TRANSPORTATION UNIFORM MITIGATION FEE NEXUS STUDY 2016 UPDATE

FINAL REPORT

Prepared for the Western Riverside Council of Governments

In Cooperation with

The City of Banning
The City of Beaumont
The City of Calimesa
The City of Canyon Lake
The City of Corona
The City of Eastvale
The City of Hemet
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The City of Wildomar
The County of Riverside
Eastern Municipal Water District
March Joint Powers Authority
Morongo Band of Mission Indians
Riverside County Superintendent of Schools
Riverside Transit Agency
Western Municipal Water District

Prepared by WSP

As adopted by the WRCOG Executive Committee, July 10, 2017

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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, has slowed this rate of growth, the region is expected to rebound and the projected growth in Western Riverside County is expected to increase. This increase in growth 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.

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 and Western Municipal Water Districts, the Riverside County Superintendent of Schools, the March Joint Powers Authority, the Riverside Transit Agency and the Morongo Band of Mission Indians to collaborate on issues that affect the entire subregion, such as air quality, solid waste, transportation and the environment. 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 development will contribute toward addressing the impacts of new growth on regional transportation infrastructure. Funding accumulated through the TUMF Program will be used to construct transportation improvements 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

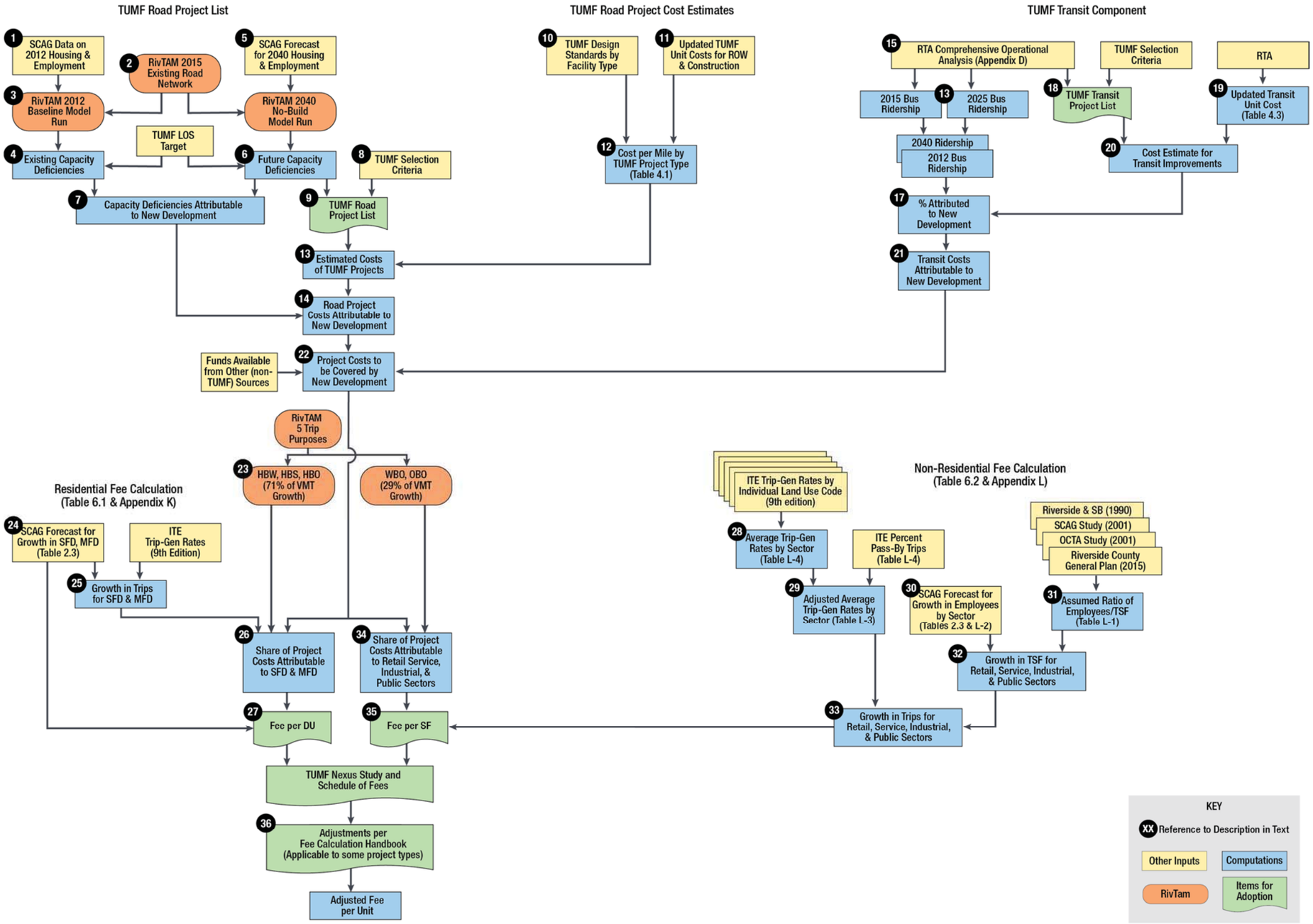
documented in the TUMF Nexus Study 2005 Update adopted by the WRCOG Executive Committee on February 6, 2006. A second comprehensive review of the TUMF Program was conducted in 2008 and 2009 in part to address the impacts of the economic recession on the rate of development within the region and on transportation 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 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 the Riverside County Traffic Analysis Model (RivTAM), 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 final results of the third comprehensive review of the TUMF Program to incorporate the revisions completed during 2016. This version of the document also incorporates revisions in response to comments received during the 45 day review of the earlier Draft TUMF Nexus Study 2016 Update. The findings of this report were ultimately adopted by the WRCOG Executive Committee on July 10, 2017.

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



ES.2 Future Growth

For earlier versions of the TUMF Nexus Study, the primary available source of consolidated demographic information for Western Riverside County was provided by the Southern California Association of Governments (SCAG). Recognizing the need to develop a more comprehensive source of socioeconomic data for Riverside County, the Riverside County Center for Demographic Research (RCCDR) was established under the joint efforts of the County of Riverside, the Western Riverside Council of Governments, the Coachella Valley Association of Governments, and the University of California, Riverside in 2005. RCCDR provided demographic estimates and forecasts for Riverside County as input to the SCAG regional forecasts as well as providing the demographic basis for the Riverside County Traffic Analysis Model (RivTAM). RCCDR data was used as the basis for the TUMF Nexus Study 2009 Update.

As directed by the WRCOG Executive Committee, the SCAG 2016 RTP/SCS demographics forecasts were utilized as the basis for this 2016 Update of the TUMF Nexus Study. A major distinction between RCCDR data used for the TUMF Nexus Study 2009 Update and the SCAG 2016 RTP/SCS data used for this 2016 Update is the change in the base year from 2007 to 2012, as well as the change in the horizon year from 2035 to 2040. 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.

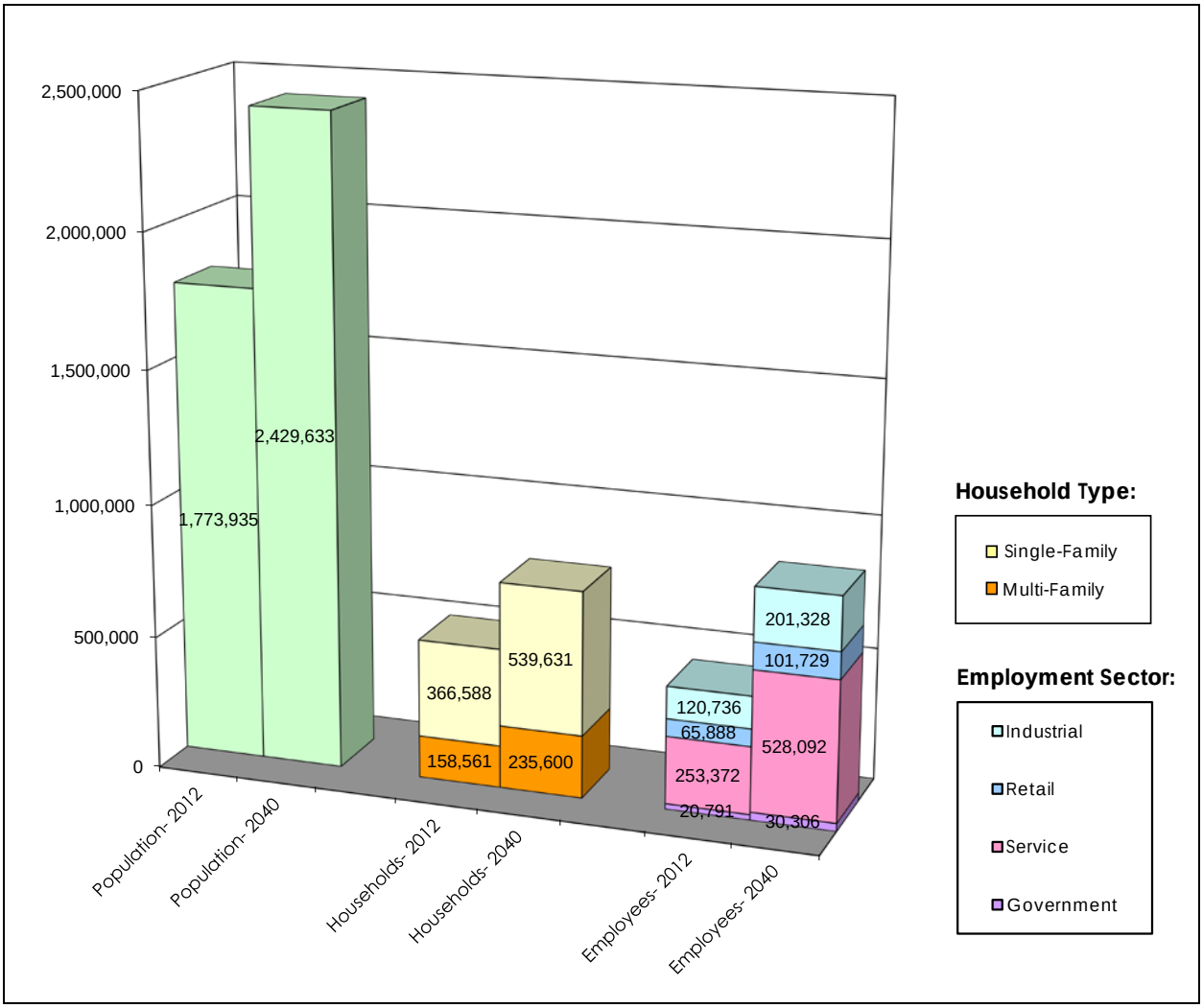
The population of Western Riverside County is projected to increase by 37% in the period between 2012 and 2040. During the same period, employment in Western Riverside County is anticipated to grow by 87%. **Figure ES.2** illustrates the forecast growth in population, household and employment for Western Riverside County.

ES.3 Need for the TUMF

The WRCOG TUMF study area was extracted from the greater regional 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 63% between 2012 and 2040. By 2040, 57% 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 4.9% 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 (2012 to 2040)



As population and employment in Western Riverside County grows as a result 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 31,016 riders per day in Western Riverside County in 2015. By 2025, bus transit services are forecast to serve approximately 46,572 riders per weekday. This represents an average increase of 1,414 weekday riders each year. Based on this rate of ridership growth, weekday ridership is estimated to increase by 41,011 riders per weekday between 2012 and 2040.

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.

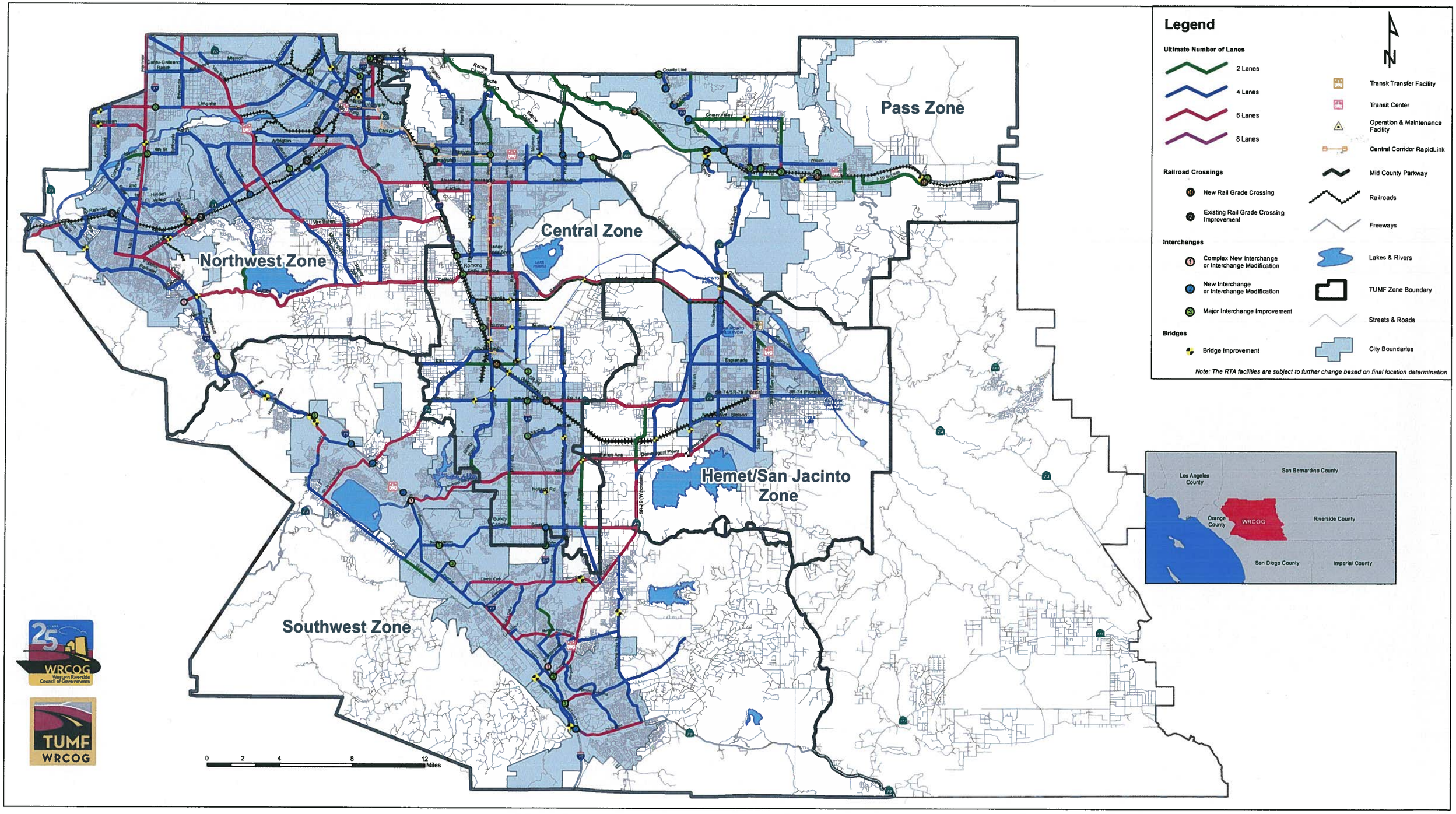
ES.4 The TUMF Network

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 select performance guidelines were identified, and a skeletal regional transportation framework evolved from facilities where multiple guidelines were observed. This framework was reviewed by representatives of all WRCOG constituent jurisdictions and private sector stakeholders, and endorsed by the WRCOG Public Works Committee, WRCOG Technical Advisory Committee, TUMF Policy Committee and the WRCOG Executive Committee.

The TUMF Network was refined to distinguish between facilities of "Regional Significance" and facilities of "Zonal Significance". The Facilities of Regional Significance have been identified as the "backbone" highway network for Western Riverside County. Facilities of Zonal Significance (the "secondary" network) represent the balance of the Regional System of Highways and Arterials for Western Riverside County. A portion of the TUMF is specifically designated for improvement projects on the backbone system and on the secondary network within the zone in which it is collected.

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

The total cost of improving the TUMF system is $3.76 billion. Accounting for obligated funds and unfunded existing needs, the estimated maximum eligible value of the TUMF Program is $2.96 billion. The maximum eligible value of the TUMF Program includes approximately $2.71 billion in eligible arterial highway and street related improvements and $92.6 million in eligible transit related improvements. An additional $43.3 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 $112.2 million is provided to cover the costs incurred by WRCOG to administer the TUMF Program.



Regional System of Highways and Arterials (RSHA)

Transportation Uniform Mitigation Fee Program | Figure ES.3

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 50.7% of the regional travel is attributable to the backbone network and 49.3% 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 2012 and 2040 was derived from RivTAM and aggregated by trip purpose. It was concluded that home-based person trips represent 71.0% of the total future person trips, and the non-home-based person trips represent 29.0% of the total future person trips.

ES.6 Fair-Share Fee Calculation

The balance of the unfunded TUMF system improvement needs is $2.96 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 $2.96 billion in unfunded future improvement needs, 71.0% ($2.10 billion) will be assigned to future new residential development and 29.0% ($858.7 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	173,043	**$9,418**	$1,629.8
Multi Family Residential	DU	77,039	**$6,134**	$472.5
Industrial	SF GFA	64,710,138	**$1.77**	$114.8
Retail	SF GFA	17,920,500	**$12.31**	$220.5
Service	SF GFA	105,211,915	**$4.56**	$480.0
Government/Public	SF GFA	2,696,349	**$16.08**	$43.4
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 is continuing to rebound and the projected rate of development in Western Riverside County is expected to increase. This increase in growth 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 2040. 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 and Western Municipal Water Districts, the Riverside County Superintendent of Schools, the March Joint Powers Authority, the Riverside Transit Agency and the Morongo Band of Mission Indians to collaborate on issues that affect the entire subregion, such as air quality, solid waste, transportation and the environment. A current list of the standing WRCOG TUMF related committees and committee membership 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. This version of the WRCOG TUMF Nexus Study Report documents the final results of the third comprehensive review of the TUMF Program to incorporate the revisions completed during 2016. The findings of this report were ultimately adopted by the WRCOG Executive Committee on July 10, 2017.

