



TRANSPORTATION UNIFORM MITIGATION FEE NEXUS STUDY 2024 UPDATE

FINAL REPORT

Prepared for the Western Riverside Council of Governments

In Cooperation with

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Prepared by GHD

As adopted by the WRCOG Executive Committee, September 9, 2024



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ES.0 EXECUTIVE SUMMARY

ES.1 Introduction and Purpose of the Nexus Study

Western Riverside County includes 18 incorporated cities and the unincorporated county covering an area of approximately 2,100 square miles. Through the mid 2000's, this portion of Riverside County was growing at a pace exceeding the capacity of existing financial resources to meet increasing demand for transportation infrastructure. Although the economic recession of the late 2000's, and the associated crises in the mortgage and housing industries, slowed this rate of growth, the regional economy has recovered and the projected rate of development in Western Riverside County remains high. Similarly, the impact of the COVID-19 pandemic on travel demand in the region has also passed, with travel demands, especially for the highway network, surpassing pre-pandemic levels. Continued high growth in households and jobs in Western Riverside County could significantly increase congestion and degrade mobility if substantial investments are not made in transportation infrastructure. This challenge is especially critical for arterial roadways of regional significance, since traditional sources of transportation funding (such as the gasoline tax and local general funds) will not be nearly sufficient to fund the needed improvements.

In February 1999, the cities of Temecula, Murrieta and Lake Elsinore, the Western Riverside Council of Governments (WRCOG), the Riverside County Transportation Commission (RCTC) and the Building Industry Association (BIA) met to discuss the concept of a Transportation Uniform Mitigation Fee (TUMF) for southwest Riverside County. In August 2000, the concept was expanded to include the entire WRCOG sub-region.

Continued high growth in households and jobs in Western Riverside County could significantly increase congestion and degrade mobility if substantial investments are not made in transportation infrastructure. This challenge is especially critical for arterial roadways of regional significance, since traditional sources of transportation funding (such as the gasoline tax and local general funds) will not be nearly sufficient to fund the needed improvements. While the TUMF cannot fund all necessary transportation system improvements, it is intended to address a current transportation funding shortfall by establishing a new revenue source that ensures future new development will contribute toward addressing its indirect cumulative traffic impacts on regional transportation infrastructure. Funding accumulated through the TUMF Program will be used to construct transportation improvements such as new arterial highway lanes, reconfigured freeway interchanges, railroad grade separations and new regional express bus services that will be needed to accommodate future travel demand in Western Riverside County. By levying a fee on new developments in the region, local agencies will be establishing a mechanism by which developers and in turn new county residents and employees will effectively contribute their "fair share" toward sustaining the regional transportation system.

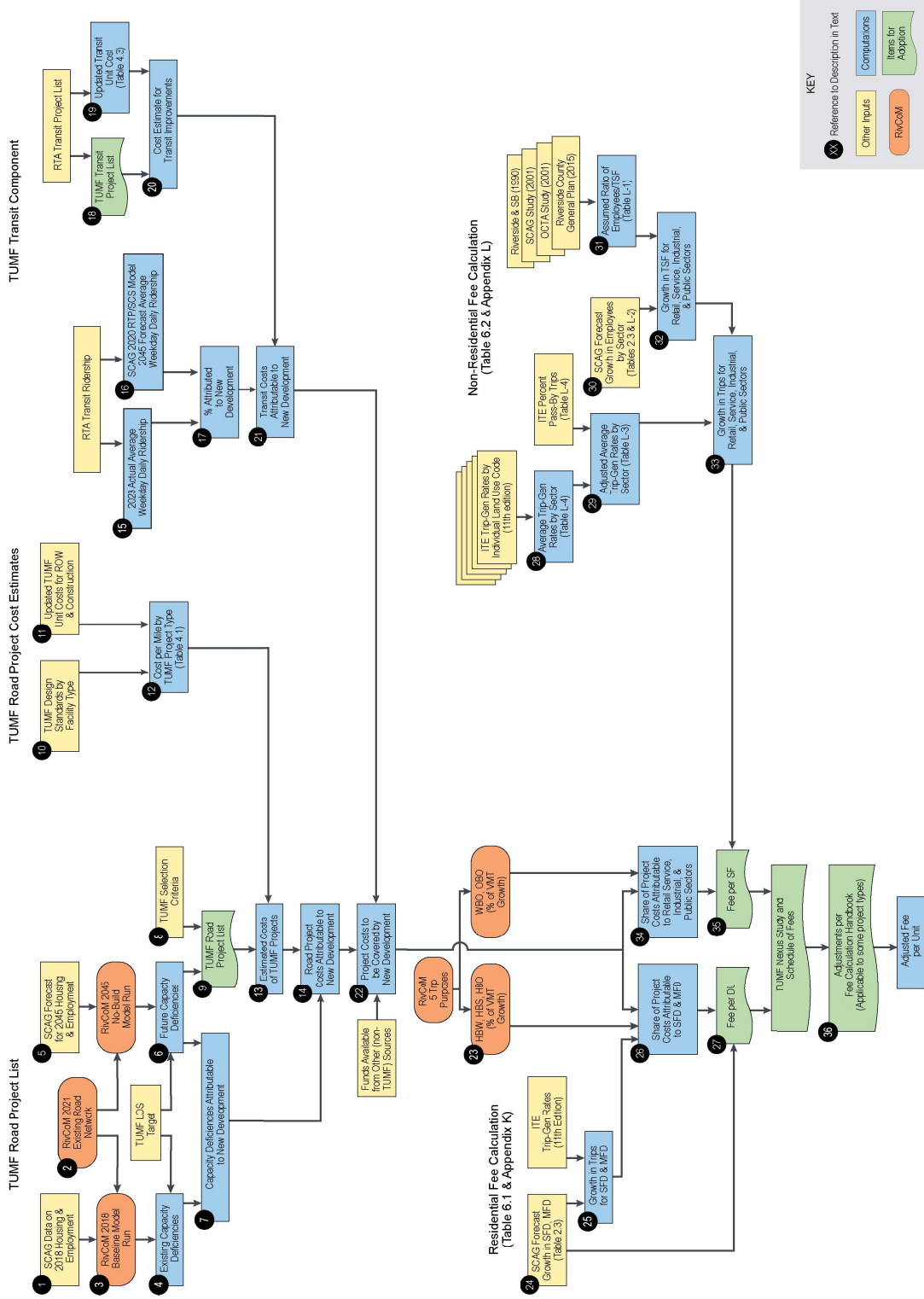
This TUMF Draft Nexus Study is intended to satisfy the requirements of California Government Code Chapter 5 Section 66000-66008 Fees for Development Projects (also known as California Assembly Bill 1600 (AB 1600) or the Mitigation Fee Act) which governs imposing development impact fees in California. The initial WRCOG TUMF Nexus Study was completed in October 2002 and adopted by the WRCOG Executive Committee in November 2002. The results of the first review of the Program were documented in the TUMF Nexus Study 2005 Update adopted by the WRCOG Executive Committee on February 6, 2006. A second comprehensive review of the TUMF Program was adopted by the WRCOG Executive Committee on October 5, 2009. A third comprehensive review of the TUMF Program was conducted following the adoption of the Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS) on April 7, 2016. The WRCOG TUMF Nexus Study 2016 Update Report was adopted by the WRCOG Executive Committee on July 10, 2017.

On September 3, 2020, SCAG adopted Connect SoCal; The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments (2020 RTP/SCS). The adoption of the 2020 RTP/SCS confirmed new growth forecasts for the region that provide a foundational element for updating the TUMF program and the associated nexus determination prompting WRCOG to initiate the current program update. These forecasts are also integrated into the Riverside County Transportation Analysis Model (RivCoM) used to forecast the cumulative regional traffic impacts of new development on the arterial highway network in Western Riverside County.

The overall process for establishing the TUMF nexus is illustrated in Figure ES.1. Each technical step is denoted with a number on the flow chart with the numbers correlating to the detailed description of each step provided in Section 1.3 of the Nexus Study Report. The flow chart also incorporates color coding of the steps to indicate those steps that involved the application of RivCoM, steps that utilized other input data, steps that are computations of various inputs, and steps that required specific actions of the various WRCOG committees to confirm major variables. Where appropriate, the flow chart also includes specific cross references to the sections or tables included in the Nexus Study document that correlate to the particular step.

This version of the WRCOG TUMF Nexus Study Report documents the results of the fourth comprehensive review of the TUMF Program. This version of the document also incorporates revisions in response to comments received during the formal review of the earlier Draft TUMF Nexus Study 2024 Update. The findings of this report were ultimately adopted by the WRCOG Executive Committee on September 9, 2024.

Figure ES.1 - Flowchart of Key Steps in the TUMF Nexus Study Process



ES.2 Future Growth

In preparation for the 2020 RTP/SCS, SCAG undertook robust stakeholder engagement, including participation by WRCOG, Riverside County and the various cities in Western Riverside County, to develop regional demographic forecasts. Using input from regional stakeholders regarding anticipated patterns and rates of development, SCAG compiled and disseminated the forecasts that were ultimately adopted in 2020. The SCAG forecasts adopted for the 2020 RTP/SCS were subsequently used as the basis for RivCoM and are used as the basis for this TUMF Nexus Study Update.

A major distinction between data used for the TUMF Nexus Study 2016 Update and the SCAG 2020 RTP/SCS data used for this 2024 Update is the change in the base year from 2012 to 2018, as well as the change in the horizon year from 2040 to 2045. This shift in the base year and horizon year demographic assumptions of the program carries through all aspects of the nexus analysis, including the travel demand forecasting, network review and fee calculation.

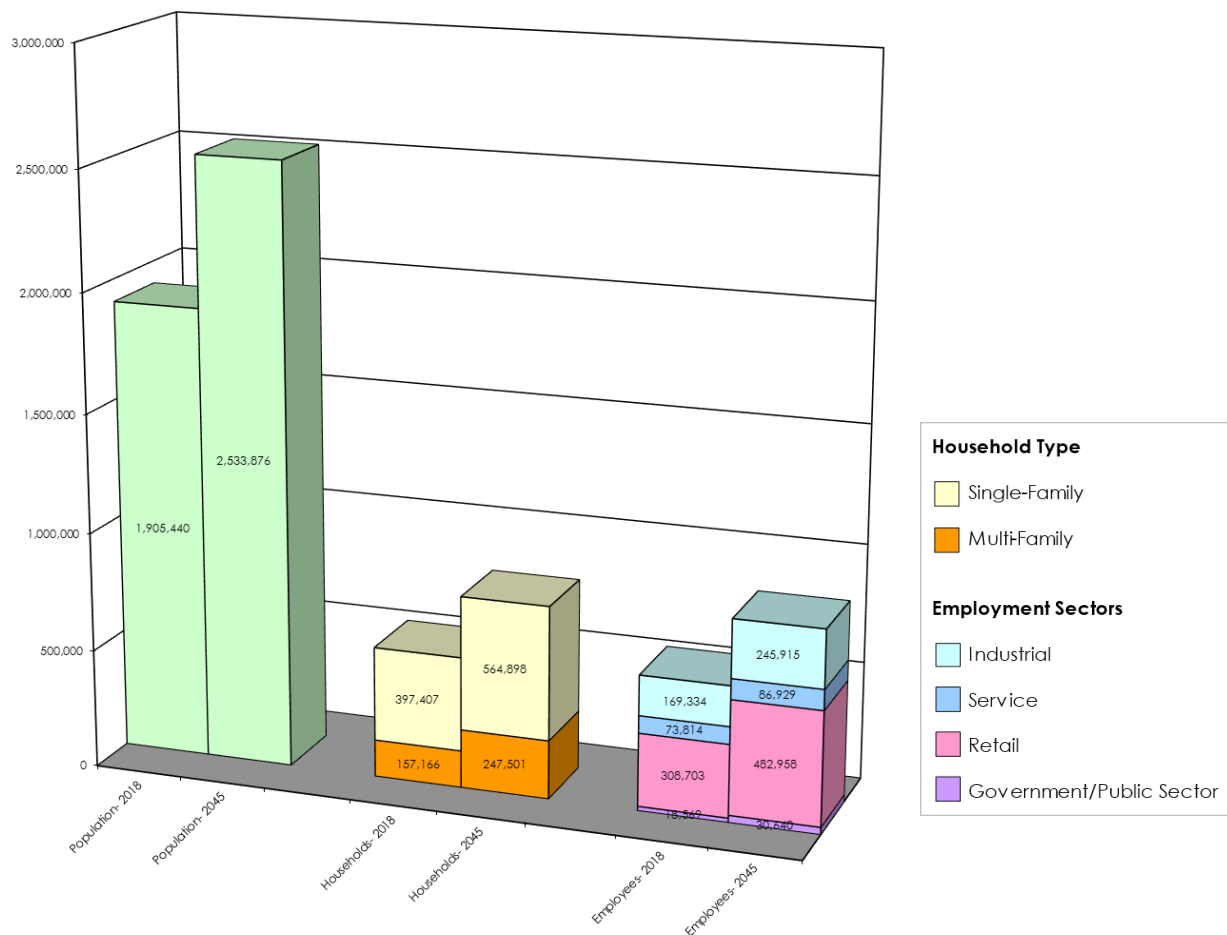
The population of Western Riverside County is projected to increase by 33% in the period between 2018 and 2045. During the same period, employment in Western Riverside County is anticipated to grow by 48%. **Figure ES.2** illustrates the forecast growth in population, household and employment for Western Riverside County.

ES.3 Need for the TUMF

The WRCOG TUMF study area was extracted from the greater RivCoM model network for the purpose of calculating measures for Western Riverside County only. Peak period performance measures for the TUMF study area included total vehicle miles of travel (VMT), total vehicle hours of travel (VHT), total combined vehicle hours of delay (VHD), and total VMT experiencing unacceptable level of service (LOS E).

As a result of the new development and associated growth in population and employment in Western Riverside County, additional pressure will be placed on the transportation infrastructure, particularly the arterial roadways, with the peak period VMT on the TUMF Network estimated to increase by 38% between 2018 and 2045. By 2045, 37% of the total VMT on the TUMF Network is forecast to be traveling on facilities experiencing peak period LOS E or worse. Without improvements to the arterial highway system, the total vehicle hours of delay (VHD) experienced by area motorists on the TUMF Network will increase over 5.0% per year. The need to improve these roadways and relieve future congestion is therefore directly linked to the future development which generates the travel demand.

Figure ES.2 - Population, Households and Employment in Western Riverside County (2018 to 2045)



As population and employment in Western Riverside County grows because of new development, demand for regional transit services in the region is also expected to grow. Weekday system ridership for RTA bus transit services is approximately 16,575 riders per day in Western Riverside County in 2023. By 2045, bus transit services are forecast to serve approximately 57,282 riders per weekday. This represents an average increase of 1,850 weekday riders each year. Based on this rate of ridership growth, weekday ridership is estimated to increase by 40,707 riders per weekday between 2018 and 2045.

The idea behind a uniform mitigation fee is to have new development throughout the region contribute equally to paying the cost of improving the transportation facilities that serve these longer-distance trips between communities. Thus, the fee should be used to improve transportation facilities that serve trips between communities within the region (primarily arterial roadways) as well as the infrastructure for public transportation. The fee should be assessed proportionately on new residential and non-residential development based on the relative impact of each use on the transportation system.

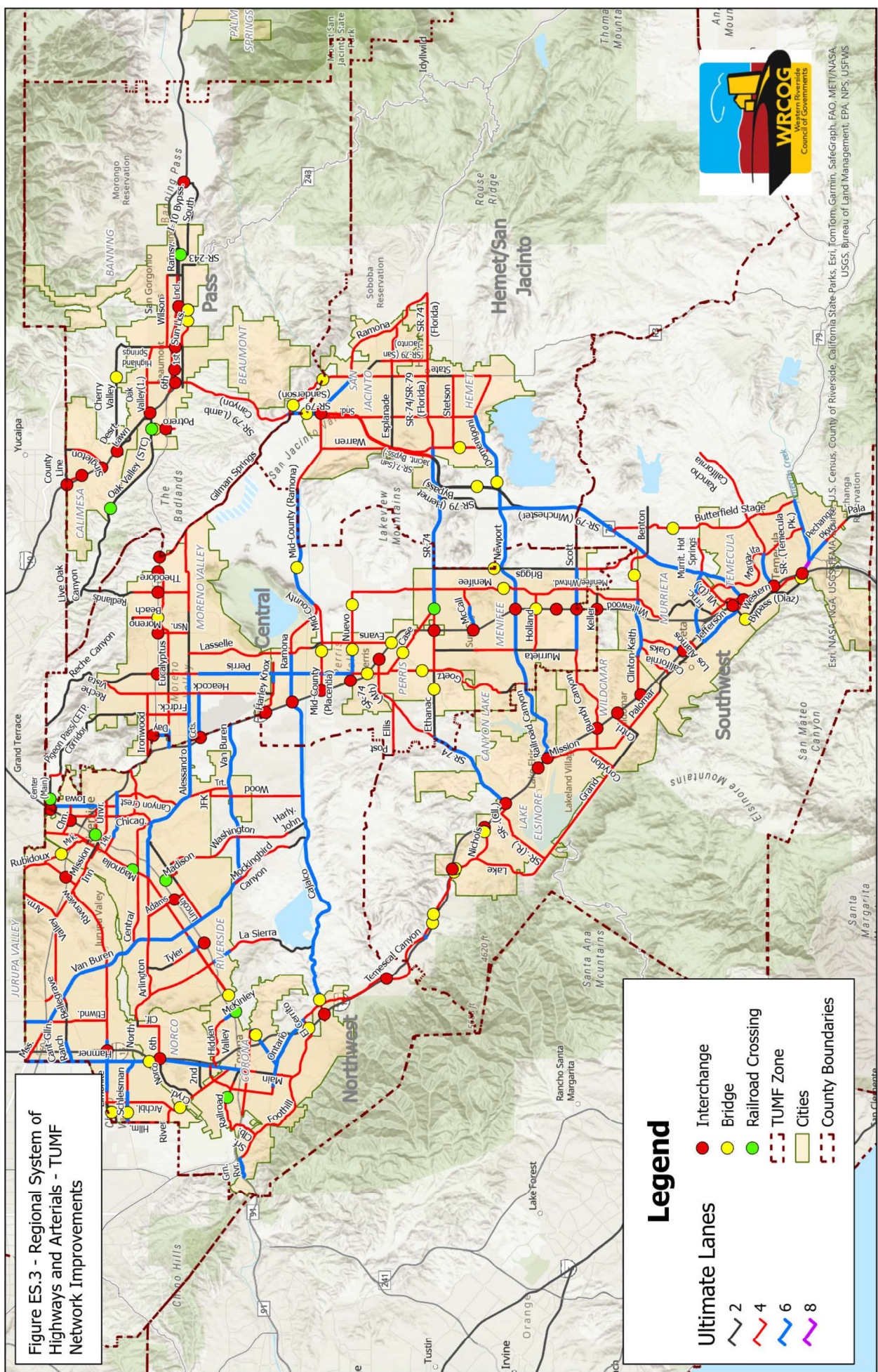
ES.4 The TUMF Network

The Regional System of Highways and Arterials (also referred to as the TUMF Network) is the system of roadways that serve inter-community trips within Western Riverside County and therefore are eligible for improvement funding with TUMF funds. Transportation facilities in Western Riverside County that generally satisfied these guidelines were initially identified, and a skeletal regional transportation framework evolved from facilities where several guidelines were observed. Representatives of all WRCOG constituent jurisdictions reviewed this framework in the context of current local transportation plans to define the TUMF Network, which was subsequently endorsed by the WRCOG Public Works Committee, WRCOG Technical Advisory Committee, TUMF Policy Committee and the WRCOG Executive Committee.

The TUMF Network was reviewed as part of the 2024 Nexus Update to ensure facilities generally still met the previously described performance guidelines, and/or that the scope and magnitude of specific improvements to the TUMF Network were roughly proportional to the impacts needing to be mitigated. This review process resulted in the removal of various facilities from the TUMF Network, as well as various changes in the scope and magnitude of specific improvements to the TUMF Network.

Figure ES.3 illustrates the TUMF improvements to the Regional System of Highways and Arterials.

The total cost of improving the TUMF system is \$5.28 billion. Accounting for obligated funds and unfunded existing needs, the estimated maximum eligible value of the TUMF Program is \$4.24 billion. The maximum eligible value of the TUMF Program includes approximately \$3.87 billion in eligible arterial highway and street related improvements and \$154.8 million in eligible transit related improvements. An additional \$53.9 million is also eligible as part of the TUMF Program to mitigate the impact of eligible TUMF related arterial highway and street projects on critical native species and wildlife habitat, while \$161.2 million is provided to cover the costs incurred by WRCOG to administer the TUMF Program.



Esri, NASA, NOAA, USGS, U.S. Census, County of Riverside, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, MET/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

ES.5 TUMF Nexus Analysis

There is a reasonable relationship between the future growth and the need for improvements to the TUMF system. These factors include:

- Western Riverside County is expected to continue growing as a result of future new development.
- Continuing new growth will result in increasing congestion on arterial roadways.
- The future arterial roadway congestion is directly attributable to the cumulative regional transportation impacts of future development in Western Riverside County.
- Capacity improvements to the transportation system will be needed to mitigate the cumulative regional impacts of new development.
- Roads on the TUMF network are the facilities that merit improvement through this fee program.
- Improvements to the public transportation system will be needed to provide adequate mobility for transit-dependent travelers and to provide an alternative to automobile travel.

The split of fee revenues between the backbone and secondary highway networks is related to the proportion of highway vehicle travel that is relatively local (between adjacent communities) and longer distance (between more distant communities but still within Western Riverside County). To estimate a rational fee split between the respective networks, the future travel forecast estimates were aggregated to a matrix of peak period trips between zones. The overall result is that 51.1% of the regional travel is attributable to the backbone network and 48.9% is assigned to the secondary network.

In order to establish the approximate proportionality of the future traffic impacts associated with new residential development and new non-residential development, peak period growth in VMT between 2018 and 2045 was derived from RivCoM and aggregated by trip purpose. It was concluded that home-based person trips represent 77.7% of the total future person trips, and the non-home-based person trips represent 22.3% of the total future person trips.

ES.6 Fair-Share Fee Calculation

The balance of the unfunded TUMF system improvement needs is \$4.24 billion which is the maximum value attributable to the mitigation of the cumulative regional transportation impacts of future new development in the WRCOG region and will be captured through the TUMF Program. By levying the uniform fee directly on future new developments (and indirectly on new residents and new employees to Western Riverside County), these transportation system users are assigned their “fair share” of the

costs to address the cumulative impacts of additional traffic they will generate on the regional transportation system.

Of the \$4.24 billion in unfunded future improvement needs, 77.7% (\$3.30 billion) will be assigned to future new residential development and 22.3% (\$946.5 million) will be assigned to future new non-residential development.

ES.7 Conclusions

Based on the results of the Nexus Study evaluation, it can be demonstrated that there is reasonable relationship between the cumulative regional transportation impacts of new land development projects in Western Riverside County and the need to mitigate these transportation impacts using funds levied through the proposed TUMF Program. Factors that reflect this reasonable relationship include:

- Western Riverside County is expected to continue growing as a result of future new development.
- Continuing new growth will result in increasing congestion on arterial roadways;
- The future arterial roadway congestion is directly attributable to the cumulative regional transportation impacts of future development in Western Riverside County;
- Capacity improvements to the transportation system will be needed to mitigate the cumulative impacts of new development;
- Roads on the TUMF network are the facilities that merit improvement through this fee program;
- Improvements to the public transportation system will be needed to provide adequate mobility for transit-dependent travelers and to provide an alternative to automotive travel.

The Nexus Study evaluation has established a proportional “fair share” of the improvement cost attributable to new development based on the impacts of existing development and the availability of obligated funding through traditional sources. The fair share fee allocable to future new residential and non-residential development in Western Riverside County is summarized for differing use types in **Table ES.1**.

Table ES.1 - Transportation Uniform Mitigation Fee for Western Riverside County				
Land Use Type	Units	Development Change	Fee Per Unit	Total Revenue (\$ million)
Single-Family Residential	DU	167,491	\$15,476	\$2,592.0
Multi-Family Residential	DU	90,335	\$7,816	\$706.1
Industrial	SF GFA	61,489,565	\$2.33	\$143.1
Retail	SF GFA	6,557,500	\$11.21	\$73.5
Service	SF GFA	66,735,957	\$9.76	\$651.1
Government/Public	SF GFA	3,420,665	\$23.07	\$78.9
MAXIMUM TUMF VALUE				\$2,961.0

1.0 INTRODUCTION AND PURPOSE OF THE NEXUS STUDY

1.1 Background

Western Riverside County includes 18 incorporated cities and the unincorporated county covering an area of approximately 2,100 square miles. Through the mid 2000's, this portion of Riverside County was growing at a pace exceeding the capacity of existing financial resources to meet increasing demand for transportation infrastructure. Although the economic recession of the late 2000's, and the associated crises in the mortgage and housing industries, slowed this rate of growth, the regional economy has recovered and the projected rate of development in Western Riverside County remains high. Similarly, the impact of the COVID-19 pandemic on travel demand in the region has also passed, with travel demands, especially for the highway network, surpassing pre-pandemic levels.

Continued high growth in households and jobs in Western Riverside County could significantly increase congestion and degrade mobility if substantial investments are not made in transportation infrastructure. This challenge is especially critical for arterial roadways of regional significance, since traditional sources of transportation funding (such as the gasoline tax and local general funds) will not be nearly sufficient to fund the needed improvements. Development exactions only provide improvements near the development site, and the broad-based county-level funding sources (i.e., Riverside County's half-cent sales tax known as Measure A) designate only a small portion of their revenues for arterial roadway improvements.

In anticipation of the continued future growth projected in Riverside County, several county-wide planning processes were initiated in 1999. These planning processes include the Riverside County General Plan Update, the Community Environmental Transportation Acceptability Process (CETAP) and the Multi-Species Habitat Conservation Plan (MSHCP). Related to these planning processes is the need to fund the mitigation of the cumulative regional transportation impacts of future new development.

Regional arterial highways in Western Riverside County are forecast to carry significant traffic volumes by 2045. While some localized fee programs exist to mitigate the local impacts of new development on the transportation system in specific areas, and while these programs are effective locally, they are insufficient in their ability to meet the regional demand for transportation infrastructure. Former Riverside County Supervisor Buster recognized the need to establish a comprehensive funding source to mitigate the cumulative regional transportation impacts of new development on regional arterial highways. The need to establish a comprehensive funding source for arterial highway improvements has evolved into the development of the Transportation Uniform Mitigation Fee (TUMF) for Western Riverside County.

In February 1999, the cities of Temecula, Murrieta and Lake Elsinore, the Western Riverside Council of Governments (WRCOG), the Riverside County Transportation Commission (RCTC) and the Building Industry Association (BIA) met to discuss the

concept of a TUMF. The intent of this effort was to have the southwest area of Western Riverside County act as a demonstration for the development of policies and a process for a regional TUMF Program before applying the concept countywide. From February 1999 to September 2000, the Southwest Area Transportation Infrastructure System Funding Year 2020 (SATISFY 2020) Program progressed with policy development, the identification of transportation improvements, traffic modeling, cost estimates, fee scenarios and a draft Implementation Agreement.

In May 2000, Riverside County Supervisor Tavaglione initiated discussions in the northwest area of Western Riverside County to determine the level of interest in developing a TUMF for that area of the county. Interest in the development of a northwest area fee program was high. In August 2000, the WRCOG Executive Committee took action to build upon the work completed in the southwest area for the SATISFY 2020 program and to develop a single consolidated mitigation fee program for all of Western Riverside County. This action was predicated on the desire to establish a single uniform mitigation fee program to mitigate the cumulative regional impacts of new development on the regional arterial highway system, rather than multiple discrete and disparate fee programs with varying policies, fees and improvement projects. A TUMF Policy Committee comprising regional elected officials was formed to recommend and set policies for staff to develop the TUMF Program and provide overall guidance to all other staff committees.

While the TUMF cannot fund all necessary transportation system improvements, it is intended to address a current transportation funding shortfall by establishing a new revenue source that ensures future new development will contribute toward addressing its indirect cumulative traffic impacts on regional transportation infrastructure. Funding accumulated through the TUMF Program will be used to construct transportation improvements such as new arterial highway lanes, reconfigured freeway interchanges, railroad grade separations and new regional express bus services that will be needed to accommodate future travel demand in Western Riverside County. By levying a fee on new developments in the region, local agencies will be establishing a mechanism by which developers and in turn new county residents and employees will effectively contribute their “fair share” toward sustaining the regional transportation system.

This TUMF Nexus Study is intended to satisfy the requirements of California Government Code Chapter 5 Section 66000-66008 Fees for Development Projects (also known as California Assembly Bill 1600 (AB 1600) or the Mitigation Fee Act), which governs imposing development impact fees in California. The Mitigation Fee Act requires that all local agencies in California, including cities, counties, and special districts follow two basic rules when instituting impact fees. These rules are as follows:

- 1) Establish a nexus or reasonable relationship between the development impact fee's use and the type of project for which the fee is required.
- 2) The fee must not exceed the project's proportional “fair share” of the proposed improvement and cannot be used to correct current problems or to make improvements for existing development.

1.2 TUMF Nexus Study History

The TUMF Program is implemented through the auspices of WRCOG. As the council of governments for Western Riverside County, WRCOG provides a forum for representatives from 18 cities, the Riverside County Board of Supervisors, the Eastern Municipal Water District, Western Water, the Riverside County Superintendent of Schools, the March Joint Powers Authority and the Riverside Transit Agency to collaborate on issues that affect the entire subregion, such as air quality, solid waste, transportation and the environment. WRCOG strives to "respect local control, provide regional perspective, and make a difference" to elevate the quality of life throughout the subregion. A current list of the standing WRCOG committees and committee membership that oversee the TUMF program is included in **Appendix A**.

The initial WRCOG TUMF Nexus Study was completed in October 2002 and adopted by the WRCOG Executive Committee in November 2002. Its purpose was to establish the nexus or reasonable relationship between new land development projects in Western Riverside County and the proposed development impact fee that would be used to improve regional transportation facilities. It also identified the proportional "fair share" of the improvement cost attributable to new development.

Consistent with the provisions of the Mitigation Fee Act, the WRCOG Executive Committee has established that the TUMF Nexus Study will be subject of a comprehensive review of the underlying program assumptions at least every five years to confirm the Nexus. Acknowledging the unprecedented and unique nature of the TUMF Program, the Executive Committee determined that the first comprehensive review of the Program should be initiated within two years of initial adoption of the Program primarily to validate the findings and recommendations of the study and to correct any program oversights. The results of the first review of the Program were documented in the TUMF Nexus Study 2005 Update adopted by the WRCOG Executive Committee on February 6, 2006. A second comprehensive review of the TUMF Program was conducted in 2008 and 2009 in part to address the impacts of the economic recession on the rate of development within the region and on transportation project costs. The findings of the 2009 review of the program were adopted by the WRCOG Executive Committee on October 5, 2009.

A third comprehensive review of the TUMF Program was conducted in 2014 and 2015 leading to a Draft Nexus Study document being distributed for review in August 2015. The WRCOG Executive Committee subsequently considered comments related to the Draft Nexus Study 2015 Update at the meeting held on September 14, 2015, where it was resolved to "delay finalizing the Nexus Study for the TUMF Program Update until the 2016 Southern California Association of Governments' 2016 Regional Transportation Plan / Sustainable Communities Strategy growth forecast is available for inclusion in the Nexus Study". The Southern California Association of Governments (SCAG) adopted the 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS) on April 7, 2016, enabling WRCOG staff to proceed with finalizing the update of the TUMF Nexus Study. The WRCOG TUMF Nexus Study 2016 Update Report was ultimately adopted by the WRCOG Executive Committee on July 10, 2017.

On September 3, 2020, SCAG adopted Connect SoCal; The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments (2020 RTP/SCS). As stated in the plan document “Connect SoCal embodies a collective vision for the region’s future, through the horizon year of 2045. It is developed with input from a wide range of constituents and stakeholders within the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura, including public agencies, community organizations, elected officials, tribal governments, the business community and the public. Connect SoCal is an important planning document for the region, allowing public agencies who implement transportation projects to do so in a coordinated manner, while qualifying for federal and state funding.”

The adoption of the 2020 RTP/SCS confirmed new growth forecasts for the region that were used as the basis to develop the Connect SoCal plan. These forecasts also provide a foundational element for updating the TUMF program and the associated nexus determination prompting WRCOG to initiate the current program update. The 2020 RTP/SCS growth forecasts are used directly in the fee calculation as the basis for determining the anticipated growth in households and employment in the region through the program horizon year of 2045. These forecasts are also integrated into the Riverside County Transportation Analysis Model (RivCoM) used to forecast the cumulative regional traffic impacts of new development on the arterial highway network in Western Riverside County.

Completed in 2021 to succeed the Riverside County Traffic Analysis Model (RIVTAM), RivCoM provides a valuable tool for supporting a variety of transportation planning activities in Riverside County, including the update of the TUMF Nexus Study. RivCoM was developed under the leadership of WRCOG in conjunction with regional partners with the intent to provide jurisdictions in Riverside County with a traffic forecasting tool that, while consistent with the SCAG regional travel demand model, provides a more appropriate level of detail to support transportation planning at the County or City level.

RivCoM is a critical tool for quantifying the cumulative regional traffic impacts of new development as part of the TUMF Nexus Study Update. Utilizing the 2020 RTP/SCS growth forecasts, RivCoM is used to quantify changes in travel demand and traffic conditions on the regional highway network, with a specific focus on the TUMF Network. RivCoM outputs are used to analyze project eligibility and quantify the fair share of traffic growth that is attributable to new development as inputs to determining the fee. The adoption of the Connect SoCal plan and the availability of RivCoM to serve as a critical tool for quantifying network impacts for the TUMF Nexus Study Update were key factors driving the schedule for this update of the fee.

To ensure new development continues to contribute a fair share of the cost to mitigate its cumulative regional transportation impacts in the period between the comprehensive review of program assumptions completed at least every five years, the WRCOG Executive Committee has also established that the TUMF Schedule of Fees will be reviewed annually, and adjusted, as needed, on July 1st to reflect current costs. The revised schedule of fees will typically be recalculated in February of each year based

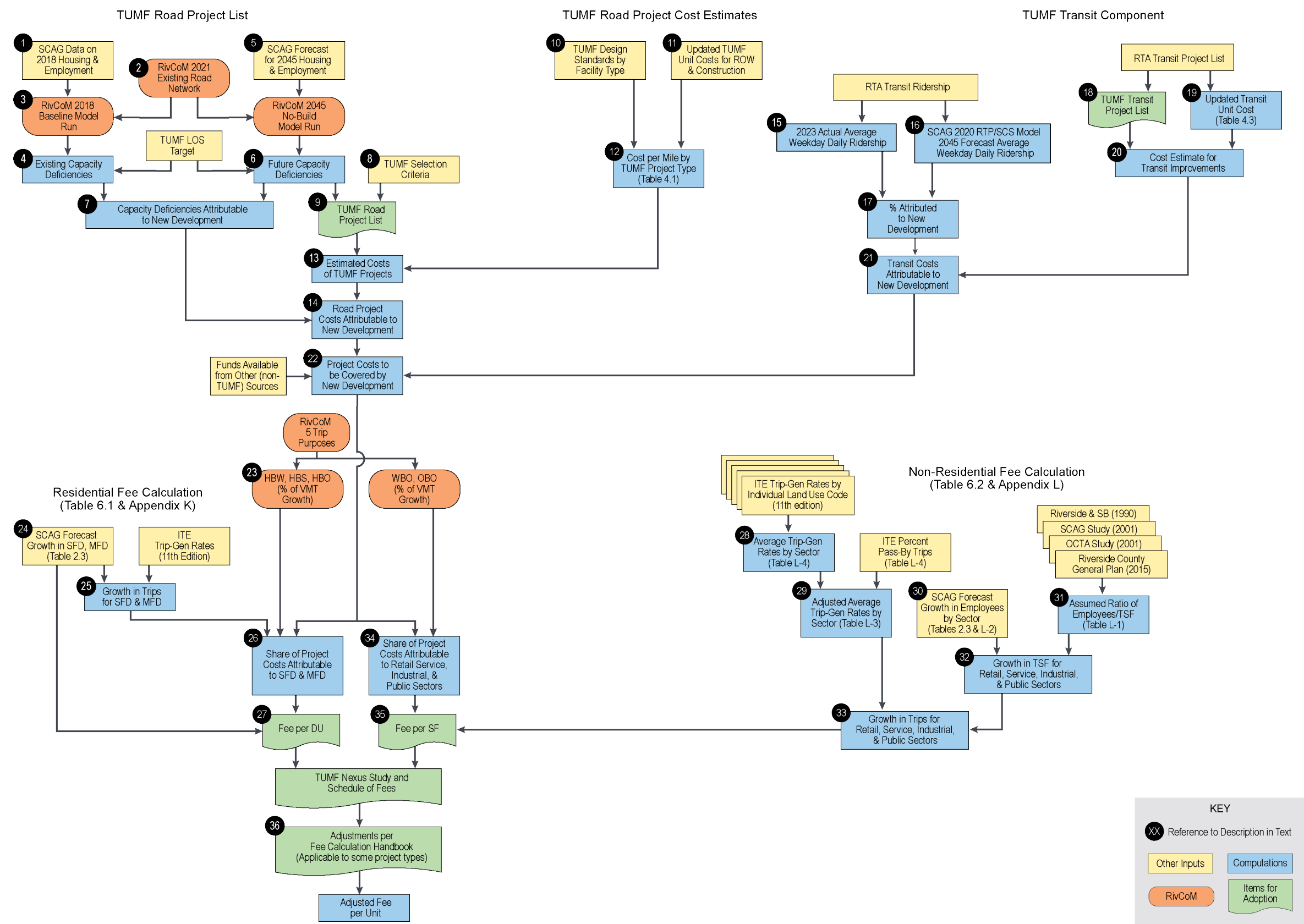
on the percentage increase or decrease in the Engineering News Record (ENR) Construction Cost Index (CCI) for the twelve (12) month period from January of the prior year to January of the current year, and the percentage increase or decrease in the National Association of Realtors (NAR) Median Sales Price of Existing Single Family Homes in the Riverside/San Bernardino Metropolitan Statistical Area for the twelve (12) month period from the 3rd Quarter of the second year prior to the 3rd Quarter of the prior year (to coincide with the publication of the most recently updated index). If approved by the Executive Committee, the resultant percentage change for each of the indices will be applied to the unit cost assumptions for roadway and bus transit costs, and land acquisition costs, respectively, to reflect the combined effects of changes in eligible project costs on the resultant per unit fee for each defined land use category. The most recent annual cost adjustment to the TUMF Schedule of Fees was adopted by the WRCOG Executive Committee on July 12, 2021.

1.3 TUMF Nexus Study Process

In coordination with WRCOG, city and county representatives and other interested parties have reviewed the underlying assumptions of the Nexus Study as part of this comprehensive program review. In particular, the most recent socioeconomic forecasts developed by SCAG as the basis for the 2020 RTP/SCS were incorporated. This use of the most recent SCAG forecasts resulted in a shift of the program base year from 2012 to 2018, as well as a shift in the program horizon year from 2040 to 2045. Furthermore, the TUMF Network was re-examined in detail based on travel demand forecasts derived from the most recent version of the Riverside County Model (RivCoM) to more accurately reflect future project needs to address the cumulative regional impacts of new development in Western Riverside County as well as eliminating those projects having been completed prior to the commencement of the Nexus review in 2021.

The subsequent chapters of this Nexus Study document describe the various assumptions, data inputs and analysis leading to the determination of each major variable in the TUMF calculation, and ultimately leading to the determination of the TUMF Schedule of Fees that indicates the maximum "fair share" fee for each of the various use types defined in the TUMF program. The overall process for establishing the TUMF nexus is summarized in this section, including the flow chart in **Figure 1.1** that illustrates the various technical steps in this fee calculation process. Each technical step that was followed to determine the TUMF Schedule of Fees and establish the program nexus is summarized below, with the numbers denoted on the flow chart correlating to the steps described. The flow chart also incorporates color coding of the steps to indicate those steps that involved the application of RivCoM, steps that utilized other input data, steps that are computations of various inputs, and steps that required specific actions of the various WRCOG committees to confirm major variables. Where appropriate, the flow chart also includes specific cross references to the sections or tables included in this Nexus Study document that correlate to the particular step.

Figure 1.1 - Flowchart of Key Steps in the TUMF Nexus Study Process



2.3.1. Establish the TUMF Network Project List

The roadway network in Western Riverside County must be evaluated to determine how new development activity will impact the performance of the network, and how the resultant traffic impacts can be mitigated by completing various roadway improvements. The following steps integrate the latest SCAG socio-economic forecasts into RivCoM as the basis for determining future roadway deficiencies and identifying the list of eligible improvements to address these future deficiencies. The rational and methodology for accomplishing these steps is further explained in **Chapters 2 and 3** of this report, with the resultant TUMF Network described in **Chapter 4**.

- 1) The SCAG 2020 RTP/SCS was developed using housing and employment data for 2018 as its base year. This adopted dataset was integrated into RivCoM providing a critical analytic tool to support the Nexus Study Update.
- 2) The RivCoM model¹ has datasets available that represent the capacity of the different facilities in the road network for several different study years. For this nexus update, the RivCoM 2018 base network that was developed following the adoption of the SCAG 2020 RTP was selected as the one most closely resembling current conditions. This network was subsequently reviewed and updated, including a detailed review by WRCOG staff and participating jurisdictions, to identify projects that were completed on the arterial network in the period between 2016 and December 2021. The arterial network was then recoded to reflect the changes to the TUMF Network to create a 2021 Existing Network as the base network for analysis. A second version of the base network was also developed adding only those facilities that had been identified on the 2016 TUMF network that did not currently exist and therefore were not represented by a link(s) in RivCoM. The Supplemental 2021 Existing Network was utilized as the basis for assessing only those projects that did not currently exist on the TUMF Network.
- 3) RivCoM was run using the 2018 socio-economic data (SED) and the 2021 Existing Networks to produce the baseline volumes on the roads in the TUMF Network.
- 4) The baseline volume-to-capacity (V/C) ratio was then determined. The target LOS for TUMF facilities is "D", meaning that facilities with LOS "E" or "F", i.e. those with a V/C ratio of 0.9 or higher, are deemed to have inadequate capacity. The result of this step is a list of roads that have existing capacity deficiencies.

¹ The macro-level traffic forecasting was conducted using the Riverside County Transportation Analysis Model (RivCoM). RivCoM is consistent of SCAG's six-county model with additional detail (traffic analysis zones and local roads) added within Riverside County. It was developed for use in traffic studies in Riverside County as a replacement for the Riverside County Transportation and Analysis Model (RivTAM) integrating an updated modeling platform to improve run time and reliability, as well as a more focused model area, more detailed network and zone structure, and post processors to satisfy more recent legislative requirements. RivCoM has both the geographic scope needed to analyze all TUMF facilities and conformity with regional planning assumptions. There is a memorandum of understanding among the jurisdictions of Riverside County that encourages the use of the RivCoM model for use in regional traffic studies.

- 5) The SCAG 2020 RTP/SCS was developed using housing and employment data for 2045 as its forecast horizon year. This adopted dataset was also used as the future base year for the TUMF update calculation.
- 6) RivCoM was run using the 2021 Existing Networks with the land use assumptions for 2045. These “Future No-Build” scenarios was used to determine where deficiencies would occur in the roadway system if development occurred as expected but no roadway improvements were implemented.
- 7) Comparing the existing capacity deficiencies with the future deficiencies showed where new deficiencies would occur that are entirely attributable to growth in households and employment. Comparing the existing and future traffic volume to capacity ratio on the roads that are currently deficient shows the portion of the future deficiency that is attributable to growth.
- 8) It is generally acknowledged that the TUMF program cannot and should not attempt to fund every roadway improvement needed in Western Riverside County. WRCOG has adopted a set of selection criteria that was used to choose which roadway improvements would be eligible for TUMF funding.
- 9) The selection criteria were applied to the forecast deficiencies to identify projects for the TUMF Project List. The project list was subsequently reviewed to confirm the eligibility of proposed projects, including projects previously included in the TUMF program, as well as additional projects requested for inclusion as part of the current update. The project list was then subsequently updated to reflect those projects considered eligible for TUMF funding as part of the 2024 Nexus Study Update.

2.3.2. Determine the TUMF Network Project Costs

The estimated costs of proposed improvements on the TUMF Network are calculated based on the prices of construction materials, labor and land values for the various eligible project types included as part of the TUMF program. The approach and outcomes of the following steps is described in **Chapter 4** of this report.

- 10) The TUMF program has design standards covering the road project components that are eligible for TUMF funding. This ensures that projects in jurisdictions with different design standards are treated equally².
- 11) Current cost values for labor and materials such as cement, asphalt, reinforcing steel, etc., as derived from Caltrans cost database, RCTC and other sources, were tabulated and updated to December 2023. Additionally, the ROW cost components per square foot for various land use types were also updated based on current property valuations in Riverside County as researched by Overland, Pacific and Cutler.

² A jurisdiction may choose to design to a higher standard, but if it does so, TUMF will only fund up to the equivalent of what costs would have been had the TUMF design standards been followed.

- 12) The cost values for the contributing labor, materials and land components were applied to estimated quantities of these components for the various roadway project types that are eligible under TUMF to generate aggregate unit cost values for each project type (road costs per lane-mile, typical costs per arterial-freeway interchange, bridge costs per linear foot, etc.).
- 13) The unit costs from the previous step were then applied to the project list to estimate the costs of the improvements on the TUMF project list.
- 14) The percentage of each project that was attributable to new development was then applied to the costs of TUMF road projects to find the total road project cost that is attributable to new development.

2.3.3. Determine the TUMF Transit Component

A portion of the TUMF funding is made available for transit services that provide an alternative to car travel for medium-to-long distance intra-regional trips. The eligible transit projects and their associated costs are determined using the following steps, with additional explanation provided in **Chapter 4** of this report.

- 15) Actual average weekday daily ridership for Riverside Transit Agency (RTA) transit bus services was tabulated for 2023.
- 16) Forecast average weekday daily ridership for RTA bus transit services was retrieved from the SCAG 2020 RTP/SCS Model for horizon year 2045.
- 17) The growth in ridership between 2023 and 2045 was compared to determine the portion of 2045 average weekday daily ridership that is attributable to existing passengers and the portion attributable to new growth.
- 18) A proposed transit project list was provided by RTA staff and was reviewed to confirm the validity of the project list to establish a final recommended transit project list to be included as part of the program. The result was the TUMF Transit Project List.
- 19) RTA provided information on current costs for the listed transit infrastructure.
- 20) The cost information was then used to determine the cost of the items on the TUMF Transit Project List.
- 21) The percent attribution from Step 17 was applied to the project cost estimates from the previous step to determine the cost of transit improvements that are attributable to new development.
- 22) The costs for road and transit projects that are attributable to new development are then combined along with information on other (non-TUMF) funds to determine the total cost for TUMF projects that is to be covered by new development through the imposition of the fees. The available alternate funding sources were reviewed as part of the Nexus update, specifically including the completion of a detailed review of available federal, state and local funding sources administered by RCTC.

2.3.4. Computing the Fee for Residential Developments

Having determined the total project costs to be covered by new development under the TUMF program, it is necessary to divide these costs among different types of developments roughly in proportion to their expected traffic impacts. The following steps describes the process for determining the proportion attributable to new residential development. The approach for accomplishing these steps along with the findings of this analysis are described in detail in **Chapter 5** and **Chapter 6** of this report.

- 23) California legislation encourages the use of vehicle miles of travel (VMT) as the primary indicator of traffic impacts because it combines the number of vehicle trips and the average length of those trips to reflect the proportional impact to the roadway network. As a result, the methodology for determining the relative distribution of traffic impacts between residential and non-residential uses for the purposes of TUMF utilizes a VMT based approach. The RivCoM 2021 Existing Network and 2045 No-Build model runs were examined to determine the VMT of various trip types that would take place in Western Riverside County (excluding through trips). The results were compared to determine the growth in VMT for each trip type. Per WRCOG policy (based on National Cooperative Highway Research Program (NCHRP) recommended practice) trips originating in or destined for a home are attributed to residential development while trips where neither the origin nor the destination are a home are attributed to non-residential development.
- 24) The SCAG 2020 RTP/SCS socio-economic forecasts were used to estimate the number of single-family and multi-family dwelling units that will be developed during the 2018 to 2045 period.
- 25) The Institute of Transportation Engineers' (ITE's) trip generation rates, which come from surveys of existing sites for various development types, were then used to estimate the daily number of trips that will be generated by future single- and multi-family developments that will occur in the region from 2018 to 2045.
- 26) The cost to be covered by residential development was divided into the portion attributable to new single-family dwellings and portion attributable to new multi-family development to calculate the cost share for each use.
- 27) The cost share for single-family dwellings and multi-family dwellings was divided by the number of dwellings of each type to determine the fee level required from each new dwelling unit to cover their fair share of the cost to mitigate the impacts of new developments.

2.3.5. Computing the Fee for Non-Residential Developments

A process similar to that used for residential units was used to determine the fee level for non-residential development. However, the determination of fees for non-residential development involves additional steps due to the additional complexity of accounting for a greater variety of development types within each use category. **Chapter 5** and **Chapter 6** of this report provide additional explanation regarding the methodology for accomplishing these steps along with the results of this analysis.

- 28) Like many impact fee programs, TUMF groups similar development projects together into general use categories to simplify the administration of the program. TUMF groups the various land use categories found in ITE's Trip Generation Manual into four non-residential categories (industrial, retail, service, and government/public sector) based on the North American Industry Classification System (NAICS), which is also used by the U.S. Census Bureau and SCAG for demographic classifications and is the basis for such classifications in the SCAG Regional Travel Demand Model as well as and the RivCoM model. The ITE trip generation rates for all uses were reviewed for accuracy updated to reflect the most current ITE published rates. The median value for the trip-generation rates for all uses within each category was used in the nexus study to represent the trip-generation characteristics for the category.
- 29) The trip-generation rates of retail and service uses were adjusted to take into account the share of pass-by trips these uses generate. Pass by trip rates for various retail and service uses were derived from the ITE Trip Generation Manual to determine the median value of all uses as the basis for the adjustment. The ITE pass by trip rates for all uses were reviewed for accuracy and updated to reflect the most current ITE published rates.
- 30) The SCAG 2020 RTP/SCS socio economic forecasts included non-residential employment for 2018 and 2045. These forecasts were used to estimate the growth in employment in each of the four non-residential uses.
- 31) The SCAG employment forecasts are denominated in jobs while development applications are typically denominated in square feet of floorspace. The ratio of floorspace per employee was determined as a median value derived from four studies, including a comprehensive study San Bernardino and Riverside Counties conducted in 1990, an OCTA study conducted in 2001, a SCAG study (including a specific focus on Riverside County) conducted in 2001, and the Riverside County General Plan adopted in 2015.
- 32) The forecast growth in employees was multiplied by the floorspace per employee to produce a forecast of the floorspace that will be developed for each of the four non-residential use types.
- 33) The trip-generation rate for each of the four uses was multiplied by the forecast of new floorspace to estimate the number of trips generated by each use.
- 34) The amount of project costs to be covered by non-residential development was split between the four non-residential uses to determine the TUMF cost share for each.
- 35) The TUMF cost share for each of the four non-residential uses was divided by the forecast growth in floorspace to determine the fee level required from each new square foot of non-residential development to cover their fair share of the cost to mitigate the impacts of new developments.
- 36) WRCOG has adopted a TUMF Fee Calculation Handbook that allows for fee adjustments to be made to account for unusual circumstances for certain types of residential and non-residential development (fuel filling stations, golf courses, high-cube warehouses, wineries, electric charging stations, etc.) These

adjustments are intended to calculate a fairer proportional fee based on the unique trip generation characteristics of these development types.

The outcome of this process is a schedule of fees for the various use categories identified as part of the TUMF program. The study conclusions including the Schedule of Fees is presented in **Chapter 7** of this report. The schedule of fees represents the **maximum** fee permissible under California law for the purposes of the TUMF program. The WRCOG Executive Committee has the option to adopt lower fees, however, in doing so each use category subject to a lower fee would not be contributing a fair share of the cost of their impacts. This would in turn create a funding gap for the program that would necessitate identifying additional project funding from some other source to ensure the cumulative regional impacts of new development are being mitigated fully in accordance with the program.

2.0 FUTURE GROWTH

2.1 Recent Historical Trend

Western Riverside County experienced robust growth in the period from the late 1990's to the mid 2000's. The results of Census 2000 indicate that in the year 2000, Western Riverside County had a population of 1.187 million representing a 30% increase (or 2.7% average annual increase) from the 1990 population of 912,000. Total employment in Western Riverside County in 2000 was estimated by the SCAG to be 381,000 representing a 46% increase (or 3.9% average annual increase) over the 1990 employment of 261,000.

Despite the impacts of the Great Recession and the associated residential mortgage and foreclosure crisis, and more recently with the shifting of population during and following the COVID-19 pandemic, Western Riverside County has continued to grow due to the availability of relatively affordable residential and commercial property, and a generally well-educated workforce. By 2010, the population of the region had grown to 1.742 million, a further 47% growth in population from 2000. Similarly, total employment in the region had also grown from 2000 to 2010 with 434,000 employees estimated to be working in Western Riverside County. This represents a 12% increase from the 381,000 employees working in the region in 2000.

2.2 Available Demographic Data

A variety of alternate demographic information that quantifies future population, household and employment growth is available for Western Riverside County. For earlier versions of the TUMF Nexus Study, the primary available source of consolidated demographic information for Western Riverside County was provided by SCAG. SCAG is the largest of nearly 700 Councils of Government (COG) in the United States and functions as the Metropolitan Planning Organization (MPO) for six counties in Southern California including Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial. SCAG is mandated by the federal government to research and plan for issues of regional significance including transportation and growth management. As part of these responsibilities, SCAG maintains a comprehensive database of regional socioeconomic data and develops demographic projections and travel demand forecasts for Southern California.

In preparation for the 2020 RTP/SCS, SCAG undertook robust stakeholder engagement, including participation by WRCOG, Riverside County and the various cities in Western Riverside County, to develop regional demographic forecasts. Using input from regional stakeholders regarding anticipated patterns and rates of development, SCAG compiled and disseminated the forecasts that were ultimately adopted in 2020, including those specific to Western Riverside County. The SCAG forecasts adopted for the 2020 RTP/SCS were subsequently used as the basis for RivCoM and are used as the basis for this TUMF Nexus Study Update.

2.3 Demographic Assumptions Used for the Nexus Study Analysis

A major distinction between data used for the TUMF Nexus Study 2016 Update and the SCAG 2020 RTP/SCS data used for this 2024 Update is the change in the base year from 2012 to 2018, as well as the change in the horizon year from 2040 to 2045. This shift in the base year and horizon year demographic assumptions of the program carries through all aspects of the nexus analysis, including the travel demand forecasting, network review and fee calculation.

The SCAG 2020 RTP/SCS data were compared to the 2016 RTP/SCS data used in the TUMF Nexus Study 2016 Update. As can be seen in **Table 2.1** and **Figure 2.1**, the 2018 data reflects an increase in population and single-family households, and a very slight decline in multi-family households. Employment grew substantially overall, with significant growth in industrial employment, largely attributable to the rapid expansion of warehousing and logistics facilities in Western Riverside County. In contrast, there was a notable decline in government and public sector employment in the region from 2012 to 2018

Table 2.1 - Base Year Socioeconomic Estimates for Western Riverside County

SED Type	2016 Update (2012)	2024 Update (2018)	Change	Percent
Total Population	1,773,935	1,905,440	131,505	7%
Total Households	525,149	554,573	29,424	6%
Single-Family	366,588	397,407	30,819	8%
Multi-Family	158,561	157,166	-1,395	-1%
Total Employment	460,787	570,420	109,633	24%
Industrial	120,736	169,334	48,598	40%
Retail	65,888	73,814	7,926	12%
Service	253,372	308,703	55,331	22%
Government/Public Sector	20,791	18,569	-2,222	-11%

Source: SCAG 2016 RTP/SCS; SCAG 2020 RTP/SCS

Figure 2.1 – Base Year Socioeconomic Estimates for Western Riverside County

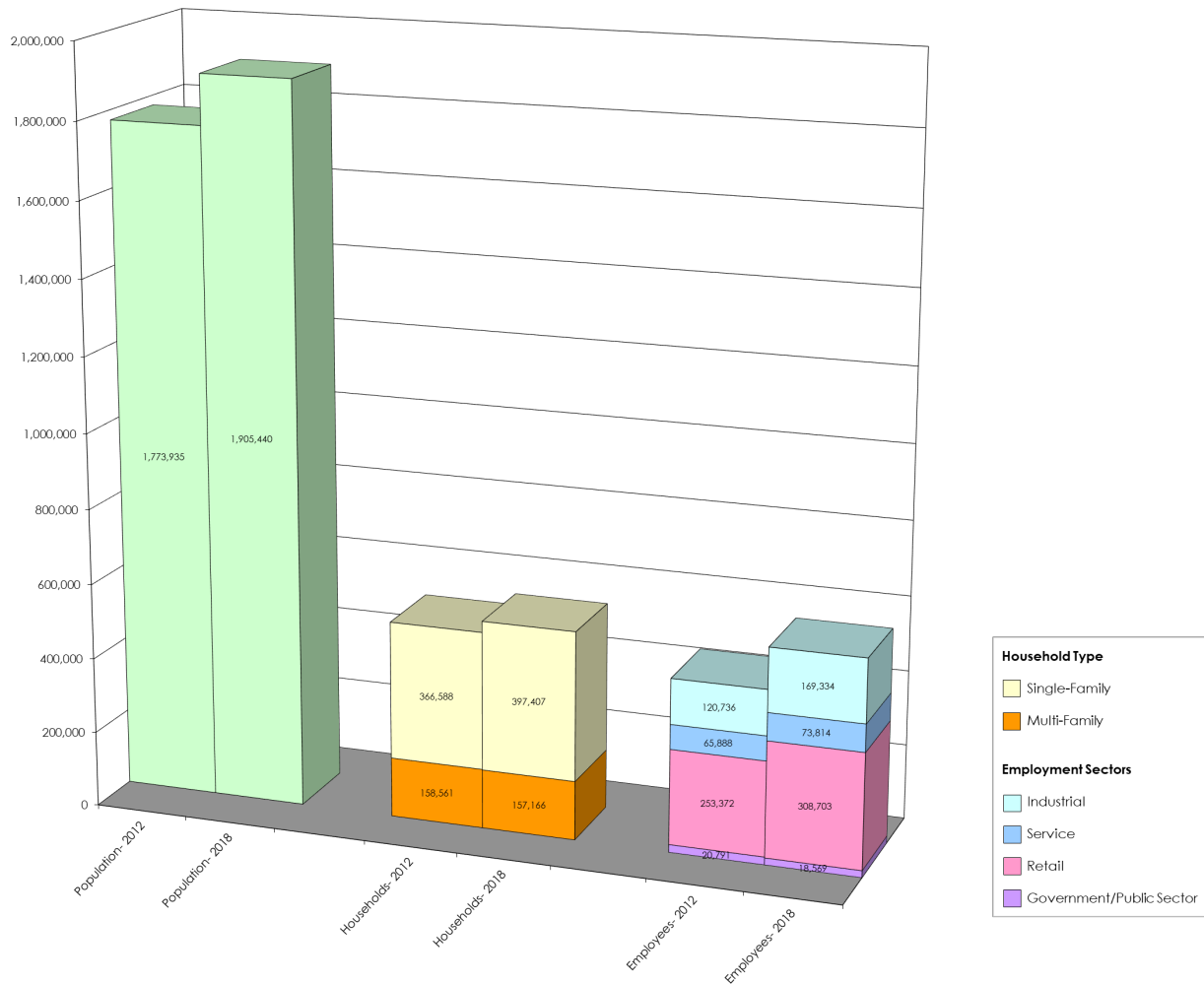


Table 2.2 and **Figure 2.2** compare the socioeconomic forecasts for the program horizon year of 2045 used in the TUMF Nexus Study 2016 Update and 2045 for this study. The most recent forecasts reflect an increase in the horizon year population and households, and a decrease in overall employment in Western Riverside County. The change in employment was not, however, consistent across sectors. The retail employment forecast has decreased approximately 15% from 2040 to 2045, while the industrial employment forecast has increased over 20%. This shift is consistent with the emergence of e-commerce as an alternative to traditional “brick and mortar” retail.

Table 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

SED Type	2016 Update (2040)	2024 Update (2045)	Change	Percent
Total Population	2,429,633	2,533,876	104,243	4%
Total Households	775,231	812,399	37,168	5%
Single-Family	539,631	564,898	25,267	5%
Multi-Family	235,600	247,501	11,901	5%
Total Employment	861,455	846,442	-15,013	-2%
TUMF Industrial	201,328	245,915	44,587	22%
TUMF Retail	101,729	86,929	-14,800	-15%
TUMF Service	528,092	482,958	-45,134	-9%
TUMF Government/Public Sector	30,306	30,640	334	1%

Source: SCAG 2016 RTP/SCS; SCAG 2020 RTP/SCS

Figure 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

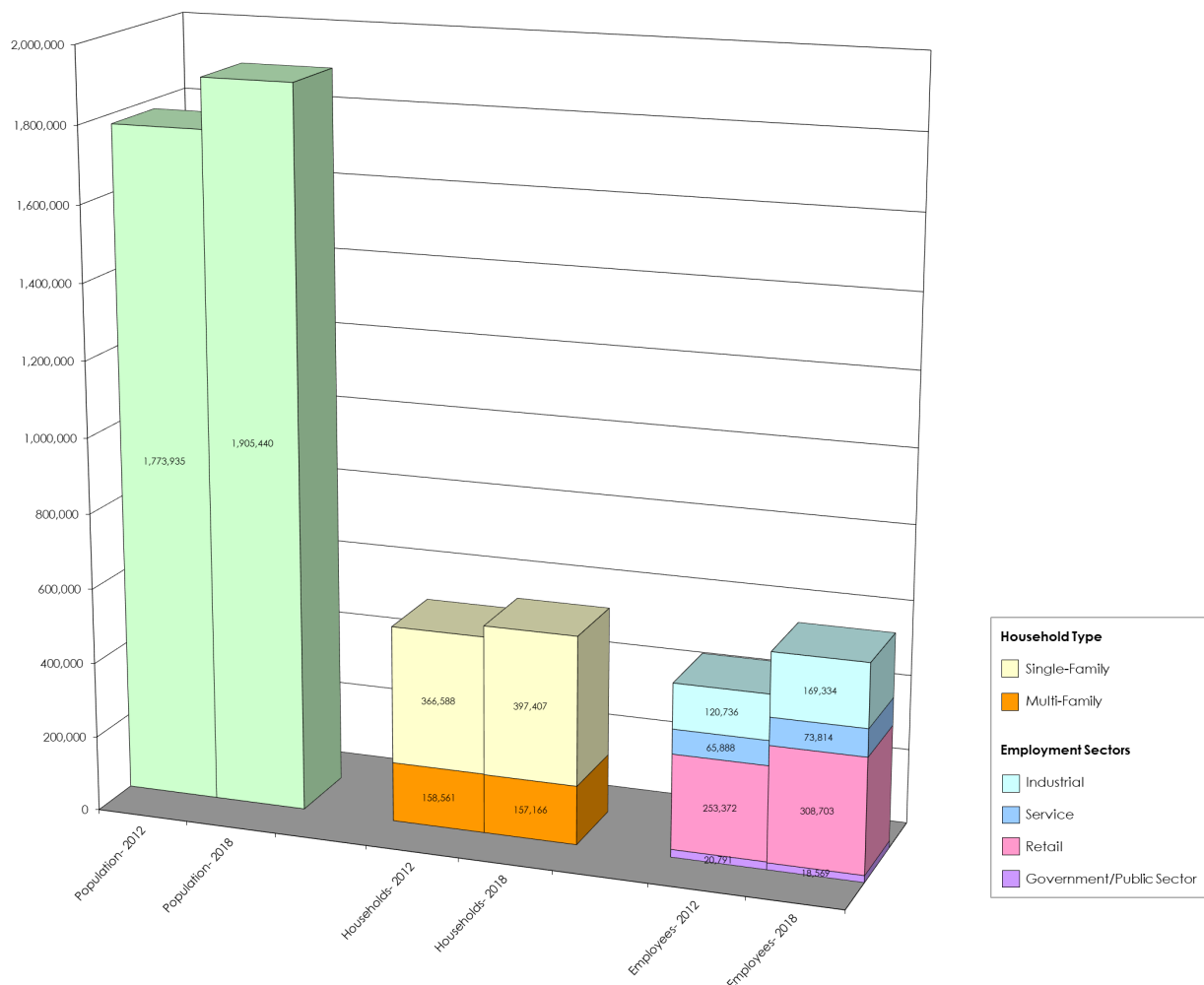


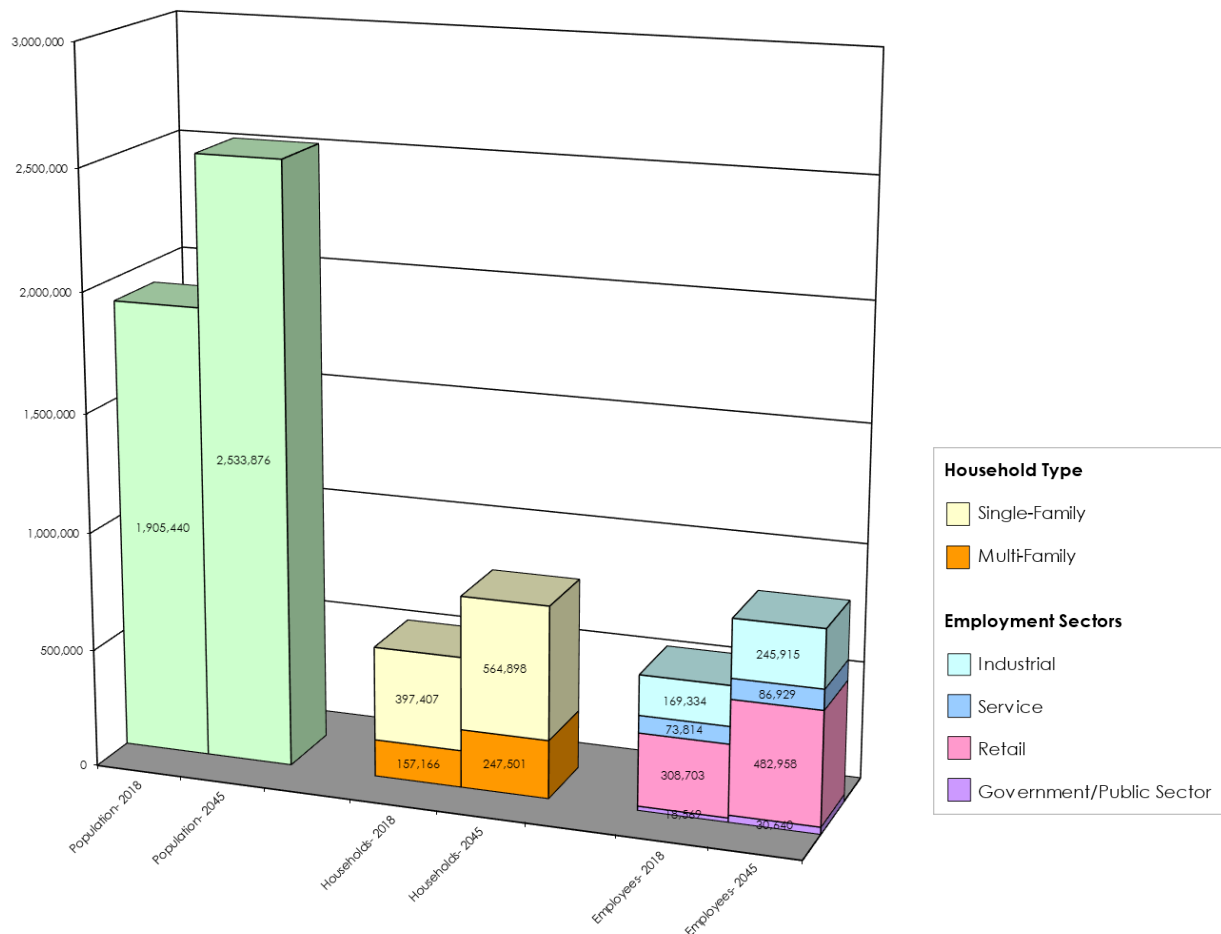
Table 2.3 and **Figure 2.3** summarize the socioeconomic data obtained from SCAG and used as the basis for completing this Nexus Study analysis. The SCAG employment data for 2018 and 2045 was provided for thirteen employment sectors consistent with the California Employment Development Department (EDD) Major Groups including: Farming, Natural Resources and Mining; Construction; Manufacturing; Wholesale Trade; Retail Trade; Transportation, Warehousing and Utilities; Information; Financial Activities; Professional and Business Service; Education and Health Service; Leisure and Hospitality; Other Service; and Government. For the purposes of the Nexus Study, the EDD Major Groups were aggregated to Industrial (Farming, Natural Resources and Mining; Construction; Manufacturing; Wholesale Trade; Transportation, Warehousing and Utilities), Retail (Retail Trade), Service (Information; Financial Activities; Professional and Business Service; Education and Health Service; Leisure and Hospitality; Other Service) and Government/Public Sector (Government). These four aggregated sector types were used as the basis for calculating the fee as described in **Section 6.2**. **Appendix B** provides a table detailing the EDD Major Groups and corresponding North American Industry Classification System (NAICS) Categories that are included in each non-residential sector type.

Table 2.3 - Population, Households and Employment in Western Riverside County (2018 to 2045)

SED Type	2018	2045	Change	Percent
Total Population	1,905,440	2,533,876	628,436	33%
Total Households	554,573	812,399	257,826	46%
Single-Family	397,407	564,898	167,491	42%
Multi-Family	157,166	247,501	90,335	57%
Total Employment	570,420	846,442	276,022	48%
TUMF Industrial	169,334	245,915	76,581	45%
TUMF Retail	73,814	86,929	13,115	18%
TUMF Service	308,703	482,958	174,255	56%
TUMF Government/Public Sector	18,569	30,640	12,071	65%

Source: SCAG 2020 RTP/SCS

Figure 2.3 - Population, Households and Employment in Western Riverside County (2018 to 2045)



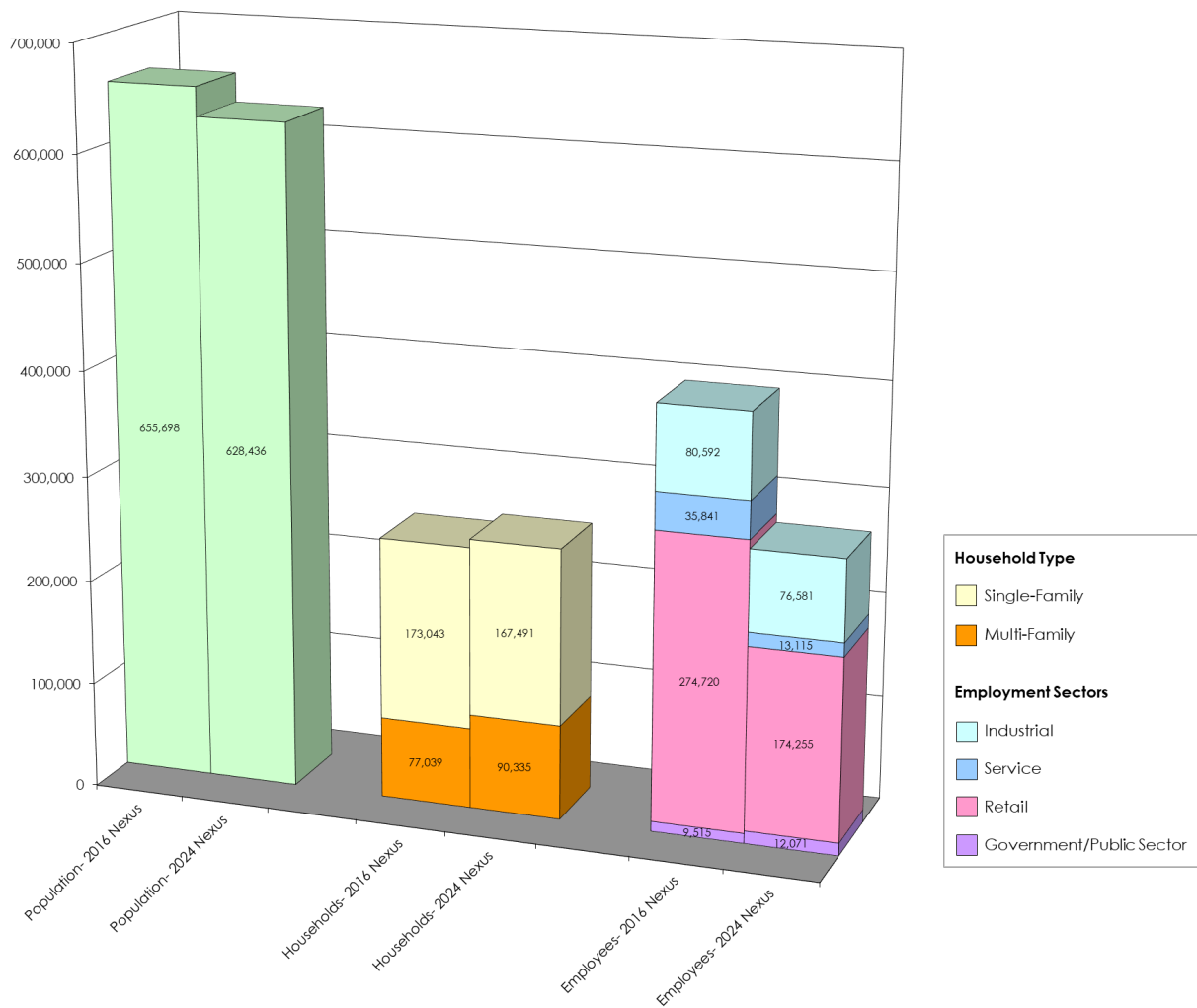
The combined effects of the changes in the base year and horizon year socioeconomic data are modest reductions in the total growth in population and single-family households, but a notable increase in multi-family households. The change in total employment is reduced by 31%, with the most significant reduction in employment growth in the retail sector (-63%), while the industrial sector saw only a slight reduction in total employment growth compared to the 2016 Nexus Update (5%). The Government/public sector employment growth has increased by 27% from the 2016 Nexus Study to the 2024 Nexus Study, although the total number of jobs increased is relatively small as a share of the total employment. **Table 2.4** and **Figure 2.4** provide a comparison of the changes in population, households and employment between the 2016 Nexus Update and the 2024 Nexus Update. The table and figure clearly illustrate the reduction in the rate of growth in Western Riverside County largely attributable to the effects of the economic recession. This reduced rate of growth in the region will serve as the basis for reevaluating the level of impact of new development on the transportation system in the next section, as well as providing the basis for the determination of the fair share fee for each land use type.

**Table 2.4 - Population, Households and Employment in Western Riverside County
(Existing to Future Change Comparison)**

SED Type	2016 Update (2012-2040)	2024 Update (2018-2045)	Difference	Percent
Total Population	655,698	628,436	-27,262	-4%
Total Households	250,082	257,826	7,744	3%
Single-Family	173,043	167,491	-5,552	-3%
Multi-Family	77,039	90,335	13,296	17%
Total Employment	400,668	276,022	-124,646	-31%
TUMF Industrial	80,592	76,581	-4,011	-5%
TUMF Retail	35,841	13,115	-22,726	-63%
TUMF Service	274,720	174,255	-100,465	-37%
TUMF Government/Public Sector	9,515	12,071	2,556	27%

Source: SCAG 2016 RTP/SCS; SCAG 2020 RTP/SCS

**Figure 2.4 - Population, Households and Employment in Western Riverside County
(Existing to Future Change Comparison)**



3.0 NEED FOR THE TUMF

All new developments have some effect on the transportation infrastructure in a community, city or county due to an increase in travel demand. Increasing usage of the transportation facilities leads to more traffic, progressively increasing VMT, traffic congestion and decreasing the level of service (LOS)³. To meet the increased travel demand and keep traffic flowing, improvements to transportation facilities become necessary to sustain pre-development traffic conditions.

The projected growth in Western Riverside County (33% growth in population and 48% growth in employment in 27 years) and the related growth in VMT can be expected to increase congestion and degrade mobility if substantial investments are not made in the transportation infrastructure. This challenge is especially critical for arterial highways and roadways that carry a significant number of the trips between cities, since traditional sources of transportation improvement funding (such as the gasoline tax and local general funds) will not be nearly sufficient to fund the improvements needed to serve new development. Development exactions generally provide only a fraction of the improvements with those being confined to the area immediately adjacent to the respective development, and the broad-based county-level funding sources (i.e., Riverside County's half-cent sales tax known as Measure A) designate only a small portion of their revenues for arterial roadway improvements.

This section documents the existing and future congestion levels that demonstrate the need for future improvements to the transportation system to specifically mitigate the cumulative regional transportation impacts of new development. It then describes the TUMF concept that has been developed to fund future new developments' fair share of needed improvements.

The forecast of future congestion levels is derived from Year 2045 No-Build travel demand forecasts for Western Riverside County developed using RivCoM. The Year 2045 No-Build scenario evaluates the effects of 2045 population, employment and resultant traffic generation on the 2021 existing arterial highway network.

3.1 Future Highway Congestion Levels

To support the evaluation of the cumulative regional impacts of new development on the existing arterial highway system in Western Riverside County, existing (2018) and future (2045) SED were modeled on the existing (2021) arterial highway network using RivCoM. To quantify traffic growth impacts, various traffic measures of effectiveness were calculated for the AM and PM peak periods for each of the two scenarios. The

³ The Highway Capacity Manual 6th Edition – A Guide for Multimodal Mobility Analysis (Transportation Research Board, National Academy of Sciences, Washington, D.C., 2016, Volume 1 – Concepts, pp 5-3) describes LOS as a “quantitative stratification of performance measure or measures representing quality of service....HCM defines six levels of service, ranging from A to F, for each service measure or combination of measures. LOS A represents the best operating conditions from the traveler's perspective and LOS F the worst.”

WRCOG TUMF study area was extracted from the greater regional model network for the purpose of calculating measures for Western Riverside County only. Peak period performance measures for the Western Riverside County TUMF study area included total VMT, total vehicle hours of travel (VHT), total combined vehicle hours of delay (VHD), and total VMT experiencing unacceptable level of service (LOS E). These results were tabulated in **Table 3.1**. Plots of the Network Extents are attached in **Appendix C**.

Total Arterial VMT, VHT, VHD and LOS E Threshold VMT were calculated to include all principal arterials, minor arterials and major connectors, respectively. Regional values for each threshold were calculated for a total of all facilities including arterials, freeways, freeway ramps and High-Occupancy Vehicle (HOV) lanes.

Table 3.1 - Regional Highway System Measures of Performance (2018 Existing to 2045 No-Build)

Measure of Performance*	Peak Periods (Total)			
	2018 Existing	2045 No-Build	% Change	% Annual
VMT - Total ALL FACILITIES	23,284,724	29,897,254	28%	0.9%
VMT - FREEWAYS	13,514,522	15,490,284	15%	0.5%
VMT - ALL ARTERIALS	9,770,202	14,406,970	47%	1.4%
TOTAL - TUMF ARTERIAL VMT	6,216,985	8,597,200	38%	1.2%
VHT - TOTAL ALL FACILITIES	541,350	915,439	69%	2.0%
VHT - FREEWAYS	263,792	399,128	51%	1.5%
VHT - ALL ARTERIALS	277,558	516,311	86%	2.3%
TOTAL TUMF ARTERIAL VHT	174,455	320,869	84%	2.3%
VHD - TOTAL ALL FACILITIES	108,900	338,056	210%	4.3%
VHD - FREEWAYS	66,156	170,649	158%	3.6%
VHD - ALL ARTERIALS	42,745	167,407	292%	5.2%
TOTAL TUMF ARTERIAL VHD	33,249	124,863	276%	5.0%
VMT LOS E - TOTAL ALL FACILITIES	5,605,070	13,369,483	139%	3.3%
VMT LOS E - FREEWAYS	4,725,471	9,316,891	97%	2.5%
VMT LOS E & F - ALL ARTERIALS	879,599	4,052,592	361%	5.8%
TOTAL TUMF ARTERIAL VMT w/ LOS E or worse	765,782	3,184,133	316%	5.4%
% of TUMF ARTERIAL VMT w/ LOS E or worse	12%	37%		

* Based on RivCoM 2018 base network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network as existing in December 2021

NOTES:

Volume is adjusted by PCE factor

VMT = vehicle miles of travel (the total combined distance that all vehicles travel on the system)

VHT = vehicle hours of travel (the total combined time that all vehicles are traveling on the system)

VHD = vehicle hours of delay (the total combined time that all vehicles have been delayed on the system based on the difference between forecast travel time and free-flow (ideal) travel time)

LOS = level of service (based on forecast volume to capacity ratios).

LOS E or Worse was determined by V/C ratio that exceeds 0.9 thresholds as indicated in the Riverside County General Plan.

The following formulas were used to calculate the respective values:

$VMT = \text{Link Distance} * \text{Total Daily Volume}$

$VHT = \text{Average Loaded (Congested) Link Travel Time} * \text{Total Daily Volume}$

$VHD = VHT - (\text{Free-flow (Uncongested) Link Travel Time} * \text{Total Daily Volume})$

$VMT \text{ LOS E or F} = VMT \text{ (on links where Daily V/C exceeded 0.90)}$

Note: Volume to capacity (v/c) ratio thresholds for LOS E are based on the Transportation Research Board 2010 Edition of the Highway Capacity Manual (HCM 2010) LOS Maximum V/C Criteria for Multilane Highways with 45 mph Free Flow Speed (Exhibit 14-5, Chapter 14, Page 14-5).

The calculated values were compared to assess the total change between 2018 Existing and 2045 No-Build scenarios, and the average annual change between 2018 Existing and 2044 No-Build. As can be seen from the RivCoM outputs summarized in **Table 3.1**, the additional traffic generated by new development will cause peak period VMT on the arterial highway network to increase by approximately 47% by the year 2045 (approximately 1.4% per year). In the absence of additional improvements to the transportation network in Western Riverside County, the growth in VMT will cause congestion on the highway system to increase almost exponentially, with the most significant increase in congestion observed on the arterial highway system that includes the TUMF Network. Many facilities will experience a significant increase in vehicle delay and deterioration in LOS to unacceptable levels because of new development and the associated growth in traffic. According to the Highway Capacity Manual 6th Edition – A Guide for Multimodal Mobility Analysis (Transportation Research Board, National Academy of Sciences, Washington, D.C., 2016), “LOS E describes operation at or near capacity. Operations...at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering...or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic stream....the physical and psychological comfort afforded drivers is poor.”

The Congestion Management Program for Riverside County (CMP) published by the Riverside County Transportation Commission (RCTC) in 2011 designates LOS E as the “traffic standards must be set no lower than LOS E for any segment or intersection along the CMP System of Highways and Roadways” in Riverside County. “The intent of the CMP is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related impacts, and improve air quality.”⁴ The CMP provides a mechanism for monitoring congestion on the highway system and, where congestion is observed, establishes procedures for developing a deficiency plan to address improvement needs. The reactive nature of the CMP to identify and remediate existing congestion differs from the proactive nature of the TUMF program to anticipate and provide for future traffic needs. For this reason, the TUMF

⁴ Congestion Management Program for Riverside County – Executive Summary (Riverside County Transportation Commission, 2011) Page ES-3, ES-1

program follows the guidance of the Highway Capacity Manual in establishing LOS E as the threshold for unacceptable level of service, and subsequently as the basis for measuring system performance and accounting for existing needs. This approach ensures a more conservative accounting of existing system needs as part of the determination of the “fair share” of mitigating the cumulative regional impacts of future new development on the transportation system.

The continuing need for a mitigation fee on new development is shown by the adverse impact that new development will have on Western Riverside County's transportation infrastructure, and particularly the arterial highway network. As a result of the new development and associated growth in population and employment in Western Riverside County, additional pressure will be placed on the transportation infrastructure with the total peak period VMT on the Western Riverside County Regional System of Highways and Arterials (RSHA; also referred to as the TUMF Network) estimated to increase by approximately 38% or 1.2% compounded annually.

As shown in **Table 3.1**, the peak period VMT on arterial facilities within the TUMF Network experiencing LOS E or worse will increase by approximately 316% or 5.4% compounded annually in Western Riverside County in the period between 2018 and 2045. By 2045, 37% of the total VMT on the TUMF arterial highway system is forecast to be traveling on facilities experiencing daily LOS E or worse. Without improvements to the TUMF arterial highway system, the total vehicle hours of delay (VHD) experienced by area motorists on TUMF arterial highways during the peak periods will increase by approximately 5.0% per year. The combined influences of increased travel demand and worsened LOS that manifest themselves in severe congestion and delay highlighting the continuing need to complete substantial capacity expansion on the TUMF arterial highway system to mitigate the cumulative regional impact of increased travel demand resulting from new development.

The RivCoM outputs summarized in **Table 3.1** clearly demonstrate that the travel demands generated by future new development in the region will lead to increasing levels of traffic congestion, especially on the arterial roadways. The need to improve these roadways to accommodate the anticipated growth in VMT and relieve future congestion is therefore directly linked to the future development which generates the additional travel demand.

3.2 Future Transit Utilization Levels

In addition to the roadway network, public transportation will play a role in serving future travel demand in the region. Transit represents a critical component of the transportation system by providing an alternative mode choice for those not wanting to use an automobile, and particularly for those who do not readily have access to an automobile. As population and employment in Western Riverside County grows because of new development, demand for regional transit services in the region is also expected to grow.

While some future transit trips will be accommodated by inter-regional transit services such as Metrolink, a substantial number of the trips within Western Riverside County will be served by bus transit services and for this reason the provision of regional bus transit service is considered integral to addressing the cumulative regional transportation impacts of new developments. Regional bus transit services within Western Riverside County are primarily provided by RTA.

In 2023, RTA reported average weekday daily ridership of 16,575 on their network of buses⁵. The SCAG 2020 RTP/SCS forecasts for RTA average weekday daily ridership in 2045 is 57,282. These values were used to represent the existing and future transit trips consistent with the analysis of highway trips described in **Section 3.1**. The existing and future transit ridership were compared to assess the impact of new development on transit demand. Average weekday daily ridership would be expected to grow by 40,707 between 2023 and 2045, or an average increase of 1,850 weekday daily riders each year. Average weekday daily system ridership is summarized in **Appendix D**.

The future growth in demand for public transit services is reflective of the cumulative regional impacts of new development, and the associated increase in demand for all types of transportation infrastructure and services to accommodate this growth. Furthermore, bus transit ridership is expected to grow as the improved services being planned and implemented by RTA attract new riders and encourages existing riders to use transit more often as an alternative to driving. Attracting additional riders to bus transit services contributes to the mitigation of the cumulative regional transportation impacts of new development by reducing the number of trips that need to be served on the highway system. The need to provide additional bus transit services within Western Riverside County to satisfy this future demand is therefore directly linked to the future development that generates the demand.

3.3 The TUMF Concept

A sizable percentage of trip-making for any given local community extends beyond the bounds of the individual community as residents pursue employment, education, shopping and entertainment opportunities elsewhere. As new development occurs within a particular local community, this dispersal of trips of all purposes by new residents and the new business that serve them generates additional travel demand and contributes to the need for transportation improvements within their community and in the other communities of Western Riverside County. The idea behind a uniform mitigation fee is to have new development throughout the region contribute uniformly to paying the fair share cost of improving the transportation facilities that serve these trips between communities. Thus, the fee is intended to be used primarily to improve

⁵ RTA, like most public transportation agencies, have seen significant short-term declines in transit ridership resulting from changes in travel demands, mode choice and trip distribution following the COVID-19 pandemic. RTA's 2016 actual average weekday daily ridership was 30,700. Post COVID-19, the RTA actual average weekday daily ridership in 2023 was 16,575, a decline of almost 50% of pre-pandemic ridership levels. These levels would be expected to continue to recover toward pre-pandemic levels as potential riders resume more regular work schedules, and apprehension toward the use of transit services for public health reasons wane.

transportation facilities that serve trips between communities within the region (in particular, arterial roadways and regional bus transit services).

Some roadways serve trips between adjacent communities, while some also serve trips between more distant communities within the region. The differing roadway functions led to the concept of using a portion of the fee revenues for a backbone system of arterial roadways that serve the longer-distance trips (i.e. using TUMF revenues from the entire region), while using a second portion of the fee revenues for a secondary system of arterials that serve inter-community trips within a specific subregion or zone (i.e. using TUMF revenues from the communities most directly served by these roads – to some extent, a return-to-source of that portion of the funds). Reflecting the importance of public transit to provide an alternative to highway travel as part of a balanced regional transportation strategy, a third portion of fee revenues was reserved for improvements to regional bus transit services (i.e. using TUMF revenues from the entire region).

Much, but not all, of the new trip-making in each area is generated by residential development (i.e. when people move into new homes, they create new trips on the transportation system as they travel to work, school, shopping or entertainment). Some of the new trips are generated simply by activities associated with new businesses (i.e. new businesses will create new trips through the delivery of goods and services, etc.). Apart from commute trips by residents coming to and from work, and the trips of residents coming to and from new businesses to get goods and services, the travel demands of new businesses are not considered to be directly attributable to residential development. The consideration of different sources of new travel demand is therefore reflected in the concept of assessing both residential and non-residential development for their related transportation impacts.

In summary, the TUMF concept includes the following:

- A uniform fee that is levied on new development throughout Western Riverside County.
- The fee is assessed roughly proportionately on new residential and non-residential development based on the relative impact of each new use on the transportation system.
- A portion of the fee is used to fund capacity improvements on a backbone system of arterial roadways that serve longer-distance trips within the region; a portion of the fee is returned to the subregion or zone in which it was generated to fund capacity improvements on a secondary system of arterial roadways that link the communities in that area; and a portion of the fee is used to fund improvements to regional bus transit services that serve trips between the communities within the region.

4.0 THE TUMF NETWORK

4.1 Identification of the TUMF Roadway Network

An integral element of the initial Nexus Study was the designation of the Western Riverside County Regional System of Highways and Arterials. This network of regionally significant highways represents those arterial and collector highway and roadway facilities that primarily support inter-community trips in Western Riverside County and supplement the regional freeway system. As a result, this system also represents the extents of the network of highways and roadways that would be eligible for TUMF funded improvements. The TUMF Network does **not** include the freeways of Western Riverside County as these facilities primarily serve longer distance inter-regional trips and a significant number of pass-through trips that have no origin or destination in Western Riverside County⁶.

The TUMF Network is the system of roadways that serve inter-community trips within Western Riverside County and therefore are eligible for improvement funding with TUMF funds. The RSHA for Western Riverside County was identified based on several transportation network and performance guidelines as follows:

1. Arterial highway facilities proposed to have a minimum of four lanes at ultimate build-out (not including freeways).
2. Facilities that serve multiple jurisdictions and/or provide connectivity between communities both within and adjoining Western Riverside County.
3. Facilities with forecast traffic volumes exceeding 20,000 vehicles per day in the future horizon year.
4. Facilities with forecast volume to capacity ratio of 0.90 (LOS E) or greater in the future horizon year.
5. Facilities that accommodate regional fixed route transit services.
6. Facilities that provide direct access to major commercial, industrial, institutional, recreational or tourist activity centers, and multi-modal transportation facilities (such as airports, railway terminals and transit centers).

Appendix E includes exhibits illustrating the various performance measures assessed during the definition of the RSHA.

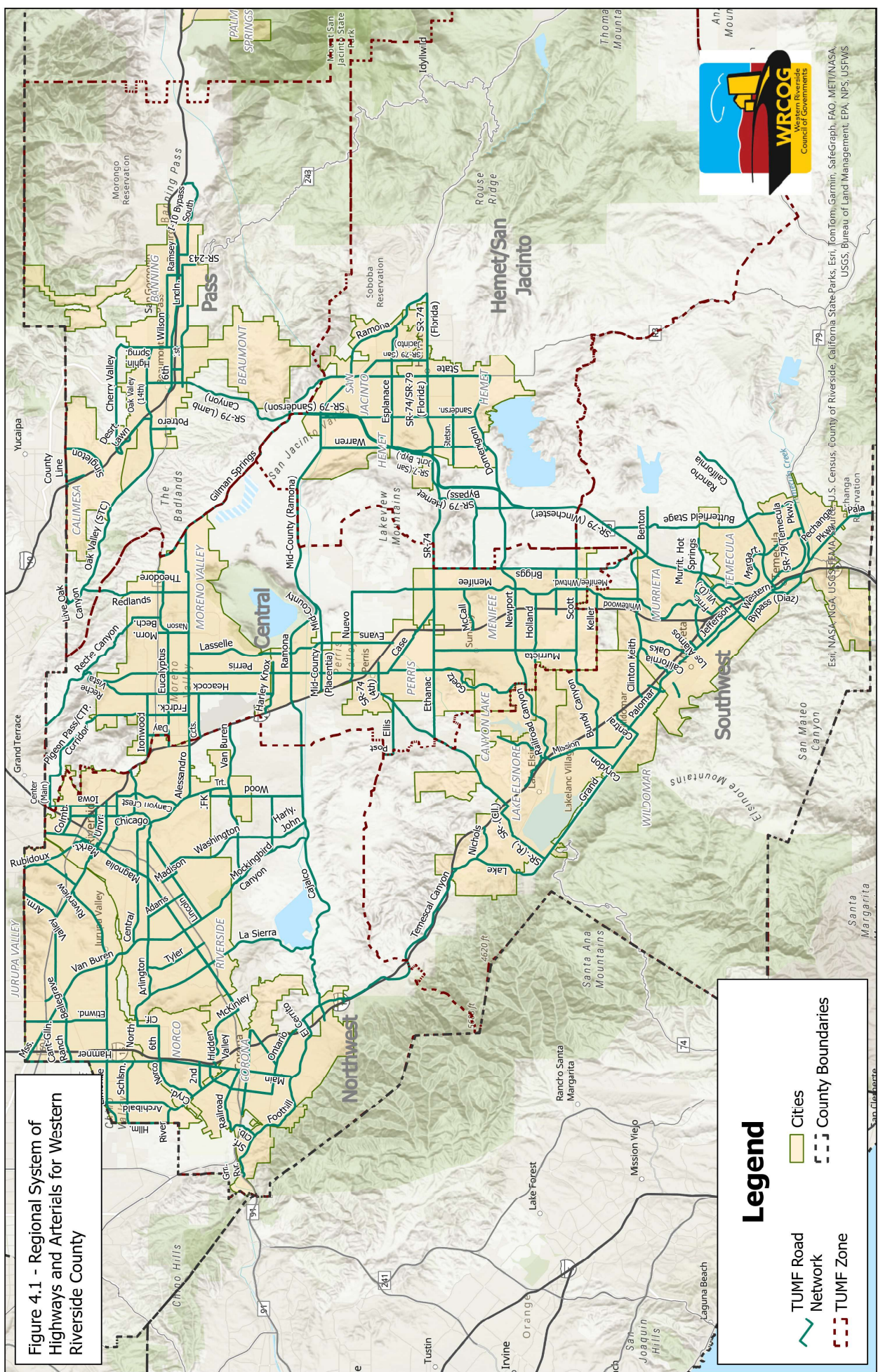
Transportation facilities in Western Riverside County that generally satisfied these guidelines were initially identified, and a skeletal regional transportation framework evolved from facilities where several guidelines were observed. Representatives of all WRCOG constituent jurisdictions reviewed this framework in the context of current local transportation plans to define the TUMF Network, which was subsequently endorsed by

⁶ Since pass-through trips have no origin or destination in Western Riverside County, new development within Western Riverside County cannot be considered responsible for mitigating the impacts of pass-through trips. The impact of pass-through trips and the associated cost to mitigate the impact of pass-through trips (and other inter-regional freeway trips) is addressed in the Riverside County Transportation Commission (RCTC) Western Riverside County Freeway Strategic Plan, Phase II – Detailed Evaluation and Impact Fee Nexus Determination, Final Report dated May 31, 2008.

the WRCOG Public Works Committee, WRCOG Technical Advisory Committee, TUMF Policy Committee and the WRCOG Executive Committee.

The RSHA is illustrated in **Figure 4.1**. As stated previously, the RSHA represents those regional significant highway facilities that primarily serve inter-community trips in Western Riverside County and therefore also represents the extents of the network of highways and roadways that would be eligible for TUMF funded improvements.

The TUMF Network was reviewed as part of the 2024 Nexus Update to ensure facilities generally still met the previously described performance guidelines, and/or that the scope and magnitude of specific improvements to the TUMF Network were roughly proportional to the impacts needing to be mitigated. This review process resulted in the removal of various facilities from the TUMF Network, as well as various changes in the scope and magnitude of specific improvements to the TUMF Network. The resulting TUMF Network used as the basis for this Nexus Update is discussed in **Section 4.3** of this report.



4.2 Backbone Network and Secondary Network

As indicated previously, the TUMF roadway network was refined to distinguish between facilities of “Regional Significance” and facilities of “Zonal Significance.” Facilities of Regional Significance were identified as those that typically are proposed to have a minimum of six lanes at general plan build-out⁷, extend across and/or between multiple Area Planning Districts⁸, and are forecast to carry at least 25,000 vehicles per day in 2045. The Facilities of Regional Significance have been identified as the “backbone” highway network for Western Riverside County. A portion of the TUMF fee is specifically designated for improvement projects on the backbone system. The backbone network is illustrated in **Figure 4.2**.

Facilities of Zonal Significance (the “secondary” network) represent the balance of the RSHA for Western Riverside County. These facilities are typically within one zone and carry comparatively lesser traffic volumes than the backbone highway network, although they are considered significant for circulation within the respective zone. A portion of the TUMF is specifically designated for improvement projects on the secondary network within the zone in which it is collected. The WRCOG APD or zones are illustrated in **Figure 4.3**.

⁷ Although facilities were identified based on the minimum number of lanes anticipated at general plan buildout, in some cases it was determined that there was not sufficient demand for all additional lanes on some facilities until beyond the current timeframe of the TUMF Program (2045). As a result, only a portion of the additional lanes on these facilities have currently been identified for funding with TUMF revenues, reflecting the cumulative impact of new development through the current duration of the TUMF Program.

⁸ Area Planning Districts (APD) are the five aggregations of communities used for regional planning functions within the WRCOG area. Area Planning Districts are interchangeably referred to as TUMF Zones.

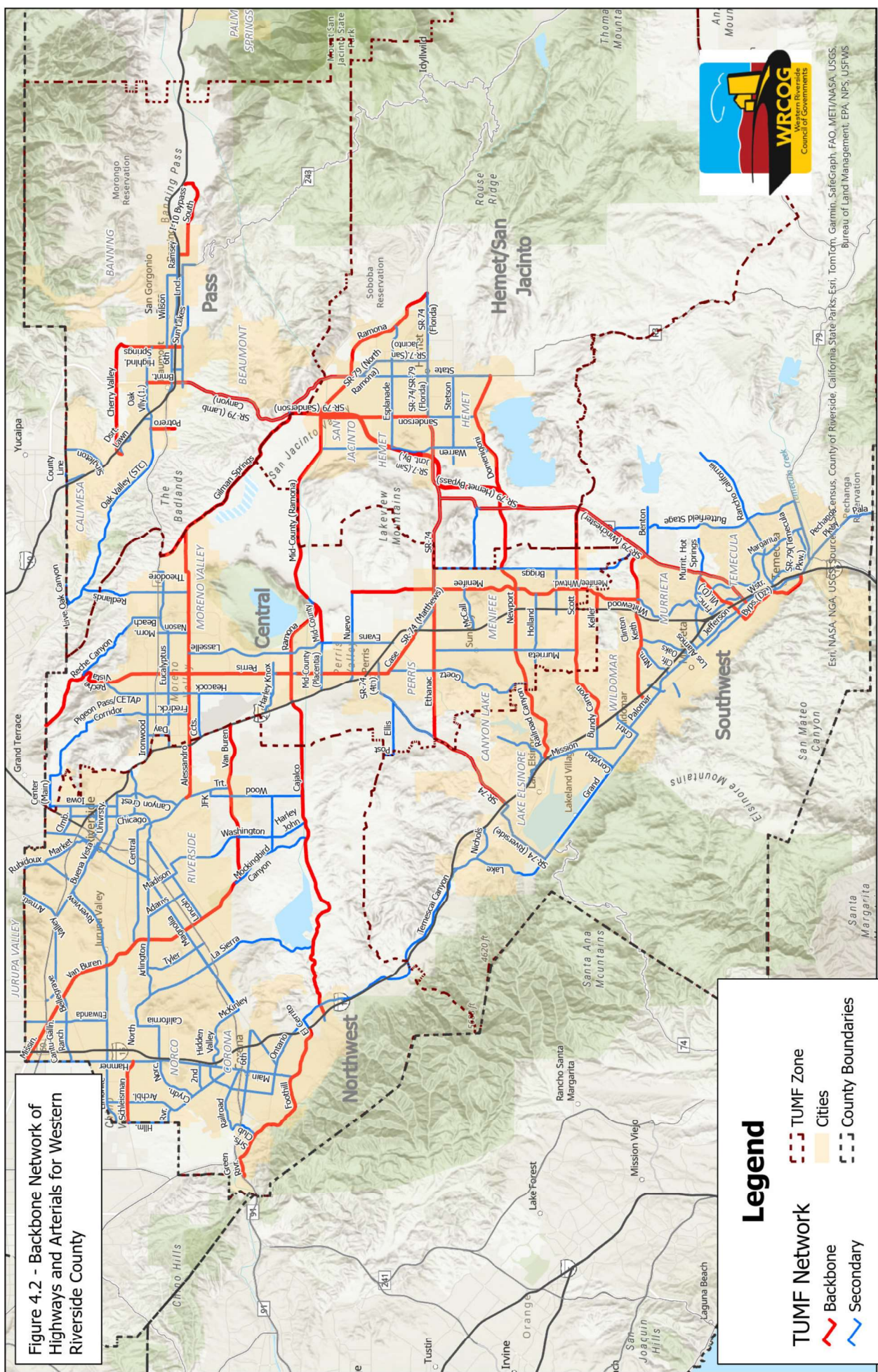
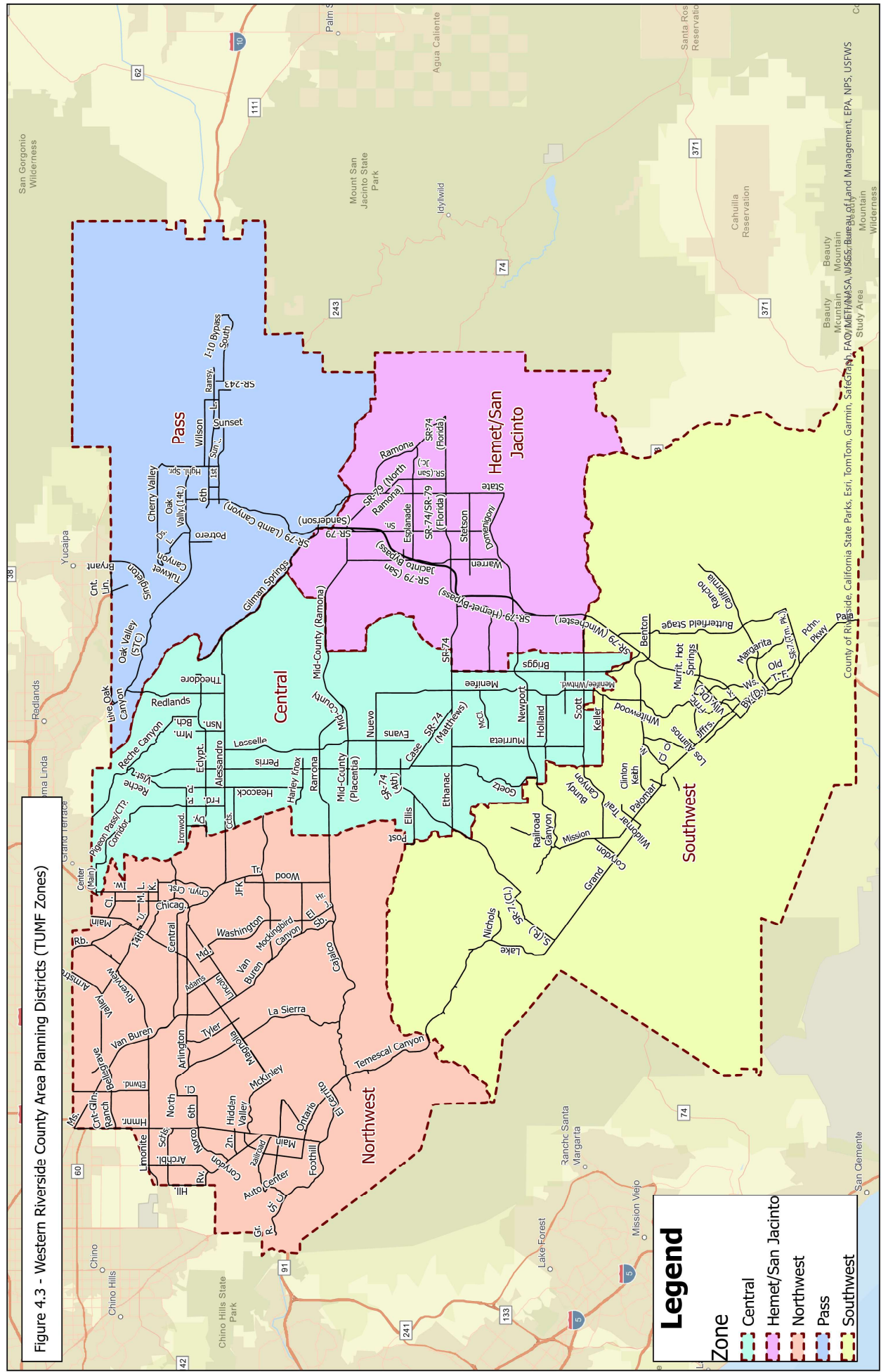


Figure 4.3 - Western Riverside County Area Planning Districts (TUMF Zones)



4.3 Future Roadway Transportation Needs

To calculate a “fair share” fee for new development, it is necessary to estimate the cost of improvements on the TUMF system that will be needed to mitigate the cumulative regional impacts of future transportation demands created by new development. Estimates of the cost to improve the network to mitigate the cumulative impacts of new development were originally developed based on unit costs prepared for the Coachella Valley Association of Governments (CVAG) Regional Arterial Cost Estimate (RACE)⁹, and the WRCOG Southwest District SATISFY 2020 Summary of Cost Estimates¹⁰ (TKC/WRCOG 2000). The RACE cost estimates were developed based on a summary of actual construction costs for projects constructed in Riverside County in 1998.

The initial unit cost estimates for the TUMF (based on inflated RACE cost estimates) were reviewed in the context of the SATISFY 2020 Draft Cost Estimates and were consolidated to provide typical improvement costs for each eligible improvement type. The refinement of unit costs was completed to simplify the process of estimating the cost to improve the entire TUMF network. Based on RACE and SATISFY 2020, consolidated cost estimates included typical per mile or lump sum costs for each of the improvement types eligible under the TUMF Program. The resultant revised unit cost estimates were used as the basis for estimating the cost to complete the necessary improvements to the TUMF network to mitigate the cumulative regional transportation impacts of new development.

Variations in the consolidated cost estimates for specific improvement types were provided to reflect differences in topography and land use across the region. Unit costs for roadway construction were originally varied to account for variations in construction cost (in particular, roadway excavation and embankment cost) associated with construction on level (code 1) rolling (code 2) and mountainous (code 3) terrain, respectively. Right-of-way acquisition costs which originally included consideration for land acquisition, documentation and legal fees, relocation and demolition costs, condemnation compensation requirements, utility relocation, and environmental mitigation costs were also varied to account for variations in right-of-way costs associated with urban (developed commercial/residential mixed uses – code 1), suburban (developed residential uses – code 2) and rural (undeveloped uses – code 3) land uses, respectively. Lump sum costs for interchange improvements were originally varied to account for variations in cost associated with new complex, new standard (or fully reconstructed), or major (or partially reconstructed) or minor (individual ramp improvements) interchange improvements.

As part of the 2024 TUMF Nexus Update, the original unit cost categories were revised to generate entirely new unit cost values based on the most recent available construction cost, labor cost and land acquisition cost values for comparable projects within Riverside County. The recalculation of the TUMF unit cost components was completed

⁹ Parsons Brinckerhoff/Coachella Valley Association of Governments, 1999, Regional Arterial Cost Estimate (RACE)

¹⁰ TKC/Western Riverside Council of Governments, 2000, SATISFY 2020 Summary of Cost Estimates

as part of the 2024 Nexus Update to reflect the effects of significant changes in materials, labor and land acquisition costs including the influences of supply chain disruptions during and following the COVID-19 pandemic, and the elevated rates of inflation prevailing in the past few years. **Appendix F** provides a detailed outline of the assumptions and methodology leading to the revised TUMF unit cost assumptions developed as part of the 2024 Nexus Update. A new category was also added to the cost assumptions to facilitate the use of intelligent transportation systems (ITS) to enhance traffic flows in arterial corridors that require mitigation but cannot accommodate construction of additional lane capacity.

Section 8.5.1 of the Riverside County Integrated Project (RCIP) Multiple Species Habitat Conservation Plan (MSHCP) adopted by the Riverside County Board of Supervisors on June 17, 2003, states that “each new transportation project will contribute to Plan implementation. Historically, these projects have budgeted 3% - 5% of their construction costs to mitigate environmental impacts.” This expectation is reiterated in the Western Riverside County Multiple Species Habitat Conservation Plan Nexus Fee Study Update (Economic & Planning Systems, Inc., October 2020) Section 6 which indicates that “about 44% of the revenue for the program” is expected to be derived from non-fee sources, including “the Measure A sales tax which is authorized through 2039 and other transportation funding sources such as the Transportation Uniform Mitigation Fees (TUMF).” Consistent with the MSHCP Nexus Report, an amount equal to 5% of the construction cost for new TUMF network lanes, bridges and railroad grade separations will be specifically included as part of TUMF Program with revenues to be provided to the Western Riverside County Regional Conservation Authority (RCA) for the acquisition of land identified in the MSHCP. The relevant sections of the MSHCP document and the most recent MSHCP Nexus Report are included in **Appendix F**.

Table 4.1 summarizes the unit cost estimate assumptions used to develop the TUMF network cost estimate as part of the current Nexus Update. **Table 4.1** also includes a comparison of the original TUMF unit cost assumptions and the 2016 Nexus Study unit cost assumptions that demonstrates the significant increases in unit costs observed during recent years. In most cases the unit cost assumptions have more than doubled from those used for the 2016 Nexus Study. Cost estimates are provided in current year values as indicated.

To estimate the cost of improving the regional network to provide for traffic growth from new development, the network characteristics and performance guidelines (outlined in **Section 4.1**) were initially used as a basis for determining the needed improvements. The initial list of improvements was then compared with local General Plan Circulation Elements to ensure that the TUMF network included planned arterial roadways of regional significance. A consolidated list of proposed improvements and the unit cost assumptions were then used to establish an initial estimate of the cost to improve the network to mitigate for future traffic growth associated with new development. This initial list of proposed improvements has since been revised and updated as part of each subsequent Nexus Update to reflect the completion of projects, changing levels of development and associated changes in travel demand and transportation system impacts to be mitigated as part of the TUMF program.

