



**TRANSPORTATION UNIFORM MITIGATION FEE
NEXUS STUDY
2009 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 Hemet
The City of Lake Elsinore
The City of Menifee
The City of Moreno Valley
The City of Murrieta
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The City of San Jacinto
The City of Temecula
The City of Wildomar
The County of Riverside
Eastern Municipal Water District
March Joint Powers Authority
Western Municipal Water District

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Adopted by WRCOG Executive Committee, October 5, 2009

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ES.0 EXECUTIVE SUMMARY

ES.1 Introduction and Purpose of the Nexus Study

Western Riverside County includes 16 incorporated cities and the unincorporated county covering an area of approximately 2,100 square miles. Until recently, 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 recent crisis in the mortgage industry and the associated economic downturn 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 the transportation infrastructure.

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 of 2000 the concept was expanded to include the entire WRCOG sub-region.

The TUMF Program is intended to be implemented through the auspices of WRCOG. 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 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. This version of the WRCOG TUMF Nexus Study Report documents the results of the second major review of the TUMF Program conducted in 2008 and 2009. The findings of this report were ultimately adopted by the WRCOG Executive Committee on October 5, 2009.

ES.2 Future Growth

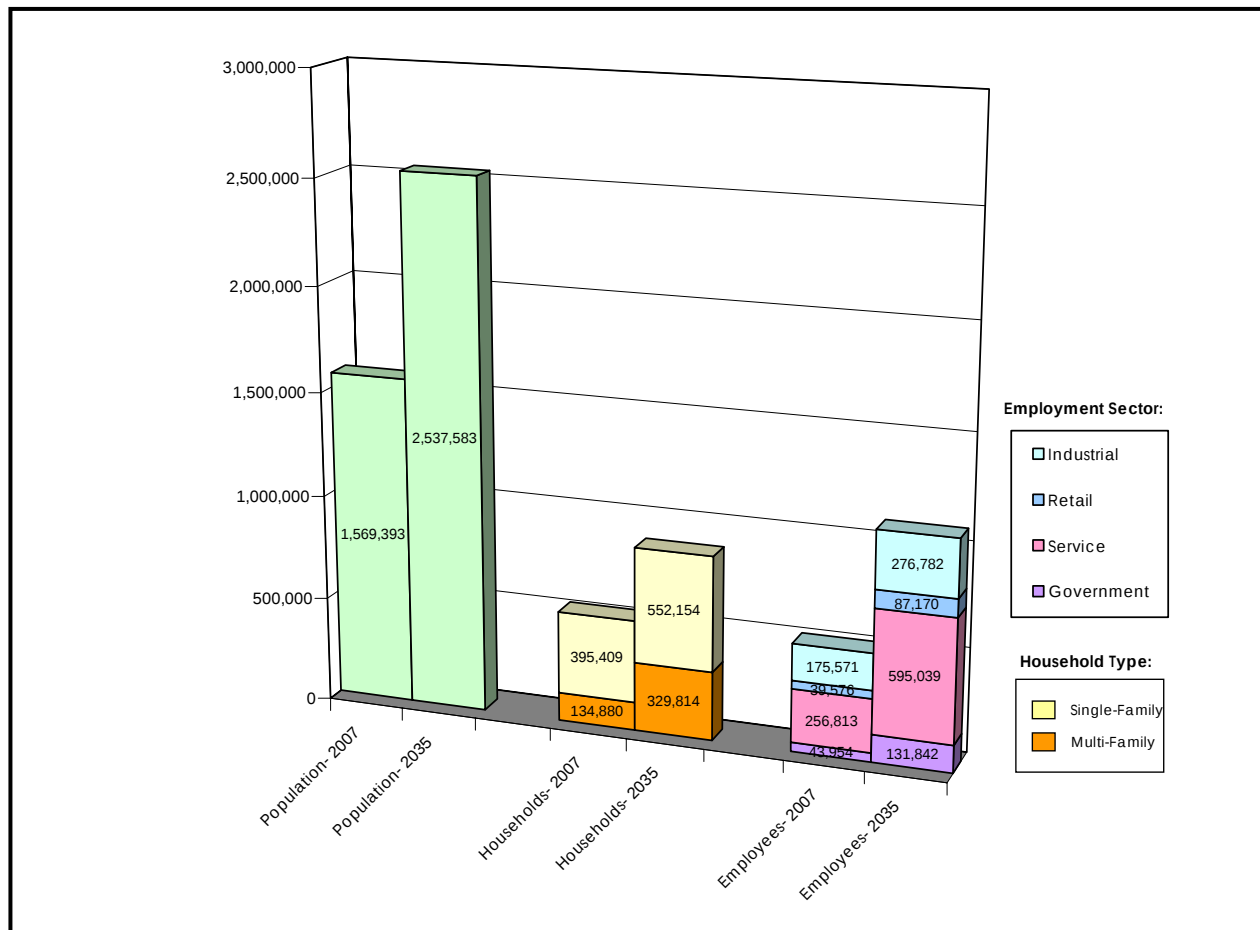
For previous versions of the TUMF Nexus Study, the primary available source of consolidated demographic information for Western Riverside County was provided by

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 is responsible for establishing and maintaining demographic information and ensuring data consistency through a centralized data source of demographic characteristics. With the availability of demographic information developed specifically for Riverside County, the socioeconomic forecasts developed by RCCDR for Western Riverside County were used for this update of the TUMF Nexus Study and associated fee schedule.

A major distinction between the SCAG 2004 RTP data used for the TUMF Nexus Study 2005 Update and the RCCDR data used for this 2009 Update is the change in both the base year and horizon year; from 2000 and 2030 to 2007 and 2035. This shift in the base 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 62% in the period between 2007 and 2035, a compounded rate of approximately 1.7% annually. During the same period, employment in Western Riverside County is anticipated to grow by 111% or 2.7% annually. **Figure ES.1** illustrates the forecast growth in population, household and employment for Western Riverside County.

Figure ES.1 - Population, Households and Employment in Western Riverside County



ES.3 Need for the TUMF

The WRCOG TUMF study area was extracted from the greater regional SCAG model network for the purpose of calculating measures for Western Riverside County only. Measures for the Western Riverside County TUMF study area included total vehicle daily miles of travel (VMT), total daily 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 VMT estimated to increase by 55% or 1.6% compounded annually. By 2035, 36% of the total VMT on the regional arterial highway system is forecast to be traveling on facilities experiencing daily LOS E or worse. Without improvements to the arterial highway system, the total vehicle hours of delay (VHD) experienced by area motorists on arterial highways will increase over 5.4% 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.

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. RivTAM outputs indicate that by 2035, regional transit services are forecast to provide approximately 27,969 trips per day. This translates into a forecasted increase of 10,358 trips per day or 59%. A substantial number of the trips will be served by bus transit services within Western Riverside County. 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.

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

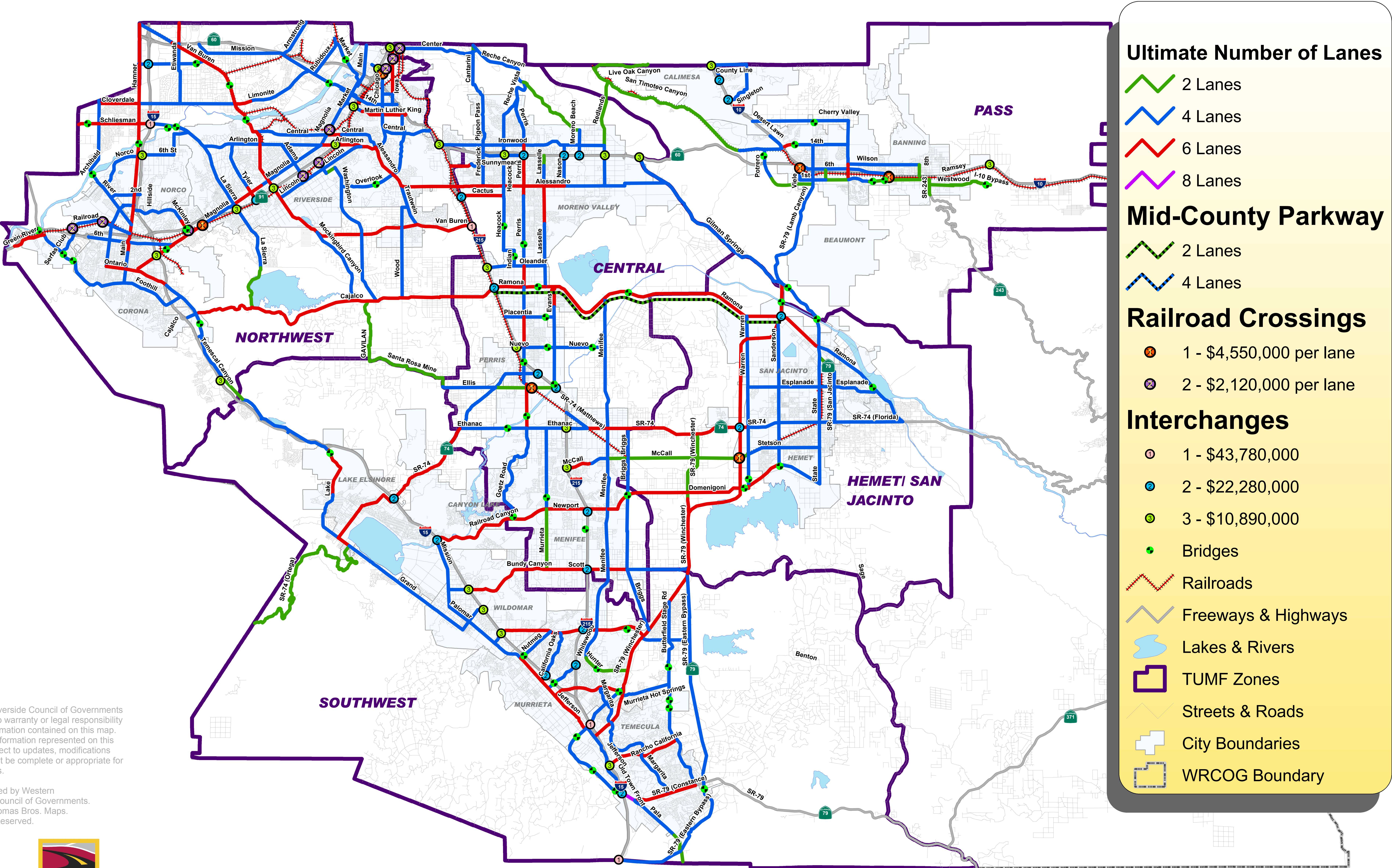
The Regional System of Highways and Arterials (also referred to as the TUMF Network) is the system of roadways that serve inter-community trips within Western Riverside County and therefore are eligible for improvement funding with TUMF funds. Transportation facilities in Western Riverside County that generally satisfied the respective 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.2 illustrates the TUMF improvements to the Regional System of Highways and Arterials.

