinforced concrete slab)
$11,696,472.00	(total estimated cost, 24' widening)

Howard Rd	29C-152		226	
	29C-231		361.4	
		W551	8	
		W553	6	

2,225.91	(Total LF of all structures + Howard)
$300.00	(cost per SF, reinforced concrete slab)
$16,026,552.00	(total estimated cost, 24' widening)

2,975.91	*(Total LF including Mariposa @ BNSF)*
$300.00	*(cost per SF, reinforced concrete slab)*
$21,426,552.00	*(total estimated cost, 24' widening)*

ID#	Street Name	Limits	Lanes	Length (ft)	ROW, (exist W)	ROW, (future W)	ROW needed (acres)
1	Turner Rd	I-5 to Ray Rd	4	8,820	40	84	8.91
		Ray Rd to DeVries Rd		5,280	55	84	3.52
		DeVries Rd to Davis Rd		5,280	60	84	2.91
		Davis Rd to Lodi CL		5,600	72	84	1.54
2	Harney Ln	SR 99 to Alpine Rd	3	12,940	50	60	2.97
		Alpine Rd to SR 88		10,570	60	60	0.00
4	Main St	Del Mar Ave to Gillis Rd	3	6,009	80	60	0.00
5	French Camp Rd	SR 99 to Jack Tone Rd	3	24,620	80	60	0.00
		Jack Tone Rd to SR 120		18,240	60	60	0.00
6	Copperopolis Rd	Jack Tone Rd to Dietrick Rd	3	26,242	80	60	0.00
7	Mariposa Rd	Stockton CL to Escalon-Bellota Rd	3	62,592	80	60	0.00
9	Santa Fe Rd	Escalon CL to SSJID	3	9,670	60	60	0.00
		SSJID to Stanislaus County		12,880	80	60	0.00
10	McHenry Ave	Stanislaus County to Escalon CL	4	4,706	60	84	2.59
11	River Rd	Ripon CL to Murphy Rd	3	5,330	40	60	2.45
		Murphy Rd to Van Allen Rd		16,070	50	60	3.69
		Van Allen Rd to McHenry Ave		16,580	60	60	0.00
		McHenry Ave to Harrold Ave		7,980	50	60	1.83
		Harrold Ave to Santa Fe Rd		5,300	60	60	0.00
12	Jack Tone Rd	Ripon CL to French Camp Rd	3	22,862	70	60	0.00
13	Lathrop Rd	E/O UPRR OC to Manteca CL	3	358	75	60	0.00
16	Grant Line Rd	Tracy CL to El Rancho Rd	3	3,500	60	60	0.00
		El Rancho Rd to 11th St		6,100	70	60	0.00
	(Kasson Rd)	11th St to I-5		2,000	80	60	0.00
17	Chrisman Rd	Schulte Rd to 11th St	3	5,280	55	60	0.61
18	Schulte Rd	Tracy CL to Chrisman Rd	3	5,280	40	60	2.42
19	Valpico Rd	Corral Hollow Rd to Tracy CL	4	2,640	55	84	1.76
20	Corral Hollow Rd	Alameda County to Tracy CL	3	33,898	60	60	0.00
21	Tracy Blvd	Lammers Rd to 1860' S/O Old River	3	3,450	50	60	0.79
		1860' S/O Old River to Old River		1,860	80	60	0.00
		Old River to Grimes Rd		4,900	50	60	1.12
		Grimes Rd to Howard Rd		22,500	80	60	0.00
3	Newton Rd	Cherokee Rd to Wilson Way	3	4,380	80	60	0.00
8	Escalon-Bellota Rd	Escalon CL to Lone Tree Rd	3	7,550	80	60	0.00
		Lone Tree Rd to Mariposa Rd		2,600	70	60	0.00
14	Yosemite/Guthmiller	SR 120 to Lathrop CL	4	2,655	95	84	0.00
15	Byron Rd	E Grant Line Rd to 300' S/O W Grant Line Rd	5	2,100	60	90	1.45
		300' S/O W Grant Line Rd to Wicklund Rd	4	10,000	80	84	0.92

The construction costs are based on an existing outside lane width of 13 feet with a 4-foot paved shoulder.

The following assumptions were made for the roadway:
1. The 4-foot shoulder and 1-foot of the existing outside lane will be removed.
2. A 13-foot lane will be added utilizing the following design:
   a. 4" Asphaltic Concrete
   b. 12" Aggregate Base
3. A 4-foot wide shoulder will be added utilizing the following design:
   a. 2" Asphaltic Concrete
   b. 6" Aggregate Base

Unit prices are from the State of California "Contract Cost Data" (2005).

DESCRIPTION	UNIT	UNIT PRICE
Excavation/Pavement Removal	CY	$14.00
Type B Asphaltic Concrete	Ton	$67.00
Class 2 Aggregate Base	CY	$41.50

Using the above typical section for roadway widening, the following unit costs per linear foot will be used:

	UNIT	QUANTITY
Type B Asphaltic Concrete	CY/LF	0.198
Class 2 Aggregate Base	CY/LF	0.592
Total (Excavation/Pavement Removal)		0.790

Convert asphalt per cubic yards to tons (0.198 x 1.89 = 0.374 tons).

DESCRIPTION	QTY.	UNIT PRICE	COST/LF
Excavation/Pavement Removal	0.790	$14.00	$11.06
Type B Asphaltic Concrete	0.374	$67.00	$25.06
Class 2 Aggregate Base	0.592	$41.50	$24.57
Total Cost per Linear Foot of Roadway Widening			$60.69

The following assumptions were made for traffic signals:
1. $210,000 per signalized intersection.
2. One traffic signal every 2,600'

Therefore, an estimated cost per linear foot for traffic signals will be: $80.77

The following assumptions were made for bridge reconstruction/widening:
1. $750,000 per every 3 miles of roadway widening.

Therefore, an estimated cost per linear foot for bridge widening will be: $47.35

Total cost per linear foot of street with one additional lane in each direction will be:

Roadway Widening (2 lanes)	$121.38
Traffic Signals	$80.77
Bridge Widening	$47.35
Sub-Total	$249.50
25% Engineering, Administration & Planning	$62.38
20% Contingency	$49.90
5% Inflation	$12.48
Cost per Linear Foot of Street	$374.26
20% Right of Way Cost	$74.85
Total Cost per Linear Foot of Street	**$449.11**

Appendix 5 Fee Per Daily Trip Table

Estimation of the daily trip fee is based on daily ITE trip generation rates and is consistent with all requisite TIMF analysis steps described herein. Note: the Thornton-Delta and Stockton-Lodi-Lockeford-Clements zones have been combined, and the Tracy-Lathrop-Manteca and Linden-Escalon-Ripon zones have been combined.

TIMF FEE PER DAILY TRIP

	TIM Fee Benefit Zone			
	Thornton-Delta	Stockton-Lodi-Lockeford-Clements	Tracy-Lathrop-Manteca	Linden-Escalon-Ripon
Fee per Peak Hour Trip				
Local Projects Share	$ 313	$ 313	$ 625	$ 625
Regional Projects Share	$ 844	$ 844	$ 541	$ 541
Alternative Modes	$ 64	$ 64	$ 65	$ 65
Administrative Fee	$ 64	$ 64	$ 65	$ 65
Total Cost per Peak Hour Trip	$ 1,285	$ 1,285	$ 1,296	$ 1,296
Average Daily Trips per Peak Hour T	9.57	9.57	9.57	9.57
Fee per Average Daily Trip	$ 134	$ 134	$ 135	$ 135
Source: Tables 15				