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

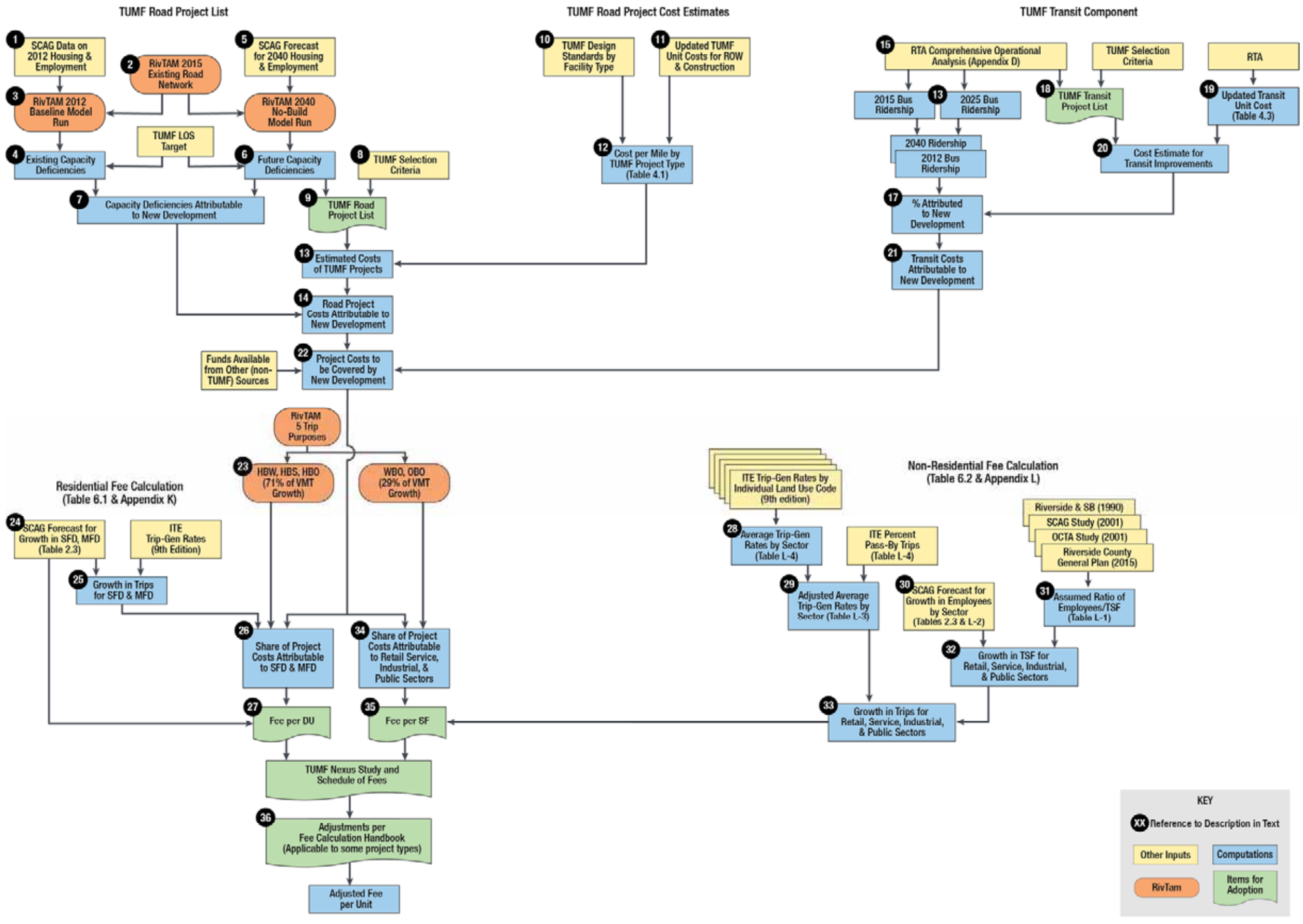
WRCOG Executive Committee has also established that the TUMF Schedule of Fees will be reviewed annually, and adjusted, as needed, on July 1st to reflect current costs. The revised schedule of fees will be recalculated in February of each year based on the percentage increase or decrease in the Engineering 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.

1.3 TUMF Nexus Study Process

In coordination with WRCOG, city and county representatives, developers, and other interested parties reviewed and updated 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 2016 RTP/SCS were incorporated, as resolved by the WRCOG Executive Committee at the September 14, 2015 meeting. This use of the most recent SCAG forecasts resulted in a shift of the program base year from 2007 to 2012, as well as a shift in the program horizon year from 2035 to 2040. Furthermore, the TUMF Network was re-examined in detail based on travel demand forecasts derived from the most recent version of the Riverside County Transportation and Analysis Model (RivTAM) 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 2016.

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 RivTAM, 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



1.1.1. 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 RivTAM 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 2016 RTP/SCS was developed using housing and employment data for 2012 as its base year. This officially-adopted dataset was updated for the base for the TUMF 2016 Nexus Update, including redistribution of the SCAG data to correspond to the RivTAM TAZ structure.

2) The RivTAM model[1] 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 RivTAM 2012 base network that was developed following the adoption of the SCAG 2012 RTP was selected as the one most closely resembling current conditions. This network was subsequently reviewed and updated, including a detailed review by WRCOG and participating jurisdictions, as well as partner entities, including BIA, to identify projects that were completed on the arterial network in the period between 2012 and December 2015. The arterial network was then recoded to reflect the changes to the TUMF Network to create a 2015 existing network as the basis for analysis.

3) RivTAM was run using the 2012 socio-economic data (SED) and the 2015 road network 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.

5) The SCAG 2016 RTP/SCS was developed using housing and employment data for 2040 as its forecast horizon year. This officially-adopted dataset was also used as the future base year for the TUMF update calculation.

6) RivTAM was run using the arterial road network for 2015 with the land use assumptions for 2040. This "No Build" scenario was used to determine where

[1] The macro-level traffic forecasting was conducted using the Riverside County Transportation and Analysis Model (RivTAM). RivTAM is a version 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 several older models that covered different portions of the county. RivTAM 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 RivTAM model for use in traffic studies.

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 new development. 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 new development.

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 2016 Nexus.

1.1.2. 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 equally[2].

11) The unit costs for the various construction components were updated based on the current cost values for labor and materials such as cement, asphalt, reinforcing steel, etc., as derived from Caltrans cost database, RCTC and other sources, effective March 2016. 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 in March 2016.

12) The design standards and the unit costs were combined to create conceptual engineering cost estimates for different eligible project types (road costs per lane-mile, typical costs per arterial-freeway interchange, bridge costs per linear foot, etc.). 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.

[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.

13) 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.

1.1.3. 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.

14) The Riverside Transit Agency (RTA) commissioned a Comprehensive Operational Analysis (COA) that was completed in January 2015. This analysis looked at existing and future ridership and identified potential projects to expand and improve transit service in Riverside County.

15) The COA's ridership figures for 2015 and 2025 were extrapolated to 2012 and 2040 to match the analysis years used for TUMF road projects.

16) The growth in ridership between 2012 and 2040 was compared to total ridership in 2040 to determine the portion of 2040 ridership that is attributable to existing passengers and the portion attributable to new growth.

17) As was the case for road improvements, possible transit projects from the COA were screened using a set of criteria to determine whether they should receive TUMF funding. The COA project list was then reviewed by WRCOG and RTA staff to confirm the validity of the project list and to reflect any changes in RTA project recommendations established since the adoption of the COA to establish a final recommended transit project list to be included as part of the program. The result was the TUMF Transit Project List.

18) RTA provided information on current costs for transit infrastructure.

19) The cost information was then used to determine the cost of the items on the TUMF Transit Project List.

20) The percent attribution from Step 21 was applied to the project cost estimates from Step 24 to determine the cost of transit improvements that are attributable to new development.

21) 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 cover 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.

1.1.4. 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 described the process for determining the proportion attributable to new residential development. These 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.

22) California legislation encourages the use of vehicle miles of travel (VMT) as the primary indicator of traffic impacts because it takes into account both to 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 was revised from a trip based approach used in the earlier nexus studies to a VMT based approach for the 2016 update. The RivTAM 2012 existing and 2040 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.

23) The SCAG 2016 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 2012 to 2040 period.

24) 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 2012 to 2040.

25) 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.

26) 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.

1.1.5. 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.

27) Like most impact fee programs, TUMF groups similar development projects together into general use categories in order 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 RivTAM 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 as a whole.

28) The trip-generation rates of retail uses 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.

29) The SCAG 2016 RTP/SCS socio economic forecasts included non-residential employment for 2012 and 2040. These forecasts were used to estimate the growth in employment in each of the four non-residential uses.

30) 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. It should be noted the SCAG study and Riverside County General Plan were identified and included as part of the 2016 Nexus Update in response to a recommendation made during the review of the prior draft 2015 Nexus Study.

31) 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.

32) 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.

33) The amount of project costs to be covered by non-residential development was split between the four non-residential uses to determine the TUMF cast share for each.

34) 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.

35) 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 particular 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 in order 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, Western Riverside County 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.

Recognizing the need to develop a more comprehensive source of socioeconomic data for Riverside County, the Riverside County Center for Demographic Research (RCCDR) was established under the joint efforts of the County of Riverside, the Western Riverside Council of Governments, the Coachella Valley Association of Governments, and the University of California, Riverside in 2005. RCCDR was responsible for establishing and maintaining demographic information and ensuring data consistency through a centralized data source of demographic characteristics. RCCDR provided demographic estimates and forecasts for Riverside County as input to the SCAG regional forecasts as well as providing the demographic basis for RivTAM. RCCDR forecasts were utilized as the basis for the TUMF Nexus Study 2009 Update.

The functions of the RCCDR have been subsequently integrated into the Riverside County Information Technology – Geographic Information Systems (RCIT-GIS) group, and their role in the development and distribution of SED has recently diminished. Although RCIT-GIS, WRCOG and other regional partners participated in the process to develop regional demographic forecasts as part of the SCAG 2016 RTP/SCS, SCAG remained the lead agency in the compilation and dissemination of the forecasts that were ultimately adopted in 2016, including those specific to Western Riverside County. For this reason, the SCAG forecasts adopted for the 2016 RTP/SCS were used as the basis for the TUMF Nexus Study 2016 Update, with the adopted SCAG data being disaggregated to correlate to the traffic analysis zone (TAZ) structure utilized for RivTAM.

2.3 Demographic Assumptions Used for the Nexus Study Analysis

A major distinction between RCCDR data used for the TUMF Nexus Study 2009 Update and the SCAG 2016 RTP/SCS data used for this 2016 Update is the change in the base year from 2007 to 2012, as well as the change in the horizon year from 2035 to 2040. 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 2016 RTP/SCS data were compared to the RCCDR 2007 data used in the TUMF Nexus Study 2009 Update. As can be seen in **Table 2.1** and **Figure 2.1**, the 2012 data reflects a modest increase in population, a very slight decline in households, and a modest decline in overall employment, with a notable shift in employment away from industry and government/public sector to retail. These changes reflect a restructuring of the regional economy in response to the influences of the Great Recession during this time.

Table 2.1 - Base Year Socioeconomic Estimates for Western Riverside County

SED Type	2009 Update (2007)	2016 Update (2012)	Change	Percent
Total Population	**1,569,393**	**1,773,935**	**204,542**	**13%**
Total Households	**530,289**	**525,149**	**-5,140**	**-1%**
Single-Family	395,409	366,588	-28,821	-7%
Multi-Family	134,880	158,561	23,681	18%
Total Employment	**515,914**	**460,787**	**-55,127**	**-11%**
Industrial	175,571	120,736	-54,835	-31%
Retail	39,576	65,888	26,312	66%
Service	256,813	253,372	-3,441	-1%
Government/Public Sector	43,954	20,791	-23,163	-53%

Source: Riverside County CDR, May 2008; SCAG 2016 RTP; WSP, April 2016

Figure 2.1 – Base Year Socioeconomic Estimates for Western Riverside County

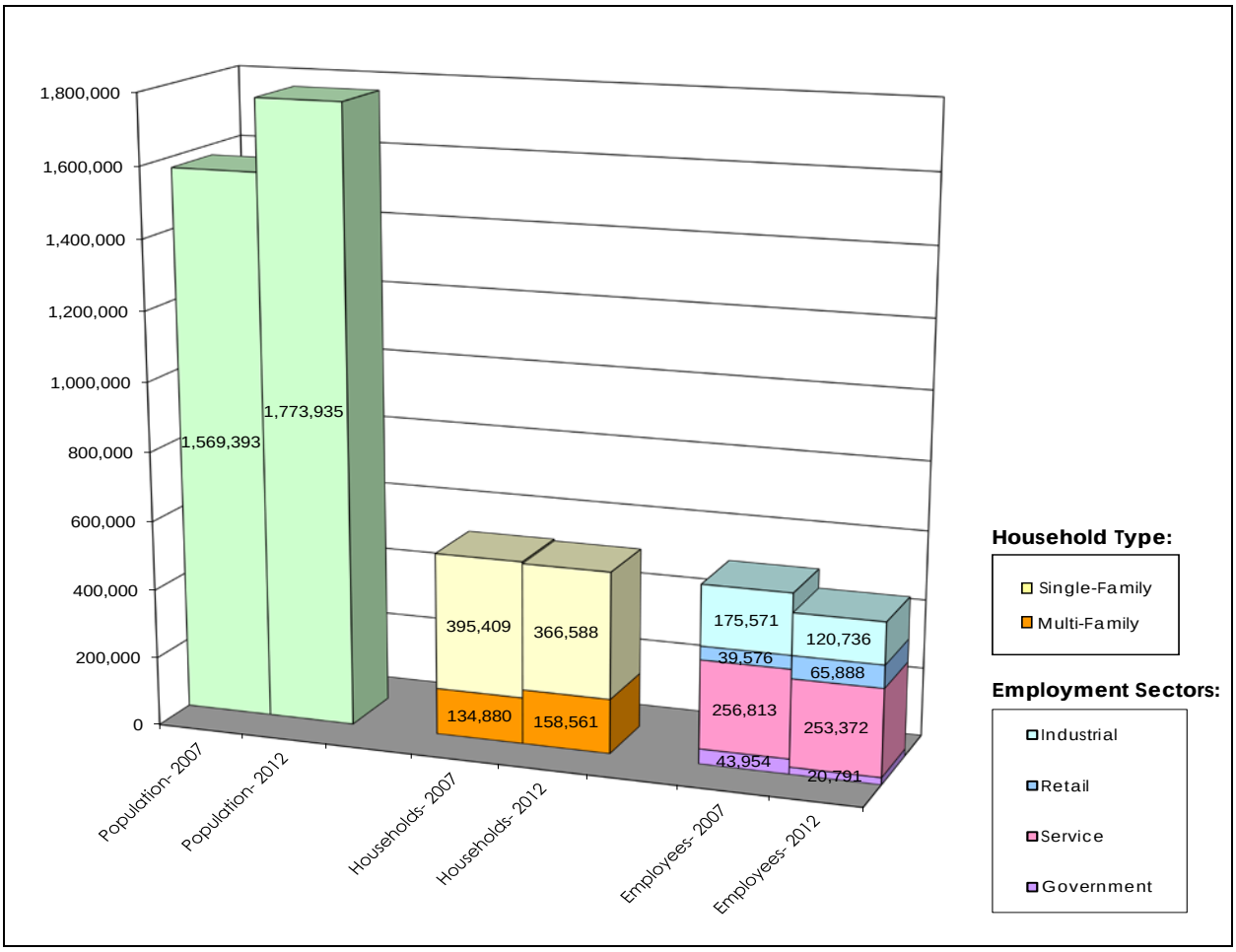


Table 2.2 and **Figure 2.2** compare the socioeconomic forecasts for the program horizon year of 2035 used in the TUMF Nexus Study 2009 Update and 2040 for this study. The most recent forecasts reflect a reduction in the horizon year population, households and overall employment in Western Riverside County, as well as shifts in the projected growth in employment sectors away from government/public sector and service towards retail. These changes are considered to be consistent with the influence of the economic recession on the rate of growth in Western Riverside County.

Table 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

SED Type	2009 Update (2035)	2016 Update (2040)	Change	Percent
Total Population	**2,537,583**	**2,429,633**	**-107,950**	**-4%**
Total Households	**881,968**	**775,231**	**-106,737**	**-12%**
Single-Family	552,154	539,631	-12,523	-2%
Multi-Family	329,814	235,600	-94,214	-29%
Total Employment	**1,090,833**	**861,455**	**-229,378**	**-21%**
TUMF Industrial	276,782	201,328	-75,454	-27%
TUMF Retail	87,170	101,729	14,559	17%
TUMF Service	595,039	528,092	-66,947	-11%
TUMF Government/Public Sector	131,842	30,306	-101,536	-77%