Table 4.1 - Unit Costs for Arterial Highway and Street Construction

Component Type	Original Cost Assumptions as published October 18, 2002	Cost Assumptions per 2016 Nexus Study July 10, 2017	Cost Assumptions per 2024 Nexus Update	Description
Terrain 1	\$550,000	\$692,000	\$1,132,000	Construction cost per lane mile - level terrain
Terrain 2	\$850,000	\$878,000	\$1,740,000	Construction cost per lane mile - rolling terrain
Terrain 3	\$1,150,000	\$1,064,000	\$2,350,000	Construction cost per lane mile - mountainous terrain
Landuse 1	\$900,000	\$2,509,000	\$7,830,000	ROW cost factor per lane mile - urban areas
Landuse 2	\$420,000	\$2,263,000	\$5,440,000	ROW cost factor per lane mile - suburban areas
Landuse 3	\$240,000	\$287,000	\$490,000	ROW cost factor per lane mile - rural areas
Interchange 1	n/a	\$50,032,000	\$84,190,000	Complex new interchange/interchange modification cost
Interchange 2	\$20,000,000	\$25,558,000	\$43,490,000	New interchange/interchange modification total cost
Interchange 3	\$10,000,000	\$12,343,000	\$22,550,000	Major interchange improvement total cost
Bridge 1	\$2,000	\$3,180	\$4,800	Bridge total cost per lane per linear foot
RRXing 1	\$4,500,000	\$6,376,000	\$18,200,000	New Rail Grade Crossing per lane
RRXing 2	\$2,250,000	\$2,733,000	\$6,900,000	Existing Rail Grade Crossing per lane
ITS 1			\$686,400	Infrastructure for ITS of roadway segments per route mile
Planning	10%	10%	10%	Planning, preliminary engineering and environmental assessment costs based on construction cost only
Engineering	25%	25%	25%	Project study report, design, permitting and construction oversight costs based on construction cost only
Contingency	10%	10%	10%	Contingency costs based on total segment cost
Administration		4%	4%	TUMF program administration based on total TUMF eligible network cost
MSHCP		5%	5%	TUMF component of MSHCP based on total TUMF eligible construction cost

As indicated in **Table 2.4** and **Figure 2.4**, the anticipated rate of forecasted growth in Western Riverside County has been reduced by 4% for population, 3% for single-family residential and 31% for employment. This reduced rate of forecasted socioeconomic growth has a commensurate impact on the forecasted daily traffic in the region as demonstrated by the 2016 Nexus Study VMT compared to the 2024 Nexus Update VMT in **Table 4.2**. As shown in the table, the forecast peak period VMT on the TUMF arterial network in the year 2045 as the basis for the 2024 Nexus Update is more than 5% less than the comparable peak period VMT for 2040 used for the 2016 Nexus Study.

Table 4.2 – Forecasted Daily Traffic in Western Riverside County

Measure of Performance	2024 Nexus Update		2016 Nexus Study	
	Peak Period		Peak Period	
	2018 Existing	2045 No-Build	2012 Existing	2040 No-Build
VMT - Total ALL FACILITIES	23,284,724	29,897,254	19,532,437	29,277,587
VMT - FREEWAYS	13,514,522	15,490,284	11,019,155	14,487,570
VMT - ALL ARTERIALS	9,770,202	14,406,970	8,513,282	14,790,016
TOTAL - TUMF ARTERIAL VMT	6,216,985	8,597,200	5,585,202	9,089,495

Source: RivCoM 2018 base network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network as existing in December 2021; RivTAM 2012 network and SCAG 2016 RTP/SCS SED with updated 2015 arterial network completed by WSP, September 2016

As a result of the reduced forecast traffic growth in the region, it is anticipated that the cumulative regional impacts of new development on the arterial highway and transit systems in the region is also reduced necessitating a reduction in the projects identified on the TUMF Network to mitigate the impacts of new development. As part of the 2024 Nexus Update, the list of proposed improvements included in the initial Nexus Study and validated during the subsequent Nexus updates was reviewed for accuracy and, where necessary, amended to remove or modify projects that have changed in need to mitigate impacts based on changes in the patterns of growth and travel demand within the region. Projects completed since the adoption of the 2016 Nexus Update were also removed from the network to reflect the fact that mitigation at these locations is no longer required. The specific network changes were screened by the WRCOG Public Works Committee for consistency with TUMF network guidelines including travel demand and traffic performance.

Based on the findings of the network screening, elements of specific projects were revised to reflect necessary network corrections and modifications to project assumptions. A matrix summarizing the disposition of the requests received as part of the 2024 TUMF Nexus Update was developed and is included in **Appendix G**.

Eligible arterial highway and street improvement types to mitigate the cumulative regional transportation impacts of new development on Network facilities include:

1. Construction of additional Network roadway lanes
2. Construction of new Network roadway segments
3. Expansion of existing Network bridge structures
4. Construction of new Network bridge structures
5. Expansion of existing Network interchanges with freeways
6. Construction of new Network interchanges with freeways
7. Grade separation of existing Network at-grade railroad crossings
8. Installation of ITS along Network roadway segments

All eligible improvement types, except for ITS, provide additional capacity to Network facilities to accommodate future traffic growth generated by new development in Western Riverside County. ITS provides the ability to improve traffic flows along corridors

where capacity expansion is not possible. Following the comprehensive update of the TUMF Program, the estimated total cost to improve the RSHA for Western Riverside County is \$4.84 billion with this cost including all arterial highway and street planning, engineering, design, right-of-way acquisition and capital construction costs, but not including transit, MSHCP or program administration costs that will be subsequently described. It should be noted that the full cost to improve the TUMF Network cannot be entirely attributed to new development and must be adjusted to account for the previous obligation of other funds to complete necessary improvements and unfunded existing needs. **Sections 4.5 and 4.6** describe the adjustments to the total TUMF Network improvement need to account for existing needs and obligated funds.

In addition to the arterial highway and street improvement costs indicated above, the TUMF Nexus Update included specific consideration for the TUMF Program obligation to the MSHCP program to mitigate the impact of TUMF network improvements on species and habitat within Western Riverside County. The TUMF obligation to MSHCP was calculated at a rate of 5% of the total construction (capital) cost of new lane segments, bridges and railroad grade separations on the TUMF Network. The total obligation to the MSHCP as indicated in the TUMF Network cost fee table is approximately \$64.6 million, although the total obligation specific to the TUMF program is reduced to account for MSHCP obligations associated with improvements addressing existing needs and therefore excluded from TUMF.

The TUMF 2024 Nexus Update similarly includes specific consideration of the costs associated with WRCOG administration of the TUMF Program. The average cost for WRCOG to administer the TUMF Program was calculated at a rate of 4% of the total eligible cost of new lane segments (including interchanges, bridges and railroad grade separations) on the TUMF Network and new transit services. Administration costs incurred by WRCOG include direct salary, fringe benefit and overhead costs for WRCOG staff assigned to administer the program and support participating jurisdictions, and costs for consultant, legal and auditing services to support the implementation of the TUMF program. The total cost for WRCOG administration of the TUMF Program as indicated in the TUMF Network cost fee table is approximately \$161.2 million.

The detailed TUMF network cost calculations are provided in **Section 4.7**, including each of the individual segments and cost components considered as part of the TUMF Program, and the maximum eligible TUMF share for each segment following adjustments for obligated funding and unfunded existing needs as described in subsequent sections.

4.4 Public Transportation Component of the TUMF System

In addition to the roadway network, public transportation plays a key role in serving future travel demand in the region. Public transportation serving inter-community trips is generally provided in the form of public bus transit services and in particular express bus or other high frequency services between strategically located community transit centers. In Western Riverside County, these bus transit services are typically provided by

RTA. Transit needs to serve future regional travel in Western Riverside County via bus transit include vehicle acquisitions, transit centers, express bus stop upgrades, maintenance facilities and other associated capital improvements to develop express bus or other high frequency inter-community transit bus services within the region. Metrolink commuter rail service improvements were not included in the TUMF Program as they typically serve longer inter-regional commute trips equivalent to freeway trips on the inter-regional highway system.

The network of regionally significant bus transit services represents those express bus and other high frequency transit bus services that primarily support inter-community trips in Western Riverside County and supplement the regional highway system and inter-regional commuter rail services. As a result, this portion of the bus transit system also represents the extents of the network of bus services that would be eligible for TUMF funded improvements.

The TUMF Bus Transit Network is the system of bus services that serve inter-community trips within Western Riverside County and therefore are eligible for improvement funding with TUMF funds. The Bus Transit Network for Western Riverside County was identified based on several transit network and performance guidelines as follows:

1. Bus transit routes (or corridors comprised of multiple overlapping routes) proposed to have a frequency of greater than three buses per direction during peak hours at ultimate build out.
2. Routes or corridors that serve multiple jurisdictions and/or provide connectivity between communities, both within and adjoining western Riverside County.
3. Routes or corridors with forecast weekday bus ridership in excess of 1,000 person trips per day by 2040.
4. Routes or corridors that are proposed to provide timed interconnections with at least four other routes or corridors at ultimate build out.
5. Routes or corridors that utilize the majority of travel along the TUMF RSHA.
6. Routes or corridors that provide direct access to areas of forecast population and employment growth, major commercial, industrial, institutional, recreational or tourist activity centers, and multi-modal transportation facilities (such as airports, railway terminals and transit centers).

Express bus routes and other high-frequency bus transit routes and corridors in Western Riverside County that generally satisfied the respective guidelines were identified by RTA. Updated cost estimates for improving the infrastructure serving public transportation, including construction of transit centers and transfer facilities, express bus stop upgrades, and capital improvements needed to develop express bus and other high frequency bus transit service within the region were also provided by RTA. The updated transit unit cost data provided by RTA are shown in **Table 4.3**.

Table 4.3 - Unit Costs for Transit Capital Expenditures

Component Type*	Original Cost Assumptions as published October 18, 2002	Cost Assumptions per 2016 Nexus Study July 10, 2017	Cost Assumptions per 2024 Nexus Update	Description
Transit Center 1		\$6,000,000	\$7,465,000	Relocation/expansion of existing Regional Transit Center with up to 14 bus bays and park and ride
Transit Center 2	\$6,000,000	\$9,000,000	\$11,195,000	New Regional Transit Center with up to 14 bus bays and park and ride
Transfer Facility		\$1,000,000	\$1,245,000	Multiple route transfer hub
O & M Facility		\$50,000,000	\$62,186,000	Regional Operations and Maintenance Facility
Green Technology			\$100,000	ZEB technology enhancements
Bus Stop	\$10,000	\$40,000	\$50,000	Bus Stop Amenities Upgrade on TUMF Network
BRT Service Capital	\$540,000	\$60,000	\$75,000	BRT/Limited Stop Service Capital (per stop**)
Vehicle Fleet 1***			\$160,000	Small Sized Bus/Van Contract Operated
Vehicle Fleet 2		\$155,000	\$300,000	Medium Sized Bus Contract Operated
Vehicle Fleet 3	\$325,125	\$585,000	\$1,271,000	Large Sized Bus Directly Operated
COA Study		\$950,000	\$1,150,000	Comprehensive Operational Analysis Study component of Nexus Study Update

* Transit Cost Component Types were restructured as part of the 2016 Nexus Update in accordance with the RTA Comprehensive Operational Analysis (January 2015)

** BRT Service Capital Cost Assumption was based on a per mile unit prior to the 2016 Nexus Update. 2016 Nexus Update uses a per stop unit cost for BRT Service Capital

*** Vehicle Fleet component was restructured as part of the 2024 Nexus Update with the inclusion of Small Sized Bus/Van Contract Operated as Vehicle Fleet 1 and subsequent renumbering of Vehicle Fleet 2 and 3, respectively

The estimated total cost for future RTA bus transit services to accommodate forecast transit demand is approximately \$217.9 million with this cost including all planning, engineering, design and capital improvement costs. Detailed transit component cost estimates are included in **Section 4.7**. The full cost to improve RTA bus transit services cannot be entirely attributed to new development and must be adjusted to account for existing needs. **Section 4.6** describes the adjustments to the total transit cost to account for existing needs.

4.5 Existing Obligated Funding

For some of the facilities identified in the TUMF network, existing obligated funding has previously been secured through traditional funding sources to complete necessary improvements. Since funding has been obligated to provide for the completion of needed improvements to the TUMF system, the funded cost of these improvements will not be recaptured from future developments through the TUMF Program. As a result, the TUMF network cost was adjusted accordingly to reflect the availability of obligated funds.

To determine the availability of obligated funds, WRCOG staff, in conjunction with RCTC staff, completed a review of the current Federal Transportation improvement Program (FTIP) to identify TUMF eligible projects that were also programmed to receive funding from alternate sources. A table summarizing the obligated funds for segments of the TUMF network is included in **Appendix H**. A total of \$382.9 million in obligated funding was identified for improvements to the TUMF system. The estimated total TUMF network project cost was subsequently reduced by this amount.

4.6 Unfunded Existing Improvement Needs

A review of the existing traffic conditions on the TUMF network (as presented in **Table 3.1**) indicates that some segments of the roadways on the TUMF system currently experience congestion and operate at unacceptable levels of service. In addition, demand for inter-community transit service already exists and future utilization of proposed inter-community transit services will partially satisfy this existing demand. The need to improve these portions of the system is generated, at least in part, by existing demand, rather than solely the cumulative regional impacts of future new development, so future new development cannot be assessed for the equivalent cost share of improvements providing for this existing need.

To account for existing need in the TUMF Network, the cost for facilities identified as currently experiencing LOS E or F was adjusted. This was done by identifying the portion of any segment of the TUMF Network with a volume to capacity (v/c) ratio of greater than 0.9 (the threshold for LOS E) in the RivCoM 2018 Existing scenario and extracting the share of the overall facility cost to improve that portion. This cost adjustment provides for the mitigation of incremental traffic growth on those TUMF segments with an existing high level of congestion. The following approach was applied to account for incremental traffic growth associated with new development as part of the existing need methodology:

1. Facilities with an existing need were identified by reviewing the RivCoM 2018 Existing scenario assigned traffic on the 2021 existing network and delineating

those facilities included on the TUMF Cost Fee Summary Table that have an average directional v/c exceeding 0.90¹¹.

- a. Weighted directional v/c values were used to determine existing need for network segments, which was calculated by:
 - i. Determining the length for the portion of each segment (model link), and calculating the ratio of link length to the overall segment length
 - ii. Generating the average directional v/c for each link, for both directions in AM and PM periods, and multiplying by link/segment length ratio
 - iii. Determining the maximum peak-period peak-direction v/c for each link, representing the highest directional v/c in either AM or PM
 - iv. Calculating weighted average v/c for each TUMF segment, based on the sum of all weighted max v/c values of each link within a segment
 - b. A similar method was used to determine existing need for spot improvements including interchanges, railroad crossings and bridges. However, no weighting was used in the calculation of existing need for spot improvements. For these facilities, the peak-period peak-direction v/c values (highest directional v/c in either AM or PM) were utilized in the existing need calculation. This was based on the individual link within a network segment where a bridge or railroad crossing is located, or on- and off-ramps in the case of interchanges.
2. Initial costs of addressing the existing need were calculated by estimating the share of a particular roadway segments "new lane" cost, or individual spot improvement cost (including all associated ROW and soft costs).
 3. Incremental growth in v/c was determined by comparing the average directional existing year v/c for the TUMF facilities (delineated under step one) with the horizon year v/c for the corresponding segments and spot improvements calculated based on the RivCoM 2045 No-Build scenario assigned traffic on the 2021 existing network using the same methodology as the existing year v/c.

¹¹ The RivCoM 2021 Existing Network used for the TUMF Nexus Study analyses reflects the RivCoM 2018 base year network augmented to include highways facilities on the TUMF Network as they existed in December 2021. A second version of the base network was also developed adding only those facilities that had been identified on the 2016 TUMF Nexus study 2040 Build scenario that did not currently exist in December 2021 and therefore were not represented by a link(s) in the RivCoM base network. The Supplemental 2021 Existing Network was utilized as the basis for determining existing and future v/c for only those projects that did not currently exist on the 2021 TUMF Network.

4. The proportion of the incremental growth attributable to new development was determined by dividing the result of step three with the total 2045 No-Build scenario v/c exceeding LOS E.
5. For those segments experiencing a net increase in v/c over the base year, TUMF will 'discount' the cost of existing need improvements by the proportion of the incremental v/c growth through 2045 No-Build compared to the 2018 Baseline v/c (up to a maximum of 100%).

The unfunded cost of existing highway improvement needs (including the related MSHCP obligation) totals \$582.6 million. **Appendix H** includes a detailed breakdown of the existing highway improvement needs on the TUMF network, including the associated unfunded improvement cost estimate for each segment and spot improvement experiencing unacceptable LOS.

For transit service improvements, the cost to provide for existing demand was determined by multiplying the total transit component cost by the share of future transit trips representing existing demand. The cost of existing transit service improvement needs is \$63.0 million representing 28.9% of the TUMF transit component. **Appendix H** includes tables reflecting the calculation of the existing transit need share and the existing transit need cost.

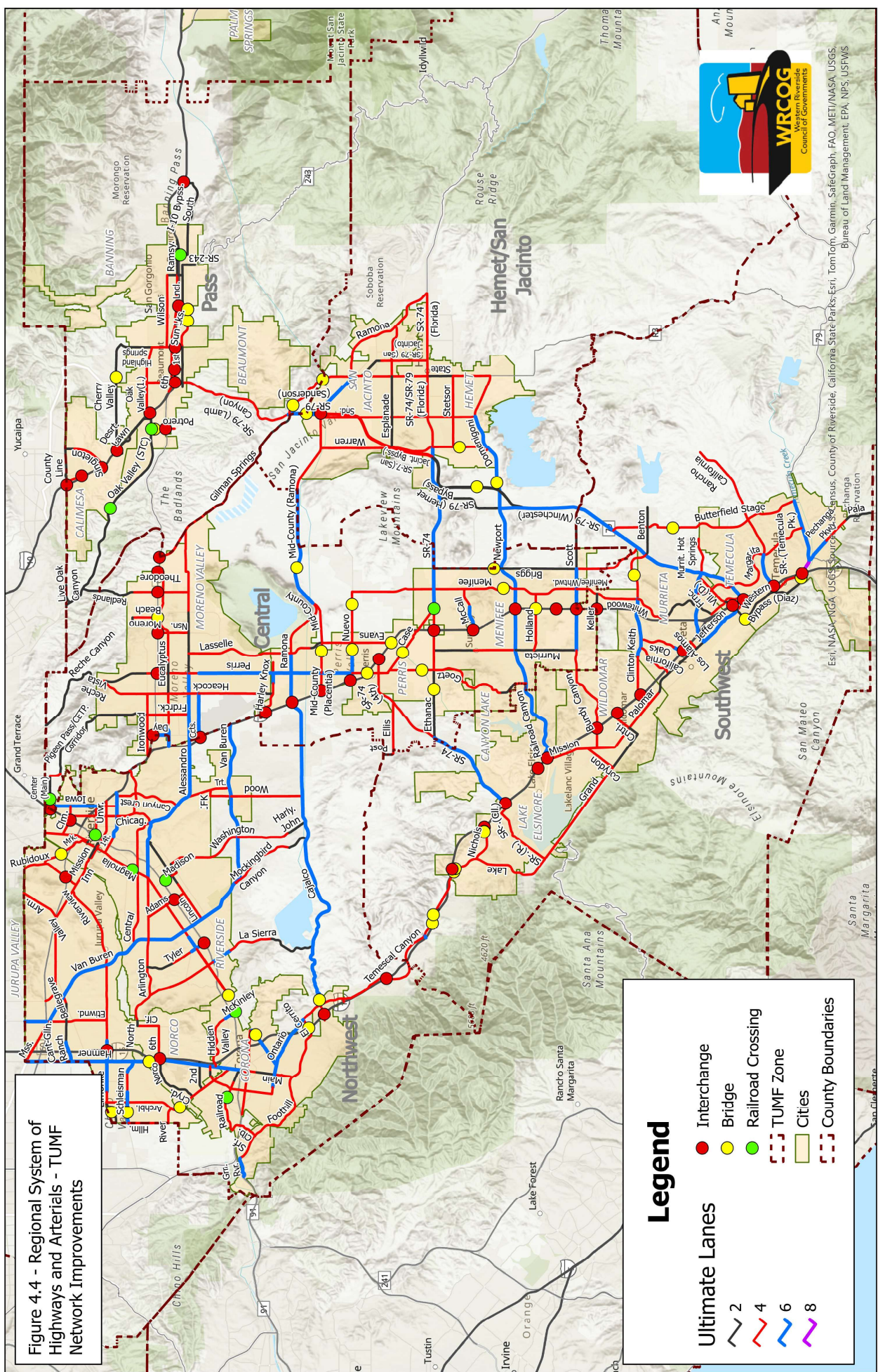
4.7 Maximum TUMF Eligible Cost

A total of \$382.9 million in obligated funding was identified for improvements to the TUMF system. Since these improvements are already funded with other available revenue sources, the funded portion of these projects cannot also be funded with TUMF revenues. Furthermore, the total cost of the unfunded existing improvement need is \$646.9 million. These improvements are needed to mitigate existing transportation deficiencies and therefore their costs cannot be assigned to new development through TUMF.

Based on the estimated costs described in **Sections 4.3** and **4.4**, the total value to complete the identified TUMF network and transit improvements, and administer the program is \$5.28 billion. Having accounted for obligated funds and unfunded existing needs as described in **Sections 4.5** and **4.6**, respectively, the estimated maximum eligible value of the TUMF Program is \$4.24 billion. The maximum eligible value of the TUMF Program includes approximately \$3.87 billion in eligible arterial highway and street related improvements and \$154.8 million in eligible transit related improvements. An additional \$53.9 million is eligible as part of the TUMF Program to mitigate the impact of eligible TUMF related arterial highway and street projects on critical native species and wildlife habitat, while \$161.2 million is provided to cover the costs incurred by WRCOG to administer the TUMF Program.

Figure 4.4 illustrates the various improvements to the RSHA included as part of the TUMF network cost calculation. **Table 4.4** summarizes the TUMF network cost calculations for each of the individual segments. This table also identifies the maximum eligible TUMF share for each segment having accounted for obligated funding and unfunded

existing need. A detailed breakdown of the individual cost components and values for the various TUMF Network segments is included in **Appendix H. Table 4.5** outlines the detailed transit component cost estimates. It should be noted that the detailed cost tables (and fee levels) are subject to regular review and updating by WRCOG and therefore WRCOG should be contacted directly to obtain the most recently adopted version of these tables (and to confirm the corresponding fee level).



WRCOG
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ESRI, NASA, NOAA, USGS, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

Table 4.4 - TUMF Network Cost Estimates

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Central			Menifee	Ethanac	Goetz	Murrieta	\$0	\$0
Central			Menifee	Ethanac	Murrieta	I-215	\$0	\$0
Central			Menifee	Ethanac	I-215	interchange	\$32,698,000	\$32,698,000
Central			Menifee	Ethanac	Sherman	Matthews	\$2,674,000	\$2,674,000
Central			Menifee	Ethanac	BNSF San Jacinto Branch	railroad crossing	\$105,560,000	\$105,560,000
Central			Menifee	Menifee	SR-74 (Pinacate)	Simpson	\$1,307,000	\$1,307,000
Central			Menifee	Menifee	Salt Creek	bridge	\$4,384,000	\$4,384,000
Central			Menifee	Menifee	Simpson	Aldergate	\$0	\$0
Central			Menifee	Menifee	Aldergate	Newport	\$0	\$0
Central			Menifee	Menifee	Newport	Holland	\$0	\$0
Central			Menifee	Menifee	Holland	Garbani	\$0	\$0
Central			Menifee	Menifee	Garbani	Scott	\$4,353,000	\$4,353,000
Central			Menifee	Menifee/Whitewood	Scott	Murrieta City Limit	\$0	\$0
Central			Menifee	Newport	Goetz	Murrieta	\$0	\$0
Central			Menifee	Newport	Murrieta	I-215	\$1,130,000	\$1,130,000
Central			Menifee	Newport	I-215	Menifee	\$0	\$0
Central			Menifee	Newport	Menifee	Lindenberger	\$0	\$0
Central			Menifee	Newport	Lindenberger	SR-79 (Winchester)	\$0	\$0
Central			Menifee	Scott	I-215	Briggs	\$8,635,000	\$8,635,000
Central			Menifee	Scott	I-215	interchange	\$0	\$0
Central			Menifee	Scott	Sunset	Murrieta	\$4,388,000	\$4,388,000
Central			Menifee	Scott	Murrieta	I-215	\$16,949,000	\$12,949,000
Central			Menifee	SR-74	Matthews	Briggs	\$8,254,000	\$8,254,000
Central			Moreno Valley	Alessandro	I-215	Perris	\$13,420,000	\$13,420,000
Central			Moreno Valley	Alessandro	Perris	Nason	\$0	\$0
Central			Moreno Valley	Alessandro	Nason	Moreno Beach	\$0	\$0
Central			Moreno Valley	Alessandro	Moreno Beach	Gilman Springs	\$18,019,000	\$18,019,000
Central			Moreno Valley	Gilman Springs	SR-60	Alessandro	\$7,291,000	\$7,291,000
Central			Moreno Valley	Gilman Springs	SR-60	interchange	\$0	\$0
Central			Moreno Valley	Perris	Reche Vista	Ironwood	\$0	\$0
Central			Moreno Valley	Perris	Ironwood	Sunnymead	\$0	\$0
Central			Moreno Valley	Perris	SR-60	interchange	\$32,698,000	\$11,192,000
Central			Moreno Valley	Perris	Sunnymead	Cactus	\$0	\$0
Central			Moreno Valley	Perris	Cactus	Harley Knox	\$0	\$0
Central			Moreno Valley	Reche Vista	Country	Heacock	\$7,486,000	\$3,799,000
Central			Perris	11th/Case	Perris	Goetz	\$4,582,000	\$4,582,000
Central			Perris	Case	Goetz	I-215	\$20,876,000	\$20,876,000
Central			Perris	Case	San Jacinto River	bridge	\$1,740,000	\$1,235,000
Central			Perris	Ethanac	Keystone	Goetz	\$6,056,000	\$6,056,000
Central			Perris	Ethanac	San Jacinto River	bridge	\$5,568,000	\$5,568,000
Central			Perris	Ethanac	I-215	Sherman	\$5,316,000	\$5,316,000
Central			Perris	Goetz	Case	Ethanac	\$1,507,000	\$999,000
Central			Perris	Goetz	San Jacinto River	bridge	\$5,568,000	\$3,398,000
Central			Perris	Mid-County (Placentia)	I-215	Perris	\$15,655,000	\$15,655,000
Central			Perris	Mid-County (Placentia)	I-215	interchange	\$0	\$0
Central			Perris	Mid-County (Placentia)	Perris	Evans	\$22,985,000	\$22,985,000
Central			Perris	Mid-County (Placentia)	Perris Valley Storm Channel	bridge	\$8,352,000	\$8,352,000
Central			Perris	Perris	Harley Knox	Ramona	\$0	\$0
Central			Perris	Perris	Ramona	Citrus	\$7,063,000	\$7,063,000
Central			Perris	Perris	Citrus	Nuevo	\$0	\$0
Central			Perris	Perris	Nuevo	11th	\$6,927,000	\$6,927,000
Central			Perris	Perris	I-215 overcrossing	bridge	\$0	\$0
Central			Perris	Ramona	I-215	Perris	\$5,039,000	\$5,039,000
Central			Perris	Ramona	I-215	interchange	\$32,698,000	\$7,725,000
Central			Perris	Ramona	Perris	Evans	\$0	\$0
Central			Perris	Ramona	Evans	Mid-County (2,800 ft E of Rider)	\$0	\$0
Central			Perris	SR-74 (4th)	Ellis	I-215	\$0	\$0
Central			Unincorporated	Ethanac	SR-74	Keystone	\$4,666,000	\$4,666,000
Central			Unincorporated	Gilman Springs	Alessandro	Bridge Road	\$30,601,000	\$30,601,000
Central			Unincorporated	Menifee	Nuevo	SR-74 (Pinacate)	\$16,684,000	\$16,684,000
Central			Unincorporated	Mid-County	Evans	Ramona (2,800 ft E of Rider)	\$12,156,000	\$12,156,000
Central			Unincorporated	Mid-County (Ramona)	Ramona (2,800 ft E of Rider)	Pico Avenue	\$0	\$0
Central			Unincorporated	Mid-County (Ramona)	Pico Avenue	Bridge Road	\$47,769,000	\$47,769,000
Central			Unincorporated	Mid-County (Ramona)	San Jacinto River	bridge	\$36,192,000	\$36,192,000
Central			Unincorporated	Reche Canyon	San Bernardino County	Reche Vista	\$0	\$0
Central			Unincorporated	Reche Canyon	Reche Canyon	Country	\$0	\$0
Central			Unincorporated	Scott	Briggs	SR-79 (Winchester)	\$0	\$0
Central			Unincorporated	SR-74	Ethanac	Ellis	\$0	\$0
Northwest			Corona	Cajalco	I-15	Temescal Canyon	\$0	\$0
Northwest			Corona	Cajalco	I-15	interchange	\$0	\$0
Northwest			Corona	Foothill	Paseo Grande	Lincoln	\$0	\$0
Northwest			Corona	Foothill	Wardlow Wash	bridge	\$0	\$0
Northwest			Corona	Foothill	Lincoln	California	\$0	\$0
Northwest			Corona	Foothill	California	I-15	\$0	\$0
Northwest			Corona	Green River	SR-91	Dominguez Ranch	\$0	\$0
Northwest			Corona	Green River	Dominguez Ranch	Palisades	\$0	\$0
Northwest			Corona	Green River	Palisades	Paseo Grande	\$0	\$0
Northwest			Eastvale	Schleisman	San Bernardino County	600' e/o Cucamonga Creek	\$648,000	\$648,000
Northwest			Eastvale	Schleisman	Cucamonga Creek	bridge	\$0	\$0
Northwest			Eastvale	Schleisman	600' e/o Cucamonga Creek	Harrison	\$866,000	\$866,000
Northwest			Eastvale	Schleisman	Harrison	Sumner	\$488,000	\$488,000
Northwest			Eastvale	Schleisman	Sumner	Scholar	\$7,625,000	\$7,625,000
Northwest			Eastvale	Schleisman	Scholar	A Street	\$119,000	\$119,000
Northwest			Eastvale	Schleisman	A Street	Hamner	\$209,000	\$209,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Northwest			Jurupa Valley	Van Buren	SR-60	Bellegrave	\$23,928,000	\$10,461,000
Northwest			Jurupa Valley	Van Buren	Bellegrave	Santa Ana River	\$60,900,000	\$0
Northwest			Riverside	Alessandro	Arlington	Trautwein	\$2,410,000	\$2,410,000
Northwest			Riverside	Arlington	La Sierra	Magnolia	\$0	\$0
Northwest			Riverside	Arlington	Magnolia	Alessandro	\$46,465,000	\$46,465,000
Northwest			Riverside	Van Buren	Santa Ana River	SR-91	\$5,230,000	\$4,392,000
Northwest			Riverside	Van Buren	SR-91	Mockingbird Canyon	\$39,493,000	\$21,292,000
Northwest			Riverside	Van Buren	Wood	Trautwein	\$0	\$0
Northwest			Riverside	Van Buren	Trautwein	Orange Terrace	\$7,574,000	\$7,574,000
Northwest			Unincorporated	Alessandro	Trautwein	Vista Grande	\$0	\$0
Northwest			Unincorporated	Alessandro	Vista Grande	I-215	\$0	\$0
Northwest			Unincorporated	Cajalco	El Sobrante	Harley John	\$10,580,000	\$9,817,000
Northwest			Unincorporated	Cajalco	Harley John	Harvil	\$166,492,000	\$166,492,000
Northwest			Unincorporated	Cajalco	Harvil	I-215	\$1,238,000	\$1,238,000
Northwest			Unincorporated	Cajalco	Temescal Canyon	La Sierra	\$49,596,000	\$35,953,000
Northwest			Unincorporated	Cajalco	Temescal Wash	bridge	\$4,872,000	\$1,907,000
Northwest			Unincorporated	Cajalco	La Sierra	El Sobrante	\$96,453,000	\$96,453,000
Northwest			Unincorporated	Van Buren	Mockingbird Canyon	Wood	\$67,429,000	\$67,429,000
Northwest			Unincorporated	Van Buren	Orange Terrace	I-215	\$0	\$0
Pass			Banning	Highland Springs	Wilson (8th)	Sun Lakes	\$0	\$0
Pass			Banning	Highland Springs	I-10	interchange	\$63,061,000	\$32,516,000
Pass			Banning	Highland Springs	Oak Valley (14th)	Wilson (8th)	\$0	\$0
Pass			Banning	Highland Springs	Cherry Valley	Oak Valley (14th)	\$0	\$0
Pass			Banning	I-10 Bypass South	I-10	Morongo Trail (Apache Trail)	\$50,110,000	\$50,110,000
Pass			Banning	I-10 Bypass South	I-10	interchange	\$63,061,000	\$63,061,000
Pass			Banning	I-10 Bypass South	San Gorgonio	bridge	\$4,176,000	\$4,176,000
Pass			Banning	I-10 Bypass South	UP/Hargrave	railroad crossing	\$52,780,000	\$52,780,000
Pass			Beaumont	Beaumont	Oak Valley (14th)	I-10	\$0	\$0
Pass			Beaumont	Patrero	Oak Valley (San Timoteo Canyon)	SR-60	\$1,100,000	\$1,100,000
Pass			Beaumont	Patrero	SR-60	interchange	\$63,061,000	\$29,561,000
Pass			Beaumont	Patrero	UP	railroad crossing	\$40,020,000	\$40,020,000
Pass			Beaumont	Patrero	Noble Creek	bridge	\$0	\$0
Pass			Beaumont	Patrero	SR-60	4th	\$0	\$0
Pass			Beaumont	SR-79 (Beaumont)	I-10	California	\$0	\$0
Pass			Beaumont	SR-79 (Beaumont)	I-10	interchange	\$63,061,000	\$7,408,000
Pass			Calimesa	Cherry Valley	I-10	interchange	\$63,061,000	\$59,773,000
Pass			Calimesa	Cherry Valley	Roberts St	Roberts Rd	\$3,053,000	\$3,053,000
Pass			Unincorporated	Cherry Valley	Bellflower	Noble	\$6,411,000	\$6,411,000
Pass			Unincorporated	Cherry Valley	Highland Springs	Bellflower	\$0	\$0
Pass			Unincorporated	Cherry Valley	Noble	Roberts St	\$0	\$0
Pass			Unincorporated	Cherry Valley	San Timoteo Wash	bridge	\$0	\$0
Pass			Unincorporated	SR-79 (Lamb Canyon)	California	Gilman Springs	\$0	\$0
San Jacinto			Hemet	Domenigoni	Warren	Sanderson	\$7,726,000	\$7,726,000
San Jacinto			Hemet	Domenigoni	Sanderson	State	\$0	\$0
San Jacinto			Hemet	SR-74	Winchester	Warren	\$35,208,000	\$35,208,000
San Jacinto			San Jacinto	Mid-County (Ramona)	Warren	Sanderson	\$0	\$0
San Jacinto			San Jacinto	Mid-County (Ramona)	Sanderson/SR-79 (Hemet Bypass)	interchange	\$0	\$0
San Jacinto			San Jacinto	Ramona	Sanderson	State	\$0	\$0
San Jacinto			San Jacinto	Ramona	State	Main	\$0	\$0
San Jacinto			San Jacinto	Ramona	Main	Cedar	\$31,518,000	\$26,928,000
San Jacinto			San Jacinto	Ramona	Cedar	SR-74	\$0	\$0
San Jacinto			Unincorporated	Domenigoni	SR-79 (Winchester)	Warren	\$13,508,000	\$13,508,000
San Jacinto			Unincorporated	Domenigoni	San Diego Aqueduct	bridge	\$4,176,000	\$4,176,000
San Jacinto			Unincorporated	Gilman Springs	Bridge	Sanderson	\$0	\$0
San Jacinto			Unincorporated	Mid-County (Ramona)	Bridge	Warren	\$9,221,000	\$9,221,000
San Jacinto			Unincorporated	SR-74	Briggs	SR-79 (Winchester)	\$15,417,000	\$15,417,000
San Jacinto			Unincorporated	SR-79 (Hemet Bypass)	SR-74 (Florida)	Domenigoni	\$13,901,000	\$13,901,000
San Jacinto			Unincorporated	SR-79 (Hemet Bypass)	San Diego Aqueduct	bridge	\$4,176,000	\$4,176,000
San Jacinto			Unincorporated	SR-79 (Hemet Bypass)	Domenigoni	Winchester	\$6,542,000	\$6,542,000
San Jacinto			Unincorporated	SR-79 (San Jacinto Bypass)	Mid-County (Ramona)	SR-74 (Florida)	\$56,690,000	\$56,690,000
San Jacinto			Unincorporated	SR-79 (Sanderson)	Gilman Springs	Ramona	\$6,899,000	\$2,555,000
San Jacinto			Unincorporated	SR-79 (Sanderson)	San Jacinto River	bridge	\$19,488,000	\$7,651,000
San Jacinto			Unincorporated	SR-79 (Winchester)	Domenigoni	Keller	\$65,022,000	\$65,022,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Southwest			Canyon Lake	Goetz	Railroad Canyon	Newport	\$0	\$0
Southwest			Canyon Lake	Railroad Canyon	Canyon Hills	Goetz	\$0	\$0
Southwest			Lake Elsinore	Railroad Canyon	I-15	Canyon Hills	\$0	\$0
Southwest			Lake Elsinore	Railroad Canyon	I-15	interchange	\$0	\$0
Southwest			Lake Elsinore	SR-74	I-15	interchange	\$63,061,000	\$24,162,000
Southwest			Murrieta	Clinton Keith	Copper Craft	Toulon	\$0	\$0
Southwest			Murrieta	Clinton Keith	Toulon	I-215	\$2,076,000	\$2,076,000
Southwest			Murrieta	Clinton Keith	I-215	Whitewood	\$0	\$0
Southwest			Murrieta	French Valley (Date)	Murrieta Hot Springs	Winchester Creek	\$7,321,000	\$7,321,000
Southwest			Murrieta	French Valley (Date)	Winchester Creek	Margarita	\$0	\$0
Southwest			Murrieta	Whitewood	Menifee City Limit	Keller	\$0	\$0
Southwest			Murrieta	Whitewood	Keller	Clinton Keith	\$0	\$0
Southwest			Temecula	French Valley (Cherry)	Jefferson	Diaz	\$3,929,000	\$3,929,000
Southwest			Temecula	French Valley (Cherry)	Murrieta Creek	bridge	\$5,846,000	\$5,846,000
Southwest			Temecula	French Valley (Date)	Margarita	Ynez	\$0	\$0
Southwest			Temecula	French Valley (Date)	Ynez	Jefferson	\$5,010,000	\$5,010,000
Southwest			Temecula	French Valley (Date)	I-15	interchange	\$122,076,000	\$122,076,000
Southwest			Temecula	SR-79 (Winchester)	Murrieta Hot Springs	Jefferson	\$2,697,000	\$2,697,000
Southwest			Temecula	SR-79 (Winchester)	I-15	interchange	\$0	\$0
Southwest			Temecula	Western Bypass (Diaz)	Cherry	Rancho California	\$2,285,000	\$2,285,000
Southwest			Temecula	Western Bypass (Vincent Moraga)	Rancho California	SR-79 (Front)	\$23,629,000	\$23,629,000
Southwest			Temecula	Western Bypass (Vincent Moraga)	I-15	interchange	\$0	\$0
Southwest			Temecula	Western Bypass (Vincent Moraga)	Murrieta Creek	bridge	\$4,176,000	\$4,176,000
Southwest			Unincorporated	Benton	SR-79	Eastern Bypass	\$0	\$0
Southwest			Unincorporated	Clinton Keith	Whitewood	SR-79	\$5,539,000	\$5,539,000
Southwest			Unincorporated	Clinton Keith	Warm Springs Creek	bridge	\$0	\$0
Southwest			Unincorporated	SR-74	I-15	Ethanac	\$27,699,000	\$26,347,000
Southwest			Unincorporated	SR-79 (Winchester)	Keller	Thompson	\$34,213,000	\$34,213,000
Southwest			Unincorporated	SR-79 (Winchester)	Thompson	La Alba	\$27,699,000	\$27,699,000
Southwest			Unincorporated	SR-79 (Winchester)	La Alba	Hunter	\$7,854,000	\$3,042,000
Southwest			Unincorporated	SR-79 (Winchester)	Hunter	Murrieta Hot Springs	\$595,000	\$442,000
Southwest			Wildomar	Bundy Canyon	I-15	Monte Vista	\$1,362,000	\$1,362,000
Southwest			Wildomar	Bundy Canyon	Monte Vista	Sunset	\$24,818,000	\$24,818,000
Southwest			Wildomar	Bundy Canyon	I-15	interchange	\$32,698,000	\$24,613,000
Southwest			Wildomar	Clinton Keith	Palomar	I-15	\$0	\$0
Southwest			Wildomar	Clinton Keith	I-15	Copper Craft	\$5,030,000	\$0
Subtotal							\$2,331,921,000	\$1,961,707,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Central			Menifee	Briggs	Newport	Scott	\$0	\$0
Central			Menifee	Briggs	SR-74 (Pinacate)	Simpson	\$2,991,000	\$2,991,000
Central			Menifee	Briggs	Simpson	Old Newport	\$5,430,000	\$5,430,000
Central			Menifee	Briggs	Salt Creek	bridge	\$8,352,000	\$8,352,000
Central			Menifee	Garbani	I-215	interchange	\$63,061,000	\$42,483,000
Central			Menifee	Goetz	Juanita	Lesser Lane	\$11,378,000	\$11,378,000
Central			Menifee	Goetz	Newport	Juanita	\$0	\$0
Central			Menifee	Holland	Murrieta	Bradley	\$15,708,000	\$15,708,000
Central			Menifee	Holland	Bradley	Haun	\$11,439,000	\$11,439,000
Central			Menifee	Holland	Haun	Antelope	\$9,456,000	\$9,456,000
Central			Menifee	Holland	I-215 overcrossing	bridge	\$9,744,000	\$9,744,000
Central			Menifee	Holland	Antelope	Menifee	\$3,844,000	\$3,844,000
Central			Menifee	McCall	I-215	Aspel	\$5,354,000	\$5,354,000
Central			Menifee	McCall	I-215	interchange	\$0	\$0
Central			Menifee	McCall	Aspel	Menifee	\$2,288,000	\$2,288,000
Central			Menifee	Murrieta	Ethanac	McCall	\$0	\$0
Central			Menifee	Murrieta	McCall	Newport	\$7,967,000	\$7,967,000
Central			Menifee	Murrieta	Newport	Bundy Canyon	\$0	\$0
Central			Moreno Valley	Cactus	I-215	Heacock	\$5,617,000	\$5,617,000
Central			Moreno Valley	Cactus	I-215	interchange	\$0	\$0
Central			Moreno Valley	Day	Ironwood	SR-60	\$0	\$0
Central			Moreno Valley	Day	SR-60	interchange	\$0	\$0
Central			Moreno Valley	Day	SR-60	Eucalyptus	\$0	\$0
Central			Moreno Valley	Eucalyptus	I-215	Towngate	\$8,843,000	\$8,843,000
Central			Moreno Valley	Eucalyptus	Towngate	Frederick	\$0	\$0
Central			Moreno Valley	Eucalyptus	Frederick	Heacock	\$0	\$0
Central			Moreno Valley	Eucalyptus	Heacock	Kitching	\$0	\$0
Central			Moreno Valley	Eucalyptus	Kitching	Moreno Beach	\$0	\$0
Central			Moreno Valley	Eucalyptus	Moreno Beach	Theodore	\$0	\$0
Central			Moreno Valley	Frederick	SR-60	Alessandro	\$0	\$0
Central			Moreno Valley	Heacock	Cactus	San Michele	\$0	\$0
Central			Moreno Valley	Heacock	Reche Vista	Cactus	\$0	\$0
Central			Moreno Valley	Heacock	San Michele	Harley Knox	\$0	\$0
Central			Moreno Valley	Ironwood	SR-60	Day	\$0	\$0
Central			Moreno Valley	Ironwood	Day	Heacock	\$0	\$0
Central			Moreno Valley	Lasselle	Alessandro	John F Kennedy	\$0	\$0
Central			Moreno Valley	Lasselle	John F Kennedy	Oleander	\$0	\$0
Central			Moreno Valley	Moreno Beach	Reche Canyon	SR-60	\$18,797,000	\$18,797,000
Central			Moreno Valley	Moreno Beach	SR-60 overcrossing	bridge	\$0	\$0
Central			Moreno Valley	Nason	SR-60	Alessandro	\$0	\$0
Central			Moreno Valley	Pigeon Pass	Ironwood	SR-60	\$0	\$0
Central			Moreno Valley	Pigeon Pass/CETAP Corridor	Hidden Springs	Ironwood	\$0	\$0
Central			Moreno Valley	Reche Canyon	Moreno Valley City Limit	Locust	\$0	\$0
Central			Moreno Valley	Redlands	Locust	Alessandro	\$39,789,000	\$39,789,000
Central			Moreno Valley	Redlands	SR-60	interchange	\$32,698,000	\$32,698,000
Central			Moreno Valley	Theodore	SR-60	Eucalyptus	\$3,966,000	\$3,966,000
Central			Moreno Valley	Theodore	SR-60	interchange	\$32,698,000	\$32,698,000
Central			Perris	Ellis	Goetz	Evans	\$9,526,000	\$9,526,000
Central			Perris	Evans	Oleander	Ramona	\$0	\$0
Central			Perris	Evans	Ramona	Morgan	\$0	\$0
Central			Perris	Evans	Morgan	Rider	\$0	\$0
Central			Perris	Evans	Rider	Placentia	\$0	\$0
Central			Perris	Evans	Placentia	Nuevo	\$6,492,000	\$6,492,000
Central			Perris	Evans	Nuevo	Ellis	\$17,705,000	\$17,705,000
Central			Perris	Evans	San Jacinto River	bridge	\$11,136,000	\$11,136,000
Central			Perris	Evans	I-215	bridge	\$8,352,000	\$8,352,000
Central			Perris	Goetz	Lesser	Ethanac	\$7,845,000	\$7,845,000
Central			Perris	Harley Knox	I-215	Indian	\$0	\$0
Central			Perris	Harley Knox	I-215	interchange	\$0	\$0
Central			Perris	Harley Knox	Indian	Perris	\$0	\$0
Central			Perris	Harley Knox	Perris	Redlands	\$0	\$0
Central			Perris	Nuevo	I-215	Murrieta	\$16,971,000	\$16,971,000
Central			Perris	Nuevo	I-215	interchange	\$32,698,000	\$19,736,000
Central			Perris	Nuevo	Murrieta	Dunlap	\$4,367,000	\$4,367,000
Central			Perris	Nuevo	Perris Valley Storm Channel	bridge	\$0	\$0
Central			Perris	SR-74 (Matthews)	I-215	Ethanac	\$0	\$0
Central			Perris	SR-74 (Matthews)	I-215	interchange	\$32,698,000	\$21,835,000
Central			Unincorporated	Center (Main)	I-215	Mt Vernon	\$0	\$0
Central			Unincorporated	Center (Main)	I-215	interchange	\$32,698,000	\$11,912,000
Central			Unincorporated	Center (Main)	BNSF	railroad crossing	\$20,010,000	\$20,010,000
Central			Unincorporated	Ellis	Post	SR-74	\$11,550,000	\$11,550,000
Central			Unincorporated	Mount Vernon/CETAP Corridor	Center	Pigeon Pass	\$2,582,000	\$2,582,000
Central			Unincorporated	Nuevo	Dunlap	Menifee	\$8,737,000	\$2,505,000
Central			Unincorporated	Nuevo	San Jacinto River	bridge	\$5,568,000	\$5,568,000
Central			Unincorporated	Pigeon Pass/CETAP Corridor	Hidden Springs	Mount Vernon	\$8,106,000	\$8,106,000
Central			Unincorporated	Post	Santa Rosa Mine	Ellis	\$0	\$0
Central			Unincorporated	Reche Canyon	Reche Vista	Moreno Valley City Limit	\$0	\$0
Central			Unincorporated	Redlands	San Timoteo Canyon	Locust	\$0	\$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Northwest			Corona	6th	SR-91	Magnolia	\$0	\$0
Northwest			Corona	Auto Center	Railroad	SR-91	\$0	\$0
Northwest			Corona	Cajalco	Bedford Canyon	I-15	\$0	\$0
Northwest			Corona	Hidden Valley	Norco Hills	McKinley	\$0	\$0
Northwest			Corona	Lincoln	Parkridge	Ontario	\$0	\$0
Northwest			Corona	Magnolia	6th	Sherborn	\$7,054,000	\$6,419,000
Northwest			Corona	Magnolia	Temescal Creek	bridge	\$4,176,000	\$3,580,000
Northwest			Corona	Magnolia	Sherborn	Rimpau	\$0	\$0
Northwest			Corona	Magnolia	Rimpau	Ontario	\$0	\$0
Northwest			Corona	Main	Grand	Ontario	\$0	\$0
Northwest			Corona	Main	Ontario	Foothill	\$0	\$0
Northwest			Corona	Main	Hidden Valley	Parkridge	\$5,314,000	\$4,389,000
Northwest			Corona	Main	Parkridge	SR-91	\$0	\$0
Northwest			Corona	Main	SR-91	S. Grand	\$0	\$0
Northwest			Corona	McKinley	Hidden Valley	Promenade	\$0	\$0
Northwest			Corona	McKinley	Promenade	SR-91	\$0	\$0
Northwest			Corona	McKinley	SR-91	Magnolia	\$0	\$0
Northwest			Corona	McKinley	Arlington Channel	bridge	\$0	\$0
Northwest			Corona	McKinley	BNSF	railroad crossing	\$105,560,000	\$0
Northwest			Corona	Ontario	I-15	El Cerrito	\$13,451,000	\$13,451,000
Northwest			Corona	Ontario	Lincoln	Buena Vista	\$0	\$0
Northwest			Corona	Ontario	Buena Vista	Main	\$0	\$0
Northwest			Corona	Ontario	Main	Kellogg	\$0	\$0
Northwest			Corona	Ontario	Kellogg	Fullerton	\$0	\$0
Northwest			Corona	Ontario	Fullerton	Rimpau	\$0	\$0
Northwest			Corona	Ontario	Rimpau	I-15	\$0	\$0
Northwest			Corona	Railroad	Auto Club	Buena Vista	\$0	\$0
Northwest			Corona	Railroad	BNSF	railroad crossing	\$40,020,000	\$40,020,000
Northwest			Corona	Railroad	Buena Vista	Main (at Grand)	\$0	\$0
Northwest			Corona	River	Corydon	Main	\$0	\$0
Northwest			Corona	Serfas Club	SR-91	Green River	\$0	\$0
Northwest			Eastvale	Archibald	Remington	River	\$3,382,000	\$3,382,000
Northwest			Eastvale	Hamner	Mission	Bellevue	\$0	\$0
Northwest			Eastvale	Hamner	Bellevue	Amberhill	\$199,000	\$199,000
Northwest			Eastvale	Hamner	Amberhill	Limonite	\$2,787,000	\$2,787,000
Northwest			Eastvale	Hamner	Limonite	Schleisman	\$991,000	\$991,000
Northwest			Eastvale	Hamner	Schleisman	Santa Ana River	\$5,533,000	\$3,675,000
Northwest			Eastvale	Hellman	Schleisman	Walters	\$419,000	\$419,000
Northwest			Eastvale	Hellman	Walters	River	\$21,503,000	\$21,503,000
Northwest			Eastvale	Hellman	Cucamonga Creek	bridge	\$3,828,000	\$3,828,000
Northwest			Eastvale	Limonite	I-15	Eastvale Gateway	\$289,000	\$289,000
Northwest			Eastvale	Limonite	I-15	interchange	\$0	\$0
Northwest			Eastvale	Limonite	Eastvale Gateway	Hamner	\$255,000	\$255,000
Northwest			Eastvale	Limonite	Hamner	Sumner	\$1,094,000	\$1,094,000
Northwest			Eastvale	Limonite	Sumner	Harrison	\$497,000	\$497,000
Northwest			Eastvale	Limonite	Harrison	Archibald	\$0	\$0
Northwest			Eastvale	Limonite	Archibald	Hellman (Keller SBD Co.)	\$2,208,000	\$2,208,000
Northwest			Eastvale	Limonite	Cucamonga Creek	bridge	\$13,920,000	\$0
Northwest			Eastvale	River	Hellman	Archibald	\$5,948,000	\$5,948,000
Northwest			Jurupa Valley	Armstrong	San Bernardino County	Valley	\$6,192,000	\$6,192,000
Northwest			Jurupa Valley	Bellevue	Cantu-Galleano Ranch	Van Buren	\$464,000	\$464,000
Northwest			Jurupa Valley	Cantu-Galleano Ranch	Bellevue	Valley	\$793,000	\$793,000
Northwest			Jurupa Valley	Etiwanda	Philadelphia	SR-60	\$1,515,000	\$989,000
Northwest			Jurupa Valley	Etiwanda	SR-60	Limonite	\$0	\$0
Northwest			Jurupa Valley	Limonite	I-15	Wineville	\$0	\$0
Northwest			Jurupa Valley	Limonite	Wineville	Etiwanda	\$0	\$0
Northwest			Jurupa Valley	Limonite	Etiwanda	Van Buren	\$2,981,000	\$2,981,000
Northwest			Jurupa Valley	Limonite	Van Buren	Clay	\$0	\$0
Northwest			Jurupa Valley	Limonite	Clay	Riverview	\$0	\$0
Northwest			Jurupa Valley	Market	Rubidoux	Santa Ana River	\$5,181,000	\$0
Northwest			Jurupa Valley	Market	Santa Ana River	bridge	\$13,920,000	\$6,204,000
Northwest			Jurupa Valley	Mission	Milliken	SR-60	\$0	\$0
Northwest			Jurupa Valley	Mission	SR-60	Santa Ana River	\$0	\$0
Northwest			Jurupa Valley	Riverview	Limonite	Mission	\$0	\$0
Northwest			Jurupa Valley	Rubidoux	Pine	Mission	\$0	\$0
Northwest			Jurupa Valley	Rubidoux	SR-60	interchange	\$32,698,000	\$9,051,000
Northwest			Jurupa Valley	Valley	Armstrong	Mission	\$0	\$0
Northwest			Norco	1st	Parkridge	Mountain	\$0	\$0
Northwest			Norco	1st	Mountain	Hamner	\$0	\$0
Northwest			Norco	2nd	River	I-15	\$0	\$0
Northwest			Norco	6th	Hamner	California	\$0	\$0
Northwest			Norco	6th	I-15	interchange	\$32,698,000	\$3,489,000
Northwest			Norco	Arlington	Crestview	Fairhaven	\$4,342,000	\$4,342,000
Northwest			Norco	California	Arlington	6th	\$15,237,000	\$12,525,000
Northwest			Norco	Corydon	River	5th	\$0	\$0
Northwest			Norco	Hamner	Santa Ana River	bridge	\$33,408,000	\$11,455,000
Northwest			Norco	Hamner	Santa Ana River	Hidden Valley	\$49,591,000	\$49,591,000
Northwest			Norco	Hidden Valley	I-15	Norco Hills	\$0	\$0
Northwest			Norco	Hidden Valley	Hamner	I-15	\$0	\$0
Northwest			Norco	Norco	Corydon	Hamner	\$0	\$0
Northwest			Norco	Norco	North	California	\$0	\$0
Northwest			Norco	River	Archibald	Corydon	\$1,743,000	\$1,109,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Northwest			Riverside	14th	Market	Martin Luther King	\$0	\$0
Northwest			Riverside	1st	Market	Main	\$0	\$0
Northwest			Riverside	3rd	SR-91	I-215	\$1,941,000	\$1,941,000
Northwest			Riverside	3rd	BNSF	railroad crossing	\$105,560,000	\$30,560,000
Northwest			Riverside	Adams	Arlington	SR-91	\$0	\$0
Northwest			Riverside	Adams	SR-91	Lincoln	\$0	\$0
Northwest			Riverside	Adams	SR-91	interchange	\$32,698,000	\$3,262,000
Northwest			Riverside	Arlington	Fairhaven	La Sierra	\$0	\$0
Northwest			Riverside	Buena Vista	Santa Ana River	Redwood	\$0	\$0
Northwest			Riverside	Canyon Crest	Martin Luther King	Central	\$0	\$0
Northwest			Riverside	Canyon Crest	Central	Country Club	\$0	\$0
Northwest			Riverside	Canyon Crest	Country Club	Via Vista	\$4,996,000	\$1,593,000
Northwest			Riverside	Canyon Crest	Via Vista	Alessandro	\$0	\$0
Northwest			Riverside	Central	Chicago	I-215/SR-60	\$0	\$0
Northwest			Riverside	Central	SR-91	Magnolia	\$0	\$0
Northwest			Riverside	Central	Alessandro	SR-91	\$0	\$0
Northwest			Riverside	Central	Van Buren	Magnolia	\$0	\$0
Northwest			Riverside	Chicago	Alessandro	Spruce	\$0	\$0
Northwest			Riverside	Chicago	Spruce	Columbia	\$0	\$0
Northwest			Riverside	Columbia	Main	Iowa	\$0	\$0
Northwest			Riverside	Columbia	I-215	interchange	\$32,698,000	\$9,050,000
Northwest			Riverside	Iowa	Center	3rd	\$30,272,000	\$30,272,000
Northwest			Riverside	Iowa	3rd	University	\$0	\$0
Northwest			Riverside	Iowa	University	Martin Luther King	\$0	\$0
Northwest			Riverside	JFK	Trautwein	Wood	\$1,880,000	\$1,880,000
Northwest			Riverside	La Sierra	Arlington	SR-91	\$0	\$0
Northwest			Riverside	La Sierra	SR-91	Indiana	\$192,000	\$192,000
Northwest			Riverside	La Sierra	Indiana	Victoria	\$778,000	\$778,000
Northwest			Riverside	Lemon (NB One way)	Mission Inn	University	\$0	\$0
Northwest			Riverside	Lincoln	Van Buren	Jefferson	\$0	\$0
Northwest			Riverside	Lincoln	Jefferson	Washington	\$0	\$0
Northwest			Riverside	Lincoln	Washington	Victoria	\$0	\$0
Northwest			Riverside	Madison	SR-91	Victoria	\$853,000	\$853,000
Northwest			Riverside	Madison	BNSF	railroad crossing	\$20,010,000	\$20,010,000
Northwest			Riverside	Magnolia	BNSF Railroad	Tyler	\$0	\$0
Northwest			Riverside	Magnolia	BNSF	railroad crossing	\$0	\$0
Northwest			Riverside	Magnolia	Tyler	Harrison	\$0	\$0
Northwest			Riverside	Magnolia	Harrison	14th	\$0	\$0
Northwest			Riverside	Main	1st	San Bernardino County	\$0	\$0
Northwest			Riverside	Market	14th	Santa Ana River	\$9,491,000	\$9,491,000
Northwest			Riverside	Martin Luther King	14th	I-215/SR-60	\$24,031,000	\$24,031,000
Northwest			Riverside	Mission Inn	Redwood	Lemon	\$0	\$0
Northwest			Riverside	Redwood (SB One way)	Mission Inn	University	\$0	\$0
Northwest			Riverside	Trautwein	Alessandro	Van Buren	\$0	\$0
Northwest			Riverside	Tyler	SR-91	Magnolia	\$0	\$0
Northwest			Riverside	Tyler	SR-91	interchange	\$63,061,000	\$21,814,000
Northwest			Riverside	Tyler	Magnolia	Hole	\$0	\$0
Northwest			Riverside	Tyler	Hole	Wells	\$0	\$0
Northwest			Riverside	Tyler	Wells	Arlington	\$0	\$0
Northwest			Riverside	University	Redwood	SR-91	\$859,000	\$859,000
Northwest			Riverside	University	SR-91	I-215/SR-60	\$2,067,000	\$2,067,000
Northwest			Riverside	Victoria	Lincoln	Arlington	\$0	\$0
Northwest			Riverside	Victoria	Madison	Washington	\$0	\$0
Northwest			Riverside	Washington	Victoria	Hermosa	\$27,018,000	\$27,018,000
Northwest			Riverside	Wood	JFK	Van Buren	\$3,053,000	\$3,053,000
Northwest			Riverside	Wood	Van Buren	Bergamont	\$0	\$0
Northwest			Riverside	Wood	Bergamont	Krameria	\$0	\$0
Northwest			Unincorporated	Cantu-Galleano Ranch	Hamner	Wineville	\$0	\$0
Northwest			Unincorporated	Dos Lagos (Weirick)	Temescal Canyon	I-15	\$0	\$0
Northwest			Unincorporated	El Cerrito	I-15	Ontario	\$0	\$0
Northwest			Unincorporated	El Sobrante	Mockingbird Canyon	Cajalco	\$0	\$0
Northwest			Unincorporated	Harley John	Washington	Scottsdale	\$0	\$0
Northwest			Unincorporated	Harley John	Scottsdale	Cajalco	\$0	\$0
Northwest			Unincorporated	La Sierra	Victoria	El Sobrante	\$0	\$0
Northwest			Unincorporated	La Sierra	El Sobrante	Cajalco	\$0	\$0
Northwest			Unincorporated	Mockingbird Canyon	Van Buren	El Sobrante	\$20,871,000	\$20,871,000
Northwest			Unincorporated	Temescal Canyon	El Cerrito	Tuscany	\$3,168,000	\$0
Northwest			Unincorporated	Temescal Canyon	Tuscany	Dos Lagos	\$0	\$0
Northwest			Unincorporated	Temescal Canyon	Dos Lagos	Leroy	\$0	\$0
Northwest			Unincorporated	Temescal Canyon	Leroy	Dawson Canyon	\$0	\$0
Northwest			Unincorporated	Temescal Canyon	Dawson Canyon	I-15	\$0	\$0
Northwest			Unincorporated	Temescal Canyon	I-15	interchange	\$32,698,000	\$32,698,000
Northwest			Unincorporated	Temescal Canyon	I-15	Park Canyon	\$14,329,000	\$14,329,000
Northwest			Unincorporated	Temescal Canyon	Park Canyon	Indian Truck Trail	\$0	\$0
Northwest			Unincorporated	Washington	Hermosa	Harley John	\$12,787,000	\$12,787,000
Northwest			Unincorporated	Wood	Krameria	Cajalco	\$12,537,000	\$12,537,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Pass	Banning			8th	Wilson	I-10	\$0	\$0
Pass	Banning			Lincoln	Sunset	SR-243	\$0	\$0
Pass	Banning			Ramsey	I-10	8th	\$0	\$0
Pass	Banning			Ramsey	8th	Highland Springs	\$0	\$0
Pass	Banning			SR-243	I-10	Wesley	\$0	\$0
Pass	Banning			Sun Lakes	Highland Home	Sunset	\$30,502,000	\$30,502,000
Pass	Banning			Sun Lakes	Smith Creek	bridge	\$8,352,000	\$8,352,000
Pass	Banning			Sun Lakes	Montgomery Creek	bridge	\$5,568,000	\$5,568,000
Pass	Banning			Sun Lakes	Highland Springs	Highland Home	\$0	\$0
Pass	Banning			Sunset	Ramsey	Lincoln	\$0	\$0
Pass	Banning			Sunset	I-10	interchange	\$32,698,000	\$32,698,000
Pass	Banning			Wilson	Highland Home	8th	\$0	\$0
Pass	Banning			Wilson	Highland Springs	Highland Home	\$0	\$0
Pass	Beaumont			1st	Viele	Pennsylvania	\$0	\$0
Pass	Beaumont			1st	Pennsylvania	Highland Springs	\$0	\$0
Pass	Beaumont			6th	I-10	Highland Springs	\$0	\$0
Pass	Beaumont			Desert Lawn	Champions	Oak Valley (STC)	\$0	\$0
Pass	Beaumont			Oak Valley (14th)	Highland Springs	Pennsylvania	\$0	\$0
Pass	Beaumont			Oak Valley (14th)	Pennsylvania	Oak View	\$0	\$0
Pass	Beaumont			Oak Valley (14th)	Oak View	I-10	\$0	\$0
Pass	Beaumont			Oak Valley (14th)	I-10	interchange	\$63,061,000	\$62,401,000
Pass	Beaumont			Oak Valley (STC)	UP Railroad	Tukwet Canyon	\$0	\$0
Pass	Beaumont			Oak Valley (STC)	Tukwet Canyon	I-10	\$0	\$0
Pass	Beaumont			Pennsylvania	6th	1st	\$6,588,000	\$6,588,000
Pass	Beaumont			Pennsylvania	I-10	interchange	\$0	\$0
Pass	Calimesa			Bryant	County Line	Avenue L	\$0	\$0
Pass	Calimesa			Calimesa	County Line	I-10	\$0	\$0
Pass	Calimesa			Calimesa	I-10	interchange	\$63,061,000	\$63,061,000
Pass	Calimesa			County Line	7th	Bryant	\$0	\$0
Pass	Calimesa			County Line	I-10	interchange	\$32,698,000	\$32,698,000
Pass	Calimesa			Desert Lawn	Palmer	Champions	\$0	\$0
Pass	Calimesa			Singleton	Avenue L	Condit	\$0	\$0
Pass	Calimesa			Singleton	Condit	Roberts	\$12,972,000	\$12,972,000
Pass	Calimesa			Singleton	I-10	interchange	\$63,061,000	\$0
Pass	Calimesa			Tukwet Canyon	Roberts Rd	Palmer	\$0	\$0
Pass	Unincorporated			Live Oak Canyon	Oak Valley (STC)	San Bernardino County	\$0	\$0
Pass	Unincorporated			San Timoteo Canyon	San Bernardino County	UP Railroad	\$0	\$0
Pass	Unincorporated			San Timoteo Canyon	UP Railroad	railroad crossing	\$52,780,000	\$52,780,000
San Jacinto	Hemet			Sanderson	Acacia	Menlo	\$0	\$0
San Jacinto	Hemet			Sanderson	Domenigoni	Stetson	\$0	\$0
San Jacinto	Hemet			Sanderson	RR Crossing	Acacia	\$0	\$0
San Jacinto	Hemet			Sanderson	Stetson	RR Crossing	\$0	\$0
San Jacinto	Hemet			Sanderson	Menlo	Esplanade	\$0	\$0
San Jacinto	Hemet			SR-74 (Florida)	Warren	Cawston	\$0	\$0
San Jacinto	Hemet			SR-74 (Florida)	Columbia	Ramona	\$0	\$0
San Jacinto	Hemet			SR-74/SR-79 (Florida)	Cawston	Columbia	\$0	\$0
San Jacinto	Hemet			State	Domenigoni	Chambers	\$0	\$0
San Jacinto	Hemet			State	Chambers	Stetson	\$0	\$0
San Jacinto	Hemet			State	Florida	Esplanade	\$0	\$0
San Jacinto	Hemet			State	Stetson	Florida	\$0	\$0
San Jacinto	Hemet			Stetson	Cawston	State	\$0	\$0
San Jacinto	Hemet			Stetson	Warren	Cawston	\$4,357,000	\$4,357,000
San Jacinto	Hemet			Warren	Esplanade	Domenigoni	\$19,926,000	\$19,926,000
San Jacinto	Hemet			Warren	Salt Creek	bridge	\$4,176,000	\$4,176,000
San Jacinto	San Jacinto			Esplanade	Mountain	State	\$0	\$0
San Jacinto	San Jacinto			Esplanade	State	Warren	\$0	\$0
San Jacinto	San Jacinto			Sanderson	Ramona	Esplanade	\$0	\$0
San Jacinto	San Jacinto			SR-79 (North Ramona)	State	San Jacinto	\$0	\$0
San Jacinto	San Jacinto			SR-79 (San Jacinto)	North Ramona Blvd	7th	\$0	\$0
San Jacinto	San Jacinto			SR-79 (San Jacinto)	7th	SR-74	\$0	\$0
San Jacinto	San Jacinto			State	Ramona	Esplanade	\$0	\$0
San Jacinto	San Jacinto			State	Gilman Springs	Quandt Ranch	\$3,317,000	\$3,317,000
San Jacinto	San Jacinto			State	San Jacinto River	bridge	\$0	\$0
San Jacinto	San Jacinto			State	Quandt Ranch	Ramona	\$0	\$0
San Jacinto	San Jacinto			Warren	Ramona	Esplanade	\$13,469,000	\$13,469,000
San Jacinto	Unincorporated			Gilman Springs	Sanderson	State	\$11,097,000	\$11,097,000
San Jacinto	Unincorporated			Gilman Springs	Massacre Canyon Wash	bridge	\$1,392,000	\$1,392,000
San Jacinto	Unincorporated			SR-79 (Winchester)	SR-74 (Florida)	Domenigoni	\$0	\$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA	PLAN	DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	TOTAL COST	MAXIMUM TUMF SHARE
Southwest	Lake Elsinore			Carydon	Mission	Grand	\$3,336,000	\$3,336,000
Southwest	Lake Elsinore			Diamond	Mission	I-15	\$0	\$0
Southwest	Lake Elsinore			Franklin (Integral to Railroad Canyon Interchange)	I-15	interchange	\$32,698,000	\$32,698,000
Southwest	Lake Elsinore			Grand	Lincoln	Toft	\$0	\$0
Southwest	Lake Elsinore			Grand	Toft	SR-74 (Riverside)	\$3,512,000	\$3,512,000
Southwest	Lake Elsinore			Lake	I-15	Lincoln	\$39,817,000	\$32,726,000
Southwest	Lake Elsinore			Lake	I-15	interchange	\$32,698,000	\$15,771,000
Southwest	Lake Elsinore			Lake	Temescal Wash	bridge	\$2,506,000	\$1,150,000
Southwest	Lake Elsinore			Mission	Railroad Canyon	Bundy Canyon	\$0	\$0
Southwest	Lake Elsinore			Nichols	I-15	Lake	\$7,850,000	\$7,850,000
Southwest	Lake Elsinore			Nichols	Temescal Wash	bridge	\$4,176,000	\$4,176,000
Southwest	Lake Elsinore			Nichols	I-15	interchange	\$63,061,000	\$63,061,000
Southwest	Lake Elsinore			SR-74 (Collier/Riverside)	I-15	Lakeshore	\$24,303,000	\$24,303,000
Southwest	Lake Elsinore			SR-74 (Grand)	Riverside	SR-74 (Ortega)	\$9,733,000	\$3,691,000
Southwest	Lake Elsinore			SR-74 (Riverside)	Lakeshore	Grand	\$20,175,000	\$20,175,000
Southwest	Lake Elsinore			Temescal Canyon	I-15	Lake	\$7,411,000	\$7,411,000
Southwest	Lake Elsinore			Temescal Canyon	Temescal Wash	bridge	\$3,480,000	\$3,480,000
Southwest	Murrieta			California Oaks	Jefferson	I-15	\$0	\$0
Southwest	Murrieta			California Oaks	I-15	Jackson	\$0	\$0
Southwest	Murrieta			California Oaks	Jackson	Clinton Keith	\$0	\$0
Southwest	Murrieta			Jackson	Whitewood	Ynez	\$0	\$0
Southwest	Murrieta			Jefferson	Palomar	Nutmeg	\$1,562,000	\$1,562,000
Southwest	Murrieta			Jefferson	Nutmeg	Murrieta Hot Springs	\$0	\$0
Southwest	Murrieta			Jefferson	Murrieta Hot Springs	Cherry	\$30,634,000	\$30,634,000
Southwest	Murrieta			Keller	I-215	Whitewood	\$0	\$0
Southwest	Murrieta			Keller	I-215	interchange	\$0	\$0
Southwest	Murrieta			Los Alamos	Jefferson	I-215	\$0	\$0
Southwest	Murrieta			Murrieta Hot Springs	Jefferson	I-215	\$0	\$0
Southwest	Murrieta			Murrieta Hot Springs	I-215	Margarita	\$0	\$0
Southwest	Murrieta			Murrieta Hot Springs	Margarita	SR-79 (Winchester)	\$4,057,000	\$3,899,000
Southwest	Murrieta			Nutmeg	Jefferson	Clinton Keith	\$0	\$0
Southwest	Murrieta			Whitewood	Clinton Keith	Los Alamos	\$2,708,000	\$2,708,000
Southwest	Murrieta			Whitewood	Los Alamos	Murrieta Hot Springs	\$0	\$0
Southwest	Murrieta			Whitewood	Murrieta Hot Springs	Jackson	\$4,629,000	\$4,629,000
Southwest	Murrieta			Ynez	Jackson	SR-79 (Winchester)	\$0	\$0
Southwest	Temecula			Butterfield Stage	Murrieta Hot Springs	Calle Chapos	\$816,000	\$816,000
Southwest	Temecula			Butterfield Stage	Calle Chapos	La Serena	\$696,000	\$696,000
Southwest	Temecula			Butterfield Stage	La Serena	Rancho California	\$904,000	\$904,000
Southwest	Temecula			Butterfield Stage	Rancho California	Pauba	\$846,000	\$846,000
Southwest	Temecula			Butterfield Stage	Pauba	SR-79 (Temecula Pkwy)	\$725,000	\$725,000
Southwest	Temecula			Jefferson	Cherry	Rancho California	\$2,285,000	\$2,285,000
Southwest	Temecula			Margarita	Murrieta Hot Springs	SR-79 (Temecula Pkwy)	\$7,644,000	\$7,644,000
Southwest	Temecula			Old Town Front	Rancho California	I-15/SR-79 (Temecula Pkwy)	\$0	\$0
Southwest	Temecula			Pechanga Pkwy	SR-79 (Temecula Pkwy)	Via Gilberto	\$0	\$0
Southwest	Temecula			Pechanga Pkwy	Via Gilberto	Pechanga Pkwy	\$0	\$0
Southwest	Temecula			Rancho California	Jefferson	Margarita	\$18,254,000	\$18,181,000
Southwest	Temecula			Rancho California	I-15	interchange	\$32,698,000	\$0
Southwest	Temecula			Rancho California	Margarita	Butterfield Stage	\$0	\$0
Southwest	Temecula			SR-79 (Temecula Pkwy)	I-15	Pechanga Pkwy	\$0	\$0
Southwest	Temecula			SR-79 (Temecula Pkwy)	Pechanga Pkwy	Butterfield Stage	\$3,065,000	\$3,065,000
Southwest	Unincorporated			Briggs	Scott	SR-79 (Winchester)	\$6,509,000	\$6,509,000
Southwest	Unincorporated			Butterfield Stage	Tucalota Creek	bridge	\$0	\$0
Southwest	Unincorporated			Butterfield Stage (Pourroy)	Auld	Murrieta Hot Springs	\$23,076,000	\$23,076,000
Southwest	Unincorporated			Grand	Ortega	Carydon	\$68,025,000	\$68,025,000
Southwest	Unincorporated			Horsethief Canyon	Temescal Canyon	I-15	\$0	\$0
Southwest	Unincorporated			Indian Truck Trail	Temescal Canyon	I-15	\$0	\$0
Southwest	Unincorporated			Murrieta Hot Springs	SR-79 (Winchester)	Pourroy	\$0	\$0
Southwest	Unincorporated			Pala	Pechanga	San Diego County	\$0	\$0
Southwest	Unincorporated			Pourroy	SR-79 (Winchester)	Auld	\$2,236,000	\$2,236,000
Southwest	Unincorporated			Rancho California	Butterfield Stage	Glen Oaks	\$87,369,000	\$87,369,000
Southwest	Unincorporated			Temescal Canyon	Horsethief Canyon Wash	bridge	\$3,340,000	\$3,340,000
Southwest	Unincorporated			Temescal Canyon	Indian Truck Trail	I-15	\$15,739,000	\$15,739,000
Southwest	Unincorporated			Temescal Canyon	Indian Wash	bridge	\$1,462,000	\$1,462,000
Southwest	Wildomar			Bundy Canyon	Mission	I-15	\$9,704,000	\$9,704,000
Southwest	Wildomar			Grand	Carydon	Wildomar Trail	\$0	\$0
Southwest	Wildomar			Mission	Bundy Canyon	Palomar	\$0	\$0
Southwest	Wildomar			Palomar	Clinton Keith	Washington	\$3,227,000	\$3,227,000
Southwest	Wildomar			Palomar	Mission	Clinton Keith	\$13,493,000	\$13,493,000
Southwest	Wildomar			Wildomar Trail	I-15	Baxter	\$1,281,000	\$1,281,000
Southwest	Wildomar			Wildomar Trail	I-15	interchange	\$32,698,000	\$27,858,000
Southwest	Wildomar			Wildomar Trail	Baxter	Palomar	\$11,316,000	\$11,316,000
Southwest	Wildomar			Wildomar Trail	Palomar	Grand	\$0	\$0
Subtotal							\$2,508,329,000	\$1,913,028,000
Totals								
	Network						\$4,840,250,000	\$3,874,735,000
	Transit						\$217,870,000	\$154,831,000
	Administration						\$161,183,000	\$161,183,000
	MSHCP						\$64,606,000	\$53,859,000
	TOTAL						\$5,283,909,000	\$4,244,608,000

Table 4.5 – TUMF Transit Cost Estimates

AREA PLAN DIST	LEAD AGENCY	PROJECT NAME	LOCATION	UNITS (number/length in miles)	UNIT COST	TOTAL	MAXIMUM TUMF SHARE
Central	RTA	Menifee Mobility Hub	Menifee	1	\$7,465,000	\$7,465,000	\$5,305,000
Northwest	RTA	Riverside Mobility Hub at Vine Street	Riverside	1	\$11,195,000	\$11,195,000	\$7,956,000
Central	RTA	Moreno Valley Mobility Hub(s)	Moreno Valley	1	\$11,195,000	\$11,195,000	\$7,956,000
Northwest	RTA	Jurupa Valley Mobility Hub(s)	Jurupa Valley	1	\$11,195,000	\$11,195,000	\$7,956,000
Pass	RTA	Pass Area Mobility Hub(s)	Banning	1	\$11,195,000	\$11,195,000	\$7,956,000
Southwest	RTA	Lake Elsinore / Canyon Lake Mobility Hub(s)	Lake Elsinore	1	\$11,195,000	\$11,195,000	\$7,956,000
San Jacinto	RTA	Hemet Mobility Hub	Hemet	1	\$11,195,000	\$11,195,000	\$7,956,000
San Jacinto	RTA	San Jacinto Mobility Hub	San Jacinto	1	\$11,195,000	\$11,195,000	\$7,956,000
San Jacinto	RTA	MSJC Mobility Hub	San Jacinto	1	\$1,245,000	\$1,245,000	\$885,000
Regional	RTA	ZEB Technology Enhancements	Various locations region wide	10	\$100,000	\$1,000,000	\$711,000
Northwest	RTA	Regional Operations and Maintenance Facility	Riverside	1	\$62,186,000	\$62,186,000	\$44,192,000
Regional	RTA	Annual Transit Enhancements Program	Various locations region wide	290	\$50,000	\$14,500,000	\$10,304,000
Northwest	RTA	HQTC Improvements	UCR, Riverside to Perris	42	\$75,000	\$3,150,000	\$2,239,000
Regional	RTA	Vehicle Fleet Small Buses/Vans	Various locations region wide	30	\$160,000	\$4,800,000	\$3,411,000
Regional	RTA	Vehicle Fleet Medium Buses	Various locations region wide	20	\$300,000	\$6,000,000	\$4,264,000
Regional	RTA	Vehicle Fleet Large Buses	Various locations region wide	29	\$1,271,000	\$36,859,000	\$26,194,000
Regional	RTA	COA Study	Various locations region wide	2	\$1,150,000	\$2,300,000	\$1,634,000
TOTAL						\$217,870,000	\$154,831,000

4.8 TUMF Network Evaluation

To assess the effectiveness of the proposed TUMF Network improvements to mitigate the cumulative regional impact of new development in Western Riverside County, the proposed network improvements were added to the 2021 existing network in RivCoM and the model was run with 2045 socioeconomic data to determine the relative impacts on horizon year traffic conditions. To quantify the impacts of the TUMF Network improvements, the various traffic measures of effectiveness described in **Section 3.1** for the 2018 Existing and 2045 No-Build scenarios were again calculated for the 2045 TUMF Build scenario. The results for VMT, VHT, VHD, and total VMT experiencing unacceptable level of service (LOS E) were then compared to the results presented in **Table 3.1** for the no-build conditions. The 2045 TUMF Build comparison results are provided in **Table 4.6**. Plots of the Network Extents are attached in **Appendix H**.

As shown in **Table 4.6**, the 2045 peak period VMT on all arterial facilities experiencing LOS of E or worse will decrease with the addition of the TUMF Network improvements while the share of VMT on the TUMF arterial network experiencing LOS E or worse during the peak periods will be reduced to 32% (which is still above the level experienced in 2018). It should be noted that the total VMT on the arterial system **increases** because of freeway trips being diverted to the arterial system to benefit from the proposed TUMF improvements.

Despite a greater share of the total peak period VMT in 2045, the arterial system can more efficiently accommodate the increased demand with the proposed TUMF improvements. Although peak period VMT on the TUMF improved arterial system increases by approximately 6% in 2045 compared to the No Build condition, VHT on the arterial system remains almost constant. Additionally, a benefit is observed on the

freeway system with VMT and VHT being reduced following TUMF Network improvements. By completing TUMF improvements, the total VHD experienced by all area motorists would be reduced during the peak period by over 7% from the levels that would be experienced under the 2045 No-Build scenario. These results highlight the effectiveness of the TUMF Program to mitigate the cumulative regional transportation impacts of new development commensurate with the level of impact being created.

**Table 4.6 – Regional Highway System Measures of Performance
(2018 Existing and 2045 No-Build Scenarios to 2045 TUMF Build Scenario)**

Measure of Performance*	Peak Periods (Total)		
	2018 Existing	2045 No-Build	2045 Build
VMT - Total ALL FACILITIES	23,284,724	29,897,254	30,160,328
VMT - FREEWAYS	13,514,522	15,490,284	15,418,548
VMT - ALL ARTERIALS	9,770,202	14,406,970	14,741,781
TOTAL - TUMF ARTERIAL VMT	6,216,985	8,597,200	9,096,417
VHT - TOTAL ALL FACILITIES	541,350	915,439	895,725
VHT - FREEWAYS	263,792	399,128	388,847
VHT - ALL ARTERIALS	277,558	516,311	506,878
TOTAL TUMF ARTERIAL VHT	174,455	320,869	321,062
VHD - TOTAL ALL FACILITIES	108,900	338,056	313,288
VHD - FREEWAYS	66,156	170,649	161,528
VHD - ALL ARTERIALS	42,745	167,407	151,760
TOTAL TUMF ARTERIAL VHD	33,249	124,863	114,451
VMT LOS E - TOTAL ALL FACILITIES	5,605,070	13,369,483	12,788,016
VMT LOS E - FREEWAYS	4,725,471	9,316,891	9,115,937
VMT LOS E & F - ALL ARTERIALS	879,599	4,052,592	3,672,079
TOTAL TUMF ARTERIAL VMT w/ LOS E or worse	765,782	3,184,133	2,929,288
% of TUMF ARTERIAL VMT w/ LOS E or worse	12%	37%	32%

* Source: RivCoM 2018 base network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network as existing in December 2021 and RivCoM 2018 base network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network plus future TUMF network projects.

NOTES:

Volume is adjusted by PCE factor

VMT = vehicle miles of travel (the total combined distance that all vehicles travel on the system)

VHT = vehicle hours of travel (the total combined time that all vehicles are traveling on the system)

VHD = vehicle hours of delay (the total combined time that all vehicles have been delayed on the system based on the difference between forecast travel time and free-flow (ideal) travel time)

LOS = level of service (based on forecast volume to capacity ratios).

LOS E or Worse was determined by V/C ratio that exceeds 0.9 thresholds as indicated in the Riverside County General Plan.

5.0 TUMF NEXUS ANALYSIS

The objective of this section is to evaluate and document the rational nexus (or reasonable relationship) between the proposed fee and the transportation system improvements it will be used to help fund. The analysis starts by documenting the correlation between future development and the need for transportation system improvements on the TUMF network to mitigate the cumulative regional impacts of this new development, followed by analysis of the nexus evaluation of the key components of the TUMF concept.

5.1 Future Development and the Need for Improvements

Previous sections of this report documented the projected population, household and employment growth in Western Riverside County, the expected increases in traffic congestion and travel delay, and the identification of the transportation system improvements that will serve these future inter-community travel demands. The following points coalesce this information in a synopsis of how the future growth relates to the need for improvements to the TUMF system.

- Western Riverside County is expected to continue growing.
Development in Western Riverside County is expected to continue at a robust rate of growth into the foreseeable future. Current projections estimate the population is projected to grow from a level of approximately 1.91 million in 2018 to a future level of about 2.53 million in 2045, while employment is projected to grow from a level of about 570,000 in 2018 to approximately 846,000 in 2045 (as shown in **Table 2.3**).
- Continuing growth will result in increasing congestion on arterial roadways.
Traffic congestion and delay on arterial roadways are projected to increase dramatically in the future (as shown in **Table 3.1**). Without improvements to the transportation system, congestion levels will grow rapidly and travelers will experience unacceptable travel conditions with slow travel speeds and lengthy delays.
- The future arterial roadway congestion is directly attributable to future development in Western Riverside County.
Traffic using arterial roadways within Western Riverside County is virtually all generated within or attracted to Western Riverside County, since longer-distance trips passing through the region typically use the freeway system, not arterial roadways. Therefore, the future recurring congestion problems on these roadways will be attributable to new trips that originate in, terminate in, or travel within Western Riverside County.
- Capacity improvements to the transportation system will be needed to alleviate the future congestion caused by new development.
To maintain transportation service closer to current levels of efficiency, capacity enhancements will need to be made to the arterial roadway system. These enhancements could include new or realigned roads, additional lanes on existing

roads, new or expanded bridges, new or upgraded freeway interchanges, grade separation of at-grade rail crossings, or the installation of new ITS to improve traffic flows. The completion of improvements to the arterial roadway system would enhance regional mobility and reduce the total peak period vehicles hours of travel (VHT) by over 2%, reduce peak period vehicle hours of delay (VHD) by over 7%, and reduce the share of traffic experiencing congestion in the peak periods by over 4% (as shown in **Table 4.6**). The specific needs and timing of implementation will depend on the location and rate of future development, so the specific improvements to be funded by the TUMF and their priority of implementation will be determined during future project programming activities as improvement needs unfold and as TUMF funds become available.

- Roads on the TUMF network are the facilities that merit improvement through this fee program.

The criteria used to identify roads for the TUMF network (future number of lanes, future traffic volume, future congestion level, and roadway function linking communities and activity centers and serving public transportation) were selected to ensure that these are the roadways that will serve inter-community travel and will require future improvement to alleviate congestion.

- Improvements to the public transportation system will be needed to provide adequate mobility for transit-dependent travelers and to provide an alternative to automobile travel.

Since a portion of the population does not own an automobile and depends on public transportation for mobility, public transportation infrastructure and service will need to be enhanced and expanded to ensure continued mobility for this segment of the population. In addition, improvements to the public transportation system will be required to ensure that transit service can function as a viable option for future new Western Riverside County residents and employees who choose to avoid congestion by using public transportation.

For the reasons cited above, it can be readily concluded that there is a rational nexus between the future need for transportation improvements on the TUMF system and the future development upon which the proposed TUMF would be levied. The following sections evaluate the rational nexus in relation to the system components and the types of uses upon which the fee is assessed.

5.2 Application of Fee to System Components

As noted in **Section 3.2**, the TUMF concept includes splitting the fee revenues between the backbone system of arterials, the secondary system of arterials, and the public transportation system. This section evaluates the travel demands to determine the rational nexus between the future travel demands and the use of the fee to fund improvements to the future system components.

The split of fee revenues between the backbone and secondary highway networks is related to the proportion of highway vehicle trips that are relatively local (between

adjacent communities) and longer distance (between more distant communities but still within Western Riverside County). To estimate a rational fee split between the respective networks, the future combined AM and PM peak period travel forecast estimates were aggregated to a matrix of trips between zones to show the percentage of trips that remain within each zone in relation to the volume that travels to the other zones. This analysis was completed using the Year 2045 No-Build scenario trip tables from RivCoM.

The first step in the analysis was to create a correspondence table between the TAZs in the model and the five WRCOG TUMF zones (i.e. Northwest, Southwest, Central, Hemet/San Jacinto and Pass). The TAZs were then compressed into six districts (the five WRCOG zones and one for the rest of the SCAG region).

Table 5.1 shows the estimated peak period vehicle trips within and between each of the zones. **Table 5.2** shows the percentage of peak period vehicle trips within and between the respective zones. **Appendix I** includes the detailed RivCoM outputs used to develop the regional trip distribution profile shown in **Table 5.1** and **5.2**.

Table 5.1 - 2045 No-Build Peak Period Vehicle Trips by WRCOG Zone

From \ To	Central	Hemet/San Jacinto	Northwest	Pass	Southwest	Outside WRCOG	TOTAL
Central	417,608	23,474	89,780	6,301	55,101	57,558	649,822
Hemet/San Jacinto	29,401	209,005	8,647	8,432	16,081	18,078	289,645
Northwest	58,578	2,684	743,234	2,687	11,032	196,041	1,014,257
Pass	8,068	7,585	6,114	110,385	908	32,334	165,395
Southwest	55,812	16,232	32,852	1,976	667,255	62,713	836,839
Outside WRCOG	33,907	7,574	192,712	24,490	33,867		292,550
TOTAL	603,375	266,554	1,073,340	154,271	784,244	366,724	3,248,507

Based on RivCoM Year 2045 No-Build scenario

Table 5.2 – 2045 No-Build Percent Peak Period Vehicle Trips By WRCOG Zone

From \ To	Central	Hemet/San Jacinto	Northwest	Pass	Southwest	Outside WRCOG	TOTAL
Central	64.3%	3.6%	13.8%	1.0%	8.5%	8.9%	100%
Hemet/San Jacinto	10.2%	72.2%	3.0%	2.9%	5.6%	6.2%	100%
Northwest	5.8%	0.3%	73.3%	0.3%	1.1%	19.3%	100%
Pass	4.9%	4.6%	3.7%	66.7%	0.5%	19.5%	100%
Southwest	6.7%	1.9%	3.9%	0.2%	79.7%	7.5%	100%

Based on RivCoM Year 2045 No-Build scenario

Table 5.3 summarizes the calculation of the split between the backbone and secondary highway networks as derived from the peak period trip values provided in **Table 5.1**. Peak period vehicle trips to and from areas outside Western Riverside County were subtracted from the calculation, on the presumption that most of their inter-regional travel would occur on the freeway system. Peak period trips between zones (regional) were assigned to the backbone network, since these trips are primarily served by the arterial roadways that provide connections between the zones. Peak period trips within zones (local) were split between the backbone network and the secondary network in proportion to their lane-miles, since roadways on both networks serve intra-zonal trips. The backbone network includes approximately 41.1% of the lane-miles on the future TUMF system, and the secondary network includes approximately 58.9% of the lane-miles.

The backbone network is therefore assigned all the inter-zonal peak period trips plus 41.1% of the intra-zonal peak period trips. The secondary network is assigned 58.9% of the intra-zonal peak period trips and none of the inter-zonal peak period trips. The overall result is that 51.1% of the regional travel is assigned to the backbone network and 48.9% is assigned to the secondary network.

Table 5.3 - Backbone-Secondary Network Share Calculation

Calculation Value Description	Input Values	Backbone Value	Backbone Share	Secondary Value	Secondary Share
Total Western Riverside County Peak Period Vehicle Trips	3,248,507				
Less Internal/External Peak Period Vehicle Trips	-659,273				
Total Peak Period Vehicle Trips Internal to Western Riverside County	2,589,234				
Peak Period Vehicle Trips Between TUMF Zones	441,747				
Peak Period Vehicle Trips Within TUMF Zones	2,147,487				
TUMF Future Network Lane-Miles	3,029.9	1,243.9	41.1%	1,786.0	58.9%
Peak Period Vehicle Trips Between TUMF Zones	441,747	441,747	100.0%	0	0.0%
Peak Period Vehicle Trips Within TUMF Zones (as share of intra-zonal trips)	2,147,487	882,332	41.1%	1,265,155	58.9%
Total Peak Period Vehicle Trips Assigned	2,589,234	1,324,079	51.1%	1,265,155	48.9%

Based on RivCoM Year 2045 No-Build scenario; TUMF Nexus Study Exhibit H-1

5.3 Application of Fee to Residential and Non-Residential Developments

In order to establish the approximate proportionality of the future traffic impacts associated with new residential development and new non-residential development, the growth in daily VMT between the 2018 Existing and 2045 No-Build Scenarios from RivCoM were aggregated by trip purpose. RivCoM produces person trips (irrespective of mode choice) on the basis of five trip purposes: home-based-work (HBW), home-based-other (HBO), home-based-school (HBS), non-home-based (NHB), and home-based-university (HBU).

NCHRP Report #187 Quick Response Urban Travel Estimation Techniques and Transferable Parameters User's Guide (Transportation Research Board, 1978) details operational travel estimation techniques that are universally used for the travel demand modeling. Chapter 2 of this report, which details trip generation estimation, states that "HBW (Home Based Work) and HBNW (Home Based Non-Work) trips are generated at the households, whereas the NHB (Non-Home Based) trips are generated elsewhere." In accordance with NCHRP Report #187, growth in daily VMT was aggregated into home-based growth in daily VMT (combining the four home-based purposes: HBW, HBO, HBSC and HBU) and non-home-based growth in daily VMT. The home-based growth in daily VMT represents 77.7% of the total future growth in daily VMT and the non-home-based growth in daily VMT represent 22.3% of the total future growth in daily VMT, as shown in **Table 5.4**. **Appendix J** includes the RivCoM outputs used to develop the trip purpose summary in **Table 5.4**.

Table 5.4 - Daily VMT Growth by Trip Purpose for Western Riverside County (2018 - 2045)

VEHICLE TRIP PURPOSE	2018 EXISTING DAILY VMT	2045 NO-BUILD DAILY VMT	DAILY VMT GROWTH	DAILY VMT GROWTH SHARE
Home-Based-Work	81,121,525	98,818,811	17,697,286	31.8%
Home-Based-Other	114,840,696	138,710,519	23,869,822	42.9%
Home-Based-School (K-12)	8,592,941	9,230,272	637,331	1.1%
Non-Home-Based	61,534,566	73,907,099	12,372,533	22.3%
Home-Based-University	5,377,197	6,400,662	1,023,465	1.8%
TOTAL	271,466,925	327,067,363	55,600,437	100.00%
Home-Based Trips (Residential Uses)			43,227,904	77.7%
Non-Home-Based Trips (Non-Residential Uses)			12,372,533	22.3%

Based on RivCoM Year 2018 Existing Scenario, November 2023 and RivCoM Year 2045 No Build Scenario, November 2023

6.0 FAIR-SHARE FEE CALCULATION

The fee amounts, by type of development, that are justified to mitigate the cumulative regional impacts of new development on transportation facilities in Western Riverside County are quantified in this section. The total cost of improving the TUMF system is \$5.28 billion. Existing funding obligated for improvements to the TUMF system totals \$382.9 million while unfunded improvement needs generated by existing development represent \$646.9 million of the total cost. The balance of the unfunded TUMF system improvement needs is \$4.24 billion which is the maximum value attributable to the mitigation of the cumulative regional transportation impacts of future new development in the WRCOG region and will be captured through the TUMF Program. By levying the uniform fee directly on future new developments (and indirectly on new residents and new employees to Western Riverside County), these transportation system users are assigned their “fair share” of the costs to address the cumulative impacts of additional traffic they will generate on the regional transportation system.

Of the \$4.24 billion in unfunded future improvement needs, 77.7% (\$3.30 billion) will be assigned to future new residential development and 22.3% (\$946.5 million) will be assigned to future new non-residential development.

6.1 Residential Fees

The portion of the unfunded future improvement cost allocable to new residential development through the TUMF is \$3.30 billion. Since this future transportation system improvement need is generated by new residential development anticipated through the Year 2045, the fee will be spread between the residential developments projected to be constructed between 2018 and 2045. The projected residential growth from year 2018 to 2045 is 257,826 households (or dwelling units) as is indicated in **Table 2.3**.

Different household types generate different numbers of trips. To reflect the difference in trip generation between lower density “single-family” dwelling units and higher density “multi-family” dwelling units, the TUMF was weighted based on the respective trip generation rates of these different dwelling unit types. For the purposes of the TUMF Program, single family dwelling units are those housing units with a density of less than 8 units per acre while multi-family units are those with a density of 8 or more units per acre. According to the SCAG 2020 RTP/SCS forecasts included in **Table 2.3** and **Appendix B**, single family dwelling units (including mobile homes) are forecast to constitute 65.0% of the growth in residential dwelling units in the region between 2018 and 2045.

Data provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021) show that, on average, single-family dwelling units generate 0.99 vehicle trips per dwelling unit per hour in the PM peak hour, whereas apartments, condominiums and townhouses (considered to be representative of higher density multi-family dwelling units) generate a median of 0.50 vehicle trips per unit per hour in the PM peak hour. The growth in dwelling units for single-family and multi-family, respectively, were multiplied by the corresponding trip generation rates to determine

the weighted proportion of the change in trips attributable to each use type as the basis for determining the per unit fee required to levy the necessary \$3.20 billion to mitigate the cumulative regional transportation impacts of future new residential development. **Table 6.1** summarizes the calculation of the fee for single-family and multi-family dwelling units. **Appendix K** includes worksheets detailing the calculation of the residential (and non-residential) TUMF for Western Riverside County.

Table 6.1 - Fee Calculation for Residential Share

Residential Sector	2018 Dwelling Units	2045 Dwelling Units	Dwelling Unit Change	Trip Generation Rate	Trip Change	Percentage of Trip Change	Fee/DU
Single-Family	397,407	564,898	167,491	0.99	165,816	78.6%	\$15,476
Multi-Family	157,166	247,501	90,335	0.50	45,168	21.4%	\$7,816
Total	554,573	812,399	257,826		210,984	100.0%	

Household data based on SCAG 2020 RTP/SCS;
Trip Generation based on ITE [Trip Generation](#) (2021).

Consistent with the socio-economic forecasts developed by SCAG and the trip generation basis to assess the cumulative regional transportation impacts of new development, the residential fee calculation for TUMF reflects a uniform fee per dwelling unit for two categories as described previously: single-family residential and multi-family residential. On September 28, 2021, California Governor Gavin Newsome signed Assembly Bill 602 (AB 602) approving several changes to the Mitigation Fee Act, including the additional of §66016.5 to the California Government Code (CGC). CGC §66016.5(a)(5)(A) states “A nexus study adopted after July 1, 2022, shall calculate a fee imposed on a housing development project proportionately to the square footage of proposed units of the development....” unless certain findings are made. These findings include:

- “(i) An explanation as to why square footage is not appropriate metric to calculate fees imposed on housing development project.
- (ii) An explanation that an alternative basis of calculating the fee bears a reasonable relationship between the fee charged and the burden posed by the development.
- (iii) That other policies in the fee structure support smaller developments, or otherwise ensure that smaller developments are not charged disproportionate fees.”

To address these provisions of AB 602, WRCOG analyzed the trip generation characteristics of single-family and multi-family residential dwelling units of various sizes to determine whether the TUMF should be imposed based on the square footage of the respective housing type. The findings of the analyses for single-family and multi-family, respectively, were summarized in technical memoranda that are included in **Appendix K**. Based on the findings of the analyses, WRCOG has determined that the fee for single-family residential units should be adjusted in four tiers to correlate to the trip generation characteristics associated with various ranges of single-family housing sizes to demonstrate compliance with AB 602. The tiers reflecting the adjustments to the

standard single-family residential fee per dwelling unit (as calculated in **Table 6.1**) for differing ranges of single-family dwelling unit sizes are summarized in **Table 6.2**. Adjustments to the standard uniform fair-share single-family residential fee to account for variations in trip generation rates based on the size of the units will be made at the time of determining the fee obligation consistent with the process outlined further in the WRCOG TUMF Fee Calculation Handbook.

Table 6.2 – Single-Family Residential Fee Adjustments by Unit Size

Adjustment Tier	Housing Unit Size Range (in square feet)	Base Fee Adjustment
Tier 1	Less than or equal to 1,800	80%
Tier 2	1,801 to 2,300	90%
Tier 3	2,301 to 2,700	100%
Tier 4	More than 2,700	125%

For multi-family residential units, WRCOG determined that the fee can be imposed on all multi-family units uniformly consistent with the conclusions of the analysis of multi-family trip generation rates by unit size, which demonstrated little variation in trip generation rates across the range of multi-family residential unit sizes. Therefore, the multi-family residential fee, as calculated in **Table 6.2**, can be applied uniformly to all multi-family residential units under the TUMF program.

6.2 Non-Residential Fees

The portion of the unfunded future improvement cost allocable to new non-residential development through the TUMF is \$946.5 million. Estimates of employment by sector were obtained from the SCAG 2020 RTP/SCS socioeconomic data included in **Table 2.3** and **Appendix B**. From the 2045 employment forecast, the amount of employee growth in each sector was calculated. The employment figures were then translated into square footage of new development using typical ratios of square feet per employee derived from four sources including: Cordoba Corporation/Parsons Brinckerhoff Quade and Douglas (PBQD), Land Use Density Conversion Factors For Long Range Corridor Study San Bernardino and Riverside Counties, August 20, 1990; Orange County Transportation Authority (OCTA), Orange County Subarea Model Guidelines Manual, June 2001; SCAG, Employment Density Study, October 31, 2001; and the County of Riverside, General Plan, as amended December 15, 2015. Worksheets showing the development of the TUMF employee conversion factors and the application of the conversion factors to calculate the square footage of future new non-residential development in Western Riverside County are included in **Appendix L**.

To account for the differences in trip generation between various types of non-residential uses, the new non-residential development was weighted by trip generation rate for each sector. Typical trip generation rates per employee were obtained from the Institute of Transportation Engineers (ITE) Trip Generation – 11th Edition (2021), and were weighted based on a calculated value of trips per employee as derived from the

employee conversion factors and ITE typical trip generation rates per square foot of development, before being assigned to the non-residential categories as follows: Industrial – 0.6 PM peak hour trips per employee, Retail – 1.8 PM peak hour trips per employee, Service – 1.2 PM peak hour trips per employee, and Government/Public – 2.1 PM peak hour trips per employee¹². These rates were applied to the employment growth in each sector to determine the relative contribution of each sector to new trip-making, and the \$946.5 million was then allocated among the non-residential categories based on the percentage of new trips added. This proportionate non-residential fee share by sector was then divided by the estimated square footage of future new development to obtain the rate per square foot for each type of use. The calculation of the non-residential fee by sector is shown in **Table 6.3**.

Table 6.3 - Fee Calculation for Non-Residential Share

Non-Residential Sector	Employment Change	Trip Generation Rate per Employee	Trip Change	Percentage of Trip Change	Change in Square Feet of Gross Floor Area	Fee/SF
Industrial	76,581	0.6	45,949	15.1%	61,489,565	\$2.33
Retail	13,115	1.8	23,607	7.8%	6,557,500	\$11.21
Service	174,255	1.2	209,106	68.8%	66,735,957	\$9.76
Government/Public	12,071	2.1	25,349	8.3%	3,420,665	\$23.07
Total	276,022		304,011	100.0%	138,203,688	

Employment Change data based on SCAG 2020 RTP/SCS; Trip Generation based on ITE (2021); Change in Square Feet conversion factor based on Cordoba (1990), OCTA (2001), SCAG (2001) and County of Riverside (2015).

¹² The median trip generation rate for 'Retail' and 'Service' was reduced to reflect the influence of pass-by trips using the weekday PM peak median pass-by trip rate for select uses as derived from the ITE Trip Generation Manual (11th Edition) (September 2021).

7.0 CONCLUSIONS

Based on the results of the Nexus Study evaluation, there is reasonable relationship between the cumulative regional transportation impacts of new land development projects in Western Riverside County and the need to mitigate these transportation impacts using funds levied through the ongoing TUMF Program. Factors that reflect this reasonable relationship include:

- Western Riverside County is expected to continue growing because of future new development.
- Continuing new growth will result in increasing congestion on arterial roadways.
- The future arterial roadway congestion is directly attributable to the cumulative regional transportation impacts of future development in Western Riverside County.
- Capacity improvements to the transportation system will be needed to mitigate the cumulative regional impacts of new development.
- Roads on the TUMF network are the facilities that merit improvement through this fee program.
- Improvements to the public transportation system will be needed to provide adequate mobility for transit-dependent travelers and to provide an alternative to automobile travel.

The Nexus Study evaluation has established a proportional “fair share” of the improvement cost attributable to new development based on the impacts of existing development and the availability of obligated funding through traditional sources. Furthermore, the Nexus Study evaluation has divided the fair share of the cost to mitigate the cumulative regional impacts of future new development in Western Riverside County in rough proportionality to the cumulative impacts of future residential and non-residential development in the region. The respective fee allocable to future new residential and non-residential development in Western Riverside County is summarized for differing use types in **Table 7.1**.

Table 7.1 - Transportation Uniform Mitigation Fee for Western Riverside County

Land Use Type	Units	Development Change	Fee Per Unit	Total Revenue (\$ million)
Single Family Residential	DU	167,491	\$15,476	\$2,592.0
Multi Family Residential	DU	90,335	\$7,816	\$706.1
Industrial	SF GFA	61,489,565	\$2.33	\$143.1
Retail	SF GFA	6,557,500	\$11.21	\$73.5
Service	SF GFA	66,735,957	\$9.76	\$651.1
Government/Public	SF GFA	3,420,665	\$23.07	\$78.9
MAXIMUM TUMF VALUE				\$4,244.6

8.0 APPENDICES

The following Appendices incorporate the extent of materials used to support the development of the WRCOG TUMF Nexus Study and, where appropriate, specifically the 2024 Update. The respective Appendices also incorporate an explanation of the methodology and assumptions used to develop the various elements of the Nexus Study.

These Appendices represent a compilation of materials derived from a variety of technical resources. Each of the following Appendices relate to the development of a specific element of the Nexus Study. These Appendices are as follows:

Appendix A - List of WRCOG Committees

Appendix B - Western Riverside County Population and Employment Growth 2018 – 2045

Appendix C - Western Riverside County Traffic Growth 2018 – 2045

Appendix D - Western Riverside County Transit System Ridership 2018 – 2045

Appendix E - Western Riverside County Regional System of Highways and Arterials Performance Measures

Appendix F - TUMF Network Cost Assumptions

Appendix G - TUMF 2024 Program Update Disposition of Network Change Requests

Appendix H - TUMF Network Cost Estimate and Evaluation

Appendix I - Western Riverside County Regional Trip Distribution

Appendix J - Western Riverside County Regional Trip Purpose

Appendix K - Residential Fee Calculation

Appendix L - Non-Residential Fee Calculation

Appendix A - List of WRCOG Committees

WRCOG Executive Committee

Sheri Flynn	City of Banning
Mike Lara	City of Beaumont
Wendy Hewitt	City of Calimesa
Mark Terry	City of Canyon Lake
Jacque Casillas (2nd Vice-Chair)	City of Corona
Christian Dinco	City of Eastvale
Jackie Peterson	City of Hemet
Chris Barajas (Past Chair)	City of Jurupa Valley
Brian Tisdale	City of Lake Elsinore
Bob Karwin	City of Menifee
Elena Baca-Santa Cruz	City of Moreno Valley
Lisa DeForest	City of Murrieta
Kevin Bash	City of Norco
Rita Rogers (Chair)	City of Perris
Chuck Conder	City of Riverside
Crystal Ruiz	City of San Jacinto
James Stewart	City of Temecula
Joseph Morabito	City of Wildomar
Kevin Jeffries	County of Riverside Dist. 1
Karen Spiegel	County of Riverside Dist. 2
Chuck Washington	County of Riverside Dist. 3
Yxstian Gutierrez	County of Riverside Dist. 5
Phil Paule	Eastern Municipal Water District
Dr. Edwin Gomez	Riverside County Superintendent of Schools (ex-officio)
Brenda Dennstedt (Vice-Chair)	Western Water

WRCOG Technical Advisory Committee

Doug Schulze	City of Banning
Elizabeth Gibbs	City of Beaumont
Will Kolbow	City of Calimesa
Aaron Brown	City of Canyon Lake
Brett Channing	City of Corona
Mark Orme	City of Eastvale
Mark Prestwich	City of Hemet
Rod Butler (Past Chair)	City of Jurupa Valley
Jason Simpson	City of Lake Elsinore
Armando Villa	City of Menifee
Mike Lee	City of Moreno Valley
Kim Summers	City of Murrieta
Lori Sassoon	City of Norco
Clara Miramontes (Chair)	City of Perris
Mike Futrell	City of Riverside
Rob Johnson	City of San Jacinto
Aaron Adams	City of Temecula
Dan York	City of Wildomar
Jeff Van Wagenen	County of Riverside
Joe Mouawad	Eastern Municipal Water District
Grace Martin	March Joint Power Authority
Matt Snellings	Riverside County Office of Education
Craig Miller	Western Water

WRCOG Planning Directors' Committee

no new appointment made (as of 07/24/24)	City of Banning
Carole Kendrick	City of Beaumont
Kelly Lucia	City of Calimesa
Jim Morrisey	City of Canyon Lake
Joanne Coletta	City of Corona
David Murray	City of Eastvale
Monique Alaniz-Flejter	City of Hemet
Joe Perez (Chair)	City of Jurupa Valley
Damaris Abraham	City of Lake Elsinore
Cheryl Kitzerow	City of Menifee
Sean Kelleher (2nd Vice-Chair)	City of Moreno Valley
David Chantarangsu	City of Murrieta
Alma Robles	City of Norco
Kenneth Phung (Vice-Chair)	City of Perris
Judy Eguez	City of Riverside
Travis Randel	City of San Jacinto
Matt Peters	City of Temecula
Matthew Bassi	City of Wildomar
John Hildebrand	County of Riverside
Jeffrey Smith	March Joint Powers Authority
Jennifer Nguyen	Riverside Transit Agency
Ryan Shaw	Western Water

WRCOG Public Works Committee

Art Vela	City of Banning
Robert Vestal	City of Beaumont
Michael Thornton	City of Calimesa
Stuart McKibben	City of Canyon Lake
Savat Khamphou (Vice-Chair)	City of Corona
Jimmy Chung	City of Eastvale
Noah Rau	City of Hemet
Paul Toor (Chair)	City of Jurupa Valley
Remon Habib	City of Lake Elsinore
Nick Fidler	City of Menifee
Melissa Walker	City of Moreno Valley
Bob Moehling	City of Murrieta
Sam Nelson	City of Norco
John Pourkazemi	City of Perris
Gil Hernandez	City of Riverside
Stuart McKibbin (Vice-Chair)	City of San Jacinto
Patrick Thomas	City of Temecula
Jason Farag	City of Wildomar
Patricia Romo	County of Riverside
Lauren Sotelo	March Joint Powers Authority
Jillian Guizado	Riverside County Transportation Commission
Mauricio Alvarez	Riverside Transit Agency

WRCOG Finance Directors' Committee

Lincoln Bogard	City of Banning
Jennifer Ustation	City of Beaumont
Celeste Reid	City of Calimesa
Terry Shea	City of Canyon Lake
Kim Sitton	City of Corona
Amanda Wells	City of Eastvale
vacant	City of Hemet
June Overholt	City of Jurupa Valley
Shannon Buckley	City of Lake Elsinore
Travis Hickey	City of Menifee
Launa Jimenez	City of Moreno Valley
Javier Carcamo (Past Chair)	City of Murrieta
Lisette Free	City of Norco
Ernie Reyna (Chair)	City of Perris
Kristie Thomas	City of Riverside
Erika Gomez (2nd Vice-Chair)	City of San Jacinto
Jennifer Hennessy	City of Temecula
Adam Jantz	City of Wildomar
Vacant	County of Riverside
John Adams	Eastern Municipal Water District
Grace Martin	March Joint Power Authority
Dr. Ruth Perez	Riverside County Office of Education
Kevin Mascaro	Western Water

Appendix B - Western Riverside County Population and Employment Growth 2008 – 2035

Although a variety of alternate demographic information is available for the purpose of quantifying population and household growth in Western Riverside County, it was determined that the data developed by SCAG to support the 2020 RTP/SCS represented the most comprehensive source of socioeconomic data (SED) for the six-county SCAG region that includes Riverside County. The SCAG 2020 RTP/SCS SED information is disaggregated to the level of traffic analysis zones (TAZ) that comprise inputs to RivCoM. These SED data by TAZ were extracted from RivCoM (specifically the TAZ_Data.CSV file located in the PopSyn output folder) and aggregated to correspond with the TUMF zones to support this update of the TUMF Nexus. The SCAG 2020 RTP/SCS SED data retrieved from RivCoM and used as the basis for the Nexus Update is summarized in this Appendix.

The SCAG employment data for 2018 and 2045 was provided for thirteen employment sectors consistent with the California Employment Development Department (EDD) Major Groups including: Farming, Natural Resources and Mining; Construction; Manufacturing; Wholesale Trade; Retail Trade; Transportation, Warehousing and Utilities; Information; Financial Activities; Professional and Business Service; Education and Health Service; Leisure and Hospitality; Other Service; and Government. For the purposes of the Nexus Study, the SCAG Employment Categories were aggregated to Industrial (Farming, Natural Resources and Mining; Construction; Manufacturing; Wholesale Trade; Transportation, Warehousing and Utilities), Retail (Retail Trade), Service (Information; Financial Activities; Professional and Business Service; Education and Health Service; Leisure and Hospitality; Other Service) and Government/Public Sector (Government). These four aggregated sector types were used as the basis for calculating the fee as described in **Section 6.2**. This Appendix includes tables detailing the SCAG RTP/SCS SED Employment Categories and corresponding North American Industry Classification System (NAICS) Categories that are included in each non-residential sector type.