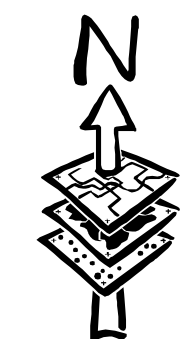
The Regional System of Highways & Arterials - TUMF Network Improvements

Figure ES.2



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Data and information represented on this
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WRCOG TUMF Nexus Study: 2009 Update

Adopted By Executive Committee, October 5, 2009

The total cost of improving the TUMF system is \$4.26 billion. Accounting for obligated funds and unfunded existing needs, the estimated maximum eligible value of the TUMF Program is \$3.77 billion. The maximum eligible value of the TUMF Program includes approximately \$3.54 billion in eligible arterial highway and street related improvements and \$61.8 million in eligible transit related improvements. An additional \$60.0 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 \$107.9 million is provided to cover the costs incurred by WRCOG to administer the TUMF Program.

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 trips between zones. The overall result is that 52.0% of the regional travel is assigned to the Backbone network and 48.0% 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, 2035 Base person trip productions from the Riverside County Traffic Analysis Model (RivTAM) were aggregated by trip purpose. It was concluded that home-based person trips represent 69.2% of the total future person trips, and the non-home-based person trips represent 30.8% of the total future person trips.

ES.6 Fair-Share Fee Calculation

The balance of the unfunded TUMF system improvement needs is \$3.77 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 \$3.77 billion in unfunded future improvement needs, 69.2% (\$2.61 billion) will be assigned to future new residential development and 30.8% (\$1.16 billion) 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-dependant 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	156,745	\$8,873	\$1,390.8
Multi Family Residential	DU	194,934	\$6,231	\$1,214.6
Industrial	SF GFA	57,535,808	\$1.73	\$99.3
Retail	SF GFA	21,758,982	\$10.49	\$228.2
Service	SF GFA	105,461,087	\$4.19	\$442.3
Government/Public	SF GFA	39,061,333	\$9.98	\$389.9
MAXIMUM TUMF VALUE				\$3,765.1

1.0 INTRODUCTION AND PURPOSE OF THE NEXUS STUDY

Western Riverside County includes 16 incorporated cities and the unincorporated county covering an area of approximately 2,100 square miles. Until recently, 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 recent crisis in the mortgage industry and the associated economic downturn 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 the 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 rapid 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 2035. 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. 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.

The TUMF Program is implemented through the auspices of WRCOG. 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 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.

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 reviewed at least every five years. Furthermore, 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. This version of the WRCOG TUMF Nexus Study Report documents the results of the second major review of the TUMF Program conducted in 2008 and 2009. The findings of this report were ultimately adopted by the WRCOG Executive Committee on October 5, 2009.

A current list of the standing WRCOG TUMF related committees and committee membership is included in **Appendix A**.

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 the Riverside County Center for Demographic Research (RCCDR) were incorporated to correspond with the newly developed Riverside County Traffic Analysis Model (RivTAM) that was also utilized for this update. This use of RivTam and the RCCDR forecasts resulted in a shift of the program base and horizon years from 2000 and 2030 to 2007 and 2035. Additionally, the underlying unit cost assumptions were recreated to utilize the most recent available materials, labor and property cost values. Furthermore, the TUMF network was re-examined based on the RivTAM model results to eliminate those projects having been completed prior to the new program base year, and to more accurately reflect future project needs to address the cumulative regional impacts of new development in Western Riverside County.

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 Southern California Association of Governments (SCAG) to be 381,000 representing a 46% increase (or 3.9% average annual increase) over the 1990 employment of 261,000.

Despite the recent economic recession and the associated residential mortgage and foreclosure crisis, Western Riverside County continues to grow due to the availability of relatively affordable residential and commercial property, and a well educated workforce. By 2007 the population of the region had grown to 1.569 million, a further 32% growth in population from 2000. Similarly, total employment in the region had also grown from 2000 to 2007 with 516,000 employees estimated to be working in Western Riverside County. This represents a 35% 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 previous 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 is responsible for establishing and maintaining demographic information and ensuring data consistency through a centralized data source of demographic characteristics. RCCDR subsequently coordinates with SCAG by providing demographic estimates and forecasts for Riverside County as input to the SCAG regional forecasts. The RCCDR forecasts are also used as the basis for the recently created RivTAM.

2.3 Demographic Assumptions Used for the Nexus Study Analysis

With the availability of demographic information developed specifically for Riverside County, the socioeconomic forecasts developed by RCCDR for Western Riverside County were used for this update of the TUMF Nexus Study and associated fee schedule. A major distinction between the SCAG 2004 Regional Transportation Plan (RTP) data used for the TUMF Nexus Study 2005 Update and the RCCDR data used for this 2009 Update is the change in both the base year and horizon year; from 2000 and 2030 to 2007 and 2035. This shift in the base 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 RCCDR 2007 data were compared to the SCAG 2004 RTP data used in the TUMF Nexus Study 2005 Update. As can be seen in **Table 2.1** and **Figure 2.1**, the 2007 data reflects considerable growth in population, households and all employment sectors except retail. It should be noted that the decline in retail is mostly reflective of a revision in data analysis methodology between retail and service uses than any significant change in retail or service employment in Western Riverside County.

Table 2.1 – Base Year Socioeconomic Estimates for Western Riverside County				
Sector	2000 (SCAG)	2007 (RCCDR)	Change	% Change
Population	1,193,862	1,569,393	375,531	31%
Households	381,182	530,289	149,107	39%
Employees				
Industrial	140,284	175,571	35,287	25%
Retail	74,356	39,576	-34,780	-47%
Service	133,567	256,813	123,246	92%
Government/Public	39,556	43,954	4,398	11%
Total	387,763	515,914	128,151	33%
Notes:				
- Y2000 Population, Household, and Employment data from the SCAG Finalized 2004 RTP				
- Y2007 Population, Household, and Employment data from RCCDR				