Source: Riverside County CDR, May 2008; SCAG 2016 RTP; WSP, April 2016

Figure 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

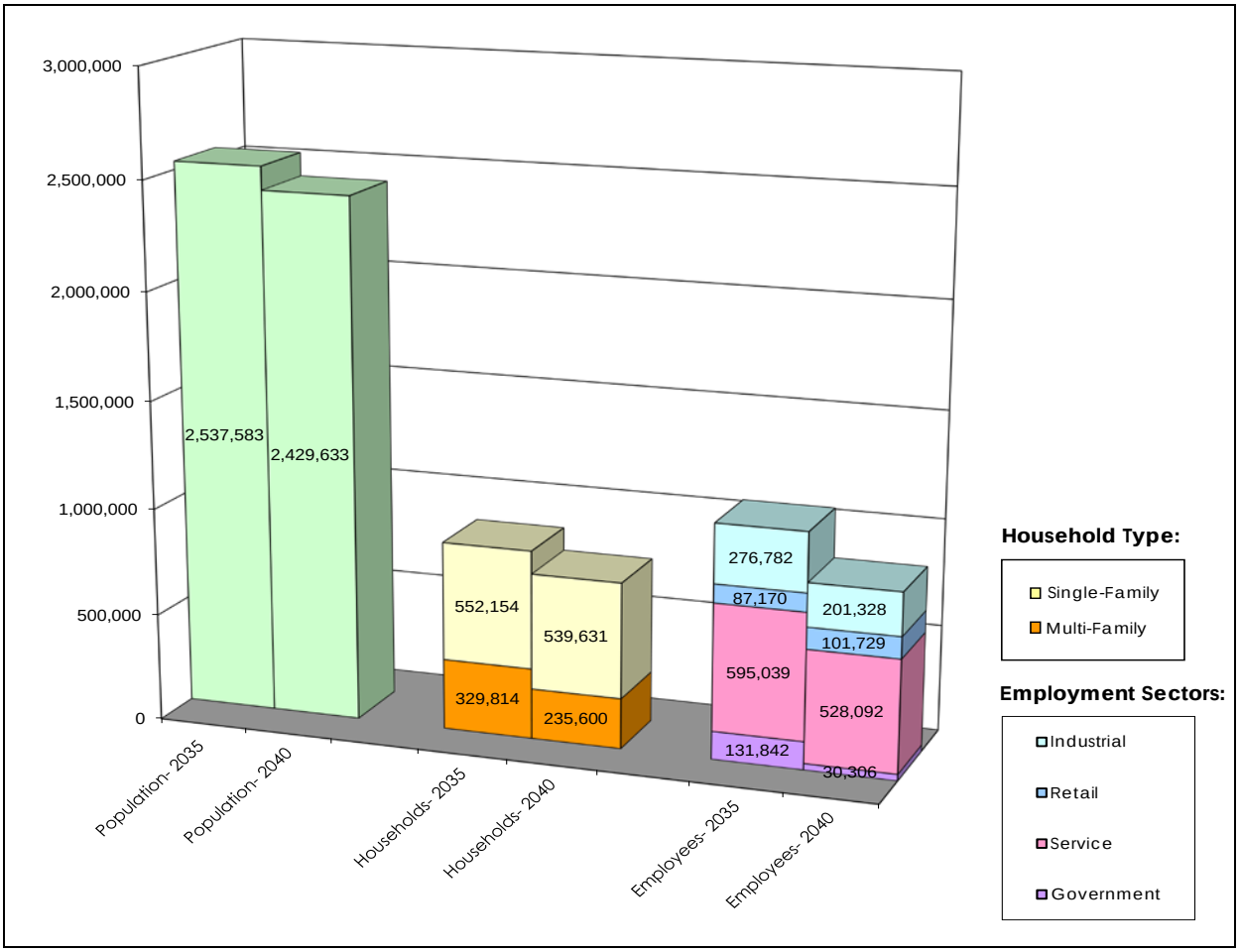


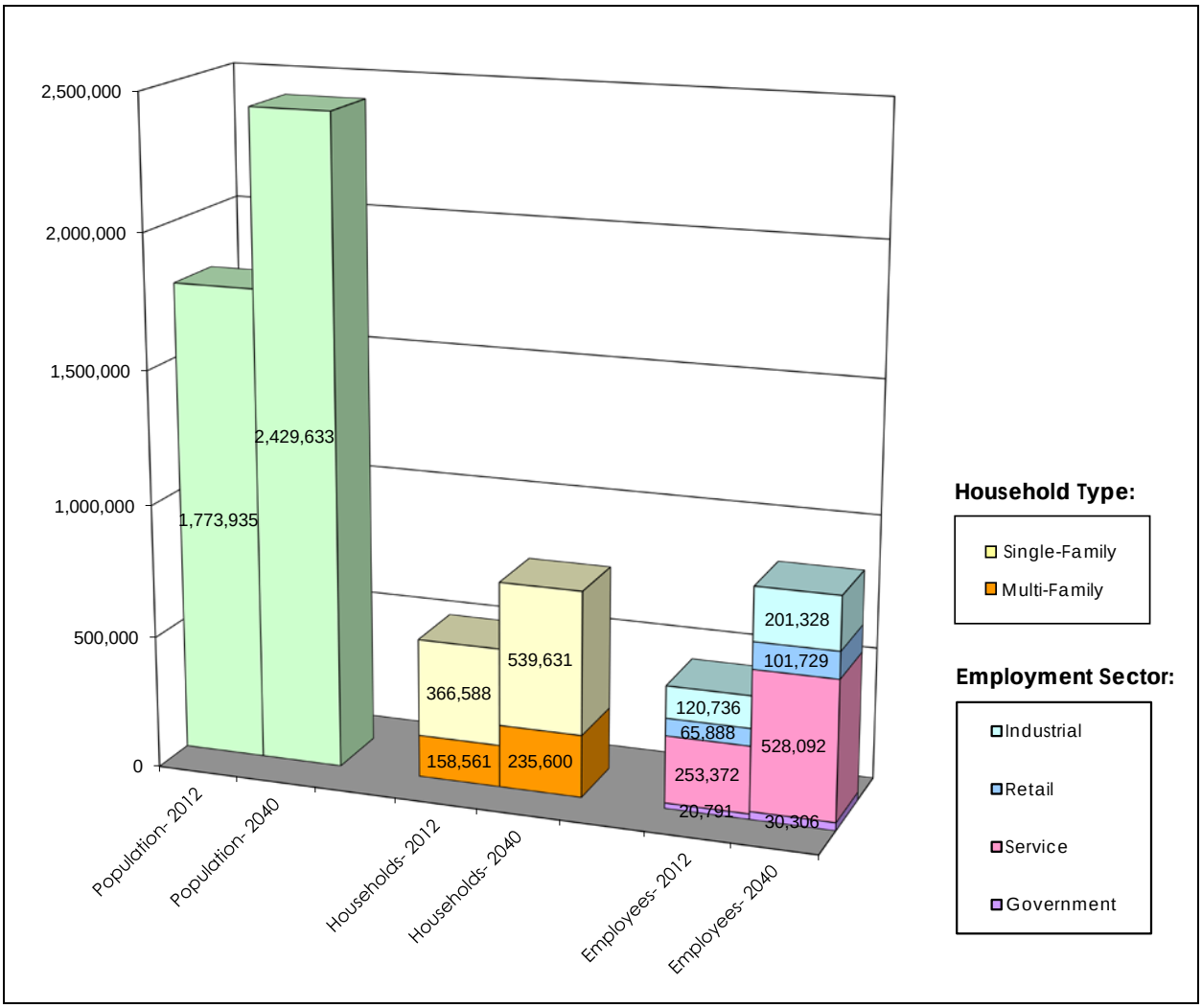
Table 2.3 and **Figure 2.3** summarize the socioeconomic data obtained from SCAG and used as the basis for completing this Nexus Study analysis. The SCAG employment data for 2012 and 2040 was provided for thirteen employment sectors consistent with the California Employment Development Department (EDD) 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 (2012 to 2040)

SED Type	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; WSP, April 2016

Figure 2.3 - Population, Households and Employment in Western Riverside County (2012 to 2040)



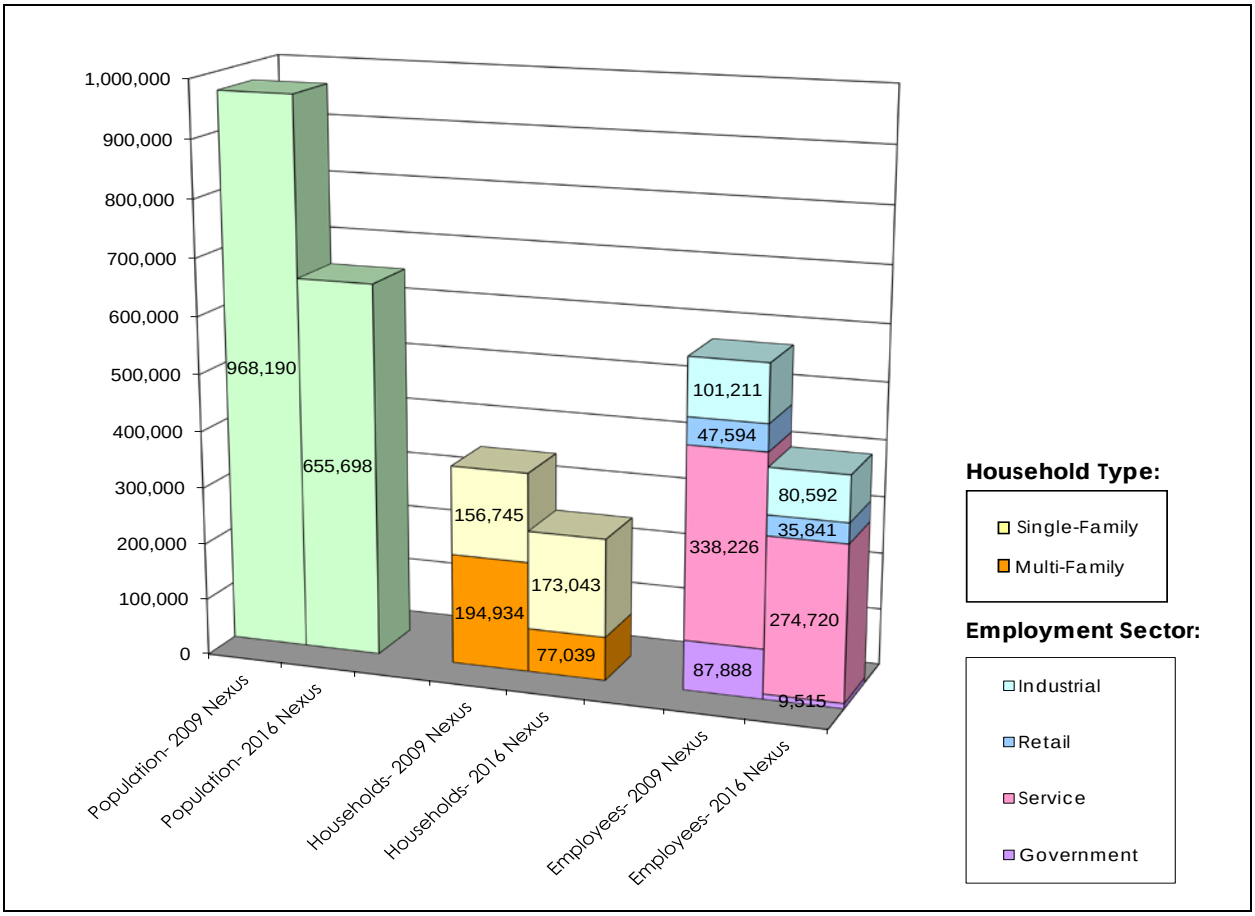
The combined effects of the changes in the base year and horizon year socioeconomic data is a notable reduction in the total growth in population, households and employment for the current Nexus Update compared to the 2009 Nexus Update. **Table 2.4** and **Figure 2.4** provide a comparison of the changes in population, households and employment between the 2016 Nexus Update and the 2009 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	2009 Update (2007-2035)	2015 Update (2012-2040)	Difference	Percent
Total Population	**968,190**	**655,698**	**-312,492**	**-32%**
Total Households	**351,679**	**250,082**	**-101,597**	**-29%**
Single-Family	156,745	173,043	16,298	10%
Multi-Family	194,934	77,039	-117,895	-60%
Total Employment	**574,919**	**400,668**	**-174,251**	**-30%**
TUMF Industrial	101,211	80,592	-20,619	-20%
TUMF Retail	47,594	35,841	-11,753	-25%
TUMF Service	338,226	274,720	-63,506	-19%
TUMF Government/Public Sector	87,888	9,515	-78,373	-89%

Source: Riverside County CDR, May 2008; SCAG 2016 RTP; WSP, April 2016

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



3.0 NEED FOR THE TUMF

All new development has 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]. In order 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 (37% growth in population and 87% growth in employment in under 30 years) and the related growth in VMT can be expected to significantly 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 improvements 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 2040 No-Build travel demand forecasts for Western Riverside County developed using RivTAM. The Year 2040 No-Build scenario evaluates the effects of 2040 population, employment and resultant traffic generation on the 2015 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 (2012) and

[3] The Highway Capacity Manual (Transportation Research Board, National Research Council, Washington, D.C., 2010, pp 2-2, 2-3) describes LOS as a "quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience." Letters are used to designate each of six LOS (A to F), with LOS A representing the best operating conditions and LOS F representing the worst. According to the Highway Capacity Manual, LOS C or D is typically used in planning efforts to ensure an acceptable operating service for facility users. Therefore, LOS E represents the threshold for unacceptable LOS.

future (2040) SED were modeled on the existing (2015) arterial highway network using RivTAM. 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 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 (2012 Baseline to 2040 No-Build)

Measure of Performance*	Peak Periods (Total)			
	2012	2040	% Change	% Annual
VMT - Total ALL FACILITIES	19,532,437	29,277,587	50%	1.5%
VMT - FREEWAYS	11,019,155	14,487,570	31%	1.0%
VMT - ALL ARTERIALS	8,513,282	14,790,016	74%	2.0%
TOTAL - TUMF ARTERIAL VMT	**5,585,202**	**9,089,495**	**63%**	**1.8%**
VHT - TOTAL ALL FACILITIES	575,154	1,361,907	137%	3.1%
VHT - FREEWAYS	296,542	736,433	148%	3.3%
VHT - ALL ARTERIALS	278,611	625,474	124%	2.9%
TOTAL TUMF ARTERIAL VHT	**181,151**	**396,981**	**119%**	**2.8%**
VHD - TOTAL ALL FACILITIES	175,765	739,075	320%	5.3%
VHD - FREEWAYS	117,430	502,549	328%	5.3%
VHD - ALL ARTERIALS	58,334	236,527	305%	5.1%
TOTAL TUMF ARTERIAL VHD	**45,080**	**172,944**	**284%**	**4.9%**
VMT LOS E - TOTAL ALL FACILITIES	6,188,644	16,966,992	174%	3.7%
VMT LOS E - FREEWAYS	4,532,703	10,156,363	124%	2.9%
VMT LOS E & F - ALL ARTERIALS	1,655,941	6,810,629	311%	5.2%
TOTAL TUMF ARTERIAL VMT w/ LOS E or worse	**1,462,061**	**5,160,911**	**253%**	**4.6%**
% of TUMF ARTERIAL VMT w/ LOS E or worse	**26%**	**57%**		

* Based on RivTAM 2012 network provided by Riverside County Transportation Department and SCAG 2016 RTP/SCS SED with updated 2015 arterial network completed by WSP, September 2016.

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 = Link Distance * Total Daily Volume
VHT = Average Loaded (Congested) Link Travel Time * Total Daily Volume
VHD = VHT – (Free-flow (Uncongested) Link Travel Time * Total Daily Volume)
VMT LOS E or F = VMT (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 2012 Baseline and 2040 No-Build, and the average annual change between 2012 Baseline and 2040 No-Build. As can be seen from the RivTAM outputs summarized in **Table 3.1**, the additional traffic generated by new development will cause VMT on the arterial highway network to increase by approximately 74% by the year 2040 (approximately 2.0% 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 as a result of new development and the associated growth in traffic. According to the Highway Capacity Manual (Transportation Research Board, 2010), LOS C or D are required to "ensure an acceptable operating service for facility users." LOS E is generally recognized to represent the threshold of unacceptable operating service and the onset of substantial systemic traffic congestion.

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 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

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

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 in particular, 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 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 63% or 1.8% compounded annually.

As shown in **Table 3.1**, the VMT on arterial facilities within the TUMF Network experiencing LOS of E or worse will increase by approximately 253% or 4.6% compounded annually in Western Riverside County in the period between 2012 and 2040. By 2040, 57% 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 will increase by approximately 4.9% per year. The combined influences of increased travel demand and worsened LOS that manifest themselves in severe congestion and delay highlight the continuing need to complete substantial capacity expansion on the TUMF arterial highway system to mitigate the cumulative regional impact of new development.

The RivTAM 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 as a result 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. To support the evaluation of regional bus service

needs to accommodate new development, daily transit trip forecasts were derived from the RTA Comprehensive Operational Analysis[5]. Weekday projected system ridership for 2015 and 2025 were interpolated to 2012 and 2040 to represent existing and future transit trips consistent with the analysis of highway trips described in **Section 3.1**. The interpolated year 2012 and year 2040 existing and future transit ridership were compared in order to assess the impact of new development on transit demand. The weekday projected system ridership indicates that RTA bus transit services accommodate approximately 31,016 riders per day in Western Riverside County in 2015. By 2025, bus transit services are forecast to serve approximately 46,572 riders per weekday. This represents an increase in projected weekday ridership of 15,556 between 2015 and 2025, or an average increase of 1,414 weekday riders each year. Based on these projected weekday ridership levels and rate of ridership growth each year, the interpolated weekday ridership for 2012 is 26,773 while the interpolated weekday ridership for 2040 would be 67,785. This translates into an increase of 41,011 riders per weekday between 2012 and 2040. Weekday projected system ridership for 2015 and 2025, as presented in Table 7 of the RTA Comprehensive Operational Analysis Executive Summary, along with the interpolated weekday system ridership in 2012 and 2040 are included in **Appendix D**.

The significant 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 attracts 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 migration of trips of all purposes by new residents and the new business that serve them 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 longer-distance trips between communities. Thus, the fee is intended to be used primarily to improve transportation

[5] Riverside Transit Agency (RTA), Comprehensive Operational Analysis Executive Summary, January 2015, Table 7

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 – in effect, a return-to-source of that portion of the funds). Reflecting the importance of public transit service in meeting regional travel needs, 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 a given 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.). With the exception of commute trips by local residents coming to and from work, and the trips of local residents coming to and from new businesses to get goods and services, the travel demands of new businesses are not 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 longer-distance 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 County[6].

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 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).

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

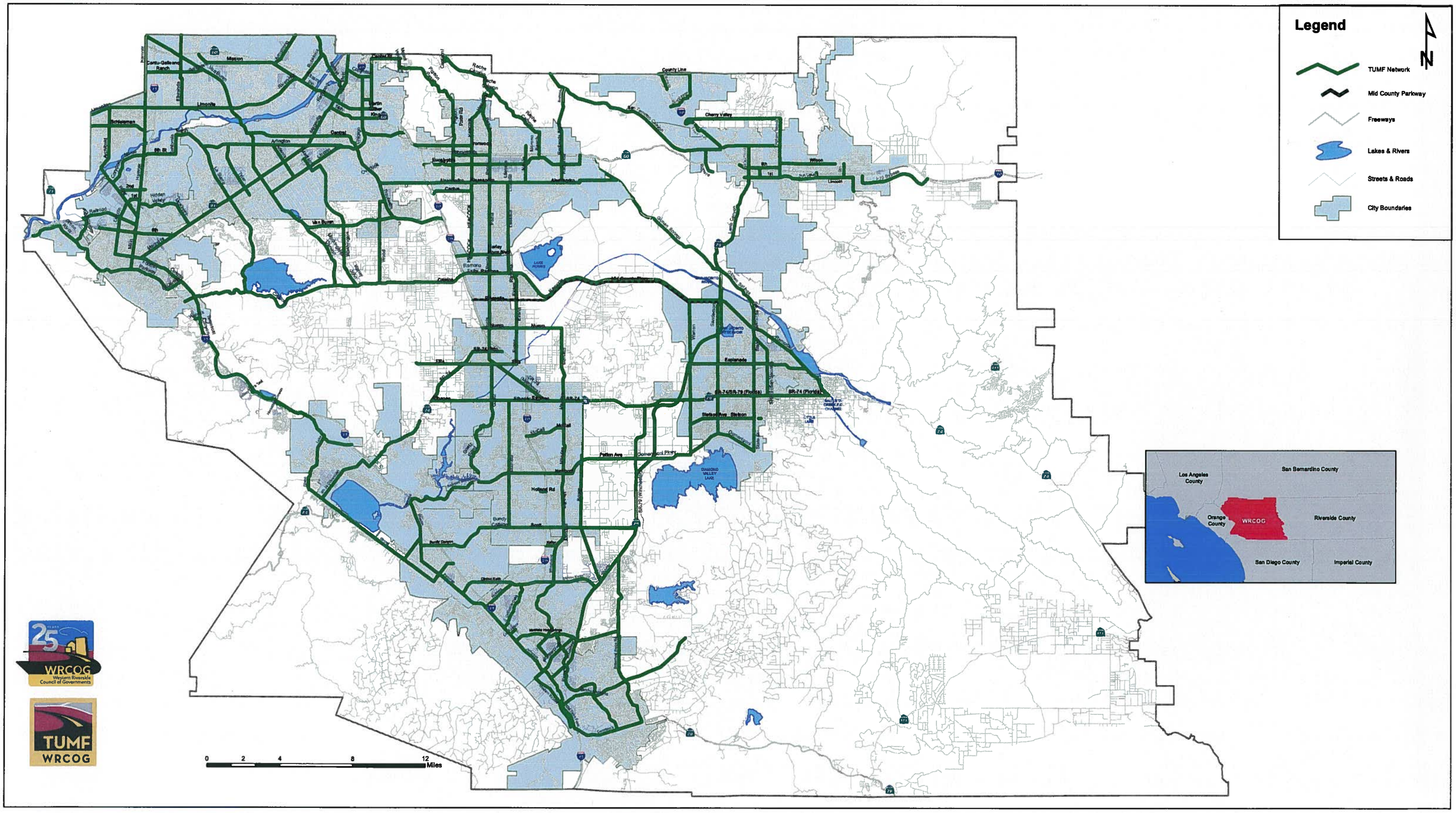
Transportation facilities in Western Riverside County that generally satisfied the respective guidelines were initially identified, and a skeletal regional transportation framework evolved from facilities where multiple guidelines were observed. Representatives of all WRCOG constituent jurisdictions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

[6] Since pass-though 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.

subsequently endorsed by 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.