EXHIBIT B-1

Western Riverside County Population, Households and Employment (2018) - SCAG 2020 RTP/SCS Base Year

SED Type/Zone	Central	Northwest	Pass	San Jacinto	Southwest	Total
Population						
Total Population	408,260	777,900	98,688	187,677	432,915	1,905,440
Households						
Single-Family	83,142	152,897	24,937	38,888	97,543	397,407
Multi-Family	26,889	63,591	8,661	26,055	31,970	157,166
Total Households	110,031	216,488	33,598	64,943	129,513	554,573
Employment						
Farming, Natural Resources and Mining	799	3,431	559	1,625	2,080	8,494
Construction	6,245	31,914	1,807	2,067	13,290	55,323
Manufacturing	4,172	25,866	1,101	925	8,902	40,966
Wholesale Trade	8,428	9,269	268	546	6,490	25,001
Retail Trade	13,346	32,061	5,472	4,564	18,371	73,814
Transportation, Warehousing and Utilities	7,349	22,686	1,132	2,132	6,251	39,550
Information	425	2,073	496	177	863	4,034
Financial Activities	1,887	8,632	586	1,003	5,414	17,522
Professional and Business Service	7,834	32,973	3,434	1,630	13,532	59,403
Education and Health Service	20,423	76,884	6,092	13,659	29,192	146,250
Leisure and Hospitality	8,391	21,990	7,207	3,726	18,270	59,584
Other Service	2,834	10,603	1,244	1,891	5,338	21,910
Government	2,579	11,727	871	761	2,631	18,569
TUMF Industrial	26,993	93,166	4,867	7,295	37,013	169,334
TUMF Retail	13,346	32,061	5,472	4,564	18,371	73,814
TUMF Service	41,794	153,155	19,059	22,086	72,609	308,703
TUMF Government/Public Sector	2,579	11,727	871	761	2,631	18,569
Total Employment	84,712	290,109	30,269	34,706	130,624	570,420

Source: SCAG 2020 RTP/SCS

EXHIBIT B-2

Western Riverside County Population, Households & Employment (2045) - SCAG 2020 RTP/SCS Horizon Year

SED Type/Zone	Central	Northwest	Pass	San Jacinto	Southwest	Total
Population						
Total Population	594,678	925,228	158,040	289,439	566,491	2,533,876
Households						
Single-Family	133,507	181,827	43,988	70,713	134,863	564,898
Multi-Family	53,555	79,359	14,362	43,654	56,571	247,501
Total Households	187,062	261,186	58,350	114,367	191,434	812,399
Employment						
Farming, Natural Resources and Mining	712	2,212	527	1,218	2,001	6,670
Construction	18,304	48,533	3,186	5,861	20,236	96,120
Manufacturing	6,836	24,624	1,393	1,149	10,335	44,337
Wholesale Trade	6,150	9,048	324	559	6,529	22,610
Retail Trade	16,310	33,656	7,136	6,338	23,489	86,929
Transportation, Warehousing and Utilities	18,227	38,043	2,705	4,771	12,432	76,178
Information	642	2,166	476	191	1,116	4,591
Financial Activities	2,906	9,889	1,229	1,536	6,665	22,225
Professional and Business Service	14,214	41,712	6,016	4,518	21,058	87,518
Education and Health Service	52,764	111,454	13,803	25,739	51,118	254,878
Leisure and Hospitality	13,197	27,739	10,540	8,424	24,641	84,541
Other Service	5,148	13,062	1,532	2,838	6,625	29,205
Government	6,229	18,222	1,176	1,471	3,542	30,640
TUMF Industrial	50,229	122,460	8,135	13,558	51,533	245,915
TUMF Retail	16,310	33,656	7,136	6,338	23,489	86,929
TUMF Service	88,871	206,022	33,596	43,246	111,223	482,958
TUMF Government/Public Sector	6,229	18,222	1,176	1,471	3,542	30,640
Total Employment	161,639	380,360	50,043	64,613	189,787	846,442

Source: SCAG 2020 RTP/SCS

EXHIBIT B-3

Western Riverside County Population, Households and Employment (2018 to 2045 Change) - SCAG 2020 RTP/SCS

SED Type/Zone	Central	Northwest	Pass	San Jacinto	Southwest	Total
Population						
Total Population	186,418	147,328	59,352	101,762	133,576	628,436
Households						
Single-Family	50,365	28,930	19,051	31,825	37,320	167,491
Multi-Family	26,666	15,768	5,701	17,599	24,601	90,335
Total Households	77,031	44,698	24,752	49,424	61,921	257,826
Employment						
Farming, Natural Resources and Mining	-87	-1,219	-32	-407	-79	-1,824
Construction	12,059	16,619	1,379	3,794	6,946	40,797
Manufacturing	2,664	-1,242	292	224	1,433	3,371
Wholesale Trade	-2,278	-221	56	13	39	-2,391
Retail Trade	2,964	1,595	1,664	1,774	5,118	13,115
Transportation, Warehousing and Utilities	10,878	15,357	1,573	2,639	6,181	36,628
Information	217	93	-20	14	253	557
Financial Activities	1,019	1,257	643	533	1,251	4,703
Professional and Business Service	6,380	8,739	2,582	2,888	7,526	28,115
Education and Health Service	32,341	34,570	7,711	12,080	21,926	108,628
Leisure and Hospitality	4,806	5,749	3,333	4,698	6,371	24,957
Other Service	2,314	2,459	288	947	1,287	7,295
Government	3,650	6,495	305	710	911	12,071
TUMF Industrial	23,236	29,294	3,268	6,263	14,520	76,581
TUMF Retail	2,964	1,595	1,664	1,774	5,118	13,115
TUMF Service	47,077	52,867	14,537	21,160	38,614	174,255
TUMF Government/Public Sector	3,650	6,495	305	710	911	12,071
Total Employment	76,927	90,251	19,774	29,907	59,163	276,022

Source: SCAG 2020 RTP/SCS

Exhibit B-4a - TUMF 2024 Nexus Update

Western Riverside County Population, Households and Employment (2018-2045)

SED Type/Zone	2018	2045	Change	Percent
Total Population	1,905,440	2,533,876	628,436	33%
Total Households	554,573	812,399	257,826	46%
Single-Family	397,407	564,898	167,491	42%
Multi-Family	157,166	247,501	90,335	57%
Total Employment	570,420	846,442	276,022	48%
TUMF Industrial	169,334	245,915	76,581	45%
TUMF Retail	73,814	86,929	13,115	18%
TUMF Service	308,703	482,958	174,255	56%
TUMF Government/Public Sector	18,569	30,640	12,071	65%

Source: SCAG 2020 RTP/SCS

Exhibit B-4b - TUMF 2016 Nexus Update

Western Riverside County Population, Households and Employment (2012-2040)

SED Type/Zone	2012	2040	Change	Percent
Total Population	1,773,935	2,429,633	655,698	37%
Total Households	525,149	775,231	250,082	48%
Single-Family	366,588	539,631	173,043	47%
Multi-Family	158,561	235,600	77,039	49%
Total Employment	460,787	861,455	400,668	87%
TUMF Industrial	120,736	201,328	80,592	67%
TUMF Retail	65,888	101,729	35,841	54%
TUMF Service	253,372	528,092	274,720	108%
TUMF Government/Public Sector	20,791	30,306	9,515	46%

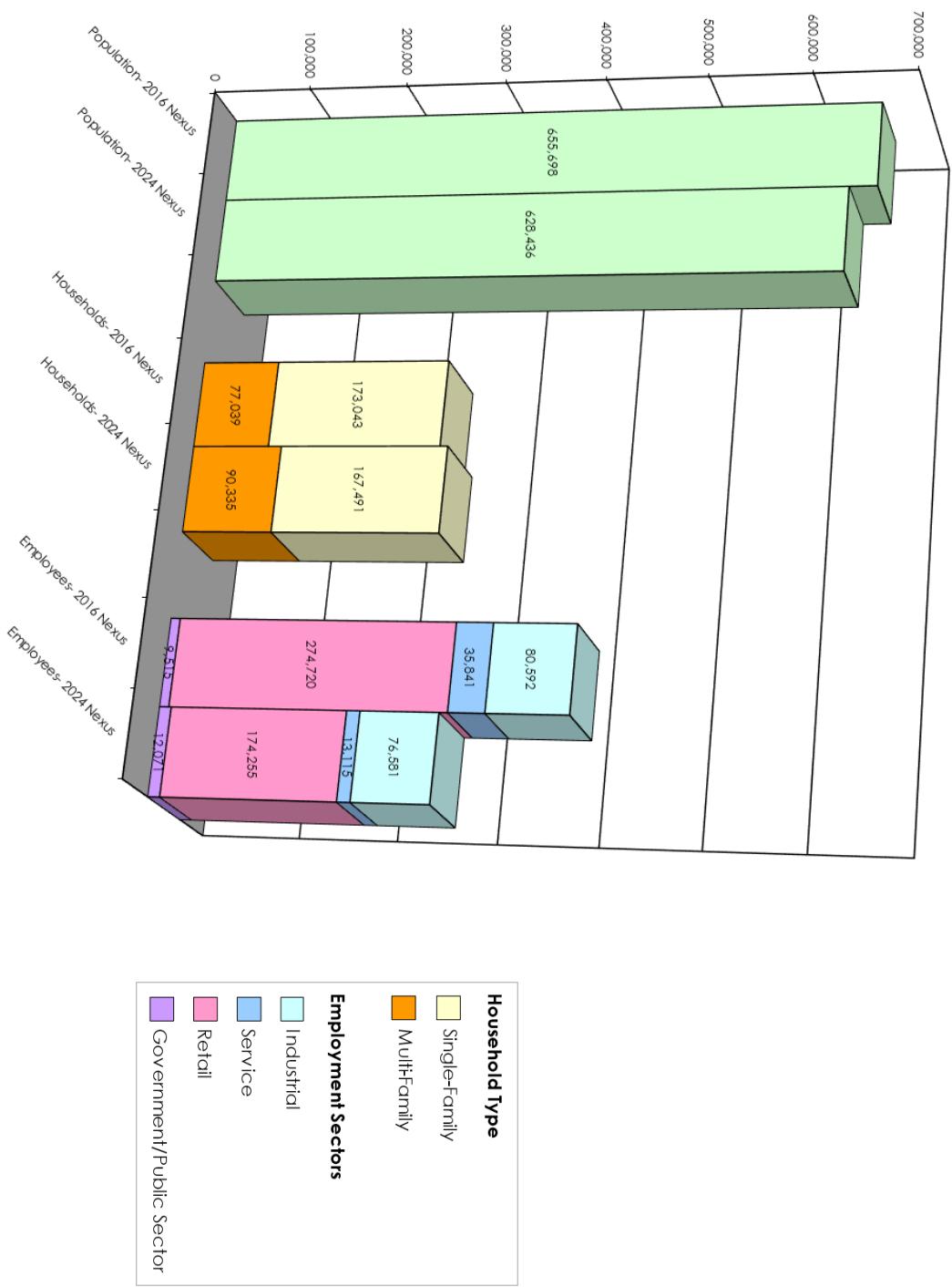
Source: SCAG 2016 RTP/SCS

**Exhibit B-4c - TUMF 2016 Nexus Update to 2024 Nexus Update Comparison
Western Riverside County Population, Households and Employment (Existing to Future Change)**

SED Type/Zone	2016 Update (2012-2040)	2024 Update (2018-2045)	Difference	Percent
Total Population	655,698	628,436	-27,262	-4%
Total Households	250,082	257,826	7,744	3%
Single-Family	173,043	167,491	-5,552	-3%
Multi-Family	77,039	90,335	13,296	17%
Total Employment	400,668	276,022	-124,646	-31%
TUMF Industrial	80,592	76,581	-4,011	-5%
TUMF Retail	35,841	13,115	-22,726	-63%
TUMF Service	274,720	174,255	-100,465	-37%
TUMF Government/Public Sector	9,515	12,071	2,556	27%

Source: SCAG 2016 RTP/SCS; SCAG 2020 RTP/SCS

EXHIBIT B-4d **Western Riverside County Population, Households and Employment Change (2012 to 2040 and 2018 to 2045)** **TUMF 2016 Nexus Update Comparison to TUMF 2024 Nexus Update**



Sources:

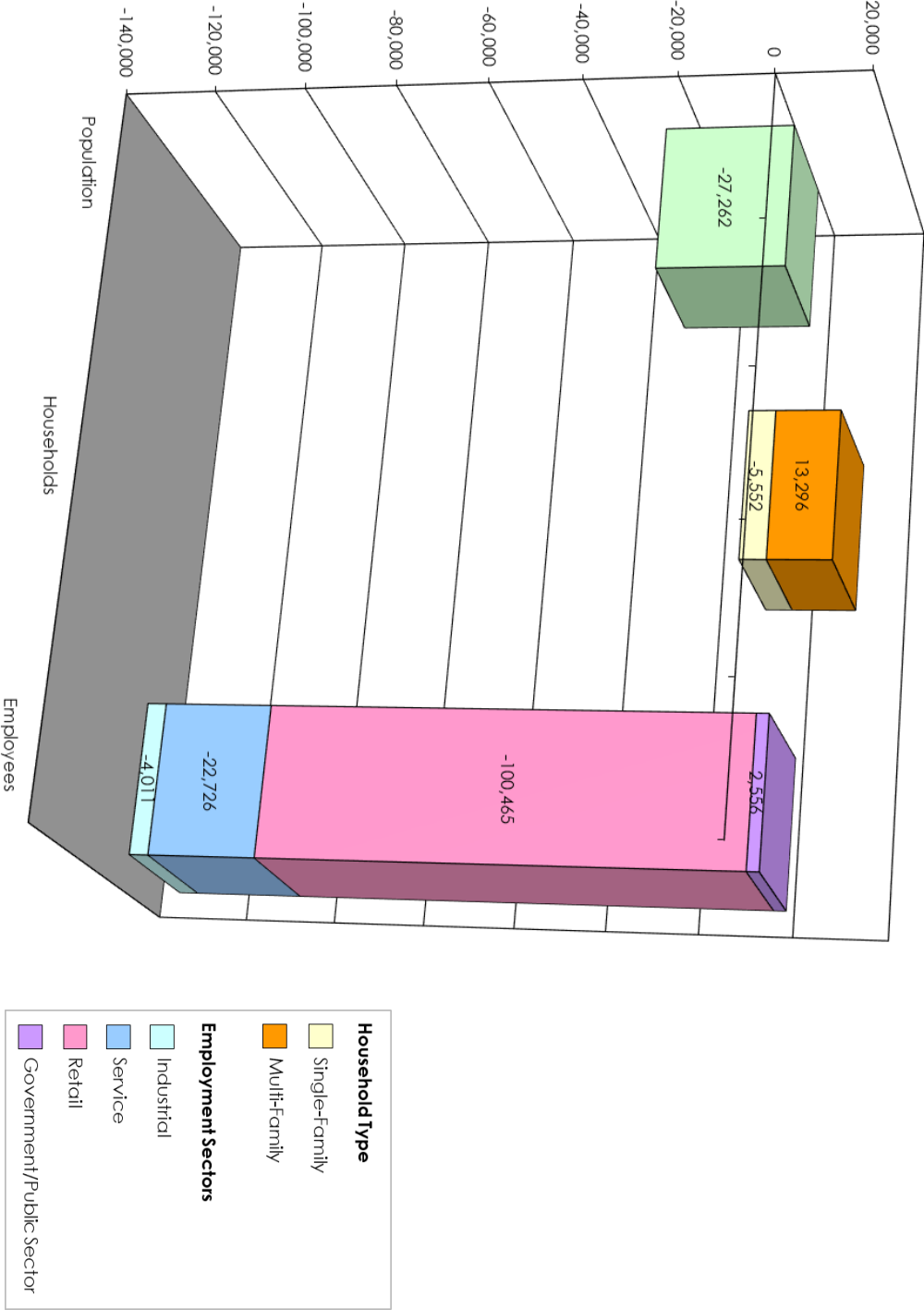
Year 2012 to Year 2040 Growth (2016 Nexus Update): SCAG 2016 RTP/SCS; WSP, April 2016

Year 2018 to Year 2045 Growth (2024 Nexus Update): SCAG 2020 RTP/SCS

WRCOG

TUMF Nexus Study – 2024 Program Update

EXHIBIT B-4e
Difference in Population, Households and Employment Growth in Western Riverside County
TUMF 2016 Nexus Update Comparison to TUMF 2024 Nexus Update



Source:
Year 2012 to Year 2040 Growth (2016 Nexus Update): SCAG 2016 RTP/SCS; WSP, April 2016
Year 2018 to Year 2045 Growth (2024 Nexus Update): SCAG 2020 RTP/SCS

EXHIBIT B-5a

TUMF Non-Residential Category Detailed NAICS Correspondence Summary

TUMF Category	SCAG RTP/SCS	NAICS Two Digit Code		NAICS Three Digit Code				
	Employment Categories	NAICS Code	NAICS Title	NAICS Code	NAICS Title			
Industrial								
	Farming, Natural Resources and Mining							
		11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production			
				112	Animal Production and Aquaculture			
				113	Forestry and Logging			
				114	Fishing, Hunting and Trapping			
				115	Support Activities for Agriculture and Forestry			
		21	Mining, Quarrying, and Oil and Gas Extraction	211	Oil and Gas Extraction			
				212	Mining (except Oil and Gas)			
				213	Support Activities for Mining			
		Construction						
			23	Construction	236	Construction of Buildings		
	237				Heavy and Civil Engineering Construction			
	238				Specialty Trade Contractors			
	Manufacturing							
		31-33	Manufacturing	311	Food Manufacturing			
				312	Beverage and Tobacco Product Manufacturing			
				313	Textile Mills			
				314	Textile Product Mills			
				315	Apparel Manufacturing			
				316	Leather and Allied Product Manufacturing			
				321	Wood Product Manufacturing			
				322	Paper Manufacturing			
				323	Printing and Related Support Activities			
				324	Petroleum and Coal Products Manufacturing			
				325	Chemical Manufacturing			
				326	Plastics and Rubber Products Manufacturing			
				327	Nonmetallic Mineral Product Manufacturing			
				331	Primary Metal Manufacturing			
				332	Fabricated Metal Product Manufacturing			
				333	Machinery Manufacturing			
				334	Computer and Electronic Product Manufacturing			
				335	Electrical Equipment, Appliance, and Component Manufacturing			
				337	Furniture and Related Product Manufacturing			
				339	Miscellaneous Manufacturing			
	Wholesale Trade							
		42	Wholesale Trade	423	Merchant Wholesalers, Durable Goods			
				424	Merchant Wholesalers, Nondurable Goods			
				425	Wholesale Trade Agents and Brokers			
	Transportation, Warehousing and Utilities							
		22	Utilities	221	Utilities			
		48-49	Transportation and Warehousing	481	Air Transportation			
				482	Rail Transportation			
				483	Water Transportation			
				484	Truck Transportation			
				485	Transit and Ground Passenger Transportation			
				486	Pipeline Transportation			
				487	Scenic and Sightseeing Transportation			
				488	Support Activities for Transportation			
				491	Postal Service			
				492	Couriers and Messengers			
				493	Warehousing and Storage			
				Retail				
				Retail Trade				
		44-45	Retail Trade	441	Motor Vehicle and Parts Dealers			
				444	Building Material and Garden Equipment and Supplies Dealers			
				445	Food and Beverage Retailers			
449				Furniture, Home Furnishings, Electronics, and Appliance Retailers				
455				General Merchandise Retailers				
456				Health and Personal Care Retailers				
457				Gasoline Stations and Fuel Dealers				
458				Clothing, Clothing Accessories, Shoe, and Jewelry Retailers				
459				Sporting Goods, Hobby, Musical Instrument, Book, and Miscellaneous Retailers				

TUMF Non-Residential Category Detailed NAICS Correspondence Summary

TUMF Category	SCAG RTP/SCS	NAICS Two Digit Code		NAICS Three Digit Code	
	Employment Categories	NAICS Code	NAICS Title	NAICS Code	NAICS Title
Service					
	Information				
		51	Information		
				512	Motion Picture and Sound Recording Industries
				513	Publishing Industries
				516	Broadcasting and Content Providers
				517	Telecommunications
				518	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services
			519	Web Search Portals, Libraries, Archives, and Other Information Services	
	Financial Activities				
		52	Finance and Insurance		
				521	Monetary Authorities-Central Bank
				522	Credit Intermediation and Related Activities
				523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities
				524	Insurance Carriers and Related Activities
			525	Funds, Trusts, and Other Financial Vehicles	
		53	Real Estate and Rental and Leasing		
				531	Real Estate
			532	Rental and Leasing Services	
			533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	
	Professional and Business Services				
		54	Professional, Scientific, and Technical Services		
				541	Professional, Scientific, and Technical Services
		55	Management of Companies and Enterprises		
				551	Management of Companies and Enterprises
		56	Administrative and Support and Waste Management and Remediation Services		
			561	Administrative and Support Services	
			562	Waste Management and Remediation Services	
	Education and Health Services				
		61	Educational Services		
				611	Educational Services
		62	Health Care and Social Assistance		
				621	Ambulatory Health Care Services
				622	Hospitals
				623	Nursing and Residential Care Facilities
			624	Social Assistance	
	Leisure and Hospitality				
		71	Arts, Entertainment, and Recreation		
				711	Performing Arts, Spectator Sports, and Related Industries
				712	Museums, Historical Sites, and Similar Institutions
			713	Amusement, Gambling, and Recreation Industries	
		72	Accommodation and Food Services		
			721	Accommodation	
			722	Food Services and Drinking Places	
	Other Service				
		81	Other Services (except Public Administration)		
			811	Repair and Maintenance	
			812	Personal and Laundry Services	
			813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	
			814	Private Households	
Government/Public Sector					
Government					
		92	Public Administration		
				921	Executive, Legislative, and Other General Government Support
				922	Justice, Public Order, and Safety Activities
				923	Administration of Human Resource Programs
				924	Administration of Environmental Quality Programs
				925	Administration of Housing Programs, Urban Planning, and Community Development
				926	Administration of Economic Programs
				927	Space Research and Technology
				928	National Security and International Affairs

Source: SCAG 2020 RTP/SCS
California Employment Development Department (EDD)
US Census Bureau, North American Industry Classification System (NAICS), 2022

EXHIBIT B-5b

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code	NAICS Code	NAICS Title	NAICS Code	NAICS Title						
Industrial	Farming, Natural Resources and Mining											
		11	Agriculture, Forestry, Fishing and Hunting									
			111	Crop Production								
				111110	Soybean Farming							
				111120	Oilseed (except Soybean) Farming							
				111130	Dry Pea and Bean Farming							
				111140	Wheat Farming							
				111150	Corn Farming							
				111160	Rice Farming							
				111191	Oilseed and Grain Combination Farming							
				111199	All Other Grain Farming							
				111211	Potato Farming							
				111219	Other Vegetable (except Potato) and Melon Farming							
				111310	Orange Groves							
				111320	Citrus (except Orange) Groves							
				111331	Apple Orchards							
				111332	Grape Vineyards							
				111333	Strawberry Farming							
				111334	Berry (except Strawberry) Farming							
				111335	Tree Nut Farming							
				111336	Fruit and Tree Nut Combination Farming							
				111339	Other Noncitrus Fruit Farming							
				111411	Mushroom Production							
				111419	Other Food Crops Grown Under Cover							
				111421	Nursery and Tree Production							
				111422	Floriculture Production							
				111910	Tobacco Farming							
				111920	Cotton Farming							
				111930	Sugarcane Farming							
				111940	Hay Farming							
				111991	Sugar Beet Farming							
				111992	Peanut Farming							
				111998	All Other Miscellaneous Crop Farming							
				112	Animal Production and Aquaculture							
					112111	Beef Cattle Ranching and Farming						
					112112	Cattle Feedlots						
					112120	Dairy Cattle and Milk Production						
					112130	Dual-Purpose Cattle Ranching and Farming						
					112210	Hog and Pig Farming						
					112310	Chicken Egg Production						
					112320	Broilers and Other Meat Type Chicken Production						
					112330	Turkey Production						
					112340	Poultry Hatcheries						
					112390	Other Poultry Production						
					112410	Sheep Farming						
					112420	Goat Farming						
					112511	Finfish Farming and Fish Hatcheries						
					112512	Shellfish Farming						
					112519	Other Aquaculture						
					112910	Apiculture						
					112920	Horses and Other Equine Production						
					112930	Fur-Bearing Animal and Rabbit Production						
					112990	All Other Animal Production						
				113	Forestry and Logging							
					113110	Timber Tract Operations						
					113210	Forest Nurseries and Gathering of Forest Products						
					113310	Logging						
				114	Fishing, Hunting and Trapping							
					114111	Finfish Fishing						
					114112	Shellfish Fishing						
					114119	Other Marine Fishing						
					114210	Hunting and Trapping						
				115	Support Activities for Agriculture and Forestry							
					115111	Cotton Ginning						
					115112	Soil Preparation, Planting, and Cultivating						
					115113	Crop Harvesting, Primarily by Machine						
					115114	Postharvest Crop Activities (except Cotton Ginning)						
					115115	Farm Labor Contractors and Crew Leaders						
					115116	Farm Management Services						
					115210	Support Activities for Animal Production						
					115310	Support Activities for Forestry						
							21	Mining, Quarrying, and Oil and Gas Extraction				
				211				Oil and Gas Extraction				
								211120	Crude Petroleum Extraction			
								211130	Natural Gas Extraction			
								212	Mining (except Oil and Gas)			
									212114	Surface Coal Mining		
									212115	Underground Coal Mining		
									212210	Iron Ore Mining		
									212220	Gold Ore and Silver Ore Mining		
									212230	Copper, Nickel, Lead, and Zinc Mining		
									212290	Other Metal Ore Mining		
									212311	Dimension Stone Mining and Quarrying		
									212312	Crushed and Broken Limestone Mining and Quarrying		
									212313	Crushed and Broken Granite Mining and Quarrying		
									212319	Other Crushed and Broken Stone Mining and Quarrying		
									212321	Construction Sand and Gravel Mining		
									212322	Industrial Sand Mining		
									212323	Kaolin, Clay, and Ceramic and Refractory Minerals Mining		
									212390	Other Nonmetallic Mineral Mining and Quarrying		
								213	Support Activities for Mining			
									213111	Drilling Oil and Gas Wells		
									213112	Support Activities for Oil and Gas Operations		
									213113	Support Activities for Coal Mining		
									213114	Support Activities for Metal Mining		
									213115	Support Activities for Nonmetallic Minerals (except Fuels) Mining		

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title
Construction	23 Construction	236 Construction of Buildings	236115	New Single-Family Housing Construction (except For-Sale Builders)
			236116	New Multifamily Housing Construction (except For-Sale Builders)
			236117	New Housing For-Sale Builders
			236118	Residential Remodelers
			236210	Industrial Building Construction
			236220	Commercial and Institutional Building Construction
		237 Heavy and Civil Engineering Construction	237110	Water and Sewer Line and Related Structures Construction
			237120	Oil and Gas Pipeline and Related Structures Construction
			237130	Power and Communication Line and Related Structures Construction
			237210	Land Subdivision
			237310	Highway, Street, and Bridge Construction
			237990	Other Heavy and Civil Engineering Construction
		238 Specialty Trade Contractors	238110	Poured Concrete Foundation and Structure Contractors
			238120	Structural Steel and Precast Concrete Contractors
			238130	Framing Contractors
			238140	Masonry Contractors
			238150	Glass and Glazing Contractors
			238160	Roofing Contractors
			238170	Siding Contractors
			238190	Other Foundation, Structure, and Building Exterior Contractors
			238210	Electrical Contractors and Other Wiring Installation Contractors
			238220	Plumbing, Heating, and Air-Conditioning Contractors
			238290	Other Building Equipment Contractors
			238310	Drywall and Insulation Contractors
			238320	Painting and Wall Covering Contractors
			238330	Flooring Contractors
			238340	Tile and Terrazzo Contractors
			238350	Finish Carpentry Contractors
			238390	Other Building Finishing Contractors
			238910	Site Preparation Contractors
			238990	All Other Specialty Trade Contractors
Manufacturing	31-33 Manufacturing	311 Food Manufacturing	311111	Dag and Cat Food Manufacturing
			311119	Other Animal Food Manufacturing
			311211	Flour Milling
			311212	Rice Milling
			311213	Malt Manufacturing
			311221	Wet Corn Milling and Starch Manufacturing
			311224	Soybean and Other Oilseed Processing
			311225	Fats and Oils Refining and Blending
			311230	Breakfast Cereal Manufacturing
			311313	Beet Sugar Manufacturing
			311314	Cane Sugar Manufacturing
			311340	Nonchocolate Confectionery Manufacturing
			311351	Chocolate and Confectionery Manufacturing from Cocoa Beans
			311352	Confectionery Manufacturing from Purchased Chocolate
			311411	Frozen Fruit, Juice, and Vegetable Manufacturing
			311412	Frozen Specialty Food Manufacturing
			311421	Fruit and Vegetable Canning
			311422	Specialty Canning
			311423	Dried and Dehydrated Food Manufacturing
			311511	Fluid Milk Manufacturing
			311512	Creamery Butter Manufacturing
			311513	Cheese Manufacturing
			311514	Dry, Condensed, and Evaporated Dairy Product Manufacturing
			311520	Ice Cream and Frozen Dessert Manufacturing
			311611	Animal (except Poultry) Slaughtering
			311612	Meat Processed from Carcasses
			311613	Rendering and Meat Byproduct Processing
			311615	Poultry Processing
			311710	Seafood Product Preparation and Packaging
			311811	Retail Bakeries
			311812	Commercial Bakeries
			311813	Frozen Cakes, Pies, and Other Pastries Manufacturing
			311821	Cookie and Cracker Manufacturing
			311824	Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour
			311830	Tortilla Manufacturing
			311911	Roasted Nuts and Peanut Butter Manufacturing
			311919	Other Snack Food Manufacturing
			311920	Coffee and Tea Manufacturing
			311930	Flavoring Syrup and Concentrate Manufacturing
			311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing
			311942	Spice and Extract Manufacturing
			311991	Perishable Prepared Food Manufacturing
			311999	All Other Miscellaneous Food Manufacturing
		312 Beverage and Tobacco Product Manufacturing	312111	Soft Drink Manufacturing
			312112	Bottled Water Manufacturing
			312113	Ice Manufacturing
			312120	Breweries
			312130	Wineries
			312140	Distilleries
		313 Textile Mills	312230	Tobacco Manufacturing
			313110	Fiber, Yarn, and Thread Mills
			313210	Broadwoven Fabric Mills
			313220	Narrow Fabric Mills and Schiffli Machine Embroidery
			313230	Nonwoven Fabric Mills
			313240	Knit Fabric Mills
		314 Textile Product Mills	313310	Textile and Fabric Finishing Mills
			313320	Fabric Coating Mills
			314110	Carpet and Rug Mills
		315 Apparel Manufacturing	314120	Curtain and Linen Mills
			314910	Textile Bag and Canvas Mills
			314994	Rope, Cordage, Twine, Tire Cord, and Tire Fabric Mills
			314999	All Other Miscellaneous Textile Product Mills
			315120	Apparel Knitting Mills
		316 Leather and Allied Product Manufacturing	315210	Cut and Sew Apparel Contractors
			315250	Cut and Sew Apparel Manufacturing (except Contractors)
			315990	Apparel Accessories and Other Apparel Manufacturing
			316110	Leather and Hide Tanning and Finishing
			316210	Footwear Manufacturing
			316990	Other Leather and Allied Product Manufacturing

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS	NAICS Two Digit Code	NAICS Three Digit Code		NAICS Six Digit Code	
	Employment Categories	NAICS Code NAICS Title	NAICS Code	NAICS Title	NAICS Code	NAICS Title
			321 Wood Product Manufacturing			
			32113	Sawmills		
			32114	Wood Preservation		
			32121	Hardwood Veneer and Plywood Manufacturing		
			32122	Softwood Veneer and Plywood Manufacturing		
			32125	Engineered Wood Member Manufacturing		
			32129	Reconstituted Wood Product Manufacturing		
			32191	Wood Window and Door Manufacturing		
			32192	Cut Stock, Resawing Lumber, and Planing		
			32198	Other Millwork (including Flooring)		
			32190	Wood Container and Pallet Manufacturing		
			32199	Manufactured Home (Mobile Home) Manufacturing		
			321992	Prefabricated Wood Building Manufacturing		
			321999	All Other Miscellaneous Wood Product Manufacturing		
			322 Paper Manufacturing			
			32210	Pulp Mills		
			32210	Paper Mills		
			32213	Paperboard Mills		
			32221	Corrugated and Solid Fiber Box Manufacturing		
			32222	Folding Paperboard Box Manufacturing		
			32229	Other Paperboard Container Manufacturing		
			32220	Paper Bag and Coated and Treated Paper Manufacturing		
			32230	Stationery Product Manufacturing		
			32229	Sanitary Paper Product Manufacturing		
			32229	All Other Converted Paper Product Manufacturing		
			323 Printing and Related Support Activities			
			32311	Commercial Printing (except Screen and Books)		
			32313	Commercial Screen Printing		
			32317	Books Printing		
			32312	Support Activities for Printing		
			324 Petroleum and Coal Products Manufacturing			
			32410	Petroleum Refineries		
			32421	Asphalt Paving Mixture and Block Manufacturing		
			32422	Asphalt Shingle and Coating Materials Manufacturing		
			32491	Petroleum Lubricating Oil and Grease Manufacturing		
			32499	All Other Petroleum and Coal Products Manufacturing		
			325 Chemical Manufacturing			
			32510	Petrochemical Manufacturing		
			32520	Industrial Gas Manufacturing		
			32530	Synthetic Dye and Pigment Manufacturing		
			32518	Other Basic Inorganic Chemical Manufacturing		
			32519	Ethyl Alcohol Manufacturing		
			32514	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing		
			32519	All Other Basic Organic Chemical Manufacturing		
			32521	Plastics Material and Resin Manufacturing		
			32522	Synthetic Rubber Manufacturing		
			32520	Artificial and Synthetic Fibers and Filaments Manufacturing		
			32531	Nitrogenous Fertilizer Manufacturing		
			32532	Phosphatic Fertilizer Manufacturing		
			32534	Fertilizer (Mixing Only) Manufacturing		
			32535	Compost Manufacturing		
			32530	Pesticide and Other Agricultural Chemical Manufacturing		
			32541	Medicinal and Botanical Manufacturing		
			32542	Pharmaceutical Preparation Manufacturing		
			32543	In-Vitro Diagnostic Substance Manufacturing		
			32544	Biological Product (except Diagnostic) Manufacturing		
			32550	Paint and Coating Manufacturing		
			32550	Adhesive Manufacturing		
			32561	Soap and Other Detergent Manufacturing		
			32562	Polish and Other Sanitation Good Manufacturing		
			32563	Surface Active Agent Manufacturing		
			32560	Toilet Preparation Manufacturing		
			32590	Printing Ink Manufacturing		
			32590	Explosives Manufacturing		
			32599	Custom Compounding of Purchased Resins		
			32592	Photographic Film, Paper, Plate, Chemical, and Copy Toner Manufacturing		
			32598	All Other Miscellaneous Chemical Product and Preparation Manufacturing		
			326 Plastics and Rubber Products Manufacturing			
			32611	Plastics Bag and Pouch Manufacturing		
			32612	Plastics Packaging Film and Sheet (including Laminated) Manufacturing		
			32613	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing		
			32621	Unlaminated Plastics Profile Shape Manufacturing		
			32622	Plastics Pipe and Pipe Fitting Manufacturing		
			32630	Laminated Plastics Plate, Sheet (except Packaging), and Shape Manufacturing		
			32640	Polystyrene Foam Product Manufacturing		
			32650	Urethane and Other Foam Product (except Polystyrene) Manufacturing		
			32660	Plastics Bottle Manufacturing		
			32691	Plastics Plumbing Fixture Manufacturing		
			32699	All Other Plastics Product Manufacturing		
			32621	Tire Manufacturing (except Retreading)		
			32622	Tire Retreading		
			32620	Rubber and Plastics Hoses and Belting Manufacturing		
			32629	Rubber Product Manufacturing for Mechanical Use		
			32629	All Other Rubber Product Manufacturing		
			327 Nonmetallic Mineral Product Manufacturing			
			32710	Pottery, Ceramics, and Plumbing Fixture Manufacturing		
			32710	Clay Building Material and Refractories Manufacturing		
			32721	Flat Glass Manufacturing		
			32722	Other Pressed and Blown Glass and Glassware Manufacturing		
			32723	Glass Container Manufacturing		
			32725	Glass Product Manufacturing Made of Purchased Glass		
			32730	Cement Manufacturing		
			32730	Ready-Mix Concrete Manufacturing		
			32731	Concrete Block and Brick Manufacturing		
			32732	Concrete Pipe Manufacturing		
			32730	Other Concrete Product Manufacturing		
			32740	Lime Manufacturing		
			32740	Gypsum Product Manufacturing		
			32790	Abrasive Product Manufacturing		
			32791	Cut Stone and Stone Product Manufacturing		
			32792	Ground or Treated Mineral and Earth Manufacturing		
			32793	Mineral Wool Manufacturing		
			32799	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing		

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TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title
			331 Primary Metal Manufacturing	
				331110 Iron and Steel Mills and Ferroalloy Manufacturing
				331210 Iron and Steel Pipe and Tube Manufacturing from Purchased Steel
				331221 Rolled Steel Shape Manufacturing
				331222 Steel Wire Drawing
				331313 Alumina Refining and Primary Aluminum Production
				331314 Secondary Smelting and Alloying of Aluminum
				331315 Aluminum Sheet, Plate, and Foil Manufacturing
				331318 Other Aluminum Rolling, Drawing, and Extruding
				331410 Nonferrous Metal (except Aluminum) Smelting and Refining
				331420 Copper Rolling, Drawing, Extruding, and Alloying
				331491 Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding
				331492 Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)
				331511 Iron Foundries
				331512 Steel Investment Foundries
				331513 Steel Foundries (except Investment)
				331523 Nonferrous Metal Die-Casting Foundries
				331524 Aluminum Foundries (except Die-Casting)
				331529 Other Nonferrous Metal Foundries (except Die-Casting)
			332 Fabricated Metal Product Manufacturing	
				332111 Iron and Steel Forging
				332112 Nonferrous Forging
				332114 Custom Roll Forming
				332117 Powder Metallurgy Part Manufacturing
				332119 Metal Crown, Closure, and Other Metal Stamping (except Automotive)
				332215 Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing
				332216 Saw Blade and Handtool Manufacturing
				332311 Prefabricated Metal Building and Component Manufacturing
				332312 Fabricated Structural Metal Manufacturing
				332313 Plate Work Manufacturing
				332321 Metal Window and Door Manufacturing
				332322 Sheet Metal Work Manufacturing
				332323 Ornamental and Architectural Metal Work Manufacturing
				332410 Power Boiler and Heat Exchanger Manufacturing
				332420 Metal Tank (Heavy Gauge) Manufacturing
				332431 Metal Can Manufacturing
				332439 Other Metal Container Manufacturing
				332510 Hardware Manufacturing
				332613 Spring Manufacturing
				332618 Other Fabricated Wire Product Manufacturing
				332710 Machine Shops
				332721 Precision Turned Product Manufacturing
				332722 Bolt, Nut, Screw, Rivet, and Washer Manufacturing
				332811 Metal Heat Treating
				332812 Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers
				332813 Electroplating, Plating, Polishing, Anodizing, and Coloring
				332911 Industrial Valve Manufacturing
				332912 Fluid Power Valve and Hose Fitting Manufacturing
				332913 Plumbing Fixture Fitting and Trim Manufacturing
				332919 Other Metal Valve and Pipe Fitting Manufacturing
				332991 Ball and Roller Bearing Manufacturing
				332992 Small Arms Ammunition Manufacturing
				332993 Ammunition (except Small Arms) Manufacturing
				332994 Small Arms, Ordnance, and Ordnance Accessories Manufacturing
				332996 Fabricated Pipe and Pipe Fitting Manufacturing
				332999 All Other Miscellaneous Fabricated Metal Product Manufacturing
			333 Machinery Manufacturing	
				333111 Farm Machinery and Equipment Manufacturing
				333112 Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing
				333120 Construction Machinery Manufacturing
				333131 Mining Machinery and Equipment Manufacturing
				333132 Oil and Gas Field Machinery and Equipment Manufacturing
				333241 Food Product Machinery Manufacturing
				333242 Semiconductor Machinery Manufacturing
				333243 Sawmill, Woodworking, and Paper Machinery Manufacturing
				333248 All Other Industrial Machinery Manufacturing
				333310 Commercial and Service Industry Machinery Manufacturing
				333413 Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing
				333414 Heating Equipment (except Warm Air Furnaces) Manufacturing
				333415 Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing
				333511 Industrial Mold Manufacturing
				333514 Special Die and Tool, Die Set, Jig, and Fixture Manufacturing
				333515 Cutting Tool and Machine Tool Accessory Manufacturing
				333517 Machine Tool Manufacturing
				333519 Rolling Mill and Other Metalworking Machinery Manufacturing
				333611 Turbine and Turbine Generator Set Units Manufacturing
				333612 Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing
				333613 Mechanical Power Transmission Equipment Manufacturing
				333618 Other Engine Equipment Manufacturing
				333912 Air and Gas Compressor Manufacturing
				333914 Measuring, Dispensing, and Other Pumping Equipment Manufacturing
				333921 Elevator and Moving Stairway Manufacturing
				333922 Conveyor and Conveying Equipment Manufacturing
				333923 Overhead Traveling Crane, Hoist, and Monorail System Manufacturing
				333924 Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing
				333991 Power-Driven Handtool Manufacturing
				333992 Welding and Soldering Equipment Manufacturing
				333993 Packaging Machinery Manufacturing
				333994 Industrial Process Furnace and Oven Manufacturing
				333995 Fluid Power Cylinder and Actuator Manufacturing
				333996 Fluid Power Pump and Motor Manufacturing
				333998 All Other Miscellaneous General Purpose Machinery Manufacturing
			334 Computer and Electronic Product Manufacturing	
				334111 Electronic Computer Manufacturing
				334112 Computer Storage Device Manufacturing
				334118 Computer Terminal and Other Computer Peripheral Equipment Manufacturing
				334210 Telephone Apparatus Manufacturing
				334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
				334290 Other Communications Equipment Manufacturing
				334310 Audio and Video Equipment Manufacturing
				334412 Bare Printed Circuit Board Manufacturing
				334413 Semiconductor and Related Device Manufacturing
				334416 Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing
				334417 Electronic Connector Manufacturing
				334418 Printed Circuit Assembly (Electronic Assembly) Manufacturing
				334419 Other Electronic Component Manufacturing
				334510 Electromedical and Electrotherapeutic Apparatus Manufacturing
				334511 Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing
				334512 Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use
				334513 Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables
				334514 Totalizing Fluid Meter and Counting Device Manufacturing
				334515 Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
				334516 Analytical Laboratory Instrument Manufacturing
				334517 Irradiation Apparatus Manufacturing
				334519 Other Measuring and Controlling Device Manufacturing
				334610 Manufacturing and Reproducing Magnetic and Optical Media

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TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title	
			335 Electrical Equipment, Appliance, and Component Manufacturing	335131 Residential Electric Lighting Fixture Manufacturing 335132 Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing 335139 Electric Lamp Bulb and Other Lighting Equipment Manufacturing 335210 Small Electrical Appliance Manufacturing 335220 Major Household Appliance Manufacturing 335311 Power, Distribution, and Specialty Transformer Manufacturing 335312 Motor and Generator Manufacturing 335313 Switchgear and Switchboard Apparatus Manufacturing 335314 Relay and Industrial Control Manufacturing 335910 Battery Manufacturing 335921 Fiber Optic Cable Manufacturing 335929 Other Communication and Energy Wire Manufacturing 335931 Current-Carrying Wiring Device Manufacturing 335932 Noncurrent-Carrying Wiring Device Manufacturing 335991 Carbon and Graphite Product Manufacturing 335999 All Other Miscellaneous Electrical Equipment and Component Manufacturing	
			336 Transportation Equipment Manufacturing	336110 Automobile and Light Duty Motor Vehicle Manufacturing 336120 Heavy Duty Truck Manufacturing 336211 Motor Vehicle Body Manufacturing 336212 Truck Trailer Manufacturing 336213 Motor Home Manufacturing 336214 Travel Trailer and Camper Manufacturing 336310 Motor Vehicle Gasoline Engine and Engine Parts Manufacturing 336320 Motor Vehicle Electrical and Electronic Equipment Manufacturing 336330 Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing 336340 Motor Vehicle Brake System Manufacturing 336350 Motor Vehicle Transmission and Power Train Parts Manufacturing 336360 Motor Vehicle Seating and Interior Trim Manufacturing 336370 Motor Vehicle Metal Stamping 336390 Other Motor Vehicle Parts Manufacturing 336411 Aircraft Manufacturing 336412 Aircraft Engine and Engine Parts Manufacturing 336413 Other Aircraft Parts and Auxiliary Equipment Manufacturing 336414 Guided Missile and Space Vehicle Manufacturing 336415 Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing 336419 Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing 336510 Railroad Rolling Stock Manufacturing 336611 Ship Building and Repairing 336612 Boat Building 336991 Motorcycle, Bicycle, and Parts Manufacturing 336992 Military Armored Vehicle, Tank, and Tank Component Manufacturing 336999 All Other Transportation Equipment Manufacturing	
			337 Furniture and Related Product Manufacturing	337110 Wood Kitchen Cabinet and Countertop Manufacturing 337121 Upholstered Household Furniture Manufacturing 337122 Nonupholstered Wood Household Furniture Manufacturing 337126 Household Furniture (except Wood and Upholstered) Manufacturing 337127 Institutional Furniture Manufacturing 337211 Wood Office Furniture Manufacturing 337212 Custom Architectural Woodwork and Millwork Manufacturing 337214 Office Furniture (except Wood) Manufacturing 337215 Showcase, Partition, Shelving, and Locker Manufacturing 337910 Mattress Manufacturing 337920 Blind and Shade Manufacturing	
			339 Miscellaneous Manufacturing	339112 Surgical and Medical Instrument Manufacturing 339113 Surgical Appliance and Supplies Manufacturing 339114 Dental Equipment and Supplies Manufacturing 339115 Ophthalmic Goods Manufacturing 339116 Dental Laboratories 339910 Jewelry and Silverware Manufacturing 339920 Sporting and Athletic Goods Manufacturing 339930 Doll, Toy, and Game Manufacturing 339940 Office Supplies (except Paper) Manufacturing 339950 Sign Manufacturing 339991 Gasket, Packing, and Sealing Device Manufacturing 339992 Musical Instrument Manufacturing 339993 Fastener, Button, Needle, and Pin Manufacturing 339994 Broom, Brush, and Mop Manufacturing 339995 Burial Casket Manufacturing 339999 All Other Miscellaneous Manufacturing	
			Wholesale Trade		
			42 Wholesale Trade	423 Merchant Wholesalers, Durable Goods	423110 Automobile and Other Motor Vehicle Merchant Wholesalers 423120 Motor Vehicle Supplies and New Parts Merchant Wholesalers 423130 Tire and Tube Merchant Wholesalers 423140 Motor Vehicle Parts (Used) Merchant Wholesalers 423210 Furniture Merchant Wholesalers 423220 Home Furnishing Merchant Wholesalers 423310 Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers 423320 Brick, Stone, and Related Construction Material Merchant Wholesalers 423330 Roofing, Siding, and Insulation Material Merchant Wholesalers 423390 Other Construction Material Merchant Wholesalers 423410 Photographic Equipment and Supplies Merchant Wholesalers 423420 Office Equipment Merchant Wholesalers 423430 Computer and Computer Peripheral Equipment and Software Merchant Wholesalers 423440 Other Commercial Equipment Merchant Wholesalers 423450 Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers 423460 Ophthalmic Goods Merchant Wholesalers 423490 Other Professional Equipment and Supplies Merchant Wholesalers 423510 Metal Service Centers and Other Metal Merchant Wholesalers 423520 Coal and Other Mineral and Ore Merchant Wholesalers 423610 Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers 423620 Household Appliances, Electric Housewares, and Consumer Electronics Merchant Wholesalers 423690 Other Electronic Parts and Equipment Merchant Wholesalers 423710 Hardware Merchant Wholesalers 423720 Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers 423730 Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers 423740 Refrigeration Equipment and Supplies Merchant Wholesalers 423810 Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers 423820 Farm and Garden Machinery and Equipment Merchant Wholesalers 423830 Industrial Machinery and Equipment Merchant Wholesalers 423840 Industrial Supplies Merchant Wholesalers 423850 Service Establishment Equipment and Supplies Merchant Wholesalers 423860 Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers 423910 Sporting and Recreational Goods and Supplies Merchant Wholesalers 423920 Toy and Hobby Goods and Supplies Merchant Wholesalers 423930 Recyclable Material Merchant Wholesalers 423940 Jewelry, Watch, Precious Stone, and Precious Metal Merchant Wholesalers 423990 Other Miscellaneous Durable Goods Merchant Wholesalers

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TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title			
			424 Merchant Wholesalers, Nondurable Goods	424110 Printing and Writing Paper Merchant Wholesalers			
			424120 Stationery and Office Supplies Merchant Wholesalers				
			424130 Industrial and Personal Service Paper Merchant Wholesalers				
			424210 Drugs and Druggists' Sundries Merchant Wholesalers				
			424310 Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers				
			424340 Footwear Merchant Wholesalers				
			424350 Clothing and Clothing Accessories Merchant Wholesalers				
			424410 General Line Grocery Merchant Wholesalers				
			424420 Packaged Frozen Food Merchant Wholesalers				
			424430 Dairy Product (except Dried or Canned) Merchant Wholesalers				
			424440 Poultry and Poultry Product Merchant Wholesalers				
			424450 Confectionery Merchant Wholesalers				
			424460 Fish and Seafood Merchant Wholesalers				
			424470 Meat and Meat Product Merchant Wholesalers				
			424480 Fresh Fruit and Vegetable Merchant Wholesalers				
			424490 Other Grocery and Related Products Merchant Wholesalers				
			424510 Grain and Field Bean Merchant Wholesalers				
			424520 Livestock Merchant Wholesalers				
			424590 Other Farm Product Raw Material Merchant Wholesalers				
			424610 Plastics Materials and Basic Forms and Shapes Merchant Wholesalers				
			424690 Other Chemical and Allied Products Merchant Wholesalers				
			424710 Petroleum Bulk Stations and Terminals				
			424720 Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)				
			424810 Beer and Ale Merchant Wholesalers				
			424820 Wine and Distilled Alcoholic Beverage Merchant Wholesalers				
			424910 Farm Supplies Merchant Wholesalers				
			424920 Book, Periodical, and Newspaper Merchant Wholesalers				
			424930 Flower, Nursery Stock, and Florists' Supplies Merchant Wholesalers				
			424940 Tobacco Product and Electronic Cigarette Merchant Wholesalers				
			424950 Paint, Varnish, and Supplies Merchant Wholesalers				
			424990 Other Miscellaneous Nondurable Goods Merchant Wholesalers				
			425 Wholesale Trade Agents and Brokers	425120 Wholesale Trade Agents and Brokers			
			Transportation, Warehousing and Utilities				
						22 Utilities	221 Utilities
						221111 Hydroelectric Power Generation	
						221112 Fossil Fuel Electric Power Generation	
						221113 Nuclear Electric Power Generation	
						221114 Solar Electric Power Generation	
						221115 Wind Electric Power Generation	
						221116 Geothermal Electric Power Generation	
						221117 Biomass Electric Power Generation	
						221118 Other Electric Power Generation	
						221121 Electric Bulk Power Transmission and Control	
						221122 Electric Power Distribution	
						221210 Natural Gas Distribution	
						221310 Water Supply and Irrigation Systems	
						221320 Sewage Treatment Facilities	
						221330 Steam and Air-Conditioning Supply	
						48-49 Transportation and Warehousing	481 Air Transportation
						481111 Scheduled Passenger Air Transportation	
						481112 Scheduled Freight Air Transportation	
						481211 Nonscheduled Chartered Passenger Air Transportation	
						481212 Nonscheduled Chartered Freight Air Transportation	
						481219 Other Nonscheduled Air Transportation	
						482 Rail Transportation	482111 Line-Haul Railroads
						482112 Short Line Railroads	
						483 Water Transportation	483111 Deep Sea Freight Transportation
						483112 Deep Sea Passenger Transportation	
						483113 Coastal and Great Lakes Freight Transportation	
						483114 Coastal and Great Lakes Passenger Transportation	
						483211 Inland Water Freight Transportation	
						483212 Inland Water Passenger Transportation	
						484 Truck Transportation	484110 General Freight Trucking, Local
						484121 General Freight Trucking, Long-Distance, Truckload	
						484122 General Freight Trucking, Long-Distance, Less Than Truckload	
						484210 Used Household and Office Goods Moving	
						484220 Specialized Freight (except Used Goods) Trucking, Local	
						484230 Specialized Freight (except Used Goods) Trucking, Long-Distance	
						485 Transit and Ground Passenger Transportation	485111 Mixed Mode Transit Systems
						485112 Commuter Rail Systems	
						485113 Bus and Other Motor Vehicle Transit Systems	
						485119 Other Urban Transit Systems	
						485210 Interurban and Rural Bus Transportation	
						485310 Taxi and Ridesharing Services	
						485320 Limousine Service	
						485410 School and Employee Bus Transportation	
						485510 Charter Bus Industry	
						485991 Special Needs Transportation	
						485999 All Other Transit and Ground Passenger Transportation	
						486 Pipeline Transportation	486110 Pipeline Transportation of Crude Oil
						486210 Pipeline Transportation of Natural Gas	
						486910 Pipeline Transportation of Refined Petroleum Products	
						486990 All Other Pipeline Transportation	
						487 Scenic and Sightseeing Transportation	487110 Scenic and Sightseeing Transportation, Land
						487210 Scenic and Sightseeing Transportation, Water	
						487990 Scenic and Sightseeing Transportation, Other	
						488 Support Activities for Transportation	488111 Air Traffic Control
						488119 Other Airport Operations	
						488190 Other Support Activities for Air Transportation	
						488210 Support Activities for Rail Transportation	
						488310 Port and Harbor Operations	
						488320 Marine Cargo Handling	
						488330 Navigational Services to Shipping	
						488390 Other Support Activities for Water Transportation	
						488410 Motor Vehicle Towing	
						488490 Other Support Activities for Road Transportation	
						488510 Freight Transportation Arrangement	
						488991 Packing and Crating	
						488999 All Other Support Activities for Transportation	
						491 Postal Service	491110 Postal Service
						492 Couriers and Messengers	492110 Couriers and Express Delivery Services
						492210 Local Messengers and Local Delivery	
						493 Warehousing and Storage	493110 General Warehousing and Storage
						493120 Refrigerated Warehousing and Storage	
						493130 Farm Product Warehousing and Storage	
						493190 Other Warehousing and Storage	

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TUMF Category	SCAG RTP/SCS	NAICS Two Digit Code	NAICS Three Digit Code	NAICS Six Digit Code
	Employment Categories	NAICS Code NAICS Title	NAICS Code NAICS Title	NAICS Code NAICS Title
Retail	Retail Trade	44-45 Retail Trade	441 Motor Vehicle and Parts Dealers	
				441110 New Car Dealers
				441120 Used Car Dealers
				441210 Recreational Vehicle Dealers
				441222 Boat Dealers
				441227 Motorcycle, ATV, and All Other Motor Vehicle Dealers
				441330 Automotive Parts and Accessories Retailers
				441340 Tire Dealers
			444 Building Material and Garden Equipment and Supplies Dealers	444110 Home Centers
				444120 Paint and Wallpaper Retailers
				444140 Hardware Retailers
				444180 Other Building Material Dealers
				444230 Outdoor Power Equipment Retailers
				444240 Nursery, Garden Center, and Farm Supply Retailers
			445 Food and Beverage Retailers	445110 Supermarkets and Other Grocery Retailers (except Convenience Retailers)
				445131 Convenience Retailers
				445132 Vending Machine Operators
				445230 Fruit and Vegetable Retailers
				445240 Meat Retailers
				445250 Fish and Seafood Retailers
				445291 Baked Goods Retailers
				445292 Confectionery and Nut Retailers
				445298 All Other Specialty Food Retailers
				445320 Beer, Wine, and Liquor Retailers
			449 Furniture, Home Furnishings, Electronics, and Appliance Retailers	449110 Furniture Retailers
				449121 Floor Covering Retailers
				449122 Window Treatment Retailers
				449129 All Other Home Furnishings Retailers
				449210 Electronics and Appliance Retailers
			455 General Merchandise Retailers	455110 Department Stores
				455211 Warehouse Clubs and Supercenters
				455219 All Other General Merchandise Retailers
			456 Health and Personal Care Retailers	456110 Pharmacies and Drug Retailers
				456120 Cosmetics, Beauty Supplies, and Perfume Retailers
				456130 Optical Goods Retailers
				456191 Food (Health) Supplement Retailers
				456199 All Other Health and Personal Care Retailers
			457 Gasoline Stations and Fuel Dealers	457110 Gasoline Stations with Convenience Stores
				457120 Other Gasoline Stations
				457210 Fuel Dealers
			458 Clothing, Clothing Accessories, Shoe, and Jewelry Retailers	458110 Clothing and Clothing Accessories Retailers
				458210 Shoe Retailers
				458310 Jewelry Retailers
				458320 Luggage and Leather Goods Retailers
			459 Sporting Goods, Hobby, Musical Instrument, Book, and Miscellaneous Retailers	459110 Sporting Goods Retailers
				459120 Hobby, Toy, and Game Retailers
				459130 Sewing, Needlework, and Piece Goods Retailers
				459140 Musical Instrument and Supplies Retailers
				459210 Book Retailers and News Dealers
				459310 Florists
				459410 Office Supplies and Stationery Retailers
				459420 Gift, Novelty, and Souvenir Retailers
				459510 Used Merchandise Retailers
				459910 Pet and Pet Supplies Retailers
				459920 Art Dealers
				459930 Manufactured (Mobile) Home Dealers
				459991 Tobacco, Electronic Cigarette, and Other Smoking Supplies Retailers
				459999 All Other Miscellaneous Retailers

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TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code	NAICS Three Digit Code	NAICS Six Digit Code	NAICS Code	NAICS Title	
Service	Information	51	Information				
			512	Motion Picture and Sound Recording Industries			
				512110	Motion Picture and Video Production		
				512120	Motion Picture and Video Distribution		
				512131	Motion Picture Theaters (except Drive-Ins)		
				512132	Drive-In Motion Picture Theaters		
				512191	Teleproduction and Other Postproduction Services		
				512199	Other Motion Picture and Video Industries		
				512230	Music Publishers		
				512240	Sound Recording Studios		
				512250	Record Production and Distribution		
			512290	Other Sound Recording Industries			
			513	Publishing Industries			
				513110	Newspaper Publishers		
				513120	Periodical Publishers		
				513130	Book Publishers		
				513140	Directory and Mailing List Publishers		
				513191	Greeting Card Publishers		
			513199	All Other Publishers			
			513210	Software Publishers			
			516	Broadcasting and Content Providers			
				516110	Radio Broadcasting Stations		
				516220	Television Broadcasting Stations		
			516210	Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers			
			517	Telecommunications			
				517111	Wired Telecommunications Carriers		
				517112	Wireless Telecommunications Carriers (except Satellite)		
				517121	Telecommunications Resellers		
				517122	Agents for Wireless Telecommunications Services		
				517410	Satellite Telecommunications		
				517810	All Other Telecommunications		
			518	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services			
			518210	Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services			
519	Web Search Portals, Libraries, Archives, and Other Information Services						
	519210	Libraries and Archives					
	519290	Web Search Portals and All Other Information Services					
Financial Activities	52	Finance and Insurance					
		521	Monetary Authorities-Central Bank				
			521110	Monetary Authorities-Central Bank			
		522	Credit Intermediation and Related Activities				
			522110	Commercial Banking			
			522130	Credit Unions			
			522180	Savings Institutions and Other Depository Credit Intermediation			
			522210	Credit Card Issuing			
			522220	Sales Financing			
			522291	Consumer Lending			
			522292	Real Estate Credit			
			522299	International, Secondary Market, and All Other Nondepository Credit Intermediation			
			522310	Mortgage and Nonmortgage Loan Brokers			
			522320	Financial Transactions Processing, Reserve, and Clearinghouse Activities			
			522390	Other Activities Related to Credit Intermediation			
			523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities			
		523150		Investment Banking and Securities Intermediation			
		523160		Commodity Contracts Intermediation			
		523210		Securities and Commodity Exchanges			
		523910		Miscellaneous Intermediation			
		523940		Portfolio Management and Investment Advice			
		523991		Trust, Fiduciary, and Custody Activities			
		523999		Miscellaneous Financial Investment Activities			
		524	Insurance Carriers and Related Activities				
			524113	Direct Life Insurance Carriers			
			524114	Direct Health and Medical Insurance Carriers			
			524126	Direct Property and Casualty Insurance Carriers			
			524127	Direct Title Insurance Carriers			
			524128	Other Direct Insurance (except Life, Health, and Medical) Carriers			
			524130	Reinsurance Carriers			
			524210	Insurance Agencies and Brokerages			
			524291	Claims Adjusting			
			524292	Pharmacy Benefit Management and Other Third Party Administration of Insurance and Pension Funds			
524298	All Other Insurance Related Activities						
525	Funds, Trusts, and Other Financial Vehicles						
	525110	Pension Funds					
	525120	Health and Welfare Funds					
	525190	Other Insurance Funds					
	525910	Open-End Investment Funds					
	525920	Trusts, Estates, and Agency Accounts					
	525990	Other Financial Vehicles					
53	Real Estate and Rental and Leasing	531	Real Estate				
			531110	Lessors of Residential Buildings and Dwellings			
			531120	Lessors of Nonresidential Buildings (except Miniwarehouses)			
			531130	Lessors of Miniwarehouses and Self-Storage Units			
			531190	Lessors of Other Real Estate Property			
			531210	Offices of Real Estate Agents and Brokers			
			531311	Residential Property Managers			
			531312	Nonresidential Property Managers			
			531320	Offices of Real Estate Appraisers			
			531390	Other Activities Related to Real Estate			
		532	Rental and Leasing Services				
			532111	Passenger Car Rental			
			532112	Passenger Car Leasing			
			532120	Truck, Utility Trailer, and RV (Recreational Vehicle) Rental and Leasing			
			532210	Consumer Electronics and Appliances Rental			
			532281	Formal Wear and Costume Rental			
			532282	Video Tape and Disc Rental			
			532283	Home Health Equipment Rental			
			532284	Recreational Goods Rental			
			532289	All Other Consumer Goods Rental			
			532310	General Rental Centers			
			532411	Commercial Air, Rail, and Water Transportation Equipment Rental and Leasing			
			532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing			
			532420	Office Machinery and Equipment Rental and Leasing			
		532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing				
		533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)				
			533110	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)			

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TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title
	Professional and Business Services	54 Professional, Scientific, and Technical Services	541 Professional, Scientific, and Technical Services	54110 Offices of Lawyers
				54112 Offices of Notaries
				54119 Title Abstract and Settlement Offices
				54119 All Other Legal Services
				54121 Offices of Certified Public Accountants
				54123 Tax Preparation Services
				54124 Payroll Services
				54129 Other Accounting Services
				54130 Architectural Services
				54132 Landscape Architectural Services
				54133 Engineering Services
				54134 Drafting Services
				54135 Building Inspection Services
				54136 Geophysical Surveying and Mapping Services
				54137 Surveying and Mapping (except Geophysical) Services
				54138 Testing Laboratories and Services
				54140 Interior Design Services
				54142 Industrial Design Services
				54143 Graphic Design Services
				54149 Other Specialized Design Services
				54151 Custom Computer Programming Services
				54152 Computer Systems Design Services
				54153 Computer Facilities Management Services
				54159 Other Computer Related Services
				54161 Administrative Management and General Management Consulting Services
				54162 Human Resources Consulting Services
				54163 Marketing Consulting Services
				54164 Process, Physical Distribution, and Logistics Consulting Services
				54168 Other Management Consulting Services
				54162 Environmental Consulting Services
				54169 Other Scientific and Technical Consulting Services
				54173 Research and Development in Nanotechnology
				54174 Research and Development in Biotechnology (except Nanobiotechnology)
				54175 Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)
				54172 Research and Development in the Social Sciences and Humanities
				54180 Advertising Agencies
				54182 Public Relations Agencies
				54183 Media Buying Agencies
				54184 Media Representatives
				54185 Indoor and Outdoor Display Advertising
				54186 Direct Mail Advertising
				54187 Advertising Material Distribution Services
				54189 Other Services Related to Advertising
				54110 Marketing Research and Public Opinion Polling
				54192 Photography Studios, Portrait
				54192 Commercial Photography
				54193 Translation and Interpretation Services
				54194 Veterinary Services
				54199 All Other Professional, Scientific, and Technical Services
				55 Management of Companies and Enterprises
				551 Management of Companies and Enterprises
				55111 Offices of Bank Holding Companies
				55112 Offices of Other Holding Companies
				55114 Corporate, Subsidiary, and Regional Managing Offices
				56 Administrative and Support and Waste Management and Remediation Services
				561 Administrative and Support Services
				56110 Office Administrative Services
				56120 Facilities Support Services
				56131 Employment Placement Agencies
				56132 Executive Search Services
				56132 Temporary Help Services
				56133 Professional Employer Organizations
				56140 Document Preparation Services
				56142 Telephone Answering Services
				56142 Telemarketing Bureaus and Other Contact Centers
				56143 Private Mail Centers
				56143 Other Business Service Centers (including Copy Shops)
				56144 Collection Agencies
				56145 Credit Bureaus
				56149 Repossession Services
				56149 Court Reporting and Stenotype Services
				56149 All Other Business Support Services
				56150 Travel Agencies
				56150 Tour Operators
				56151 Convention and Visitors Bureaus
				56159 All Other Travel Arrangement and Reservation Services
				56161 Investigation and Personal Background Check Services
				56162 Security Guards and Patrol Services
				56163 Armored Car Services
				56162 Security Systems Services (except Locksmiths)
				56162 Locksmiths
				56170 Exterminating and Pest Control Services
				56170 Janitorial Services
				56173 Landscaping Services
				56174 Carpet and Upholstery Cleaning Services
				56179 Other Services to Buildings and Dwellings
				56190 Packaging and Labeling Services
				56192 Convention and Trade Show Organizers
				56190 All Other Support Services
				562 Waste Management and Remediation Services
				56211 Solid Waste Collection
				56212 Hazardous Waste Collection
				56219 Other Waste Collection
				56221 Hazardous Waste Treatment and Disposal
				56222 Solid Waste Landfill
				56223 Solid Waste Combustors and Incinerators
				56229 Other Nonhazardous Waste Treatment and Disposal
				56290 Remediation Services
				56292 Materials Recovery Facilities
				56291 Septic Tank and Related Services
				56298 All Other Miscellaneous Waste Management Services

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code	NAICS Three Digit Code	NAICS Code	NAICS Title	
	Education and Health Services					
	61	Educational Services	611	Educational Services	611110	Elementary and Secondary Schools
					611210	Junior Colleges
	611310	Colleges, Universities, and Professional Schools				
	611410	Business and Secretarial Schools				
	611420	Computer Training				
	611430	Professional and Management Development Training				
	611511	Cosmetology and Barber Schools				
	611512	Flight Training				
	611513	Apprenticeship Training				
	611519	Other Technical and Trade Schools				
	611610	Fine Arts Schools				
	611620	Sports and Recreation Instruction				
	611630	Language Schools				
	611691	Exam Preparation and Tutoring				
	611692	Automobile Driving Schools				
	611699	All Other Miscellaneous Schools and Instruction				
	611710	Educational Support Services				
	62	Health Care and Social Assistance	621	Ambulatory Health Care Services	621111	Offices of Physicians (except Mental Health Specialists)
					621112	Offices of Physicians, Mental Health Specialists
	621210	Offices of Dentists				
	621310	Offices of Chiropractors				
	621320	Offices of Optometrists				
	621330	Offices of Mental Health Practitioners (except Physicians)				
	621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists				
	621391	Offices of Podiatrists				
	621399	Offices of All Other Miscellaneous Health Practitioners				
	621410	Family Planning Centers				
	621420	Outpatient Mental Health and Substance Abuse Centers				
	621491	HMO Medical Centers				
	621492	Kidney Dialysis Centers				
	621493	Freestanding Ambulatory Surgical and Emergency Centers				
	621498	All Other Outpatient Care Centers				
	621511	Medical Laboratories				
	621512	Diagnostic Imaging Centers				
	621610	Home Health Care Services				
	621910	Ambulance Services				
	621991	Blood and Organ Banks				
	621999	All Other Miscellaneous Ambulatory Health Care Services				
	622	Hospitals			622110	General Medical and Surgical Hospitals
					622210	Psychiatric and Substance Abuse Hospitals
	622310	Specialty (except Psychiatric and Substance Abuse) Hospitals				
	623	Nursing and Residential Care Facilities			623110	Nursing Care Facilities (Skilled Nursing Facilities)
					623210	Residential Intellectual and Developmental Disability Facilities
	623220	Residential Mental Health and Substance Abuse Facilities				
	623311	Continuing Care Retirement Communities				
	623312	Assisted Living Facilities for the Elderly				
	623990	Other Residential Care Facilities				
	624	Social Assistance			624110	Child and Youth Services
					624120	Services for the Elderly and Persons with Disabilities
	624190	Other Individual and Family Services				
	624210	Community Food Services				
	624221	Temporary Shelters				
	624229	Other Community Housing Services				
	624230	Emergency and Other Relief Services				
	624310	Vocational Rehabilitation Services				
	624410	Child Care Services				
	Leisure and Hospitality					
	71	Arts, Entertainment, and Recreation	711	Performing Arts, Spectator Sports, and Related Industries	711110	Theater Companies and Dinner Theaters
					711120	Dance Companies
	711130	Musical Groups and Artists				
	711190	Other Performing Arts Companies				
	711211	Sports Teams and Clubs				
	711212	Racetracks				
	711219	Other Spectator Sports				
	711310	Promoters of Performing Arts, Sports, and Similar Events with Facilities				
	711320	Promoters of Performing Arts, Sports, and Similar Events without Facilities				
	711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures				
	711510	Independent Artists, Writers, and Performers				
	712	Museums, Historical Sites, and Similar Institutions			712110	Museums
					712120	Historical Sites
	712130	Zoos and Botanical Gardens				
	712190	Nature Parks and Other Similar Institutions				
	713	Amusement, Gambling, and Recreation Industries			713110	Amusement and Theme Parks
					713120	Amusement Arcades
	713210	Casinos (except Casino Hotels)				
	713290	Other Gambling Industries				
	713910	Golf Courses and Country Clubs				
	713920	Skating Facilities				
	713930	Marinas				
	713940	Fitness and Recreational Sports Centers				
	713950	Bowling Centers				
	713990	All Other Amusement and Recreation Industries				

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS Employment Categories	NAICS Two Digit Code NAICS Code NAICS Title	NAICS Three Digit Code NAICS Code NAICS Title	NAICS Six Digit Code NAICS Code NAICS Title
		72 Accommodation and Food Services	721 Accommodation	72110 Hotels (except Casino Hotels) and Motels
				721120 Casino Hotels
				721191 Bed-and-Breakfast Inns
				721199 All Other Traveler Accommodation
				721211 RV (Recreational Vehicle) Parks and Campgrounds
				721214 Recreational and Vacation Camps (except Campgrounds)
				721310 Rooming and Boarding Houses, Dormitories, and Workers' Camps
			722 Food Services and Drinking Places	722310 Food Service Contractors
				722320 Caterers
				722330 Mobile Food Services
				722410 Drinking Places (Alcoholic Beverages)
				722511 Full-Service Restaurants
				722513 Limited-Service Restaurants
				722514 Cafeterias, Grill Buffets, and Buffets
				722515 Snack and Nonalcoholic Beverage Bars
	Other Service	81 Other Services (except Public Administration)	811 Repair and Maintenance	811111 General Automotive Repair
				811114 Specialized Automotive Repair
				811121 Automotive Body, Paint, and Interior Repair and Maintenance
				811122 Automotive Glass Replacement Shops
				811191 Automotive Oil Change and Lubrication Shops
				811192 Car Washes
				811198 All Other Automotive Repair and Maintenance
				811210 Electronic and Precision Equipment Repair and Maintenance
				811310 Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
				811411 Home and Garden Equipment Repair and Maintenance
				811412 Appliance Repair and Maintenance
				811420 Upholstery and Furniture Repair
				811430 Footwear and Leather Goods Repair
				811490 Other Personal and Household Goods Repair and Maintenance
			812 Personal and Laundry Services	812111 Barber Shops
				812112 Beauty Salons
				812113 Nail Salons
				812191 Diet and Weight Reducing Centers
				812199 Other Personal Care Services
				812210 Funeral Homes and Funeral Services
				812220 Cemeteries and Crematories
				812310 Coin-Operated Laundries and Drycleaners
				812320 Drycleaning and Laundry Services (except Coin-Operated)
				812331 Linen Supply
				812332 Industrial Launderers
				812910 Pet Care (except Veterinary) Services
				812921 Photofinishing Laboratories (except One-Hour)
				812922 One-Hour Photofinishing
				812930 Parking Lots and Garages
				812990 All Other Personal Services
			813 Religious, Grantmaking, Civic, Professional, and Similar Organizations	813110 Religious Organizations
				813211 Grantmaking Foundations
				813212 Voluntary Health Organizations
				813219 Other Grantmaking and Giving Services
				813311 Human Rights Organizations
				813312 Environmental, Conservation and Wildlife Organizations
				813319 Other Social Advocacy Organizations
				813410 Civic and Social Organizations
				813910 Business Associations
				813920 Professional Organizations
			814 Private Households	813930 Labor Unions and Similar Labor Organizations
				813940 Political Organizations
				813990 Other Similar Organizations (except Business, Professional, Labor, and Political Organizations)
				814110 Private Households

TUMF Non-Residential Category Detailed NAICS Correspondence

TUMF Category	SCAG RTP/SCS	NAICS Two Digit Code	NAICS Three Digit Code	NAICS Six Digit Code
Employment Categories	NAICS Code	NAICS Title	NAICS Code	NAICS Title
Government/Public Sector				
	Government	92 Public Administration	921 Executive, Legislative, and Other General Government Support	
				92110 Executive Offices
				92120 Legislative Bodies
				92130 Public Finance Activities
				92140 Executive and Legislative Offices, Combined
				92150 American Indian and Alaska Native Tribal Governments
				92190 Other General Government Support
			922 Justice, Public Order, and Safety Activities	
				92210 Courts
				92220 Police Protection
				92230 Legal Counsel and Prosecution
				92240 Correctional Institutions
				92250 Parole Offices and Probation Offices
				92260 Fire Protection
				92290 Other Justice, Public Order, and Safety Activities
			923 Administration of Human Resource Programs	
				92310 Administration of Education Programs
				92320 Administration of Public Health Programs
				92330 Administration of Human Resource Programs (except Education, Public Health, and Veterans' Affairs Programs)
				92340 Administration of Veterans' Affairs
			924 Administration of Environmental Quality Programs	
				92410 Administration of Air and Water Resource and Solid Waste Management Programs
				92420 Administration of Conservation Programs
			925 Administration of Housing Programs, Urban Planning, and Community Development	
				92510 Administration of Housing Programs
				92520 Administration of Urban Planning and Community and Rural Development
			926 Administration of Economic Programs	
				92610 Administration of General Economic Programs
				92620 Regulation and Administration of Transportation Programs
				92630 Regulation and Administration of Communications, Electric, Gas, and Other Utilities
				92640 Regulation of Agricultural Marketing and Commodities
				92650 Regulation, Licensing, and Inspection of Miscellaneous Commercial Sectors
			927 Space Research and Technology	
				92710 Space Research and Technology
			928 National Security and International Affairs	
				92810 National Security
				92820 International Affairs

Source:

SCAG 2020 RTP/SCS
California Employment Development Department (EDD)
US Census Bureau, North American Industry Classification System (NAICS), 2022

Appendix C - Western Riverside County Traffic Growth 2018 – 2045

Existing (2018) and future (2045) traffic data were derived from RivCoM. The model area of coverage, level of roadway network and TAZ detail, and application on other regional transportation study efforts represented RivCoM as the appropriate tool for evaluating traffic growth as part of the Nexus Study.

The forecasts of existing and future congestion levels were derived from the Year 2018 Existing and Year 2045 No-Build scenarios, respectively. The 2018 Existing and 2045 No-Build scenarios were developed using RivCoM to model 2018 and 2045 SED, respectively, as derived from the SCAG 2020 RTP/SCS adopted SED forecasts, on the transportation network as it existed in 2021. The 2018 existing transportation network represents the most recent baseline network developed for RivCoM, and only reflects the inclusion of those projects that were funded, committed and under construction at that time, and therefore imminently to be part of the baseline transportation system in 2018. For the purposes of the TUMF network analysis, additional improvements on the TUMF arterial highway network that were either completed or under construction in the period between 2018 and December 2021 were added to the network to create a 2021 existing network. The 2021 existing network was subsequently modeled in RivCoM using both 2018 and 2045 SED to provide the 2018 Baseline and 2045 No-Build scenarios as the basis for comparison and analysis. The 2045 No-Build scenario did not include transportation improvements that are planned as part of the recently adopted SCAG 2020 RTP/SCS on the basis they are uncommitted (meaning that their implementation is dependent on securing future funding and approval). Inclusion of the uncommitted improvements masks the congestion effects of increasing travel. Inclusion of these improvements and the resultant masking is not appropriate for this analysis aimed at identifying the effects of increasing travel if improvements were not built.

The WRCOG TUMF study area was extracted from RivCoM for the purpose of calculating the following measures for Western Riverside County only. Traffic growth impacts for each of the two scenarios were calculated using the TransCAD platform.

- Total daily vehicle miles of travel (VMT),
- Total daily VMT on facilities experiencing LOS E or worse.
- Total daily vehicle hours of travel (VHT), and
- Total combined daily vehicle hours of delay (VHD)

The following formulas were used to calculate the respective values.

- $VMT = \text{Link Distance} * \text{Total Daily Volume}$
- $VHT = \text{Average Loaded (Congested) Link Travel Time} * \text{Total Daily Volume}$
- $VHD = VHT - (\text{Free-flow (Uncongested) Link Travel Time} * \text{Total Daily Volume})$
- $VMT \text{ LOS E or F} = VMT \text{ (on links where Daily V/C exceeded 0.90)}^{13}$

¹³ LOS Thresholds for LOS E are based on the 2010 Edition of the [Highway Capacity Manual](#) (Transportation Research Board, National Research Council, Washington, D.C., 2010) LOS Maximum V/C Criteria for Multilane Highways with 45 mph Free Flow Speed (Exhibit 14-5, Chapter 14, Page 14-5).

RivCoM breaks down its roadway network into functional categories called assignment groups. The measures were calculated selectively for all facilities, freeways only, arterials only, and TUMF arterials only by including and excluding different assignment groups and facilities. For the calculation of measures on “all facilities”, only the centroid connectors were excluded. Arterial values excluded all mixed-flow to carpool lane connector ramps, freeways, carpool lanes, centroid connectors, and freeway-to-freeway connector ramps, respectively. Freeways were defined as including mixed-flow to carpool lane connector ramps, freeways, carpool lanes, and freeway-to-freeway connector ramps, respectively.

The 2021 Existing Network by Facility Type is included in this Appendix as **Exhibit C-1**. The 2021 existing network was used as the basis for the 2018 Existing and 2045 No-Build scenarios by modeling 2018 and 2045 SED, respectively, on the 2021 existing network using RivCoM to determine the comparative effects of population, household and employment growth in the region. The results of the analysis of existing and future congestion levels are presented for peak periods in **Exhibit C-2** and for daily in **Exhibit C-3** in this Appendix and extracted for the combined peak periods in **Table 3.1** of the study report.

EXHIBIT C-1 Western Riverside County 2021 Existing Network Facility Type

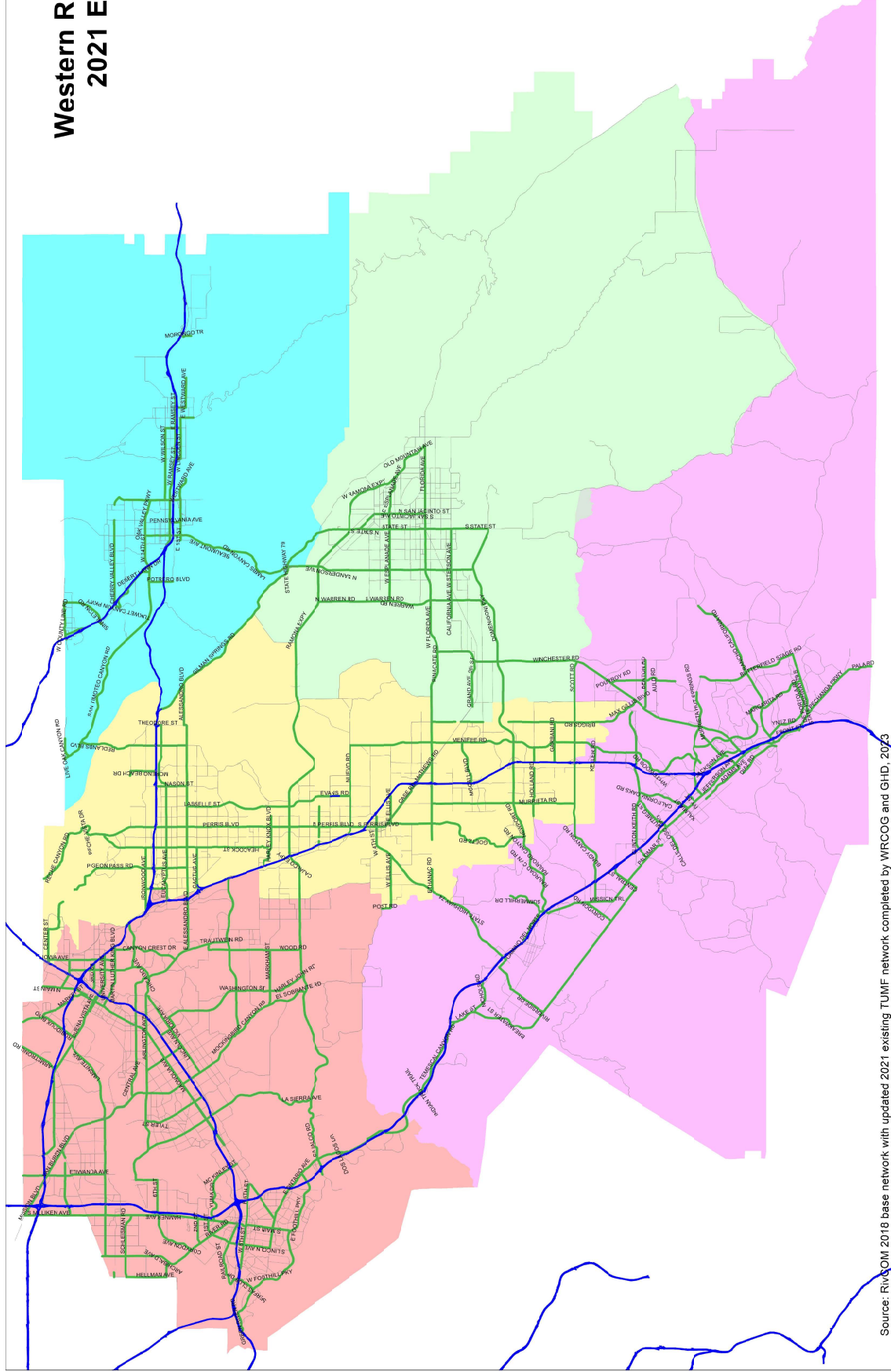
LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

Existing Facility Type

- TUMF Arterials
- NonTUMF Arterials
- Freeways



Source: RIVCO 2018 base network with updated 2021 existing TUMF network completed by WRCOG and GHD, 2023

EXHIBIT C-2

Western Riverside County Regional Highway System Measures of Performance (2018 - 2045) – Peak Periods

Measures of Performance	AM Peak			PM Peak		
	2018	2045	% Change	% Annual	2018	2045
VMT - Total ALL FACILITIES	10,324,900	13,225,039	28%	0.9%	12,959,824	16,672,215
VMT - FREEWAYS	5,877,972	6,720,682	14%	0.5%	7,636,550	8,769,602
VMT - ALL ARTERIALS	4,446,928	6,504,357	46%	1.4%	5,323,274	7,902,613
TOTAL - TUMF ARTERIAL VMT	2,793,846	3,826,810	37%	1.2%	3,423,139	4,770,390
VHT - TOTAL ALL FACILITIES	251,133	435,243	73%	2.1%	290,218	480,196
VHT - FREEWAYS	120,257	186,102	55%	1.6%	143,535	213,027
VHT - ALL ARTERIALS	130,875	249,142	90%	2.4%	146,683	267,169
TOTAL TUMF ARTERIAL VHT	81,578	154,106	89%	2.4%	92,877	166,763
VHD - TOTAL ALL FACILITIES	57,989	177,814	207%	4.2%	50,911	160,242
VHD - FREEWAYS	34,221	86,616	153%	3.5%	31,935	84,033
VHD - ALL ARTERIALS	23,768	91,198	284%	5.1%	18,977	76,209
TOTAL TUMF ARTERIAL VHD	18,024	66,789	271%	5.0%	15,225	58,074
VMT LOS E & F - TOTAL ALL FACILITIES	2,960,551	6,364,419	115%	2.9%	2,644,519	7,005,063
VMT LOS E & F - FREEWAYS	2,435,804	4,276,258	76%	2.1%	2,289,667	5,040,633
VMT LOS E & F - ALL ARTERIALS	524,747	2,088,161	298%	5.2%	354,852	1,964,430
TOTAL TUMF ARTERIAL VMT w/ LOS E & F	448,168	1,585,571	254%	4.8%	317,614	1,598,561
% of TUMF ARTERIAL VMT w/ LOS E & F	16%	41%			9%	34%

* Based on RivCom 2018 network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network completed.

NOTES:

Volume is adjusted by PCE factor

VMT = vehicle miles of travel (the total combined distance that all vehicles travel on the system)

VHT = vehicle hours of travel (the total combined time that all vehicles are traveling on the system)

VHD = vehicle hours of delay (the total combined time that all vehicles have been delayed on the system based on the difference between forecast travel time and free-flow (ideal) travel time)

LOS = level of service (based on forecast volume to capacity ratios).

LOS E or Worse was determined by V/C ratio that exceeds 0.9 thresholds as indicated in the Riverside County General Plan.

WRCOG

TUMF Nexus Study – 2024 Program Update

C-4

**Adopted by WRCOG Executive Committee
September 9, 2024**

EXHIBIT C-3

Western Riverside County Regional Highway System Measures of Performance (2018 - 2045) – Daily

Measures of Performance	Peak Periods (Total)			Daily		
	2018	2045	% Change	% Annual	2018	2045
VMT - Total ALL FACILITIES	23,284,724	29,897,254	28%	0.9%	41,378,907	53,832,389
VMT - FREEWAYS	13,514,522	15,490,284	15%	0.5%	24,642,357	29,200,582
VMT - ALL ARTERIALS	9,770,202	14,406,970	47%	1.4%	16,736,551	24,631,807
TOTAL - TUMF ARTERIAL VMT	6,216,985	8,597,200	38%	1.2%	10,794,415	15,170,125
VHT - TOTAL ALL FACILITIES	541,350	915,439	69%	2.0%	893,813	1,433,458
VHT - FREEWAYS	263,792	399,128	51%	1.5%	440,073	637,990
VHT - ALL ARTERIALS	277,558	516,311	86%	2.3%	453,740	795,469
TOTAL TUMF ARTERIAL VHT	174,455	320,869	84%	2.3%	285,520	496,757
VHD - TOTAL ALL FACILITIES	108,900	338,056	210%	4.3%	131,965	410,511
VHD - FREEWAYS	66,156	170,649	158%	3.6%	79,532	208,287
VHD - ALL ARTERIALS	42,745	167,407	292%	5.2%	52,434	202,223
TOTAL TUMF ARTERIAL VHD	33,249	124,863	276%	5.0%	41,025	152,200
VMT LOS E - TOTAL ALL FACILITIES	5,605,070	13,369,483	139%	3.3%	6,153,146	16,090,205
VMT LOS E - FREEWAYS	4,725,471	9,316,891	97%	2.5%	5,141,215	11,306,348
VMT LOS E & F - ALL ARTERIALS	879,599	4,052,592	361%	5.8%	1,011,931	4,783,858
TOTAL TUMF ARTERIAL VMT w/ LOS E or worse	765,782	3,184,133	316%	5.4%	878,465	3,819,635
% of TUMF ARTERIAL VMT w/ LOS E or worse	12%	37%			8%	25%

* Based on RivCoM 2018 network and SCAG 2020 RTP/SCS SED with updated 2021 arterial network completed.

NOTES:

Volume is adjusted by PCE factor

VMT = vehicle miles of travel (the total combined distance that all vehicles travel on the system)

VHT = vehicle hours of travel (the total combined time that all vehicles are traveling on the system)

VHD = vehicle hours of delay (the total combined time that all vehicles have been delayed on the system based on the difference between forecast tr

LOS = level of service (based on forecast volume to capacity ratios).

LOS E or Worse was determined by V/C ratio that exceeds 0.9 thresholds as indicated in the Riverside County Generc

WRCOG

TUMF Nexus Study – 2024 Program Update

C-5

Adopted by WRCOG Executive Committee

September 9, 2024

Appendix D - Western Riverside County Bus Transit System Ridership 2023 – 2045

Actual average weekday daily ridership for Riverside Transit Agency (RTA) transit bus services was tabulated for 2023. Forecast average weekday daily ridership for RTA bus transit services was retrieved from the SCAG 2020 RTP/SCS Model for horizon year 2045. The bus transit ridership for 2023 and 2045 was tabulated to represent existing and future regional bus transit trips consistent with the analysis of highway trips described in **Section 3.1** and **Appendix C**. **Table D-1** summarizes the weekday bus transit ridership in Western Riverside County.

TABLE D-1 - Regional Bus Transit Weekday System Ridership

Year	Western Riverside Weekday Projected System Ridership
2023*	16,575
2045**	57,282

Notes: * - 2023 actual average weekday daily ridership provided by RTA staff December 1, 2023

** - 2045 forecast average weekday daily ridership obtained from SCAG 2020 RTP/SCS Model as provided by Fehr and Peers, November 28, 2023

Appendix E - Western Riverside County Regional System of Highways and Arterials Performance Measures

An integral element of the Nexus Study is the designation of the Western Riverside County Regional System of Highways and Arterials (also referred to as the "TUMF Network"). This network of regionally significant highways represents those arterial and collector highway and roadway facilities that primarily support inter-community trips in Western Riverside County and supplement the regional freeway system, and represents the extents of the network of highways and roadways that would be eligible for TUMF funded improvements. The Regional System of Highways and Arterials does NOT include the freeways of Western Riverside County which primarily serve inter-regional trips.

The designation of the Regional System of Highways and Arterials in the original TUMF Nexus Study adopted by the WRCOG Executive Committee in October 2002 was initiated with the identification of highways and roadways that met certain specified guidelines as defined by the WRCOG Public Works Committee. The guidelines are defined in **Section 4.1** of the Nexus Report, and include:

1. Arterial highway facilities proposed to have a minimum of four lanes at future buildout (not including freeways).
2. Facilities that serve multiple jurisdictions and/or provide connectivity between communities both within and adjoining Western Riverside County.
3. Facilities with forecast traffic volumes in excess of 20,000 vehicles per day in the future horizon year.
4. Facilities with forecast volume to capacity ratio of 0.90 (LOS E) or greater in the future horizon year.
5. Facilities that accommodate regional fixed route transit services.
6. Facilities that provide direct access to major commercial, industrial, institutional, recreational or tourist activity centers, and multi-modal transportation facilities (such as airports, railway terminals and transit centers).

The original candidate facilities were identified by overlaying various transportation system and land use plots depicting parameters consistent with those defined by the specified guidelines. These plots included existing and proposed numbers of lanes, network volumes and volume to capacity ratio (LOS) derived from SCAG CTP Model networks developed by Transcore to support the ongoing Western Riverside County CETAP study, and existing land use information provided by SCAG. These plots were included in the Appendices that accompanied the original 2002 TUMF Nexus Study. Fixed route transit service information was provided by the Riverside County Regional Transportation Authority (RTA).

These various data inputs were overlaid and reviewed leading the definition of a segmented skeletal network of highways and roadways for further consideration. The skeletal network was further enhanced to reflect regional connectivity and access to activity center considerations. An initial draft Regional System of Highways and Arterials was developed and subsequently distributed to the County of Riverside and each City in Western Riverside County for review in the context of their respective City General

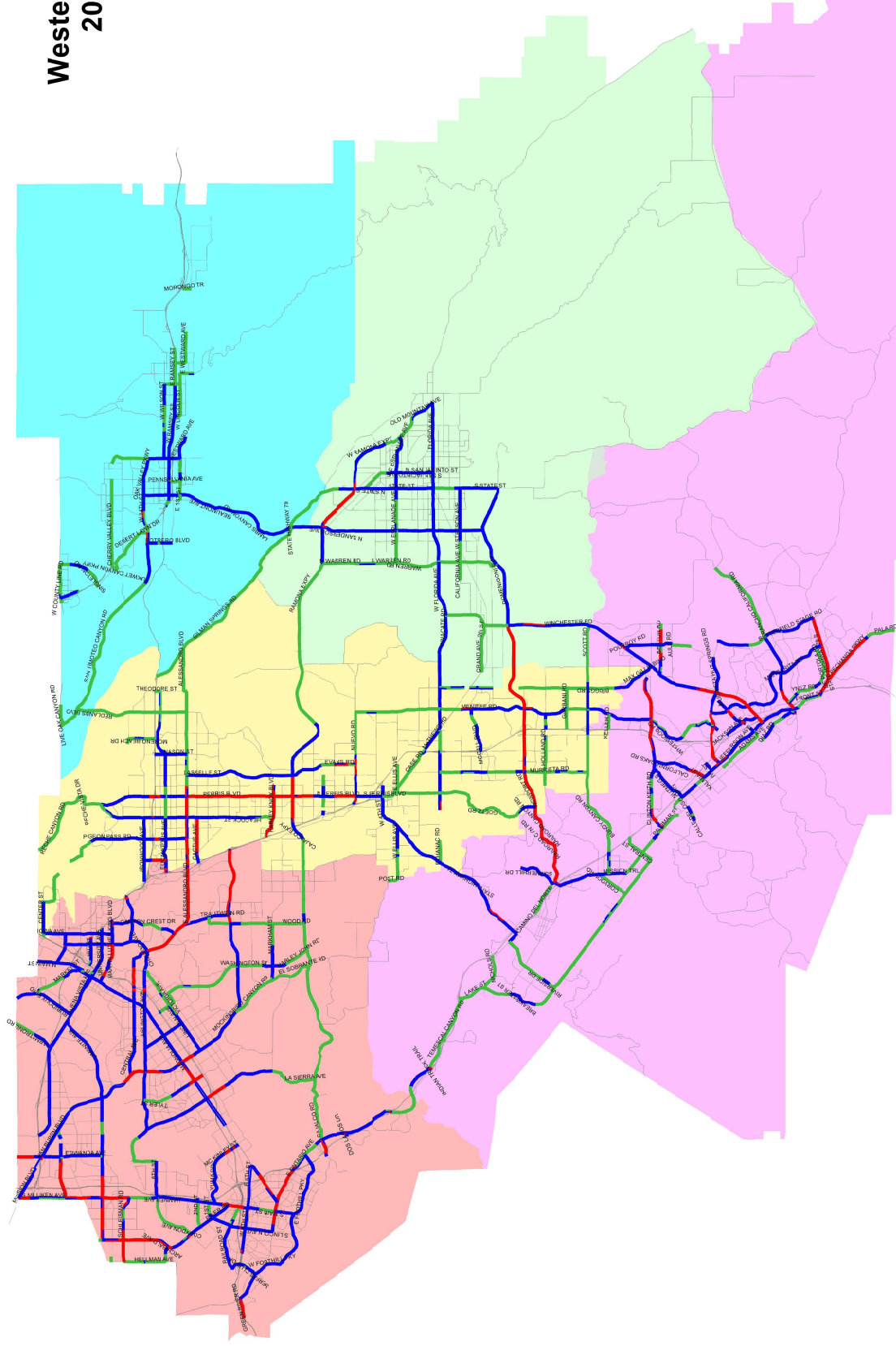
Plan Circulation Elements, primarily to confirm existing and future number of lanes and appropriateness of the facilities identified. The initial draft network was subsequently revised to consolidate appropriate General Plan Circulation Elements, including the identification of proposed new facilities as alternatives to existing facilities. It should be pointed out that the Regional System of Highways and Arterials does not represent a simple compilation of regional General Plan Circulation Elements, but rather incorporates the elements of regional General Plan Circulation Elements that are necessary for mitigating the cumulative regional traffic impacts of new development within the horizon year of the TUMF program.

The consolidated list of proposed network improvements (along with associated initial cost estimates) was subsequently distributed to each of the WRCOG jurisdictions, individual landowners, and other stakeholders including representatives of the development community through the Building Industry Association (BIA) for review. The review of the consolidated list of improvements (and associated costs) prompted a series of five peer review workshop meetings to specifically review each segment of roadway identified and the associated improvements to mitigate the traffic impacts of new development. One peer review workshop meeting was held for each of the five zones in the WRCOG region with meetings held at the Riverside County Assessor's Office between June 27, 2002 and July 18, 2002. The peer review workshop meetings involved representatives from WRCOG, the respective zone jurisdictions and the BIA. The peer review workshops culminated in the development (by consensus of the groups) of a revised list of proposed network improvements (and associated costs) more accurately reflecting the improvements necessary to mitigate the cumulative regional traffic impacts of new development.

Following the peer review, the initial Regional System of Highways and Arterials was reviewed and endorsed by the TUMF Technical Advisory Committee, the TUMF Policy Committee and the WRCOG Executive Committee and utilized as the basis for developing the original TUMF Nexus Study in October 2002.

For the 2024 update of the TUMF Nexus Study, the Regional System of Highways and Arterials was reassessed. Consistent with the changing rate of new development forecast for Western Riverside County as part of the SCAG 2020 RTP/SCS, including reductions in the overall level of non-residential employment, the review of the TUMF Network as part of the 2024 Nexus Update ensured facilities generally still met the previously described performance guidelines, and/or that the scope and magnitude of specific improvements to the TUMF Network were roughly proportional to the impacts needing to be mitigated. This review process involved the comparison of model outputs for the 2018 Baseline and 2045 No-Build Scenarios on the 2021 Existing arterial network to identify those facilities no longer expected to be impacted substantially by the cumulative effects of traffic growth from new development. This review resulted in various changes in the scope and magnitude of specific improvements previously identified on the TUMF Network. The updated model output plots utilized as the basis for the latest network review are included in this appendix as **Exhibit E-1** through **E-8**. The Regional System of Highways and Arterials is included as **Figure 4.1** in the Nexus Study report.