Figure 2.1 – Base Year Socioeconomic Estimates for Western Riverside County

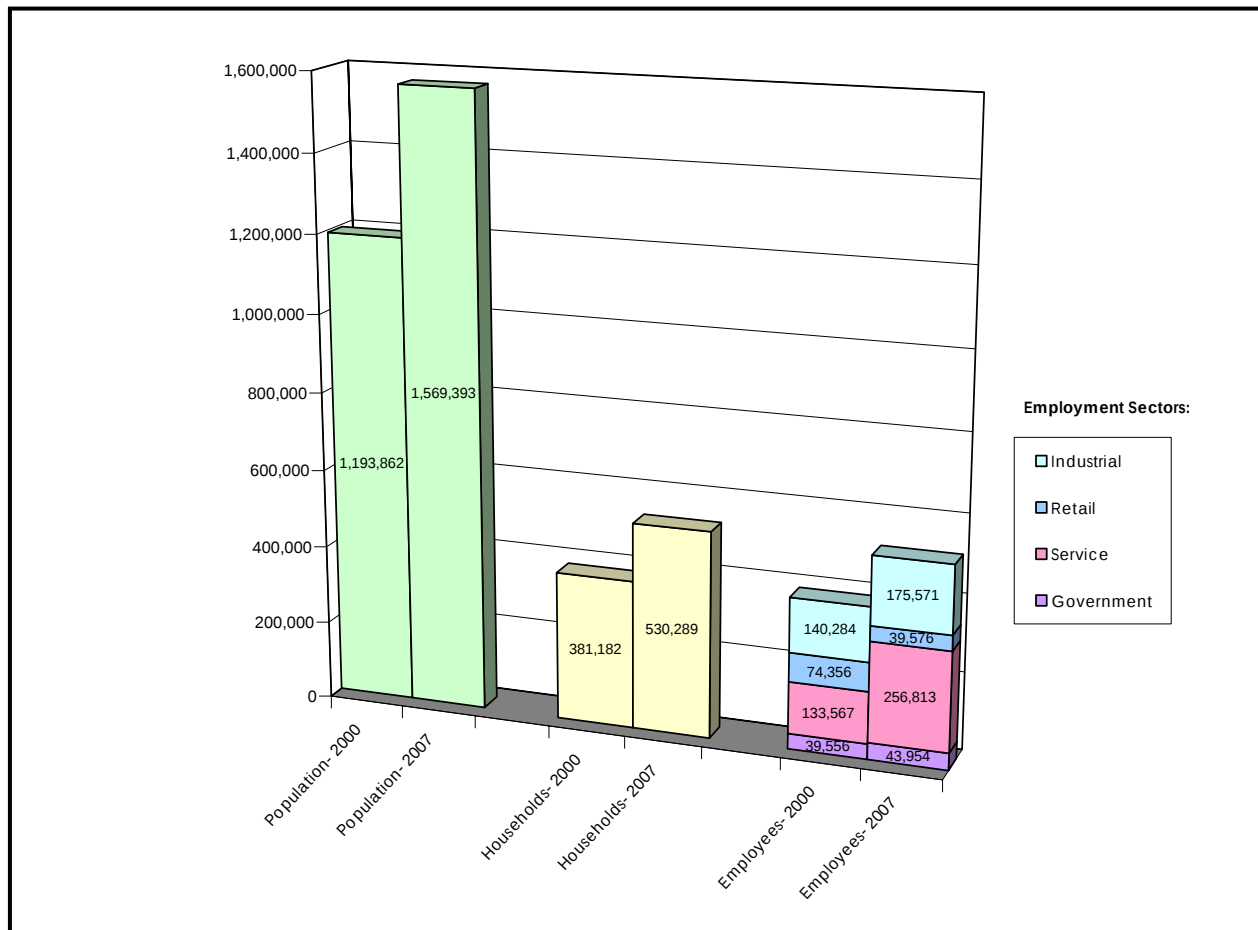


Table 2.2 and **Figure 2.2** compare the socioeconomic forecasts for the Program horizon years; Year 2030 used in the TUMF Nexus Study 2005 Update with the Year 2035 forecasts used in this study. Most of the difference between the two sets of future socioeconomic data can be attributed to the increase in forecast year from 2030 to 2035. However, the new forecasts incorporate the most recently available data and account for current trends including the influence of the current economic recession on the rate of growth in Western Riverside County.

Table 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

Sector	2030 (SCAG)	2035 (RCCDR)	Change	% Change
Population	2,400,017	2,537,583	137,566	6%
Households	784,447	881,968	97,521	12%
Employees				
Industrial	278,152	276,782	-1,370	0%
Retail	197,494	87,170	-110,324	-56%
Service	364,291	595,039	230,748	63%
Government/Public	75,729	131,842	56,113	74%
Total	915,666	1,090,833	175,167	19%

Notes:

- Y2030 Population, Household, and Employment data from the SCAG Finalized 2004 RTP
- Y2035 Population, Household, and Employment data from RCCDR

Figure 2.2 - Horizon Year Socioeconomic Estimates for Western Riverside County

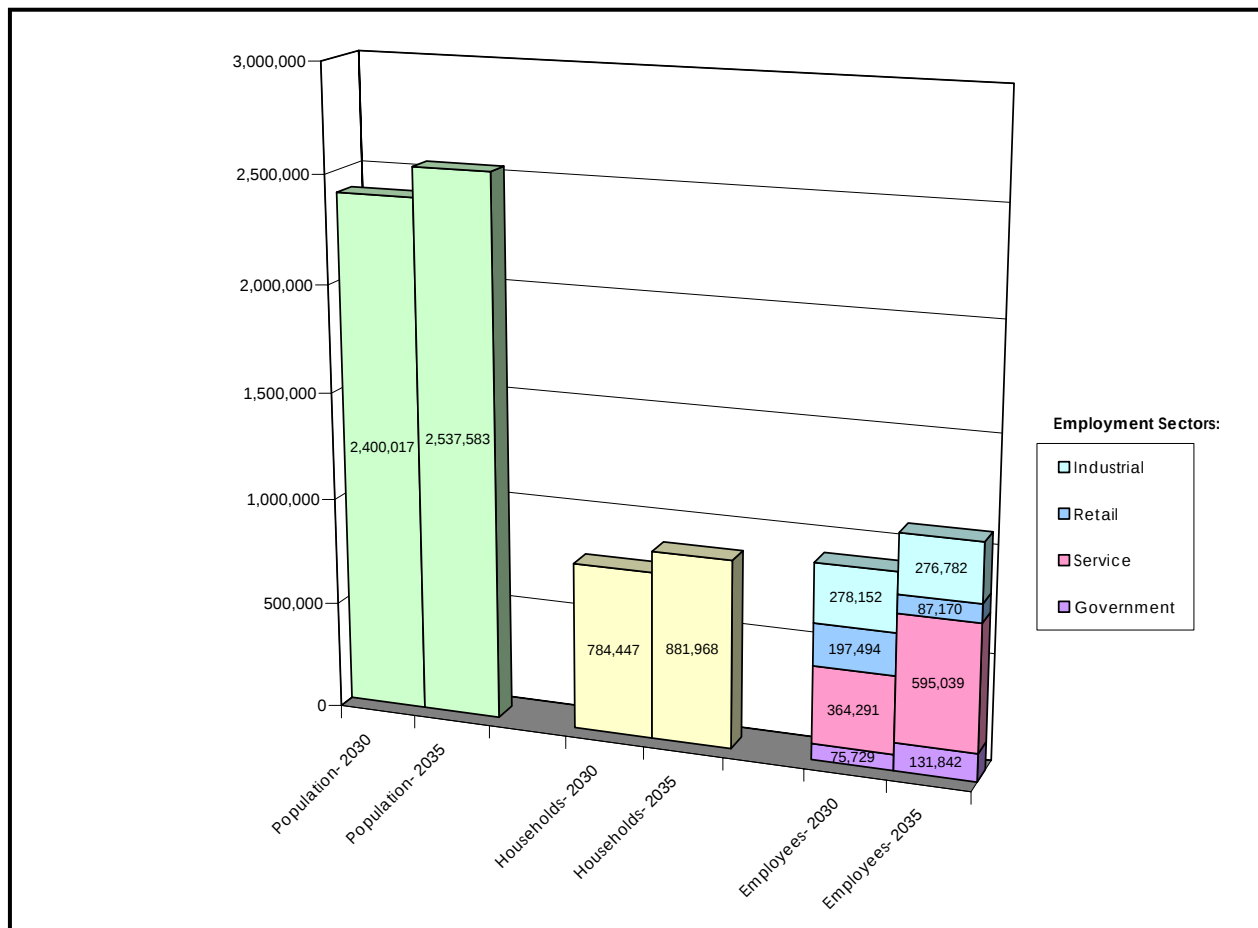
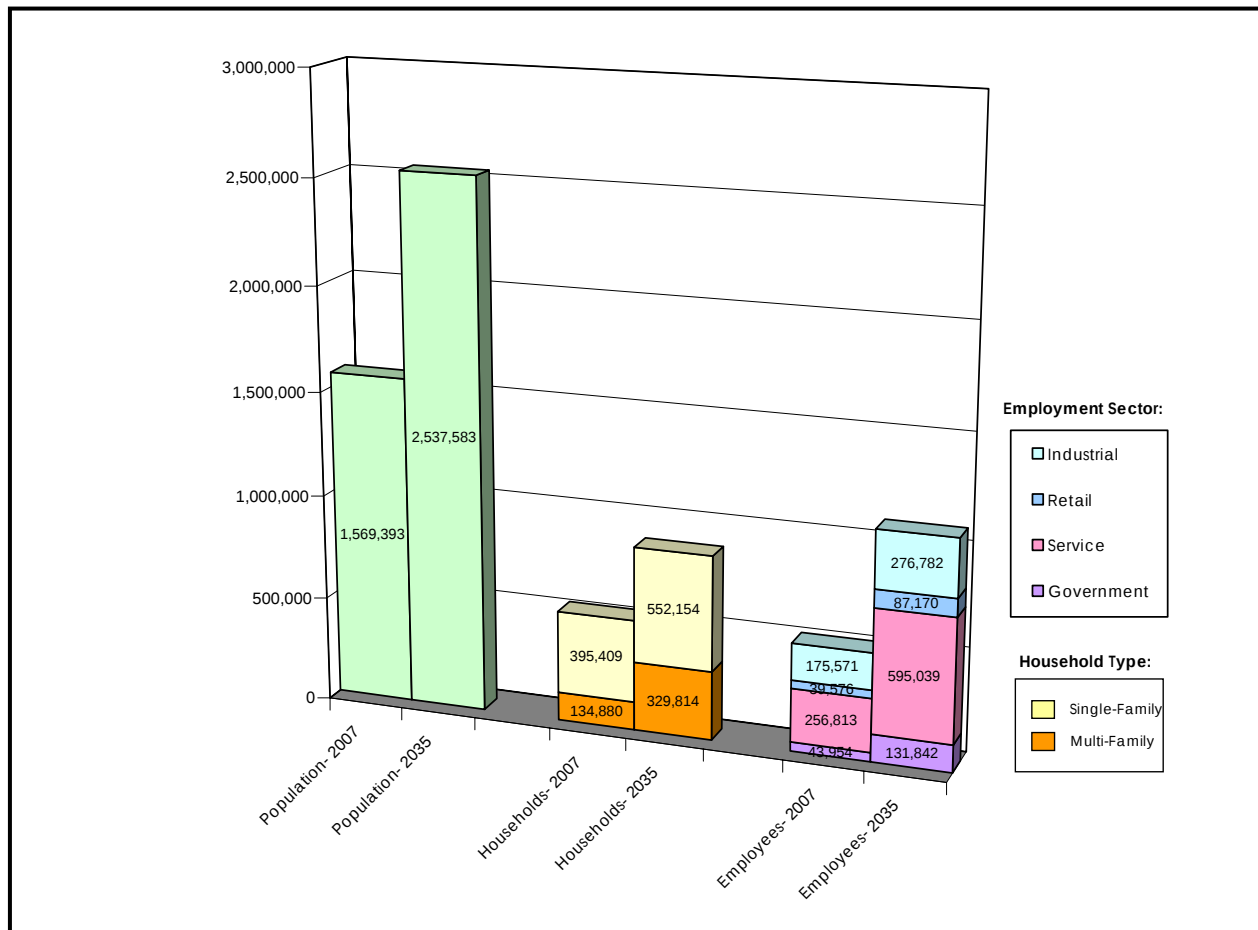