Consistent with the declining rate of new development forecast for Western Riverside County post the Great Recession, the TUMF Network was reviewed as part of the 2016 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 are discussed in **Section 4.3** of this report.



Regional System of Highways and Arterials - Western Riverside County

Transportation Uniform Mitigation Fee Program | Figure 4.1

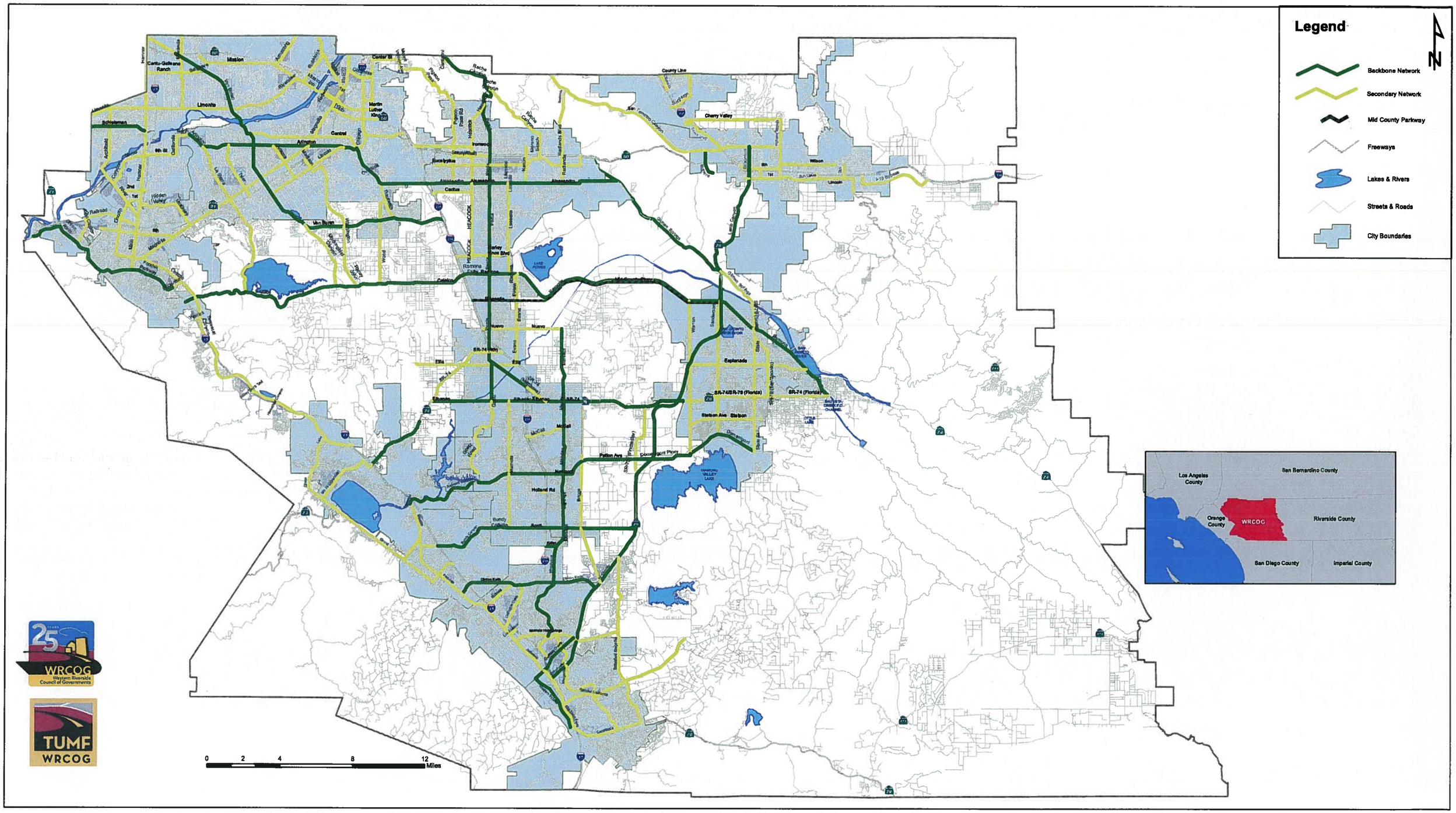
4.2 Backbone Network and Secondary Network

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-out[7], extend across and/or between multiple Area Planning Districts[8], and are forecast to carry at least 25,000 vehicles per day in 2040. 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**.

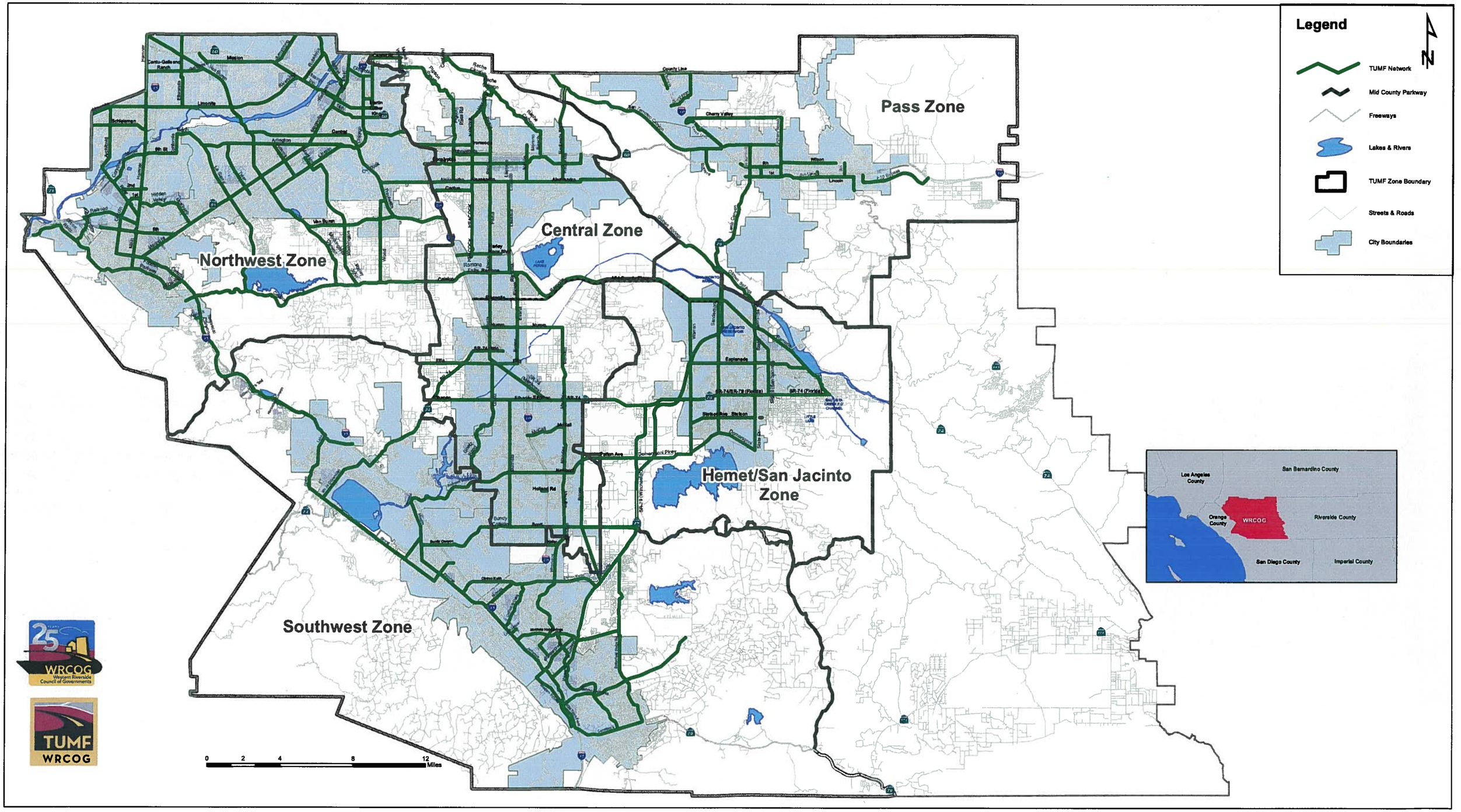
[7] Although facilities were identified based on the minimum number of lanes anticipated at general plan buildout, in some cases it was determined that sufficient demand for all additional lanes facilities may not exist on some facilities until beyond the current timeframe of the TUMF Program (2040). 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.



Backbone Network of Highways and Arterials - Western Riverside County

Transportation Uniform Mitigation Fee Program | Figure 4.2



Western Riverside County Area Planning Districts (TUMF Zones)

Transportation Uniform Mitigation Fee Program | Figure 4.3

4.3 Future Roadway Transportation Needs

For the purpose of calculating 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 Estimates[10] (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 (and 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 2016 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

[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

Riverside County. The recalculation of the TUMF unit cost components was completed as part of the 2016 Nexus Update to reflect the effects of the ongoing recovery from the economic recession that has seen the costs of materials, labor and land acquisition in California rebound from relative historical lows. **Appendix F** provides a detailed outline of the assumptions and methodology leading to the revised TUMF unit cost assumptions developed as part of the 2016 Nexus Update. In addition, supplemental categories were added to the cost assumptions to better delineate the need to mitigate the cumulative multi-species habitat impacts of TUMF arterial highway improvements in accordance with the Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and to account for the costs associated with WRCOG administration of the TUMF Program.

Section 8.5.1 of the Riverside County Integrated Project (RCIP) 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 MSHCP Final Mitigation Fee Nexus Report (David Taussig and Associates, Inc., July 1, 2003) section 5.3.1.2 which states that "over the next 25 years, regional infrastructure projects are expected to generate approximately $250 million in funding for the MSHCP" based on mitigation at 5% of construction costs. To clearly demonstrate compliance with the provisions of the MSHCP, the TUMF Program will incorporate a cost element to account for the required MSHCP contribution to mitigate the multi-species habitat impacts of constructing TUMF projects. In accordance 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 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 2009 Nexus Update unit cost assumptions. Cost estimates are provided in current year values as indicated.

To estimate the cost of improving the regional transportation system to provide for future traffic growth from new development, the transportation network characteristics and performance guidelines (outlined in **Section 4.1**) were initially used as a basis for determining the needed network improvements. The initial list of improvements needed to provide for the traffic generated by new development 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 provide 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 changing levels of new development and the associated travel demand and transportation system impacts to be mitigated as part of the TUMF program.

As discussed in **Section 2.3**, the effects of the economic recession since the 2009 Nexus Update have included a reduction in the rate of forecasted growth in Western Riverside County. As indicated in **Table 2.4** and **Figure 2.4**, the anticipated rate of forecasted growth in Western Riverside County has been reduced overall by 32% for population, 29% for households and 30% for employment. This reduced rate of socioeconomic growth is reflected in a reduction in the forecast horizon year population, households and employment depicted in **Table 2.2** and **Figure 2.2**, with the 2040 forecasts used as the basis for the 2016 Nexus Update being reduced by 4% for population, 12% for households and 21% for employment compared to the 2035 horizon year forecasts used as the basis for the 2009 Nexus Update, despite the horizon year being extended out by 5 years in the most recent SCAG forecasts. This reduced rate of forecasted socioeconomic growth has a commensurate impact on the forecasted daily traffic in the region as demonstrated by the 2009 Nexus Update VMT compared to the 2016 Nexus Update VMT in **Table 4.2**. As shown in the table, the forecast daily traffic is reduced by about 7% in the year 2040 as the basis for the 2016 Nexus Update compared to the year 2035 as used for the 2009 Nexus Update. As a result of the reduced 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.

Table 4.1 - Unit Costs for Arterial Highway and Street Construction

Component Type	Original Cost Assumptions as published October 18, 2002	Cost Assumptions per 2009 Nexus Update October 5, 2009	**Cost Assumptions per 2016 Nexus Update**	Description
Terrain 1	$550,000	$628,000	**$692,000**	Construction cost per lane mile - level terrain
Terrain 2	$850,000	$761,000	**$878,000**	Construction cost per lane mile - rolling terrain
Terrain 3	$1,150,000	$895,000	**$1,064,000**	Construction cost per lane mile - mountainous terrain
Landuse 1	$900,000	$1,682,000	**$2,509,000**	ROW cost factor per lane mile - urban areas
Landuse 2	$420,000	$803,000	**$2,263,000**	ROW cost factor per lane mile - suburban areas
Landuse 3	$240,000	$237,000	**$287,000**	ROW cost factor per lane mile - rural areas
Interchange 1	n/a	$43,780,000	**$50,032,000**	Complex new interchange/interchange modification cost
Interchange 2	$20,000,000	$22,280,000	**$25,558,000**	New interchange/interchange modification total cost
Interchange 3	$10,000,000	$10,890,000	**$12,343,000**	Major interchange improvement total cost
Bridge 1	$2,000	$2,880	**$3,180**	Bridge total cost per lane per linear foot
RRXing 1	$4,500,000	$4,550,000	**$6,376,000**	New Rail Grade Crossing per lane
RRXing 2	$2,250,000	$2,120,000	**$2,733,000**	Existing Rail Grade Crossing per lane
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		3%	**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

Table 4.2 – Forecasted Daily Traffic in Western Riverside County

Measure of Performance	2016 Nexus Update		2009 Nexus Update	
	Daily		Daily	
	2012 Baseline	2040 No-Build	2007	2035
VMT - Total ALL FACILITIES	36,844,082	56,574,656	39,187,718	60,772,353
VMT - FREEWAYS	21,798,155	30,678,958	24,056,704	32,920,502
VMT - ALL ARTERIALS	**15,045,927**	**25,895,698**	**15,131,014**	**27,851,851**
TOTAL - TUMF ARTERIAL VMT	10,059,547	16,515,642		

Source: Based on RivTAM 2012 network provided by Riverside County Transportation Department and SCAG 2016 RTP/SCS SED with updated 2015 arterial network completed by WSP, September 2016; RivTAM provided by Iteris (2008)

A peer review process utilizing real world experience and perspectives from both the private and public sectors was critical in developing a realistic network of proposed improvements to mitigate the additional traffic resulting from future development in Western Riverside County. Representatives of private development firms and the BIA have continued to participate in the process of developing and updating the TUMF Program. This involvement has included active participation of private developer staff at various workshops conducted at critical milestone points in the process of completing the Nexus update, as well as a formal review of the TUMF Network and associated elements of the Nexus Study by the BIA and their hired consultant staff.

As part of the 2015 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 2009 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, and were subsequently reviewed by representatives of the public and privates sectors at a series of workshop meetings conducted between November 2014 and January 2015.

In response to the release of the 2015 Nexus Update draft study document, the TUMF Network was further reviewed by a consultant team hired by the BIA, with findings and recommendations provided in a letter dated August 8, 2015. A final review of the TUMF Network and associated improvements was conducted by WRCOG staff in cooperation with the Public Works Committee during the summer and fall of 2016 specifically in conjunction with the 2016 Nexus Update to include consideration of the revised travel forecasts based on the SCAG 2016 RTP/SCS demographic forecasts.

Based on the findings of the network screening, workshop meetings and other reviews, elements of specific projects were revised to reflect necessary network corrections and modifications to project assumptions. Matrices summarizing the disposition of the requests received as part of both the 2015 and 2016 TUMF Nexus Updates were developed and are 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;

All eligible improvement types provide additional capacity to Network facilities to accommodate future traffic growth generated by new development in Western Riverside County. Following the comprehensive update of the TUMF Program, the estimated total cost to improve the RSHA for Western Riverside County is $3.45 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 $45.4 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 2016 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 $112.2 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 based on service information developed as part of the RTA Comprehensive Operational Analysis completed in January 2015. The TUMF Bus Transit Network was subsequently endorsed by the WRCOG Public Works Committee, WRCOG Technical Advisory Committee, and the WRCOG Executive Committee as the basis for the transit component of the 2016 Nexus Update.

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 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*	Cost Assumptions as published October 18, 2002	Cost Assumptions per 2009 Nexus Update October 5, 2009	**Cost Assumptions per 2015 Nexus Update**	Description
Transit Center 1			**$6,000,000**	Relocation/expansion of existing Regional Transit Center with up to 14 bus bays and park and ride
Transit Center 2	$6,000,000	$5,655,000	**$9,000,000**	New Regional Transit Center with up to 14 bus bays and park and ride
Transfer Facility			**$1,000,000**	Multiple route transfer hub
O & M Facility			**$50,000,000**	Regional Operations and Maintenance Facility
Bus Stop	$10,000	$27,000	**$40,000**	Bus Stop Amenities Upgrade on TUMF Network
BRT Service Capital	$540,000	$550,000	**$60,000**	BRT/Limited Stop Service Capital (per stop**)
Vehicle Fleet 1			**$155,000**	Medium Sized Bus Contract Operated
Vehicle Fleet 2	$325,125	$550,000	**$585,000**	Large Sized Bus Directly Operated
COA Study			**$950,000**	Comprehensive Operational Analysis Study component of Nexus Study Update

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

** BRT Service Capital Cost Assumption was based on a per mile unit in 2009 Nexus Update. 2016 Nexus Update uses a per stop unit cost for BRT Service Capital

The estimated total cost for future RTA bus transit services to accommodate forecast transit demand is approximately $153.1 million with this cost including all planning, engineering, design and capital improvement costs. Detailed transit component cost estimates are included in **Section 4.7**.

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, including most recently California Senate Bill (SB) 1 Transportation Funding approved by Governor Brown on April 28, 2017. 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, each jurisdiction in Western Riverside County (including the County of Riverside, the participating cities, and RCTC) was asked to review their current multi-year capital improvement programs to identify transportation projects on the TUMF system. A detailed table identifying the obligated funds for segments of the TUMF network is included in **Appendix H**. A total of $303.5 million in obligated funding was identified for improvements to the TUMF system. The estimated TUMF network 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 reflect this existing demand. The need to improve these portions of the system is generated by existing demand, rather than 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.

In the initial TUMF Nexus Study, the cost of existing improvement needs was estimated by identifying the roadway segments on the TUMF network that operate at LOS E or F according to the modeled 2000 base year volumes. The application of the LOS E threshold is consistent with national traffic analysis guidance that stipulates LOS D as the minimum acceptable LOS for arterial roadway facilities. The cost to improve these roadway segments with existing unacceptable LOS was calculated using the same method applied to estimate the overall system improvement cost. This method estimated the share of the particular roadway segment (including all associated ROW, interchange, structure and soft costs) that was experiencing unacceptable LOS, and reduced the estimated cost to reflect the relative share. The adjusted value reflected the maximum eligible under the TUMF Program to improve only those portions of the segment (and the relative share of associated improvement costs) that were not experiencing an existing need and were therefore considered to be exclusively addressing the cumulative impacts of new development.

By the application of this methodology, the initial TUMF Nexus Study did not account for the incremental cumulative impact of new development on those segments with an identified existing need. For this reason, the methodology to account for existing need was reviewed as part of the TUMF 2005 update to provide for the inclusion of incremental traffic growth on those segments with existing need.