EXHIBIT E-1 Western Riverside County 2021 Existing Network Number of Lanes



LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

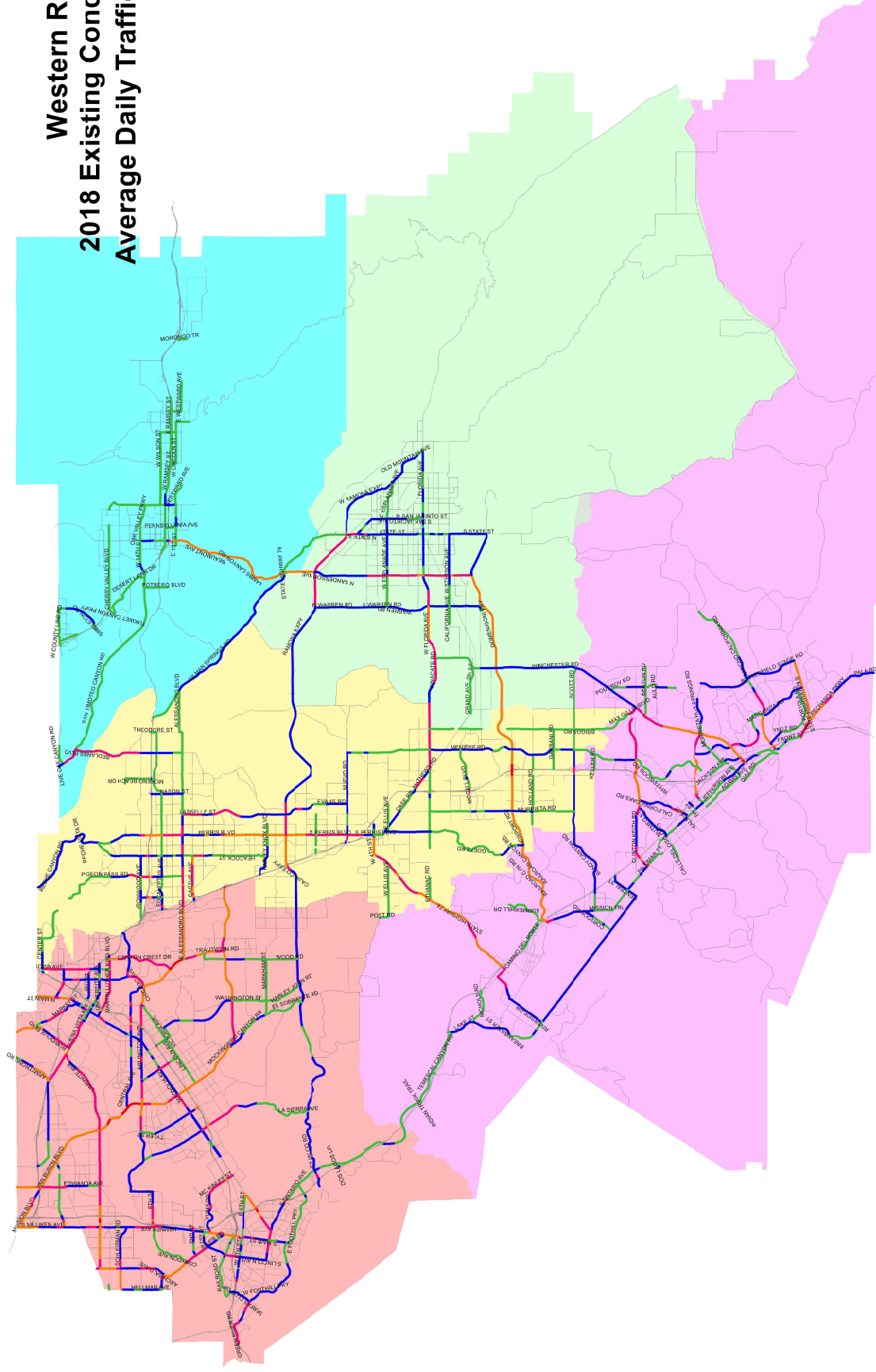
Existing Number of Lanes (Directional)

- 1 lane
- 2 lanes
- 3+ lanes



Source: RivCOM 2018 base network with updated 2021 existing TUMF network completed by WRCOG and GHD, 2023

EXHIBIT E-2 **Western Riverside County** **2018 Existing Conditions Scenario** **Average Daily Traffic Volume (ADT)**



LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

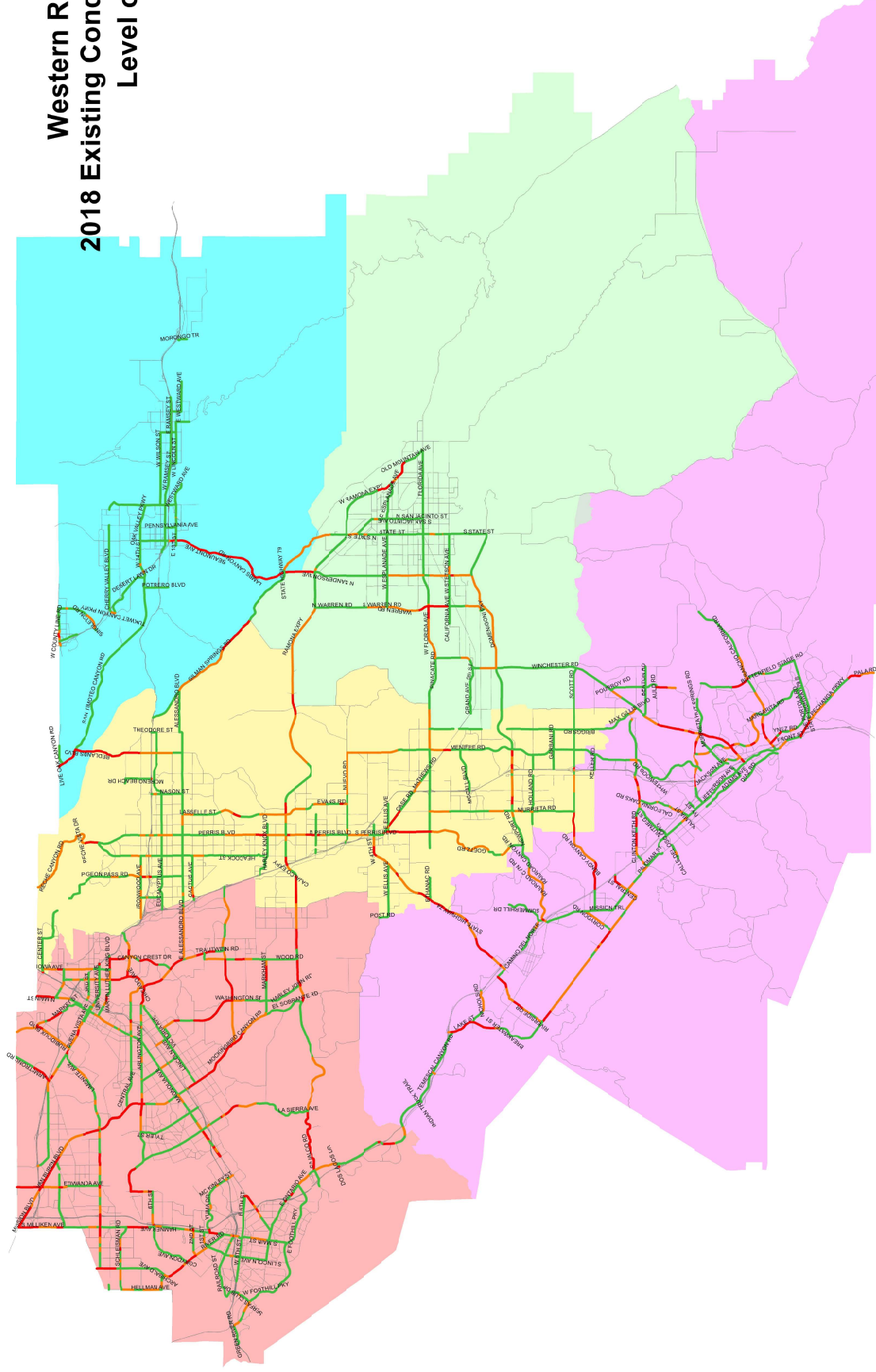
Average Daily Traffic (ADT)

- <10,000
- 10,000-20,000
- 20,000-30,000
- 30,000-50,000
- 50,000+



Source: RivCOM 2018 base network with updated 2021 existing TUMF network and SCAG 2020 RTP/SCS 2018 base year SED

EXHIBIT E-3 **Western Riverside County** **2018 Existing Conditions Scenario** **Level of Service (LOS)**



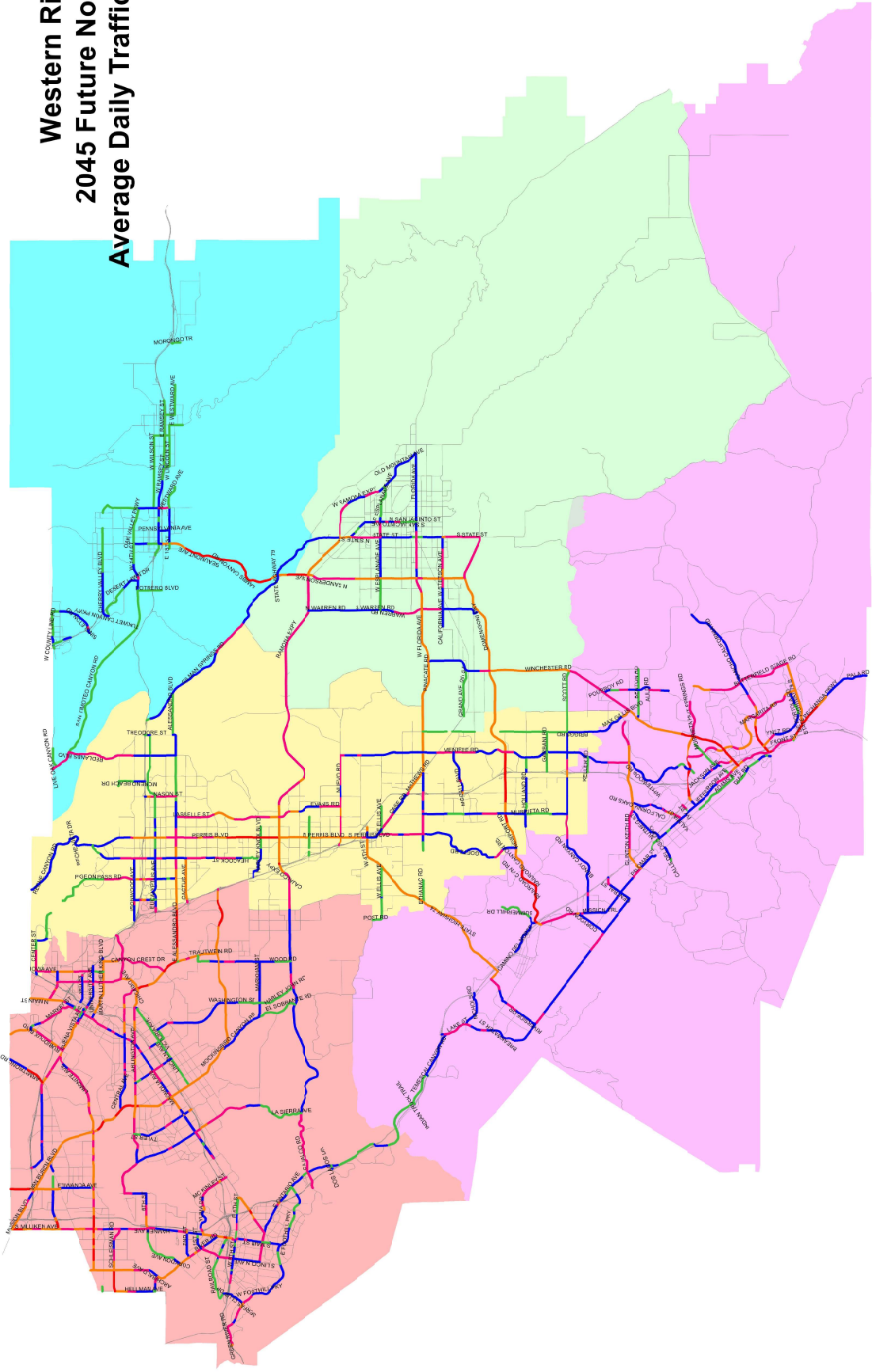
LEGEND

- TUMF ZONE**
 - Northwest
 - Central
 - Pass
 - Southwest
 - Hemet/San Jacinto
- Peak Period LOS**
 - LOS A or B
 - LOS C or D
 - LOS E or F



Source: RIVCOM 2018 base network with updated 2021 existing TUMF network and SCAG 2020 RTP/SCS 2018 base year SED

EXHIBIT E-4 **Western Riverside County** **2045 Future No-Build Scenario** **Average Daily Traffic Volume (ADT)**



LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

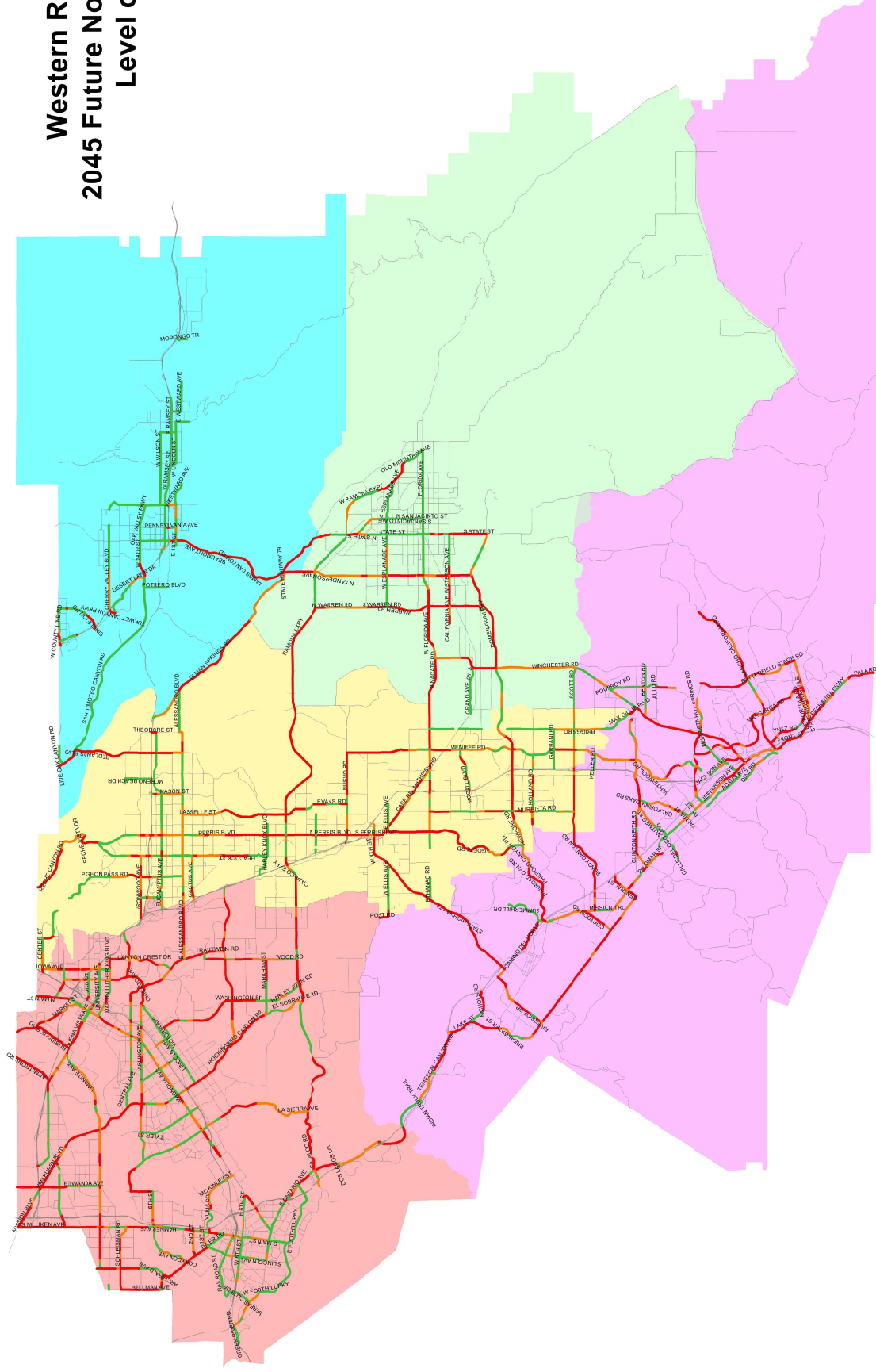
Average Daily Traffic (ADT)

- <10,000
- 10,000-20,000
- 20,000-30,000
- 30,000-50,000
- 50,000+



Source: RivCOM 2018 base network with updated 2021 existing TUMF network and SCAG 2020 RTP/SCS 2045 horizon year SED

EXHIBIT E-5 **Western Riverside County** **2045 Future No-Build Scenario** **Level of Service (LOS)**

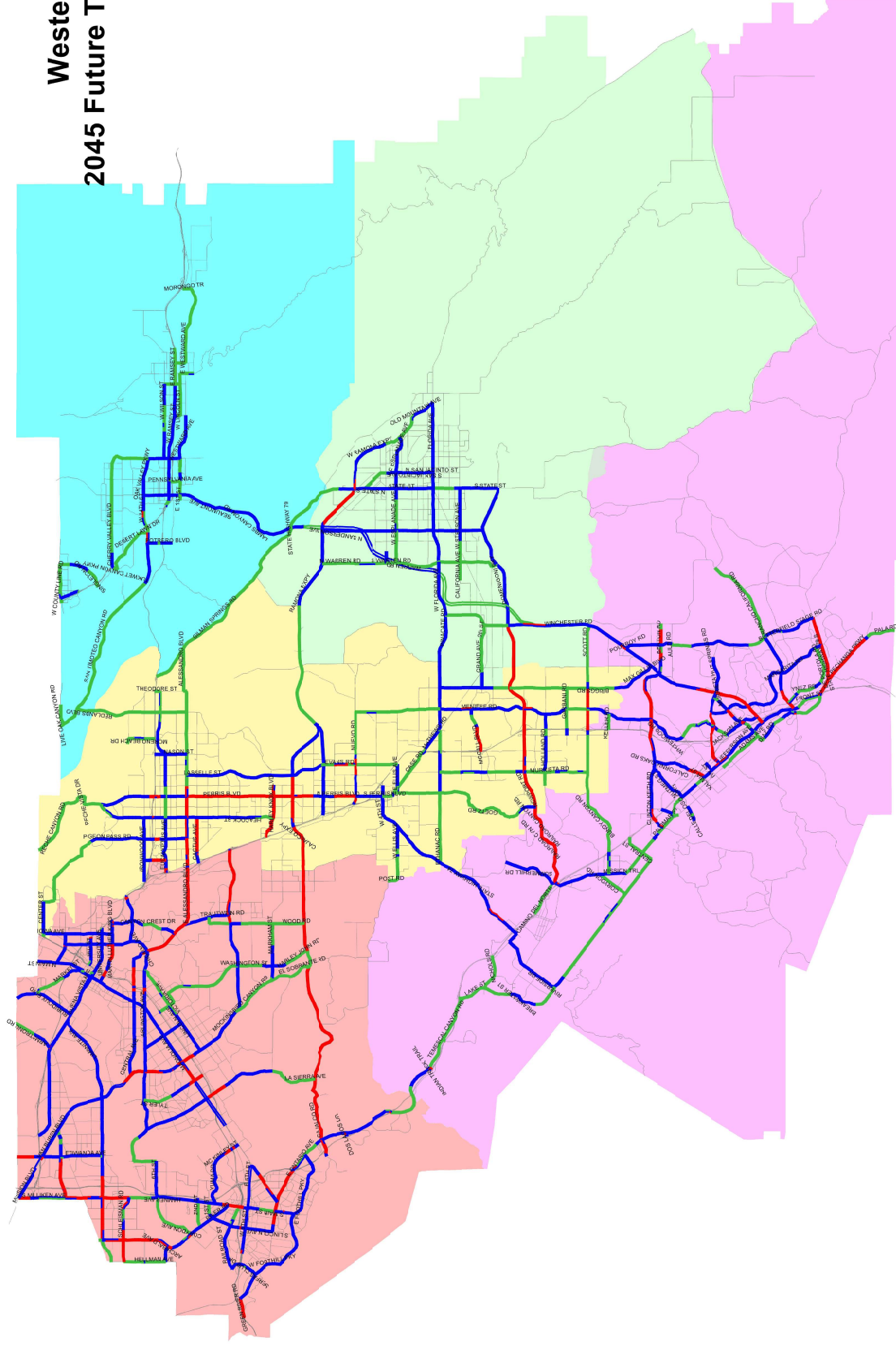


LEGEND

- TUMF ZONE**
 - Northwest
 - Central
 - Pass
 - Southwest
 - Hemet/San Jacinto
- Peak Period LOS**
 - LOS A or B
 - LOS C or D
 - LOS E or F

Source: RivCOM 2018 base network with updated 2021 existing TUMF network and SCAG 2020 RTP/SCS 2045 horizon year SED

EXHIBIT E-6 Western Riverside County 2045 Future TUMF Build Scenario Number of Lanes



LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

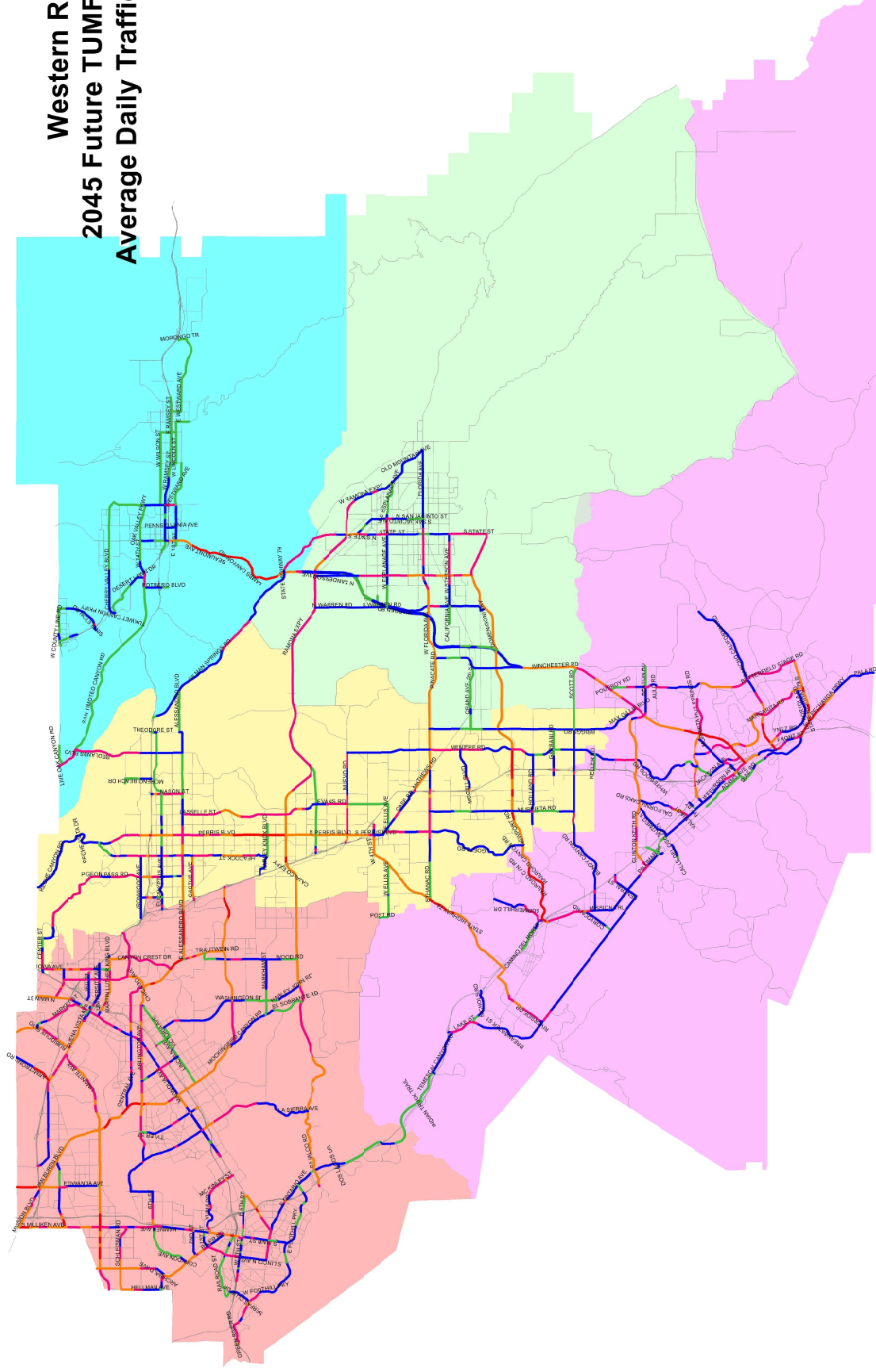
Existing Number of Lanes (Directional)

- 1 lane
- 2 lanes
- 3+ lanes



Source: RivCOM 2018 base network with updated 2045 recommended TUMF build network and SCAG 2020 RTP/SCS 2045 horizon year SED

EXHIBIT E-7 **Western Riverside County** **2045 Future TUMF Build Scenario** **Average Daily Traffic Volume (ADT)**



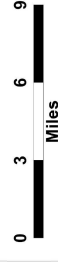
LEGEND

TUMF ZONE

- Northwest
- Central
- Pass
- Southwest
- Hemet/San Jacinto

Average Daily Traffic (ADT)

- <10,000
- 10,000-20,000
- 20,000-30,000
- 30,000-50,000
- 50,000+

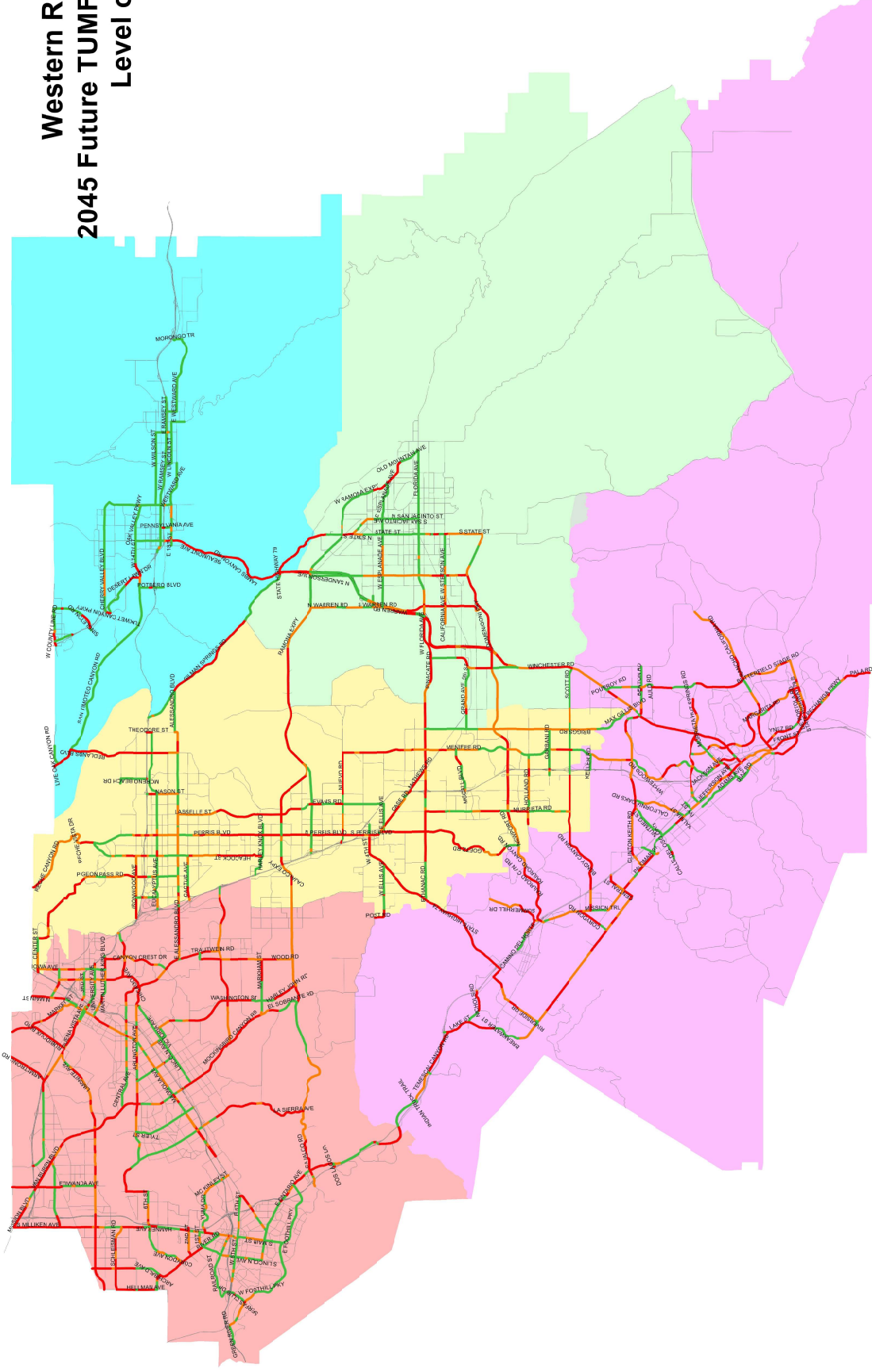
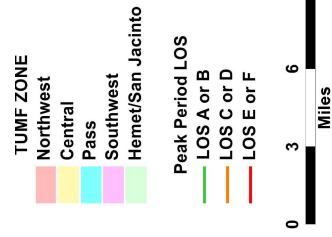


Source: RvCOM 2018 base network with updated 2045 recommended TUMF build network and SCAG 2020 RTP/SCS 2045 horizon year SED

EXHIBIT E-8 **Western Riverside County** **2045 Future TUMF Build Scenario** **Level of Service (LOS)**



LEGEND



Source: RIVCOM 2018 base network with updated 2045 recommended TUMF build network and SCAG 2020 RTP/SCS 2045 horizon year SED

Appendix F - TUMF Network Cost Assumptions

The TUMF program was established as a uniform impact fee program that is applied to mitigate the cumulative transportation impacts of new development on the regional arterial highway system. In establishing the technical basis for TUMF, like any impact fee program, there are two fundamental requirements that must be addressed: establishing a rational nexus for the program; and determining that any fee is roughly proportional to the impact of a proposed development. These requirements are rooted in two well-known legal cases: *Nollan v. California Coastal Commission* (1987) 483 U.S. 825; and *Dolan v. City of Tigard* (1994) 512 U.S. 374.

To establish project costs that meet the rough proportionality test for an expansive network of facilities, WRCOG utilizes a conceptual planning level project and cost estimation approach based on typical unit costs for a variety of project types and conditions. These unit costs are intended to reflect a range of values that are typical for the types of projects that are necessary to mitigate the cumulative regional impacts of new development. These unit costs are developed for each typical project type based on actual observed values for the various materials, labor and right-of-way that would typically be required to complete a project. Although the actual materials, labor, right-of-way and associate costs to complete each specific project can be expected to vary based on the particular conditions of each site and project requirements at the time the project is actually implemented, the approach of using typical unit costs as the basis for the TUMF program represents a manageable and appropriate level of detail to establish conceptual project cost estimates that meet the requirement for rough proportionality.

The application of typical unit costs and the associated identification of a maximum TUMF share for each eligible project also provides a framework that protects the program from projects with actual costs that vary significantly from the typical cost estimates used as the program basis. The TUMF program administrative policies limit reimbursement of costs associated with eligible TUMF projects to the lesser of maximum TUMF share identified in the Nexus Study or the actual eligible project costs. In this manner, projects that are completed by participating jurisdictions or developers for less than the maximum TUMF share are reimbursed (or credited) for the actual amount expended, while projects that exceed the maximum TUMF share are only reimbursed (or credited) by the program up to the maximum TUMF share value ensuring that the program is mitigating impacts at a level that is roughly proportional to that typically expected, and is not subject to extreme project costs to address unusual or exceptional local conditions or requirements.

For the purposes of TUMF, unit cost values were developed for various eligible improvement types that all provide additional capacity needed to mitigate the cumulative regional traffic impacts of new development to facilities on the TUMF Network. Eligible improvement types include:

1. Construction of additional Network roadway lanes;
2. Construction of new Network roadway segments;
3. Expansion of existing Network bridge structures;

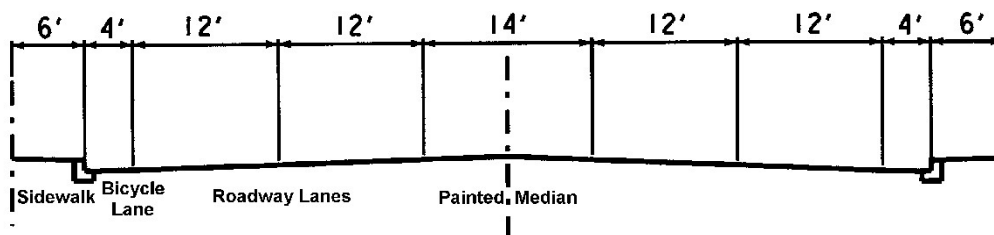
4. Construction of new Network bridge structures;
5. Expansion of existing Network interchanges with freeways;
6. Construction of new Network interchanges with freeways;
7. Grade separation of existing Network at-grade railroad crossings;
8. Expansion of existing Network-to-Network intersections;
9. Infrastructure for Intelligent Transportation Systems (ITS) of Network roadway segments.

Because roadway improvement standards vary considerably between respective jurisdictions, a typical roadway standard for the TUMF Network was recommended by the Public Works Committee (PWC) during the development of the original TUMF Nexus Study adopted by the WRCOG Executive Committee in October 2002 as the basis for developing the TUMF Network cost estimate. The typical roadway standard assumes the following design characteristics that are consistent with the minimum requirements of the Caltrans Highway Design Manual:

- Asphalt concrete pavement and appropriate base material to accomplish up to 12 feet per travel lane plus up to four feet for ancillary treatments (e.g. shoulders, or Class II Bike Lane);
- Concrete curb and gutter and associated drainage (e.g. paved roadway shoulders and/or open swale);
- Storm drains located within curb to curb, and associated transverse portions perpendicular to the roadway and adjoining portions longitudinal to the roadway;
- 14 foot paved and painted median (or dual center left turn lane);
- Traffic signals at intersections with state highways and other major arterials that are also on the TUMF Network;
- Pavement striping and roadway signing, as required;
- 6 foot wide concrete sidewalks and associated curb cuts for ADA access at street crossings.

A cross-section of the Typical Roadway Standard is illustrated in **Figure F-1**.

Figure F-1. Typical Roadway Standard Cross-Section



It is recognized that the typical roadway standard is not appropriate in all potential TUMF Network locations. Where appropriate, typical design standards could be substituted with design elements such as open swale drainage and paved roadway shoulders with no curbing that would typically cost less than the implementation of the

Typical Roadway Standard. Roadway improvements in excess of the Typical Roadway Standard include, but are not limited to:

- Portland concrete cement pavement or other aesthetic pavement types (except at intersections);
- Major rehabilitation or overlay of existing pavement in adjacent roadway lanes;
- Raised barrier medians;
- Parking lanes;
- Roadway tapers outside the extents of the approved project
- Sanitary sewage infrastructure;
- Water systems
- Dry utilities
- Undergrounding infrastructure
- Relocation of non-prior rights utilities
- Storm Drain Systems in excess of draining the roadway
- Landscaping;
- Streetlighting;
- Class I Bike Lanes (e.g. separate bicycle paths)
- Environmental Permitting
- Detection/Retention Basins outside of Street Right-of-Way
- Agency Staff time in excess of 15% of Engineering
- Agency Staff Time in excess of 15% of Construction

These improvements in excess of Typical Roadway Standards are not eligible for TUMF funding and will be the responsibility of the local funding agency.

Unit cost estimates for the implementation of TUMF Network improvements were developed based on the unit cost to accomplish the Typical Roadway Standard. Initial unit cost estimates were developed as part of the original TUMF Nexus in 2002. These original values were adjusted as part of the 2005 Nexus Update to reflect changes in cost based on relevant indices. The unit cost estimates were fully revised as part of the 2009 Nexus Update to capture the full effects of the economic recession on the costs of labor, materials and property acquisition. For the previous 2016 Nexus Update, the unit costs were fully revised. The 2016 Nexus Update reflected the effects of the ongoing recovery from the economic recession that has saw the costs of materials, labor and land acquisition in California rebound from relative historical lows previously observed at the time of the 2009 Nexus Update.

For the 2024 Nexus Update, the unit costs were again fully revised to generate entirely new unit cost values based on the most recent available construction cost, labor cost and land acquisition cost values for comparable projects within and adjacent to Riverside County. The recalculation of the TUMF unit cost components was completed as part of the 2024 Nexus Update to account for the unprecedented materials cost increases, labor shortages and high rate of inflation generally attributable to a combination of the disruption to global supply chains caused by the COVID-19 pandemic and additional tariffs on a range of products imported into the United States. In December 2023, the unit cost values were validated utilizing Caltrans Contract Cost Data and the resultant unit costs are noted in **Exhibit F-2** and summarized in **Table 4.1**.

For simplicity, the roadway unit cost was assumed to provide for the full depth construction (including grading) of 16 feet of new pavement per lane (to accommodate a minimum 12 foot lane and ancillary treatments). The unit cost was assumed to include the following construction elements:

- Sawcut of existing pavement
- Removal of existing pavement
- Roadway excavation and embankment
- 10" thick class 2 aggregate base
- 4.0" thick asphaltic concrete surface
- Concrete curb, gutter and drainage improvements

Roadway unit costs were determined for each unique cost item. The source used to determine the roadway unit costs as part of the 2024 Nexus Update are listed below.

- Caltrans Contract Cost Data 2021-2022
- Projects within Riverside County and Adjacent Counties
- Typical experience for local cities, Western Riverside County
- Michael Baker international (MBI), Structural Group
- MBI, ITS Group
- Caltrans Contract Cost Data 2022-2023

All data described above was initially obtained in October 2022 and refreshed and validated in December 2023.

Right-of-way acquisition costs were determined based on the cost to acquire 18 feet of right-of-way per lane of new roadway improvement. For urban and suburban land use areas, the amount of right-of-way to be acquired as part of the TUMF program was reduced by 75% to account for property already owned by a participating jurisdiction through prior acquisition or dedication. Right-of-way unit costs were assumed to include the following elements:

- Land acquisition
- Documentation and legal fees
- Relocation and demolition costs and condemnation compensation requirements
- Utility relocation
- Direct environmental mitigation

Right-of-way unit costs were determined based on a review of actual property sales within the WRCOG region during the prior 18 month period. The task of determining the valuation per square foot of right-of-way for different land uses was completed by Epic Land Solutions, Inc.

A typical existing condition of each component type was used as a guideline for quantity assessments.

- Terrain 1: Level terrain with 0% profile grade. Construction cost is per lane mile.
- Terrain 2: Rolling Terrain with 1.5 % profile grade. Construction cost is per lane mile.

- Terrain 3: Mountainous Terrain with 3% profile grade. Construction cost is per lane mile.
- Land Use 1, 2 and 3; ROW cost factor per lane mile, for Urban, Suburban and Rural areas respectively.
- Interchange 1: Complex New Interchange/Interchange Modification. Existing complex interchange at I-15 & SR-91 was used as a guideline for quantity assessments.
- Interchange 2: New Interchange/Interchange Modification is assumed to be a New Cloverleaf Interchange consisting of 4 (3 lane) direct ramps and 4 (2 lane) loop ramps.
- Interchange 3: Major Interchange Improvement is assumed to correspond to adding 1 lane to each ramp on a cloverleaf Interchange.
- Bridge: New Bridge cost. Construction cost is per linear foot per lane.
- RRXing 1: New Rail Grade Crossing. Construction cost is per lane per crossing.
- RRXing 2: Widening Existing Grade Crossing. Construction cost is per lane per crossing.
- ITS 1: Infrastructure for Intelligent Transportation Systems (ITS) on TUMF Network roadway segments per route mile

The cost estimating methodology here is intended to provide a Present Value Cost Estimate for the WRCOG Transportation Uniform Mitigation Fee based on year 2023 unit prices. A more detailed description of cost categories is detailed below.

I. Roadway Items

Roadway Excavation:

A unit cost of \$38.55 per cubic yard (Source: Local Projects and Caltrans Contract Cost Data) is applied to account for the excavation quantities. Assuming proposed profiles to be at 0% grade, the excavation values are estimated based on the component type as follows:

- Terrain 2 and 3: excavation for one lane (16 feet wide and 4 feet deep) is assumed.

Imported Borrow:

The unit cost used for imported borrow is \$20.47 per cubic yard (Source: Local Projects and Caltrans Contract Cost Data). Locations where imported borrow is required are determined from aerial photos.

- Terrain 2 and 3: Excavation for one lane (16 feet wide and 4 feet deep) is assumed.
- Interchanges 1, 2, and 3: Vertical clearance of 24.5 feet is used to calculate the maximum amount of imported borrow at areas adjacent to an undercrossing.
- RRXing 1 and 2: Vertical clearance of 31.5 feet and Bridge approach of 1,000 feet is used to determine the quantity of Imported borrow for this component type.

Clearing and Grubbing:

The unit cost for clearing and grubbing is \$12,100.00 per acre (Source: Local Projects and Caltrans Contract Cost Data).

- Terrain 1, 2 and 3: The area of clearing and grubbing is assumed to extend 16 feet for the addition of each new lane.
- Interchange 1 and 2: The area of clearing and grubbing is assumed to extend 40 feet beyond the proposed outside edge of shoulder. The clearing and grubbing width varies depending on the number of added lanes.
- Interchange 3 and Intersection: The area of clearing and grubbing is assumed to extend 16 feet for the addition of each lane.

Development of Water Supply:

A lump sum value is used to account for developing water supply. The lump sum cost is estimated as 10% of the combined cost for roadway excavation and imported borrow (Source: RCTC).

PCC Pavement:

The unit cost for PCC pavement is \$354.83 per cubic yard (Source: Local Projects and Caltrans Contract Cost Data).

- Terrain 1, 2 and 3: It is assumed that PCC is used at mainline shoulders. The PCC shoulder pavement is assumed to be 4 inch thick and 4 feet wide.

Asphalt Concrete Type A:

It is assumed that Asphalt Concrete is used at mainline and where ramp and bridge widening is required. A unit cost of \$240.62 per cubic yard (Source: Local Projects and Caltrans Contract Cost Data) is used to account for asphalt concrete quantities. The asphalt concrete overlay is assumed to be 4 inch thick.

Aggregate Base:

The unit cost for aggregate base is \$73.54 per cubic yard (Source: Local Projects and Caltrans Contract Cost Data). Aggregate base quantities are estimated by means of calculating the areas of additional lanes. The aggregate base layer is considered to be 10 inch thick. It is assumed that aggregate base is used over the entire widening width below the PCC pavement and asphalt concrete layers.

Curb and Gutter:

The unit cost used for curb and gutter is \$65.74 per linear foot (Source: Local Projects and Caltrans Contract Cost Data). It is assumed that type A2-6 curb and gutter is used on the entire length of travel way where required.

Project Drainage:

A lump sum value is used to account for project drainage cost of roadway construction. The project drainage cost is estimated as 15% (Source: RCTC project 2007) of combined cost for earthwork and pavement structural section.

Traffic Signals:

The costs for traffic signals are calculated per ramp termini intersection. The unit cost used for traffic signals is \$531,086 (Source: Caltrans Contract Cost Data and typical experience, Western Riverside County) per intersection. Traffic signals costs are considered only at the Intersection (Network-to-Network) upgrade.

Striping:

The unit cost used for Striping is \$2.58 per linear foot (Source: Local Projects and Caltrans Contract Cost Data). It is assumed that two lines of thermo-plastic striping are required for every lane addition.

Marking:

The unit cost used for marking is \$7.31 per square foot (Source: Local Projects and Caltrans Contract Cost Data).

- Terrains 1, 2 and 3: It is assumed that there are 8 arrow markers, 2 Stop sign markers and 4 Bike sign markers.
- Interchanges 1, 2, and 3: It is assumed that there are 2 Type I arrows on each on ramp, and 2 Type IV (L) arrows on each off ramp.
- Intersection (network to network) upgrade: It is assumed that there are 2 right turn arrows and two right lane drop arrows for each lane modification for the interchange upgrade

Pavement Marker:

Type G one-way clear retroreflective pavement markers (Spacing @ 48 feet) were assumed for Terrain 1, 2 and 3 component types only. The unit cost used for pavement marker is \$5.06 each (Source: Local Projects and Caltrans Contract Cost Data).

Signage:

The signage unit cost accounts for the costs of one-post signs and two-post signs. The unit cost used for one-post signs and two-post signs are \$367.69 and \$1,211.58 each, respectively (Source: Local Projects and Caltrans Contract Cost Data). The post sign quantities assumed for each component type is summarized below.

Sign Type	Terrain 1, 2 & 3	Interchange			Intersection
		1	2	3	
One Post Signs	33	14	36	20	3
Two Post Signs	-	4	4	4	0

Intelligent Transportation Systems (ITS):

The unit cost used for ITS is \$686,338.50 per route mile (Source: Local Projects and MBI ITS Group). It is assumed that there is no existing ITS infrastructure (with the exception of isolated ITS devices) within the TUMF Network roadway segments and essential ITS infrastructure is furnished and installed. This essential ITS infrastructure includes ethernet switch, fiber jumper, fiber distribution unit, splice enclosure, pull box, new cabinet with foundation, 144 strand single-mode fiber optic (SMFO) cable and 3" conduits.

Minor Items, Roadway Mobilization, and Roadway Additions:

A lump sum value is used to account for minor items, roadway mobilization and roadway additions as described below. These lump sum values are recommended based on provisions in Project Development Procedure Manual (PDPM) and the

date from individual sources presented in the introduction of this report (Source: RCTC)

Items	Unit Cost
Minor Items	10% of earthwork, pavement structure, drainage, specialty items and traffic items.
Roadway Mobilization	10% of earthwork, pavement structure, drainage, specialty items, traffic items and minor items.
Roadway Additions	10% of earthwork, pavement structure, drainage, specialty items, traffic items and minor items.

II. Structure Items

New Bridge:

New interchanges account for construction of a new bridge. The unit cost for a new travel way bridge construction and RRXings1 and 2 (New and Widening of Rail Grade Crossings) is \$400.00 per square foot (Source: MBI Structural group). The width of a new bridge is assumed to be 82 feet (4 lanes x 12ft + 10ft shoulder x 2 + 14ft median).

Bridge Widening:

Bridge widenings account for the widening of existing bridges. The unit cost is \$500.00 per square foot (Source: MBI Structural group). The width of a bridge widening is assumed to be: 2 lanes x 12ft + 10ft shoulder. The width of an arterial crossing over rail road is assumed to be 16 feet (1 lane x 12ft + 4ft shoulder).

Structural Mobilization:

The cost for structural mobilization is estimated as 10% of total structure item cost (Source: Typical experience).

III. Right of Way Items

The right of way unit cost varies with land use designation. The unit cost for ROW was developed by Epic Land Solutions, Inc. based on a review of actual property sales within the WRCOG region during the prior 18 month period. The area of right of way acquisition for the travel way is calculated per additional lane mile, assuming the width of the right-of-way required to be 18 feet per lane (to accommodate a 12 foot roadway lane, shoulders and ancillary amenities, like storm water drainage). The right of way acquisition for RRXings1 and 2 is calculated based on ROW acquisition for bridge approaches.

Property costs per square foot are derived by reviewing a large sample of recently sold land and improved properties within the greater Riverside area. The properties reviewed are identified specifically from completed semi large to very large infrastructure projects and upcoming projects with preferred alternatives and/or approved environmental reports. For the purposes of the 2022 Nexus Study update, an overall sample of approximately 2,700 properties was used.

The properties were designated as: urban areas (generally considered downtown, or very close to downtown in the larger cities - predominantly Corona and Riverside, with a few parcels in Temecula and Moreno Valley); suburban (primarily considered the greater areas of Hemet, Perris, San Jacinto, Moreno Valley, Lake Elsinore, outer portions of Riverside / Corona, Temecula, Murrieta, Calimesa, Eastvale, Norco, and other cities of relative size and location as those previously mentioned); and rural (considered the exurban areas between Corona / Lake Elsinore and Perris along the SR-74/79, Lake Matthews, between Wildomar and Murrieta, Temecula and Perris and other similar areas) to correspond with the land use classifications used for cost estimating purposes in the TUMF program. The properties were also determined to be partial or full property takes to determine the relative percentage of each in order to appropriately weight the average cost per square foot of each type of property. Specialty cost percentages as a share of total acquisition costs (i.e. relocation and demolition) were also derived from actual costs based on a sample of the Inland Empire projects that Epic Land Solutions, Inc. was directly involved in and therefore able to obtain reliable data.

The result is an estimated average cost per square foot for ROW acquisition by land use classification which is then multiplied by the number of square feet per lane mile to obtain the required ROW to accomplish the TUMF typical cross section. The ROW requirement is then reduced by a factor of 75% for urban and suburban areas based on the collective recommendation of the PWC during the development of the initial program cost estimation methodology to reflect the assumption that a majority of the proposed TUMF facilities in these areas already exist and/or have a substantial portion of the necessary right-of-way already owned by or dedicated to the responsible jurisdiction. As a result, the TUMF program only includes the estimated cost for 25% of the right-of-way that could potentially be required to accomplish the TUMF cross sections for the conceptual improvement projects identified as part of the program in urban and suburban areas.

Maintenance of Traffic:

A lump sum value is used to account for maintenance of traffic cost of roadway construction. The project maintenance of traffic cost is estimated as 5% (Source: RCTC) of the total project cost.

The consolidated unit cost values include typical per mile or lump sum costs for each of the eligible improvement element. These elements include new roadways, bridge improvements, interchange improvements and railroad grade separation construction costs, and right of way acquisition.

The consolidated unit costs as developed for the 2024 Nexus Update are summarized in **Exhibit F-1**. **Exhibit F-2** provides a summary of the unit costs for the various roadway and structures construction elements defined. **Exhibit F-3** provides a summary of the unit costs for the various right of way categories. **Exhibit F-4** provides worksheets showing the detailed unit cost calculation for each TUMF unit cost category related to roadway and structures construction, and right of way acquisition.

The unit cost assumptions were subsequently applied to the TUMF Network improvements identified to mitigate the cumulative regional transportation impacts of future new development. The resultant cost value was tabulated for each unique segment of the network, by improvement type. A separate cost estimate was generated for regional transit improvements based on information provided by RTA and added to the TUMF Network Cost Estimate table.

Supplemental categories have been added to the cost assumptions to better delineate the costs associated with planning and engineering a project, accommodating contingencies, mitigating the cumulative multi-species habitat impacts of TUMF arterial highway improvements in accordance with the adopted Riverside County Multi-Species Habitat Conservation Plan (MSHCP), and administering the TUMF program.

Soft Costs

The TUMF program provides for planning, engineering and contingency costs (collectively referred to as soft costs) for eligible projects to be reimbursed through the program. As indicated in **Table 4.1**, planning costs are considered to include those costs associated with planning, preliminary engineering and environmental assessment of the proposed project, with the eligible amount being 10% of the estimated TUMF eligible construction cost only. Engineering costs are considered to include project study report, design, permitting and construction oversight costs based on 25% of the estimated eligible construction cost only. Contingency is provided based on 10% of the total estimated eligible facility cost.

Soft costs include all reasonable required planning, environmental clearance and mitigation, right-of-way documentation, engineering design, plan, specification and estimate preparation and construction management and oversight costs necessary to accomplish the project. The estimated soft cost factors for planning, engineering and contingency were initially established in 2002 by the WRCOG Public Works Committee, which was responsible for the development of the initial TUMF Nexus Study. The percentage multipliers were established by consensus of the PWC based on the collective experience of members in delivering similar public highway projects. A review of various data sources indicates the cost factors are generally consistent with industry guidance for conceptual cost estimation purposes. The City of Los Angeles, Department of Public Works, Bureau of Engineering *California Multi-Agency CIP Benchmarking Study* (December 2016) indicates that combined design and construction management costs for roadway projects represent, on average, 50% of the total cost of construction¹⁴. Similarly, the American Association of State Highway and Transportation Officials (AASHTO) *Practical Guide for Estimating* (December 2011) also cites the following average multipliers for a range of planning and engineering activities based on national research as a basis for conceptual cost estimation:

¹⁴ City of Los Angeles, Department of Public Works, Bureau of Engineering *California Multi-Agency CIP Benchmarking Study* (December 2016), Table 3-6 Average Project Delivery Costs by Project Type (% of TCC) (Full Range of TCC).

- Preliminary Engineering Costs (including survey/data collection, design, environmental, utilities and contract administration) – 10% to 25% of total construction cost¹⁵
- Construction Engineering – 10% to 26% of total construction costs¹⁶

Furthermore, the contingency rate utilized in the TUMF program is significantly less than the industry norm for conceptual cost estimation purposes. Specifically, Caltrans *Project Development Procedures Manual* (July 2021) advocates for contingency rates of 30% to 50% of total costs to be used at the project feasibility (conceptual planning) phase of project development¹⁷, with contingency rates reduced to 10% for preliminary engineers cost estimates completed during project design¹⁸.

MSHCP

Section 8.5.1 of the Riverside County Integrated Project (RCIP) Multiple Species Habitat Conservation Plan (MSHCP) adopted by the Riverside County Board of Supervisors on June 17, 2003, states that “each new transportation project will contribute to Plan implementation. Historically, these projects have budgeted 3% - 5% of their construction costs to mitigate environmental impacts.” This provision is reiterated in the Western Riverside County Multiple Species Habitat Conservation Plan Nexus Fee Study Update Final Report (Economic & Planning Systems, Inc., October 2020) section “6. RCA Non-Fee Revenues” which states “The MSHCP forecast an array of revenue sources, in addition to fee revenue, supporting the conservation program. These sources were anticipated to total about 44 percent of the revenue for the program, including:

- Transportation funding – includes the Measure A sales tax which is authorized through 2039 and other transportation funding sources such as the Transportation Uniform Mitigation Fees (TUMF) charged on new development.” Table 23 Annual Non-Fee Revenue Projection in this section indicates that an average of \$950,000 in MSHCP revenue was derived annually from TUMF during the three years from FY16/17- 18/19 reflecting a TUMF contribution at 5% of construction costs consistent with the MSHCP as adopted in 2003. To clearly demonstrate compliance with the provisions of the MSHCP, the TUMF program will continue to incorporate a cost element to account for the required MSHCP contribution to mitigate the multi-species habitat impacts of constructing TUMF projects.

¹⁵ AASHTO Technical Committee on Cost Estimating (TCCE) *AASHTO Practical Guide for Estimating* (December 2011), Table 2.4. Preliminary Engineering Costs' Average Percentage Ranges (% of Construction).

¹⁶ AASHTO Technical Committee on Cost Estimating (TCCE) *AASHTO Practical Guide for Estimating* (December 2011), Section 2.2.3.2.3 Construction Engineering, “highway improvement projects in an urban environment”.

¹⁷ California Department of Transportation (Caltrans) Division of Design *Project Development Procedures Manual* (July 2021), Chapter 20 – Project Development Cost Estimates, Section 2 – Project Planning Cost Estimates, Article 2 Project Feasibility Cost Estimate, Contingencies.

¹⁸ California Department of Transportation (Caltrans) Division of Design *Project Development Procedures Manual* (July 2021), Chapter 20 – Project Development Cost Estimates, Section 3 – Project Design Cost Estimates, Article 4 Preliminary Engineer's Cost Estimate, Contingencies.

An amount equal to 5% of the construction cost for new TUMF network lanes, bridges and railroad grade separations will continue to be specifically included as part of TUMF program with revenues to be provided to the Western Riverside County Regional Conservation Authority (RCA) for the acquisition of land identified in the MSHCP. The relevant sections of the MSHCP document and the 2020 MSHCP Nexus Report are included in this Appendix as **Exhibits F-5** and **F-6**, respectively.

Similarly, an amount of 4% of the total TUMF eligible network cost is included as part of the TUMF program with revenues to be utilized by WRCOG to cover the direct costs to administer the program. The costs incurred by WRCOG include direct salary, fringe benefit and overhead costs for WRCOG staff assigned to administer the program and support participating jurisdictions, and costs for consultant, legal and auditing services to support the implementation of the TUMF program.

Table 4.1 summarizes the unit cost estimate assumptions used to develop the TUMF network cost estimate, including a comparison of the original TUMF unit cost assumptions and the current revised unit cost assumptions developed as part of the 2009 Update of the TUMF Nexus Study. Cost estimates are provided in year of original values as indicated.

EXHIBIT F-1

2024 TUMF Nexus Update - Arterial Highway Cost Assumptions:

Component Type	Cost Assumptions as published October 18, 2002	Cost Assumption per 2009 Nexus Update October 5, 2009	Cost Assumptions per 2016 Update	Cost Assumptions per 2024 Update	Description
Terrain 1	\$550,000.00	\$428,000.00	\$692,000.00	\$1,132,000	Construction cost per lane mile - level terrain
Terrain 2	\$850,000.00	\$761,000.00	\$878,000.00	\$1,740,000	Construction cost per lane mile - rolling terrain
Terrain 3	\$1,150,000.00	\$895,000.00	\$1,064,000.00	\$2,350,000	Construction cost per lane mile - mountainous terrain
Landuse 1	\$900,000.00	\$1,682,000.00	\$2,509,000.00	\$7,850,000	ROW cost factor per lane mile - urban areas
Landuse 2	\$420,000.00	\$803,000.00	\$2,263,000.00	\$5,440,000	ROW cost factor per lane mile - suburban areas
Landuse 3	\$240,000.00	\$237,000.00	\$287,000.00	\$490,000	ROW cost factor per lane mile - rural areas
Interchange 1	n/a	\$43,780,000.00	\$50,032,000.00	\$84,190,000	Complex new interchange/interchange modification cost
Interchange 2	\$20,000,000.00	\$22,280,000.00	\$25,558,000.00	\$43,490,000	New interchange/interchange modification total cost
Interchange 3	\$10,000,000.00	\$10,890,000.00	\$12,343,000.00	\$22,550,000	Major interchange improvement total cost
Bridge 1	\$2,000.00	\$2,880.00	\$3,180.00	\$4,800	Bridge total cost per lane per linear foot
RRXing 1	\$4,500,000.00	\$4,550,000.00	\$6,376,000.00	\$18,200,000	New Rail Grade Crossing per lane mile
RRXing 2	\$2,250,000.00	\$2,120,000.00	\$2,733,000.00	\$6,900,000	Existing Rail Grade Crossing per lane mile
ITS	n/a	n/a	n/a	\$486,400	Infrastructure for ITS of Network roadway segments per route mile
Planning	10%	10%	10%	10%	Planning, preliminary engineering and environmental assessment costs based on construction cost only
Engineering	25%	25%	25%	25%	Project study report, design, permitting and construction oversight costs based on construction cost only
Contingency	10%	10%	10%	10%	Contingency costs, including TUMF program administration based on total segment cost
Administration		3%	4%	4%	TUMF program administration based on total TUMF eligible network cost
MSHCP		5%	5%	5%	TUMF component of MSHCP based on total TUMF eligible construction cost

EXHIBIT F-2
WRCOG Transportation Uniform Mitigation Fee
2024 Nexus Update Master Unit Cost Summary

I. Roadway Items		Unit	Unit Cost	Notes
Section 1: Earthwork				
Roadway Excavation				
Travel way		cubic yard	\$38.55	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 190101
Imported Borrow				
Travel way		cubic yard	\$20.47	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 198010
Clearing & Grubbing				
Travel way		acre	\$12,100.00	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 170105
Develop Water Supply		lump sum	10% of Excavation and Borrow Cost	Same as RCTC
Section 2: Pavement Structural Section				
PCC		cubic yard	\$354.83	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 401050
Asphalt Concrete Type A (Including Bike Lane)		cubic yard	\$240.62	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 390132
Aggregate Base (Including Bike Lane)		cubic yard	\$73.54	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 260203
Curb and Gutter		linear foot	\$65.74	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2022/2023 - ITEM 731504
Section 3: Drainage				
Project Drainage		lump sum	15% of Sections 1 and 2	Same as RCTC
Section 4: Specialty Items				
Retaining Walls		square foot	\$90.00	Source: MBI structural group
Ramp Realignment		each		
Water Quality and Erosion Control		lump sum	3% of sections 1 to 3	Same as RCTC
Environmental Mitigation		lump sum	3% of sections 1 to 3	Same as RCTC
Section 5: Traffic Items				
Lighting		each	\$7,500	Source: RCTC
Traffic Signals		each	\$531,086	Typical for public agency projects in Western Riverside County and Caltrans Contract Cost Data 2022/2023
Striping - Thermo plastic (1 GP Lane, per direction)		linear foot	\$2.58	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 846007
Marking - Thermo plastic cross walks & pavement marking		square foot	\$7.31	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 840516
Pavement Marker Retroreflective		each	\$5.06	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2022/2023 - ITEM 810230
Signage - 1 Post		each	\$367.69	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2021/2022 - ITEM 820840
Signage - 2 Post		each	\$1,211.58	Source: Ave unit costs from Local Projects and Caltrans Contract Cost Data 2022/2023 - ITEM 820850
Infrastructure for ITS of Network roadway segments		route mile	\$686,383.00	Source: Ave unit costs from Local Projects and MBI ITS Team - Assumptions: 3 Traffic Signals per route mile
Section 6: Minor Items		lump sum	10% of sections 1 to 5	Same as RCTC
Section 7: Roadway Mobilization		lump sum	10% of sections 1 to 6	Same as RCTC
Section 8: Roadway Additions		lump sum	10% of sections 1 to 6	Same as RCTC
II. STRUCTURE ITEMS				
Major New Interchange - 2 Lane New Bridge		square foot	\$400.00	Interchange/Interchange, Cloverleaf Interchange - Cost provided by MBI Structural Group
New Interchange - 2 Lane New Bridge		square foot	\$400.00	Interchange/Interchange, Diamond Interchange - Cost provided by MBI Structural Group
Major Interchange Improvement - 2 Lane Bridge Widening		square foot	\$500.00	Interchange/Interchange, Cloverleaf Interchange - Cost provided by MBI Structural Group
Bridge		square foot	\$400.00	Cost provided by MBI Structural Group
Structure Mobilization		lump sum	10% of structure cost	Typical for public agency projects in Western Riverside County
III. RIGHT OF WAY ITEMS				
Urban				
Travel Way - Additional lane		square foot	\$330	Provided by Epic Land Solutions, Inc.
Suburban				
Travel Way - Additional lane		square foot	\$229	Provided by Epic Land Solutions, Inc.
Rural				
Travel Way - Additional lane		square foot	\$5	Provided by Epic Land Solutions, Inc.
Utility Relocation		lump sum	10% of ROW	Includes mobilization for one occurrence per lane mile
Total Items			I + II + III	Same as RCTC
Maintenance of Traffic		lump sum	5% of total items	Same as RCTC

EXHIBIT F-3
WRCOG Transportation Uniform Mitigation Fee
2024 Nexus Update Master Property Cost Summary

URBAN	Avg. \$ per SF	% of Total Area	Weighted Cost
Commercial			
Part Take	\$22	1.4%	\$0.30
Full Take	\$597	7.9%	\$47.40
		9.3%	
Industrial			
Part Take	\$29	0.5%	\$0.15
Full Take	\$267	6.0%	\$16.02
		6.5%	
Single Family Residential			
Part Take	\$10	16.8%	\$1.68
Full Take	\$348	66.2%	\$230.24
		83.0%	
Multi Family Residential			
Part Take	\$27	0.3%	\$0.07
Full Take	\$307	0.8%	\$2.52
		1.1%	
Average Unit Price per Square Foot:			\$298.38
Residential & Non-Res. Relocation (7.5%):			\$22.38
Demolition (3%)			\$8.95
Urban Unit Cost per Square Foot:			\$329.71
SUBURBAN	Avg. \$ per SF	% of Total Area	Weighted Share
Commercial			
Part Take	\$17	5.1%	\$0.87
Full Take	\$425	14.6%	\$62.01
		19.7%	
Industrial			
Part Take	\$20	0.0288	\$0.58
Full Take	\$227	0.08645	\$19.62
		11.5%	
Single Family Residential			
Part Take	\$4	0.24	\$0.96
Full Take	\$292	0.3866	\$112.89
		62.7%	
Multi Family Residential			
Part Take	\$14	0.0284	\$0.40
Full Take	\$313	0.0321	\$10.05
		6.1%	
Average Unit Price per Square Foot:			\$207.37
Residential & Non-Res. Relocation (7.5%):			\$15.55
Demolition (3%)			\$6.22
Suburban Unit Cost per Square Foot:			\$229.14
RURAL	\$ per SF		
Range of Value of Rural Vacant land sold within last year:	\$0.07 - \$31.48		
Average price per square foot of rural land:	\$4.66		
Miscellaneous improvements (10%):	\$0.46		
Rural Unit Cost per Square Foot:	\$5.12		

EXHIBIT F-4
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Terrain 1 - Level Terrain

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>				
Roadway Excavation				
Travel way	cubic yard	\$38.55	0.00	\$0
Imported Borrow				
Travel way	cubic yard	\$20.47	0.00	\$0
Clearing & Grubbing				
Travel way	acre	\$12,100.00	1.94	\$23,467
Develop Water Supply	lump sum	10% of Excavation and Borrow Cost	1.00	\$0
<u>Section 2: Pavement Structural Section</u>				
Sidewalk				
PCC	cubic yard	\$354.83	258.13	\$91,593
Travel way				
Asphalt Concrete Type A	cubic yard	\$240.62	1,032.53	\$248,448
Aggregate Base	cubic yard	\$73.54	2,596.98	\$190,982
Curb and Gutter	linear foot	\$65.74	5,280.00	\$347,107
<u>Section 3: Drainage</u>				
Project Drainage	lump sum	15% of Sections 1 and 2	1.00	\$135,240
<u>Section 5: Traffic Items</u>				
Striping - Thermo plastic (1 GP Lane, per direction)	linear foot	\$2.58	10,560.00	\$27,245
Marking	square foot	\$7.31	211.50	\$1,546
Pavement Marker (Type G One-way Clear Retroreflective)	each	\$5.06	110.00	\$557
Signage - 1 Post (Mainline)	each	\$367.69	33.00	\$12,134
Total Items		1		\$1,078,318
Maintenance of Traffic		5% of total items	1.00	\$53,916
Project Cost / Lane mile				\$1,132,234

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Terrain 2 - Rolling Terrain

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>				
Roadway Excavation				
Travel way	cubic yard	\$38.55	7,739.26	\$298,348
Imported Borrow				
Travel way	cubic yard	\$20.47	7,739.26	\$158,423
Clearing & Grubbing				
Travel way	acre	\$12,100.00	1.94	\$23,467
Develop Water Supply	lump sum	10% of Excavation and Borrow Cost	1.00	\$45,677
<u>Section 2: Pavement Structural Section</u>				
Sidewalk				
PCC	cubic yard	\$354.83	258.13	\$91,593
Travel way				
Asphalt Concrete Type A	cubic yard	\$240.62	1,032.53	\$248,448
Aggregate Base	cubic yard	\$73.54	2,596.98	\$190,982
Curb and Gutter	linear foot	\$65.74	5,280.00	\$347,107
<u>Section 3: Drainage</u>				
Project Drainage	lump sum	15% of Sections 1 and 2	1.00	\$210,607
<u>Section 5: Traffic Items</u>				
Striping - Thermo plastic (1 GP Lane, per direction)	linear foot	\$2.58	10,560.00	\$27,245
Marking	square foot	\$7.31	211.50	\$1,546
Pavement Marker (Type G One-way Clear Retroreflective)	each	\$5.06	110.00	\$557
Signage - 1 Post (Mainline)	each	\$367.69	33.00	\$12,134
Total Items		1		\$1,656,133
Maintenance of Traffic		5% of total items	1.00	\$82,807
Project Cost / Lane mile				\$1,738,940

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Terrain 3 - Mountainous Terrain

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>				
Roadway Excavation				
Travel way	cubic yard	\$38.55	15,478.52	\$596,697
Imported Borrow				
Travel way	cubic yard	\$20.47	15,478.52	\$316,845
Clearing & Grubbing				
Travel way	acre	\$12,100.00	1.94	\$23,467
Develop Water Supply	lump sum	10% of Excavation and Borrow Cost	1.00	\$91,354
<u>Section 2: Pavement Structural Section</u>				
Sidewalk				
PCC	cubic yard	\$354.83	258.13	\$91,593
Travel way				
Asphalt Concrete Type A	cubic yard	\$240.62	1,032.53	\$248,448
Aggregate Base	cubic yard	\$73.54	2,596.98	\$190,982
Curb and Gutter	linear foot	\$65.74	5,280.00	\$347,107
<u>Section 3: Drainage</u>				
Project Drainage	lump sum	15% of Sections 1 and 2	1.00	\$285,974
<u>Section 5: Traffic Items</u>				
Striping - Thermo plastic (1 GP Lane, per direction)	linear foot	\$2.58	10,560.00	\$27,245
Marking	square foot	\$7.31	211.50	\$1,546
Pavement Marker (Type G One-way Clear Retroreflective)	each	\$5.06	110.00	\$557
Signage - 1 Post (Mainline)	each	\$367.69	33.00	\$12,134
Total Items		1		\$2,233,949
Maintenance of Traffic		5% of total items	1.00	\$111,697
Project Cost / Lane mile				\$2,345,646

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update

Landuse 1 - ROW Urban areas

	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
III. RIGHT OF WAY ITEMS				
<u>Urban</u>				
Travel Way	square foot	\$329.71	95,040.00	\$31,335,419
Project Cost / Lane mile			25%	\$7,833,855

Landuse 2 - ROW Suburban Areas

	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
III. RIGHT OF WAY ITEMS				
<u>Suburban</u>				
Travel Way	square foot	\$229.14	95,040.00	\$21,777,847
Project Cost / Lane mile			25%	\$5,444,462

Landuse 3 - ROW Rural areas

I. Roadway Items	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
III. RIGHT OF WAY ITEMS				
<u>Rural</u>				
Travel Way	square foot	\$5.12	95,040.00	\$486,605
Project Cost / Lane mile				\$486,605

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Interchange 1 - Complex New Interchange/Interchange Modification

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>				
Imported Borrow	cubic yard	\$20.47	700,000.00	\$14,329,000
Travel way	acre	\$12,100.00	51.93	\$628,349
Clearing & Grubbing	lump sum	10% of Excavation and Borrow Cost	1.00	\$1,432,900
Travel way				
Develop Water Supply				
<u>Section 2: Pavement Structural Section</u>				
Asphalt Concrete Type A (Including Bike Lane)	cubic yard	\$240.62	13,500.00	\$3,248,370
Aggregate Base (Including Bike Lane)	cubic yard	\$73.54	34,000.00	\$2,500,360
Curb and Gutter	linear foot	\$65.74	31,000.00	\$2,037,940
<u>Section 3: Drainage</u>				
Project Drainage	lump sum	15% of Sections 1 and 2	1.00	\$3,626,538
<u>Section 5: Traffic Items</u>				
Striping - Thermo plastic (1 GP Lane, per direction)	linear foot	\$2.58	84,250.00	\$217,365
Marking	square foot	\$7.31	368.00	\$2,690
Signage - 1 Post	each	\$367.69	14.00	\$5,148
Signage - 2 Post	each	\$1,211.58	4.00	\$4,846
II. STRUCTURE ITEMS				
Complex New Interchange - 2 Lane New Bridge	square foot	\$400.00	140,400.00	\$56,160,000
Total Items		I + II + III		\$84,193,506
Total Project Cost / lane mile				\$84,193,506

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Interchange 2 - New Interchange/Interchange Modification

I. ROADWAY ITEMS		Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>					
Imported Borrow		cubic yard	\$20.47	400,000.00	\$8,188,000
Travel way		acre	\$12,100.00	25.12	\$304,000
Clearing & Grubbing		lump sum	10% of Excavation and Borrow Cost	1.00	\$818,800
Travel way					
Develop Water Supply					
<u>Section 2: Pavement Structural Section</u>					
Asphalt Concrete Type A (Including Bike Lane)		cubic yard	\$240.62	7,040.00	\$1,693,965
Aggregate Base (Including Bike Lane)		cubic yard	\$73.54	17,706.67	\$1,302,148
Curb and Gutter		linear foot	\$65.74	16,000.00	\$1,051,840
<u>Section 3: Drainage</u>					
Project Drainage		lump sum	15% of Sections 1 and 2	1.00	\$2,003,813
<u>Section 5: Traffic Items</u>					
Striping - Thermo plastic (1 GP Lane, per direction)		linear foot	\$2.58	43,200.00	\$111,456
Marking		square foot	\$7.31	368.00	\$2,690
Signage - 1 Post		each	\$367.69	36.00	\$13,237
Signage - 2 Post		each	\$1,211.58	4.00	\$4,846
II. STRUCTURE ITEMS					
New Interchange - 2 Lane New Bridge		square foot	\$400.00	70,000.00	\$28,000,000
Total Items			I + II + III		\$43,494,795
Total Project Cost / lane mile					\$43,494,795

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Interchange 3 - Major Interchange Improvement

I. ROADWAY ITEMS		Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>					
Imported Borrow		cubic yard	\$20.47	180,000.00	\$3,684,600
Travel way		acre	\$12,100.00	3.97	\$48,000
Clearing & Grubbing		lump sum	10% of Excavation and Borrow Cost	1.00	\$368,460
Travel way					
Develop Water Supply					
<u>Section 2: Pavement Structural Section</u>					
Asphalt Concrete Type A (Including Bike Lane)		cubic yard	\$240.62	3,128.89	\$752,873
Aggregate Base (Including Bike Lane)		cubic yard	\$73.54	7,869.63	\$578,733
Curb and Gutter		linear foot	\$65.74	16,000.00	\$1,051,840
<u>Section 3: Drainage</u>					
Project Drainage		lump sum	15% of Sections 1 and 2	1.00	\$972,676
<u>Section 5: Traffic Items</u>					
Striping - Thermo plastic (1 GP Lane, per direction)		linear foot	\$2.58	32,000.00	\$82,560
Marking		square foot	\$7.31	184.00	\$1,345
Signage - 1 Post		each	\$367.69	20.00	\$7,354
Signage - 2 Post		each	\$1,211.58	4.00	\$4,846
II. STRUCTURE ITEMS					
Major Interchange Improvement - 2 Lane Bridge Widening		square foot	\$500.00	30,000.00	\$15,000,000
Total Items			I + II + III		\$22,553,287
Total Project Cost / lane mile					\$22,553,287

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Bridge 1 - New Bridge Cost

II. STRUCTURE ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
Bridge	square foot	\$400.00	12.00	\$4,800
Total Items		I + II + III		\$4,800
Total Project Cost / lane mile				\$4,800

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
RRXing 1 - New Rail Grade Crossing

I. ROADWAY ITEMS		Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
Section 1: Earthwork Imported Borrow Travel way		cubic yard	\$20.47	17,931.03	\$367,048
		cubic yard	\$240.62	782.22	\$188,218
		cubic yard	\$73.54	1,967.41	\$144,683
		linear foot	\$65.74	1,180.00	\$77,573
Section 2: Pavement Structural Section Asphalt Concrete Type A (Including Bike Lane) Aggregate Base (Including Bike Lane) Curb and Gutter		lump sum	15% of Sections 1 and 2	1.00	\$116,628
		linear foot	\$2.58	1,180.00	\$3,044
Section 3: Drainage Project Drainage					
Section 5: Traffic Items Striping - Thermo plastic (1 GP Lane, per direction)					
II. STRUCTURE ITEMS					
Bridge		square foot	\$400.00	2,880.00	\$1,152,000
III. RIGHT OF WAY ITEMS					
Urban Travel Way - Additional lane		square foot	\$329.71	49,000.00	\$16,155,790
Total Items			I + II + III		\$18,204,986
Total Project Cost / lane mile					\$18,204,986

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
RRXing 2 - Widen Existing Rail Grade Crossing

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / lane mile	Cost / lane mile
<u>Section 1: Earthwork</u>				
Imported Borrow				
Travel way	cubic yard	\$20.47	17.78	\$364
<u>Section 2: Pavement Structural Section</u>				
Asphalt Concrete Type A (Including Bike Lane)	cubic yard	\$240.62	782.22	\$188,218
Aggregate Base (Including Bike Lane)	cubic yard	\$73.54	1,967.41	\$144,683
Curb and Gutter	linear foot	\$65.74	1,180.00	\$77,573
<u>Section 3: Drainage</u>				
Project Drainage	lump sum	15% of Sections 1 and 2	1.00	\$61,626
<u>Section 5: Traffic Items</u>				
Striping - Thermo plastic (1 GP Lane, per direction)	linear foot	\$2.58	1,180.00	\$3,044
II. STRUCTURE ITEMS				
Bridge	square foot	\$400.00	2,880.00	\$1,152,000
III. RIGHT OF WAY ITEMS				
<u>Urban</u>				
Travel Way - Additional lane	square foot	\$329.71	16,000.00	\$5,275,360
Total Items		I + II + III		\$6,902,869
Total Project Cost / lane mile				\$6,902,869

EXHIBIT F-4 (Continued)
WRCOG Transportation Uniform Mitigation Fee
Cost Assumption Estimate - 2024 Nexus Update
Infrastructure for Intelligent Transportation Systems (ITS) on TUMF Network Roadway Segments

I. ROADWAY ITEMS	Unit	Unit Cost	Quantity / route mile	Cost / route mile
Infrastructure for ITS of Network roadway segments	route mile	\$686,383.00	1.00	\$686,383
Total Items		I + II + III		\$686,383
Total Project Cost / route mile				\$686,383

EXHIBIT F-5

Riverside County Integrated Project (RCIP) Multiple Species Habitat Conservation Plan (MSHCP)

adopted by the Riverside County Board of Supervisors on June 17, 2003

Section 8.0 MSHCP Funding/Financing of Reserve Assembly and Management

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



8.5 LOCAL FUNDING PROGRAM

The following local funding plan describes the local commitment for funding Reserve Assembly, Management, and Monitoring.

The local funding program includes funding from a variety of sources, including but not limited to, regional funding resulting from the importation of waste into landfills in Riverside County, mitigation for regional public infrastructure projects, mitigation for private infrastructure projects, mitigation for private Development, funds generated by local or regional incentive programs that encourage compact growth and the creation of transit-oriented communities, and dedications of lands in conjunction with local approval of private development projects.

The local funding program will fund the local portion of:

- Land acquisition
- Management
- Monitoring
- Adaptive Management
- Plan administration

8.5.1 Funding Sources

Local funding sources include funding from both public and private developers and regional entities in an effort to spread the financial burden of the MSHCP over a broad base. The mix of funding sources provides an equitable distribution of the cost for local mitigation under the MSHCP. In addition to equitably distributing mitigation for local projects, utilizing a mixture of funding sources will help ensure the long-term viability of the local funding program because a temporary decline in funding from one source may be offset by increases from another. The proposed local funding sources are described below and include:

- Local Development Mitigation Fees
- Density Bonus Fees
- Regional Infrastructure Project Contribution
- Landfill Tipping Fees

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



- Other Potential New Revenue Sources

➤ **Local Development Mitigation Fees**

New Development affects the environment directly through construction activity and cumulatively through population bases that result from Development. Government Code Section 66000 et seq. allows cities and counties to charge new Development for the costs of mitigating the impacts of new Development. The Cities and County will implement a Development Mitigation Fee pursuant to the MSHCP; this fee will be one of the primary sources of funding the implementation of the MSHCP. The fee ordinance adopted by the Cities and the County will provide for an annual CPI adjustment based upon the Consumer Price Index for “All Urban Consumers” in the Los Angeles-Anaheim-Riverside Area, measured as of the month of December in the calendar year which ends in the previous Fiscal Year. There will also be a provision for the fee to be reevaluated and revised should it be found to insufficiently cover mitigation of new Development. A fee of approximately \$1,500 per residential unit (or an equivalent fee per acre) and \$4,800 per acre of commercial or industrial Development was used in the revenue projection shown in *Appendix B-05* of this document. The projected revenues from the Development Mitigation Fee are anticipated to be approximately \$540 million over the next 25 years. A nexus study is required to demonstrate that the proposed fee is proportionate to the impacts of the new Development.

➤ **Density Bonus Fees**

The New Riverside County General Plan creates a number of incentive plans that have the potential both to further the goals of the County’s General Plan and to facilitate the implementation of the MSHCP. *Section 8.4.2* above discusses the use of the Rural Incentive Program to aid in the Conservation of lands through non-acquisition means. An additional component of the Incentive Program enables developers to acquire the right to develop at an additional 25% increase in density by providing enhancements to their projects and by paying a “Density Bonus Fee.” The fee is anticipated to be \$3,000 – \$5,000 per additional unit. This program offers a significant incentive to developers when compared with the typical cost of creating a new buildable lot.

The Density Bonus program is new to Riverside County, and it is, therefore, difficult to project annual revenues. The Local Funding Program assumes that between 10% and 20% of the residential units built in the unincorporated County area will participate in the incentive program and that only 50% of the revenues of the program will be committed to the MSHCP, with the remaining portion staying in the local community in which the additional units are located to provide additional

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



amenities that will help offset the greater density. Of the 330,000 units projected to be built over the next 25 years, 10% (or 33,000 units) are assumed to be built utilizing the Density Bonus Fee resulting in \$132,000,000 in revenues of which 50% (or \$66,000,000) will be allocated to the MSHCP.

➤ Regional Infrastructure Project Contribution

Regional infrastructure projects directly affect the environment not only through the effect they have on species and their Habitats, but also by facilitating continued new Development. It is appropriate, therefore, for regional infrastructure projects to contribute to Plan implementation . Four general categories of infrastructure projects have been identified:

- Transportation Infrastructure
- Regional Utility Projects
- Local Public Capital Construction Projects
- Regional Flood Control Projects

Transportation Infrastructure

The RCIP has identified the need for approximately \$12 billion in new transportation infrastructure to support the Development proposed for the next 25 years. Each new transportation project will contribute to Plan implementation . Historically, these projects have budgeted 3% – 5% of their construction costs to mitigate environmental impacts. The local funding program anticipates that more than one-half of the \$12 billion cost of contribution to acquisition of Additional Reserve Lands will be funded locally and will result in approximately \$371 million in contribution over the next 25 years as discussed below.

▶ Riverside County's ½ cent sales tax for Transportation

In 1988, Riverside County voters approved a measure to increase local sales tax by ½ cent to fund new transportation projects (Measure A). The sales tax measure is due to be reauthorized in 2002. Under the reauthorization, \$121 million will be allocated as local contribution under the MSHCP. (For further information on the sales tax measure, see *Section 13.5* of the MSHCP Implementing Agreement and *Appendix B-07* of this document).

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



Regional Utility Projects

As Riverside County's population doubles over the next 25 years, new regional utility infrastructure will be required. Since the utilities are not Permittees under the MSHCP, they may choose to mitigate under the Plan or seek their own regulatory permits. In either case, their mitigation will be focused on the objectives of the MSHCP and will contribute to the local implementation funding. No estimate of the number of projects or the scope or costs is available at this time; consequently, no estimate of mitigation funding has been made. The Permittees expect that regional utility projects will contribute to the implementation of the MSHCP and provide an additional contingency should other revenue sources not generate the projected levels of funding or should implementation costs be higher than projected.

Local Public Capital Construction Projects

Local public capital construction projects may include construction of new schools, universities, City or County administrative facilities, jails, courts, juvenile facilities, parks, libraries, or other facilities that serve the public. These projects will be mitigated under the MSHCP and will utilize a per acre mitigation fee based on the fee then in place for private, commercial and industrial Development. No attempt has been made to estimate the number or magnitude of these projects. The Permittees expect that local public construction projects will contribute to the implementation of the MSHCP and provide an additional contingency should other revenue sources not generate the projected levels of funding or should implementation costs be higher than projected.

Regional Flood Control Projects

Flood control projects will receive coverage under the MSHCP for both new capital construction and for the maintenance of existing and new facilities. Preliminary estimates from the Riverside County Flood Control and Water Conservation District indicate that they will likely budget approximately \$15 M in projects annually. Based on using 3% of capital costs, the District would be expected to contribute approximately \$450,000 to \$750,000 annually to MSHCP implementation. Since many flood control projects serve existing developed communities and therefore have less impacts than projects adding capacity to serve new Development and may provide some conservation value especially in terms of Constrained Linkages, the District's contributions may average something below the 5% level on average.

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



➤ **Landfill Tipping Fees**

Riverside County has utilized revenues from public and private landfills in Riverside County to generate funding for conservation and open space projects for over a decade. In 1990, the County utilized \$1 per ton tipping fee assessed all waste deposited in County landfills to fund the acquisition of the Santa Rosa Plateau and approximately \$260,000 annually to fund the operation of the County Park and Open Space Districts. More recently, the County has negotiated agreements with two private landfills in the County to commit \$1 per ton on all waste imported from outside Riverside County to Conservation within Riverside County.

El Sobrante Landfill

This privately owned landfill was permitted to expand its capacity to 10,000 tons per day in 2001. In approving the landfill expansion, the Riverside County Board of Supervisors authorized fifty cents per ton of the County's portion of the revenue from the landfill expansion to be applied to Conservation in addition to the \$1 per ton that was committed under the landfill agreement. The projection of the annual tonnage and revenue for Conservation included in *Appendix B-09* of this document reflects the \$1.5 per ton commitment to Conservation. Over the life of the landfill, 60 million tons of imported waste are allowed. Sixty million tons at \$1.5 per ton will generate \$90 million for Conservation. The Cash Flow Analysis in *Appendix B-10* of this document reflects the annual revenues from the El Sobrante Landfill.

County Landfills

The County Board of Supervisors, beginning in 1990, authorized \$1 per ton for all in-county waste deposited in County landfills to go toward habitat and open space Conservation. After adjusting for the debt service on the Santa Rosa Plateau acquisition and an annual commitment to the Park and Open Space District, there is a projected annual balance of \$400,000 that can be applied to additional Conservation under the MSHCP. *Appendix B-09* of this document includes a projection of tonnage from in-County waste at County landfills. The Cash Flow Analysis in *Appendix B-10* of this document reflects the annual revenues from the County landfills. Over the next 25 years, County landfills will contribute approximately \$10 million to the implementation of the MSHCP.

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



Eagle Mountain

In 1997, the County approved the use of the old Kaiser mine at Eagle Mountain in eastern Riverside County as a regional landfill to serve primarily Los Angeles County. Subsequently, the Los Angeles County Sanitation District has acquired the rights to the Eagle Mountain Landfill and intends to begin operation of the landfill within the next decade. At this time, litigation is still pending that could prohibit the development of the landfill. The Development Agreement with the County would require the payment of \$1 per ton for Conservation if the landfill is developed. Conservation needs in the Coachella Valley would have first priority over the revenues from the Eagle Mountain Landfill; however, some portion of the revenues would be available to support Conservation needs in Western Riverside County. The Permittees expect that the Eagle Mountain Landfill will provide funding to support implementation of the MSHCP over the life of the MSHCP. However, no revenue from the Eagle Mountain Landfill has been projected in the funding program at this time. These potential revenues provide a contingency should other revenue sources not generate the projected levels of funding or should implementation costs be higher than projected.

➤ Potential New Revenue Sources

The County and Cities may levy assessments to pay for services that directly benefit the property on which the fee is levied. Under current law, a local election may be required to initially levy the assessment or to confirm the assessment if a protest is filed. No such assessments are currently projected for the MSHCP. As the MSHCP Conservation Area is developed, however, its value as open space and for recreation opportunities may lend itself to a local funding program for ongoing management and enhancement. In more urban areas, which Western Riverside County will be in 25 years, local voters routinely approve such funding programs.

Other revenue opportunities may be realized over the next 25 years. The County, Cities, and RCA will explore new revenue sources to support the acquisition of the MSHCP Conservation Area and its long-term management and enhancement. A goal of any new fee would be to spread a portion of the costs for the MSHCP across as broad a regional base as possible.

8.0 MSHCP Funding/Financing of Reserve Assembly and Management



**TABLE 8-5
LOCAL PUBLIC/REGIONAL FUNDING SOURCES**

Source Anticipated	\$ Range	Requirements to Implement	Responsible Party
Private Funding Sources:			
Cities and County	\$539.6M	Approval of County Ordinance	County
Development Mitigation Fees		Approval of City(ies) Ordinance	Cities
Density Bonus Fees	\$66M	Approval of General Plan	County
Public Funding Sources			
Local Roads	\$121M	Approval of Measure A, local agreement on allocation	RCTC/County
Other Transportation	\$250M	% of new road construction	RCTC/County
Other infrastructure Projects	\$unknown	Project-by-project negotiation	County and Cities
El Sobrante Landfill	\$90M	In place	County
County Landfills	\$10M	In place	County
Eagle Mountain Landfill	\$unknown	In place pending start-up	County
New Regional funding	\$unknown	Voter approval	County and Cities
TOTAL LOCAL FUNDS	\$1,076.6M		

8.6 ADEQUACY OF FUNDING

The Permittees and the Wildlife Agencies will annually evaluate the performance of the funding mechanisms and, notwithstanding other provisions of the MSHCP, will develop any necessary modifications to the funding mechanisms to address additional funding needs. Additionally, this annual evaluation will include an assessment of the funding plan and anticipate funding needs over the ensuing 18 months for the purpose of identifying any potential deficiencies in cash flow. If deficiencies are identified through this evaluation, then the Permittees and the Wildlife Agencies will develop strategies to address any additional funding needs consistent with the terms and conditions of the MSHCP.

EXHIBIT F-6

***Western Riverside County Multiple Species Habitat Conservation Plan Nexus Fee Study
Update Final Report
Economic & Planning Systems, Inc., October 2020***

The Economics of Land Use



Final Report

Western Riverside County Multiple Species Habitat Conservation Plan Nexus Fee Study Update

Prepared for:

Western Riverside County Regional Conservation Authority

Prepared by:

Economic & Planning Systems, Inc.

October 2020

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1. INTRODUCTION AND KEY FINDINGS

This Updated Nexus Study (2020 Nexus Study) provides the technical justification for changes to the Local Development Mitigation Fee schedule that applies to Local Permittee participants in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP or Plan). These changes are necessary to ensure adequate funding of the obligations of the Local Permittees under the MSHCP and the associated Incidental Take Permit and Implementing Agreement. The resulting increased fee revenues will support the continued implementation of the MSHCP and the streamlining of endangered species incidental take permitting for new Western Riverside County development provided under the MSHCP. This Nexus Study is consistent with the requirements of California Government Code 66000 et seq. (the Mitigation Fee Act) that requires specific findings (as well as administration and implementation procedures) for “any action establishing, increasing, or imposing a fee as a condition of approval of a development project by a local agency.”

Background

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP or Plan), originally adopted in 2004, is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on the conservation of species and their associated habitats in Western Riverside County. The MSHCP was developed in response to the need for future growth opportunities in Western Riverside County while addressing the requirements of the State and federal Endangered Species Acts. The MSHCP serves as an HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 as well as a Natural Communities Conservation Plan under the NCCP Act of 2001. The MSHCP streamlines these environmental permitting processes by allowing the participating jurisdictions to authorize “take” of plant and wildlife species identified within the Plan Area. At the same time, Plan implementation provides a coordinated MSHCP Conservation Area and implementation program to preserve biological diversity and maintain the region’s quality of life.

The MSHCP and the associated Implementing Agreement and Incidental Take Permit collectively determine a set of conservation actions that must be taken to meet the terms of the Incidental Take Permit and benefit from the regulatory streamlining and other benefits of the MSHCP. This includes the identification of the responsible parties, including the responsibilities of the Local Permittees.¹ One of the key requirements of the MSHCP, Implementing Agreement, and Incidental Take Permit (consistent with the requirements of the federal Endangered Species Act) is the provision of adequate funding by Local Permittees to the Implementing Entity (the Western Riverside County Regional Conservation Authority²) to conduct their portion of the conservation actions identified in the MSHCP.

¹ Local Permittees include the Western Riverside cities, the County of Riverside, County Flood Control and Water Conservation District, County Regional Park and Open-Space District, County Department of Waste Resources, and Riverside County Transportation Commission.

² The Western Riverside County Regional Conservation Agency is a Joint Powers Authority established in 2004 to implement the MSHCP.

Section 8.0 of the MSHCP outlines the MSHCP funding/financing approach. It also identified best estimates of Plan implementation costs at the time of Plan adoption, including the local funding commitment that represents a portion of the overall land acquisition, management and monitoring, and Plan administration costs. The Local Funding Program included a mix of funding sources to provide “an equitable distribution of the cost for local mitigation under the MSHCP.” The proposed funding sources included Local Development Mitigation Fees (and land dedications), regional infrastructure project public contributions (including contributions to mitigate for transportation infrastructure, regional utility projects, local public capital construction projects, and regional flood control projects), and landfill tipping fees.

Participating cities and the County were each required to implement a Local Development Mitigation Fee under California Government Code Section 66000 et seq. (the “Mitigation Fee Act”) and supported by the separate “Final Mitigation Fee Nexus Study Report for the Western Riverside County Multiple Species Habitat Conservation Plan,” July 1, 2003 (Original or 2003 Nexus Study). The MSHCP funding chapter notes the need for frequent evaluations of the performance of the funding mechanisms and assessments of the funding plan and the need to make any necessary modifications to the funding mechanisms. The MSHCP also notes that the mitigation fee will need to be “reevaluated and revised should it be found to insufficiently cover mitigation of new development.”

In addition to the common practice of updating mitigation fees periodically to account for changing circumstances, the Western Riverside County Regional Conservation Authority (RCA) has determined that significant changes have occurred and/or circumstances have arisen that justify an update to the mitigation fees. These changes include, but are not limited to, the following:

- The need to acquire more land than originally forecast due to the lower than expected land dedication.
- The lower-than-expected levels of non-fee funding from local and regional funding sources.
- The lower than expected levels of residential development.
- The need to diversify land acquisitions away from a focus on the larger, more remote parcels to also acquiring parcels closer to urbanized areas, consistent with the reserve assembly requirements of the MSHCP.

Original and Existing Fee Schedule

All local jurisdictions participating in the MSHCP and obtaining coverage for public and private take in their jurisdictions were required to adopt and implement the 2004 Mitigation Fee Schedule through ordinance and resolution and then to pass through the fee funding (except for any additional administrative charges added by the jurisdictions) to the RCA to fund MSHCP implementation. The ordinances allowed for periodic inflationary increases based on the annual change in the Consumer Price Index for the Los Angeles-Anaheim-Riverside area. In 2018 the Bureau of Labor Statistics implemented a geographic revision, establishing Riverside as its own Core Based Statistical Area. As a result, Riverside was removed from the Consumer Price Index encompassing Los Angeles and Anaheim. Going forward, inflationary increases will be based on the annual change in the Consumer Price Index for the newly established Riverside-San

Bernardino-Ontario area. As outlined in the 2003 Nexus Study (Original Nexus Study), all new development in Western Riverside County is required to pay the mitigation fee.

Table 1 shows the original 2004 Local Development Mitigation Fee schedule and the current 2021 Fee Schedule that reflects periodic inflationary fee adjustments using the indexing process that collectively increased the fees by 35 percent between 2004 and 2020 (this was below the overall inflation index increase over this period).

Table 1 2004 and 2021 MSHCP Fee Schedule

Fee Category	2004 Fee per unit or per acre	2021 Fee per unit or per acre ³
Residential: Up to 8.0 dwelling units per acre (DUAC)	\$1,651	\$2,234
Residential: 8.0-14.0 DUAC	\$1,057	\$1,430
Residential: 14.0+ DUAC	\$859	\$1,161
Commercial (per acre)	\$5,620	\$7,606
Industrial (per acre)	\$5,620	\$7,606

Updated Mitigation Fee Schedules

This 2020 Nexus Study has estimated the increased fee level that would be required to provide sufficient revenues, based on the best available forecasts of future growth, to support the full implementation of the MSHCP, including the completion of all land acquisition and the establishment of the necessary endowment, by 2029 (Year 25 of Plan implementation).⁴ Because, as shown below, this would require a major increase in the fee levels, three other scenarios are also considered where different time extensions provide more time for land acquisition.⁵ These extensions allow for the costs of Plan implementation (including land acquisitions) to be spread across more development and, as a result, moderate the level of mitigation fee increase required. In addition, the longer extension scenarios require a pace of land acquisition that is more consistent with what has proven to be achievable. All of these fee

³ Note it is RCA procedure to refer to fees during, for example, Fiscal Year 2020/2021, as the 2021 fee. The 2021 fee became effective July 1, 2020, and applies for the fiscal year of 2020-21 (i.e., until June 30, 2021 when the 2022 Fee begins).

⁴ The MSHCP provided a 25-year period of the required land acquisition with the larger 75-year permit term. This is labelled the "No Extension" or "Baseline Scenario" in this Update Study.

⁵ The baseline scenario as well as the extension scenarios assume that all land acquisition as well as the full endowment will be completed/ established by the end of the specified implementation/ land acquisition period. Interest from the non-depleting endowment will fund all ongoing costs thereafter.

increases would be consistent with the Mitigation Fee Act and the MSHCP and associated Incidental Take Permit and Implementing Agreement.

The mitigation fee levels shown for each extension scenario are the fee levels required to cover the appropriate portion of the Local Permittee MSHCP implementation costs based on the best information available at this time. The revised mitigation fee levels reflect changes in estimated costs, expected levels of land dedication, and non-fee funding. Consistent with the MSHCP and Original Nexus Study, it is assumed that all new development in Western Riverside County will pay the mitigation fee because, as noted in the MSHCP, "new development affects the environment through construction activity and cumulatively through population bases that result from such development."⁶ Importantly, the revised mitigation fee levels also reflect the decision to determine the mitigation fee that applies to different land uses on a consistent per gross acre basis. This approach is considered to provide a clear, consistent, and proportionate method for determining mitigation fees on new development.⁷ The 2020 Nexus Study does convert the overarching per gross acre fee into per unit residential fees for different density ranges; this conversion was conducted to provide implementation/administrative consistency for member jurisdictions.

Table 2 Updated MSHCP Implementation Costs and Per Acre Mitigation Fees

Fee Per Acre	No Extension	5-Year Extension	10-Year Extension	15-Year Extension
Net Cost	\$912,756,583	\$902,353,150	\$892,767,438	\$883,987,805
Acres of Development				
Residential	14,026	21,818	29,611	37,403
Nonresidential	<u>6,239</u>	<u>9,705</u>	<u>13,171</u>	<u>16,637</u>
Total	20,265	31,523	42,782	54,040
Mitigation Fee per Acre	\$45,041	\$28,625	\$20,868	\$16,358

Sources: Southern California Association of Governments; Western Riverside County RCA; Economic & Planning Systems, Inc.

⁶ Consistent with the Original Nexus Study and the technical analysis in this study update (and as described in more detail in the Fee Implementation Handbook), certain types of public improvements/ infrastructure projects will make mitigation payments calculated as a percent of total improvement cost. All projects are required to make a mitigation payment/contribution (except where exempted as specified in the Ordinance); where no mitigation payment process is specified, the project will pay the updated per acre mitigation fee.

⁷ This is the approach taken by the majority of regional Habitat Conservation Plans in California, including the Coachella Valley Multiple Species Habitat Conservation Plan mitigation fee.

As shown in **Table 2**, the required mitigation fee per gross acre of development varies substantially based on level of extension as follows:

- **No Extension.** Under the current structure, where all land acquisition must occur by the end of Year 25 of MSHCP implementation (2029), a mitigation fee of **\$45,041 per acre** of development would be required.
- **5-Year Extension.** With a 5-year extension, where all land acquisition must occur by the end of Year 30 of MSHCP implementation (2034), a mitigation fee of **\$28,625 per acre** of development would be required.
- **10-Year Extension.** With a 10-year extension, where all land acquisition must occur by the end of Year 35 of MSHCP implementation (2039), a mitigation fee of **\$20,868 per acre** of development would be required.
- **15-Year Extension.** With a 15-year extension, where all land acquisition must occur by the end of Year 40 of MSHCP implementation (2044), a mitigation fee of **\$16,358 per acre** of development would be required.

For residential development, the per gross acre fee is translated into per residential unit fees by density category to provide for a fee framework that is consistent with the current fee structure. The per residential unit fees are calculated by dividing the per gross acre fee by an assumed typical/ average density for each of the three density ranges (low, medium, and high).⁸ The full mitigation fee schedule (for each extension scenario) is shown in **Table 3**, including the per unit residential fees by density category and per gross acre fees for non-residential development. The typical/ average residential densities used to calculate the per-unit residential fees are the same as the density assumptions in the Original Nexus Study.⁹

⁸ For example, the \$3,635 per unit Residential – Low fee under the 15-year extension is derived by dividing the overall per gross acre mitigation fee of \$16,358 (shown in Figure 2) by the assumed typical/average density of Residential Low of 4.5 units/acre.

⁹ The Fee Implementation Handbook provides more specifics on how to determine a project's residential density and therefore the appropriate per unit residential fee that applies.

Table 3 Updated Mitigation Fee Schedule by Extension Scenario

Fee Per Unit	Current Fee 2021 ¹	No Extension	5-Year Extension	10-Year Extension	15-Year Extension
Residential - Low (Up to 8.0 DUAC) ^{2 3}	\$2,234	\$10,009	\$6,361	\$4,637	\$3,635
Residential - Medium (8.0-14.0 DUAC) ^{2 3}	\$1,430	\$4,170	\$2,650	\$1,932	\$1,515
Residential - High (14.0+ DUAC) ^{2 3}	\$1,161	\$1,846	\$1,173	\$855	\$670
Commercial / Industrial (per acre)	\$7,606	\$45,041	\$28,625	\$20,868	\$16,358

1. Western Riverside County Multiple Species Conservation. Local Development Mitigation Fee Schedule for FY 2020-21 (Effective July 1, 2020 – June 30, 2021), annually adjusted using the Consumer Price Index.

2. Per acre mitigation fees translated into per unit fees based on the following residential densities: for low density, 4.5 units per acre; for medium density, 10.8 units per acre; for high density, 24.4 units per acre, consistent with the assumptions used in Appendix E of the original Nexus Study.

3. DUAC stands for Dwelling Units per Acre.

Sources: Southern California Association of Governments; Western Riverside County RCA; Economic & Planning Systems, Inc.

Key Drivers of Fee Change

The change in Local Development Mitigation Fee is the result of a number of different contributing factors (“moving parts”), fully documented and detailed in **Chapters 2** through **7**. This Nexus Study is based on the most current information available including, for some inputs, recent years of experience from MSHCP implementation. The factors that have had the most significant effect on the Local Development Mitigation Fee calculations are summarized below.

- 1. Lower-than-expected land dedications substantially increase the Local Permittee habitat acquisition cost component of MSHCP implementation.** The MSHCP assumed that 41,000 of the 97,000 acres (42 percent) to be conserved by Local Permittee action/funding would be provided at no cost through land dedication associated with development inside the Criteria Cells. Through the first sixteen years of Plan implementation, less than 1,000 acres of the Local Permittee habitat conservation obligations have been generated through these dedications. An additional 10,000 acres of land dedication requirements have been required as part of proposed developments that have yet to occur. Beyond the dedication associated with previously proposed projects, additional land dedication is not expected.¹⁰ As a result, the 2020 Nexus Study assumes the noted 10,000 acres of land dedication is formalized over the next eight years (an average annual land dedication of 1,250 acres per year) prior to the end of the current land acquisition period. No additional land dedication is assumed, even if the acquisition period is extended. As a result, at the end of the current habitat acquisition period (Year 25 of Plan

¹⁰ In September 2016, the RCA revised its fee credit and waiver policy, limiting the likelihood of projects paying fees and dedicating land.

implementation), total land dedication is expected to represent about 11,000 acres and about 11 percent of the Local Permittee land conservation requirement. The RCA therefore needs to directly acquire an additional 30,000 acres of land relative to the expectations of the Original Nexus Study.

2. **Lower than expected regional infrastructure public contributions have reduced the non-free funding available, increasing the costs to be funded through the mitigation fee.** The MSHCP assumed a substantial level of funding from regional infrastructure project public contributions, including transportation infrastructure, regional utility projects, local public capital construction projects, and regional flood control projects, as well as from landfill tipping fees. While the Measure A sales tax has provided substantial funding as expected, other revenue sources, on aggregate, have provided (and are expected to continue to provide) substantially less funding than forecast in the 2003 Nexus Study. As a result, mitigation fees will need to cover about 91 percent of Local Permittee MSHCP implementation costs relative to the original assumption of about 56 percent.
3. **The change towards a consistent “per gross developed acre” fee basis provides a more consistent approach for all land use development types.** The 2003 Nexus Study used an “Equivalent Benefit Unit” approach to distributing mitigation costs between different land use categories. This Nexus Study adjusts the fee calculation to the more commonly used per gross acre basis. Under this approach, the new Local Development Mitigation Fees are all based on one “across the board” per gross acre fee determination. Non-residential development then pays this per acre fee, while per unit residential fees by density category are derived from this common per gross acre fee.¹¹ This change evens out some of the prior differences in mitigation fee levels.
4. **The estimates of average per acre land values have not changed substantially, so they have had a limited effect on the change in mitigation fees.** The original MSHCP implementation cost estimate was based on an average land value of about \$13,100 per acre. This was based on research on land transactions of parcels with different land use designations and sizes in 2001/2002. The land valuation analysis conducted for this Nexus Study estimated a planning-level land value of about \$14,300 per acre based on land transactions primarily in the 2014 to 2017 period (inflated to 2019-dollar terms). As a result, land value estimates have not changed substantially in nominal dollar terms since the Original Nexus Study. This estimated per acre land value is above the cost of most RCA transactions to date, though the average land values of future RCA land acquisition are expected to increase due to the increasing need to purchase more expensive land in “linkage” areas.

¹¹ Similar to the Original Nexus Study, all new development in Western Riverside County is required to pay the mitigation fee (or otherwise provide the necessary mitigation). The conversion from per gross acre to per unit fees for residential development is conducted to provide administrative continuity for member agencies.

Organization of Report

This Nexus Study includes several chapters. **Chapter 1**, this chapter, describes the purpose and need for this Nexus Study, the recommended changes in the Local Development Mitigation Fee, and the key drivers of these changes. **Chapters 2 through 7** provide the technical analysis that supports the updated fees and nexus findings. **Chapter 2** summarizes the purpose of and basis for the MSHCP, the conservation requirements of the MSHCP, and the financing strategy and approach developed to implement the MSHCP in 2004. **Chapter 3** describes the conservation achievements to date, identifies the remaining conservation requirements, and identifies expected land dedication. **Chapter 4** provides the development forecast used in the calculation of the updated mitigation fees. **Chapter 5** provides the estimates of MSHCP implementation costs, including land acquisition, management and monitoring, program administration, and endowment. **Chapter 6** describes the historical levels of non-fee revenues available to help fund Local Permittee MSHCP implementation costs. **Chapter 7** brings together the technical analysis in **Chapters 2 through 6** to estimate the updated 2020 Local Development Mitigation Fees. **Chapter 8** provides the nexus findings required under the Mitigation Fee Act as required to establish the updated fees. Finally, **Chapter 9** highlights some of the administration and implementation requirements under the Mitigation Fee Act, recognizing that the Fee Implementation Handbook provides more specific guidance to the RCA and its partner agencies on the implementation of the mitigation fee program.

2. MSHCP POLICIES, GOALS, AND FINANCING STRATEGY

MSHCP Purpose, Basis, and Goals

In response to the need to maintain future growth opportunities in Western Riverside County while addressing the requirements of the state and federal Endangered Species Acts, the County and the Riverside County Transportation Commission initiated the Riverside County Integrated Project (RCIP) in 1999. The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is one part of the RCIP that includes:

- **Updated County General Plan.** Addresses the required general plan elements such as land use, circulation, housing and open space, and conservation and includes programs to implement the MSHCP, enhance transit alternatives, and encourage development of mixed-use centers.
- **Community and Environment Transportation Acceptability Process.** Identifies future transportation corridors in Western Riverside and provides needed environmental documentation to allow preservation of future right-of-ways.
- **MSHCP.** The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP or Plan) is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on the conservation of species and their associated habitats in Western Riverside County. The MSHCP conserves vulnerable plant and animal species and their associated habitats in Western Riverside County and supports economic development.

The MSHCP was adopted in 2003 by the Riverside County Board of Supervisors. Subsequently, all of the Western Riverside cities, the County of Riverside, County Flood Control and Water Conservation District, County Regional Parks and Open-Space District, County Department of Waste Resources, Riverside County Transportation Commission, California Department of Transportation, California Department of Parks and Recreation, California Department of Fish and Game, the US Fish and Wildlife Service and the RCA signed an Implementing Agreement for the MSHCP. The Implementing Agreement includes terms to ensure MSHCP-implementation, defines remedies and recourses should any of the parties of the Agreement fail to perform obligations, and provides assurances that, as long as the MSHCP is being implemented, the Wildlife Agencies will not require additional mitigation from the Permittees.¹²

The MSHCP serves as an HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 as well as a Natural Communities Conservation Plan under the NCCP Act of 2001. The MSHCP streamlines these environmental permitting processes by allowing the participating jurisdictions to authorize “take” of plant and wildlife species identified within the Plan Area. At the same time, Plan implementation provides a coordinated MSHCP Conservation Area and implementation program to preserve biological diversity and maintain the region’s quality of life.

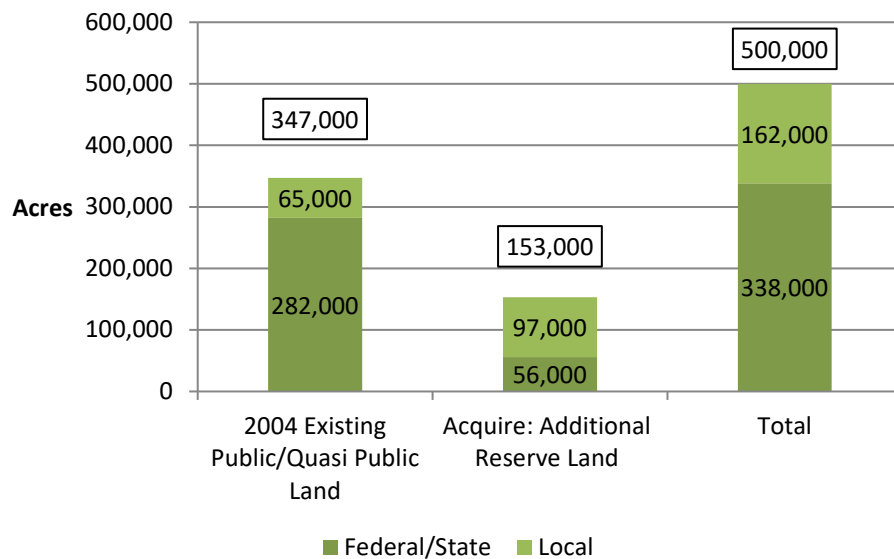
¹² The Wildlife Agencies include the US Fish and Wildlife Service and the California Department of Fish and Wildlife and the Permittees include all of the other parties to the Implementing Agreement.

The MSHCP and the associated Implementing Agreement and Incidental Take Permit collectively determine a set of conservation actions, and the associated responsible parties, that must be taken to meet the terms of the Incidental Take Permit and benefit from the regulatory streamlining and other benefits of the MSHCP. This includes the identification of the responsibilities of the Local Permittees.¹³

MSHCP Conservation Requirements

The goal of the MSHCP is to enhance and maintain biological diversity and ecosystems processes while allowing future economic growth. The MSHCP calls for an MSHCP Conservation Area of 500,000 acres and focuses on the conservation of 146 species.

Figure 1 State of Conservation in 2003: Conserved Land, Additional Reserve Land to be Acquired, and Total MSHCP Conservation Area Needed



As shown in **Figure 1**, when the MSHCP was adopted, existing public and quasi-public conservation lands covered 347,000 acres, leaving a need for 153,000 acres of land, called Additional Reserve Land (ARL), to meet the goals of the MSHCP (see **Figure 1**). The MSHCP specifies that responsibility for the conservation of the 153,000-acre Additional Reserve Lands is shared by the local development process (97,000 acres) and state and federal purchases (56,000).

¹³ Local Permittees include the Western Riverside cities, the County of Riverside, County Flood Control and Water Conservation District, County Regional Park and Open Space District, County Department of Waste Resources, and Riverside County Transportation Commission.

Table 4 MSHCP Goals by Area Plan

Area Plan	Total Area of Criteria Cells	Low End of Goal	High End of Goal	Midpoint
Cities of Riverside and Norco	1,756	90	240	165
Eastvale	665	145	290	220
Elsinore	28,946	11,700	18,515	15,110
Harvest Valley / Winchester	820	430	605	515
Highgrove	1,452	345	675	510
Jurupa	5,476	890	1,870	1,380
Lake Mathews / Woodcrest	11,673	3,215	5,470	4,340
Lakeview / Nuevo	14,682	6,650	10,235	8,445
Mead Valley	7,703	1,885	3,635	2,760
Reche Canyon / Badlands	26,000	10,520	15,610	13,065
REMAP	78,423	41,400	58,470	49,935
San Jacinto Valley	32,828	11,540	19,465	15,500
Southwest Area	66,076	22,500	36,360	29,430
Sun City / Menifee Valley	2,059	1,120	1,585	1,355
Temescal Canyon	10,007	3,485	5,800	4,645
The Pass	22,652	8,540	13,925	11,230
Total	311,218	124,455	192,750	158,605

The MSHCP includes methods to determine whether the goals of the Plan are being met. One of the methods is measuring the extent to which conservation acquisitions are moving toward acquisition goals by each Area Plan.¹⁴ Area Plans are established in the County's General Plan and are used in the MSHCP as a common geographic unit in Western Riverside County. The MSHCP established low, high, and midpoint acquisition goals for each Area Plan based on biological needs. The midpoint acquisition goals for each Area Plan range from 165 to nearly 49,935 acres, as shown in **Table 4**. The midpoint goals sum to 158,605 which represents 5,605 acres more than are needed to fulfill the MSHCP goals. As a result, acquisitions in some Area Plans can fall below the mid-point targets while the total ARL can still achieve the 153,000-acre goal.

MSHCP Financing Strategy

One of the key requirements of the MSHCP, Implementing Agreement, and Incidental Take Permit (consistent with the requirements of the federal Endangered Species Act) is the provision of adequate funding by Local Permittees to the Implementing Entity (the Regional Conservation Authority) to conduct the conservation actions identified in the MSHCP as the responsibility of the Local Permittees.

¹⁴ Other geographic units include Rough Steps, city jurisdictions, and Area Plan subunits. For the purposes of this analysis, Area Plans have been selected as the primary unit of analysis because they are the middle-sized unit (smaller than Rough Steps and larger than Area Plan subunits) and have not changed over time (unlike jurisdictions, several of which have incorporated since the adoption of the MSHCP).

Section 8.0 of the MSHCP addresses “MSHCP Funding/Financing of Reserve Assembly and Management.” This section provides best estimates of Plan implementation costs at the time of Plan adoption, including the local funding commitment – the portion of Plan implementation costs that represents the Local Permittees’ portion of the overall land acquisition, management, monitoring, adaptive management, and Plan administration costs. Section 8.5 describes the Local Funding Program. The Local Funding Program included a mix of funding sources to provide “an equitable distribution of the cost for local mitigation under the MSHCP.” The proposed funding sources included Local Development Mitigation Fees, density bonus fees, regional infrastructure project public contributions (including transportation infrastructure, regional utility projects, local public capital construction projects, and regional flood control projects), and landfill tipping fees. Key components of the overall MSHCP implementation and funding strategy are highlighted below:

- The Regional Conservation Authority would implement the MSHCP with funding from different sources.
- The permanent protection of 97,000 acres in Additional Reserve Lands by Year 25 of the Plan (2029) would be achieved through direct purchase of habitat lands by the RCA using local funding and through the HANS dedication process.¹⁵
- Local funding sources would fund the ongoing management and maintenance costs of the local portion of the Additional Reserve Lands acquired through local funding (97,000 acres by end of acquisition period).
- Local funding sources would fund monitoring activities on the pre-Plan local conservation and all the new Additional Reserve Lands (500,000 acres by end of acquisition period).
- The permanent protection of 56,000 acres in Additional Reserve Lands by Year 25 would be achieved using state/federal funding sources or contributions.
- State and federal funding sources would fund the management and maintenance costs of the State/federal portion of the required Additional Reserve Lands.
- Local Development Mitigation Fees (on private development) would fund the Local Permittee MSHCP implementation costs that were not funded by other local/regional funding sources or public contributions for public development project mitigation.
- The overall permit period was set at 75 years. Once habitat acquisition was completed by Year 25, remaining funds along with newly created revenue sources were to be used to fund

¹⁵ Section 6.1.1 of the MSHCP describes the HANS process. The Habitat Evaluation and Acquisition Negotiation Strategy (HANS) process applied to any property owner applying for a discretionary permit for land within a Criteria Area/Criteria Cell. Under the process, the County determined whether portions of the property are needed for conservation and then may send their evaluation to the RCA for Joint Project Review (JPR). During JPR, the project applicant negotiated the terms of the development and conservation of the project. The applicant also paid fees on the new development. This approach was refined when a new fee credit policy, adopted in 2016, provided for fee credits where appropriate lands are dedicated.

monitoring and management as well as to fund the establishment of an endowment to cover ongoing post-permit costs (beyond Year 75).

Importantly, the MSHCP funding chapter notes that frequent evaluations of the performance of the funding mechanisms and assessments of the funding plan will occur and that any necessary modifications to the funding mechanisms will be developed.

MSHCP Implementation Costs and Funding Sources

The original estimated costs and proposed funding sources were documented in the MSHCP and are summarized in **Table 5**. These were developed based on research and analysis conducted as part of MSHCP development.

As shown, Plan implementation costs over the first 25 years of implementation were estimated at about \$950 million in 2004-dollar terms. Key assumptions driving the implementation cost estimates included:

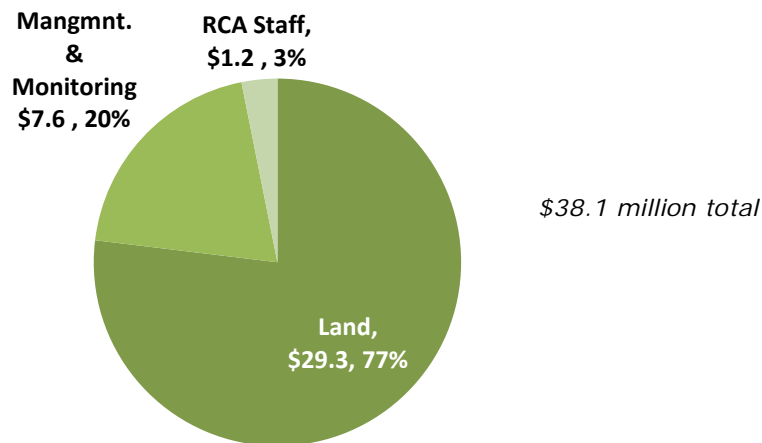
- **Dedications.** Direct acquisition using local funding sources would be required to acquire 56,000 acres, with 41,000 acres (or 42 percent) of the required local habitat protection coming through HANS dedication.
- **Land Cost.** Average land value of \$13,100 per acre for Additional Reserve Lands purchased by the RCA.
- **Management and Monitoring:** Management and monitoring costs included three key components as follows: Reserve Management, Adaptive Management, and Biological Monitoring.¹⁶
- **Program Administration.** RCA program administration costs would average about \$1.2 million each year in 2004 dollars during the 25-year period where land acquisition was required.
- **Cost Distribution.** Overall, land acquisition costs were estimated at 77 percent of total implementation costs, with management and monitoring at 20 percent, and program administration at 3 percent (see **Figure 2**).

¹⁶ See Chapter 5 of the MSHCP for a description of these activities.

Table 5 2004 Estimates: MSHCP Implementation Costs and Funding Sources

Item	Total for 2004 - 2028 (Years 1 - 25)	Average Annual	% of Total Cost/ Funding Need
Local Permittee Land Requirements			
Preservation Requirement	97,000 acres	3,880 acres	na
HANS Dedication	<u>41,000</u> acres	<u>1,640</u> acres	na
Local Permittee Acquisition	56,000 acres	2,240 acres	na
Local Permittee MSHCP Implementation Costs			
Land (1)	\$733,600,000	\$29,344,000	76.91%
Management & Monitoring	\$190,200,000	\$7,608,000	19.94%
RCA Staff	\$30,000,000	\$1,200,000	3.15%
Other Costs	na	na	na
Endowment	<i>not included</i>	<i>not included</i>	na
Total Costs	\$953,800,000	\$38,152,000	100.0%
Local Revenues			
Private Development Mitigation Fees	\$539,600,000	\$21,584,000	50.1%
Density Bonus Fees	\$66,000,000	\$2,640,000	6.1%
Regional Transportation Infra. (2)	\$250,000,000	\$10,000,000	23.2%
Local Roads (Measure A)	\$121,000,000	\$4,840,000 (3)	11.2%
Tipping Fees (4)	\$100,000,000	\$4,000,000	9.3%
Miscellaneous Revenues (5)	<u>\$0</u>	<u>\$0</u>	0.0%
Total Revenues	\$1,076,600,000	\$43,064,000	100%
<p>(1) Average land value per acre assumed to be \$13,100 per acre. (2) Public contributions at specified % of new road construction. (3) \$121 million to be provided over 10 years, so \$12.1 million annually over that period. (4) Includes \$90 million from El Sobrante Landfill and \$10 million from other County landfills. (5) Other potential revenues, including public contributions from other public projects, tipping fees from Eagle Mountain Landfill, and potential new voter-approved regional funding were noted but not estimated.</p> <p>Source: Chapter 8 of MSHCP; Economic & Planning Systems.</p>			

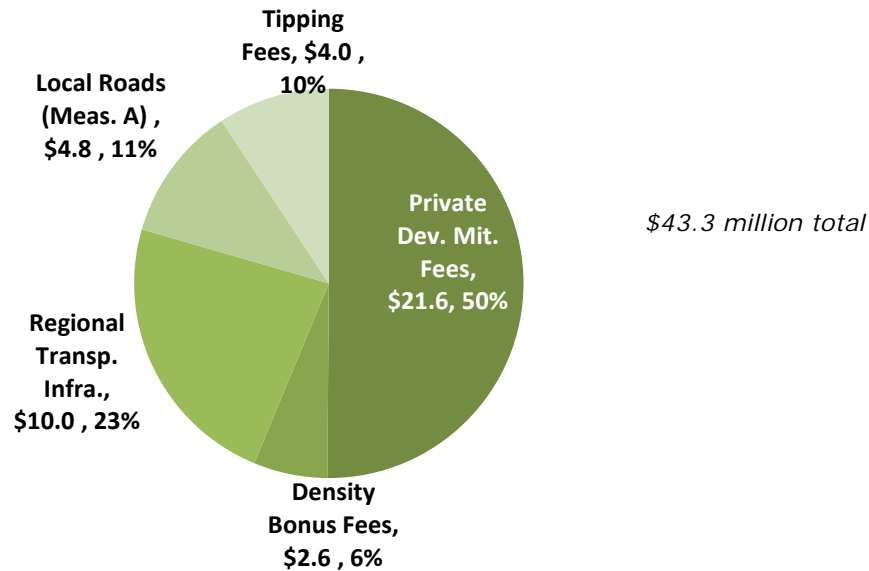
Figure 2 MSHCP Estimated Annual Costs in Millions, 2004 Dollars



As also shown in **Table 5**, MSHCP funding from local/regional sources was estimated to be about \$1.0 billion in 2004 dollars through Year 25, sufficient to cover the implementation costs over this period. Key assumptions driving the funding estimates included:

- **Measure A.** Measure A (local sales tax transportation funding measure) would provide \$121 million over 10 years in 2004-dollar terms.
- **Regional Transportation Funding.** Public contributions from regional transportation infrastructure projects would provide an average of \$10 million each year or \$250 million through Year 25.
- **Tipping Fees.** Landfill tipping fees would provide about \$100 million in revenue over 25 years, about \$4 million each year, primarily from the El Sobrante landfill.
- **Mitigation Fees.** Private development fees, including private development mitigation fees and density bonus fees, would generate over \$600 million over the first 25 years, about \$24 million annually.
- **Development Forecast and Participation.** The forecast of private development fees was based on a preliminary fee schedule and the forecast of 336,000 new residential units (13,440 units each year) and 371 acres each year of commercial and industrial development. All new development was assumed to pay the private development mitigation fee with a portion paying the density bonus fee.
- **Other Funding Options.** Potential additional funding might come through contributions from other local/regional public entities, other landfills, or new voter-approved funding initiatives.
- **Funding Distribution.** Overall, about 55 percent of the estimated funding was expected to be generated by private development fees, with 45 percent from other funding sources.

Figure 3 MSHCP Estimated Annual Revenues in Millions, 2004 Dollars



Development Mitigation Fees and Calculation

The MSHCP notes that “new development affects the environment directly through construction activity and cumulatively through population bases that result from Development.” As a result, the cities and County are required to implement a Local Development Mitigation Fee that was expected to represent one of the primary sources of funding for the implementation of the MSHCP. The MSHCP indicates that the Local Development Mitigation Fee will be adopted under California Government Code Section 66000 et seq. (the “Mitigation Fee Act”) that “allows cities and counties to charge new development for the costs of mitigating the impacts of new development.”

The MSHCP identified preliminary estimates of Local Development Mitigation Fees and indicated that these mitigation fees were expected to generate the majority of funding for Local Permittee obligations. The MSHCP noted that, under the Mitigation Fee Act, “a nexus study is required to demonstrate that the proposed fee is proportionate to the impacts of new development.” The Mitigation Fee Act also includes a number of reviewing and reporting requirements. The MSHCP also notes that the fee will need to be “reevaluated and revised should it be found to insufficiently cover mitigation of new development.”

A nexus study entitled “Final Mitigation Fee Nexus Study Report for the Western Riverside County Multiple Species Habitat Conservation Plan” was completed on July 1, 2003 (2003/Original Nexus Study). This nexus study conducted a detailed analysis of the costs of implementing the Plan, identified the Local Permittee funding obligations, determined the portion to be funded through the Local Development Mitigation Fee, and made the necessary nexus findings under the Mitigation Fee Act. The MSHCP and 2003 Nexus Study both indicated that all new development in the Western Riverside County Plan Area affects covered species and habitat and so the Local Development Mitigation Fees would apply to all new development in participating jurisdictions in Western Riverside County.