Table 2.3 and **Figure 2.3** summarize the socioeconomic data obtained from RCCDR and used as the basis for completing this Nexus Study analysis. The RCCDR employment data for 2007 and 2035 was provided for thirteen employment sectors consistent with the California Employment Development Department (EDD) 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				
Sector	Year 2007	Year 2035	Change	% Change
Population	1,569,393	2,537,583	968,190	62%
Households				
Single-Family	395,409	552,154	156,745	40%
Multi-Family	134,880	329,814	194,934	145%
Total	530,289	881,968	351,679	66%
Employees				
Industrial	175,571	276,782	101,211	58%
Retail	39,576	87,170	47,594	120%
Service	256,813	595,039	338,226	132%
Government/Public	43,954	131,842	87,888	200%
Total	515,914	1,090,833	574,919	111%
Notes:				
- Population, Household, and Employment data from RCCDR				

Figure 2.3 - Population, Households and Employment in Western Riverside County



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 traffic congestion and decreasing the level of service (LOS)¹. 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 (62% growth in population and a doubling of employment in under 30 years) 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 2035 Base travel demand forecasts for Western Riverside County developed using RivTAM. The Year 2035 Base evaluates the effects of 2035 population, employment and resultant traffic generation on the 2007 transportation network.

3.1 Future Highway Congestion Levels

To support the evaluation of the cumulative regional impacts of new development on the transportation system in Western Riverside County, existing (2007) and future (2035) traffic data were derived from RivTAM. To quantify traffic growth impacts, various traffic measures of effectiveness were calculated for each of the two scenarios. The WRCOG

¹ The Highway Capacity Manual (Transportation Research Board, National Research Council, Washington, D.C., 2000, 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.

TUMF study area was extracted from the greater regional model network for the purpose of calculating measures for Western Riverside County only. Measures for the Western Riverside County TUMF study area included total vehicle daily miles of travel (VMT), total daily 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 also calculated for a total of all facilities including arterials, freeways, freeway ramps, freeway connectors and High-Occupancy Vehicle (HOV) lanes.

Table 3.1 - Regional Highway System Measures of Performance (2007-2035)*				
Measure of Performance (Daily)	2007**	2035**	% Change	% Annual
VMT - TOTAL ALL FACILITIES	39,187,718	60,772,353	55%	1.64%
VMT – FREEWAYS	24,056,704	32,920,502	37%	1.17%
TOTAL ARTERIAL VMT	15,131,014	27,851,851	84%	2.29%
VHT - TOTAL ALL FACILITIES	1,362,725	2,385,725	75%	2.10%
VHT - FREEWAYS	885,753	1,301,737	47%	1.44%
TOTAL ARTERIAL VHT	476,972	1,083,988	127%	3.09%
VHD - TOTAL ALL FACILITIES	540,363	1,049,291	94%	2.49%
VHD – FREEWAYS	457,562	704,578	54%	1.61%
TOTAL ARTERIAL VHD	82,801	344,713	316%	5.42%
VMT LOS E – TOTAL ALL FACILITIES	25,847,218	50,001,659	93%	2.47%
VMT LOS E – FREEWAYS	20,422,906	31,864,589	56%	1.66%
TOTAL ARTERIAL VMT w/ LOS E or worse	5,424,312	18,137,070	234%	4.57%
% of ARTERIAL VMT w/ LOS E or worse	21%	36%		
* Based on RivTAM ** Volume is adjusted by PCE factor NOTES: 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. Daily capacity was calculated as ten times AM peak hour capacity) LOS E or Worse was determined by a V/C ratio that exceeds the 0.9 threshold as indicated in the Riverside County General Plan.				

The following formulas were used to calculate the respective values:

VTM = 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)
VTM LOS E or F = VTM (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 2000 Edition of the Highway Capacity Manual (HCM 2000) LOS Maximum V/C Criteria for Multilane Highways with 45 mph Free Flow Speed (Exhibit 21-2, Chapter 21, Page 21-3).

The calculated values were compared to assess the total change between 2007 and 2035, and the average annual change between 2007 and 2035. As can be seen from the RivTAM outputs summarized in **Table 3.1**, the additional traffic generated by new development in the region will cause congestion on the highway system to increase almost exponentially in the absence of additional highway infrastructure investments, with the most significant increase in congestion observed on the arterial highway system. 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, 2000), 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 2003 designates LOS E as the “minimum LOS standard for intersections and segments 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.”² 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 determination of the “fair share” of mitigating the cumulative regional impacts of future new development on the transportation system.

² Congestion Management Program for Riverside County – Executive Summary (Riverside County Transportation Commission, 2003) Page ES-3, ES-1

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. 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 vehicle miles traveled (VMT) on the Western Riverside County system of arterial roadways estimated to increase by 55% or 1.6% compounded annually.

As shown in **Table 3.1**, the VMT on arterial facilities experiencing LOS of E or worse will increase by 234% or 4.6% compounded annually in Western Riverside County in the period between 2007 and 2035. By 2035, 36% of the total VMT on the regional arterial highway system is forecast to be traveling on facilities experiencing daily LOS E or worse. Without improvements to the arterial highway system, the total vehicle hours of delay (VHD) experienced by area motorists on arterial highways will increase by over 5.4% per year. The combined influences of increased travel and worsened LOS that manifest themselves in severe congestion and delay highlight the continuing need to complete substantial capacity expansion on the 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 and relieve future congestion is therefore directly linked to the future development which generates the 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.

Transit trip forecasts were derived from RivTAM. Consistent with the analysis of highway trips described in **Section 3.1**, year 2007 and year 2035 scenarios were used to represent existing and future transit trips, respectively. Transit person trips internal to Western Riverside County (both originating in and destined for Western Riverside County) were aggregated.

The year 2007 and year 2035 aggregated Western Riverside existing and future transit person trips were compared in order to assess the impact of new development on transit demand. The RivTAM outputs indicate that regional transit services accommodated approximately 17,611 trips per day in Western Riverside County in Year 2007. By 2035, regional transit services are forecast to provide approximately 27,969 trips per day. This translates into a forecasted increase of 10,358 trips per day or 59%.

RivTAM outputs for transit person trips in the WRCOG region are summarized 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. While some of the future transit trips identified by RivTAM will be accommodated by regional transit services such as Metrolink, a substantial number of the trips will be served by bus transit services within Western Riverside County. 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 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 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.

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 (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 the public transportation infrastructure (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 is levied on new development throughout Western Riverside County.
- The fee is assessed 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 area 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 the public transportation infrastructure 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 Regional System of Highways and Arterials (RSA; also referred to as 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 County³.

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 RSA 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 by 2035.
4. Facilities with forecast volume to capacity ratio of 0.90 (LOS E) or greater in 2035.
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 RSA.

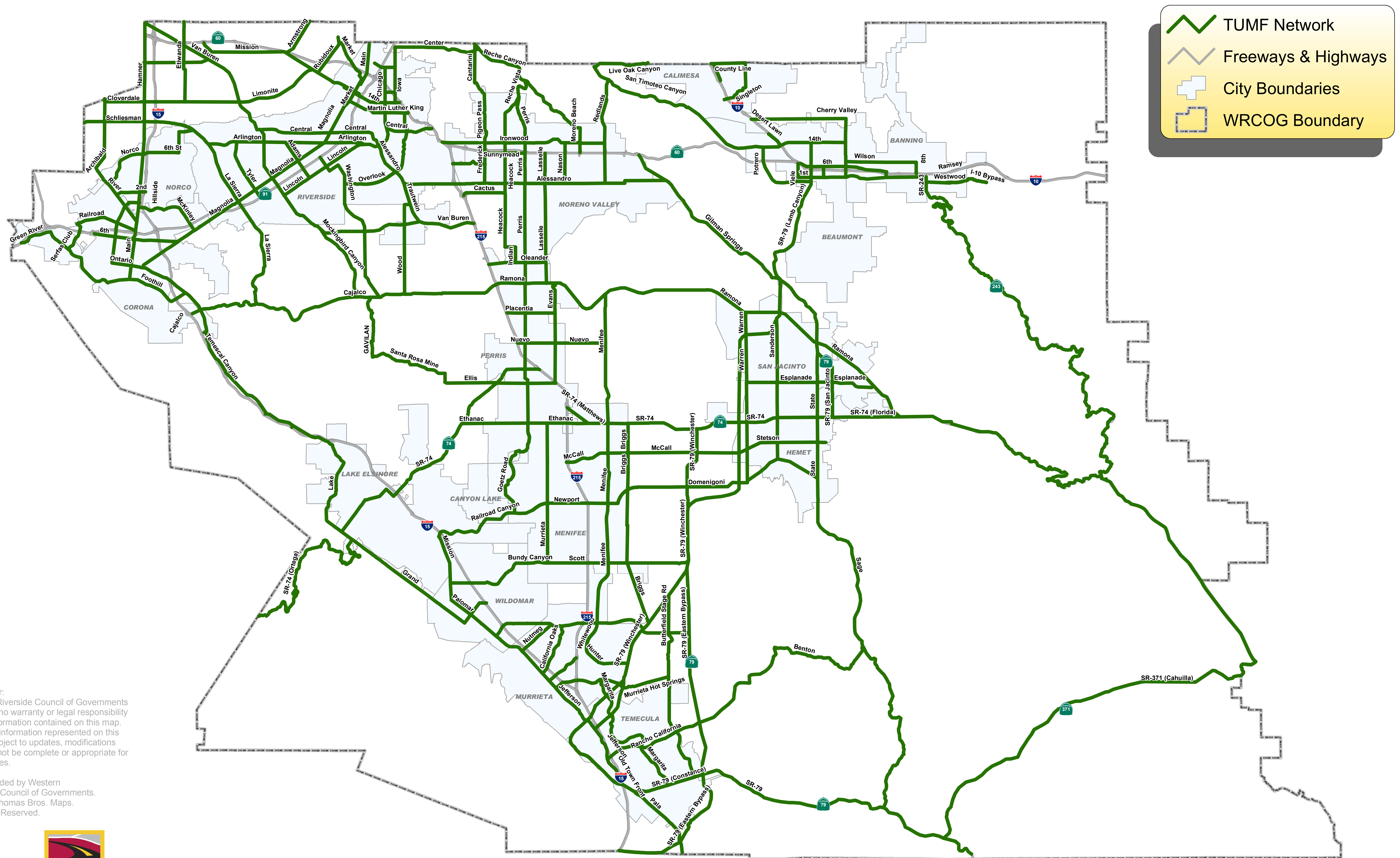
Transportation facilities in Western Riverside County that generally satisfied the respective guidelines were identified, and a skeletal regional transportation framework evolved from facilities where multiple guidelines were observed. Representatives of all WRCOG constituent jurisdictions reviewed this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