As part of the 2016 Nexus Update, the methodology to account for existing need on arterial segments was further refined to utilize peak period traffic conditions as the basis for the calculation, rather than daily traffic conditions. Peak period performance measures typically reflect the highest level of demand for transportation facilities and therefore are typically utilized as the basis for project design making peak period a more appropriate basis for determining existing need (and future mitigation needs) as part of the TUMF program. The existing need methodology for the 2016 Nexus Update was also expanded to include spot improvements on the TUMF Network (including interchanges, bridges and railroad crossings). Due to limitations in previously available traffic forecast data, prior versions of the TUMF Nexus Study only determined existing need for arterial segments and did not explicitly include existing need for spot improvements.

To account for existing need in the TUMF Network as part of the 2016 Nexus Update, the cost for facilities identified as currently experiencing LOS E or F was adjusted. This was done by identifying the portion of any TUMF facility in the RivTAM 2012 Baseline scenario with a volume to capacity (v/c) ratio of greater than 0.9 (the threshold for LOS E), 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 RivTAM 2012 Baseline scenario assigned traffic on the 2015 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 RivTAM 2040 No-Build scenario assigned traffic on the 2012 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 2040 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 2040 No-Build compared to the 2012 Baseline v/c (up to a maximum of 100%).

The unfunded cost of existing highway improvement needs (including the related MSHCP obligation) totals $431.7 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 $60.5 million representing 39.5% of the TUMF transit component. **Appendix H** includes tables reflecting the calculation of the existing transit need share and the existing transit need cost.

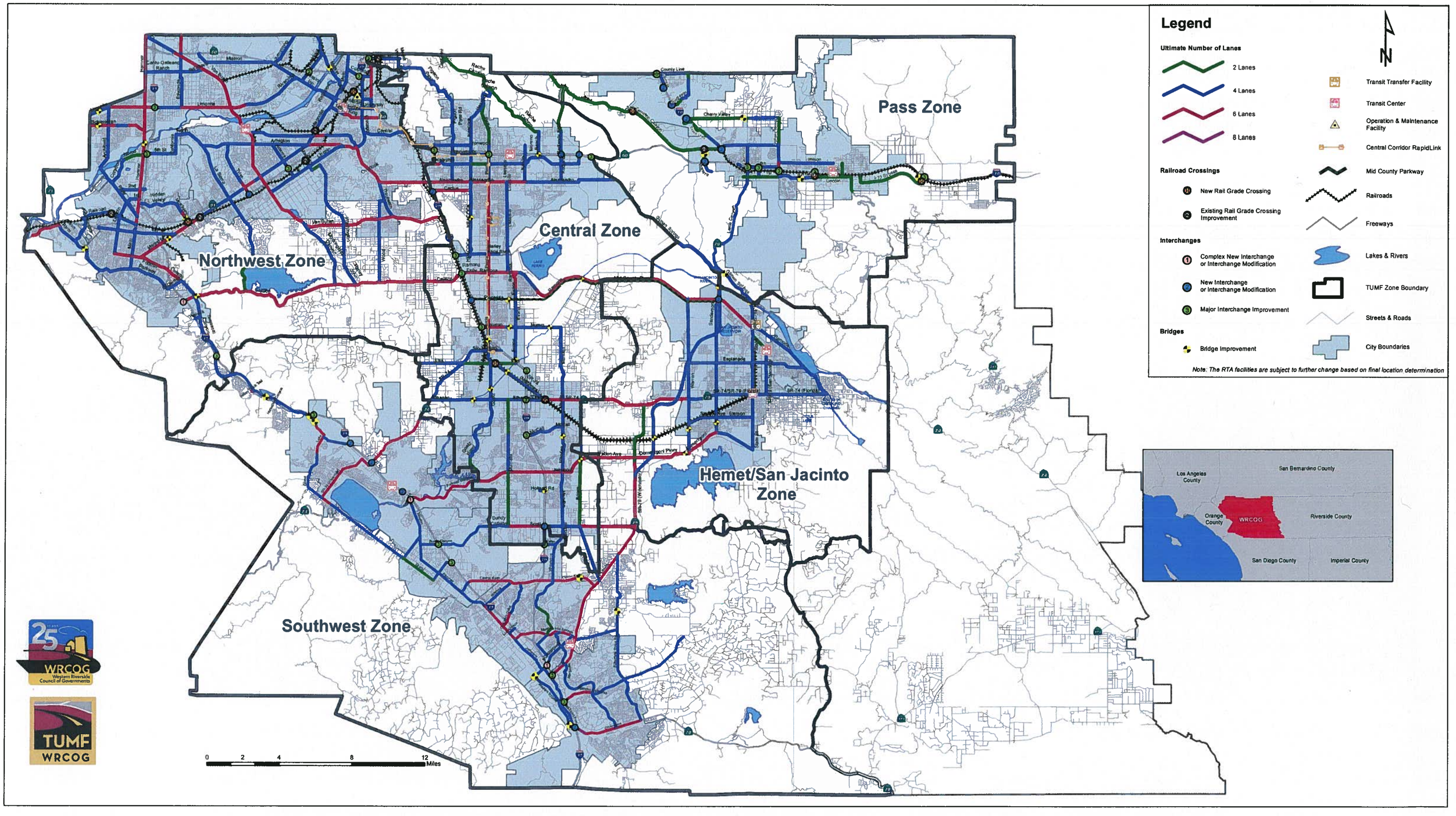
4.7 Maximum TUMF Eligible Cost

A total of $303.5 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

$492.2 million. These improvements are needed to mitigate existing transportation deficiencies and therefore their costs cannot be assigned to new development through the 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 $3.76 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 $2.96 billion. The maximum eligible value of the TUMF Program includes approximately $2.71 billion in eligible arterial highway and street related improvements and $92.6 million in eligible transit related improvements. An additional $43.3 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 $112.2 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).



Regional System of Highways and Arterials (RSHA)