Mitigation Fee Schedule and Adjustments

All local jurisdictions participating in the MSHCP and obtaining coverage for public and private take in their jurisdictions were required to adopt and implement this mitigation fee schedule through ordinance and resolution and then to pass through the fee funding (minus any additional administrative charges) to the RCA to fund MSHCP implementation. Indexed-increases based on the annual change in the Consumer Price Index for the Los Angeles-Anaheim-Riverside area were provided for in the ordinances to allow modest adjustments in mitigation fees to respond to inflationary cost increases. Due to the geographic revision implemented by the Bureau of Labor Statistics, going forward indexed-adjustments will be based on the annual change in the Consumer Price Index for the Riverside-San Bernardino-Ontario area.

Table 6 shows the original 2004 Local Development Mitigation Fee schedule and current 2021 Fee schedule that reflects periodic inflationary fee adjustments using the indexing process.

Table 6 2004 and 2021 MSHCP Fee Schedule

Fee Category	2004 Fee per unit or per acre	2021 Fee per unit or per acre
Residential: Up to 8.0 dwelling units per acre (DUAC)	\$1,651	\$2,234
Residential: 8.0-14.0 DUAC	\$1,057	\$1,430
Residential: 14.0+ DUAC	\$859	\$1,161
Commercial (per acre)	\$5,620	\$7,606
Industrial (per acre)	\$5,620	\$7,606

3. HABITAT PROTECTION TO DATE AND FUTURE CONSERVATION SCENARIO

The RCA has achieved substantial levels of habitat protection to date using the funding sources established and the associated variable flows of incoming revenues. The level of habitat protection achieved, because of lower levels of funding and land dedication than expected, has however fallen behind the pace of protection forecast in the Original Nexus Study. This chapter summarizes the achieved protection to (1) establish both the scale of future acquisitions required to meet the overall Additional Reserve Land (ARL) goals, (2) consider the annual pace of habitat protection through acquisitions and dedications in absolute terms and relative to the original MSHCP forecasts, and (3) inform the development of the Conservation Scenario that forms the baseline (project description) for estimating future MSHCP implementation costs and associated funding requirements and updated mitigation fees.

Habitat Protection Accomplishments Through 2019

Between the start of the MSHCP program and the end of 2019, the most recent full calendar year, about 40 percent of the 153,000-acre ARL target has been achieved, totaling almost 62,000 acres in acquisitions, easements, or dedications (see **Table 7**).¹⁷ As shown of the 97,000 acres in Local Permittee ARL obligation about 40,200 acres had been protected by the end of 2019. Of the 56,000 acres in State/Federal ARL obligation, about 21,600 acres have been protected to date.

Table 7 Conservation Through End of 2019

Party	Need	Conserved 2000-2003	Conserved 2004 - 2019	Total Conserved 2000 - 2019	Remaining Need 2020-2043
Local	97,000	4,531	35,681	40,212	56,788
State + Fed	56,000	12,408	9,200	21,608	34,392
Total	153,000	16,939	44,881	61,820	91,180

Sources: Western Riverside County Regional Conservation Authority MSHCP Annual Reports; RCA information on 2019 purchases; Economic & Planning Systems, Inc.

Conservation Goals and Progress

The MSHCP anticipated that acquisition would take place for 25 years, through the end of 2029, with 97,000 acres conserved through local means and 56,000 acres conserved with State/federal funding. To achieve this goal, an average of 6,120 acres of conservation is required each year,

¹⁷ Note that while the MSHCP was adopted in 2004, certain conservation which took place between 2000 and 2003 was counted toward the MSHCP reserve.

including an average of 3,880 annually from local funding sources/dedications and 2,240 annually from State and federal conservation.

Figure 4 illustrates how steady progress would result in achievement of the ARL goals by 2029. **Figure 5** shows actual progress toward the goals, through 2019. More than 21,000 acres have been conserved through State/federal means, and over 40,000 acres have been conserved through local actions. These totals sum to about 40 percent of the total ARL goal of 153,000 acres. As shown in **Figure 5**, with 16 years of the 25-year acquisition period completed, the ARL acquisitions have fallen behind the pace forecast in the Original Nexus Study. Protection through the end of 2019 represents 63 percent of the original forecast (65 percent for Local obligations and 60 percent for State/federal obligations). For the Local Permittee obligations, as discussed further below, the lower level of land dedication relative to the original forecasts account for much of the habitat protection gap that has emerged over the last 16 years.

Figure 4 MSHCP Conservation Goals, 2019 and 2029 Goals Highlighted

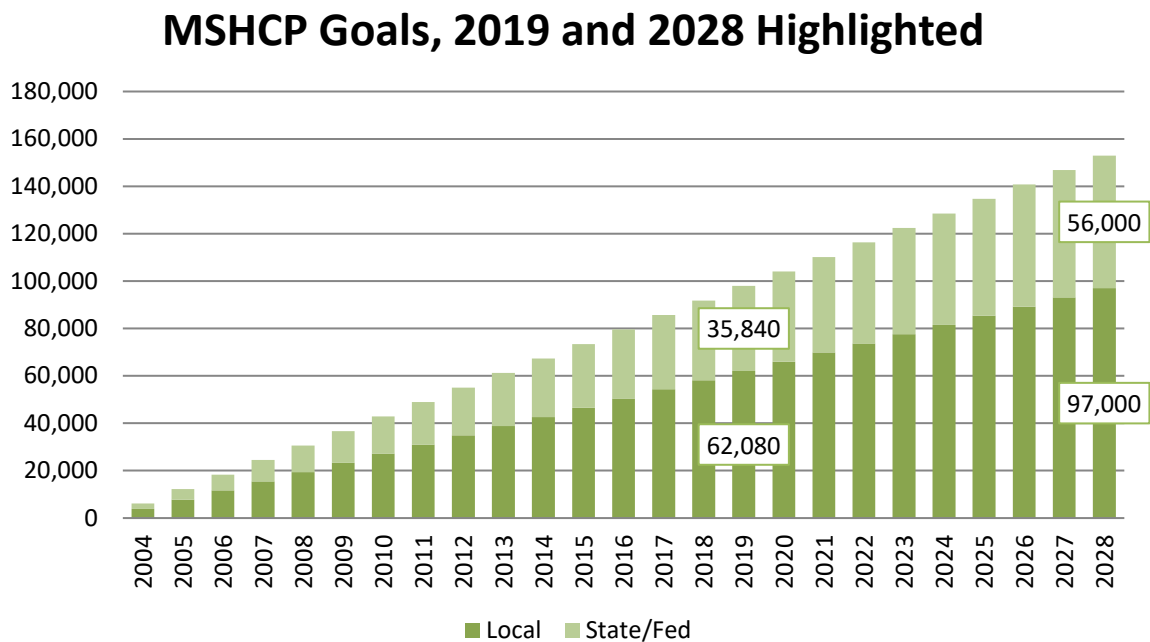
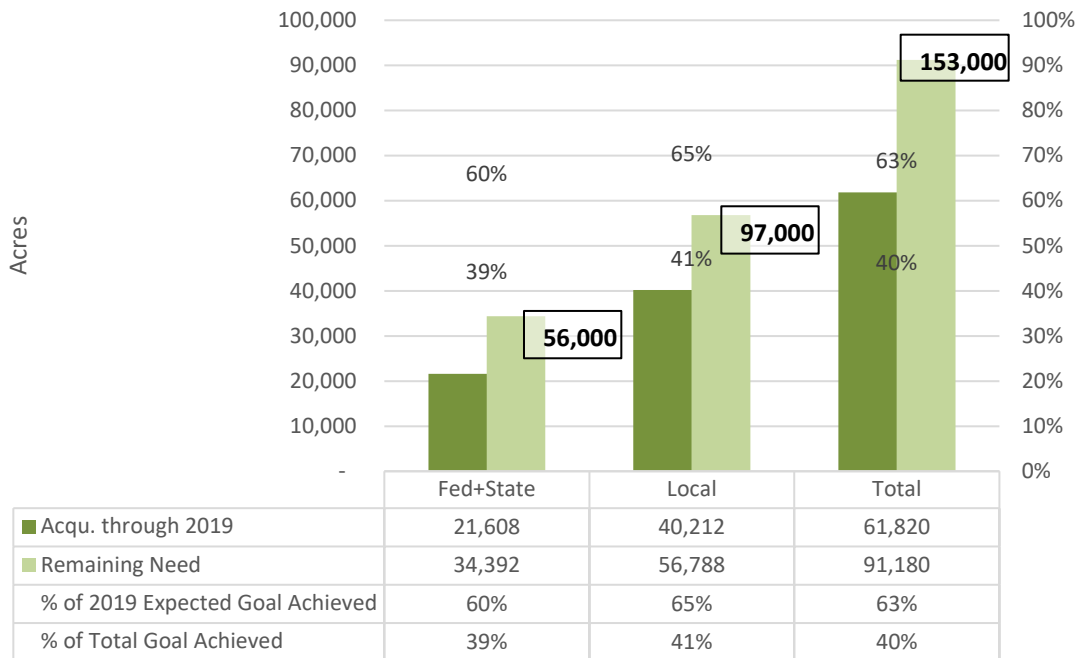


Figure 5 Progress Towards ARL Through End of 2019



Sources: Western Riverside County Regional Conservation Authority; Economic & Planning Systems, Inc.

Land Dedications

The MSHCP envisioned a conservation program where land and easements would be purchased by the RCA and land would be dedicated to the RCA through the development process.¹⁸ In addition, the potential for no-cost and low-cost donations for tax benefit purposes was also created. The MSHCP did not assume donations or conservation easement acquisitions as part of its financial analysis (this is appropriate given the limited number of such transactions). The MSHCP did, however, anticipate that 41,000 acres would be conserved through dedications, 56,000 acres through purchases on behalf of local permittees, and 56,000 acres through purchases conducted by or funded by federal and State agencies/sources for a total of 153,000 acres.

For the local portion of the goal (97,000 acres), this translates into about 42 percent of the goal conserved via dedications associated with the development review process—called Habitat Evaluation and Acquisition Negotiation Strategy (HANS)—and the other 58 percent purchased by the RCA from willing sellers. The level of dedication is a key assumption for the MSHCP implementation cost estimate as each acre dedicated through HANS is one fewer acre which must be conserved through land acquisitions at market values.

The HANS process was established to apply to developments proposed within the Criteria Cells of the MSHCP Study Area. The Criteria Cells represent areas with high conservation values relative to the areas outside of the Criteria Cells. The HANS process was designed to indicate what conservation (dedication) may be needed from new development from a biological needs

¹⁸ This process is known as the Habitat Evaluation and Acquisition Negotiation Strategy (HANS).

perspective. Subsequent to that technical analysis, applicants could then proceed to the Joint Project Review (JPR) process during which the parties negotiate an implementation plan for the project, consistent with the HANS findings. The applicants would also pay mitigation fees on the actual development. To date, a modest amount of land (less than 1,000 acres) has been conserved via the HANS/JPR method compared to the 26,000 acres that was forecast to have occurred by this point in the MSHCP implementation.

While very little land has been dedicated to the RCA through HANS/JPR, several projects went through the HANS/JPR process and have agreements in place for dedication/conservation of lands, but the start date (if any) for these projects is unknown (i.e., may be far in the future). These projects cover about 35,000 acres in the Criteria Cells and, under the JPR agreements, have set aside about 30 percent of that total or about 10,000 acres for conservation/dedication.

The adoption of Resolution No. 2016-003 in September 2016 revised the RCA's fee credit and waiver policy. This resolution indicated that MSHCP fee credit should be provided in exchange for land that contributes to reserve assembly. As a result, after the adoption of this resolution, new development is not be expected to pay mitigation fees and dedicate land in the manner originally envisioned in the MSHCP limiting the likelihood of the types of dedications envisioned in the Original Nexus Study.

Future Conservation Scenario

This updated financial analysis, nexus study, and mitigation fees estimate require a base description of the additional habitat protection required. In subsequent chapters, cost estimates are developed in reference to, and in application to, this conservation scenario to develop the overall implementation costs and the associated funding required, both in aggregate and through time during the land acquisition period of the program. Four questions are of particular importance:

1. **Remaining Habitat Protection.** The amount of habitat protection required to meet the MSHCP requirements.
2. **Dedications.** The amount of land dedication assumed to occur through the HANS/JPR process over the habitat protection period and the associated amount of habitat that must be acquired.
3. **Time Frame.** The period over which habitat protection goals must be met.
4. **Land Characteristics.** The characteristics of the land to be protected to meet MSHCP requirements (e.g., goals by Area Plan, habitat cores and linkages etc., land use designations and parcel sizes).

The answers to question 1 are provided in the data above (see **Table 7**). The answer to question 4 is provided in the subsequent chapter on land costs, with illustrative answers coming from RCA data and GIS analysis. The answer to question 2 is addressed below and is based on information on accomplishments to date (described above), discussions with RCA staff, the current Fee Waiver and Credit Policy, and an assessment of realistic opportunities and expectations. Finally, question 3 raises the issue of whether an extension to the MSHCP land acquisition implementation period should be provided. As described below, three different

extension scenarios (5-, 10-, and 15-year extension scenarios) are evaluated, as well as the baseline, "No Extension Scenario," to indicate the outcomes under different scenarios.

Habitat Protection, Land Dedication, and Conservation Scenarios

As shown in **Table 8**, there is a total of about 91,200 acres of land protection still required to complete the land protection obligations under the MSHCP and to bring the Additional Reserve Lands to 153,000 acres. Of this, the State/federal requirements is for about 34,400 acres, while the Local Permittee requirement is for about 56,800 acres.

The experience of the last 16 years indicates that the MSHCP was overly optimistic in terms of land dedications, assuming that 41,000 acres would be dedicated to the RCA. As noted above, about 10,000 acres of potential future land dedication is associated with a range of previously proposed projects. Based on historical information on actual, dedications agreements on proposed projects, current RCA policy, and consultations with RCA staff, minimal additional dedication is expected or assumed. This analysis, therefore, assumes that the prior agreement concerning dedications, summing to about 10,000 acres, will be secured over the next eight years and prior to the end of the current habitat protection period. Even if the implementation period were extended, no extra land dedication is forecast to occur.

As a result, and as shown in **Table 8**, a total of about 46,800 acres of Additional Reserve Land acquisition is required by Local Permittees for MSHCP implementation once the forecast of dedications is incorporated. As shown in **Table 8**, the required average annual pace of habitat protection varies considerably under the different acquisition period extension scenarios, as described below: ¹⁹

- **Baseline/No Extension Scenario.** As currently structured, RCA is required to complete land acquisition by the end of Year 25 of Plan implementation in 2029. This provides nine (9) years to protect the 47,000 acres through direct land acquisition (distinct from the assumed dedications), an average annual acquisition pace of about 5,200 acres each year.
- **5-Year Extension.** With a 5-year extension to the acquisition period, the RCA would be required to complete land acquisitions by the end of Year 30 of Plan implementation in 2034. This provides fourteen (14) years to protect the 47,000 acres through direct land acquisition (distinct from the assumed dedications), an average annual acquisition pace of about 3,300 acres each year.
- **10-Year Extension.** With a 10-year extension to the acquisition period, the RCA would be required to complete land acquisitions by the end of Year 35 of Plan implementation in 2039. This provides nineteen (19) years to protect the 47,000 acres through direct land acquisition (distinct from the assumed dedications), an average annual acquisition pace of about 2,500 acres each year.

¹⁹ As a point of reference, the historical pace of Local Permittee-driven habitat protection has been somewhat above 2,000 acres each year with availability of funding being an important determinant of the pace of acquisition. The pace of State/federal-driven acquisition has averaged about 1,000 acres each year.

- **15-Year Extension.** With a 15-year extension to the acquisition period, the RCA would be required to complete land acquisitions by the end of Year 40 of Plan implementation in 2044. This provides twenty-four (24) years to protect the 47,000 acres through direct land acquisition (distinct from the assumed dedications), an average annual acquisition pace of about 2,000 acres each year.

Table 8 Required Acquisition Acres to Achieve ARL Goals

Entity/Item	Through 2019	2020-End of Acquisition Period	Years Remaining	Annual Conservation Acres Required	Total Acres
NO EXTENSION					
State/Federal	21,608	34,392	9	3,821	56,000
Local					
HANS Dedication (1)	715	10,000	9	1,111	10,715
Net Local Acquisition	39,497	46,788	9	5,199	86,285
Total Local Conservation	40,212	56,788	9	6,310	97,000
State/Federal + Local = ARL Goal	61,820	91,180	9	10,131	153,000
5 YEAR EXTENSION					
State/Federal			14	2,457	56,000
Local					
HANS Dedication	See above		14	714	10,715
Net Local Acquisition			14	3,342	86,285
Total Local Conservation			14	4,056	97,000
State/Federal + Local = ARL Goal			14	6,513	153,000
10 YEAR EXTENSION					
State/Federal			19	1,810	56,000
Local					
HANS Dedication	See above		19	526	10,715
Net Local Acquisition			19	2,463	86,285
Total Local Conservation			19	2,989	97,000
State/Federal + Local = ARL Goal			19	4,799	153,000
15 YEAR EXTENSION					
State/Federal			24	1,433	56,000
Local					
HANS Dedication	See above		24	417	10,715
Net Local Acquisition			24	1,950	86,285
Total Local Conservation			24	2,366	97,000
State/Federal + Local = ARL Goal			24	3,799	153,000
20 YEAR EXTENSION					
State/Federal			29	1,186	56,000
Local					
HANS Dedication	See above		29	345	10,715
Net Local Acquisition			29	1,613	86,285
Total Local Conservation			29	1,958	97,000
State/Federal + Local = ARL Goal			29	3,144	153,000

1. About 10,000 acres of potential future land dedication is associated with a range of previously proposed projects. Based on historical information on actual, dedications agreements on proposed projects, current RCA policy, and consultations with RCA staff, minimal additional dedication is expected or assumed beyond these agreements. This analysis, therefore, assumes that the prior agreements concerning dedications will occur with future dedications summing to about 10,000 acres. The precise timing of these dedications is uncertain, but are assumed to occur over the next eight years. Average annual numbers in this table are shown distributed across the full remaining acquisition period of each extension scenario.

Shading indicates acreage to be acquired with fee revenue.

Sources: Western Riverside County Regional Conservation Authority; and Economic & Planning Systems, Inc.

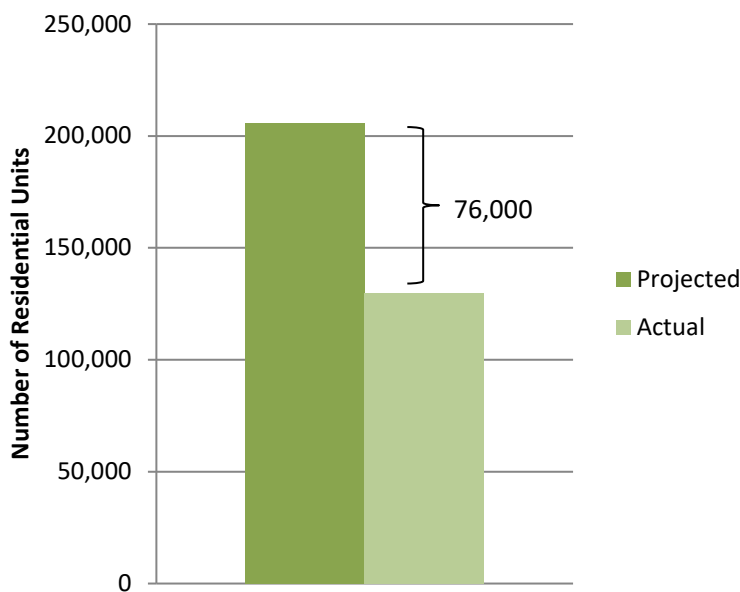
4. FORECASTS OF DEVELOPMENT, DEDICATION, FEE PAYMENT

Future development within Western Riverside County will both reduce land available for conservation while also serving as a primary funding mechanism for habitat acquisitions. This chapter identifies forecasts of future growth in Western Riverside County and develops an associated forecast of land development that is a key component of the fee calculation.

Historic Development and HCP Fees

The MSHCP anticipated that 13,000 to 14,000 residential units and about 370 commercial and industrial acres would be developed on average annually. Specifically, between 2005 and 2019, 206,000 residential units were expected in the Plan Area. A review of new units in the Plan Area indicates about 130,000 units were developed over the period (see **Figure 6**), about 37 percent below the forecast.²⁰ While the substantial volatility in the real estate market over the period (including the housing boom, deep recession, and modest recovery) may explain some of this difference, the slower pace of development means that fee revenues have been similarly constrained relative to the original revenue projections.

Figure 6 Residential Unit Development, Western Riverside County, 2005-2019



Source: California Department of Finance; MSHCP Projections

²⁰ Actual units developed have been derived from the California Department of Finance (DOF), Demographics Unit information through January 1, 2019. Note that the DOF reports data by city and for the entire Riverside County unincorporated area. Western Riverside's portion of the total unincorporated area has been derived based on the area's historic share of unincorporated County, taking into account the incorporations of new cities that occurred in Western Riverside County since MSHCP Plan adoption (Eastvale, Jurupa Valley, Menifee, and Wildomar).

Growth Projections

SCAG Forecasts in Context

The Southern California Association of Governments (SCAG) is a Metropolitan Planning Organization (MPO)²¹ representing six counties, 191 cities and more than 18 million residents. MPOs, such as SCAG are charged under California Senate Bill 375 with developing Sustainable Community Strategies (SCSs) as part of regional transportation plans. SCAG's SCS includes population, household, and job projections through 2040 by city and unincorporated area. SCAG consults with local governments within the region, including the Western Riverside Council of Governments (WRCOG) which represents Western Riverside County, to develop the projections. SCAG adopted the 2012-2040 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) in 2016. The 2016 RTP/SCS forms the basis of the SCAG projections; EPS extrapolated an annual growth rate from the SCAG projections and, assuming consistent development trends through 2050, applied the rate in order to estimate development projections through 2050.

SCAG forecasts for the future, on an annualized basis, were compared with the MSHCP's original forecast along with historical information (when available) as described further below:

- **Residential Development Forecast.** **Figure 7** shows, for Western Riverside County, the annual residential unit count for SCAG projections through 2050, MSHCP projections through 2029, and residential units produced in Western Riverside County between 2005 and 2019. As shown, the SCAG projections suggest about 8,750 units each. This is similar to the average annual historic pace of growth between 2005 and 2019 of about 9,260 units, but well below the original MSHCP projections of about 13,400 units each year. Based on the similarity between the historical average and the SCAG forecast, the SCAG forecast is considered a reasonable basis for determining the future pace of residential development and associated residential land development (based on assumed densities of development).
- **Commercial Development Forecast.** The SCAG jobs forecast of about 15,000 jobs each year was converted into an annual gross amount of commercial/industrial development using the employment density and FAR assumptions used in the most recent Transportation Uniform Mitigation Fee (TUMF) update documents. As shown in **Figure 8**, this results in a forecast of about 690 acres of commercial/industrial land development each year (representing an overall average of about 21 jobs per acre of development), considerably above the original MSHCP projections of about 370 acres each year. The higher SCAG number, however, appears reasonable given recent and ongoing trends in Western Riverside County where substantial amounts of new logistics/distribution development have occurred covering substantial land areas and, as such, is considered reasonable as the basis of the future forecast of commercial/industrial land development.

²¹ Federal law requires that an urbanized area with a population of at least 50,000 be guided by a regional entity known as an MPO. California's Senate Bill 375 expands the role of the State's 18 MPOs to include regional plans that help the State reach its greenhouse gas reduction targets by encouraging compact development and new development near public transit.

Figure 7 New Housing Units per Year, SCAG and MSHCP Projections and Historic Production (2005-2019)

SCAG (2012-2040) and MSHCP Projections (2004-2029) and Historic Production (2005-2019)

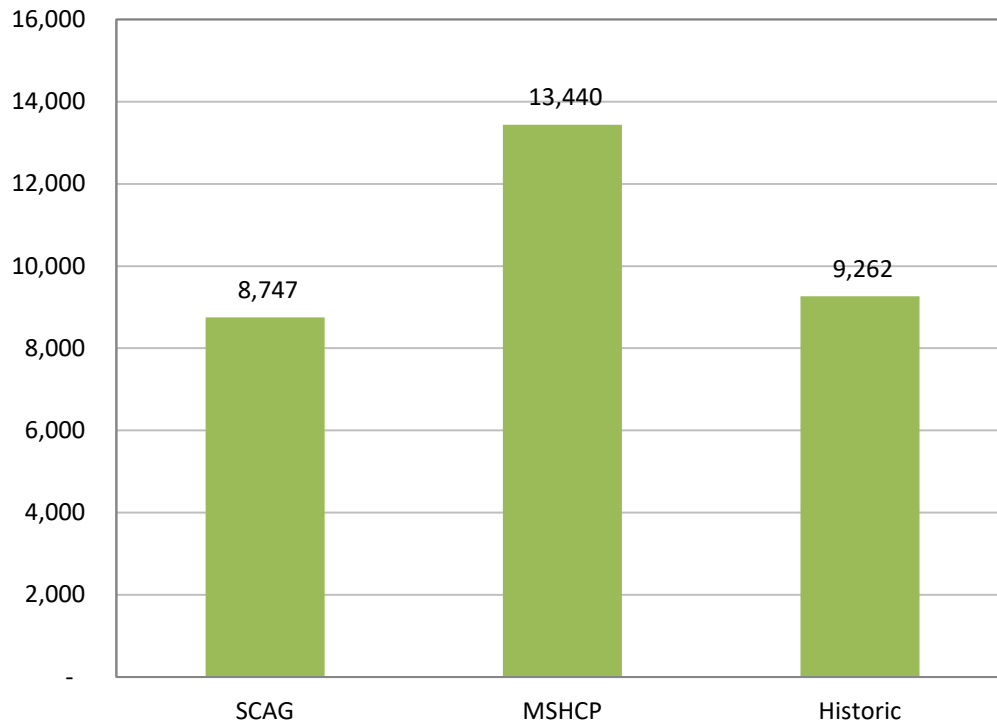
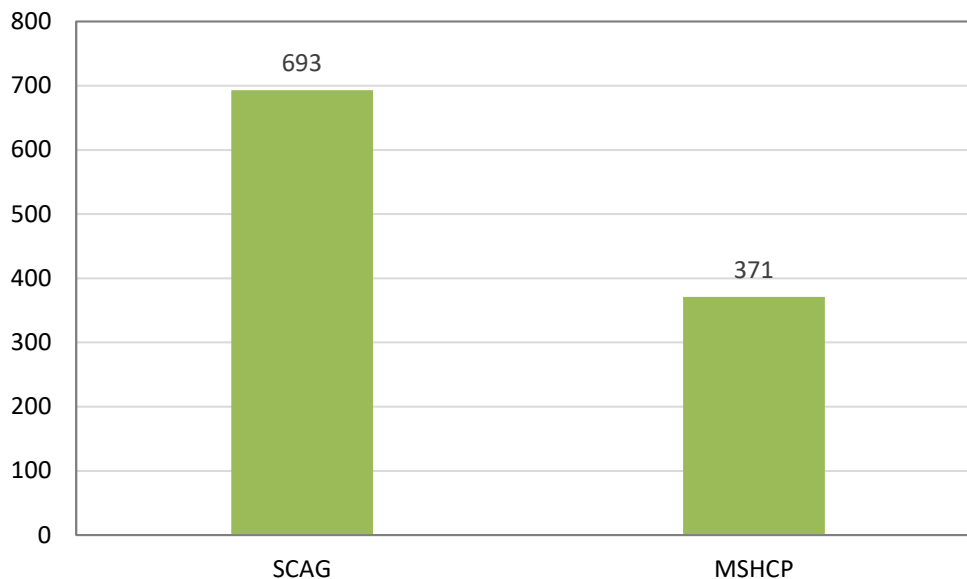


Figure 8 Newly Developed Commercial Acres per Year

SCAG (2012-2040) and MSHCP Projections



Note: SCAG job projections converted into acres by EPS

Forecasts for Fee Calculation

For this fee program update, the SCAG projections are considered a reasonable basis for forecasting future land development. Because all new development is expected to pay the mitigation fee, all of the forecasted household and job growth is converted into a land development forecast that is, in turn, used to calculate the mitigation fees. **Table 9** shows SCAG's overall projections for households and employment in Western Riverside County between 2012 and 2050, and **Table 10** shows the implied average annual land development rates, and, in turn, the overall level of residential and commercial/industrial land development that would be expected to occur through the end of the land acquisition period for each of the extension scenarios.²² As shown, all scenarios assume an overall average annual land development of 2,252 acres each year, including 693 acres in commercial/industrial land development and 1,558 acres in annual residential land development.²³

- **Baseline/No Extension Scenario.** Under the no extension scenario, a total of 20,265 acres of land development is expected to occur during the remaining Plan implementation period of nine (9) years and would pay the mitigation fees.
- **5-Year Extension.** Under the 5-year extension to the acquisition period, a total of 31,523 acres of land development is expected to occur during the remaining Plan implementation period of 14 years and would pay the mitigation fees.
- **10-Year Extension.** Under the 10-year extension to the acquisition period, a total of 42,782 acres of land development is expected to occur during the remaining Plan implementation period of 19 years and would pay the mitigation fees.
- **15-Year Extension.** Under the 15-year extension to the acquisition period, a total of 54,040 acres of land development is expected to occur during the remaining Plan implementation period of 24 years and would pay the mitigation fees.

²² Under the MSHCP, all new development is required to pay the mitigation fee and contribute to funding the implementation of the MSHCP except where specifically exempted in the Ordinance.

²³ The 1,558 acres of residential land development was derived based on the forecasted 8,747 residential units each year and assumptions concerning distribution by density category and an average density level. More specifically, consistent with the recent TUMF analysis assumptions, 70 percent of new residential units are assumed to be in the low density category (less than 8 units per acre) with an average of 4.5 units/acre, 20 percent are assumed to be the medium density category (8 to 16 units per acre) with an average of 10.8 units/acre, and 10 percent are assumed to be the high density category (over 16 units per acre) with an average of 24.4 units/acre. The unit per acre factors are consistent with those indicated in the Original Nexus Study. The overall implied average residential density is 5.6 units/gross acre.

Table 9 Projected Growth in Western Riverside County, through 2050

SCAG	Western Riverside MSHCP Plan Area	
	Households	Employment
2012	530,970	463,833
2040 Projection	775,882	869,792
2050 Projection (1)	863,350	1,014,777
New Households/Jobs Expected by 2050	332,380	550,944
Average Annual	8,747	14,499

(1) SCAG projections forecast growth through 2040. EPS assumes the annual growth rate from 2012 to 2040 remains constant through 2050 and applies the rate to an additional 10 years in order to project growth through 2050.

Sources: Southern California Association of Governments; Economic & Planning Systems, Inc.

Table 10 Projected Developed Acres in Western Riverside County, by Extension Scenario

SCAG	Western Riverside MSHCP Plan Area					
	Residential		Non Residential		Total	
No Extension						
Proportionate Share 2020-2028 ¹	78,722	Households	130,487	Jobs		
New Development to Acres ²						
Acres of New Development Through 2028	14,026	Acres	6,239	Acres	20,265	Acres
Acres per Year	1,558	Acres	693	Acres	2,252	Acres
5 Year Extension						
Proportionate Share 2020-2034 ¹	122,456	Households	202,979	Jobs		
New Development to Acres ²						
Acres of New Development Through 2034	21,818	Acres	9,705	Acres	31,523	Acres
Acres per Year	1,558	Acres	693	Acres	2,252	Acres
10 Year Extension						
Proportionate Share 2020-2038 ¹	166,190	Households	275,472	Jobs		
New Development to Acres ²						
Acres of New Development Through 2038	29,611	Acres	13,171	Acres	42,782	Acres
Acres per Year	1,558	Acres	693	Acres	2,252	Acres
15 Year Extension						
Proportionate Share 2020-2043 ¹	209,924	Households	347,965	Jobs		
New Development to Acres ²						
Acres of New Development Through 2043	37,403	Acres	16,637	Acres	54,040	Acres
Acres per Year	1,558	Acres	693	Acres	2,252	Acres

(1) SCAG forecasts from the 2016 Report have been used for all cities in Western Riverside County. The projections for the entire unincorporated area in Riverside have been split into just the Western part of the County through a review of WRCOG's recent proportion of unincorporated growth, compared to the whole County.

(2) Conversion from household projections to residential acres of developed land is based on expected development mix and average residential density by land use type, with an average residential density of 5.6 DUAC. Similarly, conversion from job projections to nonresidential acres of developed land is based on distribution of jobs by workspace type and average employment density by land use type, with an average nonresidential density of 21 jobs per land acre. Residential density assumptions are based on data from the Census and California Department of Finance; Employment density assumptions are based on SCAG data.

Sources: California Department of Finance; US Census Bureau; Southern California Association of Governments; Economic & Planning Systems, Inc.

5. MSHCP IMPLEMENTATION COSTS

This chapter describes the analysis and assumptions that underpin the estimation of the total remaining MSHCP implementation costs in 2019 dollars. Key cost factors evaluated include land costs, management and monitoring costs, administration and professional services costs, and endowment costs. Together these cost components form the total MSHCP implementation costs. Because the duration allowed for land acquisition and endowment establishment affect several of these cost items, distinct total implementation cost estimates are provided for all scenarios (i.e., Baseline/ No Extension and the three extension scenarios).

Land Costs

Planning-level estimates of the per acre values associated with potential Additional Reserve Land (ARL) acquisitions are a critical input into the estimation of total land acquisition costs associated with Plan implementation. Land acquisition costs represented the majority of the original estimates of MSHCP implementation costs. This chapter provides planning-level estimates of per acre land conservation costs in 2019-dollar terms based on available information. In combination with assumptions concerning the characteristics of the Additional Reserve Lands to be acquired and potential levels of dedication, the per acre land value estimates drive the estimate of overall land acquisition costs.

Actual per acre habitat conservation costs may vary from the average planning-level estimates presented in this chapter for a number of reasons, including differences in the specific characteristics of the actual parcels acquired as well as fluctuations in economic, real estate, and land market conditions over time. Individual transactions will require appraisals to establish their value at the time of acquisition based on parcel characteristics and pertinent market conditions at the time of appraisal. Over time, per acre and overall cost estimates typically change for a number of reasons as discussed further in **Chapter 9**.

MSHCP/Original Nexus Study

The initial adoption of the mitigation fees was based on a nexus study completed in July 2003 that included a land valuation analysis that was completed in December 2002. The land valuation analysis assumed the acquisition of vacant and unentitled lands in the Criteria Cells. The land value analysis provided planning-level estimates of per acre land values by grouped land use designation and by Area Plan. Planning-level land value estimates were based on sales comparables. The land value estimates indicated per acre land values that were primarily driven by differentiation in land use category. The land use designation categories represent groupings of the broad number of land use designations present in the Study Area. **Table 11** summarizes the per-acre land value ranges and resulting averages. Based on this analysis, an overall weighted average of \$13,100 per acre was applied in the MSHCP financial sections in the Original Nexus Study.

Table 11 Per-Acre Land Value Estimates—2003 Dollars (2003 Nexus Study)

Land Use Designation	Value Range	Resulting Average *
Open Space	\$2,500 to \$10,000 per acre	\$ 8,000 per acre
Rural/Agricultural	\$5,000 to \$25,000 per acre	\$11,000 per acre
Community Development	\$20,000 to \$80,000 per acre	\$45,000 per acre
Overall (1)	\$2,500 to \$80,000 per acre	Varied (1)

* Per acre values rounded to the nearest 1,000.

(1) Reported overall average land value per acre depends on mix of land types. Number varies by documents, though \$13,100 per acre was overall value applied in the MSHCP financing sections.

Source: Original 2003 Nexus Study

RCA Experience to Date

Table 12 summarizes average RCA land acquisition costs to date. Including land purchased shortly before the MSHCP was adopted through the end of 2018, costs for Local Permittee land acquisitions summed to \$352.5 million in nominal dollar terms, an average of \$9,400 per acre. However, for the year 2018, about 2,100 acres were acquired at the higher average per acre cost of \$13,200 per acre.

Table 12 Local Conservation Costs Through 2018

Item	Pre-MSHCP through 2018	2018
Total Acres Acquired (1)	37,547	2,066
Total Cost (millions)	\$352.5	\$27.4
Cost per Acre (Nominal \$s)	\$9,400	\$13,200

(1) Includes all acres purchased; does not include acres conserved via easement.

Sources: Western Riverside County Regional Conservation Authority MSHCP Annual Report 2018; Economic & Planning Systems, Inc.

To date, the overall historical level of per acre land acquisition expenditures is well below the original 2004 per acre land value estimates. The cost of RCA acquisitions during this timeframe were kept relatively low by concentrating more on lower cost parcels (larger parcels in remote areas with limited development potential). In 2018, as in the future, the average cost per acre is expected to be higher than this historical average due to the characteristics of land still needing to be acquired.

New Land Value Analysis and Conclusions

New 2019 per acre land value estimates were developed based on recent historical transactions as reported in the sales comparables sections of appraisals conducted for RCA acquisitions. This data set provided a substantial inventory of over 150 land sales between 2012 and 2017 that supported conclusions concerning per acre land values by key land value characteristic.

Similar to the Original Nexus Study, land values were determined to be substantially affected by land use designation and by parcel size. Land values were developed for twelve different value categories based on combinations of three land use designations and four different size ranges.

Based on the land valuation data and detailed GIS analysis by RCA staff, parcels were divided into three groups of development potential based on their land use designation:²⁴

- **Open Space.** Low development potential land use designations included open space, rural mountainous, and rural residential.
- **Rural.** Medium development potential land use designations include agriculture and rural communities land use designations.
- **Community Development.** High development potential land use designations include all community development designations, including residential, non-residential, and other community development designations.

In addition to these three land use designation groupings reflecting different levels of development potential, parcels were also divided by parcel size. The land value information indicated a per acre value distinction between the following parcels sizes:

- Parcels less than 5 acres.
- Parcels between 5 and 20 acres.
- Parcels between 20 and 80 acres.
- Parcels over 80 acres.

Based on the analysis of the sales comparables, **Table 13** shows the planning level per acre land value by land use designation grouping/size range in 2017 dollars.

Table 13 Planning Level Per Acre Land Value Estimates by Category

Land Use Designation	Per Acre Land Value (\$ / Acre) ¹			
	Less than 5 Acres	5 - 19.99 Acres	20 - 79.99 Acres	80 + Acres
Open Space	\$11,761	\$5,091	\$3,949	\$1,866
Rural	\$33,363	\$11,553	\$8,337	\$5,531
Community Development	\$177,414	\$76,050	\$72,369	\$24,335

1. Most land sale comparables used for pricing are from 2013 to 2017 and were converted to 2017 dollars using BLS CPI adjustments for the Los Angeles-Riverside-Orange County area.

Sources: Economic & Planning Systems, Inc.

²⁴ RCA staff developed a consistent set of land use designation categories across different jurisdictions in the Study Area for the purposes of this study. These formed the basis of the development potential categories.

The average land value per acre for future RCA acquisitions is dependent on the different land values per acre as well as the expected distribution of future acquisitions. The actual land to be acquired is uncertain and is dependent on the availability of land through willing sellers. However, based on the conservation needs by Area Plan, the suitable land available for protection, as well as the specific linkages that must be created between the core reserve areas, RCA staff provided sufficient information for EPS to develop a general expression of parcels by characteristic to support the land value analysis. An illustration of the expected distribution of acres by land use designation and size range is provided in **Table 14**.

Table 14 Illustrative Distribution of Land Acquisitions by Land Use and Size

Land Use Designation	Conservation Scenario (Acres) (1)				Total
	Less than 5 Acres	5 - 19.99 Acres	20 - 79.99 Acres	80 + Acres	
Open Space	535	1,531	3,626	4,654	10,346
Rural	1,901	17,241	26,802	29,428	75,371
Community Development	<u>638</u>	<u>1,707</u>	<u>3,613</u>	<u>4,384</u>	<u>10,342</u>
Total Purchases by Acreage	3,074	20,479	34,041	38,466	96,059

1. Conservation scenario analysis was conducted in 2017 so overall acres acquired more than those required as of end of 2019.

Sources: RCA; Economic & Planning Systems, Inc.

Applying the per acre land values in **Table 13** to the illustrative land conservation distribution in **Table 14** provides an estimate of the aggregate land value, supporting the estimate of the average planning level land value per acre in 2017-dollar terms (see **Table 15**).

Table 15 Aggregate Land Value of Remaining Areas (2017 dollars)

Land Use Designation	Land Comparables by Acres				Total
	Less than 5 Acres	5 - 19.99 Acres	20 - 79.99 Acres	80 + Acres	
Open Space	\$6,292,633	\$7,795,633	\$14,319,467	\$8,682,942	\$37,090,674
Rural	\$63,411,345	\$199,183,566	\$223,437,526	\$162,777,034	\$648,809,470
Community Development	<u>\$113,198,910</u>	<u>\$129,817,405</u>	<u>\$261,456,200</u>	<u>\$106,682,740</u>	<u>\$611,155,254</u>
Total Cost of Purchases	\$182,902,887	\$336,796,603	\$499,213,192	\$278,142,716	\$1,297,055,399
% of Total	14%	26%	38%	21%	100%

1. This table is the average land value per acre multiplied by the Conservation Scenario. See **Table E-1** and **E-2**.

Sources: RCA; Economic & Planning Systems, Inc.

As shown in **Table 15**, the aggregate land value of the approximately 96,000 acres remaining to be protected as part of the MSHCP as of 2017 is estimated at about \$1.3 billion in 2017 dollars. This represents an average land value of about \$13,500 per acre. To convert this land value into 2019 dollars terms (similar to the rest of the analysis), EPS indexed the value to about \$14,300 per acre in 2019-dollar terms.²⁵

Other Costs—Administration, Management, and Monitoring

Program administration, reserve management, and reserve monitoring are required functions that require annual funding. The forecasts for each of these cost categories are described below.

Administration and Professional Service Costs

The Western Riverside County Regional Conservation Authority is responsible for implementing the MSHCP. Since 2004, RCA staff members have directed the acquisition, management, and monitoring of the local portion of the Additional Reserve Land (ARL) required by the MSHCP, monitored State and federal Public/Quasi-Public lands and the State and federal portions of the ARL, and undertook all of the administrative tasks associated with maintaining the permit.

Costs categorized in this fee study under MSHCP administration include all RCA staff costs and other costs like building rents and average expenditures on non-acquisition related professional services that are not anticipated to vary as the size of the ARL increases. The forecast for the acquisition period assumes that these costs will remain at approximately \$4.2 million in constant 2019 dollars, increasing with inflation but not increasing as the size of the ARL grows (see **Table 16**). This includes salaries and benefits of about \$2.3 million annually and about \$1.5 million in professional services, supplies, and other costs.

²⁵ Two years of inflation (2017 – 2019) based on by BLS CPI adjustment for Riverside-San Bernardino-Ontario Metro Area.

Table 16 Administrative and Professional Services Costs

Expenditures	RCA FY16/17- 18/19 3-Year Average of Actuals	CPI Adjusted to 2019\$ ¹
Total Salaries and Employee Benefits	\$2,219,261	\$2,288,495
Professional Services and Supplies		
Environmental		
Legal	\$394,320	\$406,621
Auditing, Accounting & Financial Services	\$101,717	\$104,891
GIS Services	\$10,000	\$10,312
Personnel Services	\$13,920	\$14,354
Real Estate Services	\$653,774	\$674,169
Other Services	\$247,979	\$255,715
Subtotal	\$1,421,710	\$1,466,062
Other Charges	\$388,145	\$400,254
Total	\$4,029,116	\$4,154,811

(1) Three year average CPI-adjusted by one year, the average of the annual CPI adjustments for the three years.

Sources: Western Riverside County Regional Conservation Authority; Bureau of Labor Statistics;

Management and Monitoring

Reserve Management

The MSHCP describes reserve management activities focused on maintaining and improving habitat conditions and ecosystem functions including habitat and landscape-based activities and species-specific activities. For the purposes of this analysis, the average per acre cost estimate for Reserve Management as reported in the RCA actual spending for FY 2018-19 has been used to inform cost projections through the full acquisition period. Because RCA staff and relevant contractors have indicated that the current spending on staff capacity is not adequate to accomplish necessary management with existing land holdings, additional staffing and associated expenditures have been added to the current reserve management expenditures. Specifically, three new full time equivalent (FTE) positions are added to the current 2019 spending for reserve management. Overall, the 2019 per acre reserve management cost of \$25.39 per acre was adjusted to \$32.70 per acre (2019 dollars) to account for three new mid-level park ranger FTEs. While as of the end of 2019 about 40,200 acres were under management, ultimately, reserve management activities will cover the entire 97,000 acres to be acquired by the RCA.

Biological Monitoring

The purpose of biological monitoring is to provide Reserve Managers with information and data upon which reserve management decisions will be made. According to the MSHCP, the monitoring program must provide “sufficient, scientifically reliable data for Reserve Managers to assess the MSHCP’s effectiveness at meeting resource objectives and achieving or maintaining a

healthy MSHCP Conservation Area in perpetuity.” Unlike the RCA’s reserve management activities which are limited to local ARL acres, the RCA will ultimately be responsible for monitoring all 500,000 acres of the reserve lands mandated under the MSHCP. The acreage currently being monitored totals roughly 408,000 acres. For the purposes of this analysis, the \$1.1 million annual cost estimate based on FY 2018-19 actual spending was used to inform cost projections through the full acquisition period. Because current staff capacity is not adequate to accomplish necessary biological monitoring with existing land holdings, to address the additional land acquisitions, two new full time equivalent (FTE) positions are added to the current 2019 spending for reserve monitoring. The 2019 per acre reserve monitoring cost of \$2.67 was adjusted to \$3.01 (2019 dollars) to account for two new entry-level biologist FTEs. (see **Table 17**). This constant dollar per acre cost was assumed to apply throughout the period of implementation.

Reserve Management and Biological Monitoring Costs

Table 17 summarizes estimated per acre costs for reserve management and monitoring in 2019 dollars. Applying these per acre costs (in 2019 dollars) to current acreage under management and monitoring projects results in annual costs of \$1.32 million and \$1.23 million, respectively. The annual reserve management and biological monitoring costs increase as new acquisitions occur.

**Table 17 Management and Monitoring Anticipated Costs in
2004 and 2019 Dollars**

Item	Actual FY 2019 Spending
Reserve Management¹	
Acres under Management	40,212
Existing Reserve Management Expenses	\$1,021,000
<u>Additional Staff Capacity Required³</u>	<u>\$294,000</u>
Total Reserve Management Expenses	\$1,315,000
 \$/Acre	 \$32.70
\$/Acre without additional staff capacity	\$25.39
 Biological Monitoring²	
Acres being Monitored	408,820
Existing Biological Monitoring Expenses	\$1,092,000
<u>Additional Staff Capacity Required³</u>	<u>\$140,000</u>
Total Biological Monitoring Expenses	\$1,232,000
 \$/Acre	 \$3.01
\$/Acre without additional staff capacity	\$2.67

1. Reserve Management costs include Parks & Open Space contract fees, maintenance of motor vehicles, and HOA dues.

2. Biological Monitoring costs include SAWA contract fees, office and computer supplies, training, private mileage reimbursement, building rent, and rental vehicles/fuel.

3. Current staff capacity is not sufficient to accomplish necessary management and monitoring. An Expanded staff capacity scenario envisions adding 3 FTE mid-level park rangers to Reserve Management and 2 FTE entry-level biologists to Reserve Monitoring, with salaries and benefits of \$98,000 and \$70,000

Sources: Western Riverside County Regional Conservation Authority; and Economic & Planning Systems, Inc.

Endowment Funding

The overall permit period was set at 75 years, ending in 2079. To cover ongoing management and monitoring costs beyond the duration when mitigation fees will be collected, the establishment of a non-depleting endowment is required. In other words, the endowment must be sufficient such that expected average interest revenues (after inflation and transaction costs) can cover the ongoing costs associated with administration, management and monitoring in perpetuity. This section summarizes the estimated cost of establishing this endowment under the different scenarios. A key assumption is that the endowment must be fully established by

the end of the land acquisition period as it is assumed that no more mitigation fees will be collected at that time.²⁶

For the purposes of this analysis, we have assumed that habitat management and habitat monitoring costs continue in full, while administration costs are reduced by half following the end of the land acquisition period. All of these costs then continue in perpetuity. As a result and as shown in **Table 18**, the endowment is sized to cover the expected annual management and monitoring costs and 50 percent of the administration costs, totaling \$6.8 million (2019 dollars) once all lands have been acquired.

Table 18 Annual Implementation Cost Estimate (2019\$)

Cost Categories	Annual Cost by Last Year of Land Acquisition Period	Adjustment	Annual Post-Land Acquisition Cost
Ongoing Habitat Management	\$3,172,063	100%	\$3,172,063
Ongoing Habitat Monitoring	\$1,506,776	100%	\$1,506,776
Administration ¹	\$4,154,811	50%	\$2,077,406
Total	\$8,833,650		\$6,756,244

1. Administration includes salaries and benefits, accounting, auditing and reporting, contracts, etc.. Assumes less administration is needed following the land acquisition period; ongoing administrative needs include oversight, auditing and reporting, and board staffing.

Sources: Western Riverside County Regional Conservation Authority; and Economic & Planning Systems, Inc.

Consistent with many regional habitat conservations plans, the average annual net, real (allowing for inflation and institutional fees) interest rate is assumed to be three (3) percent.²⁷ Under all extension scenarios, the total required endowment funding is \$225.2 million. Because the longer extension periods provide more time for the accrual of interest revenues, the net endowment cost (that must be funded by mitigation fees) is different for each scenario. **Table 19** shows the consistent total endowment funding required by scenario as well as the different levels of aggregate endowment interest and associated net endowment funding requirement. For a detailed time-series accounting of endowment funding by extension scenario, see **Appendix II**.

²⁶ It is important to note that the RCA has collected a distinct set of endowment funds for situations where specific conservation activities are required over-and-above the core activities covered by this endowment calculation.

²⁷ This assumes that the implementing entity can use investment vehicles that may be not be typical for Riverside County.

Table 19 Endowment Funding (2019\$), by Extension Scenario

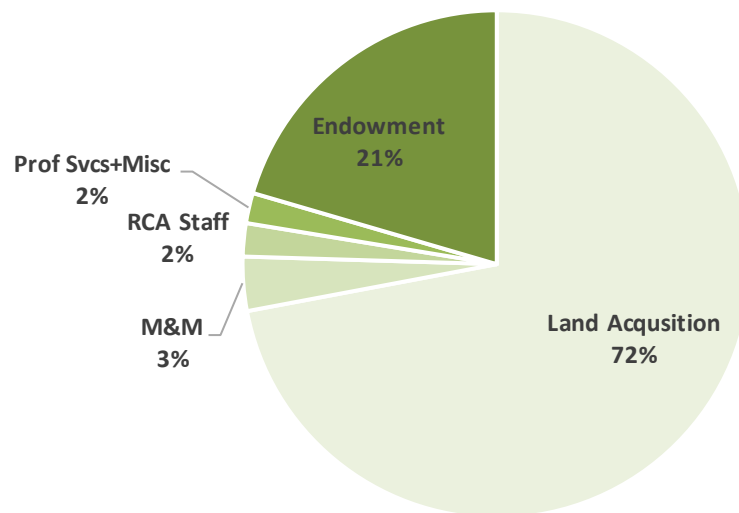
Item	No Extension	5-Year Extension	10-Year Extension	15-Year Extension
Total Endowment Funding Required	\$225,208,133	\$225,208,133	\$225,208,133	\$225,208,133
(Less) Endowment Interest	<u>(\$25,695,187)</u>	<u>(\$40,679,628)</u>	<u>(\$54,846,349)</u>	<u>(\$68,206,990)</u>
Net Endowment Funding Required	\$199,512,947	\$184,528,506	\$170,361,785	\$157,001,144

Sources: Western Riverside County Regional Conservation Authority; and Economic & Planning Systems, Inc.

Total Implementation Costs

Implementation costs include land costs, administrative and professional services expenses, management and monitoring costs, and the required net endowment funding. The remaining MSHCP implementation costs, as described in detail in the preceding sections, are all estimated in 2019 constant dollar terms. Under the Baseline/ No Extension scenario, as shown in **Figure 9**, the \$702 million in estimated land acquisition costs make up 72 percent of the total implementation cost of \$974 million. Administrative costs total about 4 percent of total costs, management and monitoring sum to 3 percent of total implementation costs, and the endowment constitutes 21 percent of total costs.

Figure 9 Comparison of Costs by Category



Total implementation costs vary by extension scenario. Land acquisition costs are the same for all scenarios. Administrative, management and monitoring costs increase the longer the acquisition period is extended, but the endowment funding required decreases the longer the

acquisition period is extended. As shown in **Table 20**, total implementation costs range from \$890 million to \$967 million depending on the extension period. Although total costs over time increase with longer extension periods the per-year implementation costs decrease with longer extension periods, as shown in **Table 21**. For a detailed time-series of all implementation costs excepting the endowment, see **Appendix I**.

Table 20 Total Implementation Costs (2019\$*), by Extension Scenario

Local Permittee MSHCP Implementation Costs	Total for 2020 - 2028 No Extension	Total for 2020 - 2033 5-Yr Extension	Total for 2020 - 2038 10-Yr Extension	Total for 2020 - 2043 15-Yr Extension
Land ¹	\$701,931,902	\$701,931,902	\$701,931,902	\$701,931,902
Management & Monitoring	\$33,582,193	\$51,646,790	\$69,711,387	\$87,775,983
RCA Staff ²	\$20,596,453	\$32,038,927	\$43,481,401	\$54,923,875
Professional Services and Supplies ²	\$13,194,561	\$20,524,873	\$27,855,185	\$35,185,497
Loan Repayment ³	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Other Costs ^{2 4}	\$3,602,285	\$5,603,554	\$7,604,824	\$9,606,093
Net Endowment Funding Required	<u>\$199,512,947</u>	<u>\$184,528,506</u>	<u>\$170,361,785</u>	<u>\$157,001,144</u>
Total Costs	\$974,420,341	\$998,274,552	\$1,022,946,483	\$1,048,424,494

1. Land value estimates at \$14,288 per acre in 2019 dollar terms.

2. RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

3. RCA has "Other Long Term Obligations" totaling \$5 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million starting in FY 2018.

4. Includes rents and all other miscellaneous expenses.

NOTE: In some cases numbers may not perfectly sum due to rounding.

Sources: Western Riverside County RCA; Economic & Planning Systems, Inc.

* All costs are provided in constant 2019 dollar terms. Costs will change over time due to inflation and other factors. These changes will be addressed through the fee indexing/ updating process that will include automatic inflation-indexed fee changes annually based on the regional Consumer Price Index and periodic comprehensive updates to the Nexus Study.

Table 21 Average Annual Implementation Costs (2019\$), by Extension Scenario

Local Permittee MSHCP Implementation Costs	Average Annual			
	2020 - 2028 No Extension	2020 - 2033 5-Yr Extension	2020 - 2038 10-Yr Extension	2020 - 2043 15-Yr Extension
Land ¹	\$77,992,434	\$50,137,993	\$36,943,784	\$29,247,163
Management & Monitoring	\$3,731,355	\$3,689,056	\$3,669,020	\$3,657,333
RCA Staff ²	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495
Professional Services and Supplies ²	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062
Loan Repayment ³	\$222,222	\$142,857	\$105,263	\$83,333
Other Costs ^{2 4}	\$400,254	\$400,254	\$400,254	\$400,254
Net Endowment Funding Required	<u>\$22,168,105</u>	<u>\$13,180,608</u>	<u>\$8,966,410</u>	<u>\$6,541,714</u>
Total Costs	\$108,268,927	\$71,305,325	\$53,839,289	\$43,684,354

1. Land value estimates at \$14,288 per acre in 2019 dollar terms.

2. RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

3. RCA has "Other Long Term Obligations" totaling \$5 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million starting in FY 2018.

4. Includes rents and all other miscellaneous expenses.

NOTE: In some cases numbers may not perfectly sum due to rounding.

Sources: Western Riverside County RCA; Economic & Planning Systems, Inc.

6. RCA NON-FEE REVENUES

MSHCP Forecast of Non-Fee Revenues

The MSHCP forecast an array of revenue sources, in addition to fee revenue, supporting the conservation program. These sources were anticipated to total about 44 percent of the revenue for the program, including:

- **Transportation funding** – includes the Measure A sales tax which is authorized through 2039 and other transportation funding sources such as the Transportation Uniform Mitigation Fees (TUMF) charged on new development. Note that the MSHCP envisioned up to \$121 million of Measure A money to the HCP.
- **Other infrastructure projects** – funding from this source was not quantified in the MSHCP but reflected the expectation that local public construction projects such as schools, administrative facilities, libraries, jails, and other projects like flood control and utility projects would mitigate the construction through the payment of a per-acre fee.²⁸ Since MSHCP adoption, the standard contribution has been three to five percent of total project costs.
- **Landfill contributions** – Landfill tipping fees have been used in the County since the 1990 for conservation programs. Under county permitting of landfills, the County has committed to divert portions of tipping fees to MSHCP implementation.

Table 22 and **Figure 10** summarizes the revenue forecasts under the MSHCP. Including the fee revenues, these sources totaled \$1.07 billion or an estimated average almost \$43 million per year for 25-years (in 2004 dollars). Excluding fee revenues, a total of \$18.84 million in annual revenues were forecast, including Measure A funding, \$10 million each year from other transportation projects, and \$4.0 million from land fill contributions.

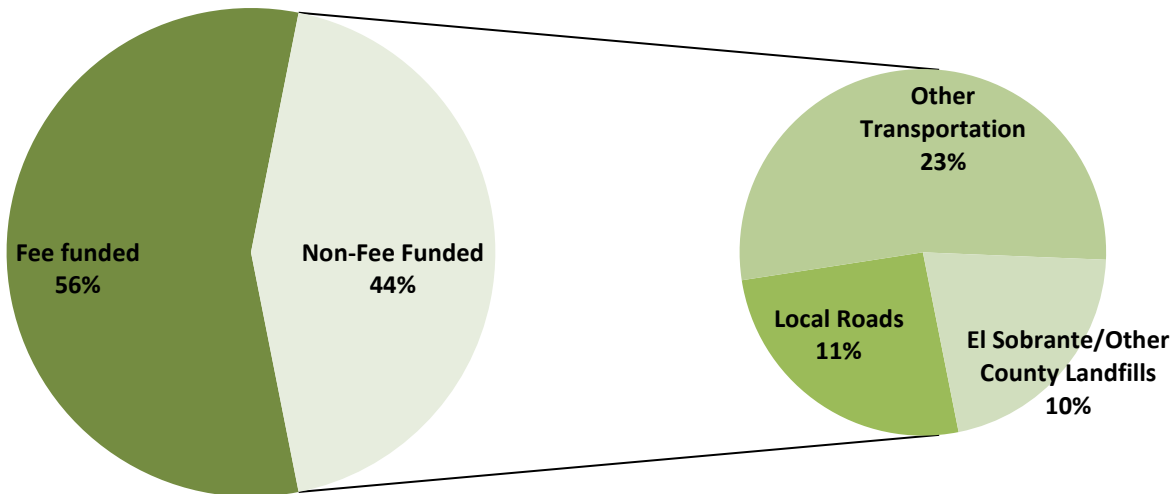
As described further below, at this point, the average annual funding from non-fee revenues sources are well below the MSCHP forecast. Measure A, a voter-approved ½ cent sales tax measure did provide substantial funding as envisioned (though is now fully used/ allocated) and, collectively, the other non-fee funding sources are well beyond what was originally envisioned.

²⁸ See Chapter 8.5.1 Funding Sources in the MSHCP.

Table 22 2004 MSHCP Anticipated Funding Sources

MSHCP Anticipated Funding Source	Estimate (millions)	% of Avg/Yr Total	(millions over 25 years)
Fee Funded Sources:			
Cities and County Development Mitigation Fees	\$539.6	50%	\$21,584,000
Density Bonus Fees	<u>\$66.0</u>	6%	<u>\$2,640,000</u>
Non-Fee Funded Sources	\$605.6		\$24,224,000.0
Public Funding Sources			
Local Roads (Measure A)	\$121.0	11%	\$4,840,000
Other Transportation	\$250.0	23%	\$10,000,000
Other infrastructure Projects	unknown	0%	\$0
El Sobrante Landfill	\$90.0	8%	\$3,600,000
County Landfills	\$10.0	1%	\$400,000
Eagle Mountain Landfill	unknown	0%	\$0
New Regional funding	<u>unknown</u>	0%	<u>\$0</u>
Non-Fee Funded Sources	\$471.0		\$18,840,000
Total, Local Funds	\$1,076.6	100%	\$43,064,000

Figure 10 2004 MSHCP Anticipated Funding Sources



New Forecast of Non-Fee Revenues

Non-fee revenues to the RCA are projected to be \$6.85 million annually in 2019 dollars. This estimate was derived from a line by line review of the major revenue items for a 3-year period from FY 2016-17 to FY 2018-19, projections by collection entities (e.g., TUMF revenue), and recent dynamics likely to affect the revenue source (e.g., greater diversion of trash to recycling

will likely reduce tipping fees). The estimates have been inflated from a three-year average to 2019 dollars, as detailed in **Table 23**.

Table 23 Annual Non-Fee Revenue Projection (2019\$s)

Non-Fee Revenue Item	RCA FY16/17- 18/19 3-Year Average of Actuals	CPI Adjusted to 2019\$
<u>Transportation Mitigation¹</u>		
TUMF Revenue-Developer Fees	\$950,000	\$979,637
Subtotal	\$950,000	\$979,637
<u>Tipping Fee</u>	\$3,865,728	\$3,986,326
<u>Public Project Mitigation</u>		
PSE Mitigation Fee ²	NA	\$500,000
Other Gov MSHCP Infrastructure	\$284,570	\$293,448
Other Gov MSHCP Civic Projects	\$93,629	\$96,550
Flood Control District	\$293,084	\$302,227
Subtotal	\$671,283	\$1,192,225
<u>Other Revenue</u>		
Interest and Other Sources	\$467,073	\$481,644
Rents	\$80,531	\$83,043
Joint Project Review Fees	\$124,762	\$128,654
Subtotal	\$672,365	\$693,341
Total Revenue	NA	\$6,851,529

1. All Measure A funding was provided prior to 2020 and the associated obligations have been met.

2. Participating Special Entities fees. This does not include Developer Mitigation Fees. These fees vary widely year over year, \$500,000 is used as an annual average per the recommendation of RCA staff.

Sources: Western Riverside County Regional Conservation Authority; Economic & Planning Systems, Inc.

7. MITIGATION FEE CALCULATION

The revised Local Development Mitigation Fee is based on a generally similar methodology to the Original Nexus Study that ensures the fee level is proportional to the development impact. This methodology looks at the remaining conservation requirements associated with Local Permittee obligations under the MSHCP and associated Incidental Take Permit and Implementing Agreement, determines the remaining Local Permittee implementation cost, subtracts out reasonable estimates of non-fee revenues and other contributions, to determine the overall fee-funding obligation. This obligation is then divided among the new development forecast to determine the required mitigation fee. In others words, the original 2003 and updated 2020 Local Development Mitigation Fee estimates are the outcome of the following formula (the 2003 and 2020 Nexus Studies differ in their process of allocating funding required between land uses):

1. Implementation Costs

minus

2. Non-Fee Funding

equals

3. Outstanding Funding Required

divided by

4. Development Forecast

equals

5. Local Development Mitigation Fee Schedule

Table 24 summarizes the estimated Net Implementation Costs, Expected Acres of Development, and the associated per gross acre mitigation fee. As shown, the average mitigation fee per gross acre decreases with each extension as similar levels of net implementation costs are spread across more development. **Tables 25** through **28** provide the detailed calculations that determine the total net MSHCP implementation costs shown in **Table 24**. As noted in **Chapter 1**, for residential development, the per-gross-acre fee is translated into a per-unit fee schedule for administrative continuity.

Table 24 MSHCP Implementation Costs and Per Acre Mitigation Fees

Fee Per Acre	No Extension	5-Year Extension	10-Year Extension	15-Year Extension
Net Cost	\$912,756,583	\$902,353,150	\$892,767,438	\$883,987,805
Acres of Development				
Residential	14,026	21,818	29,611	37,403
Nonresidential	<u>6,239</u>	<u>9,705</u>	<u>13,171</u>	<u>16,637</u>
Total	20,265	31,523	42,782	54,040
Mitigation Fee per Acre	\$45,041	\$28,625	\$20,868	\$16,358

Sources: Southern California Association of Governments; Western Riverside County RCA; Economic & Planning Systems, Inc.

Table 25 Recommended Fee Level—No Extension

Item	Total for 2020 - 2029 (Years 17 - 25)	9 yrs	Average Annual	% of Total Cost/ Funding Need
Local Permittee Land Requirements				
Preservation Requirement	56,788 acres		6,310 acres	na
(less) HANS Dedication	<u>10,000</u> acres		<u>1,111</u> acres	na
Local Permittee Acquisition	46,788 acres		5,199 acres	na
Local Permittee MSHCP Implementation Costs				
Land (1)	\$701,931,902		\$77,992,434	72.0%
Management & Monitoring	\$33,582,193		\$3,731,355	3.4%
RCA Staff (2)	\$20,596,453		\$2,288,495	2.1%
Professional Services and Supplies (2)	\$13,194,561		\$1,466,062	1.4%
Loan Repayment (3)	\$2,000,000		\$222,222	0.2%
Other Costs (2) (4)	\$3,602,285		\$400,254	0.4%
Net Endowment Funding Required	\$199,512,947		\$22,168,105	20.5%
Total Costs	\$974,420,341		\$108,268,927	100.0%
Offsetting Revenues (5) (exc. Private Development Mitigation)				
Public Project Mitigation (6)	\$10,730,025		\$1,192,225	1.4%
Transportation Mitigation (7)	\$8,816,731		\$979,637	1.1%
Tipping Fees	\$35,876,934		\$3,986,326	4.6%
Other Revenues (8)	<u>\$6,240,068</u>		<u>\$693,341</u>	<u>0.8%</u>
Total Selected Revenues	\$61,663,758		\$6,851,529	8.0%
Funding Required from Private Development Mitigation				
Net Cost	\$912,756,583		\$101,417,398	93.7%
Mitigation Fee Estimates (per gross acre of development)				
<u>Growth Projection:</u>				
Development	2020 - 2028		Annual	
Residential Units	79,000		8,778	
Residential Acres	14,026		1,558	
Non-Residential Acres	6,239		693	
Total Acres	20,265		2,252	
Mitigation Fee	\$45,041 per acre			

(1) Land value estimates at \$14,288 per acre in 2019 dollar terms plus a 5% transaction cost.

(2) RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(3) RCA has "Other Long Term Obligations" totaling \$2 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million over the course of two years.

(4) Includes rents and all other miscellaneous expenses.

(5) RCA Revenues are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(6) Includes Flood Control District, PSE mitigation payments, and other government MSHCP infrastructure & civic project revenues.

(7) Includes TUMF fees.

(8) Includes interest and other sources, rents, and joint project review fees.

Sources: MSHCP; RCA; Economic & Planning Systems, Inc.

Table 26 Recommended Fee Level—5-Year Extension

Item	Total for 2020 - 2034 (Years 17 - 30)	14 yrs	Average Annual	% of Total Cost/ Funding Need
Local Permittee Land Requirements				
Preservation Requirement	56,788 acres		4,056 acres	na
(less) HANS Dedication	<u>10,000</u> acres		<u>714</u> acres	na
Local Permittee Acquisition	46,788 acres		3,342 acres	na
Local Permittee MSHCP Implementation Costs				
Land (1)	\$701,931,902		\$50,137,993	70.3%
Management & Monitoring	\$51,646,790		\$3,689,056	5.2%
RCA Staff (2)	\$32,038,927		\$2,288,495	3.2%
Professional Services and Supplies (2)	\$20,524,873		\$1,466,062	2.1%
Loan Repayment (3)	\$2,000,000		\$142,857	0.2%
Other Costs (2) (4)	\$5,603,554		\$400,254	0.6%
Net Endowment Funding Required	\$184,528,506		\$13,180,608	18.5%
Total Costs	\$998,274,552		\$71,305,325	100.0%
Offsetting Revenues (5) (exc. Private Development Mitigation)				
Public Project Mitigation (6)	\$16,691,150		\$1,192,225	2.1%
Transportation Mitigation (7)	\$13,714,915		\$979,637	1.7%
Tipping Fees	\$55,808,564		\$3,986,326	6.9%
Other Revenues (8)	<u>\$9,706,772</u>		<u>\$693,341</u>	<u>1.2%</u>
Total Selected Revenues	\$95,921,402		\$6,851,529	11.8%
Funding Required from Private Development Mitigation				
Net Cost	\$902,353,150		\$64,453,796	90.4%
Mitigation Fee Estimates (per gross acre of development)				
<u>Growth Projection:</u>				
Development	2020 - 2033		Annual	
Residential Units (4.2 DU/Acres)	122,456		8,747	
Residential Acres	21,818		1,558	
Non-Residential Acres	9,705		693	
Total Acres	31,523		2,252	
Mitigation Fee	\$28,625 per acre			

- (1) Land value estimates at \$14,288 per acre in 2019 dollar terms plus a 5% transaction cost.
(2) RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.
(3) RCA has "Other Long Term Obligations" totaling \$2 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million over the course of two years.
(4) Includes rents and all other miscellaneous expenses.
(5) RCA Revenues are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.
(6) Includes Flood Control District, PSE mitigation payments, and other government MSHCP infrastructure & civic project revenues.
(7) Includes TUMF fees.
(8) Includes interest and other sources, rents, and joint project review fees.

Sources: MSHCP; RCA; Economic & Planning Systems, Inc.

Table 27 Recommended Fee Level—10-Year Extension

Item	Total for 2020 - 2039 (Years 17 - 35)	19 yrs	Average Annual	% of Total Cost/ Funding Need
Local Permittee Land Requirements				
Preservation Requirement	56,788 acres		2,989 acres	na
(less) HANS Dedication	<u>10,000</u> acres		<u>526</u> acres	na
Local Permittee Acquisition	46,788 acres		2,463 acres	na
Local Permittee MSHCP Implementation Costs				
Land (1)	\$701,931,902		\$36,943,784	68.6%
Management & Monitoring	\$69,711,387		\$3,669,020	6.8%
RCA Staff (2)	\$43,481,401		\$2,288,495	4.3%
Professional Services and Supplies (2)	\$27,855,185		\$1,466,062	2.7%
Loan Repayment (3)	\$2,000,000		\$105,263	0.2%
Other Costs (2) (4)	\$7,604,824		\$400,254	0.7%
Net Endowment Funding Required	\$170,361,785		\$8,966,410	16.7%
Total Costs	\$1,022,946,483		\$53,839,289	100.0%
Offsetting Revenues (5) (exc. Private Development Mitigation)				
Public Project Mitigation (6)	\$22,652,275		\$1,192,225	2.7%
Transportation Mitigation (7)	\$18,613,099		\$979,637	2.2%
Tipping Fees	\$75,740,195		\$3,986,326	8.9%
Other Revenues (8)	<u>\$13,173,476</u>		<u>\$693,341</u>	<u>1.5%</u>
Total Selected Revenues	\$130,179,045		\$6,851,529	15.3%
Funding Required from Private Development Mitigation				
Net Cost	\$892,767,438		\$46,987,760	87.3%
Mitigation Fee Estimates (per gross acre of development)				
<u>Growth Projection:</u>				
Development	2020 - 2038		Annual	
Residential Units (4.2 DU/Acres)	166,000		8,737	
Residential Acres	29,611		1,558	
Non-Residential Acres	13,171		693	
Total Acres	42,782		2,252	
Mitigation Fee	\$20,868 per acre			

(1) Land value estimates at \$14,288 per acre in 2019 dollar terms plus a 5% transaction cost.

(2) RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(3) RCA has "Other Long Term Obligations" totaling \$2 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million over the course of two years.

(4) Includes rents and all other miscellaneous expenses.

(5) RCA Revenues are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(6) Includes Flood Control District, PSE mitigation payments, and other government MSHCP infrastructure & civic project revenues.

(7) Includes TUMF fees.

(8) Includes interest and other sources, rents, and joint project review fees.

Sources: MSHCP; RCA; Economic & Planning Systems, Inc.

Table 28 Recommended Fee Level—15-Year Extension

Item	Total for 2020 - 2044 (Years 17 - 40)	24 yrs	Average Annual	% of Total Cost/ Funding Need
Local Permittee Land Requirements				
Preservation Requirement	56,788 acres		2,366 acres	na
(less) HANS Dedication	<u>10,000</u> acres		<u>417</u> acres	na
Local Permittee Acquisition	46,788 acres		1,950 acres	na
Local Permittee MSHCP Implementation Costs				
Land (1)	\$701,931,902		\$29,247,163	67.0%
Management & Monitoring	\$87,775,983		\$3,657,333	8.4%
RCA Staff (2)	\$54,923,875		\$2,288,495	5.2%
Professional Services and Supplies (2)	\$35,185,497		\$1,466,062	3.4%
Loan Repayment (3)	\$2,000,000		\$83,333	0.2%
Other Costs (2) (4)	\$9,606,093		\$400,254	0.9%
Net Endowment Funding Required	\$157,001,144		\$6,541,714	15.0%
Total Costs	\$1,048,424,494		\$43,684,354	100.0%
Offsetting Revenues (5) (exc. Private Development Mitigation)				
Public Project Mitigation (6)	\$28,613,400		\$1,192,225	3.2%
Transportation Mitigation (7)	\$23,511,283		\$979,637	2.6%
Tipping Fees	\$95,671,825		\$3,986,326	10.7%
Other Revenues (8)	<u>\$16,640,181</u>		<u>\$693,341</u>	<u>1.9%</u>
Total Selected Revenues	\$164,436,689		\$6,851,529	18.4%
Funding Required from Private Development Mitigation				
Net Cost	\$883,987,805		\$36,832,825	84.3%
Mitigation Fee Estimates (per gross acre of development)				
Growth Projection:				
Development	2020 - 2043		Annual	
Residential Units	210,000		8,750	
Residential Acres	37,403		1,558	
Non-Residential Acres	16,637		693	
Total Acres	54,040		2,252	
Mitigation Fee	\$16,358 per acre			

(1) Land value estimates at \$14,288 per acre in 2019 dollar terms plus a 5% transaction cost.

(2) RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(3) RCA has "Other Long Term Obligations" totaling \$2 million, which was a loan received from the County in FY 2012/13 and is now payable in increments of \$1 million over the course of two years.

(4) Includes rents and all other miscellaneous expenses.

(5) RCA Revenues are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

(6) Includes Flood Control District, PSE mitigation payments, and other government MSHCP infrastructure & civic project revenues.

(7) Includes TUMF fees.

(8) Includes interest and other sources, rents, and joint project review fees.

Sources: MSHCP; RCA; Economic & Planning Systems, Inc.

8. MITIGATION FEE ACT (NEXUS) FINDINGS

Mitigation fees are utilized in California to finance public facilities necessary to mitigate impacts stemming from new development. In 1987, the California Legislature adopted the Mitigation Fee Act to provide a framework for the application and administration of such fees. Current prevailing practice among the majority of approved and permitted regional multiple-species Habitat Conservation Plans is that any habitat mitigation fees are to be adopted by the relevant jurisdictions (cities and Counties) consistent with the Mitigation Fee Act.²⁹ As discussed further in **Chapter 9**, the adoption of fees under the Mitigation Fee Act includes a number of auditing and reporting requirements.

The Mitigation Fee Act, defined in California Government Code Sections 66000 to 66025, requires all public agencies to document five findings when establishing or increasing a fee as a condition for new development. These findings were made when the Western Riverside County MSHCP Local Development Mitigation Fees were first justified and established.³⁰

This Chapter of the Western Riverside Habitat Conservation Plan Nexus Fee Study was prepared to describe how the proposed increase in the Local Development Mitigation Fee satisfies the five statutory findings required by the Mitigation Fee Act and is based on the appropriate nexus between new development and the imposition of a mitigation fee. The five statutory findings required for the establishment of a mitigation fee are summarized in the sections below and supported by the technical analysis in the prior chapters of this Study.

Purpose of Fee

Identify the purpose of the fee. (66001(a)(1))

The purpose of the Local Development Mitigation Fee is to contribute to the funding required to implement the MSCHP and, as a result, help maintain the incidental take permits for new private and public development in Western Riverside County under the federal and State Endangered Species Acts. Maintaining the incidental take permit is necessary to allow for future development, and without the development community paying for the cost of the MSHCP, individual applicants will need to apply independently for development approval under federal and State law if the project impacts a threaten or endangered species. The federal Endangered Species Act specifically requires that the applicant for incidental take permit “ensure that adequate funding for the plan will be provided.”³¹ In addition, the Local Development Mitigation Fee helps provide the regional benefit of streamlined economic development in Western Riverside County as well as

²⁹ In addition to the current Western Riverside County habitat mitigation fee, see also the Coachella Valley habitat mitigation fee, the San Joaquin County Multi-Species Habitat Conservation and Open Space Fee, and the East Contra Costa County HCP/NCCP mitigation fee.

³⁰ See the Final Mitigation Nexus Report for the Western Riverside County Multiple Species Habitat Conservation Plan, published July 1, 2003.

³¹ See Section 1539(a)(2)Biii of the federal Endangered Species Act.

the provision of contiguous open spaces that will serve as a community amenity to residents, workers, and visitors.

Use of Fee Revenues

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 specific 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 MSHCP is the public document that outlines the actions required as a whole and the particular set of actions required by the Local Permittees (and the Regional Conservation Agency as their agent) to obtain incidental take permits—associated with State and federal Endangered Species Act requirements—for new public and private development in Western Riverside County. Failure to meet the requirements of the MSHCP will result in an inability to obtain or maintain incidental take permits through the MSHCP, which would require future development to secure individual take authorization if the project impacts a threaten or endangered species.

Revenues from the Local Development Mitigation Fee will be used, in conjunction with other local and regional funding sources, to fund the conservation actions identified as the responsibility of Local Permittees in the MSHCP. The revenue from the Local Development Mitigation Fee will be used to help fund the appropriate habitat acquisition (land acquisition and associated transaction costs), maintenance and monitoring of habitat land (preserve management, monitoring, and adaptive management), and program management, administration, and oversight activities and costs.³² **Chapter 3** of this report describes the Local Permittee conservation requirements, progress to date, and the remaining actions required under the MSHCP.

Relationship

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)).

The implementation of the MSHCP, and the mitigation fee as a fundamental part of it, will benefit all new development by mitigating their collective impacts on covered species and associated habitat. All new public and private development in the Plan area will affect habitat and species either directly, indirectly, or as a cumulative effect. New infrastructure development, for example, in addition to its direct effects, will support new development on other parcels and other locations in the Plan Area. Similarly, new private development will require new infrastructure and also result in additional demand for new developments through linkages—for

³² Consistent with the interpretation applied to the majority of permitted and approved regional, multiple-species Habitat Conservation Plans in California and guidance from RCA Counsel, the Local Development Mitigation Fee is assumed to fund its proportionate share (as determined by the technical analysis and constrained by the statutory requirements) of applicable MSHCP implementation costs including, but also limited to, habitat acquisition costs (and associated transaction costs), the costs of managing and monitoring the habitat preserves in perpetuity, and the administrative and other costs of managing the overall program.

example, the need for new housing to accommodate new workers at commercial developments or the need for new retail developments to serve new residents at residential developments. In other words, all new development in Western Riverside County will benefit from the incidental take permits obtained through the MSHCP and via the use of the mitigation fee revenues.

In addition, the incidental take permits are necessary to permit any future development within the Plan Area, and in order to obtain or maintain such incidental take permits, the MSHCP must be fully funded. Because funding the MSHCP is required in order to allow for future development under the MSHCP, there is a direct relationship between the proposed use of the mitigation fee and development within the Plan Area.

Need

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)).

Without new development, no MSHCP would be necessary and no further habitat conservation would be required under the federal and State Endangered Species Acts. To allow for any future development under the Plan, the MSHCP must be fully funded. New development in the Plan Area, as noted above, will directly, indirectly, or cumulatively affect species and habitat in Western Riverside County. Because of this, development of the MSHCP was undertaken to provide a regional, streamlined approach to benefit future development of all types in Western Riverside County, including the development and improvements envisioned under the numerous General Plans and the Regional Transportation Improvement Program. The requirements of the MSHCP (habitat acquisition, management and monitoring, program administration) are a direct result of the regional approach to mitigation that is engendered by all new development in the Plan Area under the pertinent environmental regulations. Meeting the requirements of the MSHCP is necessary to obtain the necessary federal authorization to develop within the Plan Area.

Proportionality

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)).

The MSHCP includes detailed conservation requirements based on the scientific evaluations that form the basis of the MSHCP. Based on these evaluations, conservation responsibilities were allocated between the Local Permittees and other agencies, such as the State and federal governments. The Local Development Mitigation Fee appropriately provides funding towards the fulfillment of the Local Permittee conservation requirements. Furthermore, the Local Permittee obligations are not fully funded through the Local Development Mitigation Fee revenues. Other local and regional funding sources, such as the Measure A sales tax and tipping fees, provide additional mitigation and/or offsetting revenues that reduce the overall cost allocation to the Local Development Mitigation Fee Program. In addition, consistent with the relationship between new development in Western Riverside County and the need for the public facilities (conservation program) described above, proportional attribution between new development is ensured

through the determination of a consistent per gross acre Local Development Mitigation Fee.³³ As a result, the Local Development Mitigation Fee level calculations are carefully determined to fund only the proportionate (or less than) conservation costs attributable to the new development on which the fee is imposed and to allocate the fee levels proportionally across all new development. It is this process of careful calculation based on the requirements of the MSHCP that is the subject of a substantial portion of this Nexus Study (see **Chapters 2** through **7**).

³³ Determining habitat mitigation fees on a gross acre basis is the clearest way of ensuring proportionate cost allocations among new developments and is a common practice among adopted Habitat Conservation Plans. For purposes of implementation/administrative consistency, for residential uses, the per-gross-acre fee is translated into per unit fees for different density categories.

9. FEE IMPLEMENTATION

The revised Local Development Mitigation Fee must be implemented consistent with the MSHCP (and associated Incidental Take Permit and Implementing Agreement) as well as the California Mitigation Fee Act. A detailed set of guidance is included in the Fee Implementation Handbook to support clarity and specificity in the implementation of the updated fee program by Local Permittees. The sections below summarize some of the key implementation and administration actions to be consistent with the requirements.

Adoption of Revised LDMF

- Consistent with the MSHCP and associated documents, each Local Permittee (i.e., all participating jurisdictions) must adopt an updated LDMF ordinance and a fee resolution establishing the revised fee level as prescribed by the Mitigation Fee Act.
- Consistent with the Mitigation Fee Act, the revised ordinance and associated fee resolution will become effective after a public hearing and 60 days.
- RCA Legal Counsel will prepare a Fee Update Ordinance and Resolution to facilitate the consistent adoption of the updated LDMF by Local Permittees.

Securing Supplemental Funding

The revised Local Development Mitigation Fee is set at the level that would cover the Local Permittee cost obligations once expected non-fee revenues are subtracted out. To the extent any discounts/exemptions are provided to new Western Riverside County development below the updated fee level, additional funding will be required to backfill the fee revenue losses. To the extent, these revenues do not make up for any fee discounts provided, other sources of funding will need to be sought by the RCA and the Local Permittees to fulfill their Plan obligations. At the same time, if new substantial funding sources become available to the RCA for Local Permittee obligations, the funding required through fees may decrease, in turn reducing the required fee levels through a new update.

Annual Review

The Mitigation Fee Act (at Gov. C. §§ 66001(c), 66006(b)(1)) stipulates that each local agency that requires payment of a fee make specific information available to the public annually within 180 days of the last day of the fiscal year. In this case, the RCA can play this role on behalf of the Local Permittees. This information includes the following:

- A description of the type of fee in the account.
- The amount of the fee (the mitigation fee schedule).
- The beginning and ending balance of the fund.
- The amount of fees collected and interest earned.
- Identification of the improvements constructed.
- The total cost of the improvements constructed.
- The fees expended to construct the improvement.
- The percentage of total costs funded by the fee.

If sufficient fees have been collected to fund specific improvement cost, the agency must specify the approximate date for the cost of that improvement. Because of the dynamic nature of growth and MSHCP implementation costs and consistent with current practice, the RCA should continue to monitor progress towards MSHCP goals. The overall adequacy of the fee revenues and other available funding in meeting these goals should be reviewed annually.

Surplus Funds

The Mitigation Fee Act also requires that if any portion of a fee remains unexpended or uncommitted in an account for 5 years or more after deposit of the fee, the RCA, acting for the Local Permittees, 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 (§66001(d)).

If adequate funding has been collected for specific investments, an approximate date must be specified as to when the cost of the investment will be incurred. If the findings show no need for the unspent funds, or if the conditions discussed above are not met, and the administrative costs of the refund do not exceed the refund itself, the local agency that has collected the funds must refund them (Gov. C §66001(e)(f)).

Annual and Periodic Updates

Consistent with the current practice, the Fee Ordinance should allow an automatic annual adjustment to the fees based on the Riverside-San Bernardino-Ontario, CA Consumer Price Index (CPI) or a similar inflation factor. In addition, a more comprehensive update should be conducted required periodically. The Nexus Study and the technical information it contains should be reviewed periodically by the RCA (every five years is recommended) to identify any necessary refinements to the Local Development Mitigation Fees to ensure adequate funding to implement the MSHCP. Under certain circumstances, the RCA may wish to conduct a Nexus Study update sooner than after five years. For example, to the extent there are significant and unexpected changes in implementation costs, in the level of non-fee funding, and/ or the level of fee-paying private development over time, a more immediate fee update may be appropriate.

APPENDIX I:

Detailed Time Series of Implementation Costs



All Implementation Costs Over Time – No Extension

Habitat Lands/ Cost Items	Factors	End of:									
		17 2020	18 2021	19 2022	20 2023	21 2024	22 2025	23 2026	24 2027	25 2028	
ACRES											
Land Acquisition Costs											
Land Acquisition (Annual)											
Local		6,310	6,310	6,310	6,310	6,310	6,310	6,310	6,310	6,310	6,310
(less) HANS/JPR Dedications		-1,250	-1,250	-1,250	-1,250	-1,250	-1,250	-1,250	-1,250	0	0
Total Local		5,060	5,060	5,060	5,060	5,060	5,060	5,060	5,060	6,310	6,310
State/Fed		3,821	3,821	3,821	3,821	3,821	3,821	3,821	3,821	3,821	3,821
Total		8,881	8,881	8,881	8,881	8,881	8,881	8,881	8,881	10,131	10,131
Land Acquisition (Cumulative)											
Local ¹		45,272	50,332	55,391	60,451	65,511	70,571	75,630	80,690	87,000	87,000
State/Fed		25,429	29,251	33,072	36,893	40,715	44,536	48,357	52,179	56,000	56,000
Local - HANS/JPR Dedications		1,250	2,500	3,750	5,000	6,250	7,500	8,750	10,000	10,000	10,000
Total		71,951	82,082	92,213	102,344	112,476	122,607	132,738	142,869	153,000	153,000
Management and Monitoring Costs											
Reserve Summary											
Financial Responsibility											
Monitoring											
State/ Federal											
PQP	RCA	282,000	282,000	282,000	282,000	282,000	282,000	282,000	282,000	282,000	282,000
ARL	State/ Fed State	29,251	33,072	36,893	40,715	44,536	48,357	52,179	56,000	56,000	56,000
Total		307,429	311,251	315,072	318,893	322,715	326,536	330,357	334,179	338,000	338,000
Local											
PQP	RCA	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000
ARL	Non-RCA Local RCA	46,522	52,832	59,141	65,451	71,761	78,071	84,380	90,690	97,000	97,000
Total		111,522	117,832	124,141	130,451	136,761	143,071	149,380	155,690	162,000	162,000
Total Acres under RCA Management		46,522	52,832	59,141	65,451	71,761	78,071	84,380	90,690	97,000	97,000
Total Acres under RCA Monitoring		418,951	429,082	439,213	449,344	459,476	469,607	479,738	489,869	500,000	500,000
COSTS (all constant 2019 dollars)											
Land Acquisition Costs											
Local, ARL, Annual	\$14,288 \$/Acre	\$72,294,065	\$72,294,065	\$72,294,065	\$72,294,065	\$72,294,065	\$72,294,065	\$72,294,065	\$72,294,065	\$90,154,055	\$90,154,055
Land Transaction Costs	5% of acquisition costs	\$3,614,703	\$3,614,703	\$3,614,703	\$3,614,703	\$3,614,703	\$3,614,703	\$3,614,703	\$3,614,703	\$4,507,703	\$4,507,703
Total, Land Acquisition Costs		\$75,908,768	\$75,908,768	\$75,908,768	\$75,908,768	\$75,908,768	\$75,908,768	\$75,908,768	\$75,908,768	\$94,661,758	\$94,661,758
Local, ARL, Cumulative		\$75,908,768	\$151,817,536	\$227,726,304	\$303,635,072	\$379,543,840	\$455,452,608	\$531,361,376	\$607,270,144	\$701,931,902	\$701,931,902
Management and Monitoring Costs											
Management, Annual	\$32.70 \$/Acre	\$1,521,340	\$1,727,681	\$1,934,021	\$2,140,361	\$2,346,702	\$2,553,042	\$2,759,382	\$2,965,723	\$3,172,063	\$3,172,063
Management Cumulative		\$1,521,340	\$3,249,021	\$5,183,042	\$7,323,403	\$9,670,105	\$12,223,147	\$14,982,530	\$17,948,252	\$21,120,315	\$21,120,315
Monitoring, Annual	\$3.01 \$/Acre	\$1,262,531	\$1,293,061	\$1,323,592	\$1,354,122	\$1,384,653	\$1,415,184	\$1,445,714	\$1,476,245	\$1,506,776	\$1,506,776
Monitoring Cumulative		\$1,262,531	\$2,555,592	\$3,879,184	\$5,233,306	\$6,617,959	\$8,033,143	\$9,478,857	\$10,955,102	\$12,461,878	\$12,461,878
Endowment Costs											
Net Endowment Funding, Annual		\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105
Net Endowment Funding, Cumulative		\$22,168,105	\$44,336,210	\$66,504,316	\$88,672,421	\$110,840,526	\$133,008,631	\$155,176,736	\$177,344,842	\$199,512,947	\$199,512,947
Administrative Costs ²											
RCA Staff Costs		\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495	\$2,288,495
Professional Services		\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062	\$1,466,062
Loan Repayment ³		\$1,000,000	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other		\$400,254	\$400,254	\$400,254	\$400,254	\$400,254	\$400,254	\$400,254	\$400,254	\$400,254	\$400,254
Total Annual		\$5,154,811	\$5,154,811	\$4,154,811	\$4,154,811	\$4,154,811	\$4,154,811	\$4,154,811	\$4,154,811	\$4,154,811	\$4,154,811
Cumulative Costs		\$5,154,811	\$10,309,622	\$14,464,433	\$18,619,244	\$22,774,055	\$26,928,866	\$31,083,677	\$35,238,488	\$39,393,299	\$39,393,299
TOTAL ALL COSTS											
TOTAL Annual		\$106,015,555	\$106,252,426	\$105,489,297	\$105,726,168	\$105,963,039	\$106,199,910	\$106,436,781	\$106,673,652	\$125,663,513	\$125,663,513
TOTAL Cumulative		\$106,015,555	\$212,267,981	\$317,757,279	\$423,483,447	\$529,446,486	\$635,646,396	\$742,083,177	\$848,756,829	\$974,420,341	\$974,420,341

1. All local land conserved to date, including all HANS dedications to date, are captured in the year 17 number.

2. RCA Administrative Costs are based on a three year average of FY 2016-17 through FY 2018-19 actual costs, adjusted to 2019 dollars.

3. Annual administrative costs decrease in year 19 due to assumption that loan repayment is completed.

APPENDIX I:

Detailed Time Series of Implementation Costs



If sufficient fees have been collected to fund specific improvement cost, the agency must specify the approximate date for the cost of that improvement. Because of the dynamic nature of growth and MSHCP implementation costs and consistent with current practice, the RCA should continue to monitor progress towards MSHCP goals. The overall adequacy of the fee revenues and other available funding in meeting these goals should be reviewed annually.

Surplus Funds

The Mitigation Fee Act also requires that if any portion of a fee remains unexpended or uncommitted in an account for 5 years or more after deposit of the fee, the RCA, acting for the Local Permittees, 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 (§66001(d)).

If adequate funding has been collected for specific investments, an approximate date must be specified as to when the cost of the investment will be incurred. If the findings show no need for the unspent funds, or if the conditions discussed above are not met, and the administrative costs of the refund do not exceed the refund itself, the local agency that has collected the funds must refund them (Gov. C §66001(e)(f)).

Annual and Periodic Updates

Consistent with the current practice, the Fee Ordinance should allow an automatic annual adjustment to the fees based on the Riverside-San Bernardino-Ontario, CA Consumer Price Index (CPI) or a similar inflation factor. In addition, a more comprehensive update should be conducted required periodically. The Nexus Study and the technical information it contains should be reviewed periodically by the RCA (every five years is recommended) to identify any necessary refinements to the Local Development Mitigation Fees to ensure adequate funding to implement the MSHCP. Under certain circumstances, the RCA may wish to conduct a Nexus Study update sooner than after five years. For example, to the extent there are significant and unexpected changes in implementation costs, in the level of non-fee funding, and/ or the level of fee-paying private development over time, a more immediate fee update may be appropriate.

9. FEE IMPLEMENTATION

The revised Local Development Mitigation Fee must be implemented consistent with the MSHCP (and associated Incidental Take Permit and Implementing Agreement) as well as the California Mitigation Fee Act. A detailed set of guidance is included in the Fee Implementation Handbook to support clarity and specificity in the implementation of the updated fee program by Local Permittees. The sections below summarize some of the key implementation and administration actions to be consistent with the requirements.

Adoption of Revised LDMF

- Consistent with the MSHCP and associated documents, each Local Permittee (i.e., all participating jurisdictions) must adopt an updated LDMF ordinance and a fee resolution establishing the revised fee level as prescribed by the Mitigation Fee Act.
- Consistent with the Mitigation Fee Act, the revised ordinance and associated fee resolution will become effective after a public hearing and 60 days.
- RCA Legal Counsel will prepare a Fee Update Ordinance and Resolution to facilitate the consistent adoption of the updated LDMF by Local Permittees.

Securing Supplemental Funding

The revised Local Development Mitigation Fee is set at the level that would cover the Local Permittee cost obligations once expected non-fee revenues are subtracted out. To the extent any discounts/exemptions are provided to new Western Riverside County development below the updated fee level, additional funding will be required to backfill the fee revenue losses. To the extent, these revenues do not make up for any fee discounts provided, other sources of funding will need to be sought by the RCA and the Local Permittees to fulfill their Plan obligations. At the same time, if new substantial funding sources become available to the RCA for Local Permittee obligations, the funding required through fees may decrease, in turn reducing the required fee levels through a new update.

Annual Review

The Mitigation Fee Act (at Gov. C. §§ 66001(c), 66006(b)(1)) stipulates that each local agency that requires payment of a fee make specific information available to the public annually within 180 days of the last day of the fiscal year. In this case, the RCA can play this role on behalf of the Local Permittees. This information includes the following:

- A description of the type of fee in the account.
- The amount of the fee (the mitigation fee schedule).
- The beginning and ending balance of the fund.
- The amount of fees collected and interest earned.
- Identification of the improvements constructed.
- The total cost of the improvements constructed.
- The fees expended to construct the improvement.
- The percentage of total costs funded by the fee.

APPENDIX II:

Detailed Time Series of Endowment Funding



Annual Cost Estimate for Management and Monitoring, Constant 2019\$

Cost Categories	Annual Cost by Last Year of Land Acquisition Period	Adjustment	Annual Post-Land Acquisition Cost
Ongoing Habitat Management	\$3,172,063	100%	\$3,172,063
Ongoing Habitat Monitoring	\$1,506,776	100%	\$1,506,776
Administration ¹	\$4,154,811	50%	\$2,077,406
Total	\$8,833,650		\$6,756,244

1. Administration includes salaries and benefits, accounting, auditing and reporting, contracts, etc.. Assumes less administration is needed following the land acquisition period; ongoing administrative needs include oversight, auditing and reporting, and board staffing.

Sources: Western Riverside County Regional Conservation Authority, and Economic & Planning Systems, Inc.

Endowment Funding – No Extension Scenario

Item	1	2	3	4	5	6	7	8	9	Post-Permit
New Impact Acres (avg. annual)	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	
Average Per Acre Endowment Fee	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	
Annual Endowment Funding	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	
Endowment Balance	\$22,168,105	\$44,336,210	\$67,169,359	\$90,687,502	\$114,911,189	\$139,861,586	\$165,560,496	\$192,030,373	\$219,294,346	
Annual Interest	\$0	\$665,043	\$1,350,038	\$2,055,582	\$2,782,293	\$3,530,804	\$4,301,772	\$5,095,868	\$5,913,787	
Cumulative Interest Earnings	\$0	\$665,043	\$2,015,081	\$4,070,663	\$6,852,955	\$10,383,760	\$14,685,531	\$19,781,399	\$25,695,187	
Total Endowment	\$22,168,105	\$45,001,254	\$68,519,396	\$92,743,083	\$117,693,481	\$143,392,391	\$169,862,268	\$197,126,241	\$225,208,133	
Average Annual Post Permit Interest										\$6,756,244

(1) Endowment fee set to ensure that, at the end of the permit term, the total endowment (Including endowment fee revenues and interest) are sufficient to provide annual interest revenues equal to the post-permit annual cost. The real interest rate is assumed to be 3 percent annually.

Assumptions
20,265 impact acres developed
9 year plan
3% interest rate (real, net)
\$6,756,244 annual post-permit cost estimate
\$9,845 Endowment Funding Per Acre of Conservation

Endowment Funding – 5 Year Extension Scenario

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Post-Permit
New Impact Acres (avg. annual)	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	
Average Per Acre Endowment Fee	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	\$5,854	
Annual Endowment Funding	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	\$13,180,608	
Endowment Balance	\$13,180,608	\$26,361,215	\$39,937,241	\$53,920,547	\$68,323,353	\$83,158,243	\$98,438,180	\$114,176,514	\$130,386,999	\$147,083,799	\$164,281,502	\$181,995,136	\$200,240,180	\$219,032,574	
Annual Interest	\$0	\$395,418	\$802,699	\$1,222,198	\$1,654,282	\$2,099,329	\$2,557,727	\$3,029,877	\$3,516,192	\$4,017,096	\$4,533,027	\$5,064,436	\$5,611,787	\$6,175,559	
Cumulative Interest Earnings	\$0	\$395,418	\$1,198,117	\$2,420,315	\$4,074,598	\$6,173,927	\$8,731,654	\$11,761,531	\$15,277,723	\$19,294,819	\$23,827,846	\$28,892,281	\$34,504,069	\$40,679,628	
Total Endowment	\$13,180,608	\$26,756,633	\$40,739,940	\$55,142,746	\$69,977,636	\$85,257,572	\$100,995,907	\$117,206,392	\$133,903,191	\$151,100,894	\$168,814,529	\$187,059,572	\$205,851,967	\$225,208,133	
Average Annual Post Permit Interest															\$6,756,244

(1) Endowment fee set to ensure that, at the end of the permit term, the total endowment (Including endowment fee revenues and interest) are sufficient to provide annual interest revenues equal to the post-permit annual cost. The real interest rate is assumed to be 3 percent annually.

Assumptions
31,523 impact acres developed
14 year plan
3% interest rate (real, net)
\$6,756,244 annual post-permit cost estimate
\$5,854 Endowment Funding Per Acre of Conservation

Endowment Funding – 10 Year Extension Scenario

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Post-Permit
New Impact Acres (avg. annual)	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	
Average Per Acre Endowment Fee	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	\$3,982	
Annual Endowment Funding	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	\$8,966,410	
Endowment Balance	\$8,966,410	\$17,932,819	\$27,168,221	\$36,680,686	\$46,478,524	\$56,570,297	\$66,964,823	\$77,671,185	\$88,698,738	\$100,057,118	\$111,756,249	\$123,806,354	\$136,217,962	\$149,001,918	\$162,169,393	\$175,731,892	\$189,701,266	\$204,089,722	\$218,909,831	
Annual Interest	\$0	\$268,992	\$546,054	\$831,428	\$1,125,363	\$1,428,117	\$1,739,952	\$2,061,143	\$2,391,970	\$2,732,721	\$3,083,695	\$3,445,198	\$3,817,547	\$4,201,065	\$4,596,089	\$5,002,964	\$5,422,046	\$5,853,699	\$6,298,303	
Cumulative Interest Earnings	\$0	\$268,992	\$815,047	\$1,646,475	\$2,771,838	\$4,199,955	\$5,939,907	\$8,001,051	\$10,393,020	\$13,125,742	\$16,209,437	\$19,654,635	\$23,472,182	\$27,673,247	\$32,269,336	\$37,272,301	\$42,694,347	\$48,548,046	\$54,846,349	
Total Endowment	\$8,966,410	\$18,201,812	\$27,714,276	\$37,512,114	\$47,603,887	\$57,998,413	\$68,704,775	\$79,732,328	\$91,090,708	\$102,789,839	\$114,839,944	\$127,251,552	\$140,035,508	\$153,202,983	\$166,765,482	\$180,734,856	\$195,123,312	\$209,943,421	\$225,208,133	
Average Annual Post Permit Interest																				\$6,756,244

(1) Endowment fee set to ensure that, at the end of the permit term, the total endowment (Including endowment fee revenues and interest) are sufficient to provide annual interest revenues equal to the post-permit annual cost. The real interest rate is assumed to be 3 percent annually.

Assumptions
42,782 impact acres developed
19 year plan
3% interest rate (real, net)
\$6,756,244 annual post-permit cost estimate
\$3,982 Endowment Funding Per Acre of Conservation

Endowment Funding – No Extension Scenario

Item	1	2	3	4	5	6	7	8	9	Post-Permit
New Impact Acres (avg. annual)	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	2,252	
Average Per Acre Endowment Fee	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	\$9,845	
Annual Endowment Funding	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	\$22,168,105	
Endowment Balance	\$22,168,105	\$44,336,210	\$67,169,359	\$90,687,502	\$114,911,189	\$139,861,586	\$165,560,496	\$192,030,373	\$219,294,346	
Annual Interest	\$0	\$665,043	\$1,350,038	\$2,055,582	\$2,782,293	\$3,530,804	\$4,301,772	\$5,095,868	\$5,913,787	
Cumulative Interest Earnings	\$0	\$665,043	\$2,015,081	\$4,070,663	\$6,852,955	\$10,383,760	\$14,685,531	\$19,781,399	\$25,695,187	
Total Endowment	\$22,168,105	\$45,001,254	\$68,519,396	\$92,743,083	\$117,693,481	\$143,392,391	\$169,862,268	\$197,126,241	\$225,208,133	
Average Annual Post Permit Interest										\$6,756,244

(1) Endowment fee set to ensure that, at the end of the permit term, the total endowment (including endowment fee revenues and interest) are sufficient to provide annual interest revenues equal to the post-permit annual cost. The real interest rate is assumed to be 3 percent annually.

Assumptions
20,265 impact acres developed
9 year plan
3% interest rate (real, net)
\$6,756,244 annual post-permit cost estimate
\$9,845 Endowment Funding Per Acre of Conservation

Appendix G - TUMF 2016 Program Update Disposition of Network Change Requests

As part of the 2024 update of the TUMF Nexus Study, the list of proposed improvements to mitigate the cumulative regional impacts of new development in the TUMF Network Cost Estimate table included in the previously adopted Nexus Study was reviewed for accuracy. In particular, the Network Cost table was reviewed to ensure the included projects were consistent with the mitigation needs identified by the RivCoM future year no-build traffic conditions.

To assist in the review of the Network Cost Estimate table, participating local jurisdictions, private developers and the Riverside County Transportation Commission were asked to submit requests for changes to the TUMF Network. The various requests for network changes were subsequently reviewed for consistency with the program guidelines for inclusion on the TUMF Network and to determine if future traffic impacts would be sufficient to require mitigation primarily utilizing the RivCoM future no-build scenario outputs to quantify impacts as well as screening the various qualitative measures that have guided the TUMF Network development since program inception.

Based on the findings of the review of the entire TUMF network, elements of specific projects were revised to reflect only necessary network corrections, modifications to project assumptions and to incorporate a limited number of additional improvements. The preliminary results of the network review and the associated screening of specific requested projects was presented to the WRCOG Public Works Directors Committee (PWC) in August 2023. Updated screening results were presented to the PWC in February 2024 and the findings endorsed confirming the TUMF Network as the basis for the Draft 2024 Nexus Study that was subsequently presented to the PWC for review and comment in April 2024. A matrix summarizing the disposition of the specific project requests received as part of the 2024 TUMF Nexus Update is included as **Exhibit G-1** in this Appendix.

With the release of the Draft 2024 Nexus Update Study Report for a formal review period commencing on May 14, 2024, and ending on June 10, 2024, additional comments were provided to WRCOG staff by thirteen participating jurisdictions or other stakeholders. These comments were reviewed by WRCOG staff and responses were provided to each of the parties that submitted comments. The responses included several changes to the TUMF network to remedy typographical errors contained in the draft report, including misreporting in the number of existing lanes, project percent complete and interchange project type for approximately 10 TUMF network segments. The recommended network revisions were presented to the PWC on August 8, 2024, and are reflected in the TUMF network cost table included in **Exhibit H-1**.

EXHIBIT G-1
2024 TUMF Nexus Study Update - Network Addition Requests

Northwest Zone

City/ County	Street Name	From	To	Recommendation
Eastvale	Hellman	River Road	Walter	Add to network for continuity and mitigate future v/c deficiency
Eastvale	Hellman	Schleisman	Walter	Add to network for continuity and mitigate future v/c deficiency
Eastvale	Hellman	Cucamonga Creek	bridge	Add to network for continuity and mitigate future v/c deficiency
Eastvale	River Rd	Archibald	Hellman	Add to network for continuity and mitigate future v/c deficiency
Eastvale	Limonite ITS	city wide		Add to network for deficient links with no capacity increase
Eastvale	Hamner ITS	city wide		Add to networks for deficient links with no capacity increase
Eastvale	Schlesman ITS	city wide		Add to networks for deficient links with no capacity increase
Eastvale	Archibald ITS	city wide		Add to networks for deficient links with no capacity increase
Eastvale	Limonite	Cucamonga Creek	bridge	Bridge length increased to 500'
Riverside	3rd	Chicago	Iowa	Do not add - no V/C deficiency and interchange overcrossing reconstructed to 4 lanes in 2006-2007
Riverside	La Sierra ITS	SR-91	Victoria	Add to network for deficient links with no capacity increase
Riverside	Madison ITS	SR-91	Victoria	Add to network for deficient links with no capacity increase
Riverside	University ITS	Market St	Canyon Crest	Add to network for deficient links with no capacity increase
Riverside	Tyler ITS	California Ave	Indiana Ave	Do not add - no V/C deficiency
Riverside	Alessandro Blvd ITS	Fairview Ave	Meridian	Add to network for deficient links with no capacity increase
County	Markham St	Mockingbird Canyon	Wood Rd	Do not add - no regional connectivity or V/C deficiency

Central Zone

City/ County	Street Name	From	To	Recommendation
Menifee	Garbani	Haun	Antelope	Do not add - no future v/c deficiency
Menifee	Garbani	I-215	interchange	Add to network to mitigate future v/c deficiency
Menifee	Garbani	I-215	Menifee	Do not add - no future v/c deficiency
Menifee	Garbani	Menifee	Briggs	Do not add - no future v/c deficiency
Menifee	Holland	City Limits (West)	Murrieta	Do not add - no future v/c deficiency
Menifee	Holland	Murrieta	Bradley	Add to network for continuity and mitigate future v/c deficiency
Menifee	Holland	Bradley	Haun	Add to network for continuity and mitigate future v/c deficiency
Menifee	Holland	Antelope	Muenifee	Add to network for continuity and mitigate future v/c deficiency
Menifee	Scott	Haun	Menifee	Already on TUMF Network
Menifee	Scott	Menifee	Briggs	Already on TUMF Network
Menifee	Scott	Sunset	Murrieta	Already on TUMF Network
Menifee	Briggs	Simpson	Angler	Already on TUMF Network
Menifee	Briggs	Salt Creek	bridge	Already on TUMF Network
Perris	Ethanac	Bridge	San Jacinto River	Already on TUMF Network
Unincorporated	Grand Ave	Briggs Rd	SR-79	Do not add - no future v/c deficiency

San Jacinto Zone

City/ County	Street Name	From	To	Recommendation
Hemet	Stetson	Warren	0.85 Miles w/o Warren	Do not add - no regional connectivity or V/C deficiency
San Jacinto	7th St	Western Terminus	Warren Rd	Do not add - no future v/c deficiency
San Jacinto	7st St	Channel adjacent to Warren	bridge	Do not add - no future v/c deficiency

Pass Zone

City/ County	Street Name	From	To	Recommendation
Banning	Highland Springs	Cherry Valley	Oak Valley	Already on TUMF Network - no v/c deficiency
Banning	Cottonwood	I-10	interchange	Do not add - no connectivity to regional network
Banning	Wilson	Highland Springs	Highland Home	Already on TUMF Network - no v/c deficiency
Banning	Sun Lakes	Smith Creek	bridge	Segment already on TUMF Network - Bridge added

Southwest Zone

City/ County	Street Name	From	To	Recommendation
Lake Elsinore	Camino del Norte	Summerhill	Main	Do not add - no connectivity to regional network
Lake Elsinore	Summerhill	Railroad Canyon	Greenwald	Do not add - no regional connectivity or V/C deficiency
Lake Elsinore	Nichols	I-15	Lake	Already on TUMF Network
Wildomar	Inland Valley Dr	I-15	bridge	Do not add - no connectivity to regional network
Wildomar	Palomar	Starbuck	Washington	Already on TUMF Network
Wildomar	Bundy Canyon	I-15	City Limits (Sunset)	Already on TUMF Network
Murrieta	Orange Springs Parkway	Clinton Keith	Scott	Do not add - no regional connectivity or V/C deficiency
Murrieta	Calle del Oso Oro	Vineyard Pkwy	Washington	Do not add - no regional connectivity or V/C deficiency
Murrieta	Calle del Oso Oro	1500 w/o Vineyard Pkwy	bridge	Do not add - no regional connectivity or V/C deficiency
Murrieta	Adams	Murrieta Hot Springs/Hawthorne	Cherry	Do not add - no regional connectivity or V/C deficiency
Temecula	Ynez Road	Rancho California	Santiago	Do not add - no connectivity to regional network
Temecula	Ynez Road/DePortola Road	Santiago	Margarita	Do not add - no connectivity to regional network
Temecula	ITS	Major Arterials (Winchester, Rancho California, Butterfield Stage, Temecula Pkwy, Margarita, Jefferson	City limits	Add to network for deficient links with no capacity increase

Appendix H - TUMF Network Cost Estimate and Evaluation

For the purpose of calculating the “fair share” fee to be applied to new development under the TUMF program, a planning level cost estimate was developed to reflect the cost to complete improvements to the Regional System of Highways and Arterials to adequately accommodate future traffic growth. The planning level cost estimate was established by applying the unit cost values (presented in **Table 4.1**) to the proposed changes identified for the future Regional System of Highways and Arterials. The resultant cost value was tabulated for each unique segment of the network, by improvement type, based on the proposed list of improvements recommended following the review of the TUMF Network (as described in **Section 4.3, Appendix E and Appendix G**). A separate cost estimate was generated for regional transit improvements based on information provided by RTA and added to the summary table. The TUMF Network cost estimate table is summarized in **Table 4.4** of the Nexus Report. The detailed TUMF Network cost estimate table is included in this Appendix as **Exhibit H-1**. The detailed TUMF transit cost estimate table is included as **Table 4.5** of the Nexus Report.

Where existing obligated funding has previously been secured through traditional funding sources to complete necessary improvements to the TUMF Network, the cost of these improvements will not be recaptured from future developments through the TUMF program. As a result, the TUMF network cost was adjusted accordingly to reflect the availability of obligated funds.

WRCOG staff, in consultation with RCTC staff, reviewed the current Regional Transportation Improvement Program (RTIP) to identify transportation projects on the TUMF network that had previously secured alternate sources of funding. **Exhibit H-2** identifies those projects included on the TUMF Network having previously obligated funding.

To account for existing needs in the original TUMF Nexus Study, the cost for facilities identified as currently experiencing LOS E or F was adjusted by extracting the share of the cost to improve the portion of those facilities identified in the 2018 Baseline network scenario with a volume to capacity ratio of greater than 0.90, which is the threshold for LOS E. The adjustment to account for existing need as part of the TUMF Nexus Study provides for the mitigation of incremental traffic growth on those facilities with existing need.