³ Since pass-through trips have no origin or destination in Western Riverside County, new development within Western Riverside County cannot be considered responsible for mitigating the impacts of pass through trips. The impact of pass-through trips and the associated cost to mitigate the impact of pass through trips (and other inter-regional freeway trips) is addressed in the Riverside County Transportation Commission Western Riverside County Freeway Strategic Plan, Phase II – Detailed Evaluation and Impact Fee Nexus Determination, Final Report dated May 31, 2008.

The RSHA is illustrated in **Figure 4.1**. Although the TUMF Network was reviewed as part of the Nexus Update, there were no significant changes to the composition of the network that was originally adopted by the WRCOG Executive Committee.

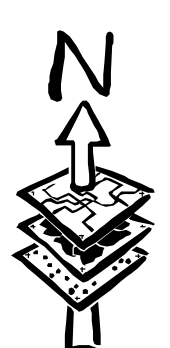
The Regional System of Highways & Arterials for Western Riverside County

Figure 4.1



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A horizontal number line with tick marks at 0, 2, 4, and 8. The word "Miles" is written at the right end of the line.

WRCOG TUMF Nexus Study: 2009 Update

Adopted By Executive Committee, October 5, 2009

4.2 Backbone Network and Secondary Network

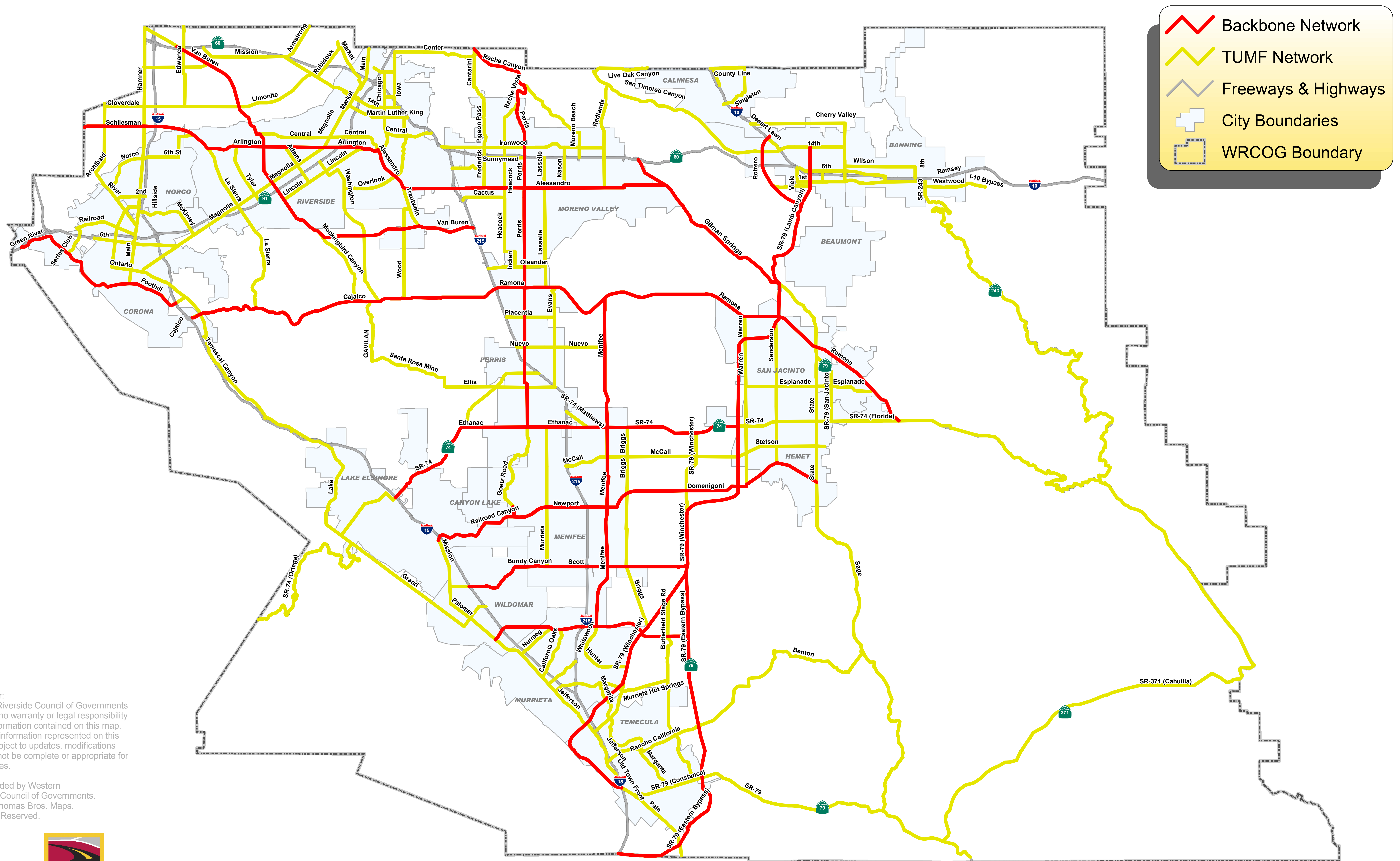
As indicated previously, the TUMF roadway network was refined to distinguish between facilities of “Regional Significance” and facilities of “Zonal Significance.” Facilities of Regional Significance were identified as those that typically are proposed to have a minimum of six lanes at general plan build-out⁴, extend across and/or between multiple Area Planning Districts (APD – the five aggregations of communities used for regional planning functions within the WRCOG area) or zones, and are forecast to carry at least 25,000 vehicles per day in 2035. 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 fee is specifically designated for improvement projects on the secondary network within the zone in which it is collected. The WRCOG zones are illustrated in **Figure 4.3**.

⁴ 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 (2035). 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.

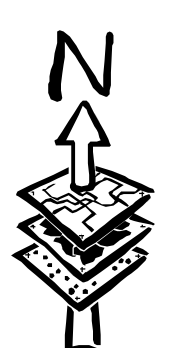
The Backbone Network of Highways & Arterials for Western Riverside County

Figure 4.2



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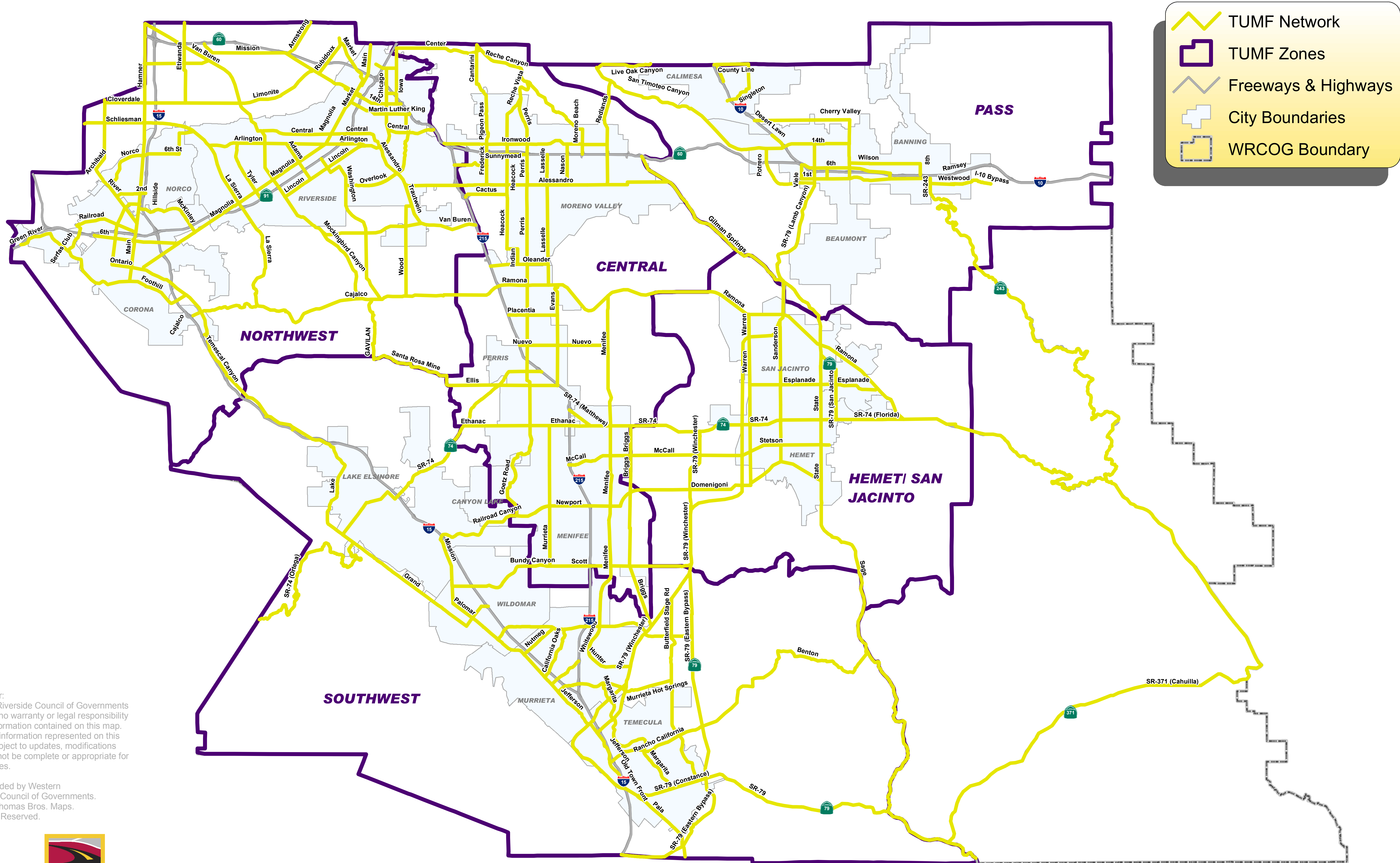
A horizontal number line with tick marks at 0, 2, 4, and 8. The word "Miles" is written at the right end of the line.