Transportation Uniform Mitigation Fee Program | Figure 4.4

Table 4.4 - TUMF Network Cost Estimates

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Central	Menifee	Ethanac	Goetz	Murrieta	0.99	$0	$0
Central	Menifee	Ethanac	Murrieta	I-215	0.90	$0	$0
Central	Menifee	Ethanac	I-215	interchange	0.00	$17,897,000	$15,766,000
Central	Menifee	Ethanac	Sherman	Matthews	0.61	$1,617,000	$1,617,000
Central	Menifee	Ethanac	BNSF San Jacinto Branch	railroad crossing	0.00	$36,980,000	$33,018,000
Central	Menifee	Menifee	SR-74 (Pinacate)	Simpson	2.49	$0	$0
Central	Menifee	Menifee	Salt Creek	bridge	0.00	$0	$0
Central	Menifee	Menifee	Simpson	Aldergate	0.64	$0	$0
Central	Menifee	Menifee	Aldergate	Newport	0.98	$0	$0
Central	Menifee	Menifee	Newport	Holland	1.07	$0	$0
Central	Menifee	Menifee	Holland	Garbani	1.03	$0	$0
Central	Menifee	Menifee	Garbani	Scott	1.00	$2,635,000	$2,635,000
Central	Menifee	Menifee/Whitewood	Scott	Murrieta City Limit	0.53	$0	$0
Central	Menifee	Newport	Goetz	Murrieta	1.81	$0	$0
Central	Menifee	Newport	Murrieta	I-215	2.05	$5,405,000	$5,405,000
Central	Menifee	Newport	I-215	Menifee	0.95	$0	$0
Central	Menifee	Newport	Menifee	Lindenberger	0.77	$0	$0
Central	Menifee	Newport	Lindenberger	SR-79 (Winchester)	3.58	$0	$0
Central	Menifee	Scott	I-215	Briggs	2.04	$0	$0
Central	Menifee	Scott	I-215	interchange	0.00	$37,060,000	$37,060,000
Central	Menifee	Scott	Sunset	Murrieta	1.01	$2,654,000	$2,654,000
Central	Menifee	Scott	Murrieta	I-215	1.94	$10,254,000	$10,254,000
Central	Menifee	SR-74	Matthews	Briggs	1.89	$4,994,000	$4,994,000
Central	Moreno Valley	Alessandro	I-215	Perris	3.52	$6,394,000	$6,394,000
Central	Moreno Valley	Alessandro	Perris	Nason	2.00	$22,632,000	$22,632,000
Central	Moreno Valley	Alessandro	Nason	Moreno Beach	0.99	$6,922,000	$6,922,000
Central	Moreno Valley	Alessandro	Moreno Beach	Gilman Springs	4.13	$10,902,000	$10,902,000
Central	Moreno Valley	Gilman Springs	SR-60	Alessandro	1.67	$4,411,000	$3,724,000
Central	Moreno Valley	Gilman Springs	SR-60	interchange	0.00	$17,897,000	$17,897,000
Central	Moreno Valley	Perris	Reche Vista	Ironwood	2.09	$0	$0
Central	Moreno Valley	Perris	Ironwood	Sunnymead	0.52	$0	$0
Central	Moreno Valley	Perris	SR-60	interchange	0.00	$17,897,000	$0
Central	Moreno Valley	Perris	Sunnymead	Cactus	2.00	$0	$0
Central	Moreno Valley	Perris	Cactus	Harley Knox	3.50	$0	$0
Central	Moreno Valley	Reche Vista	Moreno Valley City Limit	Heacock	0.44	$3,310,000	$1,705,000
Central	Perris	11th/Case	Perris	Goetz	0.30	$2,100,000	$2,100,000
Central	Perris	Case	Goetz	I-215	2.36	$16,486,000	$13,538,000
Central	Perris	Case	San Jacinto River	bridge	0.00	$1,126,000	$495,000
Central	Perris	Ethanac	Keystone	Goetz	2.24	$7,327,000	$7,327,000
Central	Perris	Ethanac	San Jacinto River	bridge	0.00	$7,378,000	$7,378,000
Central	Perris	Ethanac	I-215	Sherman	0.35	$2,435,000	$1,945,000
Central	Perris	Goetz	Case	Ethanac	2.00	$5,267,000	$2,506,000
Central	Perris	Goetz	San Jacinto River	bridge	0.00	$3,688,000	$1,925,000
Central	Perris	Mid-County (Placentia)	I-215	Perris	0.87	$13,127,000	$12,627,000
Central	Perris	Mid-County (Placentia)	I-215	interchange	0.00	$37,060,000	$12,354,000
Central	Perris	Mid-County	Perris	Evans	1.57	$32,902,000	$32,902,000
Central	Perris	Mid-County	Perris Valley Storm Channel	bridge	0.00	$8,299,000	$8,299,000
Central	Perris	Perris	Harley Knox	Ramona	1.00	$0	$0
Central	Perris	Perris	Ramona	Citrus	2.49	$6,578,000	$6,578,000
Central	Perris	Perris	Citrus	Nuevo	0.50	$0	$0
Central	Perris	Perris	Nuevo	11th	1.75	$12,206,000	$9,034,000
Central	Perris	Perris	I-215 overcrossing	bridge	0.00	$2,767,000	$1,356,000
Central	Perris	Ramona	I-215	Perris	1.47	$2,769,000	$2,769,000
Central	Perris	Ramona	I-215	interchange	0.00	$17,897,000	$5,965,000
Central	Perris	Ramona	Perris	Evans	1.00	$0	$0
Central	Perris	Ramona	Evans	Mid-County (2,800 ft E of Rider)	2.62	$0	$0
Central	Perris	SR-74 (4th)	Ellis	I-215	2.29	$0	$0
Central	Unincorporated	Ethanac	SR-74	Keystone	1.07	$5,646,000	$5,646,000
Central	Unincorporated	Gilman Springs	Alessandro	Bridge	4.98	$15,815,000	$8,105,000
Central	Unincorporated	Menifee	Nuevo	SR-74 (Pinacate)	4.07	$10,737,000	$10,737,000
Central	Unincorporated	Mid-County	Evans	Ramona (2,800 ft E of Rider)	0.77	$8,587,000	$8,587,000
Central	Unincorporated	Mid-County (Ramona)	Ramona (2,800 ft E of Rider)	Pico Avenue	0.44	$1,161,000	$1,161,000
Central	Unincorporated	Mid-County (Ramona)	Pico Avenue	Bridge	5.95	$31,413,000	$25,287,000
Central	Unincorporated	Mid-County (Ramona)	San Jacinto River	bridge	0.00	$23,978,000	$15,835,000
Central	Unincorporated	Reche Canyon	San Bernardino County	Reche Vista	3.35	$12,457,000	$9,429,000
Central	Unincorporated	Reche Vista	Reche Canyon	Moreno Valley City Limit	1.22	$9,180,000	$4,729,000
Central	Unincorporated	Scott	Briggs	SR-79 (Winchester)	3.04	$16,042,000	$0
Central	Unincorporated	SR-74	Ethanac	Ellis	2.68	$0	$0
Northwest	Corona	Cajalco	I-15	Temescal Canyon	0.66	$2,306,000	$2,306,000
Northwest	Corona	Cajalco	I-15	interchange	0.00	$72,546,000	$44,251,000
Northwest	Corona	Foothill	Paseo Grande	Lincoln	2.60	$19,330,000	$7,282,000
Northwest	Corona	Foothill	Wardlow Wash	bridge	0.00	$5,534,000	$0
Northwest	Corona	Foothill	Lincoln	California	2.81	$0	$0
Northwest	Corona	Foothill	California	I-15	0.89	$6,207,000	$4,304,000
Northwest	Corona	Green River	SR-91	Dominguez Ranch	0.52	$3,624,000	$1,000
Northwest	Corona	Green River	Dominguez Ranch	Palisades	0.56	$4,214,000	$1,639,000
Northwest	Corona	Green River	Palisades	Paseo Grande	2.01	$0	$0
Northwest	Eastvale	Schleisman	San Bernardino County	600' e/o Cucamonga Creek	0.65	$2,271,000	$2,271,000
Northwest	Eastvale	Schleisman	Cucamonga Creek	bridge	0.00	$923,000	$923,000
Northwest	Eastvale	Schleisman	600' e/o Cucamonga Creek	Harrison	0.87	$0	$0
Northwest	Eastvale	Schleisman	Harrison	Sumner	0.50	$0	$0
Northwest	Eastvale	Schleisman	Sumner	Scholar	0.50	$3,493,000	$3,493,000
Northwest	Eastvale	Schleisman	Scholar	A Street	0.31	$0	$0
Northwest	Eastvale	Schleisman	A Street	Hamner	0.27	$0	$0
Northwest	Jurupa Valley	Van Buren	SR-60	Bellegrave	1.43	$9,976,000	$3,628,000
Northwest	Jurupa Valley	Van Buren	Bellegrave	Santa Ana River	3.60	$25,115,000	$7,444,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Northwest	Riverside	Alessandro	Arlington	Trautwein	2.21	$0	$0
Northwest	Riverside	Arlington	North	Magnolia	5.92	$7,031,000	$7,031,000
Northwest	Riverside	Arlington	Magnolia	Alessandro	2.02	$13,957,000	$10,001,000
Northwest	Riverside	Van Buren	Santa Ana River	SR-91	3.44	$7,456,000	$7,456,000
Northwest	Riverside	Van Buren	SR-91	Mockingbird Canyon	3.10	$20,845,000	$10,847,000
Northwest	Riverside	Van Buren	Wood	Trautwein	0.43	$0	$0
Northwest	Riverside	Van Buren	Trautwein	Orange Terrace	1.27	$3,470,000	$3,470,000
Northwest	Unincorporated	Alessandro	Trautwein	Vista Grande	1.22	$0	$0
Northwest	Unincorporated	Alessandro	Vista Grande	I-215	1.26	$0	$0
Northwest	Unincorporated	Cajalco	El Sobrante	Harley John	0.76	$4,806,000	$3,465,000
Northwest	Unincorporated	Cajalco	Harley John	Harvil	5.79	$80,889,000	$66,905,000
Northwest	Unincorporated	Cajalco	Harvil	I-215	0.28	$749,000	$749,000
Northwest	Unincorporated	Cajalco	Temescal Canyon	La Sierra	3.21	$23,864,000	$23,864,000
Northwest	Unincorporated	Cajalco	Temescal Wash	bridge	0.00	$3,229,000	$3,229,000
Northwest	Unincorporated	Cajalco	La Sierra	El Sobrante	6.11	$45,421,000	$45,421,000
Northwest	Unincorporated	Van Buren	Mockingbird Canyon	Wood	4.41	$30,785,000	$28,309,000
Northwest	Unincorporated	Van Buren	Orange Terrace	I-215	1.89	$7,637,000	$7,637,000
Pass	Beaumont	Beaumont	Oak Valley (14th)	I-10	1.37	$0	$0
Pass	Beaumont	Potrero	Oak Valley (San Timoteo Car	SR-60	0.72	$1,615,000	$1,615,000
Pass	Beaumont	Potrero	SR-60	interchange	0.00	$37,060,000	$23,760,000
Pass	Beaumont	Potrero	UP	railroad crossing	0.00	$7,927,000	$7,927,000
Pass	Beaumont	Potrero	Noble Creek	bridge	0.00	$2,306,000	$2,306,000
Pass	Beaumont	Potrero	SR-60	4th	0.45	$2,376,000	$2,376,000
Pass	Beaumont	SR-79 (Beaumont)	I-10	Mellow	0.80	$0	$0
Pass	Beaumont	SR-79 (Beaumont)	I-10	interchange	0.00	$17,897,000	$5,369,000
Pass	Unincorporated	SR-79 (Beaumont)	Mellow	California	0.38	$0	$0
Pass	Unincorporated	SR-79 (Lamb Canyon)	California	Gilman Springs	4.87	$0	$0
San Jacinto	Hemet	Domenigoni	Warren	Sanderson	1.77	$4,674,000	$4,674,000
San Jacinto	Hemet	Domenigoni	Sanderson	State	2.14	$0	$0
San Jacinto	Hemet	SR-74	Winchester	Warren	2.59	$16,085,000	$16,085,000
San Jacinto	San Jacinto	Mid-County (Ramona)	Warren	Sanderson	1.73	$12,065,000	$12,065,000
San Jacinto	San Jacinto	Mid-County (Ramona)	Sanderson/SR-79 (Hemet Byp	interchange	0.00	$37,060,000	$37,060,000
San Jacinto	San Jacinto	Ramona	Sanderson	State	2.39	$0	$0
San Jacinto	San Jacinto	Ramona	State	Main	2.66	$0	$0
San Jacinto	San Jacinto	Ramona	Main	Cedar	2.08	$11,623,000	$11,139,000
San Jacinto	San Jacinto	Ramona	Cedar	SR-74	1.10	$0	$0
San Jacinto	Unincorporated	Domenigoni	SR-79 (Winchester)	Warren	3.10	$8,173,000	$8,173,000
San Jacinto	Unincorporated	Domenigoni	San Diego Aqueduct	bridge	0.00	$2,767,000	$2,767,000
San Jacinto	Unincorporated	Gilman Springs	Bridge	Sanderson	2.95	$7,782,000	$7,782,000
San Jacinto	Unincorporated	Mid-County (Ramona)	Bridge	Warren	2.35	$12,396,000	$11,045,000
San Jacinto	Unincorporated	SR-74	Briggs	SR-79 (Winchester)	3.53	$9,301,000	$9,301,000
San Jacinto	Unincorporated	SR-79 (Hemet Bypass)	SR-74 (Florida)	Domenigoni	3.22	$16,990,000	$16,990,000
San Jacinto	Unincorporated	SR-79 (Hemet Bypass)	San Diego Aqueduct	bridge	0.00	$5,534,000	$5,534,000
San Jacinto	Unincorporated	SR-79 (Hemet Bypass)	Domenigoni	Winchester	1.50	$7,914,000	$7,914,000
San Jacinto	Unincorporated	SR-79 (San Jacinto Bypass)	Mid-County (Ramona)	SR-74 (Florida)	6.50	$34,296,000	$30,076,000
San Jacinto	Unincorporated	SR-79 (Sanderson)	Gilman Springs	Ramona	1.92	$5,060,000	$2,376,000
San Jacinto	Unincorporated	SR-79 (Sanderson)	San Jacinto River	bridge	0.00	$12,910,000	$6,100,000
San Jacinto	Unincorporated	SR-79 (Winchester)	Domenigoni	Keller	4.90	$0	$0
Southwest	Canyon Lake	Goetz	Railroad Canyon	Newport	0.50	$0	$0
Southwest	Canyon Lake	Railroad Canyon	Canyon Hills	Goetz	1.95	$0	$0
Southwest	Lake Elsinore	Railroad Canyon	I-15	Canyon Hills	2.29	$3,021,000	$3,021,000
Southwest	Lake Elsinore	Railroad Canyon	I-15	interchange	0.00	$72,546,000	$28,636,000
Southwest	Lake Elsinore	SR-74	I-15	interchange	0.00	$37,060,000	$17,725,000
Southwest	Murrieta	Clinton Keith	Copper Craft	Toulon	0.83	$0	$0
Southwest	Murrieta	Clinton Keith	Toulon	I-215	0.83	$2,187,000	$2,187,000
Southwest	Murrieta	Clinton Keith	I-215	Whitewood	0.75	$0	$0
Southwest	Murrieta	French Valley (Date)	Murrieta Hot Springs	Winchester Creek	0.24	$3,352,000	$3,352,000
Southwest	Murrieta	French Valley (Date)	Winchester Creek	Margarita	0.61	$0	$0
Southwest	Murrieta	Whitewood	Menifee City Limit	Keller	0.55	$0	$0
Southwest	Murrieta	Whitewood	Keller	Clinton Keith	2.00	$2,111,000	$2,111,000
Southwest	Temecula	French Valley (Date)	Margarita	Ynez	0.91	$0	$0
Southwest	Temecula	French Valley (Date)	Ynez	Jefferson	0.73	$10,199,000	$10,199,000
Southwest	Temecula	French Valley (Date)	I-15	interchange	0.00	$72,546,000	$55,760,000
Southwest	Temecula	French Valley (Cherry)	Jefferson	Diaz	0.56	$5,711,000	$5,711,000
Southwest	Temecula	French Valley (Cherry)	Murrieta Creek	bridge	0.00	$7,746,000	$7,746,000
Southwest	Temecula	Western Bypass (Diaz)	Cherry	Rancho California	2.14	$5,382,000	$5,382,000
Southwest	Temecula	Western Bypass (Vincent Mor	Rancho California	SR-79 (Front)	1.48	$21,961,000	$21,961,000
Southwest	Temecula	Western Bypass (Vincent Mor	I-15	interchange	0.00	$37,060,000	$20,682,000
Southwest	Temecula	Western Bypass (Vincent Mor	Murrieta Creek	bridge	0.00	$5,534,000	$5,534,000
Southwest	Temecula	SR-79 (Winchester)	Murrieta Hot Springs	Jefferson	2.70	$0	$0
Southwest	Temecula	SR-79 (Winchester)	I-15	interchange	0.00	$17,897,000	$8,442,000
Southwest	Unincorporated	Benton	SR-79	Eastern Bypass	2.40	$0	$0
Southwest	Unincorporated	Clinton Keith	Whitewood	SR-79	2.54	$20,104,000	$3,604,000
Southwest	Unincorporated	Clinton Keith	Warm Springs Creek	bridge	0.00	$33,200,000	$27,052,000
Southwest	Unincorporated	SR-74	I-15	Ethanac	4.89	$13,064,000	$13,064,000
Southwest	Unincorporated	SR-79 (Winchester)	Keller	Thompson	2.47	$17,220,000	$17,220,000
Southwest	Unincorporated	SR-79 (Winchester)	Thompson	La Alba	1.81	$12,652,000	$12,652,000
Southwest	Unincorporated	SR-79 (Winchester)	La Alba	Hunter	0.50	$3,514,000	$2,771,000
Southwest	Unincorporated	SR-79 (Winchester)	Hunter	Murrieta Hot Springs	1.14	$513,000	$513,000
Southwest	Wildomar	Bundy Canyon	I-15	Monte Vista	0.32	$793,000	$793,000
Southwest	Wildomar	Bundy Canyon	Monte Vista	Sunset	3.10	$9,850,000	$9,850,000
Southwest	Wildomar	Bundy Canyon	I-15	interchange	0.00	$17,897,000	$7,159,000
Southwest	Wildomar	Clinton Keith	Palomar	I-15	0.55	$0	$0
Southwest	Wildomar	Clinton Keith	I-15	Copper Craft	2.48	$5,627,000	$4,275,000
Subtotal					255.28	$1,642,525,000	$1,227,955,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Central	Menifee	Briggs	Newport	Scott	3.05	$0	$0
Central	Menifee	Goetz	Juanita	Lesser Lane	2.61	$6,884,000	$6,593,000
Central	Menifee	Goetz	Newport	Juanita	1.36	$0	$0
Central	Menifee	Holland	Antelope	Haun	1.00	$13,971,000	$13,971,000
Central	Menifee	Holland	I-215 overcrossing	bridge	0.00	$6,455,000	$6,455,000
Central	Menifee	McCall	I-215	Aspel	1.23	$0	$0
Central	Menifee	McCall	I-215	interchange	0.00	$17,897,000	$16,930,000
Central	Menifee	McCall	Aspel	Menifee	0.95	$2,517,000	$2,517,000
Central	Menifee	Murrieta	Ethanac	McCall	1.95	$0	$0
Central	Menifee	Murrieta	McCall	Newport	2.03	$0	$0
Central	Menifee	Murrieta	Newport	Bundy Canyon	3.00	$0	$0
Central	Moreno Valley	Cactus	I-215	Heacock	1.81	$2,022,000	$0
Central	Moreno Valley	Cactus	I-215	interchange	0.00	$37,060,000	$37,060,000
Central	Moreno Valley	Day	Ironwood	SR-60	0.28	$0	$0
Central	Moreno Valley	Day	SR-60	interchange	0.00	$17,897,000	$17,897,000
Central	Moreno Valley	Day	SR-60	Eucalyptus	0.77	$0	$0
Central	Moreno Valley	Eucalyptus	I-215	Towngate	1.00	$4,050,000	$4,050,000
Central	Moreno Valley	Eucalyptus	Towngate	Frederick	0.67	$0	$0
Central	Moreno Valley	Eucalyptus	Frederick	Heacock	1.01	$0	$0
Central	Moreno Valley	Eucalyptus	Heacock	Kitching	1.01	$0	$0
Central	Moreno Valley	Eucalyptus	Kitching	Moreno Beach	2.42	$339,000	$0
Central	Moreno Valley	Eucalyptus	Moreno Beach	Theodore	2.28	$16,882,000	$16,882,000
Central	Moreno Valley	Frederick	SR-60	Alessandro	1.55	$0	$0
Central	Moreno Valley	Heacock	Cactus	San Michele	2.79	$4,482,000	$4,482,000
Central	Moreno Valley	Heacock	Reche Vista	Cactus	4.73	$0	$0
Central	Moreno Valley	Heacock	San Michele	Harley Knox	0.74	$1,958,000	$1,532,000
Central	Moreno Valley	Ironwood	SR-60	Day	1.33	$2,695,000	$2,695,000
Central	Moreno Valley	Ironwood	Day	Heacock	2.01	$0	$0
Central	Moreno Valley	Lasselle	Alessandro	John F Kennedy	1.00	$0	$0
Central	Moreno Valley	Lasselle	John F Kennedy	Oleander	3.14	$0	$0
Central	Moreno Valley	Moreno Beach	Reche Canyon	SR-60	1.37	$9,548,000	$9,548,000
Central	Moreno Valley	Moreno Beach	SR-60 overcrossing	bridge	0.00	$2,306,000	$2,306,000
Central	Moreno Valley	Nason	SR-60	Alessandro	1.51	$0	$0
Central	Moreno Valley	Pigeon Pass	Ironwood	SR-60	0.43	$0	$0
Central	Moreno Valley	Pigeon Pass/CETAP Corridor	Cantarini	Ironwood	3.23	$0	$0
Central	Moreno Valley	Reche Canyon	Moreno Valley City Limit	Locust	0.35	$0	$0
Central	Moreno Valley	Redlands	Locust	Alessandro	2.68	$18,721,000	$18,013,000
Central	Moreno Valley	Redlands	SR-60	interchange	0.00	$37,060,000	$37,060,000
Central	Moreno Valley	Theodore	SR-60	Eucalyptus	0.26	$1,817,000	$1,817,000
Central	Moreno Valley	Theodore	SR-60	interchange	0.00	$37,060,000	$19,096,000
Central	Perris	Evans	Oleander	Ramona	0.99	$0	$0
Central	Perris	Evans	Ramona	Morgan	0.59	$1,562,000	$1,562,000
Central	Perris	Evans	Morgan	Rider	0.49	$0	$0
Central	Perris	Evans	Rider	Placentia	0.58	$0	$0
Central	Perris	Evans	Placentia	Nuevo	1.50	$1,347,000	$1,347,000
Central	Perris	Evans	Nuevo	I-215	1.99	$10,521,000	$10,521,000
Central	Perris	Evans	San Jacinto River	bridge	0.00	$7,378,000	$7,378,000
Central	Perris	Goetz	Lesser	Ethanac	1.04	$2,745,000	$1,238,000
Central	Perris	Harley Knox	I-215	Indian	1.53	$0	$0
Central	Perris	Harley Knox	I-215	interchange	0.00	$17,897,000	$7,110,000
Central	Perris	Harley Knox	Indian	Perris	0.50	$0	$0
Central	Perris	Harley Knox	Perris	Redlands	0.50	$0	$0
Central	Perris	Nuevo	I-215	Murrieta	1.36	$9,480,000	$9,480,000
Central	Perris	Nuevo	I-215	interchange	0.00	$17,897,000	$17,897,000
Central	Perris	Nuevo	Murrieta	Dunlap	1.00	$2,035,000	$2,035,000
Central	Perris	Nuevo	Perris Valley Storm Channel	bridge	0.00	$2,767,000	$2,767,000
Central	Perris	SR-74 (Matthews)	I-215	Ethanac	1.25	$0	$0
Central	Perris	SR-74 (Matthews)	I-215	interchange	0.00	$17,897,000	$8,815,000
Central	Unincorporated	Briggs	SR-74 (Pinacate)	Simpson	2.50	$6,596,000	$6,596,000
Central	Unincorporated	Briggs	Simpson	Newport	1.53	$0	$0
Central	Unincorporated	Briggs	Salt Creek	Bridge	0.00	$0	$0
Central	Unincorporated	Center (Main)	I-215	Mt Vernon	1.50	$0	$0
Central	Unincorporated	Center (Main)	I-215	interchange	0.00	$17,897,000	$17,897,000
Central	Unincorporated	Center (Main)	BNSF	railroad crossing	0.00	$7,927,000	$7,927,000
Central	Unincorporated	Ellis	Post	SR-74	2.65	$6,989,000	$6,989,000
Central	Unincorporated	Mount Vernon/CETAP Corrid	Center	Pigeon Pass	0.61	$2,252,000	$2,252,000
Central	Unincorporated	Nuevo	Dunlap	Menifee	2.00	$5,273,000	$5,273,000
Central	Unincorporated	Nuevo	San Jacinto River	bridge	0.00	$3,688,000	$3,688,000
Central	Unincorporated	Pigeon Pass/CETAP Corridor	Cantarini	Mount Vernon	3.38	$25,146,000	$25,146,000
Central	Unincorporated	Post	Santa Rosa Mine	Ellis	0.44	$0	$0
Central	Unincorporated	Reche Canyon	Reche Vista	Moreno Valley City Limit	3.20	$0	$0
Central	Unincorporated	Redlands	San Timoteo Canyon	Locust	2.60	$0	$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Northwest	Corona	6th	SR-91	Magnolia	4.50	$0	$0
Northwest	Corona	Auto Center	Railroad	SR-91	0.48	$0	$0
Northwest	Corona	Cajalco	Bedford Canyon	I-15	0.15	$1,049,000	$1,049,000
Northwest	Corona	Hidden Valley	Norco Hills	McKinley	0.59	$0	$0
Northwest	Corona	Lincoln	Parkridge	Ontario	3.20	$0	$0
Northwest	Corona	Magnolia	6th	Sherborn Bridge	0.47	$3,283,000	$3,283,000
Northwest	Corona	Magnolia	Temescal Creek	bridge	0.00	$2,767,000	$2,767,000
Northwest	Corona	Magnolia	Sherborn Bridge	Rimpau	0.52	$0	$0
Northwest	Corona	Magnolia	Rimpau	Ontario	1.17	$0	$0
Northwest	Corona	Main	Grand	Ontario	0.88	$2,325,000	$575,000
Northwest	Corona	Main	Ontario	Foothill	0.89	$0	$0
Northwest	Corona	Main	Hidden Valley	Parkridge	0.35	$2,427,000	$1,912,000
Northwest	Corona	Main	Parkridge	SR-91	0.86	$0	$0
Northwest	Corona	Main	SR-91	S. Grand	0.86	$0	$0
Northwest	Corona	McKinley	Hidden Valley	Promenade	0.40	$0	$0
Northwest	Corona	McKinley	Promenade	SR-91	0.33	$0	$0
Northwest	Corona	McKinley	SR-91	Magnolia	0.31	$2,346,000	$2,346,000
Northwest	Corona	McKinley	Arlington Channel	bridge	0.00	$923,000	$923,000
Northwest	Corona	McKinley	BNSF	railroad crossing	0.00	$55,472,000	$0
Northwest	Corona	Ontario	I-15	El Cerrito	0.89	$6,217,000	$4,924,000
Northwest	Corona	Ontario	Lincoln	Buena Vista	0.32	$2,242,000	$1,883,000
Northwest	Corona	Ontario	Buena Vista	Main	0.65	$0	$0
Northwest	Corona	Ontario	Main	Kellogg	0.78	$0	$0
Northwest	Corona	Ontario	Kellogg	Fullerton	0.32	$2,410,000	$1,785,000
Northwest	Corona	Ontario	Fullerton	Rimpau	0.42	$0	$0
Northwest	Corona	Ontario	Rimpau	I-15	0.60	$0	$0
Northwest	Corona	Railroad	Auto Club	Buena Vista	2.45	$0	$0
Northwest	Corona	Railroad	BNSF	railroad crossing	0.00	$15,851,000	$15,851,000
Northwest	Corona	Railroad	Buena Vista	Main (at Grand)	0.58	$4,052,000	$3,203,000
Northwest	Corona	River	Corydon	Main	2.27	$0	$0
Northwest	Corona	Serfas Club	SR-91	Green River	0.96	$0	$0
Northwest	Eastvale	Archibald	San Bernardino County	River	3.63	$1,725,000	$1,725,000
Northwest	Eastvale	Hamner	Mission	Bellegrave	3.03	$2,158,000	$2,158,000
Northwest	Eastvale	Hamner	Bellegrave	Amberhill	0.20	$528,000	$528,000
Northwest	Eastvale	Hamner	Amberhill	Limonite	0.71	$3,222,000	$3,222,000
Northwest	Eastvale	Hamner	Limonite	Schleisman	1.00	$0	$0
Northwest	Eastvale	Hamner	Schleisman	Santa Ana River	1.00	$2,638,000	$2,638,000
Northwest	Eastvale	Limonite	I-15	East Center	0.35	$0	$0
Northwest	Eastvale	Limonite	I-15	interchange	0.00	$17,897,000	$0
Northwest	Eastvale	Limonite	East Center	Hamner	0.27	$0	$0
Northwest	Eastvale	Limonite	Hamner	Sumner	1.00	$1,319,000	$1,319,000
Northwest	Eastvale	Limonite	Sumner	Harrison	0.50	$0	$0
Northwest	Eastvale	Limonite	Harrison	Archibald	0.49	$1,293,000	$1,293,000
Northwest	Eastvale	Limonite	Archibald	Hellman (Keller SBD Co.)	1.12	$5,910,000	$5,910,000
Northwest	Eastvale	Limonite	Cucamonga Creek	bridge	0.00	$3,688,000	$3,688,000
Northwest	Jurupa Valley	Armstrong	San Bernardino County	Valley	1.53	$1,601,000	$1,601,000
Northwest	Jurupa Valley	Bellegrave	Cantu-Galleano Ranch	Van Buren	0.29	$759,000	$759,000
Northwest	Jurupa Valley	Cantu-Galleano Ranch	Wineville	Bellegrave	1.82	$2,400,000	$2,400,000
Northwest	Jurupa Valley	Etiwanda	San Bernardino County	SR-60	1.00	$0	$0
Northwest	Jurupa Valley	Etiwanda	SR-60	Limonite	3.00	$0	$0
Northwest	Jurupa Valley	Limonite	I-15	Wineville	0.40	$0	$0
Northwest	Jurupa Valley	Limonite	Wineville	Etiwanda	0.99	$0	$0
Northwest	Jurupa Valley	Limonite	Etiwanda	Van Buren	2.72	$14,345,000	$12,319,000
Northwest	Jurupa Valley	Limonite	Van Buren	Clay	0.79	$1,672,000	$1,672,000
Northwest	Jurupa Valley	Limonite	Clay	Riverview	2.45	$0	$0
Northwest	Jurupa Valley	Market	Rubidoux	Santa Ana River	1.74	$4,605,000	$4,314,000
Northwest	Jurupa Valley	Market	Santa Ana River	bridge	0.00	$9,222,000	$7,849,000
Northwest	Jurupa Valley	Mission	Milliken	SR-60	1.61	$0	$0
Northwest	Jurupa Valley	Mission	SR-60	Santa Ana River	7.39	$0	$0
Northwest	Jurupa Valley	Riverview	Limonite	Mission	0.95	$0	$0
Northwest	Jurupa Valley	Rubidoux	San Bernardino County	Mission	2.65	$0	$0
Northwest	Jurupa Valley	Rubidoux	SR-60	interchange	0.00	$17,897,000	$8,948,000
Northwest	Jurupa Valley	Valley	Armstrong	Mission	0.48	$0	$0
Northwest	Norco	1st	Parkridge	Mountain	0.26	$677,000	$677,000
Northwest	Norco	1st	Mountain	Hamner	0.26	$0	$0
Northwest	Norco	2nd	River	I-15	1.44	$3,789,000	$3,789,000
Northwest	Norco	6th	Hamner	California	1.71	$0	$0
Northwest	Norco	6th	I-15	interchange	0.00	$17,897,000	$5,593,000
Northwest	Norco	Arlington	North	Arlington	0.97	$2,570,000	$2,570,000
Northwest	Norco	California	Arlington	6th	0.98	$6,848,000	$6,848,000
Northwest	Norco	Corydon	River	5th	1.46	$0	$0
Northwest	Norco	Hamner	Santa Ana River	bridge	0.00	$22,132,000	$0
Northwest	Norco	Hamner	Santa Ana River	Hidden Valley	3.05	$21,325,000	$21,325,000
Northwest	Norco	Hidden Valley	I-15	Norco Hills	1.52	$0	$0
Northwest	Norco	Hidden Valley	Hamner	I-15	0.13	$0	$0
Northwest	Norco	Norco	Corydon	Hamner	1.20	$0	$0
Northwest	Norco	North	California	Arlington	0.81	$0	$0
Northwest	Norco	River	Archibald	Corydon	1.14	$1,114,000	$803,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Northwest	Riverside	14th	Market	Martin Luther King	0.89	$0	$0
Northwest	Riverside	1st	Market	Main	0.08	$0	$0
Northwest	Riverside	3rd	SR-91	I-215	1.34	$0	$0
Northwest	Riverside	3rd	BNSF	railroad crossing	0.00	$36,980,000	$36,980,000
Northwest	Riverside	Adams	Arlington	SR-91	1.56	$0	$0
Northwest	Riverside	Adams	SR-91	Lincoln	0.54	$0	$0
Northwest	Riverside	Adams	SR-91	interchange	0.00	$17,897,000	$17,897,000
Northwest	Riverside	Buena Vista	Santa Ana River	Redwood	0.30	$0	$0
Northwest	Riverside	Canyon Crest	Martin Luther King	Central	0.95	$0	$0
Northwest	Riverside	Canyon Crest	Central	Country Club	0.59	$0	$0
Northwest	Riverside	Canyon Crest	Country Club	Via Vista	0.94	$2,990,000	$1,855,000
Northwest	Riverside	Canyon Crest	Via Vista	Alessandro	0.68	$0	$0
Northwest	Riverside	Central	Chicago	I-215/SR-60	2.15	$0	$0
Northwest	Riverside	Central	SR-91	Magnolia	0.76	$0	$0
Northwest	Riverside	Central	Alessandro	SR-91	2.05	$0	$0
Northwest	Riverside	Central	Van Buren	Magnolia	3.53	$0	$0
Northwest	Riverside	Chicago	Alessandro	Spruce	3.42	$0	$0
Northwest	Riverside	Chicago	Spruce	Columbia	0.75	$0	$0
Northwest	Riverside	Columbia	Main	Iowa	1.09	$0	$0
Northwest	Riverside	Columbia	I-215	interchange	0.00	$17,897,000	$17,897,000
Northwest	Riverside	Iowa	Center	3rd	2.25	$13,815,000	$13,815,000
Northwest	Riverside	Iowa	3rd	University	0.51	$0	$0
Northwest	Riverside	Iowa	University	Martin Luther King	0.51	$3,530,000	$3,265,000
Northwest	Riverside	JFK	Trautwein	Wood	0.48	$0	$0
Northwest	Riverside	La Sierra	Arlington	SR-91	3.56	$0	$0
Northwest	Riverside	La Sierra	SR-91	Indiana	0.19	$0	$0
Northwest	Riverside	La Sierra	Indiana	Victoria	0.78	$0	$0
Northwest	Riverside	Lemon (NB One way)	Mission Inn	University	0.08	$0	$0
Northwest	Riverside	Lincoln	Van Buren	Jefferson	2.00	$0	$0
Northwest	Riverside	Lincoln	Jefferson	Washington	1.00	$4,331,000	$4,331,000
Northwest	Riverside	Lincoln	Washington	Victoria	1.43	$8,193,000	$8,193,000
Northwest	Riverside	Madison	SR-91	Victoria	0.86	$0	$0
Northwest	Riverside	Madison	BNSF	railroad crossing	0.00	$15,851,000	$10,851,000
Northwest	Riverside	Magnolia	BNSF Railroad	Tyler	2.70	$0	$0
Northwest	Riverside	Magnolia	BNSF	railroad crossing	0.00	$15,851,000	$15,851,000
Northwest	Riverside	Magnolia	Tyler	Harrison	0.65	$0	$0
Northwest	Riverside	Magnolia	Harrison	14th	5.98	$0	$0
Northwest	Riverside	Main	1st	San Bernardino County	2.19	$0	$0
Northwest	Riverside	Market	14th	Santa Ana River	2.03	$0	$0
Northwest	Riverside	Martin Luther King	14th	I-215/SR-60	2.11	$6,340,000	$6,340,000
Northwest	Riverside	Mission Inn	Redwood	Lemon	0.79	$0	$0
Northwest	Riverside	Redwood (SB One way)	Mission Inn	University	0.08	$0	$0
Northwest	Riverside	Trautwein	Alessandro	Van Buren	2.19	$0	$0
Northwest	Riverside	Tyler	SR-91	Magnolia	0.43	$0	$0
Northwest	Riverside	Tyler	SR-91	interchange	0.00	$37,060,000	$3,089,000
Northwest	Riverside	Tyler	Magnolia	Hole	0.27	$0	$0
Northwest	Riverside	Tyler	Hole	Wells	1.06	$0	$0
Northwest	Riverside	Tyler	Wells	Arlington	1.35	$9,443,000	$9,443,000
Northwest	Riverside	University	Redwood	SR-91	0.86	$0	$0
Northwest	Riverside	University	SR-91	I-215/SR-60	2.01	$0	$0
Northwest	Riverside	Victoria	Lincoln	Arlington	0.16	$0	$0
Northwest	Riverside	Victoria	Madison	Washington	0.52	$0	$0
Northwest	Riverside	Washington	Victoria	Hermosa	2.05	$14,352,000	$14,352,000
Northwest	Riverside	Wood	JFK	Van Buren	0.70	$923,000	$923,000
Northwest	Riverside	Wood	Van Buren	Bergamont	0.11	$0	$0
Northwest	Riverside	Wood	Bergamont	Krameria	0.39	$0	$0
Northwest	Unincorporated	Cantu-Galleano Ranch	Hamner	Wineville	0.94	$0	$0
Northwest	Unincorporated	Dos Lagos (Weirick)	Temescal Canyon	I-15	0.21	$0	$0
Northwest	Unincorporated	El Cerrito	I-15	Ontario	0.56	$0	$0
Northwest	Unincorporated	El Sobrante	Mockingbird Canyon	Cajalco	1.05	$3,337,000	$3,226,000
Northwest	Unincorporated	Harley John	Washington	Scottsdale	0.12	$0	$0
Northwest	Unincorporated	Harley John	Scottsdale	Cajalco	1.19	$3,134,000	$3,134,000
Northwest	Unincorporated	La Sierra	Victoria	El Sobrante	2.22	$0	$0
Northwest	Unincorporated	La Sierra	El Sobrante	Cajalco	2.36	$0	$0
Northwest	Unincorporated	Mockingbird Canyon	Van Buren	El Sobrante	3.29	$10,454,000	$9,003,000
Northwest	Unincorporated	Temescal Canyon	Ontario	Tuscany	0.65	$1,644,000	$740,000
Northwest	Unincorporated	Temescal Canyon	Tuscany	Dos Lagos	0.91	$0	$0
Northwest	Unincorporated	Temescal Canyon	Dos Lagos	Leroy	1.10	$3,507,000	$3,507,000
Northwest	Unincorporated	Temescal Canyon	Leroy	Dawson Canyon	1.89	$5,994,000	$5,994,000
Northwest	Unincorporated	Temescal Canyon	Dawson Canyon	I-15	0.28	$0	$0
Northwest	Unincorporated	Temescal Canyon	I-15	interchange	0.00	$17,897,000	$17,897,000
Northwest	Unincorporated	Temescal Canyon	I-15	Park Canyon	3.41	$12,661,000	$12,661,000
Northwest	Unincorporated	Temescal Canyon	Park Canyon	Indian Truck Trail	2.55	$8,094,000	$8,094,000
Northwest	Unincorporated	Washington	Hermosa	Harley John	3.96	$7,840,000	$7,840,000
Northwest	Unincorporated	Wood	Krameria	Cajalco	2.99	$7,880,000	$7,880,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Pass	Banning	8th	Wilson	I-10	0.54	$0	$0
Pass	Banning	Highland Springs	Wilson (8th)	Sun Lakes	0.76	$2,661,000	$2,661,000
Pass	Banning	Highland Springs	I-10	interchange	0.00	$17,897,000	$17,897,000
Pass	Banning	Highland Springs	Oak Valley (14th)	Wilson (8th)	0.73	$5,128,000	$5,128,000
Pass	Banning	Highland Springs	Cherry Valley	Oak Valley (14th)	1.53	$0	$0
Pass	Banning	I-10 Bypass South	I-10	Morongo Trail (Apache Trail)	3.29	$22,952,000	$22,952,000
Pass	Banning	I-10 Bypass South	I-10	interchange	0.00	$17,897,000	$17,897,000
Pass	Banning	I-10 Bypass South	San Gorgonio	bridge	0.00	$2,767,000	$2,767,000
Pass	Banning	I-10 Bypass South	UP	railroad crossing	0.00	$18,490,000	$18,490,000
Pass	Banning	Lincoln	Sunset	SR-243	2.01	$0	$0
Pass	Banning	Ramsey	I-10	8th	1.70	$0	$0
Pass	Banning	Ramsey	8th	Highland Springs	3.55	$0	$0
Pass	Banning	SR-243	I-10	Wesley	0.62	$0	$0
Pass	Banning	Sun Lakes	Highland Home	Sunset	1.00	$13,971,000	$13,971,000
Pass	Banning	Sun Lakes	Smith Creek	bridge	0.00	$3,688,000	$3,688,000
Pass	Banning	Sun Lakes	Highland Springs	Highland Home	1.33	$0	$0
Pass	Banning	Sunset	Ramsey	Lincoln	0.28	$0	$0
Pass	Banning	Sunset	I-10	interchange	0.00	$17,897,000	$17,897,000
Pass	Banning	Wilson	Highland Home	8th	2.51	$0	$0
Pass	Banning	Wilson	Highland Springs	Highland Home	1.01	$0	$0
Pass	Beaumont	1st	Viele	Pennsylvania	1.28	$0	$0
Pass	Beaumont	1st	Pennsylvania	Highland Springs	1.10	$0	$0
Pass	Beaumont	6th	I-10	Highland Springs	2.24	$0	$0
Pass	Beaumont	Desert Lawn	Champions	Oak Valley (STC)	0.99	$912,000	$912,000
Pass	Beaumont	Oak Valley (14th)	Highland Springs	Pennsylvania	1.13	$0	$0
Pass	Beaumont	Oak Valley (14th)	Pennsylvania	Oak View	1.40	$0	$0
Pass	Beaumont	Oak Valley (14th)	Oak View	I-10	0.65	$2,270,000	$2,270,000
Pass	Beaumont	Oak Valley (14th)	I-10	interchange	0.00	$37,060,000	$11,660,000
Pass	Beaumont	Oak Valley (STC)	Beaumont City Limits	Cherry Valley (J St / Central Over	3.46	$0	$0
Pass	Beaumont	Oak Valley (STC)	Cherry Valley (J St / Central C	I-10	1.67	$0	$0
Pass	Beaumont	Pennsylvania	6th	1st	0.53	$3,018,000	$3,018,000
Pass	Beaumont	Pennsylvania	I-10	interchange	0.00	$8,949,000	$0
Pass	Calimesa	Bryant	County Line	Avenue L	0.38	$0	$0
Pass	Calimesa	Calimesa	County Line	I-10	0.80	$0	$0
Pass	Calimesa	Calimesa	I-10	interchange	0.00	$37,060,000	$37,060,000
Pass	Calimesa	Tukwet Canyon	Roberts	Palmer	0.50	$0	$0
Pass	Calimesa	County Line	Roberts	Bryant	1.86	$6,497,000	$6,497,000
Pass	Calimesa	County Line	I-10	interchange	0.00	$17,897,000	$17,897,000
Pass	Calimesa	Desert Lawn	Palmer	Champions	1.42	$0	$0
Pass	Calimesa	Singleton	Avenue L	Condit	1.86	$11,834,000	$11,834,000
Pass	Calimesa	Singleton	Condit	Roberts	0.85	$0	$0
Pass	Calimesa	Singleton	I-10	interchange	0.00	$37,060,000	$37,060,000
Pass	Unincorporated	Cherry Valley	Noble	Desert Lawn	3.40	$0	$0
Pass	Unincorporated	Cherry Valley	I-10	interchange	0.00	$37,060,000	$36,617,000
Pass	Unincorporated	Cherry Valley	San Timoteo Wash	bridge	0.00	$0	$0
Pass	Unincorporated	Live Oak Canyon	Oak Valley (STC)	San Bernardino County	2.81	$0	$0
Pass	Unincorporated	Oak Valley (STC)	San Bernardino County	Beaumont City Limits	5.65	$0	$0
Pass	Unincorporated	Oak Valley (STC)	UP	railroad crossing	0.00	$18,490,000	$18,490,000
Pass	Unincorporated	Cherry Valley	Bellflower	Noble	1.47	$7,757,000	$7,757,000
Pass	Unincorporated	Cherry Valley	Highland Springs	Bellflower	0.44	$0	$0
San Jacinto	Hemet	Sanderson	Acacia	Menlo	0.98	$0	$0
San Jacinto	Hemet	Sanderson	Domenigoni	Stetson	1.08	$0	$0
San Jacinto	Hemet	Sanderson	RR Crossing	Acacia	0.42	$0	$0
San Jacinto	Hemet	Sanderson	Stetson	RR Crossing	0.58	$0	$0
San Jacinto	Hemet	Sanderson	Menlo	Esplanade	1.00	$0	$0
San Jacinto	Hemet	SR-74 (Florida)	Warren	Cawston	1.02	$0	$0
San Jacinto	Hemet	SR-74 (Florida)	Columbia	Ramona	2.58	$0	$0
San Jacinto	Hemet	SR-74/SR-79 (Florida)	Cawston	Columbia	4.03	$0	$0
San Jacinto	Hemet	State	Domenigoni	Chambers	1.31	$0	$0
San Jacinto	Hemet	State	Chambers	Stetson	0.51	$0	$0
San Jacinto	Hemet	State	Florida	Esplanade	1.74	$0	$0
San Jacinto	Hemet	State	Stetson	Florida	1.25	$9,377,000	$9,377,000
San Jacinto	Hemet	Stetson	Cawston	State	2.52	$0	$0
San Jacinto	Hemet	Stetson	Warren	Cawston	1.00	$2,635,000	$2,635,000
San Jacinto	Hemet	Warren	Esplanade	Domenigoni	4.99	$13,163,000	$13,163,000
San Jacinto	Hemet	Warren	Salt Creek	bridge	0.00	$2,767,000	$2,490,000
San Jacinto	San Jacinto	Esplanade	Ramona	Mountain	0.20	$2,794,000	$2,794,000
San Jacinto	San Jacinto	Esplanade	Mountain	State	2.55	$0	$0
San Jacinto	San Jacinto	Esplanade	State	Warren	3.53	$9,320,000	$9,320,000
San Jacinto	San Jacinto	Sanderson	Ramona	Esplanade	3.55	$0	$0
San Jacinto	San Jacinto	SR-79 (North Ramona)	State	San Jacinto	1.02	$0	$0
San Jacinto	San Jacinto	SR-79 (San Jacinto)	North Ramona Blvd	7th	0.25	$1,722,000	$1,722,000
San Jacinto	San Jacinto	SR-79 (San Jacinto)	7th	SR-74	2.25	$0	$0
San Jacinto	San Jacinto	State	Ramona	Esplanade	1.99	$0	$0
San Jacinto	San Jacinto	State	Gilman Springs	Quandt Ranch	0.76	$2,007,000	$1,138,000
San Jacinto	San Jacinto	State	San Jacinto River	bridge	0.00	$4,611,000	$3,162,000
San Jacinto	San Jacinto	State	Quandt Ranch	Ramona	0.70	$0	$0
San Jacinto	San Jacinto	Warren	Ramona	Esplanade	3.47	$9,156,000	$9,156,000
San Jacinto	Unincorporated	Gilman Springs	Sanderson	State	2.54	$6,714,000	$3,462,000
San Jacinto	Unincorporated	Gilman Springs	Massacre Canyon Wash	bridge	0.00	$923,000	$570,000
San Jacinto	Unincorporated	SR-79 (Winchester)	SR-74 (Florida)	Domenigoni	3.23	$0	$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Southwest	Lake Elsinore	Corydon	Mission	Grand	1.53	$2,019,000	$2,019,000
Southwest	Lake Elsinore	Diamond	Mission	I-15	0.24	$0	$0
Southwest	Lake Elsinore	Franklin (integral to Railroad	I-15	interchange	0.00	$37,060,000	$14,629,000
Southwest	Lake Elsinore	Grand	Lincoln	Toft	1.29	$0	$0
Southwest	Lake Elsinore	Grand	Toft	SR-74 (Riverside)	0.86	$1,357,000	$1,357,000
Southwest	Lake Elsinore	Lake	I-15	Lincoln	3.10	$14,794,000	$13,592,000
Southwest	Lake Elsinore	Lake	I-15	interchange	0.00	$17,897,000	$7,291,000
Southwest	Lake Elsinore	Lake	Temescal Wash	bridge	0.00	$1,973,000	$822,000
Southwest	Lake Elsinore	Mission	Railroad Canyon	Bundy Canyon	2.39	$0	$0
Southwest	Lake Elsinore	Nichols	I-15	Lake	1.80	$3,324,000	$3,324,000
Southwest	Lake Elsinore	Nichols	I-15	interchange	0.00	$37,060,000	$37,060,000
Southwest	Lake Elsinore	SR-74 (Collier/Riverside)	I-15	Lakeshore	2.10	$29,357,000	$28,315,000
Southwest	Lake Elsinore	SR-74 (Grand)	Riverside	SR-74 (Ortega)	0.64	$8,892,000	$7,495,000
Southwest	Lake Elsinore	SR-74 (Riverside)	Lakeshore	Grand	1.74	$21,830,000	$21,830,000
Southwest	Lake Elsinore	Temescal Canyon	I-15	Lake	1.21	$3,846,000	$3,846,000
Southwest	Lake Elsinore	Temescal Canyon	Temescal Wash	bridge	0.00	$2,270,000	$2,270,000
Southwest	Murrieta	California Oaks	Jefferson	I-15	0.32	$555,000	$555,000
Southwest	Murrieta	California Oaks	I-15	Jackson	0.50	$0	$0
Southwest	Murrieta	California Oaks	Jackson	Clinton Keith	1.76	$0	$0
Southwest	Murrieta	Jackson	Whitewood	Ynez	0.53	$0	$0
Southwest	Murrieta	Jefferson	Palomar	Nutmeg	1.02	$2,691,000	$2,691,000
Southwest	Murrieta	Jefferson	Nutmeg	Murrieta Hot Springs	2.37	$21,520,000	$21,520,000
Southwest	Murrieta	Jefferson	Murrieta Hot Springs	Cherry	2.26	$0	$0
Southwest	Murrieta	Keller	I-215	Whitewood	0.75	$1,571,000	$1,571,000
Southwest	Murrieta	Keller	I-215	interchange	0.00	$17,897,000	$17,897,000
Southwest	Murrieta	Los Alamos	Jefferson	I-215	1.77	$0	$0
Southwest	Murrieta	Murrieta Hot Springs	Jefferson	I-215	1.11	$0	$0
Southwest	Murrieta	Murrieta Hot Springs	I-215	Margarita	1.48	$0	$0
Southwest	Murrieta	Murrieta Hot Springs	Margarita	SR-79 (Winchester)	1.01	$2,660,000	$2,660,000
Southwest	Murrieta	Nutmeg	Jefferson	Clinton Keith	1.97	$0	$0
Southwest	Murrieta	Whitewood	Clinton Keith	Los Alamos	2.01	$0	$0
Southwest	Murrieta	Whitewood	Los Alamos	Murrieta Hot Springs	1.93	$0	$0
Southwest	Murrieta	Whitewood	Murrieta Hot Springs	Jackson	0.80	$8,066,000	$8,066,000
Southwest	Murrieta	Ynez	Jackson	SR-79 (Winchester)	1.22	$0	$0
Southwest	Temecula	Jefferson	Cherry	Rancho California	2.29	$0	$0
Southwest	Temecula	Margarita	Murrieta Hot Springs	SR-79 (Temecula Pkwy)	7.38	$0	$0
Southwest	Temecula	Old Town Front	Rancho California	I-15/SR-79 (Temecula Pkwy)	1.45	$0	$0
Southwest	Temecula	Pechanga Pkwy	SR-79 (Temecula Pkwy)	Via Gilberto	1.32	$0	$0
Southwest	Temecula	Pechanga Pkwy	Via Gilberto	Pechanga Pkwy	1.44	$0	$0
Southwest	Temecula	Rancho California	Jefferson	Margarita	1.89	$6,824,000	$6,824,000
Southwest	Temecula	Rancho California	I-15	interchange	0.00	$17,897,000	$12,009,000
Southwest	Temecula	Rancho California	Margarita	Butterfield Stage	1.96	$0	$0
Southwest	Temecula	Rancho California	Butterfield Stage	Glen Oaks	4.26	$32,064,000	$32,064,000
Southwest	Temecula	SR-79 (Temecula Pkwy)	I-15	Pechanga Pkwy	0.64	$1,692,000	$1,576,000
Southwest	Temecula	SR-79 (Temecula Pkwy)	Pechanga Pkwy	Butterfield Stage	3.08	$0	$0
Southwest	Unincorporated	Briggs	Scott	SR-79 (Winchester)	3.39	$8,950,000	$8,950,000
Southwest	Unincorporated	Butterfield Stage	Murrieta Hot Springs	Calle Chapos	0.82	$0	$0
Southwest	Unincorporated	Butterfield Stage	Calle Chapos	La Serena	0.70	$0	$0
Southwest	Unincorporated	Butterfield Stage	La Serena	Rancho California	0.90	$2,860,000	$2,860,000
Southwest	Unincorporated	Butterfield Stage	Rancho California	Pauba	0.85	$0	$0
Southwest	Unincorporated	Butterfield Stage	Pauba	SR-79 (Temecula Pkwy)	1.69	$269,000	$269,000
Southwest	Unincorporated	Butterfield Stage	SR-79 (Winchester)	Auld	2.28	$7,245,000	$7,245,000
Southwest	Unincorporated	Butterfield Stage	Auld	Murrieta Hot Springs	2.23	$14,172,000	$14,172,000
Southwest	Unincorporated	Butterfield Stage	Tucalota Creek	bridge	0.00	$3,688,000	$3,688,000
Southwest	Unincorporated	Horsethief Canyon	Temescal Canyon	I-15	0.17	$0	$0
Southwest	Unincorporated	Indian Truck Trail	Temescal Canyon	I-15	0.18	$0	$0
Southwest	Unincorporated	Murrieta Hot Springs	SR-79 (Winchester)	Pourroy	1.75	$0	$0
Southwest	Unincorporated	Pala	Pechanga	San Diego County	1.38	$0	$0
Southwest	Unincorporated	Temescal Canyon	Horsethief Canyon Wash	bridge	0.00	$2,214,000	$2,214,000
Southwest	Unincorporated	Temescal Canyon	Indian Truck Trail	I-15	2.57	$8,166,000	$8,166,000
Southwest	Unincorporated	Temescal Canyon	Indian Wash	bridge	0.00	$941,000	$941,000
Southwest	Wildomar	Baxter	I-15	Palomar	0.37	$974,000	$921,000
Southwest	Wildomar	Baxter	I-15	interchange	0.00	$17,897,000	$7,159,000
Southwest	Wildomar	Bundy Canyon	Mission	I-15	0.94	$6,537,000	$6,537,000
Southwest	Wildomar	Central	Baxter	Palomar	0.74	$5,143,000	$5,143,000
Southwest	Wildomar	Central	Grand	Palomar	0.51	$3,570,000	$3,570,000
Southwest	Wildomar	Grand	Ortega	Corydon	4.96	$34,648,000	$25,011,000
Southwest	Wildomar	Grand	Corydon	Central	2.02	$0	$0
Southwest	Wildomar	Mission	Bundy Canyon	Palomar	0.84	$0	$0
Southwest	Wildomar	Palomar	Clinton Keith	Jefferson	0.74	$1,941,000	$1,691,000
Southwest	Wildomar	Palomar	Mission	Clinton Keith	2.79	$7,358,000	$7,358,000
Subtotal					473.09	$1,803,495,000	$1,484,916,000
Totals	**Network**				728.37	$ 3,446,020,000	$ 2,712,871,000
	Transit					$ 153,120,000	$ 92,639,000
	Administration					$ 112,220,400	$ 112,220,400
	MSHCP					$ 45,401,000	$ 43,308,000
	Total					**$ 3,756,761,400**	**$ 2,961,038,400**