The following approach was applied to account for incremental traffic growth associated with new development as part of the existing need methodology:

1. 1. Facilities with an existing need were identified by reviewing the RivCoM 2018 Baseline scenario assigned traffic on the 2021 existing network and delineating those facilities included on the TUMF Cost Fee Summary Table that have an average directional v/c exceeding 0.90.
 - a. Weighted directional v/c values were used to determine existing need for network segments, which was calculated by:

- i. Determining the length for the portion of each segment (model link), and calculating the ratio of link length to the overall segment length
 - ii. Generating the average directional v/c for each link, for both directions in AM and PM periods, and multiplying by link/segment length ratio
 - iii. Determining the maximum peak-period peak-direction v/c for each link, representing the highest directional v/c in either AM or PM
 - iv. Calculating weighted average v/c for each TUMF segment, based on the sum of all weighted max v/c values of each link within a segment
 - b. A similar method was used to determine existing need for spot improvements including interchanges, railroad crossings and bridges. However, no weighting was used in the calculation of existing need for spot improvements. For these facilities, the peak-period peak-direction v/c values (highest directional v/c in either AM or PM) were utilized in the existing need calculation. This was based on the individual link within a network segment where a bridge or railroad crossing is located, or on- and off-ramps in the case of interchanges.
2. Initial costs of addressing the existing need were calculated by estimating the share of a particular roadway segments "new lane" cost, or individual spot improvement cost (including all associated ROW and soft costs).
 3. Incremental growth in v/c was determined by comparing the average directional base year v/c for the TUMF facilities (delineated under step one) with the horizon year v/c for the corresponding segments and spot improvements calculated based on the RivCoM 2045 No-Build scenario assigned traffic on the 2021 existing network using the same methodology as the base year v/c.
 4. The proportion of the incremental growth attributable to new development was determined by dividing the result of step three with the total 2045 No-Build scenario v/c in excess of LOS E.
 5. For those segments experiencing a net increase in v/c over the base year, TUMF will 'discount' the cost of existing need improvements by the proportion of the incremental v/c growth through 2045 No-Build compared to the 2018 Baseline v/c (up to a maximum of 100%).

Exhibit H-2 includes a detailed breakdown of the existing highway improvement needs on the TUMF network, including the associated unfunded improvement cost estimate for each segment experiencing unacceptable LOS.

For transit service improvements, the cost to provide for existing demand was determined by multiplying the total transit component cost by the share of future

projected daily bus transit ridership representing existing demand. **Exhibit H-3** reflects the calculation of the existing transit need share and the existing transit need cost.

To validate the effectiveness of the TUMF Network improvements to mitigate the cumulative regional transportation impacts of new development in Western Riverside County, the future TUMF Network was evaluated. The proposed improvements to the Regional System of Highways and Arterials were coded on the 2021 existing network derived from RivCoM and the model was run to determine the relative impacts on traffic conditions. To quantify the impacts of the TUMF Network improvements, the various traffic measures of effectiveness described in **Section 3.1** for the 2018 Baseline and 2045 No-Build scenarios were calculated for the 2045 TUMF Build network scenario. The results for VMT, VHT, VHD, and total VMT experiencing unacceptable level of service (LOS E) were then compared to the results presented in **Table 3.1** for the no-build conditions. The consolidated results are provided in **Table 4.6**.

EXHIBIT H-1 TUMF Network Detailed Cost Estimate

AREA 1 PLAN (H-1)										TUNE NETWORK Detailed Cost Estimate										SEGMENT 2										SEGMENT 3										SEGMENT 4										SEGMENT 5										SEGMENT 6										SEGMENT 7										SEGMENT 8										SEGMENT 9										SEGMENT 10										SEGMENT 11										SEGMENT 12										SEGMENT 13										SEGMENT 14										SEGMENT 15										SEGMENT 16										SEGMENT 17										SEGMENT 18										SEGMENT 19										SEGMENT 20										SEGMENT 21										SEGMENT 22										SEGMENT 23										SEGMENT 24										SEGMENT 25										SEGMENT 26										SEGMENT 27										SEGMENT 28										SEGMENT 29										SEGMENT 30										SEGMENT 31										SEGMENT 32										SEGMENT 33										SEGMENT 34										SEGMENT 35										SEGMENT 36										SEGMENT 37										SEGMENT 38										SEGMENT 39										SEGMENT 40										SEGMENT 41										SEGMENT 42										SEGMENT 43										SEGMENT 44										SEGMENT 45										SEGMENT 46										SEGMENT 47										SEGMENT 48										SEGMENT 49										SEGMENT 50										SEGMENT 51										SEGMENT 52										SEGMENT 53										SEGMENT 54										SEGMENT 55										SEGMENT 56										SEGMENT 57										SEGMENT 58										SEGMENT 59										SEGMENT 60										SEGMENT 61										SEGMENT 62										SEGMENT 63										SEGMENT 64										SEGMENT 65										SEGMENT 66										SEGMENT 67										SEGMENT 68										SEGMENT 69										SEGMENT 70										SEGMENT 71										SEGMENT 72										SEGMENT 73										SEGMENT 74										SEGMENT 75										SEGMENT 76										SEGMENT 77										SEGMENT 78										SEGMENT 79										SEGMENT 80										SEGMENT 81										SEGMENT 82										SEGMENT 83										SEGMENT 84										SEGMENT 85										SEGMENT 86										SEGMENT 87										SEGMENT 88										SEGMENT 89										SEGMENT 90										SEGMENT 91										SEGMENT 92										SEGMENT 93										SEGMENT 94										SEGMENT 95										SEGMENT 96										SEGMENT 97										SEGMENT 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EXHIBIT H-1 TUMF Network Detailed Cost Estimate

[illegible]

EXHIBIT H-3 Regional Transit Existing Need Share

Summary of Transit Trip Change

Year	Western Riverside Daily Transit Trips
2023*	16,575
2045**	57,282
Growth 2023 - 2045	40,707
Existing Need Share:	28.9%
Future Growth Share:	71.1%

Notes:

* - 2023 actual average weekday daily ridership provided by RTA staff
December 1, 2023

** - 2045 forecast average weekday daily ridership obtained from
SCAG 2020 RTP/SCS Model as provided by Fehr and Peers November

Maximum TUMF Transit Component Value

RTA Transit Full Mitigation Cost	Existing Need Cost	MAX TUMF TRANSIT VALUE
\$217,870,000	\$63,039,000	\$154,831,000
Total MAX TUMF VALUE		\$4,297,490,440
Transit Share of MAX TUMF VALUE		3.6%

Appendix I - Western Riverside County Regional Trip Distribution

In order to ensure an equitable regional/zonal distribution of potential TUMF revenues, the distribution of trips in the WRCOG region was analyzed to determine the distribution between local (intra-zonal) and regional (inter-zonal) trips. This analysis was completed using the Year 2040 No-Build scenario Origin-Destination (O-D) vehicle trip tables from RivCoM. The analysis of vehicle trips based on the respective trip ends as stratified by zone is considered sufficient to establish the rough proportionality between local (intra-zonal) and regional (inter-zonal) trips because this measure is intended to only serve as a guide in the distribution of potential TUMF revenues between regional and local projects, and is not intended to serve as the basis for quantifying the relative magnitude of the impacts of different types of new development on the TUMF network (as described in **Appendix J**)

The first step in the analysis was to create a correspondence table between the traffic analysis zones (TAZ's) in the RivCoM model and the five WRCOG TUMF zones: Northwest, Central, Pass Area, Hemet/San Jacinto, and Southwest. A table detailing the TAZ correspondence for each WRCOG TUMF zone is included as **Exhibit I-1** in this Appendix. The vehicle trip tables by TAZ were aggregated to obtain the trip summary between six districts (five WRCOG TUMF Zones and one for the rest of Southern California region included in the model analysis area)

Table 5.1 and **5.2** of the Nexus Study produce a matrix of total combined AM and PM peak period vehicle trips between the six districts. This information is subsequently weighted by TUMF future network lane miles in **Table 5.3** to determine the relative share of trips that can be allocated between the backbone network and secondary network. **Exhibits I-2** through **I-9** provide the corresponding peak period vehicle trip matrices for each of the four time periods analyzed by the RivCoM model (AM peak, midday, PM peak and overnight) as well as total daily trips between the six districts.

RivCoM TAZ Correspondence by WRCOG TUMF Zone - Hemet/San Jacinto

[illegible][illegible]

RivCoM TAZ Correspondence by WRCOG TUMF Zone - Hemet/San Jacinto

[illegible][illegible][illegible]

EXHIBIT I-1 (continued)

EXHIBIT I-1 (continued)
RivCoM TAZ Correspondence by WRCOG TUMF Zone - Northwest

[illegible][illegible][illegible][illegible]

RivCoM TAZ Correspondence by WRCOG TUMF Zone - Pass

TAZ	County	WRCOG Zone	City	TAZ	County	WRCOG Zone	City
1	Riverside	Pass	Banning	128	Riverside	Pass	Colimesa
2	Riverside	Pass	Banning	129	Riverside	Pass	Colimesa
3	Riverside	Pass	Banning	130	Riverside	Pass	Colimesa
4	Riverside	Pass	Banning	131	Riverside	Pass	Colimesa
5	Riverside	Pass	Banning	132	Riverside	Pass	Colimesa
6	Riverside	Pass	Banning	133	Riverside	Pass	Colimesa
7	Riverside	Pass	Banning	134	Riverside	Pass	Colimesa
8	Riverside	Pass	Banning	135	Riverside	Pass	Colimesa
9	Riverside	Pass	Banning	136	Riverside	Pass	Colimesa
10	Riverside	Pass	Banning	137	Riverside	Pass	Colimesa
11	Riverside	Pass	Banning	138	Riverside	Pass	Colimesa
12	Riverside	Pass	Banning	139	Riverside	Pass	Colimesa
13	Riverside	Pass	Banning	140	Riverside	Pass	Colimesa
14	Riverside	Pass	Banning	141	Riverside	Pass	Colimesa
15	Riverside	Pass	Banning	142	Riverside	Pass	Colimesa
16	Riverside	Pass	Banning	143	Riverside	Pass	Colimesa
17	Riverside	Pass	Banning	144	Riverside	Pass	Colimesa
18	Riverside	Pass	Banning	145	Riverside	Pass	Colimesa
19	Riverside	Pass	Banning	146	Riverside	Pass	Colimesa
20	Riverside	Pass	Banning	147	Riverside	Pass	Colimesa
21	Riverside	Pass	Banning	148	Riverside	Pass	Colimesa
22	Riverside	Pass	Banning	149	Riverside	Pass	Colimesa
23	Riverside	Pass	Banning	150	Riverside	Pass	Colimesa
24	Riverside	Pass	Banning	151	Riverside	Pass	Colimesa
25	Riverside	Pass	Banning	152	Riverside	Pass	Colimesa
26	Riverside	Pass	Banning	153	Riverside	Pass	Colimesa
27	Riverside	Pass	Banning	154	Riverside	Pass	Colimesa
28	Riverside	Pass	Banning	1278	Riverside	Pass	Moreno Valley
29	Riverside	Pass	Banning	2323	Riverside	Pass	Unincorporated
30	Riverside	Pass	Banning	2355	Riverside	Pass	Unincorporated
31	Riverside	Pass	Banning	2356	Riverside	Pass	Unincorporated
32	Riverside	Pass	Banning	2357	Riverside	Pass	Unincorporated
33	Riverside	Pass	Banning	2363	Riverside	Pass	Unincorporated
34	Riverside	Pass	Banning	2364	Riverside	Pass	Unincorporated
35	Riverside	Pass	Banning	2365	Riverside	Pass	Unincorporated
36	Riverside	Pass	Banning	2627	Riverside	Pass	Unincorporated
37	Riverside	Pass	Banning	2629	Riverside	Pass	Unincorporated
38	Riverside	Pass	Banning	2638	Riverside	Pass	Unincorporated
39	Riverside	Pass	Banning	2639	Riverside	Pass	Unincorporated
40	Riverside	Pass	Banning	2640	Riverside	Pass	Unincorporated
41	Riverside	Pass	Banning	2650	Riverside	Pass	Unincorporated
42	Riverside	Pass	Banning	2656	Riverside	Pass	Unincorporated
43	Riverside	Pass	Banning	2657	Riverside	Pass	Unincorporated
44	Riverside	Pass	Banning	2658	Riverside	Pass	Unincorporated
45	Riverside	Pass	Banning	2659	Riverside	Pass	Unincorporated
46	Riverside	Pass	Banning	2661	Riverside	Pass	Unincorporated
47	Riverside	Pass	Banning	2667	Riverside	Pass	Unincorporated
48	Riverside	Pass	Banning	2674	Riverside	Pass	Unincorporated
49	Riverside	Pass	Banning	2858	Riverside	Pass	Unincorporated
50	Riverside	Pass	Banning	2859	Riverside	Pass	Unincorporated
51	Riverside	Pass	Banning	2896	Riverside	Pass	Unincorporated
52	Riverside	Pass	Banning	2897	Riverside	Pass	Unincorporated
53	Riverside	Pass	Banning	2898	Riverside	Pass	Unincorporated
54	Riverside	Pass	Banning	2899	Riverside	Pass	Unincorporated
55	Riverside	Pass	Banning	2900	Riverside	Pass	Unincorporated
56	Riverside	Pass	Banning	2901	Riverside	Pass	Unincorporated
57	Riverside	Pass	Beaumont	2902	Riverside	Pass	Unincorporated
58	Riverside	Pass	Beaumont	2903	Riverside	Pass	Unincorporated
59	Riverside	Pass	Beaumont	2904	Riverside	Pass	Unincorporated
60	Riverside	Pass	Beaumont	2908	Riverside	Pass	Unincorporated
61	Riverside	Pass	Beaumont	2909	Riverside	Pass	Unincorporated
62	Riverside	Pass	Beaumont	2910	Riverside	Pass	Unincorporated
63	Riverside	Pass	Beaumont	2911	Riverside	Pass	Unincorporated
64	Riverside	Pass	Beaumont	2912	Riverside	Pass	Unincorporated
65	Riverside	Pass	Beaumont	2913	Riverside	Pass	Unincorporated
66	Riverside	Pass	Beaumont	2914	Riverside	Pass	Unincorporated
67	Riverside	Pass	Beaumont	2915	Riverside	Pass	Unincorporated
68	Riverside	Pass	Beaumont	2916	Riverside	Pass	Unincorporated
69	Riverside	Pass	Beaumont	2917	Riverside	Pass	Unincorporated
70	Riverside	Pass	Beaumont	2927	Riverside	Pass	Unincorporated
71	Riverside	Pass	Beaumont	2939	Riverside	Pass	Unincorporated
72	Riverside	Pass	Beaumont	2940	Riverside	Pass	Unincorporated
73	Riverside	Pass	Beaumont	2941	Riverside	Pass	Unincorporated
74	Riverside	Pass	Beaumont	2942	Riverside	Pass	Unincorporated
75	Riverside	Pass	Beaumont	2943	Riverside	Pass	Unincorporated
76	Riverside	Pass	Beaumont	2944	Riverside	Pass	Unincorporated
77	Riverside	Pass	Beaumont	2945	Riverside	Pass	Unincorporated
78	Riverside	Pass	Beaumont	2946	Riverside	Pass	Unincorporated
79	Riverside	Pass	Beaumont	2947	Riverside	Pass	Unincorporated
80	Riverside	Pass	Beaumont	2948	Riverside	Pass	Unincorporated
81	Riverside	Pass	Beaumont	2949	Riverside	Pass	Unincorporated
82	Riverside	Pass	Beaumont	2950	Riverside	Pass	Unincorporated
83	Riverside	Pass	Beaumont	2951	Riverside	Pass	Unincorporated
84	Riverside	Pass	Beaumont	2952	Riverside	Pass	Unincorporated
85	Riverside	Pass	Beaumont	3042	Riverside	Pass	Unincorporated
86	Riverside	Pass	Beaumont	3156	Riverside	Pass	Unincorporated
87	Riverside	Pass	Beaumont	3157	Riverside	Pass	Unincorporated
88	Riverside	Pass	Beaumont	3158	Riverside	Pass	Unincorporated
89	Riverside	Pass	Beaumont	3159	Riverside	Pass	Unincorporated
90	Riverside	Pass	Beaumont	3160	Riverside	Pass	Unincorporated
91	Riverside	Pass	Beaumont	3161	Riverside	Pass	Unincorporated
92	Riverside	Pass	Beaumont	3164	Riverside	Pass	Unincorporated
93	Riverside	Pass	Beaumont	3216	Riverside	Pass	Unincorporated
94	Riverside	Pass	Beaumont	3217	Riverside	Pass	Unincorporated
95	Riverside	Pass	Beaumont	3218	Riverside	Pass	Unincorporated
96	Riverside	Pass	Beaumont	3219	Riverside	Pass	Unincorporated
97	Riverside	Pass	Beaumont	3220	Riverside	Pass	Unincorporated
98	Riverside	Pass	Beaumont	3221	Riverside	Pass	Unincorporated
99	Riverside	Pass	Beaumont	3222	Riverside	Pass	Unincorporated
100	Riverside	Pass	Beaumont	3223	Riverside	Pass	Unincorporated
101	Riverside	Pass	Beaumont				
102	Riverside	Pass	Beaumont				
103	Riverside	Pass	Beaumont				
104	Riverside	Pass	Beaumont				
105	Riverside	Pass	Beaumont				
106	Riverside	Pass	Beaumont				
107	Riverside	Pass	Beaumont				
108	Riverside	Pass	Beaumont				
109	Riverside	Pass	Beaumont				
110	Riverside	Pass	Beaumont				
111	Riverside	Pass	Beaumont				
112	Riverside	Pass	Beaumont				
113	Riverside	Pass	Beaumont				
114	Riverside	Pass	Beaumont				

EXHIBIT I-1 (continued)
RivCoM TAZ Correspondence by WRCOG TUMF Zone - Southwest

[illegible][illegible][illegible][illegible]

RivCoM TAZ Correspondence by WRCOG TUMF Zones - Riverside County Outside WRCOG

[illegible]

RivCoM TAZ Correspondence by WRCOG TUMF Zones - Outside Riverside County

TAZ	County	WRCOG Zone
3370	San Diego	Outside TUMF Zones
3371	San Diego	Outside TUMF Zones
3372	San Diego	Outside TUMF Zones
3373	San Diego	Outside TUMF Zones
3374	San Diego	Outside TUMF Zones
3375	San Diego	Outside TUMF Zones
3376	San Diego	Outside TUMF Zones
3377	San Diego	Outside TUMF Zones
3378	San Diego	Outside TUMF Zones
3379	San Diego	Outside TUMF Zones
3380	San Diego	Outside TUMF Zones
3381	San Diego	Outside TUMF Zones
3382	San Diego	Outside TUMF Zones
3383	San Diego	Outside TUMF Zones

EXHIBIT I-2 - 2045 AM Peak Period Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		187,280	10,596	40,037	2,900	24,865	25,446	291,124
Hemet/San Jacinto		13,060	93,350	3,815	3,847	7,263	8,090	129,424
Northwest		26,655	1,189	333,593	1,239	4,956	86,710	454,342
Pass Area		3,663	3,372	2,768	49,166	402	14,458	73,828
Southwest		25,061	7,304	14,708	914	298,362	27,954	374,302
Outside WRCOG		15,413	3,353	86,546	11,208	14,949		131,469
TOTAL		271,131	119,163	481,467	69,274	350,797	162,658	1,454,490

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-3 - 2045 AM Peak Period Percent Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		64.3%	3.6%	13.8%	1.0%	8.5%	8.7%	100%
Hemet/San Jacinto		10.1%	72.1%	2.9%	3.0%	5.6%	6.3%	100%
Northwest		5.9%	0.3%	73.4%	0.3%	1.1%	19.1%	100%
Pass Area		5.0%	4.6%	3.7%	66.6%	0.5%	19.6%	100%
Southwest		6.7%	2.0%	3.9%	0.2%	79.7%	7.5%	100%

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-4 - 2045 PM Peak Period Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		230,328	12,878	49,743	3,401	30,237	32,112	358,698
Hemet/San Jacinto		16,341	115,656	4,833	4,586	8,818	9,988	160,221
Northwest		31,923	1,495	409,641	1,448	6,076	109,331	559,914
Pass Area		4,405	4,214	3,346	61,219	506	17,876	91,566
Southwest		30,752	8,928	18,144	1,062	368,893	34,759	462,537
Outside WRCOG		18,495	4,221	106,166	13,282	18,918		161,080
TOTAL		332,244	147,391	591,872	84,997	433,447	204,065	1,794,017

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-5 - 2045 PM Peak Period Percent Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		64.2%	3.6%	13.9%	0.9%	8.4%	9.0%	100%
Hemet/San Jacinto		10.2%	72.2%	3.0%	2.9%	5.5%	6.2%	100%
Northwest		5.7%	0.3%	73.2%	0.3%	1.1%	19.5%	100%
Pass Area		4.8%	4.6%	3.7%	66.9%	0.6%	19.5%	100%
Southwest		6.6%	1.9%	3.9%	0.2%	79.8%	7.5%	100%

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-6 - 2045 Off-Peak Period Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		313,691	17,511	64,577	3,948	39,446	41,718	480,890
Hemet/San Jacinto		21,579	162,035	5,659	6,318	10,987	11,533	218,110
Northwest		43,461	1,848	565,759	1,528	7,406	160,552	780,554
Pass Area		6,068	6,269	4,125	91,253	631	24,354	132,700
Southwest		40,442	11,861	22,506	1,132	508,327	40,698	624,964
Outside WRCOG		25,307	5,301	145,054	16,534	23,061		215,257
TOTAL		450,546	204,825	807,679	120,712	589,859	278,854	2,452,475

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

Table I-7 - 2045 Off-Peak Period Percent Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		65.2%	3.6%	13.4%	0.8%	8.2%	8.7%	100%
Hemet/San Jacinto		9.9%	74.3%	2.6%	2.9%	5.0%	5.3%	100%
Northwest		5.6%	0.2%	72.5%	0.2%	0.9%	20.6%	100%
Pass Area		4.6%	4.7%	3.1%	68.8%	0.5%	18.4%	100%
Southwest		6.5%	1.9%	3.6%	0.2%	81.3%	6.5%	100%

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-8 - 2045 Daily Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		731,298	40,985	154,356	10,249	94,547	99,276	1,130,712
Hemet/San Jacinto		50,980	371,040	14,306	14,750	27,068	29,611	507,755
Northwest		102,039	4,532	1,308,993	4,215	18,439	356,593	1,794,811
Pass Area		14,136	13,855	10,239	201,638	1,539	56,688	298,095
Southwest		96,254	28,093	55,358	3,108	1,175,582	103,410	1,461,804
Outside WRCOG		59,214	12,874	337,766	41,024	56,927		507,806
TOTAL		1,053,921	471,379	1,881,018	274,984	1,374,103	645,578	5,700,982

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-9 - 2045 Percent Daily Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		64.7%	3.6%	13.7%	0.9%	8.4%	8.8%	100%
Hemet/San Jacinto		10.0%	73.1%	2.8%	2.9%	5.3%	5.8%	100%
Northwest		5.7%	0.3%	72.9%	0.2%	1.0%	19.9%	100%
Pass Area		4.7%	4.6%	3.4%	67.6%	0.5%	19.0%	100%
Southwest		6.6%	1.9%	3.8%	0.2%	80.4%	7.1%	100%

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

Appendix J - Western Riverside County Regional Trip Purpose

On September 27, 2013, California Governor Jerry Brown signed SB 743 into law, fundamentally changing the way that transportation impacts are to be assessed pursuant to the California Environmental Quality Act (CEQA). The new law requires CEQA guidelines to be amended to provide an alternative to Level of Service for evaluating transportation impacts. The intent of the change is to introduce alternate criteria that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” (New Public Resources Code Section 21099(b)(1).) The primary effect of the new law is to establish the use of vehicle miles of travel (VMT) as the preferred basis for measuring traffic impacts, in recognition of the fact that VMT more accurately reflects traffic impacts as it takes into account both the number of trips being made and the distance of those trips. Although CEQA and the specific provision of SB 743 do not generally apply directly to impact fee programs (which are governed by the provision of the Mitigation Fee Act), the reasoning behind SB 743 establishing VMT as the preferred basis for CEQA traffic impact measurement is sound and equally applicable for impact fee nexus determination.

Linking the TUMF to VMT does enable developers to continue to use TUMF participation as demonstration of partial mitigation for their cumulative regional transportation impacts under the new SB 743 requirements. Furthermore, consistent with SB 743, consideration of travel impacts in terms of peak period VMT more accurately reflects the realities of travel behavior as the basis for determining impacts on the regional transportation system by reflecting the peak demands on the system based on the number of trips and the cumulative distance these trips occupy facilities in the system. Variation in trip length for different trip purposes is important to quantify since the impact associated with a trip is not limited to whether a trip occurs or not. A longer distance trip occupies more roadways over a longer period of time (all else being equal), and therefore goes through more intersections and consumes more capacity, thus requiring greater levels of mitigation. As the purpose of the TUMF is to mitigate the cumulative regional traffic impacts of future growth, a VMT based approach to defining the rough proportionality of impacts resulting from various differing types of new development better aligns with this purpose.

RivCoM is the primary analytical tool used to forecast VMT in Riverside County. RivCoM was developed based on the SCAG regional travel demand model, whose underlying model travel characteristics were developed based on national and regional travel behavior surveys, including the U.S. Census and the California Household Travel Survey. The methodology for using travel demand models, including RivCoM, as the basis for calculating and measuring VMT is consistent with NEPA and CEQA guidance, and accepted transportation planning practice.

The RivCoM model produces person-trips (irrespective of mode choice) on the basis of five trip purposes including home-based-work (HBW), home-based-other (HBO), home-based-school (HBS), home-based-university (HBU), and non-home based (NHB). Peak period, off-peak period and daily vehicle trips and VMT are derived from the person-trip productions based on mode choice assignments and differing trip length

characteristics embedded on the model parameters. Daily VMT results were aggregated into home-based VMT and non-home-based VMT for each scenario to represent the level of travel demand and impact on the transportation system attributable to each trip purpose.

The attribution of VMT associated with home-based trip purposes to residential land uses and non-home-based trips to non-residential land uses is consistent with the provisions of NCHRP Report #187 Quick Response Urban Travel Estimation Techniques and Transferable Parameters User's Guide (Transportation Research Board, 1978), a widely-referenced source for travel estimation techniques used for travel demand modeling. Chapter 2 of this report, which details trip generation estimation, states that "HBW (Home Based Work) and HBNW (Home Based Non Work) trips are generated at the households, whereas the NHB (Non-Home Based) trips are generated elsewhere." Consistent with NCHRP Report #187, aggregating person trip productions and associated VMT into home-based (combining home-based-work, home-based-other and home-based-school) and non-home-based (combining work-based-other, and other-based-other) represents an appropriate way to allocate trip generation and associated impacts between residential and non-residential land uses for the purpose of estimating the rough proportionality of the TUMF fee.

Exhibits J-1 through **J-36** of this Appendix include the RivCoM model data aggregated for peak period, off-peak period and daily person VMT for each trip purpose between the respective TUMF zones, and for both model year scenarios. The growth in daily VMT for each trip purpose was calculated as the difference between the daily VMT in the 2018 Existing scenario and the daily VMT in the 2045 No Build scenario. The growth in home-based daily VMT represents 77.7% of the total growth in daily VMT, and the growth in non-home-based daily VMT represents 22.3% of the total growth in daily VMT, as shown in **Table 5.4**. The relative share of the growth in daily VMT summarized in **Table 5.4** provides the basis for estimating the rough proportionality of the TUMF network impacts and related mitigation costs (and associated fees) attributable to new residential and non-residential development, respectively.

EXHIBIT J-1
VMT BY WRCOG TUMF ZONE
TOTAL PEAK PERIOD TRIPS FOR ALL PURPOSES - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,084,569	176,144	919,950	98,767	494,843	1,672,280	4,446,553
Hemet/San Jacinto		202,282	474,270	189,620	93,211	207,871	736,736	1,903,990
Northwest		471,239	62,909	3,082,883	69,489	235,185	3,500,199	7,421,903
Pass Area		86,956	66,611	120,609	230,246	31,017	531,753	1,067,192
Southwest		474,113	188,640	635,435	61,535	1,822,831	2,240,495	5,423,048
Outside WRCOG		833,664	293,941	3,584,150	403,303	1,245,556	129,717,014	136,077,627
TOTAL		3,152,824	1,262,514	8,532,646	956,551	4,037,302	138,398,477	156,340,314

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-2
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-WORK TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		165,241	58,992	411,439	65,622	197,893	1,220,777	2,119,965
Hemet/San Jacinto		70,807	53,805	128,758	48,898	103,290	567,394	972,951
Northwest		143,340	37,259	674,676	53,185	136,185	1,920,635	2,965,279
Pass Area		25,983	15,665	65,646	34,287	18,981	304,632	465,194
Southwest		165,236	76,537	376,007	49,330	410,382	1,721,102	2,798,594
Outside WRCOG		420,948	169,433	1,777,239	260,161	753,400	45,139,830	48,521,011
TOTAL		991,555	411,691	3,433,764	511,483	1,620,131	50,874,369	57,842,994

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-3
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-OTHER TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		673,880	84,730	364,070	26,370	227,784	361,436	1,738,269
Hemet/San Jacinto		100,994	306,411	50,898	33,509	84,214	146,284	722,311
Northwest		239,023	20,386	1,679,367	13,441	81,648	1,178,130	3,211,995
Pass Area		45,133	33,006	42,321	129,128	10,013	167,567	427,168
Southwest		234,369	82,255	197,098	10,679	1,016,873	402,898	1,944,172
Outside WRCOG		326,013	98,751	1,241,409	108,093	389,492	54,404,000	56,567,758
TOTAL		1,619,412	625,538	3,575,162	321,221	1,810,024	56,660,315	64,611,673

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-4
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-SCHOOL TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		110,735	3,642	21,950	387	16,486	6,055	159,255
Hemet/San Jacinto		8,004	43,231	162	666	2,726	70	54,859
Northwest		20,225	79	221,291	28	2,091	56,821	300,535
Pass Area		1,326	1,697	103	16,564	7	4,939	24,635
Southwest		19,735	3,035	4,593	7	138,861	1,084	167,315
Outside WRCOG		6,136	402	60,940	5,117	10,948	5,978,607	6,062,150
TOTAL		166,161	52,086	309,039	22,769	171,120	6,047,576	6,768,750

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-5
VMT BY WRCOG TUMF ZONE
PEAK PERIOD NON-HOME-BASED TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		116,617	17,407	82,092	6,004	49,146	58,568	329,833
Hemet/San Jacinto		20,422	60,529	6,881	9,918	17,117	18,684	133,551
Northwest		61,455	2,779	414,635	2,683	14,253	282,505	778,310
Pass Area		12,768	11,566	8,715	49,680	1,935	47,061	131,725
Southwest		40,694	13,037	27,856	1,225	237,362	49,558	369,732
Outside WRCOG		65,953	13,263	341,047	28,498	87,982	22,327,971	22,864,713
TOTAL		317,908	118,582	881,227	98,008	407,795	22,784,346	24,607,865

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-6
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-UNIVERSITY TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		18,096	11,373	40,399	384	3,534	25,445	99,231
Hemet/San Jacinto		2,056	10,293	2,922	220	523	4,304	20,318
Northwest		7,195	2,406	92,914	152	1,007	62,109	165,784
Pass Area		1,747	4,677	3,824	587	80	7,554	18,470
Southwest		14,080	13,775	29,881	293	19,353	65,853	143,236
Outside WRCOG		14,614	12,092	163,514	1,433	3,734	1,866,606	2,061,994
TOTAL		57,788	54,616	333,455	3,070	28,232	2,031,871	2,509,032

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-7
VMT BY WRCOG TUMF ZONE
TOTAL OFF PEAK TRIPS FOR ALL PURPOSES - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		801,662	128,869	640,224	56,860	339,965	988,339	2,955,918
Hemet/San Jacinto		140,692	363,274	109,533	65,159	132,656	415,778	1,227,093
Northwest		340,558	37,798	2,341,566	37,213	141,992	2,394,837	5,293,964
Pass Area		67,550	54,436	80,501	191,165	19,798	353,246	766,697
Southwest		330,176	130,997	414,647	31,788	1,358,749	1,284,306	3,550,663
Outside WRCOG		569,970	187,134	2,517,328	247,784	764,704	97,045,358	101,332,277
TOTAL		2,250,608	902,509	6,103,800	629,968	2,757,864	102,481,863	115,126,612

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-8
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-WORK TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		64,053	23,015	164,150	25,429	78,516	519,620	874,784
Hemet/San Jacinto		27,710	20,523	51,954	19,949	40,698	244,713	405,547
Northwest		57,811	15,473	261,251	21,801	56,354	811,368	1,224,059
Pass Area		10,592	6,429	27,063	12,994	8,220	128,530	193,828
Southwest		65,794	29,706	153,862	20,870	157,689	724,854	1,152,774
Outside WRCOG		187,105	76,293	763,815	115,048	322,353	17,962,924	19,427,539
TOTAL		413,065	171,439	1,422,095	216,091	663,831	20,392,010	23,278,531

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-9
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-OTHER TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		518,247	66,043	291,090	21,528	180,073	324,734	1,401,715
Hemet/San Jacinto		77,692	230,275	41,945	28,302	64,944	130,834	573,991
Northwest		181,766	15,629	1,296,905	11,001	63,383	1,010,885	2,579,569
Pass Area		35,416	25,064	34,290	99,409	8,287	138,571	341,037
Southwest		181,290	62,892	165,057	8,746	793,860	357,826	1,569,671
Outside WRCOG		262,051	76,387	1,010,627	87,034	296,373	42,030,568	43,763,040
TOTAL		1,256,461	476,289	2,839,914	256,020	1,406,920	43,993,419	50,229,023

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-10
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-SCHOOL TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		29,899	1,018	5,963	112	4,495	1,879	43,367
Hemet/San Jacinto		2,171	11,723	46	212	743	22	14,915
Northwest		5,315	22	59,984	8	572	16,387	82,287
Pass Area		367	460	31	4,489	2	1,358	6,707
Southwest		5,242	828	1,239	2	37,812	304	45,428
Outside WRCOG		1,679	106	16,999	1,337	2,522	1,608,845	1,631,488
TOTAL		44,671	14,158	84,261	6,159	46,147	1,628,796	1,824,191

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-11
VMT BY WRCOG TUMF ZONE
OFF PEAK NON-HOME-BASED TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		171,868	26,165	127,774	9,573	74,861	103,539	513,780
Hemet/San Jacinto		31,023	89,467	11,465	16,561	25,978	33,500	207,994
Northwest		88,808	4,136	620,263	4,317	21,165	472,709	1,211,397
Pass Area		19,327	17,223	13,991	73,960	3,239	74,839	202,580
Southwest		61,789	19,268	45,891	1,951	356,701	84,988	570,589
Outside WRCOG		103,831	20,636	536,313	43,581	141,283	33,374,718	34,220,361
TOTAL		476,647	176,895	1,355,697	149,943	623,228	34,144,292	36,926,701

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-12
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-UNIVERSITY TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		17,594	12,628	51,247	218	2,019	38,566	122,272
Hemet/San Jacinto		2,097	11,286	4,124	136	292	6,709	24,645
Northwest		6,858	2,539	103,163	86	517	83,488	196,652
Pass Area		1,849	5,259	5,127	313	49	9,947	22,544
Southwest		16,062	18,302	48,598	219	12,688	116,334	212,202
Outside WRCOG		15,304	13,712	189,575	784	2,172	2,068,303	2,289,850
TOTAL		59,764	63,727	401,834	1,755	17,738	2,323,347	2,868,164

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-13
VMT BY WRCOG TUMF ZONE
TOTAL DAILY TRIPS FOR ALL PURPOSES - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,886,231	305,013	1,560,174	155,627	834,808	2,660,619	7,402,471
Hemet/San Jacinto		342,975	837,544	299,154	158,370	340,527	1,152,514	3,131,082
Northwest		811,797	100,707	5,424,449	106,702	377,177	5,895,035	12,715,867
Pass Area		154,507	121,047	201,110	421,411	50,814	884,999	1,833,889
Southwest		804,289	319,636	1,050,082	93,323	3,181,580	3,524,801	8,973,711
Outside WRCOG		1,403,634	481,075	6,101,478	651,086	2,010,260	226,762,371	237,409,905
TOTAL		5,403,432	2,165,023	14,636,446	1,586,519	6,795,166	240,880,340	271,466,925

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-14
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-WORK TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		229,295	82,007	575,590	91,051	276,409	1,740,397	2,994,749
Hemet/San Jacinto		98,516	74,328	180,712	68,847	143,988	812,107	1,378,498
Northwest		201,151	52,731	935,927	74,986	192,540	2,732,003	4,189,337
Pass Area		36,574	22,095	92,709	47,281	27,201	433,163	659,022
Southwest		231,030	106,243	529,869	70,200	568,071	2,445,955	3,951,368
Outside WRCOG		608,054	245,727	2,541,054	375,209	1,075,753	63,102,754	67,948,550
TOTAL		1,404,620	583,131	4,855,859	727,574	2,283,962	71,266,379	81,121,525

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-15
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-OTHER TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,192,127	150,772	655,160	47,898	407,857	686,170	3,139,984
Hemet/San Jacinto		178,686	536,686	92,843	61,811	149,158	277,118	1,296,302
Northwest		420,789	36,015	2,976,272	24,442	145,031	2,189,015	5,791,564
Pass Area		80,549	58,070	76,610	228,537	18,300	306,138	768,205
Southwest		415,659	145,147	362,155	19,425	1,810,733	760,724	3,513,843
Outside WRCOG		588,064	175,138	2,252,036	195,127	685,865	96,434,568	100,330,798
TOTAL		2,875,873	1,101,828	6,415,076	577,241	3,216,945	100,653,734	114,840,696

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-16
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-SCHOOL TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		140,634	4,660	27,913	499	20,981	7,934	202,622
Hemet/San Jacinto		10,175	54,954	207	877	3,469	92	69,775
Northwest		25,540	101	281,274	36	2,663	73,208	382,822
Pass Area		1,692	2,157	134	21,053	9	6,297	31,343
Southwest		24,977	3,864	5,832	9	176,673	1,388	212,743
Outside WRCOG		7,814	508	77,939	6,454	13,470	7,587,452	7,693,638
TOTAL		210,832	66,244	393,299	28,928	217,266	7,676,372	8,592,941

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-17
VMT BY WRCOG TUMF ZONE
DAILY NON-HOME-BASED TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		288,485	43,572	209,866	15,577	124,008	162,106	843,613
Hemet/San Jacinto		51,445	149,996	18,346	26,479	43,095	52,184	341,544
Northwest		150,263	6,915	1,034,898	7,000	35,418	755,213	1,989,708
Pass Area		32,095	28,790	22,706	123,641	5,174	121,900	334,305
Southwest		102,482	32,305	73,748	3,176	594,063	134,546	940,320
Outside WRCOG		169,784	33,899	877,360	72,079	229,264	55,702,689	57,085,075
TOTAL		794,554	295,477	2,236,924	247,951	1,031,023	56,928,638	61,534,566

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-18
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-UNIVERSITY TRIPS ONLY - 2018 EXISTING

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		35,690	24,001	91,646	601	5,553	64,011	221,503
Hemet/San Jacinto		4,153	21,580	7,046	356	815	11,012	44,963
Northwest		14,054	4,945	196,077	238	1,525	145,596	362,435
Pass Area		3,596	9,936	8,951	900	129	17,502	41,014
Southwest		30,142	32,078	78,478	512	32,040	182,188	355,438
Outside WRCOG		29,918	25,804	353,089	2,217	5,906	3,934,909	4,351,844
TOTAL		117,553	118,344	735,288	4,825	45,970	4,355,218	5,377,197

Based on RivCOM Year 2018 Existing Scenario, November 2023

EXHIBIT J-19
VMT BY WRCOG TUMF ZONE
TOTAL PEAK PERIOD TRIPS FOR ALL PURPOSES - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,799,333	331,707	1,246,839	150,237	725,077	2,074,041	6,327,234
Hemet/San Jacinto		419,876	828,755	285,137	155,667	345,759	1,006,889	3,042,083
Northwest		719,180	87,427	3,652,429	90,736	283,636	3,816,550	8,649,959
Pass Area		166,143	123,928	189,122	408,274	39,950	805,993	1,733,411
Southwest		823,445	350,410	894,926	84,115	3,062,054	3,170,545	8,385,495
Outside WRCOG		1,208,763	420,070	4,001,373	598,622	1,482,553	151,663,404	159,374,786
TOTAL		5,136,740	2,142,297	10,269,827	1,487,652	5,939,029	162,537,422	187,512,968

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-20
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-WORK TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		373,364	119,251	639,446	100,864	284,454	1,576,209	3,093,588
Hemet/San Jacinto		172,286	134,504	208,376	88,310	169,783	827,421	1,600,680
Northwest		244,964	48,849	905,169	66,860	143,376	2,007,531	3,416,748
Pass Area		69,297	34,601	118,258	72,874	25,101	465,215	785,345
Southwest		346,327	152,164	600,641	69,322	654,211	2,572,563	4,395,228
Outside WRCOG		627,554	220,846	2,057,129	369,322	678,800	52,699,890	56,653,540
TOTAL		1,833,791	710,214	4,529,019	767,551	1,955,725	60,148,829	69,945,130

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-21
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-OTHER TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,062,642	154,854	432,156	38,451	340,614	392,364	2,421,080
Hemet/San Jacinto		190,962	506,337	65,022	49,916	143,277	154,174	1,109,688
Northwest		352,592	31,203	1,941,227	19,896	116,947	1,347,877	3,809,741
Pass Area		73,295	60,143	56,197	230,606	12,927	245,844	679,013
Southwest		365,033	139,169	213,955	13,093	1,806,167	430,821	2,968,236
Outside WRCOG		473,253	165,371	1,354,389	176,377	669,783	64,072,996	66,912,168
TOTAL		2,517,777	1,057,076	4,062,946	528,338	3,089,715	66,644,076	77,899,927

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-22
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-SCHOOL TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		136,895	5,994	23,940	484	20,215	6,298	193,827
Hemet/San Jacinto		13,675	57,088	301	975	4,113	107	76,259
Northwest		23,198	110	237,602	33	2,279	66,566	329,788
Pass Area		1,880	2,406	139	26,717	7	9,600	40,749
Southwest		24,598	3,842	4,731	7	228,422	1,295	262,895
Outside WRCOG		6,723	624	64,150	5,947	16,481	6,271,751	6,365,676
TOTAL		206,969	70,065	330,863	34,163	271,517	6,355,617	7,269,194

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-23
VMT BY WRCOG TUMF ZONE
PEAK PERIOD NON-HOME-BASED TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		202,038	35,728	103,488	10,029	74,959	74,079	500,322
Hemet/San Jacinto		40,465	115,618	8,342	16,222	27,829	20,983	229,458
Northwest		89,752	4,817	459,879	3,793	19,949	335,223	913,414
Pass Area		19,244	20,136	9,751	77,216	1,839	73,705	201,892
Southwest		63,376	22,555	29,308	1,251	322,054	43,941	482,484
Outside WRCOG		88,138	21,358	372,582	45,519	113,947	26,519,796	27,161,341
TOTAL		503,012	220,212	983,351	154,031	560,578	27,067,727	29,488,911

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-24
VMT BY WRCOG TUMF ZONE
PEAK PERIOD HOME-BASED-UNIVERSITY TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		24,394	15,880	47,809	408	4,835	25,090	118,417
Hemet/San Jacinto		2,488	15,208	3,096	245	757	4,204	25,998
Northwest		8,674	2,448	108,552	155	1,085	59,353	180,268
Pass Area		2,428	6,642	4,777	861	76	11,629	26,412
Southwest		24,112	32,680	46,293	442	51,199	121,926	276,652
Outside WRCOG		13,096	11,872	153,123	1,456	3,543	2,098,971	2,282,060
TOTAL		75,191	84,731	363,649	3,568	61,494	2,321,174	2,909,807

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-25
VMT BY WRCOG TUMF ZONE
TOTAL OFF PEAK TRIPS FOR ALL PURPOSES - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,318,612	243,507	855,399	90,116	512,253	1,362,381	4,382,268
Hemet/San Jacinto		307,848	620,261	182,200	112,414	232,480	632,480	2,087,683
Northwest		514,466	58,795	2,686,245	50,935	187,731	2,945,148	6,443,318
Pass Area		125,325	101,371	126,342	322,595	27,752	586,766	1,290,151
Southwest		594,702	254,789	612,135	48,790	2,229,187	1,999,442	5,739,044
Outside WRCOG		857,986	292,176	2,897,700	380,089	960,617	114,223,362	119,611,929
TOTAL		3,718,939	1,570,899	7,360,021	1,004,939	4,150,019	121,749,579	139,554,395

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-26
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-WORK TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		139,109	48,317	252,879	40,263	116,636	745,260	1,342,464
Hemet/San Jacinto		68,574	47,643	92,129	35,673	67,839	402,851	714,710
Northwest		98,150	23,283	337,214	28,227	65,852	940,673	1,493,399
Pass Area		28,513	15,183	50,763	26,317	12,905	221,065	354,746
Southwest		143,010	60,883	254,955	32,890	244,955	1,155,616	1,892,308
Outside WRCOG		302,064	116,183	938,244	166,464	326,211	21,226,888	23,076,054
TOTAL		779,420	311,492	1,926,184	329,834	834,398	24,692,353	28,873,681

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-27
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-OTHER TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		817,753	121,802	362,911	33,093	271,714	415,042	2,022,315
Hemet/San Jacinto		161,868	374,441	65,747	46,266	116,874	172,568	937,763
Northwest		270,238	25,096	1,486,279	16,476	90,978	1,281,165	3,170,231
Pass Area		61,546	47,031	50,231	174,731	11,410	223,207	568,155
Southwest		303,367	111,492	202,017	12,889	1,405,767	465,133	2,500,666
Outside WRCOG		387,066	126,440	1,130,769	140,486	452,722	49,373,980	51,611,462
TOTAL		2,001,838	806,301	3,297,953	423,940	2,349,465	51,931,094	60,810,592

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-28
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-SCHOOL TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		37,552	1,684	7,015	142	5,504	2,210	54,106
Hemet/San Jacinto		4,077	15,458	110	341	1,168	42	21,196
Northwest		6,276	32	64,909	10	605	20,422	92,254
Pass Area		563	684	47	7,234	2	2,659	11,190
Southwest		6,927	1,090	1,449	3	62,653	584	72,705
Outside WRCOG		2,040	166	19,074	1,704	3,185	1,683,458	1,709,627
TOTAL		57,435	19,114	92,604	9,433	73,117	1,709,376	1,961,079

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-29
VMT BY WRCOG TUMF ZONE
OFF PEAK NON-HOME-BASED TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		299,738	55,092	169,871	16,381	115,948	153,204	810,234
Hemet/San Jacinto		70,174	166,706	18,278	29,966	46,159	47,597	378,880
Northwest		131,414	7,633	681,134	6,136	29,764	610,663	1,466,744
Pass Area		31,940	31,225	18,232	113,898	3,385	123,898	322,577
Southwest		104,433	36,376	55,746	2,580	484,258	98,486	781,879
Outside WRCOG		151,333	34,517	620,329	70,600	176,455	39,604,640	40,657,873
TOTAL		789,032	331,549	1,563,590	239,561	855,969	40,638,488	44,418,188

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-30
VMT BY WRCOG TUMF ZONE
OFF PEAK HOME-BASED-UNIVERSITY TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		24,461	16,612	62,722	237	2,451	46,666	153,148
Hemet/San Jacinto		3,155	16,013	5,936	169	440	9,422	35,134
Northwest		8,389	2,752	116,708	85	532	92,226	220,691
Pass Area		2,763	7,248	7,069	416	50	15,937	33,483
Southwest		36,965	44,949	97,968	427	31,554	279,623	491,486
Outside WRCOG		15,482	14,869	189,285	835	2,045	2,334,396	2,556,912
TOTAL		91,214	102,442	479,690	2,170	37,070	2,778,268	3,490,855

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-31
VMT BY WRCOG TUMF ZONE
TOTAL DAILY TRIPS FOR ALL PURPOSES - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		3,117,946	575,214	2,102,238	240,353	1,237,329	3,436,422	10,709,502
Hemet/San Jacinto		727,723	1,449,016	467,337	268,082	578,239	1,639,369	5,129,767
Northwest		1,233,645	146,222	6,338,674	141,671	471,367	6,761,699	15,093,278
Pass Area		291,468	225,299	315,464	730,869	67,702	1,392,759	3,023,562
Southwest		1,418,147	605,199	1,507,061	132,904	5,291,241	5,169,987	14,124,539
Outside WRCOG		2,066,749	712,246	6,899,073	978,711	2,443,170	265,886,766	278,986,715
TOTAL		8,855,679	3,713,196	17,629,848	2,492,590	10,089,048	284,287,001	327,067,363

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-32
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-WORK TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		512,473	167,568	892,325	141,127	401,091	2,321,469	4,436,052
Hemet/San Jacinto		240,860	182,148	300,505	123,983	237,623	1,230,272	2,315,390
Northwest		343,114	72,132	1,242,383	95,087	209,228	2,948,204	4,910,147
Pass Area		97,810	49,784	169,021	99,191	38,005	686,279	1,140,090
Southwest		489,337	213,047	855,596	102,212	899,166	3,728,179	6,287,536
Outside WRCOG		929,618	337,029	2,995,373	535,786	1,005,010	73,926,778	79,729,594
TOTAL		2,613,211	1,021,707	6,455,203	1,097,385	2,790,123	84,841,182	98,818,811

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-33
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-OTHER TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		1,880,395	276,656	795,067	71,544	612,328	807,406	4,443,395
Hemet/San Jacinto		352,830	880,778	130,769	96,181	260,151	326,742	2,047,451
Northwest		622,829	56,299	3,427,506	36,372	207,925	2,629,041	6,979,972
Pass Area		134,842	107,173	106,427	405,337	24,337	469,052	1,247,168
Southwest		668,400	250,661	415,972	25,982	3,211,934	895,954	5,468,902
Outside WRCOG		860,319	291,810	2,485,158	316,863	1,122,505	113,446,976	118,523,630
TOTAL		4,519,614	1,863,377	7,360,898	952,278	5,439,180	118,575,170	138,710,519

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-34
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-SCHOOL TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		174,447	7,678	30,955	627	25,718	8,507	247,933
Hemet/San Jacinto		17,752	72,546	411	1,316	5,281	149	97,455
Northwest		29,474	142	302,511	43	2,884	86,988	422,042
Pass Area		2,443	3,091	186	33,950	9	12,260	51,939
Southwest		31,524	4,932	6,180	10	291,076	1,879	335,600
Outside WRCOG		8,764	790	83,223	7,651	19,666	7,955,209	8,075,303
TOTAL		264,404	89,179	423,467	43,596	344,634	8,064,992	9,230,272

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-35
VMT BY WRCOG TUMF ZONE
DAILY NON-HOME-BASED TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		501,776	90,820	273,360	26,410	190,907	227,284	1,310,557
Hemet/San Jacinto		110,639	282,324	26,620	46,188	73,988	68,580	608,338
Northwest		221,166	12,450	1,141,014	9,929	49,713	945,886	2,380,158
Pass Area		51,183	51,361	27,984	191,114	5,224	197,603	524,469
Southwest		167,809	58,931	85,053	3,831	806,312	142,426	1,264,363
Outside WRCOG		239,471	55,876	992,911	116,119	290,402	66,124,436	67,819,215
TOTAL		1,292,044	551,761	2,546,941	393,592	1,416,547	67,706,215	73,907,099

Based on RivCOM Year 2045 No-Build Scenario, November 2023

EXHIBIT J-36
VMT BY WRCOG TUMF ZONE
DAILY HOME-BASED-UNIVERSITY TRIPS ONLY - 2045 NO BUILD

From	To	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		48,855	32,492	110,531	645	7,286	71,756	271,565
Hemet/San Jacinto		5,642	31,221	9,033	414	1,197	13,626	61,132
Northwest		17,063	5,200	225,260	240	1,617	151,579	400,959
Pass Area		5,191	13,890	11,846	1,278	126	27,566	59,896
Southwest		61,077	77,629	144,261	870	82,752	401,549	768,138
Outside WRCOG		28,578	26,741	342,408	2,292	5,587	4,433,366	4,838,972
TOTAL		166,406	187,172	843,339	5,738	98,564	5,099,442	6,400,662

Based on RivCOM Year 2045 No-Build Scenario, November 2023

Appendix K - Residential Fee Calculation

In general, the fee for the TUMF program is calculated based on the following formula:

$$\frac{\boxed{\text{Unit Cost Assumptions}} \times \boxed{\text{Recommended Network Improvements}}}{\boxed{\text{Change in Residential and Non-Residential Development}}} = \text{TUMF}$$

Applying this formula, Unit Cost Assumptions for the various eligible TUMF project types are used to estimate the overall cost to improve the TUMF Network as described in the TUMF Nexus Study. The resultant network improvement cost is then divided proportionally between various residential and non-residential development categories such that each new development type contributes its 'fair share' to the program. Any change in one formula variable has a related impact on the overall TUMF fee, although it is important to note that the resultant impact to the overall fee is not necessarily directly proportional to the formula variable change due to the intricacies of the fee calculation.

The residential fee was calculated by multiplying the estimated TUMF Network improvements cost attributable to mitigating the cumulative regional impacts of new development (**Section 4.0**) by the proportion of all regional trips that are generated by residential land uses (**Section 5.3**), and dividing this number by the projected increase in residential units between 2018 and 2045 (**Table 2.3**).

To account for the difference in trip generation rates between single-family residential units and multi-family residential units, the fee value was normalized for each of these housing types by first multiplying the proposed growth in households between 2018 and 2045 by the existing proportional share of each household type, and then multiplying the resultant values by the respective trip generation rate as published in the Institute of Traffic Engineers Trip Generation Manual, Eleventh Edition, 2021. The respective uniform fee values are presented in **Section 6.1**. **Exhibit K-1** details the calculation of the uniform single-family and multi-family residential fees (and non-residential fees).

On September 28, 2021, California Governor Gavin Newsome signed Assembly Bill 602 (AB 602) approving several changes to the Mitigation Fee Act, including the additional of §66016.5 to the California Government Code (CGC). §66016.5(a)(5)(A) states "A nexus study adopted after July 1, 2022, shall calculate a fee imposed on a housing development project proportionately to the square footage of proposed units of the development...." unless certain findings are made. These findings include:

- “(i) An explanation as to why square footage is not appropriate metric to calculate fees imposed on housing development project.
- (ii) An explanation that an alternative basis of calculating the fee bears a reasonable relationship between the fee charged and the burden posed by the development.

- (iii) That other policies in the fee structure support smaller developments, or otherwise ensure that smaller developments are not charged disproportionate fees."

To address these provisions of AB 602, WRCOG analyzed the trip generation characteristics of both single-family and multi-family housing units of various sizes to determine whether there was a variation in trip generation rates based on housing unit size substantiating that TUMF should be imposed based on the square footage of the respective housing type. The findings of the analyses for single-family and multi-family, respectively, were summarized in technical memoranda that are included as **Exhibit K-2** for single-family residential units, and **Exhibit K-3** for multi-family residential units.

The findings of the analysis of single-family residential units, as presented in **Exhibit K-2**, indicates that the trip generation rates for these units do vary by housing size, especially for units of 2,500 square feet or less. The findings also noted that variations in trip generation characteristics tended to be more closely correlated to total household population, number of children and number of workers.

Figure 9 in **Exhibit K-2** illustrates Daily Vehicle Trips per Median Square Footage for Single-Family housing units. The figure generally reflects a linear increase in trip generation rate as housing size increases until the unit size reaches between 2,500 and 2,900 square feet, after which the trip generation rate stabilizes at approximately 10 to 12 trips per day. The figure also indicates some clustering of trip generation rates for housing units below 1,800 square feet, and similarly for housing units between 1,800 and 2,300 square feet. Based on these findings, WRCOG has determined that the fee for single-family residential units should be adjusted in four tiers to correlate to the trip generation characteristics associated with various ranges of single-family housing sizes to demonstrate compliance with AB 602.

To develop these tiers, WRCOG reviewed all single-family permits for which TUMF was assessed in the 2022/2023 Fiscal Year, which totaled 3,875 permits. These permit data indicated the square footage for these units ranged from 900 square feet to over 10,000 square feet with the majority of the units being between 1,800 square feet and 3,000 square feet. According to these data, the average square footage of these units was 2,300 square feet. WRCOG then examined the permit distribution to determine how units of various sizes should be grouped for the purposes of assessing TUMF to account for variations in the trip generation rates for single-family residential units of different sizes. An analysis of the different home sizes determined that it would be reasonable to stratify the home sizes into four tiers as presented in **Table K.1**. As indicated in **Table K.1**, approximately ½ of all single-family permits fall into Tier 1 and Tier 2 while the remaining ½ fall into Tier 3 and Tier 4.

Table K.1 – Single-Family Residential Unit Size Distribution in Western Riverside County
(based on FY 2022/2023 Single-Family Residential Unit Permits Issued in Western Riverside County)

Home Size Range (square feet)	Number of Permits	Percentage of Permits
Less than or equal to 1,800	451	12%
1,801 to 2,300	1,409	36%
2,301 to 2,700	1,121	29%
More than 2,700	894	23%
Total	3,875	100%

The tiers reflecting the adjustments to the standard uniform single-family residential fee per dwelling unit (as calculated in **Table 6.1**) for differing ranges of single-family unit sizes are summarized in **Table K.2**. Consistent with §66016.5(a)(5)(A), the adjustments to the standard single-family residential fee for each tier is roughly proportional to the relative trip generation rates for the units of varying sizes described in each tier. Furthermore, the assessment of the single-family residential fee at the adjusted levels would result in a roughly proportional fee collection for all single-family residential units compared to the assessment of a standard uniform fee across all single-family residential units. This ensures that new single-family residential units continue to contribute their fair share towards the cost of mitigating the cumulative regional impact of new development on the regional transportation system thereby maintaining the program nexus outlined in this document and represented by the fee schedule presented in Table 7.1.

Table K.2 – Single-Family Residential Fee Adjustments by Unit Size

Adjustment Tier	Housing Unit Size Range (in square feet)	Standard Fee Adjustment
Tier 1	Less than or equal to 1,800	80%
Tier 2	1,801 to 2,300	90%
Tier 3	2,301 to 2,700	100%
Tier 4	More than 2,700	125%

Exhibit K-3 presents the findings for multi-family housing units. For multi-family residential units, the results indicate little variation in trip generation rates across the range of multi-family residential unit sizes prompting WRCOG to determine that the fee for multi-family residential units would be most appropriately imposed uniformly across all multi-family dwelling units, regardless of their size.

EXHIBIT K-1 Western Riverside County TUMF Estimate
by Percent of TUMF Share Weighted by PM Peak Hour Trip Generation Rate
Based on Needed Improvements to the Regional System of Highways and Arterials

Residential	Dwelling Units		PM Peak Hour Trip Generation Rate		PM Peak Hour Trip Change	Percentage of PM Peak Hour Trip Change	Fee/DU	
	2018	2045	Change					
Single Family Residential	397,407	564,898	167,491	0.99	165,816	78.6%	\$15,476	
Multi Family Residential	157,166	247,501	90,335	0.50	45,168	21.4%	\$7,816	
Total	554,573	812,399	257,826		210,984	100.0%		
Non-Residential	Employees		PM Peak Hour Trip Generation Rate		PM Peak Hour Trip Change	Percentage of PM Peak Hour Trip Change	Change in SF of GFA	Fee/SF of GFA
	2018	2045	Change					
Industrial	169,334	245,915	76,581	0.6	45,949	15.1%	61,489,565	\$2.33
Retail	73,814	86,929	13,115	1.8	23,607	7.8%	6,557,500	\$11.21
Service	308,703	482,958	174,255	1.2	209,106	68.8%	66,735,957	\$9.76
Government/Public Sector	18,569	30,640	12,071	2.1	25,349	8.3%	3,420,665	\$23.07
Total	570,420	846,442	276,022		304,011	100.0%	138,203,688	

Notes:

- trip generation rates based on ITE Trip Generation 11th Edition (2021) rates for weekday PM peak hour by generator trip ends
- residential formula: $[(\text{TUMF cost share}) / (\text{residential share of VMT}) / (\text{change in housing units})] * (\text{percentage of trip change})$
- non-residential formula: $[(\text{TUMF cost share}) / (\text{non-residential share of VMT}) / (\text{change in $F of GFA})] * (\text{percentage of trip change})$

Calculation Inputs:

residential share of daily VMT	77.7%
non-residential share of daily VMT	22.3%
total regional mitigation cost	\$5,283,909,000
existing obligated improvement funding	\$382,886,000
unfunded existing need cost	\$646,931,000

MAX TUMF VALUE	\$4,244,608,000
MAX TUMF SHARE	80.3%

Residential Value \$3,298,060,000
Non-Residential Value \$946,548,000

EXHIBIT K-2

[Single-Family] Residential Trip Generation Memorandum
Fehr & Peers, November 16, 2022

Memorandum

Date: November 16, 2022

To: Suzanne Peterson, Christopher Gray, and Chris Tzeng – WRCOG

From: Mike Wallace, Eleanor Hunts, and Jason Pack – Fehr & Peers

Subject: **WRCOG Residential Trip Generation**
Contract No. 2022-65-1400-004 / Task Order No. 2022-65-1400-004-003

OC22- 0864

This memo summarizes the goals, data and analysis, key findings, and recommendations relating to the evaluation of vehicle trip generation and residential development characteristics. Specifically, this memo is intended to inform the Transportation Uniform Mitigation Fee (TUMF) guidelines on the relationship between residential trip generation and home size (square footage) as prescribed in California Assembly Bill 602 (AB 602). This draft memo will be followed-up with a phone call to discuss the recommendations and the memo will be revised and finalized based on the call.

Key Findings

Questions answered through the analysis and the findings are listed below.

- Is home size a key predictor of residential vehicle trip generation? **Yes, for homes of 2,500 square feet or less the trips increase with the larger home size. After 2,500 square feet the number of trips stay constant with home size, all else being equal.**
- Are there other characteristics that have a higher predictive relationship than home size? **Yes, the trip generation increases with the total household population, average number of children, and average number workers. Home size accounts for approximately 50% of the increase in home size for homes less than 2,500 square feet with the remaining 50% explained by multiple factors of the people within the home.**
- Does the location (i.e. TUMF zone) change the relationship of home size or the other characteristics? **No, the home location may influence the size, number of people, or household income, and/or the distance the trips travel, but does not influence the trips generated.**



- Are there recommended changes to the TUMF based on the findings? If so, what is the potential impact to the TUMF collection and home owners? **Yes, it is recommended that smaller homes pay a fee based on home size. The appropriate fee should be evaluated by the TUMF fee consultant to determine the potential impact to fee collected compared to the current fee expectation. Smaller homes paying less could potentially make home ownership less expensive overall compared to larger homes.**

Data Collection

This section describes the data that were used to evaluate the trip generation. Specifically, the identification and selection of study areas, method for obtaining and results of the travel activity, and collection of residential characteristics.

Study Area Selection

To determine the home characteristics that might influence trip generation, representative residential neighborhoods in each of the TUMF zones were identified. The criteria used for selecting neighborhoods included the following:

- Residential land use could be isolated from other uses
- Minimal cut through traffic
- As close to Census Blocks or Block Groups as possible to obtain demographic information
- Minimal construction activity that would change the number of units
- Diverse home size, household income

Based on local knowledge, aerial photos, Census geography, and home information from Zillow, WRCOG staff identified a preliminary list of potential study locations in each TUMF zone. Through discussions and review of each location, Fehr & Peers narrowed down the list of study locations to 23 neighborhoods, shown on **Figure 1**.

Travel Activity

StreetLight Data from smart phones were collected at 23 residential neighborhoods shown on Figure 1 were collected for trips that started or ended within each neighborhood. This method excluded trips that cut through the neighborhood. To avoid holidays, vacations, and to reflect travel when school is in session, data from March 1st through April 30th and September 1st through October 31st for all weekdays in 2019 were collected to represent the average vehicle trips per day for all homes within each study area.

Since StreetLight Data are based on location-based services (LBS) derived from cellular phone applications, 48-hour traffic counts were conducted at eight of the 23 study area locations as a point of comparison. The eight representative count locations were selected to have at least one



location in each TUMF zone, minimize the number of roadways accessing the land use, and to allow the most accurate representation of trips associated with the residential homes without capturing cut through traffic. The eight locations where 48-hour counts were collected are shown on **Figure 2**.

As shown on **Figure 3**, the 48-hour traffic count variation from day to day and the StreetLight Data average are very similar, giving confidence that the StreetLight Data for all study areas would be representative.

Residential Characteristics

The number of homes and characteristics for the homes within each study area were obtained from multiple sources, as summarized in **Table 1**. To identify outliers and the range of values for each variable that would be used to estimate the trip generation, plots of each study location by TUMF zone were developed and are summarized below with reference to the appropriate figure.

- **Figure 4 – Median Square Footage:** good distribution across study areas and within each TUMF zone
- **Figure 5 – Average Persons per Household:** good distribution across study areas and within each TUMF zone
- **Figure 6 – Average Children per Household:** good distribution across study areas and within each TUMF zone, including one study area that has very high children per household and another study area that has very low children per household
- **Figure 7 – Average Workers per Household:** good distribution across study areas and within each TUMF zone
- **Figure 8 – Median Cost per Square Foot:** good distribution across study areas and within each TUMF zone

Based on the review of each variable, the range across the study areas and within each TUMF zone are appropriate for use in the trip generation analysis.

Trip Generation Results

The StreetLight Data daily vehicle trips were used to visually display the relationship of each home characteristic for each study area and within each TUMF zone. The appropriate figure number and conclusion for the relationship are listed below.

- **Figure 9 – Daily Vehicle Trips per Median Square Footage:** slight increase in vehicle trips as median square footage increases
- **Figure 10 – Daily Vehicle Trips per Average Persons per Household:** slight increase in vehicle trips as total number of people per household increases



- **Figure 11 – Daily Vehicle Trips per Average Children per Household:** slight increase in vehicle trips as average number of children per household increases
- **Figure 12 – Daily Vehicle Trips per Average Workers per Household:** slight increase in vehicle trips as average number of workers per household increases
- **Figure 13 – Daily Vehicle Trips per Median Cost per Square Foot:** no clear relationship between average number of workers and trip generation

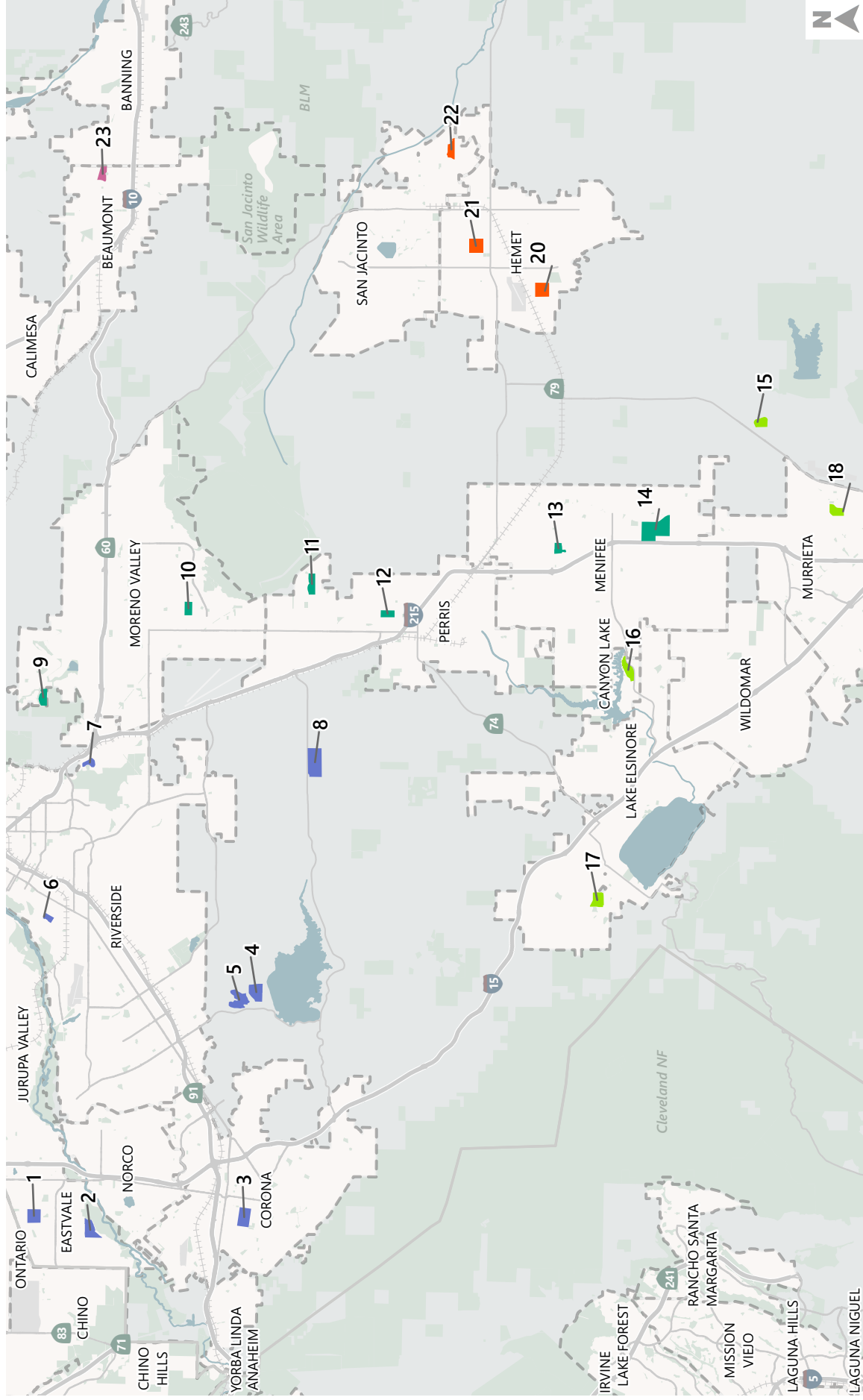
In addition to visual representations of the data, statistical analysis was performed to obtain the correlation between the variables to daily vehicle trips and to determine the regression equations.

Figure 16 – Correlation Matrix for All Variables: the correlation values in the green box for average and median home size of 0.7 indicate a strong positive correlation and mean as home size increases the number of trips increase. The correlation value of 0.7 results in an R-square of 0.49, meaning nearly half of the increase in trip generation is related to home size.

Based on Figures 10 and 11, the relationship between trip generation appeared to be linear, with the relationship possibly changing around 2,500 square feet. The linear regression analysis of average home size was performed for all home sizes, homes 2,500 square feet or smaller, and homes larger than 2,500 square feet. The results of the analysis are summarized in **Table 2**. The results show for home sizes of 2,500 square feet or less, the influence of the home size (represented by the coefficient) is nearly double that when all home sizes are included in the regression. The nearly zero coefficient and very high constant for the regression of home sizes above 2,500 square feet indicate that the trip generation is nearly constant for homes above 2,500 square feet.

Recommendations and Next Steps

Although home characteristics other than square footage have a slight increase in trip generation, the ability to forecast or control all of the characteristics other than home square footage is very difficult. Based on the results of trip generation and discussions with WRCOG regarding the feasible size of homes being constructed in the region, WRCOG will work with the TUMF fee consultant to identify and recommend appropriate fee adjustments based on square footage.



Study Location by TUMF Zone

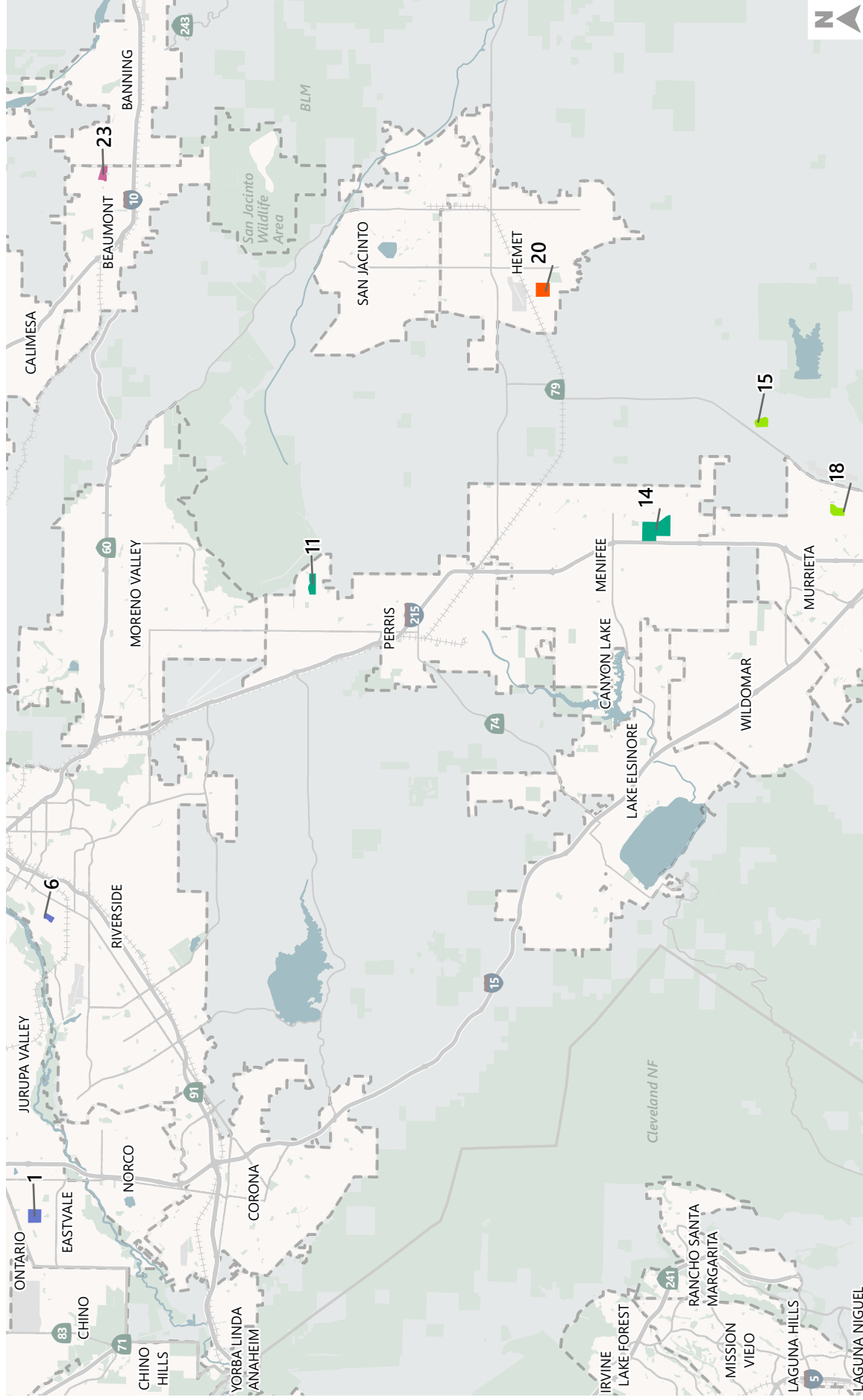
- Central
- Hemet/San Jacinto
- Northwest
- Pass
- Southwest

City Boundaries



Figure 1

StreetLight Data Collection Locations



Study Location by TUMF Zone

- Central
- Hemet/San Jacinto
- Northwest
- Pass
- Southwest

City Boundaries

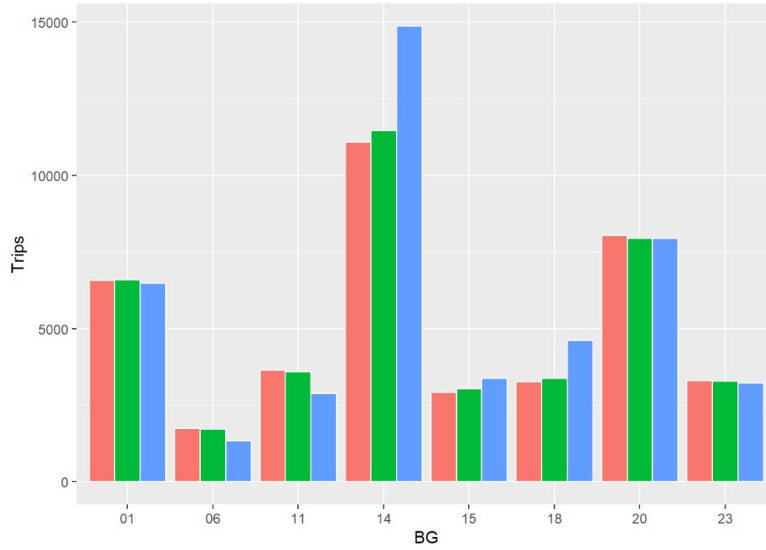


Figure 2

Traffic Count Data Collection Locations



Figure 3 – Comparison of Individual Traffic Counts and StreetLight Data Average



Note: Red and green are the two days of manual count collection and blue are the StreetLight Data average. The BG number corresponds to the number on Figure 2.

Figure 4 – Median Square Footage

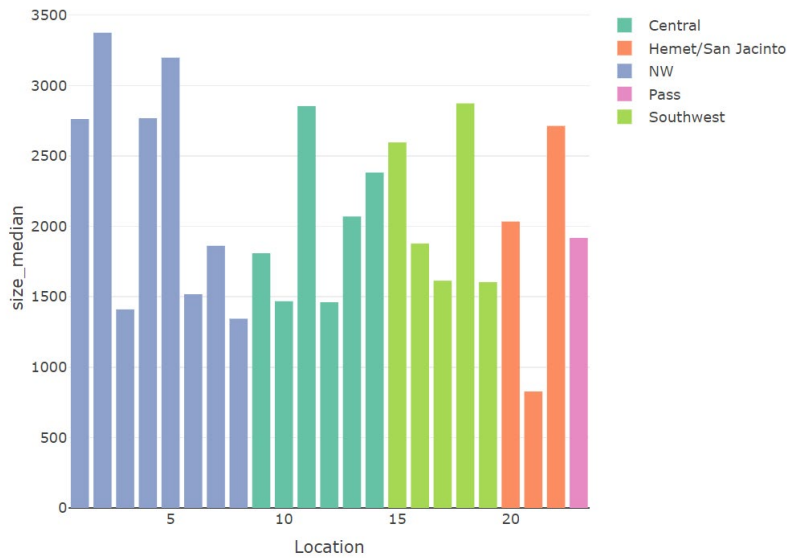




Figure 5 – Average Persons per Household

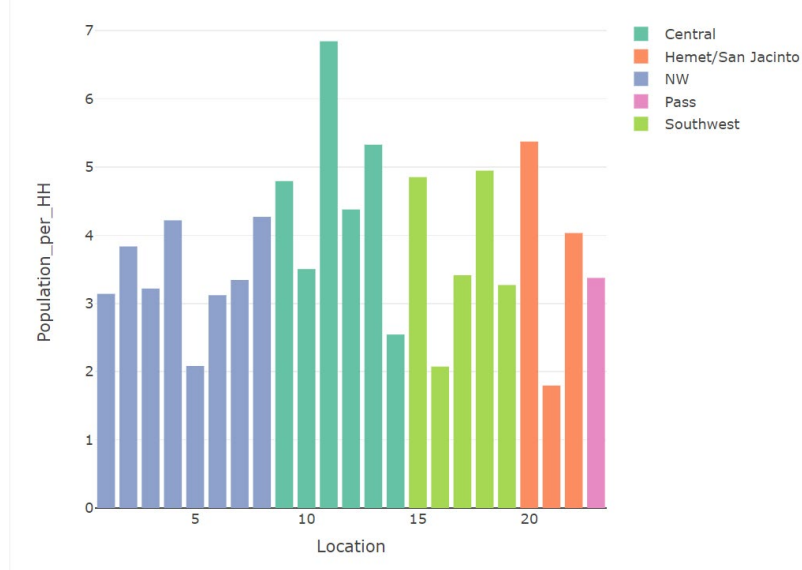


Figure 6 – Average Children per Household

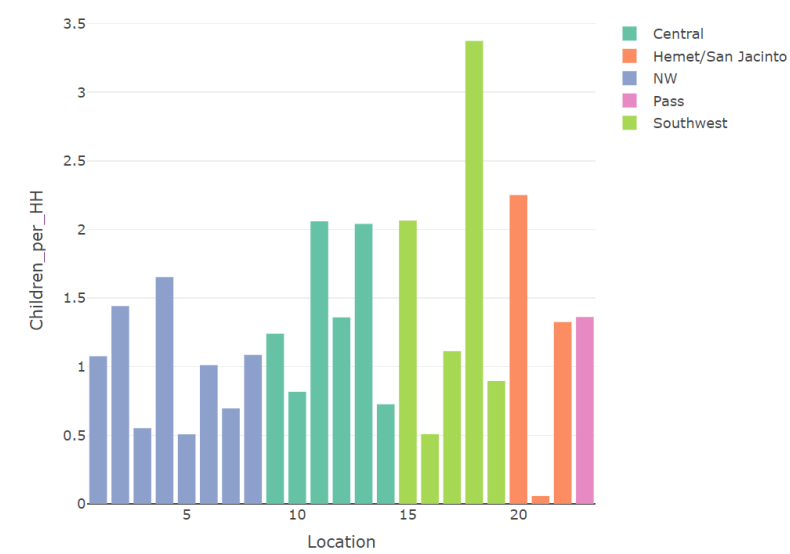




Figure 7 – Average Workers per Household

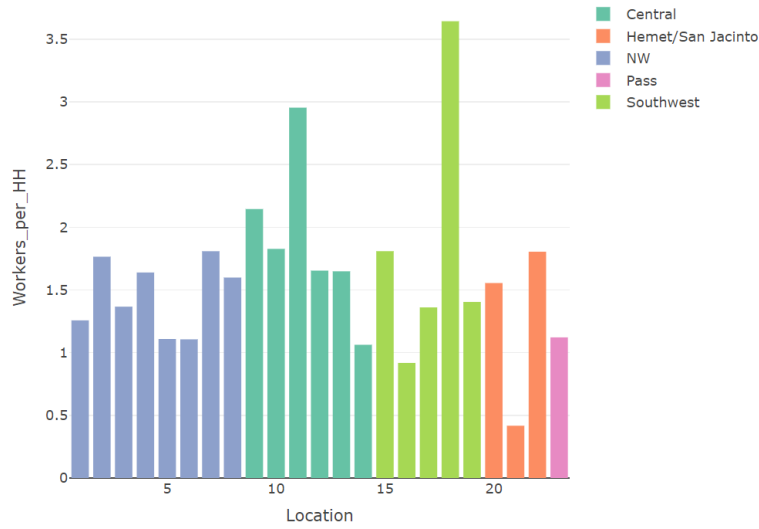


Figure 8 – Median Cost per Square Foot

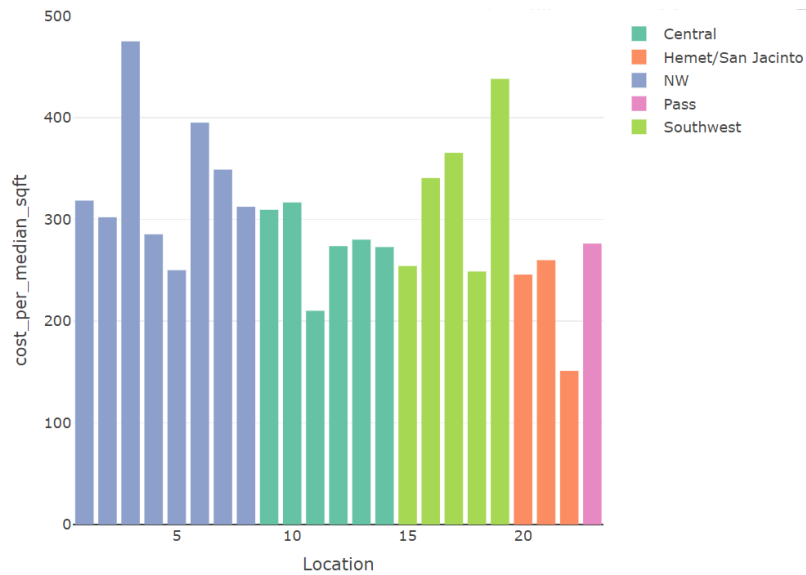




Figure 9 – Daily Vehicle Trips per Median Square Footage

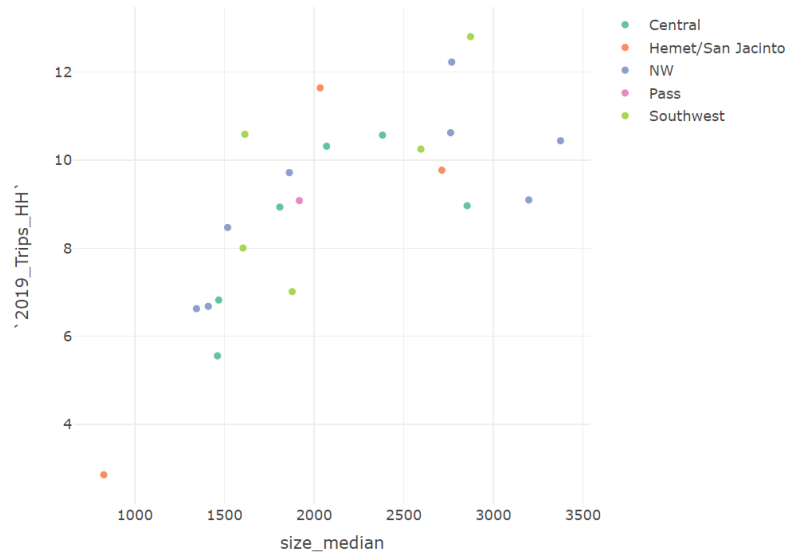


Figure 10 – Daily Vehicle Trips per Average Persons per Household

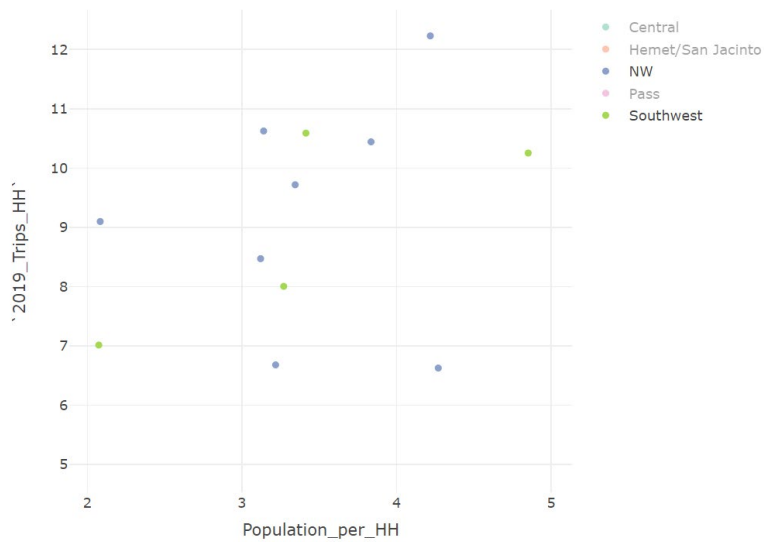




Figure 11 – Daily Vehicle Trips per Average Children per Household

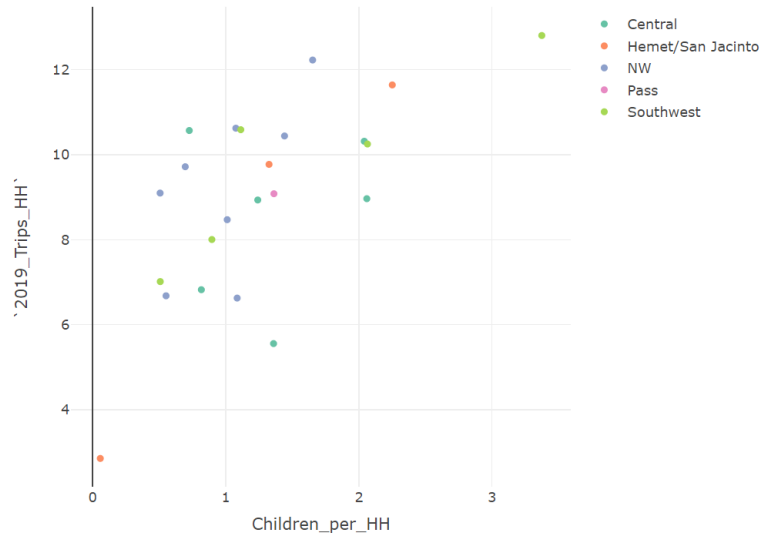


Figure 12 – Daily Vehicle Trips per Average Workers per Household

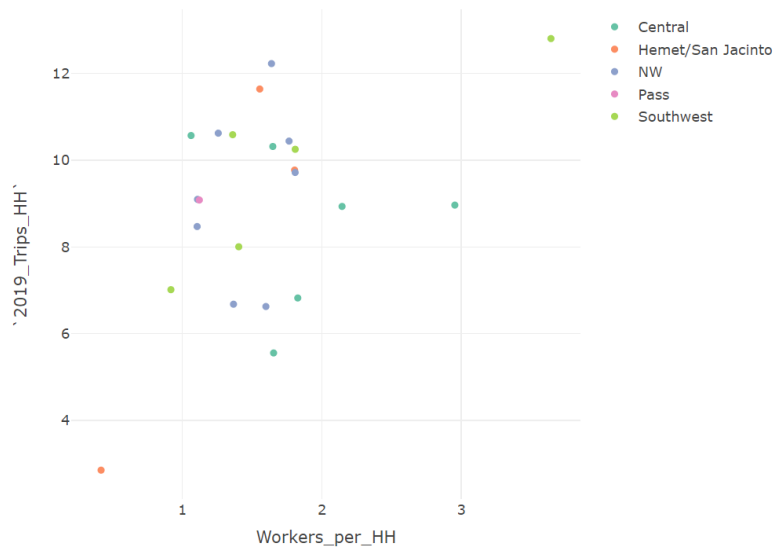




Figure 13 – Daily Vehicle Trips per Median Cost per Square Foot

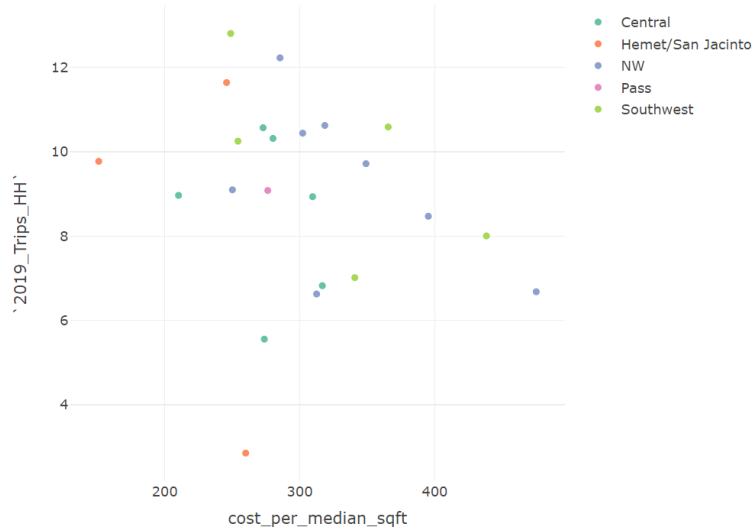


Figure 14 – Correlation Matrix for All Variables

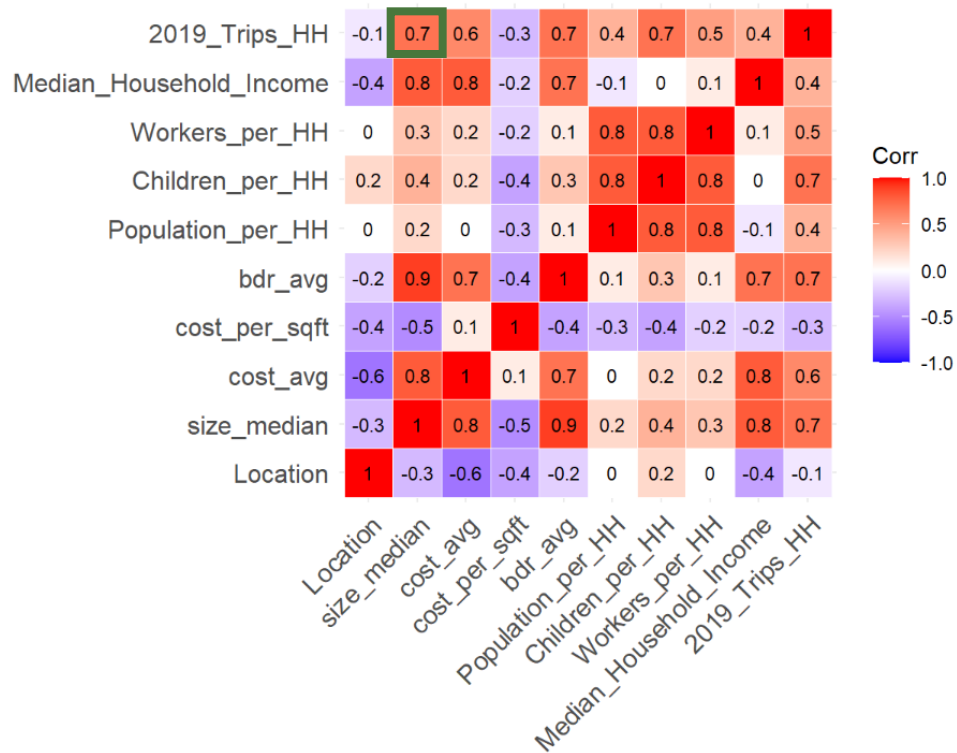




Table 1: Residential Home Data and Sources

Value	Source
Median Home Size	Zillow
Average Home Rooms	Zillow
Average Household Population	ACS 5 year and 1 year
Average Number of Children	ACS 5 year and 1 year
Average Number of Workers	ACS 5 year and 1 year
TUMF Zone	WRCOG
Average Household Income	ACS 5 year and 1 year

Table 2: Daily Total Vehicle Trip Regression Equation Summary

Home Size Variable	Coefficient	Constant	R-Squared
All home sizes			
Median Home Size (KSF)	2.26	4.22	0.507
Homes 2.5 KSF or smaller			
Median Home Size (KSF)	4.11	1.22	0.553
Homes over 2.5 KSF			
Median Home Size (KSF)	-0.3	11.57	0.007

Notes: KSF= Thousand Square Feet

Regression Equations

All home sizes.

Daily total vehicle trips = $2.26 * \text{Median Home Size in Thousand Square Feet} + 4.22$

Homes 2.5 thousand square feet or less.

Daily total vehicle trips = $4.11 * \text{Median Home Size in Thousand Square Feet} + 1.22$

Homes more than 2.5 thousand square feet.

Daily total vehicle trips = $-0.3 * \text{Median Home Size in Thousand Square Feet} + 11.57$

EXHIBIT K-3

***Multi-Family Residential Counts and Trip Generation Memorandum
Fehr & Peers, May 12, 2023***

Memorandum

Date: May 12, 2023

To: Christopher Gray - WRCOG
Chris Tzeng – WRCOG

From: Jason D. Pack, P.E.
Delia Votsch, P.E.
Raymond Poss

Subject: **DRAFT TUMF Multifamily Residential Counts and Trip Generation**
Task Order No. 2022-65-1400-004-007

OC23-0955

This memorandum summarizes the goals, data collection and analyses, key findings, and recommendations regarding the evaluation of multifamily development characteristics and trip generation. This memo is intended to inform the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) guidelines on the relationship between multifamily trip generation, number of bedrooms per dwelling unit, and average size of dwelling unit.

Key Findings

Questions answered through the data analyses and findings are listed below.

- Are the size of the dwelling unit or number of bedrooms in a dwelling unit key predictors of residential multifamily trip generation? **No, the size of dwelling unit nor the number of bedrooms in a dwelling unit are key predictors of trip generation.**
- Are there other characteristics that have a higher predictive relationship than the number of dwelling units? **No, the number of dwelling units has the highest predictive relationship.**
- Are there recommended changes to the TUMF program or fee calculations based on the findings? If so, what is the potential impact to the TUMF collection process and to developers? **No, it is not recommended that TUMF be updated from basing multifamily development fees on number of dwelling units.**



Background

Western Riverside Council of Governments (WRCOG) provides local roadway funding in part through collection of fees through the Transportation Uniform Mitigation Fee (TUMF) program as part of new developments. These fees vary based on the level of impact the new development will have on traffic as determined by the characteristics of the development. The impact fee for multifamily residential developments is currently determined by the number of dwelling units (DUs).

As required by new state legislature (AB-602), agencies are required to account for the size of the dwelling unit when developing impact fees. As such, Fehr & Peers was contracted to evaluate the relationship between trips generated by multifamily apartment complexes to determine if attributes other than number of dwelling units, including number bedrooms per dwelling unit and average size of dwelling unit, significantly affect trip generation.

Data Collection

This section describes the data used to evaluate multifamily trip generation, including the selection of locations and methods for collecting trip data, apartment characteristics, and regional Census data.

Study Selection Area

To evaluate the effect of dwelling unit size and number of dwelling unit bedrooms on multifamily trip generation, the following criteria were used to select the apartment complexes within Western Riverside County:

- Minimum of one complex per TUMF Zone (five zones total)
- Complexes not within a Transit Priority Area (TPA)
- Complexes not near a college or university

Through discussions and review of each location with WRCOG, Fehr & Peers narrowed the study locations to 12 multifamily apartment complexes as shown on **Figure 1**.

Travel Activity

Trips were observed at each of the 12 complexes by collecting vehicle counts during typical weekdays at each driveway over a three-day period. Trip observations for each complex were averaged over the three-day period and summarized below in **Table 1** for Daily, AM Peak Period, and PM Peak Period counts. Raw data counts taken over the three-day period can be found

Appendix A.

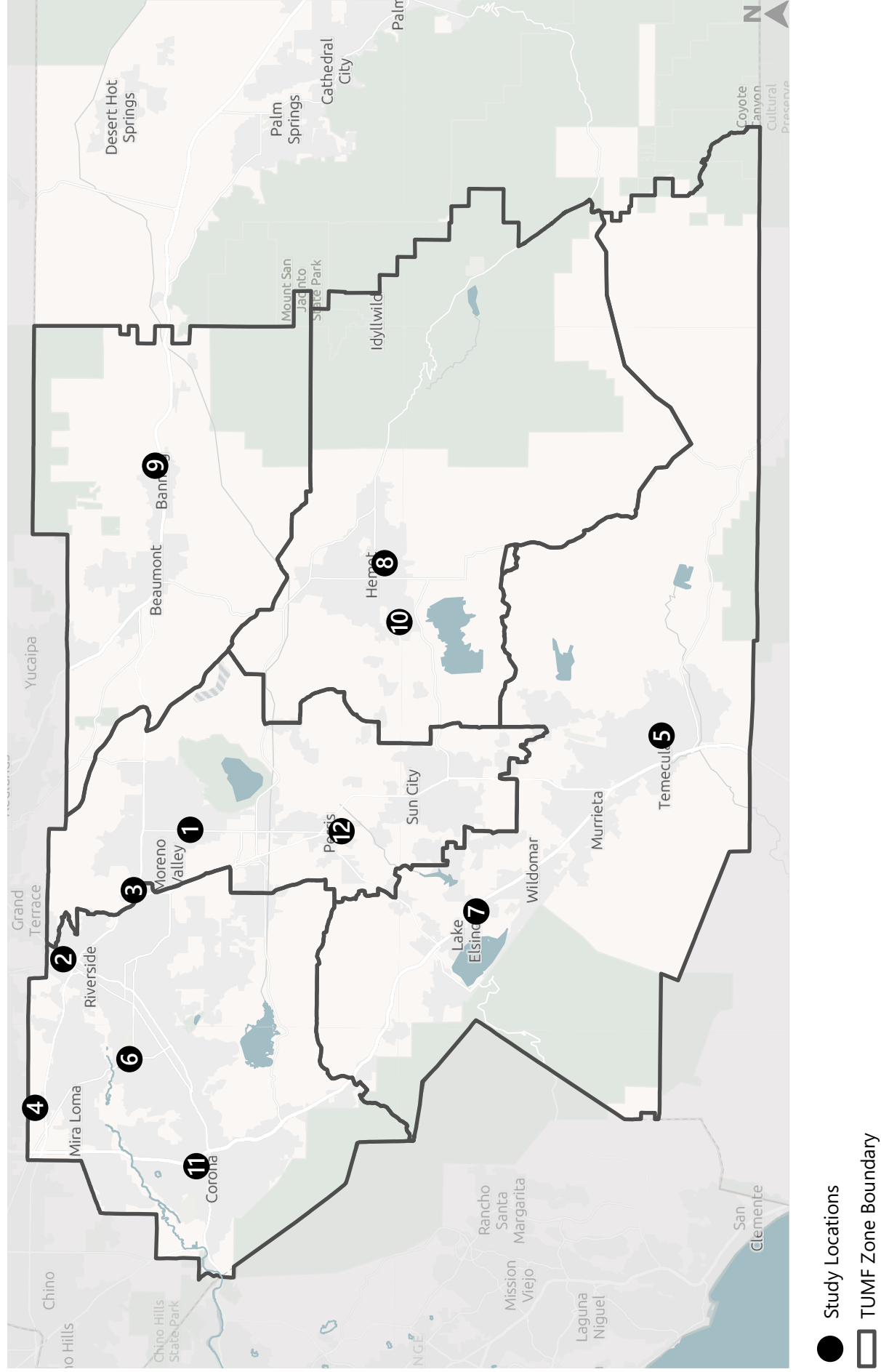


Figure 1





Table 1: Multifamily Complex Trip Observations

Study Site #	Location Name	Daily Trips			AM Peak			PM Peak		
		Trips	% In	% Out	Trip Rate	In %	Out %	Trip Rate	In %	Out %
1	Oakwood Apartments	2,089	50%	50%	168	40%	60%	170	56%	44%
2	Springbrook Park Apartments	841	50%	50%	68	34%	66%	69	58%	42%
3	Vista Springs Apartments	1,117	49%	51%	106	36%	64%	82	55%	45%
4	Vesada Apartment Homes	1,625	50%	50%	126	35%	65%	126	62%	38%
5	Morning Ridge Apartments	1,130	51%	49%	88	30%	70%	102	59%	41%
6	Stonegate Apartments	952	56%	44%	67	42%	58%	81	64%	36%
7	River's Edge Apartment Homes	1,045	50%	50%	93	34%	66%	91	57%	43%
8	Mayberry Colony Apartments	616	50%	50%	49	39%	61%	54	52%	48%
9	Summit Ridge Apartments	777	50%	50%	67	39%	61%	57	54%	46%
10	Riverdale Apartments	737	50%	50%	65	32%	68%	67	57%	43%
11	Parkridge Meadows Apartments	744	50%	50%	58	34%	66%	54	63%	37%
12	Hunt Club Apartments	1,422	51%	49%	143	36%	64%	106	60%	40%

Source: Fehr & Peers (2023)



Residential Characteristics

Apartment characteristics, listed below, were obtained from a variety of sources, including conversations with apartment leasing agents, property webpages, Census data, Zillow.com, and the Assessor's Office of Riverside County web page.

- Number of dwelling units
- Number of apartment styles (i.e., number of one-bedroom units, two-bedroom units, etc.)
- Average size (square footage) of dwelling units
- Average number of bedrooms per dwelling unit
- Median monthly household income by Census Tract
- Average number of persons per household by Census Tract
- Proximity to nearest public school

The average size of each dwelling unit was calculated by dividing the total size of all combined dwelling units by the total number of dwelling units. Similarly, the average number of bedrooms per dwelling unit were calculated by dividing the total number of bedrooms by the number of dwelling units. These apartment characteristics are shown below in **Table 2**. Specific information related to each apartment complex are provided in **Appendix B**.



Table 2: Apartment Characteristics

Study Site #	Location Name	# of DUs	Average Size of DU (Sq. Ft.)	Average Number of Bedrooms	Median Monthly Household Income (Dollars)	Average # of Persons per Household	Proximity to Nearest School (Mi)
1	Oakwood Apartments	241	1,040	3.0	\$65,240	3.92	0.2
2	Springbrook Park Apartments	112	955	2.0	\$77,148	3.6	0.5
3	Vista Springs Apartments	212	822	1.5	\$74,333	3.3	0.7
4	Vesada Apartment Homes	261	938	1.7	\$79,199	4.53	1.1
5	Morning Ridge Apartments	200	850	1.6	\$63,279	2.73	0.6
6	Stonegate Apartments	160	802	1.5	\$68,250	3.14	0.7
7	River's Edge Apartment Homes	184	918	1.5	\$78,222	3.74	0.4
8	Mayberry Colony Apartments	89	896	1.6	\$51,653	3.71	0.7
9	Summit Ridge Apartments	80	529	2.5	\$43,100	3.47	0.3
10	Riverdale Apartments	96	1,015	2.6	\$87,532	4.33	0.3
11	Parkridge Meadows Apartments	88	771	2.0	\$74,886	3.53	0.1
12	Hunt Club Apartments	203	962	2.0	\$58,200	4.5	0.8

Sources: Fehr & Peers (2023), U.S. Census Bureau 5-Year American Community Survey (2016-2021), Zillow.com (2023), Riverside County Assessor (2023)



Trip Generation Analysis

Using the data described above, a statistical analysis, including a regression and correlation assessment, was performed to evaluate if a statistically significant relationship exists between multifamily trip generation and the following variables to determine if an update to the development fee calculation was justified.

- Number of dwelling units
- Average size of dwelling units
- Average number of bedrooms per dwelling unit
- Median monthly income
- Average number of persons per household
- Proximity to nearest public school

Correlation Analysis

A correlation analysis was also performed to determine if a one-to-one relationship exists between daily trip generation and an apartment characteristic listed above. **Figure 2**, below, shows the results of the correlation analysis, with darker green cells representing a stronger, positive correlation.

The correlation analysis indicates that daily trip generation has a **strong, positive correlation with the number of dwelling units** and a **moderate, positive correlation with average size of dwelling unit**. All other variables are indicated to have a weak or very weak positive correlation with trip generation.



Figure 2: Trip Generation Correlation Matrix

	Total Vehicles	# of DUs	Average # of Bedrooms per DU	Average DU Size (Sq. Ft.)	Median Monthly Income	Average Household Size	Proximity to Nearest School
Total Vehicles	1.00	0.87	0.29	0.46	0.06	0.34	0.21
# of DUs	0.87	1.00	-0.17	0.43	0.20	0.18	0.51
Average # of Bedrooms per DU	0.29	-0.17	1.00	0.13	-0.09	0.36	-0.60
Average DU Size (Sq. Ft.)	0.46	0.43	0.13	1.00	0.55	0.51	0.16
Median Monthly Income	0.06	0.20	-0.09	0.55	1.00	0.25	-0.02
Average Household Size	0.34	0.18	0.36	0.51	0.25	1.00	0.21
Proximity to Nearest School	0.21	0.51	-0.60	0.16	-0.02	0.21	1.00

Source: Fehr & Peers (2023)

Regression Analysis

An ordinary least squares regression at a 95% confidence interval was performed on the above variables against daily trip generation to screen out variables that yielded statistically insignificant results. The results of the first regression are shown in **Table 3**.



Table 3: Regression Results

Variable	P-Value ¹	Statistically Significant
Number of dwelling units	<0.05	Yes
Average size (square footage) of dwelling units	>0.05	No
Average number of bedrooms per dwelling unit	<0.05	Yes
Median monthly household income	>0.05	No
Average number of persons per household	>0.05	No
Proximity to nearest public school	>0.05	No

Source: Fehr & Peers (2023)

1. P-Values < 0.05 are considered statistically significant. P-Values > 0.05 are considered statistically insignificant.

A subsequent regression was run with the least statistically significant (highest P-value) variable removed. This process was repeated until all remaining variables yielded statistically significant P-values (less than 0.05), resulting in the number of dwelling units and average size of dwelling unit as the remaining variables. The P-Values for these variables are shown below in **Table 4**.

Table 4: Filtered Regression Results

Variable	P-Value ¹	Statistically Significant
Number of dwelling units	4.8×10^{-07}	Yes
Average size (square footage) of dwelling units	0.0002	Yes

Source: Fehr & Peers (2023)

1. P-Values < 0.05 are considered statistically significant. P-Values > 0.05 are considered statistically insignificant.

The regression analysis indicates that **number of dwelling units** and **average size of dwelling unit** are statistically significant predictors of multifamily trip generation.

To validate these results, a forward stepwise regression was also completed. A forward stepwise regression is completed by beginning with no variables in the model, and then adding them one at a time based on which has the smallest p-value when tested one at a time. This isolates any possible relationships between the variables and further helps confirm if the vehicle trip rate has a statistically valid correlation to the variables tested.



Table 5: Forward Stepwise Regression Results

Variable	Relationship Rank ¹	P-Value ²	Statistically Significant
Average size (square footage) of dwelling units	4	0.377	Yes
Average number of bedrooms per dwelling unit	1	0.0008	No
Median monthly household income	3	0.249	Yes
Average number of persons per household	5	0.509	Yes
Proximity to nearest public school	2	0.0239	No

Source: Fehr & Peers (2023)

1. Relationship rank indicates which variable has the strongest correlation with daily vehicle trip rate.
2. P-Values < 0.05 are considered statistically significant. P-Values > 0.05 are considered statistically insignificant.

As noted in Table 5, the variables with the strongest relationship to daily vehicle trip rate (number of bedrooms and distance to nearest school) are not statistically significant.

Trip Generation Results

In both the regression and correlation analyses, the number of dwelling units was found to be the strongest predictor of daily trip generation. All other variables had positive but weaker correlations to daily trip generation, and none were found to be statistically significant predictors of multifamily daily trip generation under both regression analyses.

Table 6: Summary of Trip Generation Results

Variable	Overall Relationship Ranking ¹	Statistically Significant	
		Filtered Regression	Forward Regression
Number of Dwelling Units	1	Yes	Yes
Average number of bedrooms per dwelling unit	2	Yes	No
Proximity to nearest public school	3	No	No
Average size (square footage) of dwelling units	4	No	Yes
Average number of persons per household	5	No	Yes
Median monthly household income	6	No	Yes

Source: Fehr & Peers (2023)

1. Overall relationship rank indicates which variable has the strongest relationship with daily vehicle trip rate under the correlation and forward stepwise regression analyses.



Recommendations and Next Steps

The results of this statistical analysis indicate that the best predictor of trip generation for multifamily apartment complexes in Western Riverside County is the number of dwelling units (the current basis for development fee calculation). Although other variables showed a positive correlation with trip generation, none yielded as strong a relationship. Based on this statistical analysis, it is not recommended that these other variables be incorporated into the TUMF program.