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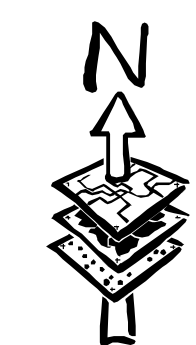
Western Riverside County Area Planning Districts (TUMF Zones)

Figure 4.3



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0 2 4 8 Miles

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Adopted By Executive Committee, October 5, 2009

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)⁵, and the WRCOG Southwest District SATISFY 2020 Summary of Cost Estimates⁶ (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.

For the purposes of the TUMF Nexus Update, the original unit cost categories were reviewed to generate entirely new unit cost values based on the most recent available construction cost, labor cost and land acquisition cost values. In addition, supplemental categories have been added to the cost assumptions to better delineate

⁵ Parsons Brinckerhoff/Coachella Valley Association of Governments, 1999, Regional Arterial Cost Estimate (RACE)

⁶ TKC/Western Riverside Council of Governments, 2000, SATISFY 2020 Summary of Cost Estimates

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**.

Appendix F provides a detailed outline of the assumptions and methodology leading to the revised TUMF unit cost assumptions. **Table 4.1** summarizes the unit cost estimate assumptions used to develop the TUMF network cost estimate, including a comparison of the original TUMF unit cost assumptions and the current revised unit cost assumptions developed as part of this review of the TUMF Nexus. 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.

Table 4.1 - Unit Costs for Arterial Highway and Street Construction

Component Type	Cost Assumptions as published October 18, 2002	Cost Assumptions per 2005 Update February 6, 2006	Cost Assumption per 2009 Nexus Update	Description
Terrain 1	\$550,000	\$640,000	\$628,000	Construction cost per lane mile - level terrain
Terrain 2	\$850,000	\$990,000	\$761,000	Construction cost per lane mile - rolling terrain
Terrain 3	\$1,150,000	\$1,340,000	\$895,000	Construction cost per lane mile - mountainous terrain
Landuse 1	\$900,000	\$1,820,000	\$1,682,000	ROW cost factor per lane mile - urban areas
Landuse 2	\$420,000	\$850,000	\$803,000	ROW cost factor per lane mile - suburban areas
Landuse 3	\$240,000	\$485,000	\$237,000	ROW cost factor per lane mile - rural areas
Interchange 1	n/a	\$46,500,000	\$43,780,000	Complex new interchange/ interchange modification cost
Interchange 2	\$20,000,000	\$23,300,000	\$22,280,000	New interchange/interchange modification total cost
Interchange 3	\$10,000,000	\$11,650,000	\$10,890,000	Major interchange improvement total cost
Interchange 4	\$2,000,000	\$2,330,000	n/a	Minor interchange improvement total cost
Interchange 5	n/a	\$2,500,000	n/a	TUMF arterial to TUMF arterial interchange
Bridge 1	\$2,000	\$2,350	\$2,880	Bridge total cost per lane per linear foot
RRXing* 1	\$4,500,000	\$5,240,000	\$4,550,000	New Rail Grade Crossing per lane
RRXing 2	\$2,250,000	\$2,620,000	\$2,120,000	Existing Rail Grade Crossing per lane
Intersection 1	\$300,000	\$350,000	\$380,000	Upgrade existing network-to-network intersection
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	n/a	n/a	3%	TUMF Program administration based on total TUMF eligible network cost
MSHCP	n/a	5%	5%	TUMF component of MSHCP based on total TUMF eligible construction cost

*RRXing = Railroad Crossing

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 part of the 2009 Program update, the list of proposed improvements included in the initial Nexus Study and validated during the 2005 update was reviewed for accuracy and, where necessary, amended to either remove projects completed prior to the new base year of the TUMF Program (2007), remove projects that are no longer needed based on changes in the patterns of growth within the region, or add further improvements to accommodate additional projected traffic growth associated with new development. The specific network changes were screened by the WRCOG Public Works Committee for consistency with TUMF network guidelines and were

subsequently reviewed by representatives of the public and private sectors at a series of workshop meetings conducted in June 2009.

Based on the findings of the network screening and workshop reviews, elements of specific projects were revised to reflect necessary network corrections, modifications to project assumptions and to incorporate a limited number of additional segment improvements following further review and recommendation through the WRCOG standing committee structure. A matrix summarizing the disposition of the requests received as part of the TUMF Nexus Update was developed and is included in **Appendix G**.

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

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

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 \$3.92 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 TUMF obligation to the MSHCP as indicated in the TUMF Network cost fee table is approximately \$62.4 million.

The TUMF Nexus Study 2009 Program 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 3% of the

total eligible cost of new lane segments (including interchanges, bridges and railroad grade separations) on the TUMF Network and new transit services. The total cost for WRCOG administration of the TUMF Program as indicated in the TUMF Network cost fee table is approximately \$107.9 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 will play a role in serving future travel demand in the region. Public transportation serving inter-community trips is generally provided in the form of public transit bus services and in particular express bus services between strategically located community transit centers. Transit needs to serve future travel in Western Riverside County via public transit bus were provided by the Riverside County Regional Transportation Agency (RTA). The identified public transit needs include transit centers, express bus stop upgrades, and capital improvements to develop express bus service 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.

Updated cost estimates for improving the infrastructure serving public transportation, including construction of transit centers, express bus stop upgrades, and capital improvements needed to develop express bus 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 2005 Update February 6, 2006	Cost Assumptions per 2009 Nexus Update	Description
Transit Center	\$6,000,000	\$6,990,000	\$5,655,000	Regional Transit Centers
Bus Stop	\$10,000	\$11,600	\$27,000	Bus Stop Amenities Upgrade
Service Capital	\$540,000	\$630,000	\$550,000	Regional Corridor Transit Service Capital
Vehicle Fleet	\$325,125	\$380,000	\$550,000	Regional Flyer Vehicle Fleet

The estimated total cost for future transit services to accommodate forecast transit demand is approximately \$166.9 million with this cost including all planning, engineering, design and capital improvement costs. Detailed transit component cost estimates are included in **Section 4.7**.

4.5 Existing Obligated Funding

For some of the facilities identified in the TUMF network, existing obligated funding has previously been secured through traditional funding sources to complete necessary improvements. Since funding has been obligated to provide for the completion of needed improvements to the TUMF system, the 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 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 \$270.8 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 guidelines that stipulate 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. The following approach was applied to account for this oversight in the initial existing need methodology:

1. Identify those segments with an existing need by evaluating the RivTAM base year model networks and delineating those segments included on the TUMF RSHA that have a daily volume to capacity (V/C) ratio exceeding 0.90.
2. Calculate the initial cost of addressing the existing need by estimating the share of the particular roadway segment 'new lane' cost (including all associated ROW and new lane construction soft costs but not including interchange, railroad grade separation and bridge costs and their associated soft costs). It should be noted that where the TUMF network identifies more than one new lane in each direction, only the first lane in each direction is considered to be addressing existing need and any additional new lanes would be fully eligible under TUMF for addressing exclusively future needs.
3. Determine the incremental growth in V/C by comparing the weighted average base year V/C for the TUMF segment (delineated under step 1) with the RivTAM 2035 baseline assigned model network V/C for the corresponding segments.
4. Determine the proportion of the incremental growth attributable to new development by dividing the result of step three with the total 2035 baseline V/C in excess of LOS E.
5. For those segments experiencing a net increase in V/C over the 2007 base year, 'discount' the cost of existing need improvements by the proportion of the incremental V/C growth through 2035 compared to the 2007 base year V/C (up to a maximum of 100%).