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
Northwest	RTA	Riverside Mobility Hub at Vine Street	Riverside	1	$6,000,000	$6,000,000	$3,630,000
Central	RTA	Moreno Valley Mobility Hub	Moreno Valley	1	$9,000,000	$9,000,000	$5,445,000
Northwest	RTA	Jurupa Valley Mobility Hub	Jurupa Valley	1	$9,000,000	$9,000,000	$5,445,000
Pass	RTA	Banning Mobility Hub	Banning	1	$9,000,000	$9,000,000	$5,445,000
Southwest	RTA	Lake Elsinore/Canyon Lake Mobility Hb	Lake Elsinore	1	$9,000,000	$9,000,000	$5,445,000
Southwest	RTA	Temecula/Murrieta Mobility Hub	Temecula	1	$9,000,000	$9,000,000	$5,445,000
San Jacinto	RTA	Hemet Mobility Hub	Hemet	1	$9,000,000	$9,000,000	$5,445,000
San Jacinto	RTA	San Jacinto Mobility Hub	San Jacinto	1	$9,000,000	$9,000,000	$5,445,000
San Jacinto	RTA	Mt. San Jacinto College Mobility Hub	San Jacinto	1	$1,000,000	$1,000,000	$605,000
Regional	RTA	Regional Operations and Maintenance Facilit	Riverside	1	$50,000,000	$50,000,000	$30,251,000
Regional	RTA	Annual Transit Enhancements Program	Various locations region wid	290	$40,000	$11,600,000	$7,018,000
Central	RTA	Central Corridor RapidLink Implementation	UCR, Riverside to Perris	42	$60,000	$2,520,000	$1,525,000
Regional	RTA	Vehicle Fleet Medium Buses	Various locations region wid	7	$155,000	$1,085,000	$656,000
Regional	RTA	Vehicle Fleet Large Buses	Various locations region wid	29	$585,000	$16,965,000	$10,264,000
Regional	RTA	Comprehensive Operational Analysis Study	Various locations region wid	1	$950,000	$950,000	$575,000
Total						**$153,120,000**	**$92,639,000**