Appendix A: Three-Day Trip Observations

A021323

Study Site 1 - Oakwood Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS79 Southern Dwy east of Perris.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	1	0	0	0	0	1
0:15	0	0	0	0	0	0	12:15	0	0	0	0	0	0
0:30	1	0	0	0	0	1	12:30	1	0	1	0	0	2
0:45	0	0	0	0	0	0	12:45	0	1	0	0	0	1
1:00	1	0	0	0	0	1	13:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0	13:15	0	0	0	0	0	0
1:30	1	0	0	0	0	1	13:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0	13:45	2	0	0	0	0	2
2:00	0	0	0	0	0	0	14:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0	14:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0	14:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0	14:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0	15:00	1	0	0	0	0	1
3:15	0	0	0	0	0	0	15:15	0	2	0	0	0	2
3:30	1	0	0	0	0	1	15:30	2	2	0	0	0	4
3:45	0	0	0	0	0	0	15:45	2	0	0	0	0	2
4:00	0	0	0	0	0	0	16:00	1	0	0	0	0	1
4:15	0	0	0	0	0	0	16:15	2	0	0	0	0	2
4:30	0	0	0	0	0	0	16:30	1	0	0	0	0	1
4:45	0	0	0	0	0	0	16:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0	17:00	2	0	0	0	0	2
5:15	1	0	0	0	0	1	17:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0	17:30	1	0	0	0	0	1
5:45	0	0	0	0	0	0	17:45	1	0	0	0	0	1
6:00	1	0	0	0	0	1	18:00	0	0	0	0	0	0
6:15	0	0	0	0	0	0	18:15	2	0	0	0	0	2
6:30	0	0	0	0	0	0	18:30	1	0	0	0	0	1
6:45	0	0	0	0	0	0	18:45	0	0	0	0	0	0
7:00	1	0	0	0	0	1	19:00	3	1	0	0	0	4
7:15	0	3	0	0	0	3	19:15	0	0	0	0	0	0
7:30	0	0	0	0	0	0	19:30	0	0	0	0	0	0
7:45	0	0	0	0	0	0	19:45	1	0	0	0	0	1
8:00	0	0	0	0	0	0	20:00	0	0	0	0	0	0
8:15	0	0	0	0	0	0	20:15	1	0	0	0	0	1
8:30	0	0	0	0	0	0	20:30	0	0	0	0	0	0
8:45	0	0	0	0	0	0	20:45	0	0	0	0	0	0
9:00	0	0	0	0	0	0	21:00	0	0	0	0	0	0
9:15	2	0	0	0	0	2	21:15	1	0	0	0	0	1
9:30	2	1	0	0	0	3	21:30	1	0	0	0	0	1
9:45	0	0	0	0	0	0	21:45	0	0	0	0	0	0
10:00	1	1	0	0	0	2	22:00	1	0	0	0	0	1
10:15	0	0	0	0	0	0	22:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0	22:30	1	0	0	0	0	1
10:45	1	0	0	0	0	1	22:45	0	0	0	0	0	0
11:00	1	0	0	0	0	1	23:00	0	0	0	0	0	0
11:15	1	0	0	0	0	1	23:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0	23:30	0	0	0	0	0	0
11:45	1	0	0	0	0	1	23:45	0	0	0	0	0	0
TOTAL	17	5	0	0	0	22	TOTAL	29	6	1	0	0	36
						AM PEAK HOUR							AM PEAK HOUR
						9:15 AM							3:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						7							9

CLASS 1	CARS	TOTAL: AM+PM	46	11	1	0	0	58
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	79.3%	19.0%	1.7%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	1	3	0	0	0	4
CLASS 4	4-AXLE TRUCKS	PM PEAK	5	0	0	0	0	5
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 1 - Oakwood Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS79 Southern Dwy east of Perris.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	1	0	0	0	0	1
0:15	0	0	0	0	0	0	12:15	0	0	0	0	0	0
0:30	1	0	0	0	0	1	12:30	1	0	1	0	0	2
0:45	0	0	0	0	0	0	12:45	0	0	0	0	0	0
1:00	1	0	0	0	0	1	13:00	0	1	0	0	0	1
1:15	0	0	0	0	0	0	13:15	0	0	0	0	0	0
1:30	1	0	0	0	0	1	13:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0	13:45	2	0	0	0	0	2
2:00	0	0	0	0	0	0	14:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0	14:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0	14:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0	14:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0	15:00	1	0	0	0	0	1
3:15	0	0	0	0	0	0	15:15	0	2	0	0	0	2
3:30	0	0	0	0	0	0	15:30	1	1	0	0	0	2
3:45	1	0	0	0	0	1	15:45	3	1	0	0	0	4
4:00	0	0	0	0	0	0	16:00	1	0	0	0	0	1
4:15	0	0	0	0	0	0	16:15	3	0	0	0	0	3
4:30	0	0	0	0	0	0	16:30	1	0	0	0	0	1
4:45	0	0	0	0	0	0	16:45	0	0	0	0	0	0
5:00	1	0	0	0	0	1	17:00	2	0	0	0	0	2
5:15	1	0	0	0	0	1	17:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0	17:30	1	0	0	0	0	1
5:45	0	0	0	0	0	0	17:45	1	0	0	0	0	1
6:00	1	0	0	0	0	1	18:00	1	0	0	0	0	1
6:15	0	0	0	0	0	0	18:15	1	0	0	0	0	1
6:30	0	0	0	0	0	0	18:30	3	0	0	0	0	3
6:45	0	0	0	0	0	0	18:45	0	0	0	0	0	0
7:00	1	0	0	0	0	1	19:00	2	1	0	0	0	3
7:15	0	3	0	0	0	3	19:15	1	0	0	0	0	1
7:30	0	0	0	0	0	0	19:30	0	0	0	0	0	0
7:45	0	0	0	0	0	0	19:45	1	0	0	0	0	1
8:00	0	0	0	0	0	0	20:00	0	0	0	0	0	0
8:15	0	0	0	0	0	0	20:15	1	0	0	0	0	1
8:30	0	0	0	0	0	0	20:30	0	0	0	0	0	0
8:45	0	0	0	0	0	0	20:45	0	0	0	0	0	0
9:00	0	0	0	0	0	0	21:00	0	0	0	0	0	0
9:15	2	0	0	0	0	2	21:15	1	0	0	0	0	1
9:30	2	1	0	0	0	3	21:30	0	0	0	0	0	0
9:45	0	0	0	0	0	0	21:45	1	0	0	0	0	1
10:00	1	1	0	0	0	2	22:00	1	0	0	0	0	1
10:15	0	0	0	0	0	0	22:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0	22:30	1	0	0	0	0	1
10:45	2	0	0	0	0	2	22:45	0	0	0	0	0	0
11:00	1	0	0	0	0	1	23:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0	23:15	0	0	0	0	0	0
11:30	1	0	0	0	0	1	23:30	0	0	0	0	0	0
11:45	1	0	0	0	0	1	23:45	0	0	0	0	0	0
TOTAL	19	5	0	0	0	24	TOTAL	32	6	1	0	0	39
			AM PEAK HOUR			9:15 AM				AM PEAK HOUR			3:30 PM
			AM PEAK VOLUME			7				AM PEAK VOLUME			10

CLASS 1	CARS	TOTAL: AM+PM	51	11	1	0	0	63
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	81.0%	17.5%	1.6%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	1	3	0	0	0	4
CLASS 4	4-AXLE TRUCKS	PM PEAK	6	0	0	0	0	6
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 1 - Oakwood Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS80 Northern Dwy east of Perris.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	9	0	0	0	0	9	12:00	35	0	0	0	0	35
0:15	6	0	0	0	0	6	12:15	42	1	0	0	0	43
0:30	20	0	0	0	0	20	12:30	36	1	1	0	0	38
0:45	12	0	0	0	0	12	12:45	58	0	0	0	0	58
1:00	16	0	0	0	0	16	13:00	44	0	0	0	0	44
1:15	5	0	0	0	0	5	13:15	39	1	0	0	0	40
1:30	5	0	0	0	0	5	13:30	38	0	0	0	0	38
1:45	7	0	0	0	0	7	13:45	55	0	0	0	0	55
2:00	7	0	0	0	0	7	14:00	44	0	0	0	0	44
2:15	2	0	0	0	0	2	14:15	65	0	0	0	0	65
2:30	2	0	0	0	0	2	14:30	51	0	0	0	0	51
2:45	4	0	0	0	0	4	14:45	63	0	0	0	0	63
3:00	1	0	0	0	0	1	15:00	53	0	0	0	0	53
3:15	2	0	0	0	0	2	15:15	64	2	0	0	0	66
3:30	5	0	0	0	0	5	15:30	66	2	0	0	0	68
3:45	0	0	0	0	0	0	15:45	75	1	0	0	0	76
4:00	6	0	0	0	0	6	16:00	73	0	0	0	0	73
4:15	9	0	0	0	0	9	16:15	67	0	0	0	0	67
4:30	1	0	0	0	0	1	16:30	62	0	0	0	0	62
4:45	2	0	0	0	0	2	16:45	80	0	0	0	0	80
5:00	8	0	0	0	0	8	17:00	48	2	0	0	0	50
5:15	7	0	0	0	0	7	17:15	68	0	0	0	0	68
5:30	5	0	0	0	0	5	17:30	53	0	0	0	0	53
5:45	11	0	0	0	0	11	17:45	60	0	0	0	0	60
6:00	9	0	0	0	0	9	18:00	79	0	0	0	0	79
6:15	11	0	0	0	0	11	18:15	70	0	0	0	0	70
6:30	8	0	0	0	0	8	18:30	60	0	0	0	0	60
6:45	13	0	0	0	0	13	18:45	54	0	0	0	0	54
7:00	10	0	0	0	0	10	19:00	53	0	0	0	0	53
7:15	29	0	0	0	0	29	19:15	43	0	0	0	0	43
7:30	48	0	0	0	0	48	19:30	38	0	0	0	0	38
7:45	70	0	0	0	0	70	19:45	35	0	0	0	0	35
8:00	52	0	0	0	0	52	20:00	48	0	0	0	0	48
8:15	27	0	0	0	0	27	20:15	38	0	0	0	0	38
8:30	52	0	0	0	0	52	20:30	38	0	0	0	0	38
8:45	36	0	1	0	0	37	20:45	32	0	0	0	0	32
9:00	21	1	0	0	0	22	21:00	47	0	0	0	0	47
9:15	19	1	0	0	0	20	21:15	36	0	0	0	0	36
9:30	22	0	0	0	0	22	21:30	35	0	0	0	0	35
9:45	29	1	0	0	0	30	21:45	25	0	0	0	0	25
10:00	28	1	0	0	0	29	22:00	35	0	0	0	0	35
10:15	24	0	0	0	0	24	22:15	24	0	0	0	0	24
10:30	24	0	0	0	0	24	22:30	23	0	0	0	0	23
10:45	35	0	0	0	0	35	22:45	21	0	0	0	0	21
11:00	31	0	0	0	0	31	23:00	16	0	0	0	0	16
11:15	16	0	0	0	0	16	23:15	30	0	0	0	0	30
11:30	20	0	0	0	0	20	23:30	10	0	0	0	0	10
11:45	29	3	0	0	0	32	23:45	17	0	0	0	0	17
TOTAL	815	7	1	0	0	823	TOTAL	2,246	10	1	0	0	2,257
			AM PEAK HOUR			7:45 AM				AM PEAK HOUR			3:30 PM
			AM PEAK VOLUME			201				AM PEAK VOLUME			284

CLASS 1	CARS	TOTAL: AM+PM	3,061	17	2	0	0	3,080
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.4%	0.6%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	201	0	0	0	0	201
CLASS 4	4-AXLE TRUCKS	PM PEAK	282	0	0	0	0	282
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 1 - Oakwood Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS80 Northern Dwy east of Perris.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	5	1	0	0	0	6	12:00	59	1	0	0	0	60
0:15	8	0	0	0	0	8	12:15	38	2	0	0	0	40
0:30	7	0	0	0	0	7	12:30	34	0	0	0	0	34
0:45	7	0	0	0	0	7	12:45	32	1	0	0	0	33
1:00	5	1	0	0	0	6	13:00	40	0	0	0	0	40
1:15	6	0	0	0	0	6	13:15	47	0	1	0	0	48
1:30	3	0	0	0	0	3	13:30	51	1	0	0	0	52
1:45	5	0	0	0	0	5	13:45	46	0	0	0	0	46
2:00	3	0	0	0	0	3	14:00	60	0	0	0	0	60
2:15	2	0	0	0	0	2	14:15	49	0	0	0	0	49
2:30	1	0	0	0	0	1	14:30	52	0	0	0	0	52
2:45	3	0	0	0	0	3	14:45	48	0	0	0	0	48
3:00	2	0	0	0	0	2	15:00	57	0	0	0	0	57
3:15	4	0	0	0	0	4	15:15	56	0	0	0	0	56
3:30	5	0	0	0	0	5	15:30	61	1	0	0	0	62
3:45	10	0	0	0	0	10	15:45	37	0	0	0	0	37
4:00	14	0	0	0	0	14	16:00	71	0	0	0	0	71
4:15	17	0	0	0	0	17	16:15	39	0	0	0	0	39
4:30	20	0	0	0	0	20	16:30	53	1	0	0	0	54
4:45	11	0	0	0	0	11	16:45	53	0	0	0	0	53
5:00	15	0	0	0	0	15	17:00	63	0	0	0	0	63
5:15	19	0	0	0	0	19	17:15	46	1	0	0	0	47
5:30	21	0	0	0	0	21	17:30	48	0	0	0	0	48
5:45	23	0	0	0	0	23	17:45	42	0	0	0	0	42
6:00	28	0	0	0	0	28	18:00	48	0	0	0	0	48
6:15	29	0	0	0	0	29	18:15	57	0	0	0	0	57
6:30	27	0	0	0	0	27	18:30	30	0	0	0	0	30
6:45	38	0	0	0	0	38	18:45	33	0	0	0	0	33
7:00	48	0	0	0	0	48	19:00	41	0	0	0	0	41
7:15	79	0	0	0	0	79	19:15	20	0	0	0	0	20
7:30	82	0	0	0	0	82	19:30	32	1	0	0	0	33
7:45	78	0	0	0	0	78	19:45	33	0	0	0	0	33
8:00	57	0	0	0	0	57	20:00	33	0	0	0	0	33
8:15	61	0	0	0	0	61	20:15	31	0	0	0	0	31
8:30	36	1	0	0	0	37	20:30	32	1	0	0	0	33
8:45	34	0	0	0	0	34	20:45	35	0	0	0	0	35
9:00	27	0	0	0	0	27	21:00	29	0	0	0	0	29
9:15	33	0	0	0	0	33	21:15	24	0	0	0	0	24
9:30	27	2	1	0	0	30	21:30	28	0	0	0	0	28
9:45	44	1	0	0	0	45	21:45	24	0	0	0	0	24
10:00	28	1	0	0	0	29	22:00	19	0	0	0	0	19
10:15	39	1	0	0	0	40	22:15	14	0	0	0	0	14
10:30	27	2	0	0	0	29	22:30	16	0	0	0	0	16
10:45	32	0	0	0	0	32	22:45	16	0	0	0	0	16
11:00	36	0	0	0	0	36	23:00	16	0	0	0	0	16
11:15	37	0	0	0	0	37	23:15	19	0	0	0	0	19
11:30	26	0	0	0	0	26	23:30	8	0	0	0	0	8
11:45	39	1	0	0	0	40	23:45	13	0	0	0	0	13
TOTAL	1,208	11	1	0	0	1,220	TOTAL	1,833	10	1	0	0	1,844
						AM PEAK HOUR							AM PEAK HOUR
						7:15 AM							3:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						296							226

CLASS 1	CARS	TOTAL: AM+PM	3,041	21	2	0	0	3,064
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.2%	0.7%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	296	0	0	0	0	296
CLASS 4	4-AXLE TRUCKS	PM PEAK	216	1	0	0	0	217
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 2 - Springbrook Park Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS75 Eastern Dwy south of Orange.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	6	0	0	0	0	6
0:15	1	0	0	0	0	1	12:15	6	0	0	0	0	6
0:30	1	0	0	0	0	1	12:30	4	0	0	0	0	4
0:45	2	0	0	0	0	2	12:45	7	1	0	0	0	8
1:00	1	0	0	0	0	1	13:00	7	0	0	0	0	7
1:15	1	0	0	0	0	1	13:15	7	0	0	0	0	7
1:30	1	0	0	0	0	1	13:30	8	0	0	0	0	8
1:45	1	0	0	0	0	1	13:45	10	0	0	0	0	10
2:00	0	0	0	0	0	0	14:00	8	0	0	0	0	8
2:15	3	0	0	0	0	3	14:15	6	1	0	0	0	7
2:30	0	0	0	0	0	0	14:30	17	1	0	0	0	18
2:45	0	0	0	0	0	0	14:45	8	0	0	0	0	8
3:00	0	0	0	0	0	0	15:00	11	0	0	0	0	11
3:15	1	0	0	0	0	1	15:15	5	0	0	0	0	5
3:30	1	0	0	0	0	1	15:30	16	0	0	0	0	16
3:45	3	0	0	0	0	3	15:45	22	0	0	0	0	22
4:00	0	0	0	0	0	0	16:00	10	0	0	0	0	10
4:15	1	0	0	0	0	1	16:15	9	2	0	0	0	11
4:30	3	0	0	0	0	3	16:30	14	0	0	0	0	14
4:45	2	0	0	0	0	2	16:45	11	0	0	0	0	11
5:00	1	0	0	0	0	1	17:00	10	0	0	0	0	10
5:15	0	0	0	0	0	0	17:15	12	0	0	0	0	12
5:30	2	0	0	0	0	2	17:30	17	0	0	0	0	17
5:45	3	0	0	0	0	3	17:45	11	0	0	0	0	11
6:00	4	0	0	0	0	4	18:00	5	0	0	0	0	5
6:15	1	3	0	0	0	4	18:15	7	0	0	0	0	7
6:30	0	0	0	0	0	0	18:30	15	0	0	0	0	15
6:45	2	1	0	0	0	3	18:45	13	0	0	0	0	13
7:00	4	2	0	0	0	6	19:00	8	0	0	0	0	8
7:15	4	3	0	0	0	7	19:15	9	0	0	0	0	9
7:30	4	0	0	0	0	4	19:30	9	0	0	0	0	9
7:45	5	0	0	0	0	5	19:45	8	0	0	0	0	8
8:00	5	0	0	0	0	5	20:00	6	0	0	0	0	6
8:15	11	0	0	0	0	11	20:15	10	0	0	0	0	10
8:30	7	0	0	0	0	7	20:30	4	0	0	0	0	4
8:45	6	0	0	0	0	6	20:45	7	0	0	0	0	7
9:00	4	0	0	0	0	4	21:00	4	0	0	0	0	4
9:15	4	0	0	0	0	4	21:15	2	0	0	0	0	2
9:30	1	0	0	0	0	1	21:30	6	0	0	0	0	6
9:45	2	1	0	0	0	3	21:45	8	0	0	0	0	8
10:00	1	0	0	0	0	1	22:00	3	0	0	0	0	3
10:15	6	1	0	0	0	7	22:15	5	0	0	0	0	5
10:30	8	0	0	0	0	8	22:30	5	0	0	0	0	5
10:45	1	0	0	0	0	1	22:45	3	0	0	0	0	3
11:00	4	1	0	0	0	5	23:00	1	0	0	0	0	1
11:15	2	0	1	0	0	3	23:15	5	0	0	0	0	5
11:30	2	0	0	0	0	2	23:30	0	0	0	0	0	0
11:45	10	1	1	0	0	12	23:45	0	0	0	0	0	0
TOTAL	128	13	2	0	0	143	TOTAL	385	5	0	0	0	390
						AM PEAK HOUR							AM PEAK HOUR
						8:00 AM							3:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						29							59

CLASS 1	CARS	TOTAL: AM+PM	513	18	2	0	0	533
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	96.2%	3.4%	0.4%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	29	0	0	0	0	29
CLASS 4	4-AXLE TRUCKS	PM PEAK	50	0	0	0	0	50
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 2 - Springbrook Park Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS75 Eastern Dwy south of Orange.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	8	1	0	0	0	9
0:15	0	0	0	0	0	0	12:15	6	0	0	0	0	6
0:30	0	0	0	0	0	0	12:30	6	2	1	0	0	9
0:45	2	0	0	0	0	2	12:45	4	0	0	0	0	4
1:00	0	0	0	0	0	0	13:00	5	0	0	0	0	5
1:15	0	0	0	0	0	0	13:15	6	0	0	0	0	6
1:30	0	0	0	0	0	0	13:30	3	0	0	0	0	3
1:45	0	0	0	0	0	0	13:45	8	0	0	0	0	8
2:00	0	0	0	0	0	0	14:00	12	0	0	0	0	12
2:15	3	0	0	0	0	3	14:15	9	0	0	0	0	9
2:30	2	0	0	0	0	2	14:30	9	0	0	0	0	9
2:45	5	0	0	0	0	5	14:45	8	0	0	0	0	8
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	4	0	0	0	0	4	15:15	7	0	0	0	0	7
3:30	6	0	0	0	0	6	15:30	9	0	0	0	0	9
3:45	1	0	0	0	0	1	15:45	3	0	0	0	0	3
4:00	3	0	0	0	0	3	16:00	15	0	0	0	0	15
4:15	1	0	0	0	0	1	16:15	11	0	0	0	0	11
4:30	5	0	0	0	0	5	16:30	15	0	0	0	0	15
4:45	7	0	0	0	0	7	16:45	9	0	0	0	0	9
5:00	4	0	0	0	0	4	17:00	5	0	0	0	0	5
5:15	7	0	0	0	0	7	17:15	11	0	0	0	0	11
5:30	3	0	0	0	0	3	17:30	6	0	0	0	0	6
5:45	6	0	0	0	0	6	17:45	10	0	0	0	0	10
6:00	5	0	0	0	0	5	18:00	5	0	0	0	0	5
6:15	9	0	0	0	0	9	18:15	9	0	0	0	0	9
6:30	6	0	0	0	0	6	18:30	5	0	0	0	0	5
6:45	7	0	0	0	0	7	18:45	6	0	0	0	0	6
7:00	5	0	0	0	0	5	19:00	10	0	0	0	0	10
7:15	12	0	0	0	0	12	19:15	10	0	0	0	0	10
7:30	19	0	1	0	0	20	19:30	5	0	0	0	0	5
7:45	19	0	0	0	0	19	19:45	5	0	0	0	0	5
8:00	7	0	0	0	0	7	20:00	5	0	0	0	0	5
8:15	9	0	0	0	0	9	20:15	2	0	0	0	0	2
8:30	4	0	1	0	0	5	20:30	5	0	0	0	0	5
8:45	9	0	0	0	0	9	20:45	3	0	0	0	0	3
9:00	3	0	0	0	0	3	21:00	5	0	0	0	0	5
9:15	6	0	0	0	0	6	21:15	2	0	0	0	0	2
9:30	4	0	0	0	0	4	21:30	9	0	0	0	0	9
9:45	1	0	0	0	0	1	21:45	5	0	0	0	0	5
10:00	5	0	0	0	0	5	22:00	1	0	0	0	0	1
10:15	8	0	0	0	0	8	22:15	3	0	0	0	0	3
10:30	4	0	0	0	0	4	22:30	5	0	0	0	0	5
10:45	3	0	0	0	0	3	22:45	6	0	0	0	0	6
11:00	11	1	0	0	0	12	23:00	3	0	0	0	0	3
11:15	6	0	0	0	0	6	23:15	0	0	0	0	0	0
11:30	4	1	0	0	0	5	23:30	4	0	0	0	0	4
11:45	8	0	0	0	0	8	23:45	2	0	0	0	0	2
TOTAL	234	2	2	0	0	238	TOTAL	306	3	1	0	0	310
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						4:00 PM
AM PEAK VOLUME						58	AM PEAK VOLUME						50

CLASS 1	CARS	TOTAL: AM+PM	540	5	3	0	0	548
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.5%	0.9%	0.5%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	57	0	1	0	0	58
CLASS 4	4-AXLE TRUCKS	PM PEAK	50	0	0	0	0	50
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 2 - Springbrook Park Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS76 Western Dwy south of Orange.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	7	1	0	0	0	8
0:15	3	0	0	0	0	3	12:15	11	0	0	0	0	11
0:30	1	0	0	0	0	1	12:30	12	2	1	0	0	15
0:45	3	0	0	0	0	3	12:45	6	0	0	0	0	6
1:00	0	0	0	0	0	0	13:00	13	0	0	0	0	13
1:15	1	0	0	0	0	1	13:15	11	1	0	0	0	12
1:30	0	0	0	0	0	0	13:30	10	0	0	0	0	10
1:45	1	0	0	0	0	1	13:45	9	0	0	0	0	9
2:00	1	0	0	0	0	1	14:00	13	0	0	0	0	13
2:15	0	0	0	0	0	0	14:15	10	0	0	0	0	10
2:30	0	0	0	0	0	0	14:30	13	0	0	0	0	13
2:45	4	0	0	0	0	4	14:45	10	0	0	0	0	10
3:00	0	0	0	0	0	0	15:00	12	0	0	0	0	12
3:15	1	0	0	0	0	1	15:15	13	0	0	0	0	13
3:30	0	0	0	0	0	0	15:30	16	0	0	0	0	16
3:45	0	0	0	0	0	0	15:45	15	0	0	0	0	15
4:00	0	0	0	0	0	0	16:00	13	1	0	0	0	14
4:15	0	0	0	0	0	0	16:15	14	0	0	0	0	14
4:30	2	0	0	0	0	2	16:30	13	0	0	0	0	13
4:45	1	0	0	0	0	1	16:45	14	0	0	0	0	14
5:00	1	0	0	0	0	1	17:00	16	0	0	0	0	16
5:15	5	0	0	0	0	5	17:15	13	0	0	0	0	13
5:30	4	0	0	0	0	4	17:30	24	0	0	0	0	24
5:45	2	0	0	0	0	2	17:45	17	0	0	0	0	17
6:00	5	0	0	0	0	5	18:00	20	0	0	0	0	20
6:15	5	0	0	0	0	5	18:15	15	0	0	0	0	15
6:30	2	0	0	0	0	2	18:30	10	0	0	0	0	10
6:45	1	0	0	0	0	1	18:45	9	0	0	0	0	9
7:00	2	0	0	0	0	2	19:00	18	0	0	0	0	18
7:15	2	0	1	0	0	3	19:15	13	0	0	0	0	13
7:30	7	0	0	0	0	7	19:30	8	0	0	0	0	8
7:45	15	0	0	0	0	15	19:45	7	0	0	0	0	7
8:00	9	0	0	0	0	9	20:00	11	0	0	0	0	11
8:15	6	0	1	0	0	7	20:15	11	0	0	0	0	11
8:30	10	0	0	0	0	10	20:30	7	0	0	0	0	7
8:45	8	0	0	0	0	8	20:45	9	0	0	0	0	9
9:00	10	0	0	0	0	10	21:00	14	0	0	0	0	14
9:15	7	0	0	0	0	7	21:15	11	0	0	0	0	11
9:30	3	1	0	0	0	4	21:30	7	0	0	0	0	7
9:45	3	0	0	0	0	3	21:45	15	0	0	0	0	15
10:00	10	1	0	0	0	11	22:00	5	0	0	0	0	5
10:15	3	0	0	0	0	3	22:15	7	0	0	0	0	7
10:30	8	0	0	0	0	8	22:30	4	0	0	0	0	4
10:45	7	0	0	0	0	7	22:45	5	0	0	0	0	5
11:00	3	0	0	0	0	3	23:00	4	0	0	0	0	4
11:15	7	0	0	0	0	7	23:15	3	0	0	0	0	3
11:30	2	1	0	0	0	3	23:30	7	0	0	0	0	7
11:45	7	0	0	0	0	7	23:45	6	0	0	0	0	6
TOTAL	174	3	2	0	0	179	TOTAL	531	5	1	0	0	537
						AM PEAK HOUR							AM PEAK HOUR
						7:45 AM							5:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						41							76

CLASS 1	CARS	TOTAL: AM+PM	705	8	3	0	0	716
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.5%	1.1%	0.4%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	40	0	1	0	0	41
CLASS 4	4-AXLE TRUCKS	PM PEAK	70	0	0	0	0	70
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 2 - Springbrook Park Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS76 Western Dwy south of Orange.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	6	0	1	0	0	7
0:15	1	0	0	0	0	1	12:15	9	0	0	0	0	9
0:30	0	0	0	0	0	0	12:30	9	0	0	0	0	9
0:45	1	0	0	0	0	1	12:45	4	0	0	0	0	4
1:00	0	0	0	0	0	0	13:00	6	1	0	0	0	7
1:15	0	0	0	0	0	0	13:15	11	1	0	0	0	12
1:30	1	0	0	0	0	1	13:30	20	0	0	0	0	20
1:45	0	0	0	0	0	0	13:45	11	0	0	0	0	11
2:00	1	0	0	0	0	1	14:00	13	0	0	0	0	13
2:15	1	0	0	0	0	1	14:15	11	0	0	0	0	11
2:30	0	0	0	0	0	0	14:30	11	2	0	0	0	13
2:45	0	0	0	0	0	0	14:45	9	0	0	0	0	9
3:00	0	0	0	0	0	0	15:00	21	0	0	0	0	21
3:15	1	0	0	0	0	1	15:15	11	0	0	0	0	11
3:30	6	0	0	0	0	6	15:30	9	0	0	0	0	9
3:45	9	0	0	0	0	9	15:45	9	0	0	0	0	9
4:00	4	0	0	0	0	4	16:00	9	1	0	0	0	10
4:15	8	0	0	0	0	8	16:15	8	1	0	0	0	9
4:30	5	0	0	0	0	5	16:30	8	1	0	0	0	9
4:45	6	0	0	0	0	6	16:45	10	0	0	0	0	10
5:00	5	0	0	0	0	5	17:00	3	0	0	0	0	3
5:15	6	0	0	0	0	6	17:15	9	0	0	0	0	9
5:30	6	0	0	0	0	6	17:30	11	0	0	0	0	11
5:45	6	0	0	0	0	6	17:45	11	0	0	0	0	11
6:00	7	0	0	0	0	7	18:00	15	0	0	0	0	15
6:15	5	3	0	0	0	8	18:15	10	0	0	0	0	10
6:30	13	0	0	0	0	13	18:30	9	0	0	0	0	9
6:45	2	0	0	0	0	2	18:45	9	0	0	0	0	9
7:00	7	3	0	0	0	10	19:00	4	0	0	0	0	4
7:15	17	3	0	0	0	20	19:15	9	0	0	0	0	9
7:30	18	0	0	0	0	18	19:30	10	0	0	0	0	10
7:45	24	0	0	0	0	24	19:45	4	0	0	0	0	4
8:00	16	0	0	0	0	16	20:00	7	0	0	0	0	7
8:15	12	0	0	0	0	12	20:15	4	0	0	0	0	4
8:30	17	0	0	0	0	17	20:30	11	0	0	0	0	11
8:45	14	0	0	0	0	14	20:45	5	0	0	0	0	5
9:00	8	0	0	0	0	8	21:00	6	0	0	0	0	6
9:15	9	0	0	0	0	9	21:15	7	0	0	0	0	7
9:30	10	1	0	0	0	11	21:30	3	0	0	0	0	3
9:45	1	1	0	0	0	2	21:45	4	0	0	0	0	4
10:00	13	0	0	0	0	13	22:00	11	0	0	0	0	11
10:15	12	2	0	0	0	14	22:15	2	0	0	0	0	2
10:30	9	0	0	0	0	9	22:30	5	0	0	0	0	5
10:45	6	0	0	0	0	6	22:45	0	0	0	0	0	0
11:00	11	0	0	0	0	11	23:00	3	0	0	0	0	3
11:15	3	0	0	0	0	3	23:15	3	0	0	0	0	3
11:30	5	0	1	0	0	6	23:30	3	0	0	0	0	3
11:45	8	1	0	0	0	9	23:45	1	0	0	0	0	1
TOTAL	314	14	1	0	0	329	TOTAL	384	7	1	0	0	392
						AM PEAK HOUR							AM PEAK HOUR
						7:15 AM							1:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						78							56

CLASS 1	CARS	TOTAL: AM+PM	698	21	2	0	0	721
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	96.8%	2.9%	0.3%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	75	3	0	0	0	78
CLASS 4	4-AXLE TRUCKS	PM PEAK	35	3	0	0	0	38
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 3 - Vista Springs Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS77 Dwy east of Clark

AM TIME	IN						TOTAL	PM Time	IN						TOTAL
	1	2	3	4	5				1	2	3	4	5		
0:00	4	0	0	0	0		4	12:00	13	0	0	0	0		13
0:15	3	0	0	0	0		3	12:15	3	0	0	0	0		3
0:30	1	0	0	0	0		1	12:30	8	0	0	0	0		8
0:45	5	0	0	0	0		5	12:45	11	0	0	0	0		11
1:00	3	0	0	0	0		3	13:00	8	0	0	0	0		8
1:15	1	0	0	0	0		1	13:15	12	0	0	0	0		12
1:30	0	0	0	0	0		0	13:30	12	0	0	0	0		12
1:45	1	0	0	0	0		1	13:45	6	0	0	0	0		6
2:00	0	0	0	0	0		0	14:00	12	0	1	0	0		13
2:15	1	0	0	0	0		1	14:15	14	0	0	0	0		14
2:30	0	0	0	0	0		0	14:30	11	0	0	0	0		11
2:45	1	0	0	0	0		1	14:45	4	0	0	0	0		4
3:00	0	0	0	0	0		0	15:00	6	0	0	0	0		6
3:15	0	0	0	0	0		0	15:15	11	0	0	0	0		11
3:30	0	0	0	0	0		0	15:30	11	0	0	0	0		11
3:45	1	0	0	0	0		1	15:45	10	0	0	0	0		10
4:00	0	0	0	0	0		0	16:00	5	0	0	0	0		5
4:15	2	0	0	0	0		2	16:15	16	0	0	0	0		16
4:30	2	0	0	0	0		2	16:30	10	0	0	0	0		10
4:45	4	0	0	0	0		4	16:45	13	0	0	0	0		13
5:00	4	0	0	0	0		4	17:00	14	0	0	0	0		14
5:15	2	0	0	0	0		2	17:15	16	0	0	0	0		16
5:30	1	0	0	0	0		1	17:30	10	0	0	0	0		10
5:45	1	0	0	0	0		1	17:45	12	0	0	0	0		12
6:00	0	0	0	0	0		0	18:00	8	0	0	0	0		8
6:15	1	0	0	0	0		1	18:15	10	0	0	0	0		10
6:30	0	0	0	0	0		0	18:30	16	0	0	0	0		16
6:45	1	0	0	0	0		1	18:45	9	0	0	0	0		9
7:00	2	0	0	0	0		2	19:00	8	0	0	0	0		8
7:15	10	0	0	0	0		10	19:15	17	0	0	0	0		17
7:30	18	0	0	0	0		18	19:30	13	0	0	0	0		13
7:45	16	0	0	0	0		16	19:45	4	0	0	0	0		4
8:00	10	0	0	0	0		10	20:00	16	0	0	0	0		16
8:15	10	0	0	0	0		10	20:15	5	0	0	0	0		5
8:30	6	0	0	0	0		6	20:30	13	0	0	0	0		13
8:45	7	0	0	0	0		7	20:45	11	0	0	0	0		11
9:00	5	0	0	0	0		5	21:00	9	0	0	0	0		9
9:15	6	0	0	0	0		6	21:15	11	0	0	0	0		11
9:30	5	0	0	0	0		5	21:30	5	0	0	0	0		5
9:45	4	0	0	0	0		4	21:45	8	0	0	0	0		8
10:00	6	0	0	0	0		6	22:00	8	0	0	0	0		8
10:15	4	1	0	0	0		5	22:15	2	0	0	0	0		2
10:30	3	1	0	0	0		4	22:30	1	0	0	0	0		1
10:45	1	0	0	0	0		1	22:45	6	0	0	0	0		6
11:00	2	0	0	0	0		2	23:00	4	0	0	0	0		4
11:15	3	0	0	0	0		3	23:15	2	0	0	0	0		2
11:30	4	0	0	0	0		4	23:30	0	0	0	0	0		0
11:45	8	0	0	0	0		8	23:45	4	0	0	0	0		4
TOTAL	169	2	0	0	0		171	TOTAL	438	0	1	0	0		439
AM PEAK HOUR							7:30 AM	AM PEAK HOUR							4:45 PM
AM PEAK VOLUME							54	AM PEAK VOLUME							53

CLASS 1	CARS	TOTAL: AM+PM	607	2	1	0	0	610
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.5%	0.3%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	54	0	0	0	0	54
CLASS 4	4-AXLE TRUCKS	PM PEAK	53	0	0	0	0	53
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 3 - Vista Springs Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS77 Dwy east of Clark

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	10	0	0	0	0	10
0:15	2	0	0	0	0	2	12:15	13	0	0	0	0	13
0:30	1	0	0	0	0	1	12:30	10	0	0	0	0	10
0:45	2	0	0	0	0	2	12:45	10	1	0	0	0	11
1:00	1	0	0	0	0	1	13:00	11	0	0	0	0	11
1:15	1	0	0	0	0	1	13:15	10	0	0	0	0	10
1:30	3	0	0	0	0	3	13:30	16	0	1	0	0	17
1:45	0	0	0	0	0	0	13:45	19	0	0	0	0	19
2:00	0	0	0	0	0	0	14:00	18	0	0	0	0	18
2:15	0	0	0	0	0	0	14:15	19	0	0	0	0	19
2:30	1	0	0	0	0	1	14:30	10	0	0	0	0	10
2:45	0	0	0	0	0	0	14:45	16	0	0	0	0	16
3:00	1	0	0	0	0	1	15:00	12	0	0	0	0	12
3:15	3	0	0	0	0	3	15:15	13	0	0	0	0	13
3:30	6	0	0	0	0	6	15:30	13	0	0	0	0	13
3:45	1	0	0	0	0	1	15:45	9	0	0	0	0	9
4:00	5	0	0	0	0	5	16:00	8	0	0	0	0	8
4:15	11	0	0	0	0	11	16:15	11	0	0	0	0	11
4:30	4	0	0	0	0	4	16:30	10	0	0	0	0	10
4:45	2	0	0	0	0	2	16:45	8	0	0	0	0	8
5:00	5	0	0	0	0	5	17:00	13	0	0	0	0	13
5:15	8	0	0	0	0	8	17:15	11	0	0	0	0	11
5:30	4	0	0	0	0	4	17:30	8	0	0	0	0	8
5:45	4	0	0	0	0	4	17:45	4	0	0	0	0	4
6:00	10	0	0	0	0	10	18:00	6	0	0	0	0	6
6:15	8	0	0	0	0	8	18:15	7	0	0	0	0	7
6:30	14	0	0	0	0	14	18:30	15	0	0	0	0	15
6:45	8	0	0	0	0	8	18:45	19	1	0	0	0	20
7:00	23	0	0	0	0	23	19:00	7	0	0	0	0	7
7:15	26	0	0	0	0	26	19:15	4	0	0	0	0	4
7:30	27	0	0	0	0	27	19:30	7	0	0	0	0	7
7:45	31	0	0	0	0	31	19:45	5	0	0	0	0	5
8:00	31	0	0	0	0	31	20:00	6	0	0	0	0	6
8:15	21	0	0	0	0	21	20:15	3	0	0	0	0	3
8:30	15	0	0	0	0	15	20:30	2	0	0	0	0	2
8:45	12	0	0	0	0	12	20:45	9	0	0	0	0	9
9:00	9	0	0	0	0	9	21:00	5	0	0	0	0	5
9:15	11	0	0	0	0	11	21:15	7	0	0	0	0	7
9:30	8	0	0	0	0	8	21:30	9	0	0	0	0	9
9:45	12	0	0	0	0	12	21:45	7	0	0	0	0	7
10:00	13	1	0	0	0	14	22:00	6	0	0	0	0	6
10:15	4	1	0	0	0	5	22:15	4	0	0	0	0	4
10:30	8	0	0	0	0	8	22:30	5	0	0	0	0	5
10:45	6	1	0	0	0	7	22:45	0	0	0	0	0	0
11:00	8	0	0	0	0	8	23:00	1	0	0	0	0	1
11:15	6	1	0	0	0	7	23:15	2	0	0	0	0	2
11:30	9	0	0	0	0	9	23:30	0	0	0	0	0	0
11:45	12	0	0	0	0	12	23:45	0	0	0	0	0	0
TOTAL	398	4	0	0	0	402	TOTAL	418	2	1	0	0	421
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						1:30 PM
AM PEAK VOLUME						115	AM PEAK VOLUME						73

CLASS 1	CARS	TOTAL: AM+PM	816	6	1	0	0	823
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.7%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	115	0	0	0	0	115
CLASS 4	4-AXLE TRUCKS	PM PEAK	42	0	0	0	0	42
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 3 - Vista Springs Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS78 Dwy north of Box Springs

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	8	0	0	0	0	8	12:00	9	0	0	0	0	9
0:15	5	0	0	0	0	5	12:15	15	0	0	0	0	15
0:30	1	0	0	0	0	1	12:30	17	1	1	0	0	19
0:45	3	0	0	0	0	3	12:45	12	1	0	0	0	13
1:00	1	0	0	0	0	1	13:00	14	0	0	0	0	14
1:15	5	0	0	0	0	5	13:15	16	0	1	0	0	17
1:30	2	0	0	0	0	2	13:30	9	1	0	0	0	10
1:45	4	0	0	0	0	4	13:45	8	0	0	0	0	8
2:00	3	0	0	0	0	3	14:00	20	0	0	0	0	20
2:15	3	0	0	0	0	3	14:15	22	0	0	0	0	22
2:30	2	0	0	0	0	2	14:30	20	0	0	0	0	20
2:45	0	0	0	0	0	0	14:45	11	0	0	0	0	11
3:00	0	0	0	0	0	0	15:00	15	0	0	0	0	15
3:15	1	0	0	0	0	1	15:15	29	0	0	0	0	29
3:30	0	0	0	0	0	0	15:30	27	0	0	0	0	27
3:45	0	0	0	0	0	0	15:45	13	0	0	0	0	13
4:00	3	0	0	0	0	3	16:00	19	0	0	0	0	19
4:15	2	0	0	0	0	2	16:15	21	0	0	0	0	21
4:30	1	0	0	0	0	1	16:30	26	0	0	0	0	26
4:45	2	0	0	0	0	2	16:45	13	0	0	0	0	13
5:00	2	0	0	0	0	2	17:00	23	0	0	0	0	23
5:15	2	0	0	0	0	2	17:15	21	0	0	0	0	21
5:30	1	0	0	0	0	1	17:30	13	0	0	0	0	13
5:45	3	0	0	0	0	3	17:45	17	0	0	0	0	17
6:00	3	0	0	0	0	3	18:00	19	0	0	0	0	19
6:15	0	0	0	0	0	0	18:15	20	0	0	0	0	20
6:30	6	0	0	0	0	6	18:30	16	0	0	0	0	16
6:45	6	0	0	0	0	6	18:45	13	1	0	0	0	14
7:00	7	0	0	0	0	7	19:00	23	0	0	0	0	23
7:15	5	0	0	0	0	5	19:15	16	0	0	0	0	16
7:30	6	0	0	0	0	6	19:30	19	0	0	0	0	19
7:45	14	0	0	0	0	14	19:45	34	0	0	0	0	34
8:00	16	0	0	0	0	16	20:00	15	0	0	0	0	15
8:15	10	0	0	0	0	10	20:15	20	0	0	0	0	20
8:30	20	0	0	0	0	20	20:30	17	0	0	0	0	17
8:45	14	0	0	0	0	14	20:45	21	0	0	0	0	21
9:00	8	0	0	0	0	8	21:00	16	0	0	0	0	16
9:15	5	0	0	0	0	5	21:15	13	0	0	0	0	13
9:30	8	0	0	0	0	8	21:30	7	0	0	0	0	7
9:45	12	1	0	0	0	13	21:45	7	0	0	0	0	7
10:00	12	0	0	0	0	12	22:00	11	0	0	0	0	11
10:15	10	2	0	0	0	12	22:15	3	0	0	0	0	3
10:30	10	2	0	0	0	12	22:30	12	0	0	0	0	12
10:45	8	0	0	0	0	8	22:45	5	0	0	0	0	5
11:00	13	0	0	0	0	13	23:00	7	0	0	0	0	7
11:15	13	1	0	0	0	14	23:15	6	0	0	0	0	6
11:30	13	1	0	0	0	14	23:30	8	0	0	0	0	8
11:45	12	0	0	0	0	12	23:45	10	0	0	0	0	10
TOTAL	285	7	0	0	0	292	TOTAL	748	4	2	0	0	754
AM PEAK HOUR						8:00 AM	AM PEAK HOUR						7:00 PM
AM PEAK VOLUME						60	AM PEAK VOLUME						92

CLASS 1	CARS	TOTAL: AM+PM	1,033	11	2	0	0	1,046
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.8%	1.1%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	60	0	0	0	0	60
CLASS 4	4-AXLE TRUCKS	PM PEAK	83	0	0	0	0	83
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 3 - Vista Springs Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS78 Dwy north of Box Springs

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	7	0	0	0	0	7	12:00	14	0	0	0	0	14
0:15	8	0	0	0	0	8	12:15	18	0	0	0	0	18
0:30	1	0	0	0	0	1	12:30	9	0	0	0	0	9
0:45	0	0	0	0	0	0	12:45	17	0	0	0	0	17
1:00	0	0	0	0	0	0	13:00	14	1	0	0	0	15
1:15	2	0	0	0	0	2	13:15	8	0	0	0	0	8
1:30	4	0	0	0	0	4	13:30	8	1	1	0	0	10
1:45	0	0	0	0	0	0	13:45	13	0	0	0	0	13
2:00	6	0	0	0	0	6	14:00	12	0	0	0	0	12
2:15	1	0	0	0	0	1	14:15	9	0	0	0	0	9
2:30	1	0	0	0	0	1	14:30	11	0	1	0	0	12
2:45	2	0	0	0	0	2	14:45	20	0	0	0	0	20
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	1	0	0	0	0	1	15:15	20	0	0	0	0	20
3:30	1	0	0	0	0	1	15:30	9	0	0	0	0	9
3:45	0	0	0	0	0	0	15:45	13	0	0	0	0	13
4:00	4	0	0	0	0	4	16:00	16	0	0	0	0	16
4:15	11	0	0	0	0	11	16:15	18	0	0	0	0	18
4:30	14	0	0	0	0	14	16:30	16	0	0	0	0	16
4:45	3	0	0	0	0	3	16:45	19	0	0	0	0	19
5:00	4	0	0	0	0	4	17:00	14	0	0	0	0	14
5:15	5	0	0	0	0	5	17:15	16	0	0	0	0	16
5:30	5	0	0	0	0	5	17:30	18	0	0	0	0	18
5:45	14	0	0	0	0	14	17:45	12	0	0	0	0	12
6:00	8	0	0	0	0	8	18:00	5	0	0	0	0	5
6:15	11	0	0	0	0	11	18:15	9	0	0	0	0	9
6:30	11	0	0	0	0	11	18:30	18	0	0	0	0	18
6:45	9	0	0	0	0	9	18:45	9	0	0	0	0	9
7:00	29	0	0	0	0	29	19:00	6	0	0	0	0	6
7:15	17	0	0	0	0	17	19:15	16	0	0	0	0	16
7:30	12	0	0	0	0	12	19:30	2	0	0	0	0	2
7:45	30	0	0	0	0	30	19:45	9	0	0	0	0	9
8:00	16	0	0	0	0	16	20:00	4	0	0	0	0	4
8:15	9	0	0	0	0	9	20:15	10	0	0	0	0	10
8:30	11	0	0	0	0	11	20:30	10	0	0	0	0	10
8:45	15	0	0	0	0	15	20:45	4	0	0	0	0	4
9:00	7	0	0	0	0	7	21:00	8	0	0	0	0	8
9:15	11	0	0	0	0	11	21:15	7	0	0	0	0	7
9:30	12	0	0	0	0	12	21:30	3	0	0	0	0	3
9:45	14	0	0	0	0	14	21:45	2	0	0	0	0	2
10:00	17	0	0	0	0	17	22:00	2	0	0	0	0	2
10:15	9	0	0	0	0	9	22:15	1	0	0	0	0	1
10:30	14	2	0	0	0	16	22:30	3	0	0	0	0	3
10:45	8	1	0	0	0	9	22:45	4	0	0	0	0	4
11:00	7	0	0	0	0	7	23:00	1	0	0	0	0	1
11:15	8	0	0	0	0	8	23:15	2	0	0	0	0	2
11:30	9	0	0	0	0	9	23:30	0	0	0	0	0	0
11:45	10	1	0	0	0	11	23:45	1	0	0	0	0	1
TOTAL	398	4	0	0	0	402	TOTAL	466	2	2	0	0	470
						AM PEAK HOUR							AM PEAK HOUR
						7:00 AM							4:00 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						88							69

CLASS 1	CARS	TOTAL: AM+PM	864	6	2	0	0	872
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.7%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	88	0	0	0	0	88
CLASS 4	4-AXLE TRUCKS	PM PEAK	69	0	0	0	0	69
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 4 - Vesada Aparment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS73 Southern Dwy east of Country Village.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0	12:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0	12:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0	12:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0	13:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0	13:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0	13:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0	13:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0	14:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0	14:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0	14:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0	14:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0	15:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0	15:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0	15:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0	15:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0	16:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0	16:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0	16:30	0	0	0	0	0	0
4:45	0	0	0	0	0	0	16:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0	17:00	0	0	0	0	0	0
5:15	0	0	0	0	0	0	17:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0	17:30	0	0	0	0	0	0
5:45	0	0	0	0	0	0	17:45	0	0	0	0	0	0
6:00	0	0	0	0	0	0	18:00	0	0	0	0	0	0
6:15	0	0	0	0	0	0	18:15	0	0	0	0	0	0
6:30	0	0	0	0	0	0	18:30	0	0	0	0	0	0
6:45	0	0	0	0	0	0	18:45	0	0	0	0	0	0
7:00	0	0	0	0	0	0	19:00	0	0	0	0	0	0
7:15	0	0	0	0	0	0	19:15	0	0	0	0	0	0
7:30	0	0	0	0	0	0	19:30	0	0	0	0	0	0
7:45	0	0	0	0	0	0	19:45	0	0	0	0	0	0
8:00	0	0	0	0	0	0	20:00	0	0	0	0	0	0
8:15	0	0	0	0	0	0	20:15	0	0	0	0	0	0
8:30	0	0	0	0	0	0	20:30	0	0	0	0	0	0
8:45	0	0	0	0	0	0	20:45	0	0	0	0	0	0
9:00	0	0	0	0	0	0	21:00	0	0	0	0	0	0
9:15	0	0	0	0	0	0	21:15	0	0	0	0	0	0
9:30	0	0	0	0	0	0	21:30	0	0	0	0	0	0
9:45	0	0	0	0	0	0	21:45	0	0	0	0	0	0
10:00	0	0	0	0	0	0	22:00	0	0	0	0	0	0
10:15	0	0	0	0	0	0	22:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0	22:30	0	0	0	0	0	0
10:45	0	0	0	0	0	0	22:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0	23:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0	23:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0	23:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0	23:45	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	TOTAL	0	0	0	0	0	0
AM PEAK HOUR						11:45 AM	AM PEAK HOUR						11:45 PM
AM PEAK VOLUME						0	AM PEAK VOLUME						0

CLASS 1	CARS	TOTAL: AM+PM	0	0	0	0	0	0
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CLASS 3	3-AXLE TRUCKS	AM PEAK	0	0	0	0	0	0
CLASS 4	4-AXLE TRUCKS	PM PEAK	0	0	0	0	0	0
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 4 - Vesada Aparment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS73 Southern Dwy east of Country Village.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	1	0	0	0	0	1
0:15	0	0	0	0	0	0	12:15	3	0	0	0	0	3
0:30	1	0	0	0	0	1	12:30	2	0	0	0	0	2
0:45	1	0	0	0	0	1	12:45	3	0	0	0	0	3
1:00	0	0	0	0	0	0	13:00	0	0	0	0	0	0
1:15	1	0	0	0	0	1	13:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0	13:30	6	0	0	0	0	6
1:45	0	0	0	0	0	0	13:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0	14:00	2	0	0	0	0	2
2:15	0	0	0	0	0	0	14:15	5	0	0	0	0	5
2:30	0	0	0	0	0	0	14:30	4	1	0	0	0	5
2:45	0	0	0	0	0	0	14:45	1	0	0	0	0	1
3:00	0	0	0	0	0	0	15:00	2	0	0	0	0	2
3:15	4	0	0	0	0	4	15:15	1	0	0	0	0	1
3:30	5	0	0	0	0	5	15:30	1	0	0	0	0	1
3:45	1	0	0	0	0	1	15:45	0	0	0	0	0	0
4:00	3	0	0	0	0	3	16:00	1	0	0	0	0	1
4:15	0	0	0	0	0	0	16:15	5	0	0	0	0	5
4:30	1	0	0	0	0	1	16:30	1	0	0	0	0	1
4:45	2	0	0	0	0	2	16:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0	17:00	1	0	0	0	0	1
5:15	3	0	0	0	0	3	17:15	2	0	0	0	0	2
5:30	1	0	0	0	0	1	17:30	0	0	0	0	0	0
5:45	2	0	0	0	0	2	17:45	2	0	0	0	0	2
6:00	3	0	0	0	0	3	18:00	1	0	0	0	0	1
6:15	1	0	0	0	0	1	18:15	1	0	0	0	0	1
6:30	3	0	0	0	0	3	18:30	1	0	0	0	0	1
6:45	1	0	0	0	0	1	18:45	1	0	0	0	0	1
7:00	3	0	0	0	0	3	19:00	3	0	0	0	0	3
7:15	1	0	0	0	0	1	19:15	0	0	0	0	0	0
7:30	2	0	0	0	0	2	19:30	3	0	0	0	0	3
7:45	3	0	0	0	0	3	19:45	1	0	0	0	0	1
8:00	3	0	0	0	0	3	20:00	1	0	0	0	0	1
8:15	1	0	0	0	0	1	20:15	0	0	0	0	0	0
8:30	0	0	0	0	0	0	20:30	2	0	0	0	0	2
8:45	0	0	0	0	0	0	20:45	2	0	0	0	0	2
9:00	2	0	0	0	0	2	21:00	2	0	0	0	0	2
9:15	3	0	0	0	0	3	21:15	3	0	0	0	0	3
9:30	1	0	0	0	0	1	21:30	4	0	0	0	0	4
9:45	4	0	0	0	0	4	21:45	0	0	0	0	0	0
10:00	3	0	0	0	0	3	22:00	3	0	0	0	0	3
10:15	0	0	0	0	0	0	22:15	2	0	0	0	0	2
10:30	2	0	0	0	0	2	22:30	2	0	0	0	0	2
10:45	1	0	0	0	0	1	22:45	1	0	0	0	0	1
11:00	2	0	0	0	0	2	23:00	1	0	0	0	0	1
11:15	1	0	0	0	0	1	23:15	1	0	0	0	0	1
11:30	0	0	0	0	0	0	23:30	0	0	0	0	0	0
11:45	3	0	0	0	0	3	23:45	0	0	0	0	0	0
TOTAL	69	0	0	0	0	69	TOTAL	78	1	0	0	0	79
						AM PEAK HOUR	3:15 AM						
						AM PEAK VOLUME	13						
						AM PEAK HOUR	2:15 PM						
						AM PEAK VOLUME	13						

CLASS 1	CARS	TOTAL: AM+PM	147	1	0	0	0	148
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.3%	0.7%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	9	0	0	0	0	9
CLASS 4	4-AXLE TRUCKS	PM PEAK	7	0	0	0	0	7
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 4 - Vesada Aparment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS74 Northern Dwy east of Country Village.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	5	0	0	0	0	5	12:00	33	0	0	0	0	33
0:15	10	0	0	0	0	10	12:15	33	1	0	0	0	34
0:30	5	0	0	0	0	5	12:30	36	1	0	0	0	37
0:45	4	0	0	0	0	4	12:45	37	0	1	0	0	38
1:00	7	0	0	0	0	7	13:00	34	0	0	0	0	34
1:15	6	0	0	0	0	6	13:15	36	0	0	0	0	36
1:30	1	0	0	0	0	1	13:30	32	0	0	0	0	32
1:45	5	0	0	0	0	5	13:45	34	2	0	0	0	36
2:00	6	0	0	0	0	6	14:00	33	0	0	0	0	33
2:15	3	0	0	0	0	3	14:15	26	2	0	0	0	28
2:30	1	0	0	0	0	1	14:30	34	0	0	0	0	34
2:45	5	0	0	0	0	5	14:45	39	0	0	0	0	39
3:00	2	0	0	0	0	2	15:00	49	0	0	0	0	49
3:15	2	0	0	0	0	2	15:15	39	0	0	0	0	39
3:30	7	0	0	0	0	7	15:30	26	0	0	0	0	26
3:45	8	0	0	0	0	8	15:45	65	0	0	0	0	65
4:00	3	0	0	0	0	3	16:00	49	0	0	0	0	49
4:15	6	0	0	0	0	6	16:15	59	1	0	0	0	60
4:30	4	0	0	0	0	4	16:30	74	0	0	0	0	74
4:45	7	0	0	0	0	7	16:45	52	0	0	0	0	52
5:00	6	0	0	0	0	6	17:00	47	0	0	0	0	47
5:15	6	0	0	0	0	6	17:15	51	0	0	0	0	51
5:30	3	0	0	0	0	3	17:30	50	0	0	0	0	50
5:45	7	0	0	0	0	7	17:45	55	0	0	0	0	55
6:00	5	0	0	0	0	5	18:00	60	0	0	0	0	60
6:15	15	0	0	0	0	15	18:15	52	0	0	0	0	52
6:30	13	0	0	0	0	13	18:30	44	0	0	0	0	44
6:45	11	0	0	0	0	11	18:45	51	2	0	0	0	53
7:00	19	0	0	0	0	19	19:00	42	0	0	0	0	42
7:15	16	0	0	0	0	16	19:15	26	0	0	0	0	26
7:30	14	0	0	0	0	14	19:30	46	0	0	0	0	46
7:45	34	0	0	0	0	34	19:45	42	0	0	0	0	42
8:00	30	0	0	0	0	30	20:00	44	0	0	0	0	44
8:15	39	0	0	0	0	39	20:15	35	0	0	0	0	35
8:30	28	0	0	0	0	28	20:30	29	0	0	0	0	29
8:45	27	0	0	0	0	27	20:45	33	0	0	0	0	33
9:00	22	0	0	0	0	22	21:00	31	0	0	0	0	31
9:15	21	0	0	0	0	21	21:15	27	0	0	0	0	27
9:30	20	2	0	0	0	22	21:30	27	0	0	0	0	27
9:45	24	2	0	0	0	26	21:45	27	0	0	0	0	27
10:00	19	1	0	0	0	20	22:00	22	0	0	0	0	22
10:15	17	1	0	0	0	18	22:15	24	0	0	0	0	24
10:30	21	0	0	0	0	21	22:30	21	0	0	0	0	21
10:45	12	0	0	0	0	12	22:45	22	0	0	0	0	22
11:00	31	0	1	0	0	32	23:00	12	0	0	0	0	12
11:15	28	0	0	0	0	28	23:15	11	0	0	0	0	11
11:30	21	1	0	0	0	22	23:30	9	0	0	0	0	9
11:45	23	2	0	0	0	25	23:45	7	0	0	0	0	7
TOTAL	629	9	1	0	0	639	TOTAL	1,767	9	1	0	0	1,777
AM PEAK HOUR						7:45 AM	AM PEAK HOUR						3:45 PM
AM PEAK VOLUME						131	AM PEAK VOLUME						248

CLASS 1	CARS	TOTAL: AM+PM	2,396	18	2	0	0	2,416
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.2%	0.7%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	131	0	0	0	0	131
CLASS 4	4-AXLE TRUCKS	PM PEAK	234	1	0	0	0	235
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 4 - Vesada Aparment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS74 Northern Dwy east of Country Village.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	27	2	0	0	0	29
0:15	4	0	0	0	0	4	12:15	33	0	0	0	0	33
0:30	2	0	0	0	0	2	12:30	34	2	0	0	0	36
0:45	3	0	0	0	0	3	12:45	28	1	0	0	0	29
1:00	2	0	0	0	0	2	13:00	29	0	1	0	0	30
1:15	3	0	0	0	0	3	13:15	44	0	0	0	0	44
1:30	5	0	0	0	0	5	13:30	38	1	0	0	0	39
1:45	3	0	0	0	0	3	13:45	29	1	0	0	0	30
2:00	2	0	0	0	0	2	14:00	24	2	0	0	0	26
2:15	5	0	0	0	0	5	14:15	22	0	0	0	0	22
2:30	1	0	0	0	0	1	14:30	25	1	0	0	0	26
2:45	2	0	0	0	0	2	14:45	35	0	0	0	0	35
3:00	5	0	0	0	0	5	15:00	31	0	0	0	0	31
3:15	4	0	0	0	0	4	15:15	21	0	0	0	0	21
3:30	16	0	0	0	0	16	15:30	29	0	0	0	0	29
3:45	6	0	0	0	0	6	15:45	29	0	0	0	0	29
4:00	17	0	0	0	0	17	16:00	26	0	0	0	0	26
4:15	6	0	0	0	0	6	16:15	29	0	0	0	0	29
4:30	17	0	0	0	0	17	16:30	29	1	0	0	0	30
4:45	20	2	0	0	0	22	16:45	31	0	0	0	0	31
5:00	19	1	0	0	0	20	17:00	30	0	0	0	0	30
5:15	14	0	0	0	0	14	17:15	34	0	0	0	0	34
5:30	14	0	0	0	0	14	17:30	38	0	0	0	0	38
5:45	17	0	0	0	0	17	17:45	36	0	0	0	0	36
6:00	18	0	0	0	0	18	18:00	37	0	0	0	0	37
6:15	38	0	0	0	0	38	18:15	41	0	0	0	0	41
6:30	34	0	0	0	0	34	18:30	31	0	0	0	0	31
6:45	46	0	0	0	0	46	18:45	21	0	0	0	0	21
7:00	46	0	0	0	0	46	19:00	31	0	0	0	0	31
7:15	82	0	0	0	0	82	19:15	24	0	0	0	0	24
7:30	56	0	0	0	0	56	19:30	40	1	0	0	0	41
7:45	52	0	0	0	0	52	19:45	32	0	0	0	0	32
8:00	48	0	0	0	0	48	20:00	30	0	0	0	0	30
8:15	59	1	0	0	0	60	20:15	17	0	0	0	0	17
8:30	26	0	0	0	0	26	20:30	17	0	0	0	0	17
8:45	32	1	0	0	0	33	20:45	19	0	0	0	0	19
9:00	27	0	0	0	0	27	21:00	15	0	0	0	0	15
9:15	26	0	0	0	0	26	21:15	14	0	0	0	0	14
9:30	31	1	0	0	0	32	21:30	12	0	0	0	0	12
9:45	36	0	0	0	0	36	21:45	19	0	0	0	0	19
10:00	28	0	0	0	0	28	22:00	13	0	0	0	0	13
10:15	32	1	0	0	0	33	22:15	15	0	0	0	0	15
10:30	32	0	0	0	0	32	22:30	11	0	0	0	0	11
10:45	23	0	0	0	0	23	22:45	10	0	0	0	0	10
11:00	29	0	0	0	0	29	23:00	5	0	0	0	0	5
11:15	25	0	0	0	0	25	23:15	7	0	0	0	0	7
11:30	32	0	1	0	0	33	23:30	10	0	0	0	0	10
11:45	33	2	0	0	0	35	23:45	3	0	0	0	0	3
TOTAL	1,080	9	1	0	0	1,090	TOTAL	1,205	12	1	0	0	1,218
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						5:30 PM
AM PEAK VOLUME						238	AM PEAK VOLUME						152

CLASS 1	CARS	TOTAL: AM+PM	2,285	21	2	0	0	2,308
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.0%	0.9%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	238	0	0	0	0	238
CLASS 4	4-AXLE TRUCKS	PM PEAK	138	0	0	0	0	138
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS84 Northern Dwy east of Milky Way.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	4	0	0	0	0	4	12:00	9	0	0	0	0	9
0:15	1	0	0	0	0	1	12:15	3	0	0	0	0	3
0:30	1	0	0	0	0	1	12:30	4	0	0	0	0	4
0:45	0	0	0	0	0	0	12:45	9	0	0	0	0	9
1:00	1	0	0	0	0	1	13:00	4	0	0	0	0	4
1:15	0	0	0	0	0	0	13:15	5	1	0	0	0	6
1:30	1	0	0	0	0	1	13:30	9	0	0	0	0	9
1:45	0	0	0	0	0	0	13:45	8	0	0	0	0	8
2:00	0	0	0	0	0	0	14:00	8	0	0	0	0	8
2:15	0	0	0	0	0	0	14:15	7	1	0	0	0	8
2:30	0	0	0	0	0	0	14:30	12	0	0	0	0	12
2:45	0	0	0	0	0	0	14:45	13	0	0	0	0	13
3:00	1	0	0	0	0	1	15:00	7	0	0	0	0	7
3:15	1	0	0	0	0	1	15:15	7	0	0	0	0	7
3:30	0	0	0	0	0	0	15:30	9	0	0	0	0	9
3:45	0	0	0	0	0	0	15:45	18	0	0	0	0	18
4:00	1	0	0	0	0	1	16:00	6	0	0	0	0	6
4:15	1	0	0	0	0	1	16:15	18	0	0	0	0	18
4:30	0	0	0	0	0	0	16:30	11	0	0	0	0	11
4:45	0	0	0	0	0	0	16:45	15	0	0	0	0	15
5:00	0	0	0	0	0	0	17:00	8	0	0	0	0	8
5:15	2	0	0	0	0	2	17:15	12	0	0	0	0	12
5:30	0	0	0	0	0	0	17:30	6	0	0	0	0	6
5:45	1	0	0	0	0	1	17:45	15	0	0	0	0	15
6:00	0	0	0	0	0	0	18:00	6	0	0	0	0	6
6:15	1	0	0	0	0	1	18:15	8	0	0	0	0	8
6:30	2	0	0	0	0	2	18:30	6	0	0	0	0	6
6:45	2	0	0	0	0	2	18:45	8	0	0	0	0	8
7:00	1	0	0	0	0	1	19:00	6	0	0	0	0	6
7:15	3	0	0	0	0	3	19:15	10	0	0	0	0	10
7:30	5	0	0	0	0	5	19:30	8	0	0	0	0	8
7:45	5	0	0	1	0	6	19:45	6	0	0	0	0	6
8:00	8	0	0	0	0	8	20:00	9	0	0	0	0	9
8:15	4	1	0	0	0	5	20:15	12	0	0	0	0	12
8:30	4	0	0	0	0	4	20:30	10	0	0	0	0	10
8:45	7	0	0	0	0	7	20:45	8	0	0	0	0	8
9:00	3	0	0	0	0	3	21:00	8	0	0	0	0	8
9:15	1	0	0	0	0	1	21:15	8	0	0	0	0	8
9:30	3	0	0	0	0	3	21:30	2	0	0	0	0	2
9:45	4	0	0	0	0	4	21:45	7	0	0	0	0	7
10:00	2	0	0	0	0	2	22:00	4	0	0	0	0	4
10:15	4	0	0	0	0	4	22:15	2	0	0	0	0	2
10:30	3	0	0	0	0	3	22:30	4	0	0	0	0	4
10:45	4	0	0	0	0	4	22:45	4	0	0	0	0	4
11:00	2	0	0	0	0	2	23:00	4	0	0	0	0	4
11:15	8	0	0	0	0	8	23:15	1	0	0	0	0	1
11:30	5	0	0	0	0	5	23:30	2	0	0	0	0	2
11:45	5	0	0	0	0	5	23:45	1	0	0	0	0	1
TOTAL	101	1	0	1	0	103	TOTAL	367	2	0	0	0	369
				AM PEAK HOUR 8:00 AM							AM PEAK HOUR 3:45 PM		
				AM PEAK VOLUME 24							AM PEAK VOLUME 53		

CLASS 1	CARS	TOTAL: AM+PM	468	3	0	1	0	472
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.2%	0.6%	0.0%	0.2%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	23	1	0	0	0	24
CLASS 4	4-AXLE TRUCKS	PM PEAK	52	0	0	0	0	52
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS84 Northern Dwy east of Milky Way.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	6	0	0	0	0	6
0:15	0	0	0	0	0	0	12:15	11	1	0	0	0	12
0:30	0	0	0	0	0	0	12:30	3	0	0	0	0	3
0:45	2	0	0	0	0	2	12:45	10	1	0	0	0	11
1:00	0	0	0	0	0	0	13:00	7	0	0	0	0	7
1:15	3	0	0	0	0	3	13:15	9	0	0	0	0	9
1:30	1	0	0	0	0	1	13:30	4	2	0	0	0	6
1:45	0	0	0	0	0	0	13:45	11	0	0	0	0	11
2:00	0	0	0	0	0	0	14:00	7	0	0	0	0	7
2:15	1	0	0	0	0	1	14:15	8	0	0	0	0	8
2:30	0	0	0	0	0	0	14:30	13	0	0	0	0	13
2:45	0	0	0	0	0	0	14:45	8	1	0	0	0	9
3:00	1	0	0	0	0	1	15:00	7	0	0	0	0	7
3:15	2	0	0	0	0	2	15:15	6	0	0	0	0	6
3:30	3	0	0	0	0	3	15:30	12	0	0	0	0	12
3:45	1	0	0	0	0	1	15:45	5	0	0	0	0	5
4:00	0	0	0	0	0	0	16:00	19	0	0	0	0	19
4:15	3	0	0	0	0	3	16:15	6	0	0	0	0	6
4:30	3	0	0	0	0	3	16:30	4	0	0	0	0	4
4:45	2	0	0	0	0	2	16:45	9	0	0	0	0	9
5:00	2	0	0	0	0	2	17:00	4	0	0	0	0	4
5:15	3	0	0	0	0	3	17:15	5	1	0	0	0	6
5:30	10	0	0	0	0	10	17:30	11	0	0	0	0	11
5:45	9	0	0	0	0	9	17:45	15	0	0	0	0	15
6:00	3	0	0	0	0	3	18:00	10	0	0	0	0	10
6:15	12	0	0	0	0	12	18:15	5	0	0	0	0	5
6:30	12	0	0	0	0	12	18:30	10	0	0	0	0	10
6:45	5	0	0	0	0	5	18:45	7	0	0	0	0	7
7:00	10	0	0	0	0	10	19:00	3	0	0	0	0	3
7:15	19	0	0	0	0	19	19:15	2	0	0	0	0	2
7:30	13	0	0	0	0	13	19:30	5	0	0	0	0	5
7:45	17	0	0	0	0	17	19:45	3	0	0	0	0	3
8:00	13	0	0	0	0	13	20:00	7	0	0	0	0	7
8:15	15	0	0	0	0	15	20:15	4	0	0	0	0	4
8:30	14	0	0	0	0	14	20:30	4	0	0	0	0	4
8:45	8	0	0	0	0	8	20:45	2	0	0	0	0	2
9:00	9	0	0	0	0	9	21:00	5	0	0	0	0	5
9:15	7	0	0	0	0	7	21:15	3	0	0	0	0	3
9:30	4	1	0	0	0	5	21:30	2	0	0	0	0	2
9:45	10	1	0	0	0	11	21:45	4	0	0	0	0	4
10:00	7	0	0	0	0	7	22:00	0	0	0	0	0	0
10:15	4	0	0	0	0	4	22:15	2	0	0	0	0	2
10:30	10	1	0	0	0	11	22:30	0	0	0	0	0	0
10:45	3	0	0	0	0	3	22:45	1	0	0	0	0	1
11:00	5	1	0	0	0	6	23:00	1	0	0	0	0	1
11:15	9	0	0	0	0	9	23:15	1	0	0	0	0	1
11:30	5	0	0	0	0	5	23:30	1	0	0	0	0	1
11:45	12	0	0	0	0	12	23:45	0	0	0	0	0	0
TOTAL	274	4	0	0	0	278	TOTAL	282	6	0	0	0	288
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						5:15 PM
AM PEAK VOLUME						62	AM PEAK VOLUME						42

CLASS 1	CARS	TOTAL: AM+PM	556	10	0	0	0	566
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.2%	1.8%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	62	0	0	0	0	62
CLASS 4	4-AXLE TRUCKS	PM PEAK	38	0	0	0	0	38
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS85 Middle Dwy east of Milky Way.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	3	0	0	0	0	3	12:00	10	0	0	0	0	10
0:15	3	0	0	0	0	3	12:15	10	0	0	0	0	10
0:30	0	0	0	0	0	0	12:30	14	0	0	0	0	14
0:45	0	0	0	0	0	0	12:45	12	0	0	0	0	12
1:00	0	0	0	0	0	0	13:00	12	1	0	0	0	13
1:15	2	0	0	0	0	2	13:15	12	1	0	0	0	13
1:30	6	0	0	0	0	6	13:30	11	0	0	0	0	11
1:45	0	0	0	0	0	0	13:45	8	0	0	0	0	8
2:00	2	0	0	0	0	2	14:00	11	1	0	0	0	12
2:15	1	0	0	0	0	1	14:15	6	0	0	0	0	6
2:30	0	0	0	0	0	0	14:30	10	0	0	0	0	10
2:45	1	0	0	0	0	1	14:45	13	0	0	0	0	13
3:00	0	0	0	0	0	0	15:00	15	0	0	0	0	15
3:15	0	0	0	0	0	0	15:15	10	0	0	0	0	10
3:30	0	0	0	0	0	0	15:30	10	0	0	0	0	10
3:45	0	0	0	0	0	0	15:45	18	0	0	0	0	18
4:00	0	0	0	0	0	0	16:00	18	0	0	0	0	18
4:15	1	0	0	0	0	1	16:15	19	0	0	0	0	19
4:30	0	0	0	0	0	0	16:30	20	0	0	0	0	20
4:45	1	0	0	0	0	1	16:45	18	1	0	0	0	19
5:00	1	0	0	0	0	1	17:00	20	0	0	0	0	20
5:15	0	0	0	0	0	0	17:15	19	0	0	0	0	19
5:30	1	0	0	0	0	1	17:30	19	0	0	0	0	19
5:45	0	0	0	0	0	0	17:45	17	0	0	0	0	17
6:00	2	0	0	0	0	2	18:00	11	0	0	0	0	11
6:15	2	0	0	0	0	2	18:15	30	0	0	0	0	30
6:30	4	0	0	0	0	4	18:30	15	0	0	0	0	15
6:45	2	0	0	0	0	2	18:45	18	0	0	0	0	18
7:00	3	0	0	0	0	3	19:00	23	3	0	0	0	26
7:15	3	0	0	0	0	3	19:15	10	0	0	0	0	10
7:30	9	0	0	0	0	9	19:30	19	0	0	0	0	19
7:45	9	0	0	0	0	9	19:45	10	0	0	0	0	10
8:00	5	0	0	0	0	5	20:00	11	0	0	0	0	11
8:15	13	0	0	0	0	13	20:15	6	0	0	0	0	6
8:30	4	0	0	0	0	4	20:30	9	0	0	0	0	9
8:45	9	0	0	0	0	9	20:45	6	0	0	0	0	6
9:00	2	0	0	0	0	2	21:00	7	0	0	0	0	7
9:15	3	0	0	0	0	3	21:15	4	0	0	0	0	4
9:30	9	0	0	0	0	9	21:30	8	0	0	0	0	8
9:45	7	0	0	0	0	7	21:45	2	0	0	0	0	2
10:00	5	0	0	0	0	5	22:00	4	0	0	0	0	4
10:15	3	0	0	0	0	3	22:15	1	0	0	0	0	1
10:30	6	0	0	0	0	6	22:30	1	0	0	0	0	1
10:45	8	0	0	0	0	8	22:45	6	0	0	0	0	6
11:00	6	0	0	0	0	6	23:00	7	0	0	0	0	7
11:15	13	0	0	0	0	13	23:15	1	0	0	0	0	1
11:30	11	1	0	0	0	12	23:30	4	0	0	0	0	4
11:45	7	0	0	0	0	7	23:45	0	0	0	0	0	0
TOTAL	167	1	0	0	0	168	TOTAL	545	7	0	0	0	552
AM PEAK HOUR						10:45 AM	AM PEAK HOUR						6:15 PM
AM PEAK VOLUME						39	AM PEAK VOLUME						89

CLASS 1	CARS	TOTAL: AM+PM	712	8	0	0	0	720
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.9%	1.1%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	31	0	0	0	0	31
CLASS 4	4-AXLE TRUCKS	PM PEAK	75	1	0	0	0	76
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS85 Middle Dwy east of Milky Way.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	7	0	0	0	0	7
0:15	3	0	0	0	0	3	12:15	5	0	0	0	0	5
0:30	0	0	0	0	0	0	12:30	15	0	0	0	0	15
0:45	1	0	0	0	0	1	12:45	14	0	0	0	0	14
1:00	0	0	0	0	0	0	13:00	6	1	0	0	0	7
1:15	1	0	0	0	0	1	13:15	9	2	0	0	0	11
1:30	1	0	0	0	0	1	13:30	8	0	0	0	0	8
1:45	0	0	0	0	0	0	13:45	6	1	0	0	0	7
2:00	0	0	0	0	0	0	14:00	9	0	0	0	0	9
2:15	0	0	0	0	0	0	14:15	10	1	0	0	0	11
2:30	3	0	0	0	0	3	14:30	8	0	0	0	0	8
2:45	1	0	0	0	0	1	14:45	12	2	0	0	0	14
3:00	0	0	0	0	0	0	15:00	8	0	0	0	0	8
3:15	0	0	0	0	0	0	15:15	5	0	0	0	0	5
3:30	5	0	0	0	0	5	15:30	8	0	0	0	0	8
3:45	0	0	0	0	0	0	15:45	11	0	0	0	0	11
4:00	0	0	0	0	0	0	16:00	16	1	0	0	0	17
4:15	0	0	0	0	0	0	16:15	11	0	0	0	0	11
4:30	5	2	0	0	0	7	16:30	7	0	0	0	0	7
4:45	3	0	0	0	0	3	16:45	9	0	0	0	0	9
5:00	1	0	0	0	0	1	17:00	11	0	0	0	0	11
5:15	9	0	0	0	0	9	17:15	12	0	0	0	0	12
5:30	8	2	0	0	0	10	17:30	12	0	0	0	0	12
5:45	7	2	0	0	0	9	17:45	12	0	0	0	0	12
6:00	6	0	0	0	0	6	18:00	9	0	0	0	0	9
6:15	12	0	0	0	0	12	18:15	5	0	0	0	0	5
6:30	7	0	0	0	0	7	18:30	11	0	0	0	0	11
6:45	8	0	0	0	0	8	18:45	8	0	0	0	0	8
7:00	6	0	0	0	0	6	19:00	5	0	0	0	0	5
7:15	8	0	0	0	0	8	19:15	8	0	0	0	0	8
7:30	27	3	0	0	0	30	19:30	8	0	0	0	0	8
7:45	17	0	0	0	0	17	19:45	7	0	0	0	0	7
8:00	25	0	0	0	0	25	20:00	5	0	0	0	0	5
8:15	13	0	0	0	0	13	20:15	6	0	0	0	0	6
8:30	19	0	0	0	0	19	20:30	4	0	0	0	0	4
8:45	12	0	0	0	0	12	20:45	3	0	0	0	0	3
9:00	3	0	0	0	0	3	21:00	6	0	0	0	0	6
9:15	6	0	0	0	0	6	21:15	2	0	0	0	0	2
9:30	9	0	0	0	0	9	21:30	3	0	0	0	0	3
9:45	11	0	0	0	0	11	21:45	3	0	0	0	0	3
10:00	5	0	0	0	0	5	22:00	2	0	0	0	0	2
10:15	8	0	0	0	0	8	22:15	1	0	0	0	0	1
10:30	7	0	0	0	0	7	22:30	5	0	0	0	0	5
10:45	8	0	0	0	0	8	22:45	2	0	0	0	0	2
11:00	8	0	0	0	0	8	23:00	4	0	0	0	0	4
11:15	8	0	0	0	0	8	23:15	3	0	0	0	0	3
11:30	5	0	0	0	0	5	23:30	0	0	0	0	0	0
11:45	9	0	0	0	0	9	23:45	1	0	0	0	0	1
TOTAL	295	9	0	0	0	304	TOTAL	342	8	0	0	0	350
						AM PEAK HOUR							AM PEAK HOUR
						7:30 AM							5:00 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						85							47

CLASS 1	CARS	TOTAL: AM+PM	637	17	0	0	0	654
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	97.4%	2.6%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	82	3	0	0	0	85
CLASS 4	4-AXLE TRUCKS	PM PEAK	47	0	0	0	0	47
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS86 Southern Dwy east of Milky Way.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	4	0	0	0	0	4
0:15	0	0	0	0	0	0	12:15	5	0	0	0	0	5
0:30	2	0	0	0	0	2	12:30	7	1	0	0	0	8
0:45	0	0	0	0	0	0	12:45	7	1	0	0	0	8
1:00	1	0	0	0	0	1	13:00	4	0	0	0	0	4
1:15	2	0	0	0	0	2	13:15	4	0	0	0	0	4
1:30	1	0	0	0	0	1	13:30	9	2	0	0	0	11
1:45	1	0	0	0	0	1	13:45	13	1	0	0	0	14
2:00	0	0	0	0	0	0	14:00	11	0	0	0	0	11
2:15	0	0	0	0	0	0	14:15	7	1	0	0	0	8
2:30	0	0	0	0	0	0	14:30	11	0	0	0	0	11
2:45	0	0	0	0	0	0	14:45	11	2	0	0	0	13
3:00	1	0	0	0	0	1	15:00	7	0	0	0	0	7
3:15	1	0	0	0	0	1	15:15	12	1	0	0	0	13
3:30	0	0	0	0	0	0	15:30	8	0	0	0	0	8
3:45	0	0	0	0	0	0	15:45	9	0	0	0	0	9
4:00	1	0	0	0	0	1	16:00	5	0	0	0	0	5
4:15	0	0	0	0	0	0	16:15	7	0	0	0	0	7
4:30	0	0	0	0	0	0	16:30	16	0	0	0	0	16
4:45	0	0	0	0	0	0	16:45	14	0	0	0	0	14
5:00	2	0	0	0	0	2	17:00	10	0	0	0	0	10
5:15	0	0	0	0	0	0	17:15	9	1	0	0	0	10
5:30	2	0	0	0	0	2	17:30	10	1	0	0	0	11
5:45	0	0	0	0	0	0	17:45	9	0	0	0	0	9
6:00	2	0	0	0	0	2	18:00	11	0	0	0	0	11
6:15	2	0	0	0	0	2	18:15	16	0	0	0	0	16
6:30	2	0	0	0	0	2	18:30	11	0	0	0	0	11
6:45	1	0	0	0	0	1	18:45	10	0	0	0	0	10
7:00	5	0	0	0	0	5	19:00	9	0	0	0	0	9
7:15	4	0	0	0	0	4	19:15	16	0	0	0	0	16
7:30	1	3	0	0	0	4	19:30	11	0	0	0	0	11
7:45	5	0	0	0	0	5	19:45	8	0	0	0	0	8
8:00	7	0	0	0	0	7	20:00	12	0	0	0	0	12
8:15	2	0	0	0	0	2	20:15	16	0	0	0	0	16
8:30	9	0	0	0	0	9	20:30	4	0	0	0	0	4
8:45	5	0	0	0	0	5	20:45	4	0	0	0	0	4
9:00	5	0	0	0	0	5	21:00	9	0	0	0	0	9
9:15	4	0	0	0	0	4	21:15	8	0	0	0	0	8
9:30	6	0	0	0	0	6	21:30	7	0	0	0	0	7
9:45	3	1	0	0	0	4	21:45	4	0	0	0	0	4
10:00	3	0	0	0	0	3	22:00	5	0	0	0	0	5
10:15	4	0	0	0	0	4	22:15	6	0	0	0	0	6
10:30	4	0	0	0	0	4	22:30	7	0	0	0	0	7
10:45	2	1	0	0	0	3	22:45	4	0	0	0	0	4
11:00	5	0	0	0	0	5	23:00	1	0	0	0	0	1
11:15	2	0	0	0	0	2	23:15	3	0	0	0	0	3
11:30	9	0	0	0	0	9	23:30	4	0	0	0	0	4
11:45	2	0	0	0	0	2	23:45	3	0	0	0	0	3
TOTAL	109	5	0	0	0	114	TOTAL	398	11	0	0	0	409
			AM PEAK HOUR 8:30 AM							AM PEAK HOUR 4:30 PM			
			AM PEAK VOLUME 23							AM PEAK VOLUME 50			

CLASS 1	CARS	TOTAL: AM+PM	507	16	0	0	0	523
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	96.9%	3.1%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	23	0	0	0	0	23
CLASS 4	4-AXLE TRUCKS	PM PEAK	49	1	0	0	0	50
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 5 - Morning Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS86 Southern Dwy east of Milky Way.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	4	0	0	0	0	4
0:15	0	0	0	0	0	0	12:15	6	0	0	0	0	6
0:30	1	0	0	0	0	1	12:30	7	0	0	0	0	7
0:45	0	0	0	0	0	0	12:45	4	0	0	0	0	4
1:00	2	0	0	0	0	2	13:00	4	0	0	0	0	4
1:15	0	0	0	0	0	0	13:15	5	0	0	0	0	5
1:30	3	0	0	0	0	3	13:30	11	0	0	0	0	11
1:45	0	0	0	0	0	0	13:45	4	1	0	0	0	5
2:00	0	0	0	0	0	0	14:00	14	0	0	0	0	14
2:15	0	0	0	0	0	0	14:15	5	1	0	0	0	6
2:30	0	0	0	0	0	0	14:30	15	0	0	0	0	15
2:45	0	0	0	0	0	0	14:45	6	0	0	0	0	6
3:00	0	0	0	0	0	0	15:00	5	0	0	0	0	5
3:15	0	0	0	0	0	0	15:15	6	0	0	0	0	6
3:30	1	0	0	0	0	1	15:30	1	0	0	0	0	1
3:45	0	0	0	0	0	0	15:45	5	0	0	0	0	5
4:00	2	0	0	0	0	2	16:00	6	0	0	0	0	6
4:15	2	0	0	0	0	2	16:15	6	0	0	0	0	6
4:30	9	0	0	0	0	9	16:30	9	0	0	0	0	9
4:45	3	0	0	0	0	3	16:45	13	0	0	0	0	13
5:00	6	0	0	0	0	6	17:00	10	0	0	0	0	10
5:15	9	0	0	0	0	9	17:15	9	0	0	0	0	9
5:30	8	0	0	0	0	8	17:30	4	0	0	0	0	4
5:45	5	0	0	0	0	5	17:45	7	0	0	0	0	7
6:00	8	0	0	0	0	8	18:00	8	0	0	0	0	8
6:15	7	0	0	0	0	7	18:15	4	0	0	0	0	4
6:30	8	0	0	0	0	8	18:30	4	0	0	0	0	4
6:45	3	0	0	0	0	3	18:45	5	0	0	0	0	5
7:00	4	0	0	0	0	4	19:00	5	0	0	0	0	5
7:15	5	0	0	0	0	5	19:15	7	0	0	0	0	7
7:30	12	0	0	0	0	12	19:30	4	0	0	0	0	4
7:45	9	0	0	0	0	9	19:45	3	0	0	0	0	3
8:00	7	0	0	0	0	7	20:00	4	0	0	0	0	4
8:15	7	0	0	1	0	8	20:15	3	0	0	0	0	3
8:30	15	0	0	0	0	15	20:30	4	0	0	0	0	4
8:45	4	0	0	0	0	4	20:45	4	0	0	0	0	4
9:00	3	0	0	0	0	3	21:00	2	0	0	0	0	2
9:15	6	0	0	0	0	6	21:15	7	0	0	0	0	7
9:30	8	0	0	0	0	8	21:30	2	0	0	0	0	2
9:45	6	0	0	0	0	6	21:45	4	0	0	0	0	4
10:00	7	0	0	0	0	7	22:00	0	0	0	0	0	0
10:15	4	0	0	0	0	4	22:15	4	0	0	0	0	4
10:30	5	0	0	0	0	5	22:30	1	0	0	0	0	1
10:45	2	0	0	0	0	2	22:45	1	0	0	0	0	1
11:00	10	0	0	0	0	10	23:00	1	0	0	0	0	1
11:15	4	0	0	0	0	4	23:15	2	0	0	0	0	2
11:30	5	0	0	0	0	5	23:30	0	0	0	0	0	0
11:45	7	0	0	0	0	7	23:45	2	0	0	0	0	2
TOTAL	208	0	0	1	0	209	TOTAL	247	2	0	0	0	249
						AM PEAK HOUR	7:45 AM						
						AM PEAK VOLUME	39						
												AM PEAK HOUR	4:30 PM
												AM PEAK VOLUME	41

CLASS 1	CARS	TOTAL: AM+PM	455	2	0	1	0	458
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.3%	0.4%	0.0%	0.2%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	38	0	0	1	0	39
CLASS 4	4-AXLE TRUCKS	PM PEAK	41	0	0	0	0	41
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 6 - Stonegate Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS71 Northern dwy west of Doolittle

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	12	0	0	0	0	12
0:15	2	0	0	0	0	2	12:15	9	0	0	0	0	9
0:30	2	0	0	0	0	2	12:30	11	0	0	0	0	11
0:45	3	0	0	0	0	3	12:45	12	0	0	0	0	12
1:00	1	0	0	0	0	1	13:00	5	0	0	0	0	5
1:15	5	0	0	0	0	5	13:15	7	0	0	0	0	7
1:30	2	0	0	0	0	2	13:30	11	0	0	0	0	11
1:45	3	0	0	0	0	3	13:45	10	0	0	0	0	10
2:00	1	0	0	0	0	1	14:00	16	0	0	0	0	16
2:15	1	0	0	0	0	1	14:15	14	0	0	0	0	14
2:30	0	0	0	0	0	0	14:30	23	0	0	0	0	23
2:45	0	0	0	0	0	0	14:45	10	0	0	0	0	10
3:00	3	0	0	0	0	3	15:00	17	0	0	0	0	17
3:15	3	0	0	0	0	3	15:15	18	0	0	0	0	18
3:30	1	0	0	0	0	1	15:30	14	0	0	0	0	14
3:45	1	1	0	0	0	2	15:45	16	0	0	0	0	16
4:00	1	0	0	0	0	1	16:00	17	0	0	0	0	17
4:15	0	0	0	0	0	0	16:15	16	0	0	0	0	16
4:30	1	0	0	0	0	1	16:30	17	0	0	0	0	17
4:45	6	0	0	0	0	6	16:45	12	0	0	0	0	12
5:00	3	0	0	0	0	3	17:00	16	0	0	0	0	16
5:15	6	0	0	0	0	6	17:15	22	0	0	0	0	22
5:30	0	0	0	0	0	0	17:30	17	0	0	0	0	17
5:45	1	0	0	0	0	1	17:45	17	0	0	0	0	17
6:00	2	0	0	0	0	2	18:00	20	0	0	0	0	20
6:15	1	0	0	0	0	1	18:15	10	0	0	0	0	10
6:30	2	0	0	0	0	2	18:30	15	0	0	0	0	15
6:45	3	0	0	0	0	3	18:45	15	0	0	0	0	15
7:00	3	0	0	0	0	3	19:00	6	0	0	0	0	6
7:15	4	0	0	0	0	4	19:15	6	1	0	0	0	7
7:30	4	0	0	0	0	4	19:30	16	0	0	0	0	16
7:45	9	0	0	0	0	9	19:45	10	0	0	0	0	10
8:00	13	0	0	0	0	13	20:00	8	0	0	0	0	8
8:15	7	0	0	0	0	7	20:15	13	0	0	0	0	13
8:30	12	1	0	0	0	13	20:30	15	0	0	0	0	15
8:45	13	0	0	0	0	13	20:45	11	0	0	0	0	11
9:00	5	0	0	0	0	5	21:00	14	0	0	0	0	14
9:15	3	0	0	0	0	3	21:15	9	0	0	0	0	9
9:30	4	0	0	0	0	4	21:30	12	0	0	0	0	12
9:45	7	1	0	0	0	8	21:45	12	0	0	0	0	12
10:00	2	0	0	0	0	2	22:00	8	0	0	0	0	8
10:15	5	0	0	0	0	5	22:15	4	0	0	0	0	4
10:30	6	0	0	0	0	6	22:30	5	0	0	0	0	5
10:45	7	0	0	0	0	7	22:45	3	0	0	0	0	3
11:00	8	1	0	0	0	9	23:00	7	0	0	0	0	7
11:15	1	0	0	0	0	1	23:15	5	0	0	0	0	5
11:30	5	0	0	0	0	5	23:30	5	0	0	0	0	5
11:45	11	0	0	0	0	11	23:45	2	0	0	0	0	2
TOTAL	183	4	0	0	0	187	TOTAL	570	1	0	0	0	571
						AM PEAK HOUR							AM PEAK HOUR
						8:00 AM							5:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						46							76

CLASS 1	CARS	TOTAL: AM+PM	753	5	0	0	0	758
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.3%	0.7%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	45	1	0	0	0	46
CLASS 4	4-AXLE TRUCKS	PM PEAK	72	0	0	0	0	72
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 6 - Stonegate Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS71 Northern dwy west of Doolittle

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	9	0	0	0	0	9
0:15	0	0	0	0	0	0	12:15	13	0	0	0	0	13
0:30	0	0	0	0	0	0	12:30	13	1	0	0	0	14
0:45	2	0	0	0	0	2	12:45	17	0	0	0	0	17
1:00	0	0	0	0	0	0	13:00	6	0	0	0	0	6
1:15	2	0	0	0	0	2	13:15	12	0	0	0	0	12
1:30	1	0	0	0	0	1	13:30	14	1	0	0	0	15
1:45	1	0	0	0	0	1	13:45	20	0	0	0	0	20
2:00	0	0	0	0	0	0	14:00	12	0	0	0	0	12
2:15	3	0	0	0	0	3	14:15	8	0	0	0	0	8
2:30	1	0	0	0	0	1	14:30	13	0	0	0	0	13
2:45	0	0	0	0	0	0	14:45	6	1	0	0	0	7
3:00	0	0	0	0	0	0	15:00	13	0	0	0	0	13
3:15	6	0	0	0	0	6	15:15	12	0	0	0	0	12
3:30	5	0	0	0	0	5	15:30	13	0	0	0	0	13
3:45	6	0	0	0	0	6	15:45	11	0	0	0	0	11
4:00	5	0	0	0	0	5	16:00	12	0	0	0	0	12
4:15	4	0	0	0	0	4	16:15	9	0	0	0	0	9
4:30	6	0	0	0	0	6	16:30	6	0	0	0	0	6
4:45	4	0	0	0	0	4	16:45	12	0	0	0	0	12
5:00	6	0	0	0	0	6	17:00	8	0	0	0	0	8
5:15	7	0	0	0	0	7	17:15	13	0	0	0	0	13
5:30	11	0	0	0	0	11	17:30	14	0	0	0	0	14
5:45	12	0	0	0	0	12	17:45	8	0	0	0	0	8
6:00	1	0	0	0	0	1	18:00	11	0	0	0	0	11
6:15	7	0	0	0	0	7	18:15	9	0	0	0	0	9
6:30	12	0	0	0	0	12	18:30	5	0	0	0	0	5
6:45	17	0	0	0	0	17	18:45	7	0	0	0	0	7
7:00	8	0	0	0	0	8	19:00	8	0	0	0	0	8
7:15	16	0	0	0	0	16	19:15	9	0	0	0	0	9
7:30	21	0	0	0	0	21	19:30	6	0	0	0	0	6
7:45	18	0	0	0	0	18	19:45	8	0	0	0	0	8
8:00	13	0	0	0	0	13	20:00	6	0	0	0	0	6
8:15	5	0	0	0	0	5	20:15	11	0	0	0	0	11
8:30	7	0	0	0	0	7	20:30	7	0	0	0	0	7
8:45	8	0	0	0	0	8	20:45	6	0	0	0	0	6
9:00	10	0	1	0	0	11	21:00	4	0	0	0	0	4
9:15	14	0	0	0	0	14	21:15	4	0	0	0	0	4
9:30	7	1	0	0	0	8	21:30	3	1	0	0	0	4
9:45	7	0	0	0	0	7	21:45	5	1	0	0	0	6
10:00	7	1	0	0	0	8	22:00	4	0	0	0	0	4
10:15	5	1	0	0	0	6	22:15	2	0	0	0	0	2
10:30	5	1	0	0	0	6	22:30	3	0	0	0	0	3
10:45	10	2	0	0	0	12	22:45	0	0	0	0	0	0
11:00	5	1	0	0	0	6	23:00	6	0	0	0	0	6
11:15	4	0	0	0	0	4	23:15	0	0	0	0	0	0
11:30	7	1	0	0	0	8	23:30	2	0	0	0	0	2
11:45	13	0	0	0	0	13	23:45	1	0	0	0	0	1
TOTAL	309	8	1	0	0	318	TOTAL	401	5	0	0	0	406
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						1:15 PM
AM PEAK VOLUME						68	AM PEAK VOLUME						59

CLASS 1	CARS	TOTAL: AM+PM	710	13	1	0	0	724
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.1%	1.8%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	68	0	0	0	0	68
CLASS 4	4-AXLE TRUCKS	PM PEAK	47	0	0	0	0	47
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 6 - Stonegate Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS72 Southern dwy west of Doolittle

AM TIME	IN						TOTAL	PM Time	IN						TOTAL
	1	2	3	4	5				1	2	3	4	5		
0:00	2	0	0	0	0		2	12:00	19	1	0	0	0		20
0:15	1	0	0	0	0		1	12:15	16	1	0	0	0		17
0:30	2	0	0	0	0		2	12:30	16	0	0	0	0		16
0:45	2	0	0	0	0		2	12:45	11	0	0	0	0		11
1:00	2	0	0	0	0		2	13:00	12	0	0	0	0		12
1:15	1	0	0	0	0		1	13:15	18	0	0	0	0		18
1:30	0	0	0	0	0		0	13:30	13	1	0	0	0		14
1:45	0	0	0	0	0		0	13:45	5	0	0	0	0		5
2:00	2	0	0	0	0		2	14:00	18	0	0	0	0		18
2:15	1	0	0	0	0		1	14:15	13	0	0	0	0		13
2:30	0	0	0	0	0		0	14:30	15	0	0	0	0		15
2:45	0	0	0	0	0		0	14:45	17	1	0	0	0		18
3:00	0	0	0	0	0		0	15:00	21	0	0	0	0		21
3:15	2	0	0	0	0		2	15:15	19	2	0	0	0		21
3:30	0	0	0	0	0		0	15:30	11	0	0	0	0		11
3:45	1	0	0	0	0		1	15:45	19	1	0	0	0		20
4:00	1	0	0	0	0		1	16:00	24	0	0	0	0		24
4:15	0	0	0	0	0		0	16:15	13	0	0	0	0		13
4:30	0	0	0	0	0		0	16:30	9	0	0	0	0		9
4:45	0	0	0	0	0		0	16:45	18	0	0	0	0		18
5:00	1	0	0	0	0		1	17:00	24	0	0	0	0		24
5:15	1	0	0	0	0		1	17:15	15	0	0	0	0		15
5:30	2	0	0	0	0		2	17:30	21	0	0	0	0		21
5:45	1	0	0	0	0		1	17:45	23	0	0	0	0		23
6:00	0	0	0	0	0		0	18:00	12	0	0	0	0		12
6:15	4	0	0	0	0		4	18:15	13	0	0	0	0		13
6:30	3	0	0	0	0		3	18:30	12	0	0	0	0		12
6:45	3	0	0	0	0		3	18:45	11	0	0	0	0		11
7:00	4	0	0	0	0		4	19:00	13	0	0	0	0		13
7:15	4	2	0	0	0		6	19:15	21	0	0	0	0		21
7:30	6	1	0	0	0		7	19:30	5	0	0	0	0		5
7:45	4	0	0	0	0		4	19:45	10	0	0	0	0		10
8:00	13	0	0	0	0		13	20:00	13	1	0	0	0		14
8:15	11	0	0	0	0		11	20:15	12	0	0	0	0		12
8:30	10	0	1	0	0		11	20:30	17	0	0	0	0		17
8:45	6	0	0	0	0		6	20:45	10	0	0	0	0		10
9:00	10	0	0	0	0		10	21:00	11	0	0	0	0		11
9:15	13	0	0	0	0		13	21:15	8	1	0	0	0		9
9:30	10	1	0	0	0		11	21:30	1	0	0	0	0		1
9:45	7	0	0	0	0		7	21:45	9	0	0	0	0		9
10:00	5	0	1	0	0		6	22:00	4	0	0	0	0		4
10:15	10	2	0	0	0		12	22:15	2	0	0	0	0		2
10:30	21	1	0	0	0		22	22:30	5	0	0	0	0		5
10:45	7	1	0	0	0		8	22:45	5	0	0	0	0		5
11:00	14	0	0	0	0		14	23:00	3	0	0	0	0		3
11:15	10	2	0	0	0		12	23:15	2	0	0	0	0		2
11:30	18	1	0	0	0		19	23:30	4	0	0	0	0		4
11:45	10	0	0	0	0		10	23:45	1	0	0	0	0		1
TOTAL	225	11	2	0	0		238	TOTAL	594	9	0	0	0		603
AM PEAK HOUR							10:30 AM	AM PEAK HOUR							5:00 PM
AM PEAK VOLUME							56	AM PEAK VOLUME							83

CLASS 1	CARS	TOTAL: AM+PM	819	20	2	0	0	841
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	97.4%	2.4%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	38	0	1	0	0	39
CLASS 4	4-AXLE TRUCKS	PM PEAK	83	0	0	0	0	83
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 6 - Stonegate Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS72 Southern dwy west of Doolittle

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	14	0	0	0	0	14
0:15	1	0	0	0	0	1	12:15	3	0	0	0	0	3
0:30	2	0	0	0	0	2	12:30	5	0	0	0	0	5
0:45	2	0	0	0	0	2	12:45	16	0	0	0	0	16
1:00	0	0	0	0	0	0	13:00	4	0	0	0	0	4
1:15	2	0	0	0	0	2	13:15	8	0	0	0	0	8
1:30	0	0	0	0	0	0	13:30	6	0	0	0	0	6
1:45	1	0	0	0	0	1	13:45	11	1	0	0	0	12
2:00	2	0	0	0	0	2	14:00	5	0	0	0	0	5
2:15	1	0	0	0	0	1	14:15	6	0	0	0	0	6
2:30	0	0	0	0	0	0	14:30	10	0	0	0	0	10
2:45	0	0	0	0	0	0	14:45	6	0	0	0	0	6
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	0	0	0	0	0	0	15:15	3	0	0	0	0	3
3:30	3	0	0	0	0	3	15:30	10	0	0	0	0	10
3:45	3	0	0	0	0	3	15:45	12	0	0	0	0	12
4:00	6	1	0	0	0	7	16:00	12	0	0	0	0	12
4:15	2	0	0	0	0	2	16:15	8	0	0	0	0	8
4:30	2	0	0	0	0	2	16:30	8	0	0	0	0	8
4:45	2	0	0	0	0	2	16:45	12	0	0	0	0	12
5:00	0	0	0	0	0	0	17:00	7	0	0	0	0	7
5:15	5	0	0	0	0	5	17:15	8	0	0	0	0	8
5:30	7	0	0	0	0	7	17:30	8	0	0	0	0	8
5:45	5	0	0	0	0	5	17:45	6	0	0	0	0	6
6:00	5	0	0	0	0	5	18:00	8	0	0	0	0	8
6:15	4	0	0	0	0	4	18:15	9	0	0	0	0	9
6:30	12	0	0	0	0	12	18:30	6	0	0	0	0	6
6:45	4	0	0	0	0	4	18:45	6	0	0	0	0	6
7:00	5	0	0	0	0	5	19:00	4	0	0	0	0	4
7:15	6	0	0	0	0	6	19:15	9	0	0	0	0	9
7:30	11	0	0	0	0	11	19:30	8	0	0	0	0	8
7:45	18	0	0	0	0	18	19:45	4	0	0	0	0	4
8:00	8	0	0	0	0	8	20:00	3	0	0	0	0	3
8:15	11	0	0	0	0	11	20:15	5	0	0	0	0	5
8:30	11	0	0	0	0	11	20:30	5	0	0	0	0	5
8:45	1	0	0	0	0	1	20:45	2	0	0	0	0	2
9:00	4	0	0	0	0	4	21:00	3	0	0	0	0	3
9:15	9	0	0	0	0	9	21:15	2	0	0	0	0	2
9:30	8	0	0	0	0	8	21:30	5	0	0	0	0	5
9:45	8	0	0	0	0	8	21:45	4	0	0	0	0	4
10:00	3	0	0	0	0	3	22:00	3	0	0	0	0	3
10:15	10	0	0	0	0	10	22:15	3	0	0	0	0	3
10:30	9	0	0	0	0	9	22:30	2	0	0	0	0	2
10:45	9	0	0	0	0	9	22:45	4	0	0	0	0	4
11:00	7	0	0	0	0	7	23:00	2	0	0	0	0	2
11:15	10	0	0	0	0	10	23:15	2	0	0	0	0	2
11:30	8	0	0	0	0	8	23:30	3	0	0	0	0	3
11:45	8	0	0	0	0	8	23:45	0	0	0	0	0	0
TOTAL	235	1	0	0	0	236	TOTAL	296	1	0	0	0	297
						AM PEAK HOUR	7:45 AM						
						AM PEAK VOLUME	48						
						AM PEAK HOUR	3:30 PM						
						AM PEAK VOLUME	42						

CLASS 1	CARS	TOTAL: AM+PM	531	2	0	0	0	533
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.6%	0.4%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	48	0	0	0	0	48
CLASS 4	4-AXLE TRUCKS	PM PEAK	40	0	0	0	0	40
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 7 - River's Edge Apartment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS82 Dwy east of Elm.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0	12:15	0	0	0	0	0	0
0:30	0	0	0	0	0	0	12:30	0	0	0	0	0	0
0:45	0	0	0	0	0	0	12:45	0	0	0	0	0	0
1:00	0	0	0	0	0	0	13:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0	13:15	0	0	0	0	0	0
1:30	0	0	0	0	0	0	13:30	0	0	0	0	0	0
1:45	0	0	0	0	0	0	13:45	0	0	0	0	0	0
2:00	0	0	0	0	0	0	14:00	0	0	0	0	0	0
2:15	0	0	0	0	0	0	14:15	0	0	0	0	0	0
2:30	0	0	0	0	0	0	14:30	0	0	0	0	0	0
2:45	0	0	0	0	0	0	14:45	0	0	0	0	0	0
3:00	0	0	0	0	0	0	15:00	0	0	0	0	0	0
3:15	0	0	0	0	0	0	15:15	0	0	0	0	0	0
3:30	0	0	0	0	0	0	15:30	0	0	0	0	0	0
3:45	0	0	0	0	0	0	15:45	0	0	0	0	0	0
4:00	0	0	0	0	0	0	16:00	0	0	0	0	0	0
4:15	0	0	0	0	0	0	16:15	0	0	0	0	0	0
4:30	0	0	0	0	0	0	16:30	0	0	0	0	0	0
4:45	0	0	0	0	0	0	16:45	0	0	0	0	0	0
5:00	0	0	0	0	0	0	17:00	0	0	0	0	0	0
5:15	0	0	0	0	0	0	17:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0	17:30	0	0	0	0	0	0
5:45	0	0	0	0	0	0	17:45	0	0	0	0	0	0
6:00	0	0	0	0	0	0	18:00	0	0	0	0	0	0
6:15	0	0	0	0	0	0	18:15	0	0	0	0	0	0
6:30	0	0	0	0	0	0	18:30	0	0	0	0	0	0
6:45	0	0	0	0	0	0	18:45	0	0	0	0	0	0
7:00	0	0	0	0	0	0	19:00	0	0	0	0	0	0
7:15	0	0	0	0	0	0	19:15	0	0	0	0	0	0
7:30	0	0	0	0	0	0	19:30	0	0	0	0	0	0
7:45	0	0	0	0	0	0	19:45	0	0	0	0	0	0
8:00	0	0	0	0	0	0	20:00	0	0	0	0	0	0
8:15	0	0	0	0	0	0	20:15	0	0	0	0	0	0
8:30	1	0	0	0	0	1	20:30	0	0	0	0	0	0
8:45	0	0	0	0	0	0	20:45	0	0	0	0	0	0
9:00	0	0	0	0	0	0	21:00	0	0	0	0	0	0
9:15	0	0	0	0	0	0	21:15	0	0	0	0	0	0
9:30	0	0	0	0	0	0	21:30	0	0	0	0	0	0
9:45	0	0	0	0	0	0	21:45	0	0	0	0	0	0
10:00	0	0	0	0	0	0	22:00	0	0	0	0	0	0
10:15	0	0	0	0	0	0	22:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0	22:30	0	0	0	0	0	0
10:45	0	0	0	0	0	0	22:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0	23:00	0	0	0	0	0	0
11:15	1	0	0	0	0	1	23:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0	23:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0	23:45	0	0	0	0	0	0
TOTAL	2	0	0	0	0	2	TOTAL	0	0	0	0	0	0
AM PEAK HOUR						11:15 AM	AM PEAK HOUR						11:45 PM
AM PEAK VOLUME						1	AM PEAK VOLUME						0

CLASS 1	CARS	TOTAL: AM+PM	2	0	0	0	0	2
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	1	0	0	0	0	1
CLASS 4	4-AXLE TRUCKS	PM PEAK	0	0	0	0	0	0
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 7 - River's Edge Apartment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS82 Dwy east of Elm.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	0	0	0	0	0	0
0:15	0	0	0	0	0	0	12:15	2	1	0	0	0	3
0:30	0	0	0	0	0	0	12:30	2	0	0	0	0	2
0:45	0	0	0	0	0	0	12:45	1	0	0	0	0	1
1:00	0	0	0	0	0	0	13:00	0	0	0	0	0	0
1:15	0	0	0	0	0	0	13:15	1	0	0	0	0	1
1:30	0	0	0	0	0	0	13:30	1	0	0	0	0	1
1:45	0	0	0	0	0	0	13:45	4	0	0	0	0	4
2:00	0	0	0	0	0	0	14:00	1	0	0	0	0	1
2:15	1	0	0	0	0	1	14:15	4	0	0	0	0	4
2:30	0	0	0	0	0	0	14:30	0	0	0	0	0	0
2:45	1	0	0	0	0	1	14:45	1	1	0	0	0	2
3:00	0	0	0	0	0	0	15:00	3	0	0	0	0	3
3:15	0	0	0	0	0	0	15:15	3	0	0	1	0	4
3:30	0	0	0	0	0	0	15:30	2	0	0	0	0	2
3:45	0	0	0	0	0	0	15:45	2	0	0	0	0	2
4:00	0	0	0	0	0	0	16:00	3	0	0	0	0	3
4:15	0	0	0	0	0	0	16:15	3	0	0	0	0	3
4:30	0	0	0	0	0	0	16:30	1	1	0	0	0	2
4:45	0	0	0	0	0	0	16:45	2	0	0	0	0	2
5:00	0	0	0	0	0	0	17:00	0	0	0	0	0	0
5:15	0	0	0	0	0	0	17:15	0	0	0	0	0	0
5:30	0	0	0	0	0	0	17:30	2	0	0	0	0	2
5:45	2	0	0	0	0	2	17:45	0	0	0	0	0	0
6:00	1	0	0	0	0	1	18:00	3	0	0	0	0	3
6:15	0	0	0	0	0	0	18:15	0	0	0	0	0	0
6:30	0	0	0	0	0	0	18:30	1	0	0	0	0	1
6:45	0	0	0	0	0	0	18:45	2	0	0	0	0	2
7:00	0	0	0	0	0	0	19:00	3	0	0	0	0	3
7:15	1	0	0	0	0	1	19:15	1	0	0	0	0	1
7:30	2	0	0	0	0	2	19:30	1	0	0	0	0	1
7:45	7	0	0	0	0	7	19:45	1	0	0	0	0	1
8:00	5	0	0	0	0	5	20:00	0	0	0	0	0	0
8:15	1	0	0	0	0	1	20:15	1	0	0	0	0	1
8:30	4	0	0	0	0	4	20:30	2	0	0	0	0	2
8:45	1	0	0	0	0	1	20:45	2	0	0	0	0	2
9:00	4	0	0	0	0	4	21:00	1	0	0	0	0	1
9:15	1	0	0	0	0	1	21:15	1	0	0	0	0	1
9:30	2	0	0	0	0	2	21:30	0	0	0	0	0	0
9:45	0	0	0	0	0	0	21:45	4	0	0	0	0	4
10:00	0	0	0	0	0	0	22:00	1	0	0	0	0	1
10:15	1	0	0	0	0	1	22:15	0	0	0	0	0	0
10:30	1	0	0	0	0	1	22:30	1	0	0	0	0	1
10:45	0	0	0	0	0	0	22:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0	23:00	0	0	0	0	0	0
11:15	1	1	0	0	0	2	23:15	0	0	0	0	0	0
11:30	2	0	0	0	0	2	23:30	2	0	0	0	0	2
11:45	0	1	0	0	0	1	23:45	0	0	0	0	0	0
TOTAL	38	2	0	0	0	40	TOTAL	65	3	0	1	0	69
						AM PEAK HOUR							AM PEAK HOUR
						7:45 AM							3:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						17							11