The unfunded cost of existing highway improvement needs (including the related MSHCP obligation) totals \$225.2 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 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 \$105.1 million representing 37% 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 \$270.8 million in obligated funding was identified for improvements to the TUMF system. Since these improvements are already funded with other available

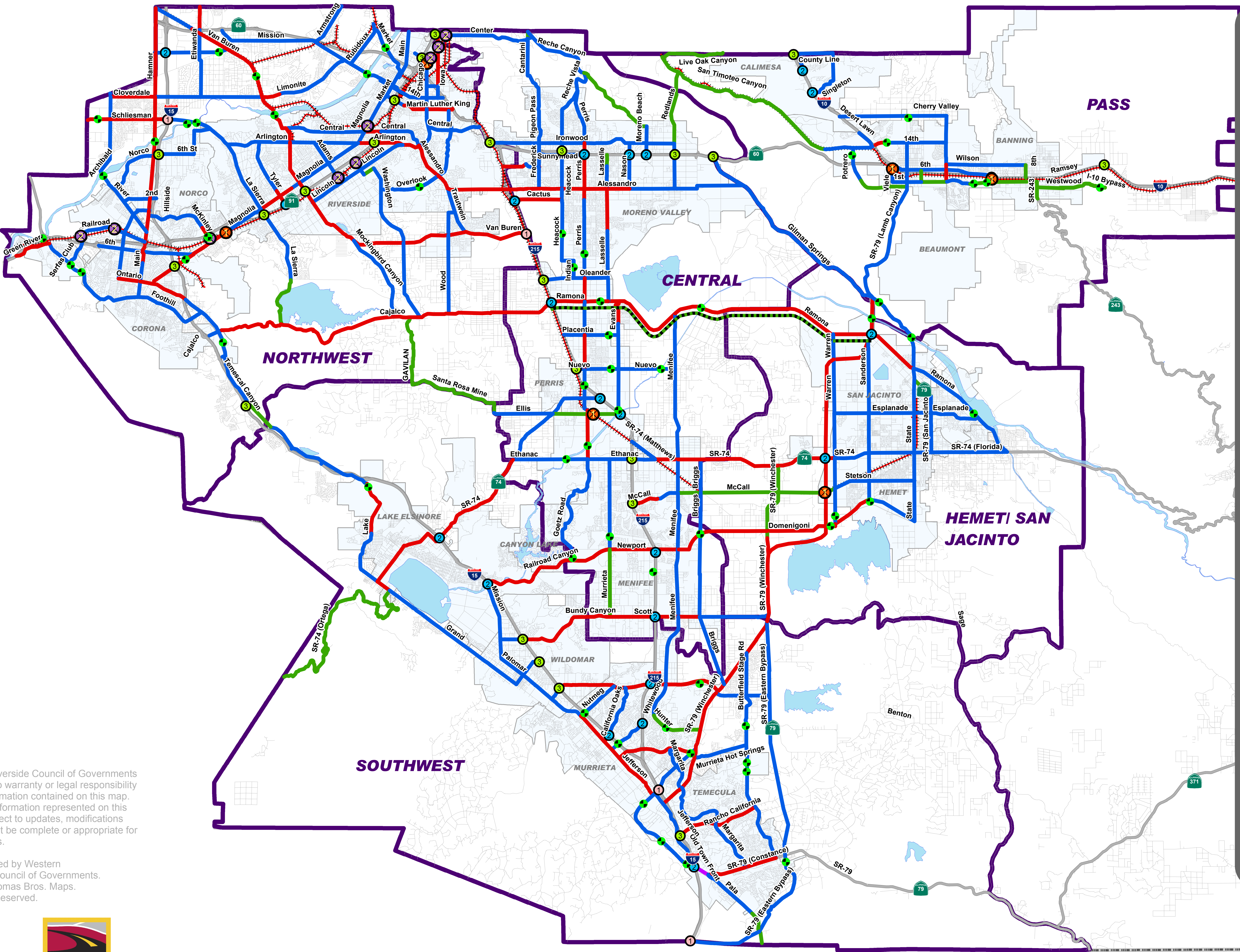
revenue sources, these projects cannot also be funded with TUMF revenues. Furthermore, the total cost of the unfunded existing improvement needs is \$330.1 million. These improvements are needed to provide for existing transportation needs and therefore their costs cannot be assigned to new development 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 is \$4.26 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 \$3.77 billion. The maximum eligible value of the TUMF Program includes approximately \$3.54 billion in eligible arterial highway and street related improvements and \$61.8 million in eligible transit related improvements. An additional \$60.0 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 \$107.9 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 4.3** 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 4.4** 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).

The Regional System of Highways & Arterials - TUMF Network Improvements

Figure 4.4



Ultimate Number of Lanes

2 Lanes

4 Lanes

6 Lanes

8 Lanes

Mid-County Parkway

2 Lanes

4 Lanes

Railroad Crossings

1 - \$4,550,000 per lane

2 - \$2,120,000 per lane

Interchanges

1 - \$43,780,000

2 - \$22,280,000

3 - \$10,890,000

Bridges

Railroads

Freeways & Highways

Lakes & Rivers

TUMF Zones

Streets & Roads

City Boundaries

WRCOG Boundary

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Data and information represented on this
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all purposes.

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Table 4.4 - TUMF Network Cost Estimates