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 2015 existing network in RivTAM and the model was run with 2040 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 2012 Baseline and 2040 No-Build scenarios were again calculated for the 2040 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 2040 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 2040 VMT on 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 regional arterial highway system experiencing daily LOS E or worse will be reduced to 38% (which is still above the level experienced in 2012). It should be noted that the total VMT on the arterial system **increases** as a result of freeway trips being diverted to the arterial system to benefit from the proposed TUMF improvements.

Despite a greater share of the total VMT in 2040, the arterial system is able to more efficiently accommodate the increased demand with the proposed TUMF improvements. Although VMT on the TUMF improved arterial system increases by approximately 9% in 2040 compared to the No Build condition, VHT on the arterial system decreases by approximately 11% indicating traffic is able to move more efficiently. Additionally, a notable benefit is observed on the freeway system with VMT and VHT being substantially reduced following TUMF Network improvements. By completing TUMF improvements, the total VHD experienced by all area motorists would be reduced by over one third from the levels that would be experienced under the 2040 No-Build scenario. These results highlight the overall 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
(2012 Baseline and 2040 No-Build Scenarios to 2040 TUMF Build Scenario)

Measure of Performance*	Peak Periods (Total)		
	2012 Baseline	2040 No-Build	2040 Build
VMT - Total ALL FACILITIES	19,532,437	29,277,587	31,022,272
VMT - FREEWAYS	11,019,155	14,487,570	13,411,377
VMT - ALL ARTERIALS	8,513,282	14,790,016	17,610,895
TOTAL - TUMF ARTERIAL VMT	**5,585,202**	**9,089,495**	**9,902,433**
VHT - TOTAL ALL FACILITIES	575,154	1,361,907	1,180,647
VHT - FREEWAYS	296,542	736,433	530,849
VHT - ALL ARTERIALS	278,611	625,474	649,797
TOTAL TUMF ARTERIAL VHT	**181,151**	**396,981**	**354,639**
VHD - TOTAL ALL FACILITIES	175,765	739,075	489,238
VHD - FREEWAYS	117,430	502,549	312,669
VHD - ALL ARTERIALS	58,334	236,527	176,569
TOTAL TUMF ARTERIAL VHD	**45,080**	**172,944**	**114,833**
VMT LOS E - TOTAL ALL FACILITIES	6,188,644	16,966,992	14,299,498
VMT LOS E - FREEWAYS	4,532,703	10,156,363	8,982,566
VMT LOS E & F - ALL ARTERIALS	1,655,941	6,810,629	5,316,932
TOTAL TUMF ARTERIAL VMT w/ LOS E or worse	**1,462,061**	**5,160,911**	**3,735,762**
% of TUMF ARTERIAL VMT w/ LOS E or worse	**26%**	**57%**	**38%**

* Based on RivTAM 2012 network provided by Riverside County Transportation Department and SCAG 2016 RTP/SCS SED with updated 2015 arterial network completed by WSP, September 2016.

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 residential 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 1.77 million in 2012 to a future level of about 2.43 million in 2040, while employment is projected to grow from a level of about 461,000 in 2012 to approximately 861,000 in 2040 (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 at or near its 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, or grade separation of at-grade rail crossings. 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 approximately 13%, reduce peak period vehicle hours of delay (VHD) by approximately 34%, and reduce the share of traffic experiencing congestion in the peak periods by 16% (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, the 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 2040 No-Build scenario trip tables from RivTAM.

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 RivTAM outputs used to develop the regional trip distribution profile shown in **Table 5.1** and **5.2**.

Table 5.1 - 2040 Peak Period Vehicle Trips By WRCOG Zone

From \ To	Central	Hemet/San Jacinto	Northwest	Pass	Southwest	Outside WRCOG	TOTAL
Central	285,556	15,102	60,146	6,274	34,821	41,799	**443,699**
Hemet/San Jacinto	14,876	190,792	7,396	5,256	17,138	13,851	**249,310**
Northwest	64,066	8,082	742,299	6,569	25,648	211,686	**1,058,350**
Pass	6,721	5,563	6,536	103,901	1,791	32,830	**157,341**
Southwest	34,785	17,514	24,135	1,785	452,345	28,424	**558,988**
Outside WRCOG	43,352	14,690	212,699	33,337	29,242		**333,320**
TOTAL	**449,357**	**251,743**	**1,053,210**	**157,123**	**560,984**	**328,590**	**2,801,008**

Based on RivTAM Year 2040 No-Build scenario

Table 5.2 - 2040 Percent Peak Period Vehicle Trips By WRCOG Zone

From \ To	Central	Hemet/San Jacinto	Northwest	Pass	Southwest	Outside WRCOG	TOTAL
Central	64.4%	3.4%	13.6%	1.4%	7.8%	9.4%	**100%**
Hemet/San Jacinto	6.0%	76.5%	3.0%	2.1%	6.9%	5.6%	**100%**
Northwest	6.1%	0.8%	70.1%	0.6%	2.4%	20.0%	**100%**
Pass	4.3%	3.5%	4.2%	66.0%	1.1%	20.9%	**100%**
Southwest	6.2%	3.1%	4.3%	0.3%	80.9%	5.1%	**100%**

Based on RivTAM Year 2040 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 40.5% of the lane-miles on the future TUMF system, and the secondary network includes approximately 59.5% of the lane-miles.

The backbone network is therefore assigned all of the inter-zonal peak period trips plus 40.5% of the intra-zonal peak period trips. The secondary network is assigned 59.5% of the intra-zonal peak period trips and none of the inter-zonal peak period trips. The overall result is that 50.7% of the regional travel is assigned to the backbone network and 49.3% 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	2,801,008				
Less Internal/External Peak Period Vehicle Trips	-661,910				
Total Peak Period Vehicle Trips Internal to Western Riverside County	**2,139,098**				
Peak Period Vehicle Trips Between TUMF Zones	364,205				
Peak Period Vehicle Trips Within TUMF Zones	1,774,893				
TUMF Future Network Lane-Miles	3,151.1	1,277.7	40.5%	1,873.4	59.5%
Peak Period Vehicle Trips Between TUMF Zones	364,205	364,205	100.0%	0	0.0%
Peak Period Vehicle Trips Within TUMF Zones (as share of intra-zonal trips)	1,774,893	719,679	40.5%	1,055,214	59.5%
Total Peak Period Vehicle Trips Assigned	**2,139,098**	**1,083,884**	**50.7%**	**1,055,214**	**49.3%**

Based on RivTAM Year 2040 No-Build scenario; TUMF Nexus Study Exhibit H-2

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 peak period VMT between the 2012 Baseline and 2040 No-Build Scenarios from RivTAM were aggregated by trip purpose. RivTAM 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 (HBSC), work-based-other (WBO), and other-based-other (OBO).

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 peak period VMT was aggregated into home-based growth in peak period VMT (combining the first three purposes: HBW, HBO, HBS) and non-home-based growth in peak period VMT (combining the last two purposes: WBO, OBO). The home-based growth in peak period VMT represent 71.0% of the total future growth in VMT in the peak periods, and the non-home-based growth in peak period VMT represent 29.0% of the total future growth in VMT in the peak period as shown in **Table 5.4**. **Appendix J** includes the RivTAM outputs used to develop the trip purpose summary in **Table 5.4**.

Table 5.4 - Peak Period VMT Growth by Trip Purpose for Western Riverside County (2012 - 2040)

VEHICLE TRIP PURPOSE	2012 BASELINE PEAK PERIOD VMT	2040 NO-BUILD PEAK PERIOD VMT	PEAK PERIOD VMT GROWTH	PEAK PERIOD VMT GROWTH SHARE
Home-Based-Work	5,849,895	8,331,921	2,482,026	52.9%
Home-Based-Other	2,214,102	2,932,929	718,827	15.3%
Home-Based-School (K-12)	413,303	542,911	129,608	2.8%
Work-Based-Other	945,539	1,583,034	637,496	13.6%
Other-Based-Other	1,772,020	2,493,667	721,647	15.4%
TOTAL	11,194,859	15,884,463	4,689,605	100.00%
Home-Based Trips (Residential Uses)			**3,330,462**	**71.0%**
Non-Home-Based Trips (Non-Residential Uses)			**1,359,143**	**29.0%**

Based on RivTAM Year 2012 Baseline Scenario, September 2016 and RivTAM Year 2040 No Build Scenario, September 2016

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 $3.76 billion. Existing funding obligated for improvements to the TUMF system totals $303.5 million while unfunded improvement needs generated by existing development represent $492.2 million of the total cost. The balance of the unfunded TUMF system improvement needs is $2.96 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 $2.96 billion in unfunded future improvement needs, 71.0% ($2.10 billion) will be assigned to future new residential development and 29.0% ($858.7 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 $2.10 billion. Since this future transportation system improvement need is generated by new residential development anticipated through the Year 2040, the fee will be spread between the residential developments projected to be constructed between 2012 and 2040. The projected residential growth from year 2012 to 2040 is 250,082 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 2016 RTP/SCS forecasts included in **Table 2.3** and **Appendix B**, single family dwelling units (including mobile homes) are forecast to constitute 69.2% of the growth in residential dwelling units in the region between 2012 and 2040.

Data provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, Ninth Edition (2012) show that, on average, single-family dwelling units generate 9.52 vehicle trips per dwelling unit per day, whereas apartments, condominiums and townhouses (considered to be representative of higher density multi-family dwelling units) generate a median of 6.20 vehicle trips per unit per day. 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 $2.10 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	2012 Dwelling Units	2040 Dwelling Units	Dwelling Unit Change	Trip Generation Rate	Trip Change	Percentage of Trip Change	Fee/DU
Single-Family	366,588	539,631	173,043	9.52	1,647,369	77.5%	**$9,418**
Multi-Family	158,561	235,600	77,039	6.20	477,642	22.5%	**$6,134**
Total	525,149	775,231	250,082		2,125,011	100.0%	

Household data based on SCAG 2016 RTP/SCS and WSP, April 2016;
Trip Generation based on ITE Trip Generation (2012).

6.2 Non-Residential Fees

The portion of the unfunded future improvement cost allocable to new non-residential development through the TUMF is $858.7 million. Estimates of employment by sector were obtained from the SCAG 2016 RTP/SCS socioeconomic data included in **Table 2.3** and **Appendix B**. From the 2040 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 – Ninth Edition (2012), 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 – 3.8 trips per employee, Retail – 16.2 trips per employee, Service – 4.6 trips per

employee, and Government/Public – 12.0 trips per employee[11]. 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 $858.7 million was then allocated among the non-residential categories on the basis of 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 6.2**.

Table 6.2 - 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	80,592	3.8	302,220	13.4%	64,710,138	**$1.77**
Retail	35,841	16.2	580,624	25.7%	17,920,500	**$12.31**
Service	274,720	4.6	1,263,712	55.9%	105,211,915	**$4.56**
Government/Public	9,515	12.0	114,180	5.1%	2,696,349	**$16.08**
Total	400,668		2,260,736	100.0%	190,538,901	

Employment Change data based on SCAG 2016 RTP/SCS; Trip Generation based on ITE (2012); Change in Square Feet conversion factor based on Cordoba (1990), OCTA (2001), SCAG (2001) and County of Riverside (2015).

[11] 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 Handbook (June 2004).

7.0 CONCLUSIONS

Based on the results of the Nexus Study evaluation, it can be seen 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 ongoing 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 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	173,043	**$9,418**	$1,629.8
Multi Family Residential	DU	77,039	**$6,134**	$472.5
Industrial	SF GFA	64,710,138	**$1.77**	$114.8
Retail	SF GFA	17,920,500	**$12.31**	$220.5
Service	SF GFA	105,211,915	**$4.56**	$480.0
Government/Public	SF GFA	2,696,349	**$16.08**	$43.4
MAXIMUM TUMF VALUE				**$2,961.0**