CLASS 1	CARS	TOTAL: AM+PM	103	5	0	1	0	109
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	94.5%	4.6%	0.0%	0.9%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	17	0	0	0	0	17
CLASS 4	4-AXLE TRUCKS	PM PEAK	9	1	0	0	0	10
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 7 - River's Edge Apartment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS83 Dwy south of Lakeshore.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	3	0	0	0	0	3	12:00	23	3	0	0	0	26
0:15	2	0	0	0	0	2	12:15	17	2	0	0	0	19
0:30	4	0	0	0	0	4	12:30	22	0	0	0	0	22
0:45	3	0	0	0	0	3	12:45	15	0	0	0	0	15
1:00	2	0	0	0	0	2	13:00	17	0	0	0	0	17
1:15	2	0	0	0	0	2	13:15	17	2	0	0	0	19
1:30	0	0	0	0	0	0	13:30	15	0	0	0	0	15
1:45	3	0	0	0	0	3	13:45	36	0	0	0	0	36
2:00	2	0	0	0	0	2	14:00	29	0	0	0	0	29
2:15	2	0	0	0	0	2	14:15	25	2	0	0	0	27
2:30	3	0	0	0	0	3	14:30	13	2	0	0	0	15
2:45	5	0	0	0	0	5	14:45	32	1	0	1	0	34
3:00	2	0	0	0	0	2	15:00	27	0	0	0	0	27
3:15	0	0	0	0	0	0	15:15	19	0	0	0	0	19
3:30	1	0	0	0	0	1	15:30	25	1	0	0	0	26
3:45	1	0	0	0	0	1	15:45	43	0	0	0	0	43
4:00	2	0	0	0	0	2	16:00	36	0	0	0	0	36
4:15	1	0	0	0	0	1	16:15	23	1	0	0	0	24
4:30	2	0	0	0	0	2	16:30	41	0	0	0	0	41
4:45	2	1	0	0	0	3	16:45	35	0	0	0	0	35
5:00	3	0	0	0	0	3	17:00	42	2	0	0	0	44
5:15	3	0	0	0	0	3	17:15	35	0	0	0	0	35
5:30	2	0	0	0	0	2	17:30	32	0	0	0	0	32
5:45	7	0	0	0	0	7	17:45	27	0	0	0	0	27
6:00	6	0	0	0	0	6	18:00	45	0	0	0	0	45
6:15	6	0	0	0	0	6	18:15	40	0	0	0	0	40
6:30	3	0	0	0	0	3	18:30	35	1	0	0	0	36
6:45	1	0	0	0	0	1	18:45	30	0	0	0	0	30
7:00	8	1	0	0	0	9	19:00	32	0	0	0	0	32
7:15	4	1	0	0	0	5	19:15	29	0	0	0	0	29
7:30	21	0	0	0	0	21	19:30	23	0	0	0	0	23
7:45	28	0	0	0	0	28	19:45	27	0	0	0	0	27
8:00	17	0	0	0	0	17	20:00	37	1	0	0	0	38
8:15	28	0	0	0	0	28	20:15	18	0	0	0	0	18
8:30	11	0	0	0	0	11	20:30	20	0	0	0	0	20
8:45	14	1	0	0	0	15	20:45	20	0	0	0	0	20
9:00	13	0	0	0	0	13	21:00	31	0	0	0	0	31
9:15	15	1	0	0	0	16	21:15	14	0	0	0	0	14
9:30	12	2	0	0	0	14	21:30	17	0	0	0	0	17
9:45	14	1	0	0	0	15	21:45	15	0	0	0	0	15
10:00	15	3	0	0	0	18	22:00	14	0	0	0	0	14
10:15	15	1	0	0	0	16	22:15	9	0	0	0	0	9
10:30	10	2	0	0	0	12	22:30	11	0	0	0	0	11
10:45	10	1	0	0	0	11	22:45	10	0	0	0	0	10
11:00	12	2	0	0	0	14	23:00	6	0	0	0	0	6
11:15	12	0	0	0	0	12	23:15	10	0	0	0	0	10
11:30	22	0	0	0	0	22	23:30	5	0	0	0	0	5
11:45	26	0	0	0	0	26	23:45	7	0	0	0	0	7
TOTAL	380	17	0	0	0	397	TOTAL	1,151	18	0	1	0	1,170
						AM PEAK HOUR							AM PEAK HOUR
						7:30 AM							4:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						94							155

CLASS 1	CARS	TOTAL: AM+PM	1,531	35	0	1	0	1,567
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	97.7%	2.2%	0.0%	0.1%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	94	0	0	0	0	94
CLASS 4	4-AXLE TRUCKS	PM PEAK	153	2	0	0	0	155
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 7 - River's Edge Apartment Homes

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS83 Dwy south of Lakeshore.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	7	0	0	0	0	7	12:00	21	0	0	0	0	21
0:15	1	0	0	0	0	1	12:15	15	0	0	0	0	15
0:30	1	0	0	0	0	1	12:30	20	1	0	0	0	21
0:45	0	0	0	0	0	0	12:45	14	1	0	0	0	15
1:00	1	0	0	0	0	1	13:00	15	0	0	0	0	15
1:15	3	0	0	0	0	3	13:15	16	0	0	0	0	16
1:30	2	0	0	0	0	2	13:30	22	1	0	0	0	23
1:45	2	0	0	0	0	2	13:45	24	1	0	0	0	25
2:00	2	0	0	0	0	2	14:00	23	0	0	0	0	23
2:15	0	0	0	0	0	0	14:15	15	0	0	0	0	15
2:30	0	0	0	0	0	0	14:30	25	1	0	0	0	26
2:45	1	0	0	0	0	1	14:45	26	1	0	0	0	27
3:00	2	0	0	0	0	2	15:00	18	1	0	0	0	19
3:15	5	0	0	0	0	5	15:15	31	0	0	0	0	31
3:30	3	0	0	0	0	3	15:30	23	0	0	0	0	23
3:45	6	0	0	0	0	6	15:45	31	1	0	0	0	32
4:00	3	0	0	0	0	3	16:00	15	0	0	0	0	15
4:15	9	0	0	0	0	9	16:15	23	0	0	0	0	23
4:30	9	0	0	0	0	9	16:30	25	0	0	0	0	25
4:45	17	0	0	0	0	17	16:45	27	0	0	0	0	27
5:00	7	0	0	0	0	7	17:00	32	0	0	0	0	32
5:15	13	0	0	0	0	13	17:15	25	0	0	0	0	25
5:30	15	1	0	0	0	16	17:30	18	0	0	0	0	18
5:45	13	0	0	0	0	13	17:45	20	0	0	0	0	20
6:00	12	1	0	0	0	13	18:00	18	0	0	0	0	18
6:15	19	0	0	0	0	19	18:15	24	0	0	0	0	24
6:30	23	0	0	0	0	23	18:30	25	1	0	0	0	26
6:45	16	1	0	0	0	17	18:45	16	0	0	0	0	16
7:00	13	2	0	0	0	15	19:00	9	0	0	0	0	9
7:15	35	0	0	0	0	35	19:15	11	0	0	0	0	11
7:30	55	0	0	0	0	55	19:30	11	0	0	0	0	11
7:45	40	0	0	0	0	40	19:45	15	0	0	0	0	15
8:00	35	0	0	0	0	35	20:00	9	0	0	0	0	9
8:15	20	0	0	0	0	20	20:15	13	0	0	0	0	13
8:30	17	0	0	0	0	17	20:30	15	1	0	0	0	16
8:45	18	0	0	0	0	18	20:45	13	0	0	0	0	13
9:00	21	0	0	0	0	21	21:00	12	0	0	0	0	12
9:15	28	0	0	0	0	28	21:15	7	0	0	0	0	7
9:30	24	1	0	0	0	25	21:30	6	1	0	0	0	7
9:45	13	0	0	0	0	13	21:45	7	0	0	0	0	7
10:00	21	2	0	0	0	23	22:00	7	0	0	0	0	7
10:15	26	3	0	0	0	29	22:15	6	0	0	0	0	6
10:30	16	2	0	0	0	18	22:30	5	0	0	0	0	5
10:45	16	3	0	0	0	19	22:45	7	0	0	0	0	7
11:00	15	0	0	0	0	15	23:00	6	0	0	0	0	6
11:15	14	1	0	0	0	15	23:15	3	0	0	0	0	3
11:30	21	0	0	0	0	21	23:30	4	0	0	0	0	4
11:45	16	1	0	0	0	17	23:45	2	0	0	0	0	2
TOTAL	656	18	0	0	0	674	TOTAL	775	11	0	0	0	786
AM PEAK HOUR						7:15 AM	AM PEAK HOUR						4:30 PM
AM PEAK VOLUME						165	AM PEAK VOLUME						109

CLASS 1	CARS	TOTAL: AM+PM	1,431	29	0	0	0	1,460
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.0%	2.0%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	165	0	0	0	0	165
CLASS 4	4-AXLE TRUCKS	PM PEAK	109	0	0	0	0	109
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 8 - Mayberry Colony Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS90 Western Dwy south of Mayberry.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	3	0	0	0	0	3
0:15	1	0	0	0	0	1	12:15	12	0	0	0	0	12
0:30	2	0	0	0	0	2	12:30	6	0	0	0	0	6
0:45	0	0	0	0	0	0	12:45	3	0	0	0	0	3
1:00	1	0	0	0	0	1	13:00	1	0	0	0	0	1
1:15	3	0	0	0	0	3	13:15	10	0	0	1	0	11
1:30	0	0	0	0	0	0	13:30	9	0	0	0	0	9
1:45	1	0	0	0	0	1	13:45	6	0	0	0	0	6
2:00	0	0	0	0	0	0	14:00	10	0	0	0	0	10
2:15	3	0	0	0	0	3	14:15	8	0	0	0	0	8
2:30	2	0	0	0	0	2	14:30	12	0	0	0	0	12
2:45	0	0	0	0	0	0	14:45	18	0	0	0	0	18
3:00	4	0	0	0	0	4	15:00	13	0	0	0	0	13
3:15	1	0	0	0	0	1	15:15	7	0	0	0	0	7
3:30	3	0	0	0	0	3	15:30	17	1	0	0	0	18
3:45	1	0	0	0	0	1	15:45	17	0	0	0	0	17
4:00	0	0	0	0	0	0	16:00	6	0	0	0	0	6
4:15	0	0	0	0	0	0	16:15	8	0	0	0	0	8
4:30	0	0	0	0	0	0	16:30	9	0	0	0	0	9
4:45	2	0	0	0	0	2	16:45	15	0	0	0	0	15
5:00	0	0	0	0	0	0	17:00	9	0	0	0	0	9
5:15	2	0	0	0	0	2	17:15	10	0	0	0	0	10
5:30	0	0	0	0	0	0	17:30	14	0	0	0	0	14
5:45	0	0	0	0	0	0	17:45	11	0	0	0	0	11
6:00	3	0	0	0	0	3	18:00	8	1	0	0	0	9
6:15	5	0	0	0	0	5	18:15	12	0	0	0	0	12
6:30	6	0	0	0	0	6	18:30	9	0	0	0	0	9
6:45	0	0	0	0	0	0	18:45	8	1	0	0	0	9
7:00	2	0	0	0	0	2	19:00	4	0	0	0	0	4
7:15	5	0	0	0	0	5	19:15	9	0	0	0	0	9
7:30	12	0	0	0	0	12	19:30	8	0	0	0	0	8
7:45	3	0	0	0	0	3	19:45	7	0	0	0	0	7
8:00	4	0	0	0	0	4	20:00	8	0	0	0	0	8
8:15	7	0	0	0	0	7	20:15	2	0	0	0	0	2
8:30	11	0	0	0	0	11	20:30	9	0	0	0	0	9
8:45	1	0	0	0	0	1	20:45	5	0	0	0	0	5
9:00	5	0	0	0	0	5	21:00	7	0	0	0	0	7
9:15	3	0	0	0	0	3	21:15	3	0	0	0	0	3
9:30	2	0	0	0	0	2	21:30	1	0	0	0	0	1
9:45	4	0	0	0	0	4	21:45	2	0	0	0	0	2
10:00	5	0	0	0	0	5	22:00	2	0	0	0	0	2
10:15	2	2	0	0	0	4	22:15	2	0	0	0	0	2
10:30	5	0	0	0	0	5	22:30	3	0	0	0	0	3
10:45	3	0	0	0	0	3	22:45	4	0	0	0	0	4
11:00	5	0	0	0	0	5	23:00	3	0	0	0	0	3
11:15	6	0	0	0	0	6	23:15	5	0	0	0	0	5
11:30	6	0	0	0	0	6	23:30	4	0	0	0	0	4
11:45	3	0	0	0	0	3	23:45	1	0	0	0	0	1
TOTAL	135	2	0	0	0	137	TOTAL	360	3	0	1	0	364
			AM PEAK HOUR 7:30 AM							AM PEAK HOUR 2:45 PM			
			AM PEAK VOLUME 26							AM PEAK VOLUME 56			

CLASS 1	CARS	TOTAL: AM+PM	495	5	0	1	0	501
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.8%	1.0%	0.0%	0.2%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	26	0	0	0	0	26
CLASS 4	4-AXLE TRUCKS	PM PEAK	44	0	0	0	0	44
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 8 - Mayberry Colony Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS90 Western Dwy south of Mayberry.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	11	0	0	0	0	11
0:15	1	0	0	0	0	1	12:15	11	0	0	0	0	11
0:30	0	0	0	0	0	0	12:30	9	0	0	0	0	9
0:45	1	0	0	0	0	1	12:45	8	0	0	0	0	8
1:00	0	0	0	0	0	0	13:00	6	0	0	0	0	6
1:15	1	0	0	0	0	1	13:15	6	0	0	0	0	6
1:30	0	0	0	0	0	0	13:30	3	0	0	0	0	3
1:45	2	0	0	0	0	2	13:45	7	0	0	0	0	7
2:00	0	0	0	0	0	0	14:00	12	0	0	0	0	12
2:15	0	0	0	0	0	0	14:15	14	0	0	0	0	14
2:30	0	0	0	0	0	0	14:30	10	0	0	0	0	10
2:45	3	0	0	0	0	3	14:45	11	0	0	0	0	11
3:00	2	0	0	0	0	2	15:00	10	0	0	0	0	10
3:15	5	0	0	0	0	5	15:15	9	0	0	0	0	9
3:30	5	0	0	0	0	5	15:30	8	0	0	0	0	8
3:45	4	0	0	0	0	4	15:45	7	0	0	0	0	7
4:00	0	0	0	0	0	0	16:00	11	0	0	0	0	11
4:15	5	0	0	0	0	5	16:15	10	0	0	0	0	10
4:30	7	0	0	0	0	7	16:30	10	0	0	0	0	10
4:45	3	0	0	0	0	3	16:45	8	0	0	0	0	8
5:00	8	0	0	0	0	8	17:00	16	0	0	0	0	16
5:15	0	0	0	0	0	0	17:15	13	1	0	0	0	14
5:30	2	0	0	0	0	2	17:30	12	0	0	0	0	12
5:45	6	0	0	0	0	6	17:45	13	0	0	0	0	13
6:00	4	0	0	0	0	4	18:00	11	0	0	0	0	11
6:15	3	0	0	0	0	3	18:15	5	0	0	0	0	5
6:30	9	0	0	0	0	9	18:30	7	0	0	0	0	7
6:45	8	0	0	0	0	8	18:45	12	0	0	0	0	12
7:00	7	0	0	0	0	7	19:00	8	0	0	0	0	8
7:15	21	0	0	0	0	21	19:15	5	0	0	0	0	5
7:30	4	0	0	0	0	4	19:30	7	0	0	0	0	7
7:45	7	0	0	0	0	7	19:45	6	0	0	0	0	6
8:00	21	0	0	0	0	21	20:00	5	0	0	0	0	5
8:15	10	0	0	0	0	10	20:15	7	0	0	0	0	7
8:30	8	0	0	1	0	9	20:30	6	0	0	0	0	6
8:45	7	0	0	0	0	7	20:45	3	0	0	0	0	3
9:00	9	0	0	0	0	9	21:00	1	0	0	0	0	1
9:15	5	0	0	0	0	5	21:15	5	0	0	0	0	5
9:30	3	0	0	0	0	3	21:30	3	0	0	0	0	3
9:45	2	0	0	0	0	2	21:45	5	0	0	0	0	5
10:00	9	1	0	0	0	10	22:00	1	0	0	0	0	1
10:15	4	3	0	0	0	7	22:15	1	0	0	0	0	1
10:30	2	1	0	0	0	3	22:30	0	0	0	0	0	0
10:45	9	0	0	0	0	9	22:45	2	0	0	0	0	2
11:00	11	0	0	0	0	11	23:00	2	0	0	0	0	2
11:15	2	0	0	0	0	2	23:15	4	0	0	0	0	4
11:30	5	0	0	0	0	5	23:30	5	0	0	0	0	5
11:45	8	0	0	0	0	8	23:45	2	0	0	0	0	2
TOTAL	233	5	0	1	0	239	TOTAL	348	1	0	0	0	349
						AM PEAK HOUR							AM PEAK HOUR
						7:15 AM							5:00 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						53							55

CLASS 1	CARS	TOTAL: AM+PM	581	6	0	1	0	588
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.8%	1.0%	0.0%	0.2%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	53	0	0	0	0	53
CLASS 4	4-AXLE TRUCKS	PM PEAK	54	1	0	0	0	55
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 8 - Mayberry Colony Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS91 Eastern Dwy south of Mayberry.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	3	0	0	0	0	3	12:00	8	0	0	0	0	8
0:15	3	0	0	0	0	3	12:15	8	0	0	0	0	8
0:30	1	0	0	0	0	1	12:30	3	0	0	0	0	3
0:45	1	0	0	0	0	1	12:45	5	0	0	0	0	5
1:00	0	0	0	0	0	0	13:00	7	0	0	0	0	7
1:15	4	0	0	0	0	4	13:15	4	0	0	0	0	4
1:30	0	0	0	0	0	0	13:30	7	0	0	0	0	7
1:45	1	0	0	0	0	1	13:45	2	0	0	0	0	2
2:00	1	0	0	0	0	1	14:00	9	0	0	0	0	9
2:15	1	0	0	0	0	1	14:15	14	0	0	0	0	14
2:30	0	0	0	0	0	0	14:30	14	0	0	0	0	14
2:45	1	0	0	0	0	1	14:45	8	0	0	0	0	8
3:00	0	0	0	0	0	0	15:00	2	0	0	0	0	2
3:15	0	0	0	0	0	0	15:15	1	0	0	0	0	1
3:30	3	0	0	0	0	3	15:30	3	0	0	0	0	3
3:45	0	0	0	0	0	0	15:45	3	0	0	0	0	3
4:00	0	0	0	0	0	0	16:00	9	0	0	0	0	9
4:15	1	0	0	0	0	1	16:15	9	0	0	0	0	9
4:30	1	0	0	0	0	1	16:30	7	0	0	0	0	7
4:45	0	0	0	0	0	0	16:45	13	0	0	0	0	13
5:00	0	0	0	0	0	0	17:00	8	1	0	0	0	9
5:15	0	0	0	0	0	0	17:15	12	0	0	0	0	12
5:30	3	0	0	0	0	3	17:30	7	0	0	0	0	7
5:45	3	0	0	0	0	3	17:45	11	0	0	0	0	11
6:00	0	0	0	0	0	0	18:00	14	0	0	0	0	14
6:15	0	0	0	0	0	0	18:15	6	0	0	0	0	6
6:30	2	0	0	0	0	2	18:30	3	0	0	0	0	3
6:45	0	0	0	0	0	0	18:45	13	0	0	0	0	13
7:00	12	0	0	0	0	12	19:00	14	0	0	0	0	14
7:15	7	0	0	0	0	7	19:15	10	0	0	0	0	10
7:30	4	0	0	0	0	4	19:30	2	0	0	0	0	2
7:45	8	0	0	0	0	8	19:45	8	0	0	0	0	8
8:00	3	0	0	0	0	3	20:00	3	0	0	0	0	3
8:15	6	0	0	0	0	6	20:15	4	0	0	0	0	4
8:30	6	0	0	1	0	7	20:30	4	0	0	0	0	4
8:45	7	0	0	0	0	7	20:45	7	0	0	0	0	7
9:00	5	0	0	0	0	5	21:00	2	0	0	0	0	2
9:15	3	0	0	0	0	3	21:15	3	0	0	0	0	3
9:30	5	0	0	0	0	5	21:30	3	0	0	0	0	3
9:45	3	2	0	0	0	5	21:45	3	0	0	0	0	3
10:00	2	0	0	0	0	2	22:00	2	0	0	0	0	2
10:15	3	2	0	0	0	5	22:15	2	0	0	0	0	2
10:30	5	0	0	0	0	5	22:30	6	0	0	0	0	6
10:45	4	0	0	0	0	4	22:45	2	0	0	0	0	2
11:00	2	0	0	0	0	2	23:00	1	0	0	0	0	1
11:15	3	0	0	0	0	3	23:15	1	0	0	0	0	1
11:30	7	0	0	0	0	7	23:30	3	0	0	0	0	3
11:45	3	0	0	0	0	3	23:45	2	0	0	0	0	2
TOTAL	127	4	0	1	0	132	TOTAL	292	1	0	0	0	293
AM PEAK HOUR						7:00 AM	AM PEAK HOUR						2:00 PM
AM PEAK VOLUME						31	AM PEAK VOLUME						45

CLASS 1	CARS	TOTAL: AM+PM	419	5	0	1	0	425
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.6%	1.2%	0.0%	0.2%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	31	0	0	0	0	31
CLASS 4	4-AXLE TRUCKS	PM PEAK	40	1	0	0	0	41
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 8 - Mayberry Colony Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS91 Eastern Dwy south of Mayberry.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	7	0	0	0	0	7
0:15	0	0	0	0	0	0	12:15	5	0	0	0	0	5
0:30	1	0	0	0	0	1	12:30	3	0	0	0	0	3
0:45	0	0	0	0	0	0	12:45	3	0	0	0	0	3
1:00	0	0	0	0	0	0	13:00	4	0	0	0	0	4
1:15	0	0	0	0	0	0	13:15	9	0	0	0	0	9
1:30	1	0	0	0	0	1	13:30	4	0	0	1	0	5
1:45	0	0	0	0	0	0	13:45	5	0	0	0	0	5
2:00	0	0	0	0	0	0	14:00	11	0	0	0	0	11
2:15	0	0	0	0	0	0	14:15	8	0	0	0	0	8
2:30	2	0	0	0	0	2	14:30	2	0	0	0	0	2
2:45	1	0	0	0	0	1	14:45	4	0	0	0	0	4
3:00	1	0	0	0	0	1	15:00	7	0	0	0	0	7
3:15	0	0	0	0	0	0	15:15	5	0	0	0	0	5
3:30	0	0	0	0	0	0	15:30	7	1	0	0	0	8
3:45	0	0	0	0	0	0	15:45	11	0	0	0	0	11
4:00	1	0	0	0	0	1	16:00	5	0	0	0	0	5
4:15	1	0	0	0	0	1	16:15	10	0	0	0	0	10
4:30	1	0	0	0	0	1	16:30	7	0	0	0	0	7
4:45	3	0	0	0	0	3	16:45	3	0	0	0	0	3
5:00	1	0	0	0	0	1	17:00	2	0	0	0	0	2
5:15	3	0	0	0	0	3	17:15	4	0	0	0	0	4
5:30	3	0	0	0	0	3	17:30	5	0	0	0	0	5
5:45	7	0	0	0	0	7	17:45	7	0	0	0	0	7
6:00	2	0	0	0	0	2	18:00	3	0	0	0	0	3
6:15	2	0	0	0	0	2	18:15	4	0	0	0	0	4
6:30	3	0	0	0	0	3	18:30	3	0	0	0	0	3
6:45	9	0	0	0	0	9	18:45	5	0	0	0	0	5
7:00	11	0	0	0	0	11	19:00	2	0	0	0	0	2
7:15	9	0	0	0	0	9	19:15	4	0	0	0	0	4
7:30	10	0	0	0	0	10	19:30	0	0	0	0	0	0
7:45	6	0	0	0	0	6	19:45	0	0	0	0	0	0
8:00	1	0	0	0	0	1	20:00	2	0	0	0	0	2
8:15	3	0	0	0	0	3	20:15	2	0	0	0	0	2
8:30	11	0	0	0	0	11	20:30	2	0	0	0	0	2
8:45	13	0	0	0	0	13	20:45	1	0	0	0	0	1
9:00	2	0	0	0	0	2	21:00	1	0	0	0	0	1
9:15	2	0	0	0	0	2	21:15	1	0	0	0	0	1
9:30	4	0	0	0	0	4	21:30	0	0	0	0	0	0
9:45	4	0	0	0	0	4	21:45	0	0	0	0	0	0
10:00	1	0	0	0	0	1	22:00	2	0	0	0	0	2
10:15	7	1	0	0	0	8	22:15	2	0	0	0	0	2
10:30	5	0	0	0	0	5	22:30	1	0	0	0	0	1
10:45	5	0	0	0	0	5	22:45	4	0	0	0	0	4
11:00	1	0	0	0	0	1	23:00	2	0	0	0	0	2
11:15	3	0	0	0	0	3	23:15	0	0	0	0	0	0
11:30	4	0	0	0	0	4	23:30	2	0	0	0	0	2
11:45	3	0	0	0	0	3	23:45	0	0	0	0	0	0
TOTAL	147	1	0	0	0	148	TOTAL	181	1	0	1	0	183
						AM PEAK HOUR							AM PEAK HOUR
						6:45 AM							3:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						39							34

CLASS 1	CARS	TOTAL: AM+PM	328	2	0	1	0	331
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.6%	0.0%	0.3%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	36	0	0	0	0	36
CLASS 4	4-AXLE TRUCKS	PM PEAK	25	0	0	0	0	25
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 9 - Summit Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS92 DWY west of Hathaway.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	9	0	0	0	0	9
0:15	1	0	0	0	0	1	12:15	6	0	1	0	0	7
0:30	2	0	0	0	0	2	12:30	7	0	0	0	0	7
0:45	2	0	0	0	0	2	12:45	5	0	0	0	0	5
1:00	2	0	0	0	0	2	13:00	4	0	0	0	0	4
1:15	1	0	0	0	0	1	13:15	3	0	0	0	0	3
1:30	0	0	0	0	0	0	13:30	8	0	0	0	0	8
1:45	0	0	0	0	0	0	13:45	7	1	0	0	0	8
2:00	1	0	0	0	0	1	14:00	10	1	0	0	0	11
2:15	0	0	0	0	0	0	14:15	5	0	0	0	0	5
2:30	0	0	0	0	0	0	14:30	11	0	0	0	0	11
2:45	0	0	0	0	0	0	14:45	4	0	0	0	0	4
3:00	1	0	0	0	0	1	15:00	5	0	0	0	0	5
3:15	1	0	0	0	0	1	15:15	6	0	0	0	0	6
3:30	0	0	0	0	0	0	15:30	13	0	0	0	0	13
3:45	1	0	0	0	0	1	15:45	12	0	0	0	0	12
4:00	0	0	0	0	0	0	16:00	13	0	0	0	0	13
4:15	1	0	0	0	0	1	16:15	7	0	0	0	0	7
4:30	3	0	0	0	0	3	16:30	9	0	0	0	0	9
4:45	2	0	0	0	0	2	16:45	3	0	0	0	0	3
5:00	0	0	0	0	0	0	17:00	7	0	0	0	0	7
5:15	1	0	0	0	0	1	17:15	8	0	0	0	0	8
5:30	1	0	0	0	0	1	17:30	7	0	0	0	0	7
5:45	1	0	0	0	0	1	17:45	7	0	0	0	0	7
6:00	0	0	0	0	0	0	18:00	8	0	0	0	0	8
6:15	1	0	1	0	0	2	18:15	5	0	0	0	0	5
6:30	1	0	0	0	0	1	18:30	9	0	0	0	0	9
6:45	2	0	0	0	0	2	18:45	7	0	0	0	0	7
7:00	3	0	0	0	0	3	19:00	4	1	0	0	0	5
7:15	2	0	0	0	0	2	19:15	7	0	0	0	0	7
7:30	2	0	0	0	0	2	19:30	9	0	0	0	0	9
7:45	4	0	0	0	0	4	19:45	6	0	0	0	0	6
8:00	5	0	0	0	0	5	20:00	10	0	0	0	0	10
8:15	7	0	0	0	0	7	20:15	7	0	0	0	0	7
8:30	3	0	0	0	0	3	20:30	6	0	0	0	0	6
8:45	7	0	0	0	0	7	20:45	4	0	0	0	0	4
9:00	2	0	0	0	0	2	21:00	8	0	0	0	0	8
9:15	4	0	0	0	0	4	21:15	5	0	0	0	0	5
9:30	4	0	0	0	0	4	21:30	5	0	0	0	0	5
9:45	3	1	0	0	0	4	21:45	5	0	0	0	0	5
10:00	7	0	0	0	0	7	22:00	4	0	0	0	0	4
10:15	2	0	0	0	0	2	22:15	12	0	0	0	0	12
10:30	2	0	0	0	0	2	22:30	4	0	0	0	0	4
10:45	3	0	0	0	0	3	22:45	5	0	0	0	0	5
11:00	1	0	0	0	0	1	23:00	4	0	0	0	0	4
11:15	7	0	0	0	0	7	23:15	1	0	0	0	0	1
11:30	4	1	0	0	0	5	23:30	1	0	0	0	0	1
11:45	3	0	0	0	0	3	23:45	0	0	0	0	0	0
TOTAL	101	2	1	0	0	104	TOTAL	312	3	1	0	0	316
			AM PEAK HOUR 8:00 AM							AM PEAK HOUR 3:30 PM			
			AM PEAK VOLUME 22							AM PEAK VOLUME 45			

CLASS 1	CARS	TOTAL: AM+PM	413	5	2	0	0	420
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.3%	1.2%	0.5%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	22	0	0	0	0	22
CLASS 4	4-AXLE TRUCKS	PM PEAK	32	0	0	0	0	32
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 9 - Summit Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS92 DWY west of Hathaway.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	3	0	1	0	0	4
0:15	0	0	0	0	0	0	12:15	9	0	0	0	0	9
0:30	1	0	0	0	0	1	12:30	9	0	0	0	0	9
0:45	0	0	0	0	0	0	12:45	3	0	0	0	0	3
1:00	0	0	0	0	0	0	13:00	6	0	0	0	0	6
1:15	0	0	0	0	0	0	13:15	3	1	0	0	0	4
1:30	0	0	0	0	0	0	13:30	9	0	0	0	0	9
1:45	0	0	0	0	0	0	13:45	3	0	0	0	0	3
2:00	0	0	0	0	0	0	14:00	8	1	0	0	0	9
2:15	1	0	0	0	0	1	14:15	7	0	0	0	0	7
2:30	1	0	0	0	0	1	14:30	9	0	0	0	0	9
2:45	0	0	0	0	0	0	14:45	1	0	0	0	0	1
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	1	0	0	0	0	1	15:15	8	0	0	0	0	8
3:30	3	0	0	0	0	3	15:30	10	0	0	0	0	10
3:45	0	0	0	0	0	0	15:45	9	1	0	0	0	10
4:00	2	0	0	0	0	2	16:00	8	0	0	0	0	8
4:15	0	0	0	0	0	0	16:15	4	0	0	0	0	4
4:30	1	0	0	0	0	1	16:30	6	0	0	0	0	6
4:45	0	0	0	0	0	0	16:45	2	0	0	0	0	2
5:00	2	0	0	0	0	2	17:00	4	1	0	0	0	5
5:15	1	0	0	0	0	1	17:15	8	0	0	0	0	8
5:30	2	0	0	0	0	2	17:30	9	0	0	0	0	9
5:45	10	0	0	0	0	10	17:45	6	0	0	0	0	6
6:00	2	0	0	0	0	2	18:00	3	0	0	0	0	3
6:15	7	0	0	0	0	7	18:15	5	0	0	0	0	5
6:30	0	0	0	0	0	0	18:30	4	0	0	0	0	4
6:45	4	0	1	0	0	5	18:45	3	0	0	0	0	3
7:00	3	0	0	0	0	3	19:00	5	0	0	0	0	5
7:15	4	0	0	0	0	4	19:15	4	1	0	0	0	5
7:30	3	0	0	0	0	3	19:30	4	0	0	0	0	4
7:45	8	0	0	0	0	8	19:45	2	0	0	0	0	2
8:00	9	0	0	0	0	9	20:00	5	0	0	0	0	5
8:15	9	0	0	0	0	9	20:15	3	0	0	0	0	3
8:30	3	0	0	0	0	3	20:30	2	0	0	0	0	2
8:45	8	0	0	0	0	8	20:45	2	0	0	0	0	2
9:00	8	0	0	0	0	8	21:00	4	0	0	0	0	4
9:15	4	0	0	0	0	4	21:15	1	0	0	0	0	1
9:30	7	0	0	0	0	7	21:30	5	0	0	0	0	5
9:45	1	0	0	0	0	1	21:45	5	0	0	0	0	5
10:00	4	0	0	0	0	4	22:00	3	0	0	0	0	3
10:15	3	0	0	0	0	3	22:15	1	0	0	0	0	1
10:30	2	0	0	0	0	2	22:30	1	0	0	0	0	1
10:45	2	0	0	0	0	2	22:45	4	0	0	0	0	4
11:00	5	0	0	0	0	5	23:00	0	0	0	0	0	0
11:15	4	0	0	0	0	4	23:15	1	0	0	0	0	1
11:30	3	0	0	0	0	3	23:30	0	0	0	0	0	0
11:45	6	0	0	0	0	6	23:45	2	0	0	0	0	2
TOTAL	134	0	1	0	0	135	TOTAL	219	5	1	0	0	225
						AM PEAK HOUR	8:00 AM						
						AM PEAK VOLUME	29						
						AM PEAK HOUR	3:15 PM						
						AM PEAK VOLUME	36						

CLASS 1	CARS	TOTAL: AM+PM	353	5	2	0	0	360
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.1%	1.4%	0.6%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	29	0	0	0	0	29
CLASS 4	4-AXLE TRUCKS	PM PEAK	27	1	0	0	0	28
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 9 - Summit Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS93 DWY north of George.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	12	0	1	0	0	13
0:15	2	0	0	0	0	2	12:15	10	1	0	0	0	11
0:30	0	0	0	0	0	0	12:30	9	0	0	0	0	9
0:45	0	0	0	0	0	0	12:45	12	0	0	0	0	12
1:00	1	0	0	0	0	1	13:00	21	0	0	0	0	21
1:15	1	0	0	0	0	1	13:15	10	1	0	0	0	11
1:30	0	0	0	0	0	0	13:30	8	0	0	0	0	8
1:45	0	0	0	0	0	0	13:45	13	0	0	0	0	13
2:00	3	0	0	0	0	3	14:00	13	0	0	0	0	13
2:15	1	1	0	0	0	2	14:15	8	0	0	0	0	8
2:30	1	0	0	0	0	1	14:30	18	0	0	0	0	18
2:45	0	0	0	0	0	0	14:45	9	0	0	0	0	9
3:00	2	0	0	0	0	2	15:00	9	0	0	0	0	9
3:15	1	0	0	0	0	1	15:15	24	0	0	0	0	24
3:30	0	0	0	0	0	0	15:30	19	1	0	0	0	20
3:45	0	0	0	0	0	0	15:45	19	0	0	0	0	19
4:00	1	0	0	0	0	1	16:00	13	0	0	0	0	13
4:15	0	0	0	0	0	0	16:15	8	0	0	0	0	8
4:30	0	0	0	0	0	0	16:30	22	0	0	0	0	22
4:45	0	0	0	0	0	0	16:45	13	0	0	0	0	13
5:00	3	0	0	0	0	3	17:00	15	1	0	0	0	16
5:15	4	0	0	0	0	4	17:15	12	0	0	0	0	12
5:30	0	0	0	0	0	0	17:30	15	0	0	0	0	15
5:45	1	0	0	0	0	1	17:45	18	0	0	0	0	18
6:00	3	0	0	0	0	3	18:00	23	0	0	0	0	23
6:15	3	0	0	0	0	3	18:15	12	0	0	0	0	12
6:30	2	0	0	0	0	2	18:30	10	0	0	0	0	10
6:45	2	0	0	0	0	2	18:45	12	0	0	0	0	12
7:00	1	0	0	0	0	1	19:00	16	0	0	0	0	16
7:15	6	0	0	0	0	6	19:15	13	0	0	0	0	13
7:30	15	0	0	0	0	15	19:30	7	0	0	0	0	7
7:45	7	0	0	0	0	7	19:45	7	0	0	0	0	7
8:00	11	0	0	0	0	11	20:00	14	0	0	0	0	14
8:15	13	0	0	0	0	13	20:15	7	0	0	0	0	7
8:30	16	0	0	0	0	16	20:30	8	0	0	0	0	8
8:45	15	0	0	0	0	15	20:45	10	0	0	0	0	10
9:00	10	0	0	0	0	10	21:00	10	0	0	0	0	10
9:15	8	0	0	0	0	8	21:15	6	0	0	0	0	6
9:30	12	0	0	0	0	12	21:30	2	0	0	0	0	2
9:45	5	0	0	0	0	5	21:45	6	0	0	0	0	6
10:00	4	0	0	0	0	4	22:00	7	0	0	0	0	7
10:15	5	0	0	0	0	5	22:15	5	0	0	0	0	5
10:30	2	0	0	0	0	2	22:30	2	0	0	0	0	2
10:45	17	0	0	0	0	17	22:45	5	0	0	0	0	5
11:00	5	0	0	0	0	5	23:00	9	0	0	0	0	9
11:15	11	1	0	0	0	12	23:15	1	0	0	0	0	1
11:30	12	0	0	0	0	12	23:30	1	0	0	0	0	1
11:45	5	0	0	0	0	5	23:45	4	0	0	0	0	4
TOTAL	213	2	0	0	0	215	TOTAL	527	4	1	0	0	532
						AM PEAK HOUR							AM PEAK HOUR
						8:00 AM							3:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						55							76

CLASS 1	CARS	TOTAL: AM+PM	740	6	1	0	0	747
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.8%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	55	0	0	0	0	55
CLASS 4	4-AXLE TRUCKS	PM PEAK	62	1	0	0	0	63
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 9 - Summit Ridge Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS93 DWY north of George.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	9	0	0	0	0	9
0:15	1	0	0	0	0	1	12:15	12	0	0	0	0	12
0:30	0	0	0	0	0	0	12:30	12	1	1	0	0	14
0:45	3	0	0	0	0	3	12:45	20	0	0	0	0	20
1:00	0	0	0	0	0	0	13:00	16	0	0	0	0	16
1:15	0	0	0	0	0	0	13:15	14	0	0	0	0	14
1:30	0	0	0	0	0	0	13:30	17	0	0	0	0	17
1:45	0	0	0	0	0	0	13:45	9	1	0	0	0	10
2:00	1	0	0	0	0	1	14:00	18	0	0	0	0	18
2:15	1	0	0	0	0	1	14:15	11	0	0	0	0	11
2:30	1	1	0	0	0	2	14:30	10	0	0	0	0	10
2:45	1	0	0	0	0	1	14:45	14	0	0	0	0	14
3:00	0	0	0	0	0	0	15:00	19	0	0	0	0	19
3:15	0	0	0	0	0	0	15:15	15	0	0	0	0	15
3:30	0	0	0	0	0	0	15:30	11	0	0	0	0	11
3:45	0	0	0	0	0	0	15:45	9	0	0	0	0	9
4:00	0	0	0	0	0	0	16:00	17	0	0	0	0	17
4:15	1	0	0	0	0	1	16:15	9	0	0	0	0	9
4:30	3	0	0	0	0	3	16:30	8	0	0	0	0	8
4:45	1	0	0	0	0	1	16:45	13	0	0	0	0	13
5:00	5	0	0	0	0	5	17:00	5	0	0	0	0	5
5:15	1	0	0	0	0	1	17:15	20	0	0	0	0	20
5:30	6	0	0	0	0	6	17:30	13	0	0	0	0	13
5:45	2	0	0	0	0	2	17:45	13	0	0	0	0	13
6:00	4	0	0	0	0	4	18:00	12	0	0	0	0	12
6:15	6	0	0	0	0	6	18:15	10	0	0	0	0	10
6:30	6	0	0	0	0	6	18:30	11	0	0	0	0	11
6:45	7	0	0	0	0	7	18:45	12	0	0	0	0	12
7:00	9	0	0	0	0	9	19:00	10	0	0	0	0	10
7:15	18	0	0	0	0	18	19:15	5	0	0	0	0	5
7:30	20	0	0	0	0	20	19:30	8	0	0	0	0	8
7:45	31	0	0	0	0	31	19:45	11	0	0	0	0	11
8:00	25	0	0	0	0	25	20:00	7	0	0	0	0	7
8:15	16	0	0	0	0	16	20:15	10	0	0	0	0	10
8:30	15	0	0	0	0	15	20:30	9	0	0	0	0	9
8:45	14	0	0	0	0	14	20:45	7	0	0	0	0	7
9:00	10	0	0	0	0	10	21:00	5	0	0	0	0	5
9:15	15	0	0	0	0	15	21:15	4	0	0	0	0	4
9:30	11	0	0	0	0	11	21:30	6	0	0	0	0	6
9:45	9	0	0	0	0	9	21:45	2	0	0	0	0	2
10:00	9	1	0	0	0	10	22:00	5	0	0	0	0	5
10:15	10	0	0	0	0	10	22:15	4	0	0	0	0	4
10:30	7	0	0	0	0	7	22:30	4	0	0	0	0	4
10:45	12	0	0	0	0	12	22:45	3	0	0	0	0	3
11:00	11	0	0	0	0	11	23:00	6	0	0	0	0	6
11:15	8	1	0	0	0	9	23:15	0	0	0	0	0	0
11:30	9	0	0	0	0	9	23:30	0	0	0	0	0	0
11:45	19	1	0	0	0	20	23:45	3	0	0	0	0	3
TOTAL	329	4	0	0	0	333	TOTAL	468	2	1	0	0	471
						AM PEAK HOUR	7:15 AM						
						AM PEAK VOLUME	94						
												AM PEAK HOUR	12:45 PM
												AM PEAK VOLUME	67

CLASS 1	CARS	TOTAL: AM+PM	797	6	1	0	0	804
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.7%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	94	0	0	0	0	94
CLASS 4	4-AXLE TRUCKS	PM PEAK	51	0	0	0	0	51
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS87 Dwy north of Thornton.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	3	0	0	0	0	3
0:15	0	0	0	0	0	0	12:15	2	1	0	0	0	3
0:30	3	0	0	0	0	3	12:30	3	1	0	0	0	4
0:45	2	0	0	0	0	2	12:45	2	0	0	0	0	2
1:00	1	0	0	0	0	1	13:00	3	0	0	0	0	3
1:15	0	0	0	0	0	0	13:15	4	0	0	0	0	4
1:30	0	0	0	0	0	0	13:30	3	0	0	0	0	3
1:45	0	0	0	0	0	0	13:45	3	0	0	0	0	3
2:00	0	0	0	0	0	0	14:00	5	0	0	0	0	5
2:15	0	0	0	0	0	0	14:15	8	0	0	0	0	8
2:30	0	0	0	0	0	0	14:30	6	0	0	0	0	6
2:45	2	0	0	0	0	2	14:45	2	0	0	0	0	2
3:00	1	0	0	0	0	1	15:00	5	0	0	0	0	5
3:15	0	0	0	0	0	0	15:15	5	0	0	0	0	5
3:30	0	0	0	0	0	0	15:30	9	0	0	0	0	9
3:45	0	0	0	0	0	0	15:45	3	0	0	0	0	3
4:00	0	0	0	0	0	0	16:00	9	0	0	0	0	9
4:15	0	0	0	0	0	0	16:15	9	0	0	0	0	9
4:30	0	0	0	0	0	0	16:30	5	0	0	0	0	5
4:45	2	0	0	0	0	2	16:45	7	0	0	0	0	7
5:00	0	0	0	0	0	0	17:00	6	0	0	0	0	6
5:15	0	0	0	0	0	0	17:15	2	0	0	0	0	2
5:30	1	0	0	0	0	1	17:30	9	0	0	0	0	9
5:45	0	0	0	0	0	0	17:45	9	0	0	0	0	9
6:00	0	0	0	0	0	0	18:00	12	0	0	0	0	12
6:15	0	0	0	0	0	0	18:15	5	0	0	0	0	5
6:30	1	0	0	0	0	1	18:30	9	0	0	0	0	9
6:45	3	0	0	0	0	3	18:45	5	0	0	0	0	5
7:00	1	0	0	0	0	1	19:00	5	0	0	0	0	5
7:15	10	0	0	0	0	10	19:15	3	0	0	0	0	3
7:30	2	0	0	0	0	2	19:30	8	0	0	0	0	8
7:45	1	0	0	0	0	1	19:45	3	0	0	0	0	3
8:00	3	0	0	0	0	3	20:00	7	0	0	0	0	7
8:15	4	0	0	0	0	4	20:15	5	0	0	0	0	5
8:30	5	0	0	0	0	5	20:30	8	0	0	0	0	8
8:45	2	1	0	0	0	3	20:45	2	0	0	0	0	2
9:00	10	0	0	0	0	10	21:00	1	0	0	0	0	1
9:15	1	0	0	0	0	1	21:15	3	0	0	0	0	3
9:30	3	0	0	0	0	3	21:30	2	0	0	0	0	2
9:45	7	0	0	0	0	7	21:45	2	0	0	0	0	2
10:00	2	0	0	0	0	2	22:00	7	0	0	0	0	7
10:15	0	0	0	0	0	0	22:15	3	0	0	0	0	3
10:30	1	0	0	0	0	1	22:30	1	0	0	0	0	1
10:45	4	1	0	0	0	5	22:45	3	0	0	0	0	3
11:00	5	0	0	0	0	5	23:00	1	0	0	0	0	1
11:15	3	0	0	0	0	3	23:15	5	0	0	0	0	5
11:30	4	1	0	0	0	5	23:30	1	0	0	0	0	1
11:45	5	0	0	0	0	5	23:45	1	0	0	0	0	1
TOTAL	89	3	0	0	0	92	TOTAL	224	2	0	0	0	226
AM PEAK HOUR						8:15 AM	AM PEAK HOUR						5:45 PM
AM PEAK VOLUME						22	AM PEAK VOLUME						35

CLASS 1	CARS	TOTAL: AM+PM	313	5	0	0	0	318
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.4%	1.6%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	16	0	0	0	0	16
CLASS 4	4-AXLE TRUCKS	PM PEAK	30	0	0	0	0	30
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS87 Dwy north of Thornton.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	3	0	0	0	0	3
0:15	0	0	0	0	0	0	12:15	6	0	0	0	0	6
0:30	2	0	0	0	0	2	12:30	0	1	0	0	0	1
0:45	1	0	0	0	0	1	12:45	5	0	0	0	0	5
1:00	1	0	0	0	0	1	13:00	3	0	0	0	0	3
1:15	0	0	0	0	0	0	13:15	5	0	0	0	0	5
1:30	1	0	0	0	0	1	13:30	1	0	0	0	0	1
1:45	1	0	0	0	0	1	13:45	5	0	0	0	0	5
2:00	0	0	0	0	0	0	14:00	5	0	0	0	0	5
2:15	0	0	0	0	0	0	14:15	6	0	0	0	0	6
2:30	0	0	0	0	0	0	14:30	7	0	0	0	0	7
2:45	1	0	0	0	0	1	14:45	4	0	0	0	0	4
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	0	0	0	0	0	0	15:15	2	0	0	0	0	2
3:30	1	0	0	0	0	1	15:30	11	0	0	0	0	11
3:45	0	0	0	0	0	0	15:45	3	0	0	0	0	3
4:00	1	0	0	0	0	1	16:00	5	0	0	0	0	5
4:15	1	0	0	0	0	1	16:15	12	0	0	0	0	12
4:30	0	0	0	0	0	0	16:30	5	0	0	0	0	5
4:45	0	0	0	0	0	0	16:45	7	0	0	0	0	7
5:00	1	0	0	0	0	1	17:00	5	0	0	0	0	5
5:15	0	0	0	0	0	0	17:15	6	0	0	0	0	6
5:30	1	0	0	0	0	1	17:30	1	0	0	0	0	1
5:45	1	0	0	0	0	1	17:45	4	0	0	0	0	4
6:00	1	0	0	0	0	1	18:00	7	0	0	0	0	7
6:15	3	0	0	0	0	3	18:15	7	0	0	0	0	7
6:30	6	0	0	0	0	6	18:30	7	0	0	0	0	7
6:45	3	0	0	0	0	3	18:45	4	0	0	0	0	4
7:00	13	0	0	0	0	13	19:00	5	0	0	0	0	5
7:15	14	0	0	0	0	14	19:15	2	0	0	0	0	2
7:30	3	0	0	0	0	3	19:30	4	0	0	0	0	4
7:45	7	0	0	0	0	7	19:45	4	0	0	0	0	4
8:00	6	0	0	0	0	6	20:00	5	0	0	0	0	5
8:15	3	0	0	0	0	3	20:15	4	0	0	0	0	4
8:30	11	0	0	0	0	11	20:30	4	0	0	0	0	4
8:45	5	1	0	0	0	6	20:45	1	0	0	0	0	1
9:00	6	0	0	0	0	6	21:00	2	0	0	0	0	2
9:15	1	0	0	0	0	1	21:15	0	0	0	0	0	0
9:30	4	0	0	0	0	4	21:30	2	0	0	0	0	2
9:45	6	0	0	0	0	6	21:45	0	0	0	0	0	0
10:00	4	0	0	0	0	4	22:00	5	0	0	0	0	5
10:15	0	0	0	0	0	0	22:15	3	0	0	0	0	3
10:30	2	0	0	0	0	2	22:30	1	0	0	0	0	1
10:45	1	0	0	0	0	1	22:45	3	0	0	0	0	3
11:00	3	0	0	0	0	3	23:00	1	0	0	0	0	1
11:15	4	0	0	0	0	4	23:15	5	0	0	0	0	5
11:30	5	0	0	0	0	5	23:30	1	0	0	0	0	1
11:45	4	1	0	0	0	5	23:45	0	0	0	0	0	0
TOTAL	128	2	0	0	0	130	TOTAL	194	1	0	0	0	195
						AM PEAK HOUR							AM PEAK HOUR
						7:00 AM							3:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						37							31

CLASS 1	CARS	TOTAL: AM+PM	322	3	0	0	0	325
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.1%	0.9%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	37	0	0	0	0	37
CLASS 4	4-AXLE TRUCKS	PM PEAK	29	0	0	0	0	29
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS88 Southern Dwy east of Cawston.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	6	0	0	0	0	6
0:15	2	0	0	0	0	2	12:15	12	0	0	0	0	12
0:30	3	0	0	0	0	3	12:30	9	0	0	0	0	9
0:45	1	0	0	0	0	1	12:45	3	0	0	0	0	3
1:00	1	0	0	0	0	1	13:00	4	0	0	0	0	4
1:15	2	0	0	0	0	2	13:15	13	0	0	0	0	13
1:30	0	0	0	0	0	0	13:30	11	0	0	0	0	11
1:45	3	0	0	0	0	3	13:45	3	0	0	0	0	3
2:00	0	0	0	0	0	0	14:00	4	0	0	0	0	4
2:15	1	0	0	0	0	1	14:15	11	0	0	0	0	11
2:30	0	0	0	0	0	0	14:30	8	0	0	0	0	8
2:45	1	0	0	0	0	1	14:45	11	0	0	0	0	11
3:00	0	0	0	0	0	0	15:00	14	0	0	0	0	14
3:15	1	0	0	0	0	1	15:15	6	0	0	0	0	6
3:30	0	0	0	0	0	0	15:30	9	0	0	0	0	9
3:45	0	0	0	0	0	0	15:45	12	0	0	0	0	12
4:00	0	0	0	0	0	0	16:00	7	0	0	0	0	7
4:15	0	0	0	0	0	0	16:15	13	0	0	0	0	13
4:30	1	0	0	0	0	1	16:30	6	0	0	0	0	6
4:45	0	0	0	0	0	0	16:45	16	0	0	0	0	16
5:00	5	0	0	0	0	5	17:00	16	0	0	0	0	16
5:15	2	0	0	0	0	2	17:15	7	0	0	0	0	7
5:30	3	0	0	0	0	3	17:30	13	0	0	0	0	13
5:45	2	0	0	0	0	2	17:45	10	0	0	0	0	10
6:00	1	0	0	0	0	1	18:00	6	0	0	0	0	6
6:15	0	0	0	0	0	0	18:15	10	0	0	0	0	10
6:30	3	0	0	0	0	3	18:30	10	0	0	0	0	10
6:45	4	0	0	0	0	4	18:45	10	0	0	0	0	10
7:00	12	0	0	0	0	12	19:00	10	0	0	0	0	10
7:15	11	0	0	0	0	11	19:15	7	0	0	0	0	7
7:30	10	0	0	0	0	10	19:30	8	0	0	0	0	8
7:45	5	0	0	0	0	5	19:45	4	0	0	0	0	4
8:00	6	0	0	0	0	6	20:00	4	0	0	0	0	4
8:15	2	0	0	0	0	2	20:15	3	0	0	0	0	3
8:30	9	0	0	0	0	9	20:30	4	0	0	0	0	4
8:45	9	0	0	0	0	9	20:45	2	0	0	0	0	2
9:00	3	0	0	0	0	3	21:00	4	0	0	0	0	4
9:15	3	0	0	0	0	3	21:15	6	0	0	0	0	6
9:30	4	0	0	0	0	4	21:30	6	0	0	0	0	6
9:45	2	0	0	0	0	2	21:45	2	0	0	0	0	2
10:00	3	0	0	0	0	3	22:00	4	0	0	0	0	4
10:15	2	0	0	0	0	2	22:15	5	0	0	0	0	5
10:30	5	1	0	0	0	6	22:30	5	0	0	0	0	5
10:45	4	0	0	0	0	4	22:45	3	0	0	0	0	3
11:00	6	0	0	0	0	6	23:00	0	0	0	0	0	0
11:15	5	0	0	0	0	5	23:15	1	0	0	0	0	1
11:30	6	0	0	0	0	6	23:30	1	0	0	0	0	1
11:45	1	1	0	0	0	2	23:45	1	0	0	0	0	1
TOTAL	145	2	0	0	0	147	TOTAL	340	0	0	0	0	340
						AM PEAK HOUR							AM PEAK HOUR
						7:00 AM							4:45 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						38							52

CLASS 1	CARS	TOTAL: AM+PM	485	2	0	0	0	487
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.6%	0.4%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	38	0	0	0	0	38
CLASS 4	4-AXLE TRUCKS	PM PEAK	52	0	0	0	0	52
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS88 Southern Dwy east of Cawston.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	1	0	0	0	0	1	12:00	4	0	0	0	0	4
0:15	1	0	0	0	0	1	12:15	8	0	0	0	0	8
0:30	2	0	0	0	0	2	12:30	7	2	0	0	0	9
0:45	2	0	0	0	0	2	12:45	7	0	0	0	0	7
1:00	0	0	0	0	0	0	13:00	8	0	0	0	0	8
1:15	1	0	0	0	0	1	13:15	9	0	0	0	0	9
1:30	0	0	0	0	0	0	13:30	13	0	0	0	0	13
1:45	0	0	0	0	0	0	13:45	7	0	0	0	0	7
2:00	0	0	0	0	0	0	14:00	14	0	0	0	0	14
2:15	0	0	0	0	0	0	14:15	13	0	0	0	0	13
2:30	0	0	0	0	0	0	14:30	4	0	0	0	0	4
2:45	0	0	0	0	0	0	14:45	6	0	0	0	0	6
3:00	0	0	0	0	0	0	15:00	6	0	0	0	0	6
3:15	0	0	0	0	0	0	15:15	8	0	0	0	0	8
3:30	0	0	0	0	0	0	15:30	9	0	0	0	0	9
3:45	3	0	0	0	0	3	15:45	11	0	0	0	0	11
4:00	1	0	0	0	0	1	16:00	8	0	0	0	0	8
4:15	1	0	0	0	0	1	16:15	6	0	0	0	0	6
4:30	0	0	0	0	0	0	16:30	4	0	0	0	0	4
4:45	0	0	0	0	0	0	16:45	7	0	0	0	0	7
5:00	2	0	0	0	0	2	17:00	12	0	0	0	0	12
5:15	1	0	0	0	0	1	17:15	6	0	0	0	0	6
5:30	2	0	0	0	0	2	17:30	11	0	0	0	0	11
5:45	1	0	0	0	0	1	17:45	6	0	0	0	0	6
6:00	6	0	0	0	0	6	18:00	3	0	0	0	0	3
6:15	3	0	0	0	0	3	18:15	3	0	0	0	0	3
6:30	3	0	0	0	0	3	18:30	8	0	0	0	0	8
6:45	14	0	0	0	0	14	18:45	8	0	0	0	0	8
7:00	20	0	0	0	0	20	19:00	4	0	0	0	0	4
7:15	18	0	0	0	0	18	19:15	4	0	0	0	0	4
7:30	26	0	0	0	0	26	19:30	4	0	0	0	0	4
7:45	11	0	0	0	0	11	19:45	3	0	0	0	0	3
8:00	6	0	0	0	0	6	20:00	5	0	0	0	0	5
8:15	5	0	0	0	0	5	20:15	5	0	0	0	0	5
8:30	8	0	0	0	0	8	20:30	5	0	0	0	0	5
8:45	8	0	0	0	0	8	20:45	3	0	0	0	0	3
9:00	5	0	0	0	0	5	21:00	5	0	0	0	0	5
9:15	2	0	0	0	0	2	21:15	5	0	0	0	0	5
9:30	5	0	0	0	0	5	21:30	4	0	0	0	0	4
9:45	6	0	0	0	0	6	21:45	2	0	0	0	0	2
10:00	5	0	0	0	0	5	22:00	1	0	0	0	0	1
10:15	0	0	0	0	0	0	22:15	2	0	0	0	0	2
10:30	3	0	0	0	0	3	22:30	4	0	0	0	0	4
10:45	7	1	0	0	0	8	22:45	1	0	0	0	0	1
11:00	8	1	0	0	0	9	23:00	0	0	0	0	0	0
11:15	5	0	0	0	0	5	23:15	7	0	0	0	0	7
11:30	4	0	0	0	0	4	23:30	1	0	0	0	0	1
11:45	5	1	0	0	0	6	23:45	1	0	0	0	0	1
TOTAL	201	3	0	0	0	204	TOTAL	282	2	0	0	0	284
						AM PEAK HOUR							AM PEAK HOUR
						6:45 AM							1:30 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						78							47

CLASS 1	CARS	TOTAL: AM+PM	483	5	0	0	0	488
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.0%	1.0%	0.0%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	75	0	0	0	0	75
CLASS 4	4-AXLE TRUCKS	PM PEAK	36	0	0	0	0	36
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS89 Northern Dwy east of Cawston.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	4	0	0	0	0	4
0:15	0	0	0	0	0	0	12:15	3	0	0	0	0	3
0:30	0	0	0	0	0	0	12:30	3	0	0	0	0	3
0:45	1	0	0	0	0	1	12:45	1	0	0	0	0	1
1:00	0	0	0	0	0	0	13:00	5	0	0	0	0	5
1:15	0	0	0	0	0	0	13:15	1	0	0	0	0	1
1:30	1	0	0	0	0	1	13:30	4	0	0	0	0	4
1:45	0	0	0	0	0	0	13:45	4	0	0	0	0	4
2:00	1	0	0	0	0	1	14:00	7	1	0	0	0	8
2:15	0	0	0	0	0	0	14:15	5	0	0	0	0	5
2:30	0	0	0	0	0	0	14:30	4	0	0	0	0	4
2:45	0	0	0	0	0	0	14:45	4	0	0	0	0	4
3:00	0	0	0	0	0	0	15:00	4	0	0	0	0	4
3:15	0	0	0	0	0	0	15:15	5	0	1	0	0	6
3:30	0	0	0	0	0	0	15:30	3	0	0	0	0	3
3:45	0	0	0	0	0	0	15:45	2	0	0	0	0	2
4:00	2	0	0	0	0	2	16:00	7	0	0	0	0	7
4:15	5	0	0	0	0	5	16:15	6	0	0	0	0	6
4:30	0	0	0	0	0	0	16:30	8	0	0	0	0	8
4:45	0	0	0	0	0	0	16:45	10	0	0	0	0	10
5:00	0	0	0	0	0	0	17:00	8	0	0	0	0	8
5:15	0	0	0	0	0	0	17:15	4	0	0	0	0	4
5:30	0	0	0	0	0	0	17:30	3	0	0	0	0	3
5:45	1	0	0	0	0	1	17:45	4	0	0	0	0	4
6:00	1	0	0	0	0	1	18:00	5	0	0	0	0	5
6:15	2	0	0	0	0	2	18:15	6	0	0	0	0	6
6:30	1	0	0	0	0	1	18:30	8	0	0	0	0	8
6:45	0	0	0	0	0	0	18:45	4	0	0	0	0	4
7:00	2	0	0	0	0	2	19:00	5	0	0	0	0	5
7:15	1	0	0	0	0	1	19:15	4	0	0	0	0	4
7:30	5	0	0	0	0	5	19:30	4	0	0	0	0	4
7:45	2	0	0	0	0	2	19:45	5	0	0	0	0	5
8:00	0	0	0	0	0	0	20:00	3	0	0	0	0	3
8:15	1	0	0	0	0	1	20:15	7	0	0	0	0	7
8:30	3	0	0	0	0	3	20:30	4	0	0	0	0	4
8:45	5	0	0	0	0	5	20:45	12	0	0	0	0	12
9:00	5	1	0	0	0	6	21:00	4	0	0	0	0	4
9:15	3	0	0	0	0	3	21:15	5	0	0	0	0	5
9:30	1	0	0	0	0	1	21:30	4	0	0	0	0	4
9:45	5	0	0	0	0	5	21:45	6	0	0	0	0	6
10:00	3	0	0	0	0	3	22:00	2	0	0	0	0	2
10:15	2	0	0	0	0	2	22:15	4	0	0	0	0	4
10:30	2	0	0	0	0	2	22:30	3	0	0	0	0	3
10:45	4	0	0	0	0	4	22:45	3	0	0	0	0	3
11:00	5	0	0	0	0	5	23:00	6	0	0	0	0	6
11:15	1	0	0	0	0	1	23:15	7	0	0	0	0	7
11:30	3	0	0	0	0	3	23:30	6	0	0	0	0	6
11:45	3	1	0	0	0	4	23:45	5	0	0	0	0	5
TOTAL	73	2	0	0	0	75	TOTAL	231	1	1	0	0	233
						AM PEAK HOUR							AM PEAK HOUR
						8:30 AM							4:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						17							32

CLASS 1	CARS	TOTAL: AM+PM	304	3	1	0	0	308
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.7%	1.0%	0.3%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	10	0	0	0	0	10
CLASS 4	4-AXLE TRUCKS	PM PEAK	32	0	0	0	0	32
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 10 - Riverdale Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS89 Northern Dwy east of Cawston.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	0	0	0	0	0	0	12:00	6	0	0	0	0	6
0:15	0	0	0	0	0	0	12:15	9	0	0	0	0	9
0:30	3	0	0	0	0	3	12:30	6	0	0	0	0	6
0:45	1	0	0	0	0	1	12:45	4	0	0	0	0	4
1:00	0	0	0	0	0	0	13:00	5	0	0	0	0	5
1:15	0	0	0	0	0	0	13:15	4	0	0	0	0	4
1:30	0	0	0	0	0	0	13:30	5	0	0	0	0	5
1:45	0	0	0	0	0	0	13:45	4	0	0	0	0	4
2:00	0	0	0	0	0	0	14:00	3	0	0	0	0	3
2:15	0	0	0	0	0	0	14:15	8	0	0	0	0	8
2:30	0	0	0	0	0	0	14:30	6	0	0	0	0	6
2:45	2	0	0	0	0	2	14:45	5	0	0	0	0	5
3:00	1	0	0	0	0	1	15:00	6	0	0	0	0	6
3:15	0	0	0	0	0	0	15:15	9	0	0	0	0	9
3:30	3	0	0	0	0	3	15:30	5	0	1	0	0	6
3:45	0	0	0	0	0	0	15:45	7	0	0	0	0	7
4:00	0	0	0	0	0	0	16:00	2	0	0	0	0	2
4:15	4	0	0	0	0	4	16:15	6	0	0	0	0	6
4:30	0	0	0	0	0	0	16:30	6	0	0	0	0	6
4:45	1	0	0	0	0	1	16:45	5	0	0	0	0	5
5:00	0	0	0	0	0	0	17:00	6	0	0	0	0	6
5:15	0	0	0	0	0	0	17:15	3	0	0	0	0	3
5:30	2	0	0	0	0	2	17:30	4	0	0	0	0	4
5:45	2	0	0	0	0	2	17:45	3	0	0	0	0	3
6:00	5	0	0	0	0	5	18:00	6	0	0	0	0	6
6:15	3	0	0	0	0	3	18:15	5	0	0	0	0	5
6:30	2	0	0	0	0	2	18:30	3	0	0	0	0	3
6:45	5	0	0	0	0	5	18:45	3	0	0	0	0	3
7:00	7	0	0	0	0	7	19:00	6	0	0	0	0	6
7:15	7	0	0	0	0	7	19:15	2	0	0	0	0	2
7:30	5	0	0	0	0	5	19:30	2	0	0	0	0	2
7:45	2	0	0	0	0	2	19:45	3	0	0	0	0	3
8:00	4	0	0	0	0	4	20:00	3	0	0	0	0	3
8:15	3	0	0	0	0	3	20:15	1	0	0	0	0	1
8:30	6	0	0	0	0	6	20:30	1	0	0	0	0	1
8:45	4	0	0	0	0	4	20:45	2	0	0	0	0	2
9:00	2	0	0	0	0	2	21:00	1	0	0	0	0	1
9:15	2	0	0	0	0	2	21:15	5	0	0	0	0	5
9:30	3	0	0	0	0	3	21:30	2	0	0	0	0	2
9:45	8	0	0	0	0	8	21:45	2	0	0	0	0	2
10:00	1	0	0	0	0	1	22:00	1	0	0	0	0	1
10:15	3	0	0	0	0	3	22:15	1	0	0	0	0	1
10:30	2	0	0	0	0	2	22:30	3	0	0	0	0	3
10:45	3	0	0	0	0	3	22:45	2	0	0	0	0	2
11:00	2	0	0	0	0	2	23:00	1	0	0	0	0	1
11:15	2	0	0	0	0	2	23:15	0	0	0	0	0	0
11:30	3	0	0	0	0	3	23:30	1	0	0	0	0	1
11:45	1	1	0	0	0	2	23:45	0	0	0	0	0	0
TOTAL	104	1	0	0	0	105	TOTAL	183	0	1	0	0	184
						AM PEAK HOUR							AM PEAK HOUR
						6:45 AM							3:00 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						24							28

CLASS 1	CARS	TOTAL: AM+PM	287	1	1	0	0	289
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	99.3%	0.3%	0.3%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	21	0	0	0	0	21
CLASS 4	4-AXLE TRUCKS	PM PEAK	23	0	0	0	0	23
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 11 - Parkridge Meadows Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS70 Dwy east of E Parkridge.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	9	0	0	0	0	9
0:15	2	0	0	0	0	2	12:15	10	0	0	0	0	10
0:30	8	0	0	0	0	8	12:30	16	0	0	0	0	16
0:45	2	0	0	0	0	2	12:45	13	1	0	0	0	14
1:00	2	0	0	0	0	2	13:00	20	2	0	0	0	22
1:15	2	0	0	0	0	2	13:15	10	2	0	0	0	12
1:30	1	0	0	0	0	1	13:30	18	1	0	0	0	19
1:45	1	0	0	0	0	1	13:45	18	0	0	0	0	18
2:00	1	0	0	0	0	1	14:00	19	2	0	0	0	21
2:15	1	0	0	0	0	1	14:15	21	1	0	0	0	22
2:30	1	0	0	0	0	1	14:30	37	1	0	0	0	38
2:45	1	0	0	0	0	1	14:45	32	0	0	0	0	32
3:00	4	0	0	0	0	4	15:00	15	0	0	0	0	15
3:15	5	0	0	0	0	5	15:15	22	2	0	0	0	24
3:30	1	0	0	0	0	1	15:30	20	0	0	0	0	20
3:45	4	0	0	0	0	4	15:45	17	0	0	0	0	17
4:00	7	0	0	0	0	7	16:00	26	3	0	0	0	29
4:15	0	0	0	0	0	0	16:15	21	0	0	0	0	21
4:30	2	0	0	0	0	2	16:30	26	0	0	0	0	26
4:45	4	0	0	0	0	4	16:45	25	0	0	0	0	25
5:00	3	0	0	0	0	3	17:00	23	0	0	0	0	23
5:15	5	0	0	0	0	5	17:15	25	0	0	0	0	25
5:30	1	0	0	0	0	1	17:30	19	0	0	0	0	19
5:45	5	0	0	0	0	5	17:45	30	0	0	0	0	30
6:00	4	0	0	0	0	4	18:00	13	0	0	0	0	13
6:15	6	0	0	0	0	6	18:15	28	1	0	0	0	29
6:30	3	2	0	0	0	5	18:30	14	1	0	0	0	15
6:45	8	1	0	0	0	9	18:45	26	0	0	0	0	26
7:00	6	2	0	0	0	8	19:00	18	0	0	0	0	18
7:15	7	3	0	0	0	10	19:15	9	0	0	0	0	9
7:30	20	0	1	0	0	21	19:30	18	0	0	0	0	18
7:45	11	0	0	0	0	11	19:45	20	0	0	0	0	20
8:00	11	0	1	0	0	12	20:00	14	0	0	0	0	14
8:15	15	1	0	0	0	16	20:15	7	0	0	0	0	7
8:30	11	1	0	0	0	12	20:30	18	0	0	0	0	18
8:45	8	2	0	0	0	10	20:45	14	0	0	0	0	14
9:00	11	0	0	0	0	11	21:00	9	0	0	0	0	9
9:15	5	0	0	0	0	5	21:15	15	0	0	0	0	15
9:30	9	2	0	0	0	11	21:30	11	0	0	0	0	11
9:45	8	0	0	0	0	8	21:45	12	0	0	0	0	12
10:00	13	0	0	0	0	13	22:00	11	0	0	0	0	11
10:15	3	1	0	0	0	4	22:15	6	0	0	0	0	6
10:30	9	1	0	0	0	10	22:30	12	0	0	0	0	12
10:45	15	0	0	0	0	15	22:45	5	0	0	0	0	5
11:00	10	0	0	0	0	10	23:00	7	0	0	0	0	7
11:15	7	1	0	0	0	8	23:15	3	0	0	0	0	3
11:30	11	0	0	0	0	11	23:30	6	0	0	0	0	6
11:45	8	0	0	0	0	8	23:45	2	0	0	0	0	2
TOTAL	284	17	2	0	0	303	TOTAL	790	17	0	0	0	807
AM PEAK HOUR						7:30 AM	AM PEAK HOUR						2:00 PM
AM PEAK VOLUME						60	AM PEAK VOLUME						113

CLASS 1	CARS	TOTAL: AM+PM	1,074	34	2	0	0	1,110
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	96.8%	3.1%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	57	1	2	0	0	60
CLASS 4	4-AXLE TRUCKS	PM PEAK	98	3	0	0	0	101
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 11 - Parkridge Meadows Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS70 Dwy east of E Parkridge.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	2	0	0	0	0	2	12:00	8	0	0	0	0	8
0:15	3	0	0	0	0	3	12:15	12	1	0	0	0	13
0:30	4	0	0	0	0	4	12:30	12	0	0	0	0	12
0:45	3	0	0	0	0	3	12:45	10	0	0	0	0	10
1:00	2	0	0	0	0	2	13:00	16	2	0	0	0	18
1:15	1	0	0	0	0	1	13:15	15	2	0	0	0	17
1:30	1	0	0	0	0	1	13:30	14	0	0	0	0	14
1:45	0	0	0	0	0	0	13:45	18	0	0	0	0	18
2:00	0	0	0	0	0	0	14:00	16	3	0	0	0	19
2:15	0	0	0	0	0	0	14:15	20	2	0	0	0	22
2:30	1	0	0	0	0	1	14:30	17	0	0	0	0	17
2:45	0	0	0	0	0	0	14:45	14	0	0	0	0	14
3:00	1	0	0	0	0	1	15:00	16	1	0	0	0	17
3:15	0	0	0	0	0	0	15:15	29	2	0	0	0	31
3:30	1	0	0	0	0	1	15:30	24	0	0	0	0	24
3:45	2	0	0	0	0	2	15:45	21	0	0	0	0	21
4:00	10	0	0	0	0	10	16:00	15	3	0	0	0	18
4:15	14	0	0	0	0	14	16:15	17	0	0	0	0	17
4:30	16	0	0	0	0	16	16:30	12	0	0	0	0	12
4:45	11	0	0	0	0	11	16:45	9	0	0	0	0	9
5:00	6	0	0	0	0	6	17:00	18	0	0	0	0	18
5:15	19	0	0	0	0	19	17:15	15	0	0	0	0	15
5:30	13	0	0	0	0	13	17:30	15	0	0	0	0	15
5:45	16	0	0	0	0	16	17:45	12	0	0	0	0	12
6:00	10	0	0	0	0	10	18:00	11	0	0	0	0	11
6:15	11	0	0	0	0	11	18:15	12	0	0	0	0	12
6:30	18	0	0	0	0	18	18:30	15	3	0	0	0	18
6:45	28	3	0	0	0	31	18:45	12	0	0	0	0	12
7:00	12	1	0	0	0	13	19:00	14	1	0	0	0	15
7:15	35	4	0	0	0	39	19:15	11	0	0	0	0	11
7:30	26	0	0	0	0	26	19:30	13	0	0	0	0	13
7:45	26	0	1	0	0	27	19:45	7	0	0	0	0	7
8:00	23	0	0	0	0	23	20:00	16	0	0	0	0	16
8:15	10	0	1	0	0	11	20:15	10	0	0	0	0	10
8:30	14	1	0	0	0	15	20:30	19	0	0	0	0	19
8:45	20	3	0	0	0	23	20:45	7	0	0	0	0	7
9:00	15	0	0	0	0	15	21:00	7	0	0	0	0	7
9:15	16	0	0	0	0	16	21:15	4	0	0	0	0	4
9:30	9	1	0	0	0	10	21:30	6	0	0	0	0	6
9:45	16	1	0	0	0	17	21:45	6	0	0	0	0	6
10:00	10	0	0	0	0	10	22:00	1	0	0	0	0	1
10:15	17	0	0	0	0	17	22:15	4	0	0	0	0	4
10:30	8	1	0	0	0	9	22:30	7	0	0	0	0	7
10:45	17	0	0	0	0	17	22:45	3	0	0	0	0	3
11:00	10	0	0	0	0	10	23:00	8	0	0	0	0	8
11:15	5	0	0	0	0	5	23:15	0	0	0	0	0	0
11:30	12	1	0	0	0	13	23:30	3	0	0	0	0	3
11:45	17	0	0	0	0	17	23:45	1	0	0	0	0	1
TOTAL	511	16	2	0	0	529	TOTAL	572	20	0	0	0	592
						AM PEAK HOUR	7:15 AM						
						AM PEAK VOLUME	115						
												AM PEAK HOUR	3:15 PM
												AM PEAK VOLUME	94

CLASS 1	CARS	TOTAL: AM+PM	1,083	36	2	0	0	1,121
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	96.6%	3.2%	0.2%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	110	4	1	0	0	115
CLASS 4	4-AXLE TRUCKS	PM PEAK	60	0	0	0	0	60
CLASS 5	5-AXLE + TRUCKS							

A021323

Study Site 12 - Hunt Club Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY:

WRCOG

JOB #: SC3826

LOCATION:

CLASS81 Dwy west of Goetz.

AM TIME	IN						PM Time	IN					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	11	0	0	0	0	11	12:00	29	1	0	0	0	30
0:15	7	0	0	0	0	7	12:15	34	0	0	0	0	34
0:30	9	0	0	0	0	9	12:30	28	0	0	0	0	28
0:45	6	0	0	0	0	6	12:45	32	1	0	0	0	33
1:00	3	0	0	0	0	3	13:00	20	2	0	0	0	22
1:15	6	0	0	0	0	6	13:15	40	2	0	0	0	42
1:30	3	0	0	0	0	3	13:30	37	0	0	0	0	37
1:45	7	0	0	0	0	7	13:45	29	0	0	0	0	29
2:00	2	0	0	0	0	2	14:00	28	0	0	0	0	28
2:15	5	0	0	0	0	5	14:15	48	1	0	0	0	49
2:30	5	0	0	0	0	5	14:30	45	0	0	0	0	45
2:45	8	0	0	0	0	8	14:45	33	1	0	0	0	34
3:00	5	0	0	0	0	5	15:00	33	1	0	0	0	34
3:15	2	0	0	0	0	2	15:15	51	0	0	0	0	51
3:30	2	0	0	0	0	2	15:30	48	0	1	0	0	49
3:45	8	0	0	0	0	8	15:45	62	0	0	0	0	62
4:00	0	0	0	0	0	0	16:00	56	1	0	0	0	57
4:15	3	0	0	0	0	3	16:15	42	0	0	0	0	42
4:30	1	0	0	0	0	1	16:30	49	0	0	0	0	49
4:45	10	0	0	0	0	10	16:45	39	0	0	0	0	39
5:00	5	0	0	0	0	5	17:00	59	0	0	0	0	59
5:15	8	0	0	0	0	8	17:15	43	0	0	0	0	43
5:30	6	0	0	0	0	6	17:30	40	0	0	0	0	40
5:45	5	0	0	0	0	5	17:45	50	1	0	0	0	51
6:00	6	0	0	0	0	6	18:00	38	1	0	0	0	39
6:15	3	0	0	0	0	3	18:15	33	0	0	0	0	33
6:30	8	0	0	0	0	8	18:30	44	0	0	0	0	44
6:45	9	0	0	0	0	9	18:45	35	1	0	0	0	36
7:00	9	0	0	0	0	9	19:00	33	0	0	0	0	33
7:15	14	0	0	0	0	14	19:15	29	0	0	0	0	29
7:30	15	0	0	0	0	15	19:30	27	0	0	0	0	27
7:45	34	0	0	0	0	34	19:45	20	1	0	0	0	21
8:00	44	1	0	0	0	45	20:00	29	0	0	0	0	29
8:15	47	2	1	0	0	50	20:15	25	0	0	0	0	25
8:30	23	0	0	0	0	23	20:30	33	0	0	0	0	33
8:45	37	0	0	0	0	37	20:45	29	0	0	0	0	29
9:00	14	0	0	0	0	14	21:00	29	0	0	0	0	29
9:15	13	0	0	0	0	13	21:15	21	0	0	0	0	21
9:30	16	0	0	0	0	16	21:30	32	0	0	0	0	32
9:45	10	1	0	0	0	11	21:45	10	0	0	0	0	10
10:00	11	1	0	0	0	12	22:00	15	0	0	0	0	15
10:15	16	2	0	0	0	18	22:15	18	0	0	0	0	18
10:30	19	0	0	0	0	19	22:30	21	0	0	0	0	21
10:45	20	0	0	0	0	20	22:45	19	0	0	0	0	19
11:00	14	1	1	0	0	16	23:00	11	0	0	0	0	11
11:15	20	0	0	0	0	20	23:15	21	0	0	0	0	21
11:30	17	0	0	0	0	17	23:30	10	0	0	0	0	10
11:45	19	0	0	0	0	19	23:45	14	0	0	0	0	14
TOTAL	565	8	2	0	0	575	TOTAL	1,571	14	1	0	0	1,586
						AM PEAK HOUR							AM PEAK HOUR
						8:00 AM							3:15 PM
						AM PEAK VOLUME							AM PEAK VOLUME
						155							219

CLASS 1	CARS	TOTAL: AM+PM	2,136	22	3	0	0	2,161
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.8%	1.0%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	151	3	1	0	0	155
CLASS 4	4-AXLE TRUCKS	PM PEAK	192	1	0	0	0	193
CLASS 5	5-AXLE + TRUCKS							

A13123

Study Site 12 - Hunt Club Apartments

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: THREE DAYS

CITY: WRCOG

JOB #: SC3826

LOCATION: CLASS81 Dwy west of Goetz.

AM TIME	OUT						PM Time	OUT					
	1	2	3	4	5	TOTAL		1	2	3	4	5	TOTAL
0:00	5	0	0	0	0	5	12:00	27	1	0	0	0	28
0:15	4	0	0	0	0	4	12:15	17	0	0	0	0	17
0:30	6	0	0	0	0	6	12:30	42	1	0	0	0	43
0:45	1	0	0	0	0	1	12:45	29	1	0	0	0	30
1:00	2	0	0	0	0	2	13:00	31	2	0	0	0	33
1:15	5	0	0	0	0	5	13:15	24	0	0	0	0	24
1:30	4	0	0	0	0	4	13:30	39	3	0	0	0	42
1:45	1	0	0	0	0	1	13:45	40	1	0	0	0	41
2:00	2	0	0	0	0	2	14:00	53	0	0	0	0	53
2:15	4	0	0	0	0	4	14:15	38	0	0	0	0	38
2:30	2	0	0	0	0	2	14:30	32	0	0	0	0	32
2:45	4	0	0	0	0	4	14:45	25	0	0	0	0	25
3:00	4	0	0	0	0	4	15:00	38	1	0	0	0	39
3:15	8	0	0	0	0	8	15:15	39	1	0	0	0	40
3:30	12	0	0	0	0	12	15:30	38	0	1	0	0	39
3:45	15	0	0	0	0	15	15:45	39	0	0	0	0	39
4:00	13	0	0	0	0	13	16:00	28	0	0	0	0	28
4:15	11	0	0	0	0	11	16:15	32	1	0	0	0	33
4:30	23	0	0	0	0	23	16:30	33	0	0	0	0	33
4:45	17	0	0	0	0	17	16:45	23	0	0	0	0	23
5:00	10	0	0	0	0	10	17:00	28	0	0	0	0	28
5:15	18	0	0	0	0	18	17:15	39	0	0	0	0	39
5:30	21	0	0	0	0	21	17:30	31	0	0	0	0	31
5:45	28	0	0	0	0	28	17:45	27	0	0	0	0	27
6:00	14	0	0	0	0	14	18:00	17	0	0	0	0	17
6:15	25	1	0	0	0	26	18:15	24	0	0	0	0	24
6:30	37	0	0	0	0	37	18:30	19	0	0	0	0	19
6:45	30	0	0	0	0	30	18:45	24	0	0	0	0	24
7:00	47	1	0	0	0	48	19:00	20	1	0	0	0	21
7:15	65	0	0	0	0	65	19:15	17	0	0	0	0	17
7:30	72	0	0	0	0	72	19:30	13	0	0	0	0	13
7:45	87	0	0	0	0	87	19:45	17	0	0	0	0	17
8:00	53	0	0	0	0	53	20:00	10	0	0	0	0	10
8:15	30	1	0	0	0	31	20:15	18	2	0	0	0	20
8:30	16	2	1	0	0	19	20:30	18	0	0	0	0	18
8:45	17	0	0	0	0	17	20:45	16	0	0	0	0	16
9:00	30	0	0	0	0	30	21:00	9	0	0	0	0	9
9:15	14	0	0	0	0	14	21:15	8	0	0	0	0	8
9:30	23	0	0	0	0	23	21:30	16	0	0	0	0	16
9:45	20	0	0	0	0	20	21:45	8	0	0	0	0	8
10:00	25	1	0	0	0	26	22:00	5	0	0	0	0	5
10:15	27	0	0	0	0	27	22:15	4	0	0	0	0	4
10:30	17	1	0	0	0	18	22:30	11	0	0	0	0	11
10:45	31	0	0	0	0	31	22:45	10	0	0	0	0	10
11:00	24	0	0	0	0	24	23:00	7	0	0	0	0	7
11:15	25	1	0	0	0	26	23:15	6	0	0	0	0	6
11:30	22	0	0	0	0	22	23:30	2	0	0	0	0	2
11:45	16	0	1	0	0	17	23:45	1	0	0	0	0	1
TOTAL	987	8	2	0	0	997	TOTAL	1,092	15	1	0	0	1,108
						AM PEAK HOUR	7:15 AM						
						AM PEAK VOLUME	277						
												AM PEAK HOUR	1:30 PM
												AM PEAK VOLUME	174

CLASS 1	CARS	TOTAL: AM+PM	2,079	23	3	0	0	2,105
CLASS 2	2-AXLE TRUCKS	% OF TOTAL	98.8%	1.1%	0.1%	0.0%	0.0%	100.0%
CLASS 3	3-AXLE TRUCKS	AM PEAK	277	0	0	0	0	277
CLASS 4	4-AXLE TRUCKS	PM PEAK	125	0	0	0	0	125
CLASS 5	5-AXLE + TRUCKS							



Appendix B: Apartment Characteristics

EXHIBIT I-4 - 2045 PM Peak Period Vehicle Trips by WRCOG Zone*

FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		230,328	12,878	49,743	3,401	30,237	32,112	358,698
Hemet/San Jacinto		16,341	115,656	4,833	4,586	8,818	9,988	160,221
Northwest		31,923	1,495	409,641	1,448	6,076	109,331	559,914
Pass Area		4,405	4,214	3,346	61,219	506	17,876	91,566
Southwest		30,752	8,928	18,144	1,062	368,893	34,759	462,537
Outside WRCOG		18,495	4,221	106,166	13,282	18,918		161,080
TOTAL		332,244	147,391	591,872	84,997	433,447	204,065	1,794,017

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

EXHIBIT I-5 - 2045 PM Peak Period Percent Vehicle Trips by WRCOG Zone*

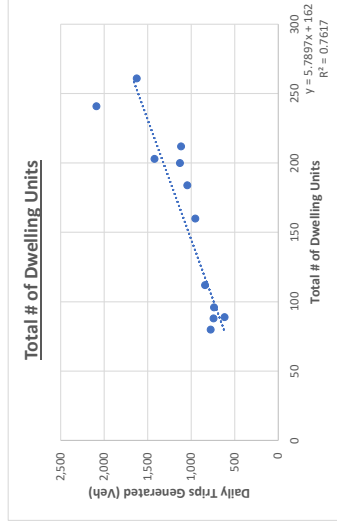
FROM	TO	Central	Hemet/San Jacinto	Northwest	Pass Area	Southwest	Outside WRCOG	TOTAL
Central		64.2%	3.6%	13.9%	0.9%	8.4%	9.0%	100%
Hemet/San Jacinto		10.2%	72.2%	3.0%	2.9%	5.5%	6.2%	100%
Northwest		5.7%	0.3%	73.2%	0.3%	1.1%	19.5%	100%
Pass Area		4.8%	4.6%	3.7%	66.9%	0.6%	19.5%	100%
Southwest		6.6%	1.9%	3.9%	0.2%	79.8%	7.5%	100%

* Based on RIVCOM Year 2045 No-Build Scenario, February 2024

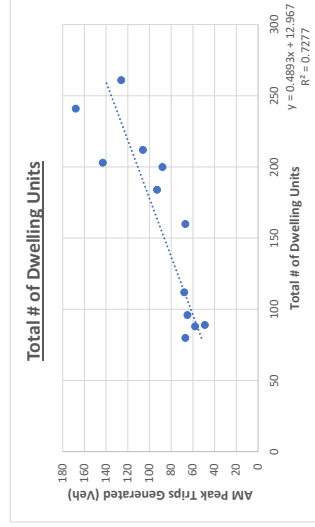


Appendix C: Correlation Plots

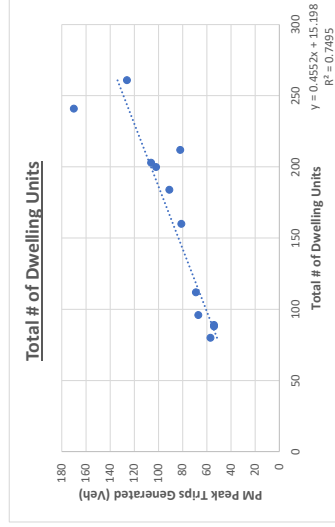
Daily Trip Generation by # of Dwelling Units in Complex



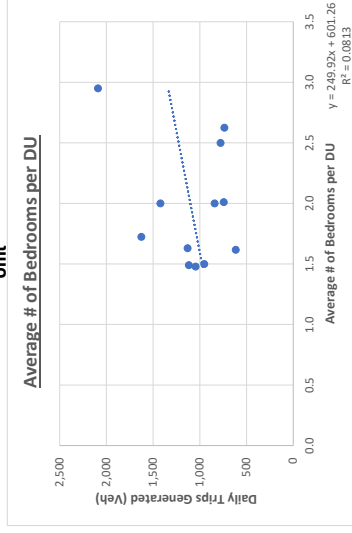
AM Peak Trip Generation by # of Dwelling Units in Complex



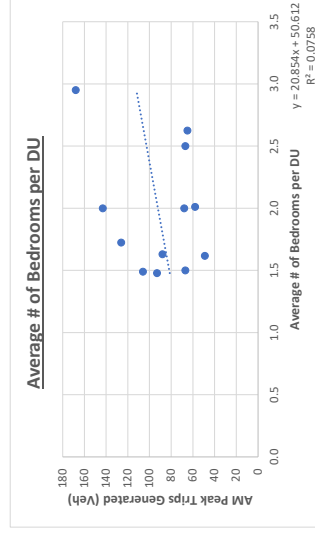
PM Peak Trip Generation by # of Dwelling Units in Complex



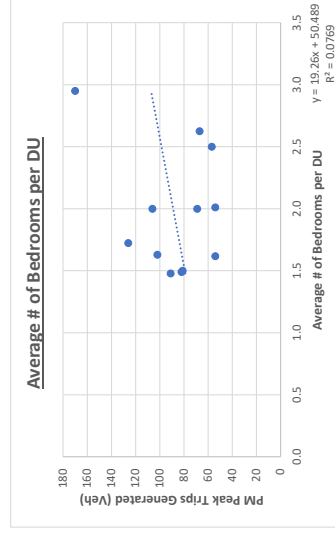
Daily Trip Generation by Average # of Bedrooms Per Dwelling Unit



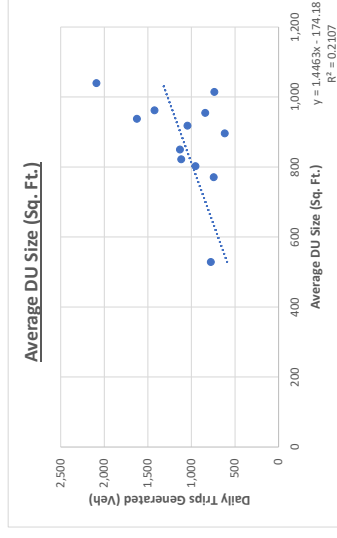
AM Peak Trip Generation by Average # of Bedrooms Per Dwelling Unit



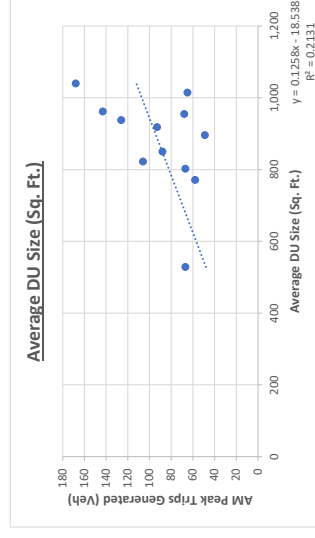
PM Peak Trip Generation by Average # of Bedrooms Per Dwelling Unit



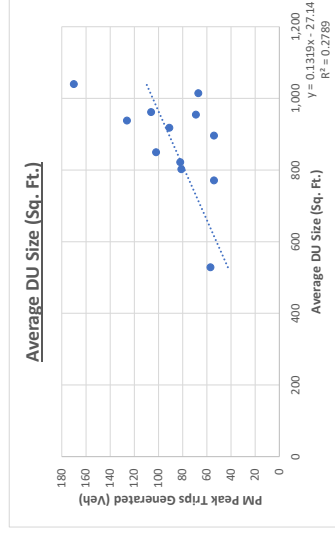
Daily Trip Generation by Average Size of Dwelling Unit



AM Peak Trip Generation by Average Size of Dwelling Unit



PM Peak Trip Generation by Average Size of Dwelling Unit



Appendix L - Non-Residential Fee Calculation

The non-residential fee was calculated by multiplying the estimated Regional System of Highways and Arterials improvements cost attributable to new development (**Section 4.0**) by the proportion of all regional trips that are generated by non-residential land uses (**Section 5.3**), and dividing this number by the projected increase in non-residential land use between 2018 and 2045 (**Table 2.3, Section 2.0**) and the proportional share of new employees in each sector.

In preparation for the fee calculation, SCAG 2020 RTP/SCS employment data by sector was first converted to land use as square feet of gross floor area (SF GFA). Non-residential employee to gross floor area conversion factors were derived from four sources. These sources are:

- Cordoba Corporation/Parsons Brinckerhoff Quade and Douglas, Inc. (PBQD), Land Use Density Conversion Factors For The Long-Range Corridor Study San Bernardino and Riverside Counties, August 20, 1990. Table 8.
- Orange County Transportation Authority (OCTA), Orange County Subarea Modeling Guidelines Manual, June 2001. Appendix C.
- Southern California Association of Governments (SCAG), Employment Density Study, October 31, 2001, Table IIB
- County of Riverside, General Plan, As Amended December 15, 2015, Appendix E: Socioeconomic Build-Out Projections Assumptions & Methodology, Table E-5

The employment conversion factors developed for use in the calculation of the non-residential fee are tabulated in **Exhibits L-1** through **L-4**. The relevant sections of these respective publications are included in this Appendix as **Exhibits L-5** through **L-8**.

To account for the difference in trip generation rates between the various employment sectors, the non-residential fee value for each sector was normalized by multiplying by the respective median trip generation rate for the range of associated land use types as published in the Institute of Traffic Engineers Trip Generation Manual, Eleventh Edition, 2021. The respective fee values are presented in **Section 6.2**. The table detailing the calculation of the non-residential fee (and residential fee) is included in **Appendix K** as **Exhibit K-1**.

EXHIBIT L-1 Employment Conversion Factors

Employment Sector	Business by Land Use Category (1)	Employees	Gross Floor Area (TSF)	Conversion Rate (Employees/TSF)	Land Use Category (2)	Minimum Range Conversion Rate (Employees/TSF)	Land Use Category (3)	SF per Employee based on Average Employees per Acre and Average FAR (Western County)	Employees/TSF	Land Use Category (4)	SF per Employee	Employees/TSF	TIME Median Conversion Factors (Employees/TSF)
Industrial	Heavy Manufacturing	6,379	5,117	1.25	R&D/LIBP	2.50	84,000 Sq. Feet Warehouse	1030		Light Industrial			
	General Manufacturing	11,603	6,103	1.90	Heavy Industry	2.00	Light Manufacturing Warehouse	1548		Heavy Industry			
	Light Manufacturing	8,624	3,962	2.18	Warehouse	1.00		1195					
	Manufacturing, Small Module	5,559	3,038	1.83									
	High Tech/Research	954	411	2.32									
	Research and Development	6,100	4,111	1.48									
	Warehouse	6,119	4,148	1.48									
	Warehousing	1,112	279	1.48									
	General Industry	1,023	917	1.12									
	Median			1.65	Median	2.00		1195.0	0.84	Median Commercial Retail	1765.0	0.79	1.25
Retail	Retail Trade	34,821	20,125	1.73				268					
	Personal, Rental and Repair	3,452	1,590	2.17				629					
	General Commercial	12,976	17,023	0.76									
Service	Median			1.95				448.5	2.23	Median Commercial Office Business Park	500.0	2.00	2.00
	Financial/Business Real Estate	7,798	1,095	7.02	Office	3.00	Office						
	Small Office	3,945	548	7.20	Medical/PO/Bank	3.50	Hotel/Motel	3476					
	Professional Services	5,470	1,529	3.58	Hospital	2.50							
	Business Services	6,680	1,966	3.40	Restaurant	3.00							
	General Offices	8,900	3,886	2.29									
	Business Services	14,506	3,201	4.53									
	Restaurant	23,345	4,681	5.01									
	Median			3.58	Median Government/Civic Library	3.00	Median Government Offices	1976.5	0.51	Median	450.0	2.22	2.61
	Government/Public Sector					1.50		208					
					Median	2.25	Median	208.0	4.81				3.53

Notes:

- Business by Land Use Categories Wholesale Trade Commercial and Automotive Repair were excluded as there is inconsistencies between the Land Use Density Conversion Factors for Long Range Corridor Study San Bernardino and Riverside Counties categorization, and the NACS Major Group categorization.
- OCFA Typical Employment Conversion Factors for Commercial excluded as it potentially covers uses in both Retail and Service categories: Hotel/Motel, School, Golf Course, Developed Park, Park and Agricultural were excluded as they are calculated from units other than TSF.
- OCFA Typical Employment Conversion Factors for Industrial excluded as they are calculated from units other than TSF.
- (1) OCFA, Orange County Subarea Model Guidelines Manual, June 2001, Appendix C.
- (2) OCFA, Orange County Subarea Model Guidelines Manual, June 2001, Appendix C.
- (3) SCAG, Employment Density Study, October 31, 2001, Table IIB
- (4) County of Riverside, General Plan, As Amended December 15, 2015, Appendix E: Socioeconomic Build-Out Projections Assumptions & Methodology, Table E-5

EXHIBIT L-2 Population and Employment Estimates

Sector	2018	2045	Change	Employee Conversion Factor / ISF	Change in \$ of GFA
Population	1,905,440	2,533,876	628,436		
Households					
Single-Family	397,407	564,898	167,491		
Mult-Family	157,164	247,501	90,335		
Total	554,573	812,399	257,826		
Employees					
Industrial	169,334	245,915	76,581	1.25	61,489,565
Retail	73,814	86,929	13,115	2.00	6,557,500
Service	308,703	482,938	174,255	2.61	66,735,957
Government/Public Sector	18,569	30,640	12,071	3.53	3,400,665
Total	570,420	846,442	276,022		138,203,688

Source: SCAG 2020 R17 JCS-RVCON

EXHIBIT L-3 Trip Generation Rate Comparison

Non-Residential	Employee Growth				SF Growth		ITE Median PM Peak Hour Trips Per Employee		ITE Median PM Peak Hour Trips per TSF		TIF Growth (SF Growth / ITE Median)		Calculated PM Peak Hour Trips per Employee		Weighted Median PM Peak Hour Trips Per Employee		Median Share PM Peak Hour Trips (Retail and Service Use)		Adjusted PM Peak Hour Trips Per Employee	
	Industrial	Retail	Service	Government/Public Sector	61,489,565	6,557,500	0.7	3.3	0.6	5.7	30,894	0.5	0.6	2.2	2.2	0.6	37%	44%	0.6	1.8
	76,381	13,115	174,235	276,022	61,489,565	6,557,500	0.7	3.3	0.6	5.7	30,894	0.5	0.6	2.2	2.2	0.6	37%	44%	0.6	1.8
	174,235	66,735,957	3,420,665	138,203,688	61,489,565	6,557,500	0.7	3.3	0.6	5.7	30,894	0.5	0.6	2.2	2.2	0.6	37%	44%	0.6	1.8
	276,022				61,489,565	6,557,500	0.7	3.3	0.6	5.7	30,894	0.5	0.6	2.2	2.2	0.6	37%	44%	0.6	1.8

EXHIBIT L-4 Representative ITE Weekday PM Peak Hour Trip Generation Rates
RESIDENTIAL

Land Use Category	ITE Reference	PM Peak Hour Trip Ends per DU	PM Peak Hour Trip Ends per Residents
Single Family Residential			
Single Family Detached Housing	210	0.99	0.28
Multi Family			
Single-Family Attached Housing	215	0.61	0.44
Multifamily Housing (Low-Rise) Not Close to Rail Transit	220	0.57	0.27
Multifamily Housing (Mid-Rise) Not Close to Rail Transit	221	0.39	0.23
Multifamily Housing (High-Rise) Not Close to Rail Transit	222	0.40	
Affordable Housing - Income Limits	223	0.50	0.14
Average		0.49	0.27
Median		0.50	0.25

NON-RESIDENTIAL

Land Use Category	ITE Reference	PM Peak Hour Trip Ends per ISF*	PM Peak Hour Trip Ends per Employee*	PM Peak Period Pass by Trips**
Industrial				
Intermodal Truck Terminal	30	1.89	0.72	
General Light Industry	110	0.80	0.69	
Industrial Park	130	0.40	0.42	
Manufacturing	140	0.80	0.40	
Warehousing	150	0.23	0.68	
High-Cube Transload and Short-Term Storage	154	0.17		
High-Cube Fulfillment Center Warehouse - Non-Sort	155	0.27		
High-Cube Parcel Hib Warehouse	156	0.71		
Average		0.66	0.58	
Median		0.56	0.68	
Retail				
Building Materials and Lumber	812	2.65	3.30	
Free-Standing Discount Superstore	813	4.39	1.75	29%
Variety Store	814	7.42	12.65	34%
Free-Standing Discount Store	815	5.42	2.36	20%
Hardware/Paint Store	816	1.10	3.77	26%
Nursery (Garden Center)	817	8.37	2.55	
Nursery (Wholesale)	818	5.01	0.59	
Shopping Center	820	4.09	1.91	
Shopping Center (150K to 300K)	820			29%
Shopping Center (300K to 900 K)	820			19%
Shopping Plaza with Supermarket	821	9.72		
Shopping Plaza without Supermarket	821	5.40	1.80	
Shopping Plaza	821			40%
Strip Retail Plaza	822	13.24	10.15	
Factory Outlet Center	823	1.94		
Automobile Sales (New)	840	2.65	1.10	
Automobile Sales (Used)	841	4.92	2.27	
Automobile Parts Sales	843	5.88	4.27	43%
Tire Store	848	3.72	3.05	25%
Supermarket	850	9.19	3.37	24%
Convenience Store	851	53.51	34.33	
Convenience Market with Gasoline Pumps	853			
Discount Supermarket	854			
Discount Club	857	4.62	3.49	34%
Sporting Goods Superstore	861	2.58	0.93	
Home Improvement Superstore	862	3.21		42%
Electronics Superstore	863	4.48		40%
Pet Supply Superstore	866	2.19		
Book Superstore	868	14.00		
Department Store	875	2.81		
Apparel Store	876	4.20		
Pharmacy/Drugstore without Drive Through Window	880	8.62		53%
Pharmacy/Drugstore with Drive Through Window	881	11.23	7.79	49%
Marijuana Dispensary	882	24.57		
Furniture Store	890	0.70	1.01	53%
Liquor Store	899	17.00	5.98	
Gasoline/Service Station	944		28.39	57%
Convenience Store/Gas Station (none)	945		21.31	
Convenience Store/Gas Station (9 - 15 vehicle fueling positions)	945	56.38		75%
Average		9.54	6.87	38%
Median		4.97	3.30	37%
Service				
Data Center	160	0.13		
Specialty Trade Contractor	180	2.18	0.80	
Movie Theatre	445	14.06	9.56	
Health/Fitness Club	492	3.92		
Day Care Center	565	11.82	4.66	44%
Hospital	610	0.98	0.33	
Nursing Home	620	0.82	0.45	
Clinic	630	4.22	2.49	
Animal Hospital/Veterinary Clinic	640	3.83	2.26	
Free Standing Emergency Room	650	2.24		
Small Office Building	712	3.15	1.90	
Medical-Dentist Office Building (Stand-Alone)	720	4.79	1.26	
Medical-Dentist Office Building (Within/Near Hospital Campus)	720	3.78	1.03	
Walk-in Bank	911	26.40	6.18	
Drive-in Bank	912	20.92	4.36	35%
Hair Salon	918	1.94		
Copy, Print and Express Ship Store	920	12.30	6.63	
Fast Casual Restaurant	930	18.57		
Fine Dining Restaurant	931	8.28	1.79	44%
High Turnover (Sit-Down) Restaurant	932	16.35	3.66	43%
Fast Food Restaurant with Drive Through	934	50.94	5.45	55%
Fast Food Restaurant with Drive Through No Seating	935			31%
Coffee/Donut Shop with Drive Through	937	43.65		
Coffee/Donut Shop with Drive Through No Seating	938			98%
Quick Lube Vehicle Shop	941	9.42	2.17	
Automobile Care Center	942	3.51	1.43	
Automobile Parts and Service Center	943	2.61	1.80	
Wine Tasting Room	970	6.60		
Brewery Tap Room	971	10.93		
Drinking Place	975	15.53		
Average		10.85	3.06	50%
Median		5.70	2.17	44%
Government/Public Sector				
Recreational Community Center	495	2.53	2.71	
Elementary School	520		4.60	
Middle/Junior High School	522		4.83	
High School	525		3.32	
School District Office	528	2.37	0.84	
Private School (K-8)	530		5.72	
Private School (K-12)	532		2.82	
Private High School	534		2.49	
Charter Elementary School	536		10.64	
Charter School (K-12)	538		10.66	
Junior/Community College	540		1.63	
University/College	550		0.81	
Adult Detention Facility	571	0.94	0.51	
Library	590	8.53	6.81	
Government Office Building	730	3.19	0.91	
State Motor Vehicles Department	731	7.68	4.27	
Post Office	732	15.11	3.29	
Average		5.76	3.93	
Median		3.19	3.29	

Notes:

* - Average weekday PM peak hour of generator trip end data derived from ITE Trip Generation Manual (11th Edition), September 2021

** - Average weekday PM peak pass-by trip rates derived from ITE Trip Generation Manual (11th Edition), September 2021

EXHIBIT L-5

Land Use Density Conversion Factors for the Long-Range Corridor Study San Bernardino and Riverside Counties, Table 8

Cordoba Corporation/Parsons Brinckerhoff Quade and Douglas, Inc. (PBQD), August 20, 1990.

**TABLE 8
EMPLOYEES PER ACRE
RIVERSIDE COUNTY**

BUSINESS BY LAND USE	Employees *	Floor Space Sq. Ft.	Square Feet Per Employee	Average F.A.R.	Employees per Acre
Manufacturing/Industrial	40,383	23,968,000	594	0.25	18
Heavy Manufacturing	6,379	5,117,000	802	0.20	11
General Manufacturing	11,603	6,103,000	526	0.20	17
Light Manufacturing	8,624	3,962,000	459	0.25	24
Manufacturing, Small Module	5,559	3,038,000	547	0.25	20
High Tech Activity and Research	954	411,000	431	0.35	35
Wholesale Trade Industrial	6,120	4,140,000	676	0.25	16
Warehousing	119	279,000	2,345	0.25	5
General Industrial	1,023	917,000	896	0.20	10
Commercial	79,067	46,304,000	586	0.30	22
Retail Trade	34,821	20,125,000	578	0.30	23
Restaurants and Bars	23,345	4,061,000	174	0.30	75
Personnal, Rental and Repair Services	3,452	1,590,000	461	0.30	28
Automotive Repair Services	1,870	1,619,000	866	0.30	15
Equipment Rental	1,080	453,000	419	0.30	31
Wholesale, Trade Commercial	1,521	1,434,000	943	0.25	12
General Commercial	12,978	17,023,000	1,312	0.40	13
Office	41,740	12,226,000	293	0.50	74
Finance/Insurance/Real Estate	7,738	1,095,000	142	0.50	154
Finance/Insurance/RE/Small Office	3,945	548,000	139	0.50	157
Professional Services	5,470	1,529,000	280	0.50	78
Business Services	6,680	1,966,000	294	0.50	74
General Office	8,900	3,886,000	437	0.50	50
Medical Services	9,006	3,201,000	355	0.50	61

* Employment figures do not include government, military and sole proprietorships.

Source: Urban Decision Systems (1989), Census Zip Business Patterns (1986)

Filename: Trans rv

EXHIBIT L-6

Orange County Subarea Modeling Guidelines Manual, Appendix C

Orange County Transportation Authority (OCTA)

June 2001

TYPICAL EMPLOYMENT CONVERSION FACTORS
(June 2001)

Land Use Category	Conversion Rates Range	Employment Type (Percentate Ranges)		
		Retail	Service	Other
Commercial	2.25 - 2.75 employees/TSF ¹	60% - 90%	10% - 40%	0% - 5%
Office/Office Park	3.00 - 4.00 employees/TSF	0% - 5%	20% - 30%	65% - 80%
R&D/Light Industrial/Business Park	2.50 - 3.50 employees/TSF	0% - 5%	0% - 30%	60% - 100%
Heavy Industrial	2.00 - 2.50 employees/TSF	0%	0%	100%
Warehouse	1.00 - 2.00 employees/TSF	0%	0%	100%
Restaurant	3.00 - 5.00 employees/TSF	100%	0%	0%
Medical Office/Post-Office/Bank	3.50 - 4.50 employees/TSF	0% - 10%	70% - 100%	0% - 20%
Government Office/Civic Center	3.00 - 4.00 employees/TSF	0% - 5%	50% - 70%	25% - 50%
Hospital	2.50 - 3.00 employees/TSF	0%	70% - 80%	20% - 30%
Library/Museum	1.50 - 2.50 employees/TSF	0%	100%	0%
Hotel/Motel	0.75 - 1.25 employees/room	0% - 10%	70% - 80%	10% - 30%
Schools	0.08 - 0.12 employees/student	0%	0%	100%
Golf Course	0.50 - 0.70 employees/acre	0% - 10%	90% - 100%	0%
Developed Park/Athletic Fields	0.20 - 0.40 employees/acre	0%	80% - 100%	0% - 20%
Park	0.05 - 0.10 employees/acre	0%	80% - 100%	0% - 20%
Agricultural	0.01 - 0.05 employees/acre	0%	0%	100%

¹ Thousands of Square Feet

EXHIBIT L-7
Employment Density Study, Table IIB
Southern California, October 31, 2001

Table II-A
Derivation of Square Feet per Employee Based on:
--MEDIAN EMPLOYEES PER ACRE
--MEDIAN FAR

<u>Land Use Category</u>	<u>Los Angeles</u>	<u>Orange</u>	<u>Riverside</u>	<u>San Bernardino</u>	<u>Ventura</u>	<u>Imperial</u>	<u>Region</u>
<u>Square Feet per Employee</u>							
Regional Retail	--	2,322	165	1,392	990	--	1,023
Other Retail/Svc.	730	450	1,148	432	412	796	585
Low-Rise Office	471	352	598	1,014	659	415	466
High-Rise Office	377	235	--	--	--	--	300
Hotel/Motel	1,179	--	5,273	1,747	--	808	1,804
R & D/Flex Space	1,717	511	1,121	1,833	277	--	527
Light Manufacturing	1,214	786	2,221	1,538	202	2,230	924
Heavy Manufacturing	--	--	--	--	--	--	--
Warehouse	1,518	1,350	819	2,111	149	3,257	1,225
Government Offices	2,182	408	1,475	851	120	407	672

Table II-B
Derivation of Square Feet per Employee Based on:
--AVERAGE EMPLOYEES PER ACRE
--AVERAGE FAR

<u>Land Use Category</u>	<u>Los Angeles</u>	<u>Orange</u>	<u>Riverside</u>	<u>San Bernardino</u>	<u>Ventura</u>	<u>Imperial</u>	<u>Region</u>
<u>Square Feet per Employee</u>							
Regional Retail	--	704	268	1,009	1,165	--	857
Other Retail/Svc.	424	325	629	124	271	255	344
Low-Rise Office	319	287	481	697	389	632	288
High-Rise Office	440	218	--	--	--	--	311
Hotel/Motel	--	--	3,476	2,544	--	311	1,152
R & D/Flex Space	1,796	466	867	834	269	--	344
Light Manufacturing	829	558	1,548	705	189	994	439
Heavy Manufacturing	--	--	--	--	--	--	--
Warehouse	1,518	979	581	1,195	131	450	814
Government Offices	1,442	206	208	188	94	322	261

Notes:
"--" = Data not available.

EXHIBIT L-8

General Plan, As Amended December 15, 2015.

Appendix E: Socioeconomic Build-Out Projections Assumptions & Methodology,

Table E-5

County of Riverside, 2015

Table E-3: Net Parcel Acre Factors

Land Use Designation	Net Parcel Area
Commercial Retail (CR)	0.75
Commercial Tourist (CT)	0.75
Commercial Office (CO)	0.75
Light Industrial (LI)	0.80
Heavy Industrial (HI)	0.75
Business Park (BP)	0.75

Net Parcel Square Feet: To convert net acres to net square feet, net acres are multiplied by 43,560 feet per acre. For example, 50 net acres of Commercial Office (66.66 gross acres) equals 2,178,000 net square feet.

Floor Area Ratio (FAR): Floor Area Ratio, or FAR, indicates the ratio of gross building square footage permitted on a parcel to net square footage of the parcel. FAR's for Commercial, Industrial and Business Park land uses are identified, in Table E-4, below. See General Plan Glossary for full definition of FAR.

Table E-4: Development FAR Factors

Land Use Designation	FAR		
	Minimum	Probable*	Maximum
Commercial Retail (CR)	0.20	0.23	0.35
Commercial Tourist (CT)	0.20	0.25	0.35
Commercial Office (CO)	0.25	0.35	1.00
Light Industrial (LI)	0.25	0.38	0.60
Heavy Industrial (HI)	0.15	0.40	0.50
Business Park (BP)	0.25	0.30	0.60

*Factor used for theoretical planning estimates.

Building Square Footage: Building square footage for the land use designations listed in the table above are calculated by multiplying the Net Square Feet of each land use designation by the corresponding FAR. For instance, 20,000 square feet of Commercial Retail with an FAR of 0.23 would yield 4,600 square feet of building space.

Square Feet (SF)/Employee Factor: This factor indicates the number of employees typically associated with a given amount of square feet of building space per employee. It is used to estimate the number of jobs resulting for a given land use designation. These factors for the commercial land use designations are listed in Table E-5 below.

Table E-5: Commercial Employment Factors

Land Use Designation	SF/Employee
Commercial Retail (CR)*	500
Commercial Tourist (CT)	500
Commercial Office (CO)	300
Light Industrial (LI)	1,030
Heavy Industrial (HI)	1,500
Business Park (BP)	600

*It is assumed that CR designated lands will build out at 40% CR and 60% MDR.

Employment: Employment for commercial, industrial, and business park land uses is calculated by dividing the total number of building square feet by the SF/Employee factor. For example, 300,000 square feet of commercial office building space would yield 1,000 employees.