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Central	Menifee	Ethanac	Goetz	Murieta	0.99	\$3,540,000	\$3,540,000
Central	Menifee	Ethanac	I-215	Murieta	0.90	\$19,019,000	\$19,019,000
Central	Menifee	Goetz	Case	Ethanac	2.00	\$8,017,000	\$7,065,000
Central	Menifee	Menifee	SR-74 (Pinacate)	Simpson	2.49	\$7,503,000	\$7,503,000
Central	Menifee	Menifee	Holland	Garbani	1.03	\$0	\$0
Central	Menifee	Menifee	Garbani	Scott	1.00	\$2,339,000	\$2,339,000
Central	Menifee	Menifee	Simpson	Aldergate	0.64	\$3,000,000	\$3,000,000
Central	Menifee	Menifee	Aldergate	Newport	0.98	\$0	\$0
Central	Menifee	Menifee	Newport	Holland	1.07	\$0	\$0
Central	Menifee	Newport	Goetz	Murieta	1.81	\$2,546,000	\$2,546,000
Central	Menifee	Newport	Murieta	I-215	2.05	\$37,104,000	\$37,104,000
Central	Menifee	Newport	I-215	Menifee	0.95	\$13,130,000	\$13,130,000
Central	Menifee	Scott	I-215	Briggs	2.04	\$2,220,000	\$2,171,000
Central	Menifee	Scott	Murieta	I-215	1.94	\$41,870,000	\$40,533,000
Central	Menifee	SR-74	Matthews	Briggs	1.89	\$9,105,000	\$9,105,000
Central	Moreno Valley	Alessandro	I-215	Peris	3.71	\$4,433,000	\$4,433,000
Central	Moreno Valley	Alessandro	Peris	Nason	2.00	\$5,322,000	\$5,322,000
Central	Moreno Valley	Alessandro	Nason	Moreno Beach	2.00	\$12,198,000	\$12,198,000
Central	Moreno Valley	Alessandro	Moreno Beach	Gilman Springs	0.99	\$3,556,000	\$3,556,000
Central	Moreno Valley	Gilman Springs	SR-60	Alessandro	4.13	\$9,681,000	\$9,681,000
Central	Moreno Valley	Peris	Reche Vista	Ironwood	1.67	\$19,708,000	\$19,207,000
Central	Moreno Valley	Peris	Ironwood	Sunnymead	2.20	\$7,099,000	\$7,099,000
Central	Moreno Valley	Peris	Sunnymead	Cactus	0.52	\$16,162,000	\$16,162,000
Central	Moreno Valley	Peris	Cactus	Harley Knox	2.00	\$1,434,000	\$1,366,000
Central	Moreno Valley	Reche Vista	Reche Canyon	Heacock	3.50	\$18,855,000	\$13,951,000
Central	Peris	11th/Case	Goetz	Peris	1.66	\$6,606,000	\$5,097,000
Central	Peris	Ethanac	Keystone	Goetz	0.30	\$1,078,000	\$1,078,000
Central	Peris	Ethanac	I-215	Sherman	2.24	\$13,609,000	\$13,609,000
Central	Peris	Mid-County	I-215	Rider	0.35	\$1,252,000	\$1,252,000
Central	Peris	Peris	Harley Knox	Ramona	4.55	\$82,321,000	\$82,321,000
Central	Peris	Peris	Ramona	Citrus	1.00	\$4,667,000	\$3,393,000
Central	Peris	Peris	Citrus	Nuevo	2.49	\$5,841,000	\$5,831,000
Central	Peris	Peris	Nuevo	11th	0.50	\$0	\$0
Central	Peris	Ramona	I-215	Peris	1.75	\$8,774,000	\$6,023,000
Central	Peris	Ramona	Peris	Evans	1.47	\$37,573,000	\$37,508,000
Central	Peris	Ramona	Evans	Rider	1.00	\$6,079,000	\$6,079,000
Central	Peris	Ramona	Evans	Rider	2.09	\$7,493,000	\$7,493,000
Central	Peris	SR-74 (4th)	Ellis	I-215	2.29	\$32,306,000	\$32,306,000
Central	Unincorporated	Ethanac	SR-74	Keystone	1.07	\$5,013,000	\$5,013,000
Central	Unincorporated	Ethanac	Sherman	Matthews	0.61	\$27,827,000	\$27,827,000
Central	Unincorporated	Gilman Springs	Alessandro	Bridge	4.98	\$13,577,000	\$10,039,000
Central	Unincorporated	Menifee	Ramona	SR-74 (Pinacate)	6.52	\$15,273,000	\$15,273,000
Central	Unincorporated	Mid-County	Rider	Bridge	6.92	\$21,230,000	\$21,230,000
Central	Unincorporated	Ramona	Rider	Pico	0.97	\$2,273,000	\$2,273,000
Central	Unincorporated	Ramona	Pico	Bridge	5.95	\$49,609,000	\$47,703,000
Central	Unincorporated	Reche Canyon	San Bernardino County	Reche Vista	3.35	\$20,890,000	\$17,540,000
Central	Unincorporated	Scott	Briggs	SR-79 (Winchester)	3.04	\$14,243,000	\$14,243,000
Central	Unincorporated	SR-74	Ethanac	Ellis	2.68	\$0	\$0
Northwest	Corona	Foothill	Paseo Grande	Lincoln	2.60	\$21,219,000	-\$6,810,000
Northwest	Corona	Foothill	Lincoln	California	2.81	\$0	\$0
Northwest	Corona	Foothill	California	I-15	0.89	\$3,188,000	\$3,188,000
Northwest	Corona	Green River	SR-91	Dominguez Ranch	0.52	\$1,860,000	\$1,290,000
Northwest	Corona	Green River	Dominguez Ranch	Palisades	0.56	\$2,224,000	\$2,198,000
Northwest	Corona	Green River	Palisades	Paseo Grande	2.01	\$0	\$0
Northwest	Riverside	Alessandro	Arlington	Trautwein	2.21	\$0	\$0
Northwest	Riverside	Arlington	North	Magnolia	5.92	\$0	\$0
Northwest	Riverside	Arlington	Magnolia	Alessandro	2.02	\$22,899,000	\$20,625,000
Northwest	Riverside	Van Buren	Santa Ana River	SR-91	3.44	\$34,857,000	\$30,923,000
Northwest	Riverside	Van Buren	SR-91	Mockingbird Canyon	3.10	\$10,706,000	\$5,197,000
Northwest	Riverside	Van Buren	Wood	Trautwein	0.43	\$0	\$0
Northwest	Riverside	Van Buren	Trautwein	Orange Terrace	1.27	\$3,568,000	\$3,514,000
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	\$4,127,000	\$3,573,000
Northwest	Unincorporated	Cajalco	Harvil John	Harvil	5.79	\$41,545,000	\$40,650,000
Northwest	Unincorporated	Cajalco	Harvil	I-215	0.28	\$666,000	\$666,000
Northwest	Unincorporated	Cajalco	I-15	Temescal Canyon	0.66	\$34,674,000	\$9,431,000
Northwest	Unincorporated	Cajalco	Temescal Canyon	La Sierra	3.21	\$22,934,000	\$22,934,000
Northwest	Unincorporated	Cajalco	La Sierra	El Sobrante	6.11	\$38,089,000	\$38,089,000
Northwest	Unincorporated	Schliesman	San Bernardino County	Harrison	1.53	\$14,342,000	\$14,342,000
Northwest	Unincorporated	Schliesman	Harrison	Sumner	0.50	\$3,576,000	\$3,576,000
Northwest	Unincorporated	Schliesman	Sumner	Cleveland	0.50	\$5,381,000	\$5,381,000
Northwest	Unincorporated	Schliesman	Cleveland	A Street	0.23	\$2,477,000	\$2,477,000
Northwest	Unincorporated	Schliesman	A Street	Hamner	0.27	\$1,961,000	\$1,961,000
Northwest	Unincorporated	Schliesman	Hamner	I-15	0.31	\$66,797,000	\$66,797,000
Northwest	Unincorporated	Schliesman	I-15	Arlington	1.97	\$25,943,000	\$25,943,000
Northwest	Unincorporated	Van Buren	SR-60	Bellevue	1.43	\$5,125,000	\$2,192,000
Northwest	Unincorporated	Van Buren	Bellevue	Santa Ana River	3.60	\$12,900,000	\$5,569,000
Northwest	Unincorporated	Van Buren	Mockingbird Canyon	Wood	4.41	\$15,811,000	\$12,345,000
Northwest	Unincorporated	Van Buren	Orange Terrace	I-215	1.89	\$70,246,000	\$68,716,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Pass	Beaumont	Beaumont	Oak Valley (14th)	I-10	1.37	\$0	\$0
Pass	Beaumont	Potrero	Oak Valley (San Timoteo Canyon)	4th	1.17	\$69,189,000	\$0
Pass	Beaumont	SR-79 (Beaumont)	I-10	Mellow	0.80	\$15,791,000	\$0
Pass	Unincorporated	SR-79 (Beaumont)	Mellow	California	0.38	\$0	\$0
Pass	Unincorporated	Potrero	4th	1st	0.45	\$2,109,000	\$2,109,000
Pass	Unincorporated	Potrero	1st	SR-79 (Beaumont)	2.03	\$11,098,000	\$11,098,000
Pass	Unincorporated	SR-79 (Lamb Canyon)	California	Gilman Springs	4.87	\$0	\$0
San Jacinto	Hemet	Domenigoni	Warren	Sanderson	1.77	\$4,151,000	\$4,151,000
San Jacinto	Hemet	Domenigoni	Sanderson	State	2.14	\$0	\$0
San Jacinto	Hemet	SR-74	Winchester	Warren	2.59	\$9,281,000	\$7,335,000
San Jacinto	San Jacinto	Mid-County	Warren	Sanderson	1.73	\$6,196,000	\$6,196,000
San Jacinto	San Jacinto	Ramona	Warren	Sanderson	1.73	\$6,196,000	\$6,196,000
San Jacinto	San Jacinto	Ramona	Sanderson	State	2.39	\$17,131,000	\$13,661,000
San Jacinto	San Jacinto	Ramona	State	Main	2.66	\$9,556,000	\$9,301,000
San Jacinto	San Jacinto	Ramona	Main	Cedar	2.08	\$17,430,000	\$17,430,000
San Jacinto	San Jacinto	Ramona	Cedar	SR-74	1.10	\$0	\$0
San Jacinto	Unincorporated	Domenigoni	SR-79 (Winchester)	Warren	3.10	\$9,763,000	\$8,788,000
San Jacinto	Unincorporated	Gilman Springs	Bridge	Sanderson	2.95	\$6,908,000	\$6,908,000
San Jacinto	Unincorporated	Mid-County	Bridge	Warren	2.35	\$5,505,000	\$5,505,000
San Jacinto	Unincorporated	Ramona	Bridge	Warren	2.35	\$11,006,000	\$11,006,000
San Jacinto	Unincorporated	SR-74	Briggs	SR-79 (Winchester)	3.53	\$8,259,000	\$8,259,000
San Jacinto	Unincorporated	SR-79 (Hemet Bypass)	SR-74 (Florida)	Domenigoni	3.22	\$62,453,000	\$62,453,000
San Jacinto	Unincorporated	SR-79 (Hemet Bypass)	Domenigoni	Winchester	1.50	\$10,542,000	\$10,542,000
San Jacinto	Unincorporated	SR-79 (San Jacinto Bypass)	Ramona	SR-74 (Florida)	6.50	\$77,987,000	\$77,987,000
San Jacinto	Unincorporated	SR-79 (Sanderson)	Gilman Springs	Ramona	1.92	\$26,208,000	\$24,508,000
San Jacinto	Unincorporated	SR-79 (Winchester)	Domenigoni	Keller	4.90	\$35,165,000	\$23,047,000
Southwest	Canyon Lake	Goetz	Railroad Canyon	Newport	0.50	\$3,652,000	\$2,685,000
Southwest	Canyon Lake	Railroad Canyon	Canyon Hills	Goetz	1.95	\$7,733,000	\$7,508,000
Southwest	Lake Elsinore	Railroad Canyon	I-15	Canyon Hills	2.29	\$34,989,000	\$34,989,000
Southwest	Murietta	Clinton Keith	I-15	Copper Craft	2.48	\$27,411,000	\$26,786,000
Southwest	Murietta	Clinton Keith	Copper Craft	Toulon	0.83	\$0	\$0
Southwest	Murietta	Clinton Keith	Toulon	I-215	0.83	\$34,247,000	\$34,247,000
Southwest	Murietta	Clinton Keith	I-215	Meadowlark	0.75	\$1,751,000	\$1,751,000
Southwest	Murietta	French Valley (Date)	SR-79 (Winchester)	Margarita	1.03	\$3,702,000	\$3,702,000
Southwest	Murietta	Meadowlark (Menifee)	Keller	Clinton Keith	2.00	\$9,370,000	\$9,370,000
Southwest	Murietta	Menifee	Scott	Keller	1.08	\$0	\$0
Southwest	Temecula	French Valley	Margarita	Ynez	0.91	\$0	\$0
Southwest	Temecula	French Valley	Ynez	Murietta Creek	1.29	\$77,748,000	\$64,827,000
Southwest	Temecula	French Valley	Murietta Creek	Rancho California	2.36	\$23,129,000	\$23,129,000
Southwest	Temecula	French Valley	Rancho California	I-15 (Front)	1.86	\$53,579,000	\$37,201,000
Southwest	Temecula	SR-79 (Winchester)	Murietta Hot Springs	Jefferson	2.70	\$15,791,000	\$15,791,000
Southwest	Wildomar	Bundy Canyon	I-15	Sunset	3.42	\$34,443,000	\$34,443,000
Southwest	Wildomar	Bundy Canyon	Sunset	Murietta	1.01	\$4,714,000	\$4,714,000
Southwest	Wildomar	Clinton Keith	Palomar	I-15	0.55	\$0	\$0
Southwest	Unincorporated	Benton	SR-79	Eastern Bypass	2.40	\$5,630,000	\$5,630,000
Southwest	Unincorporated	Clinton Keith	Meadowlark	SR-79	2.54	\$47,919,000	\$47,919,000
Southwest	Unincorporated	Newport	Menifee	Lindenberger	0.77	\$0	\$0
Southwest	Unincorporated	Newport	Lindenberger	SR-79 (Winchester)	3.58	\$0	\$0
Southwest	Unincorporated	SR-74	I-15	Ethanac	4.89	\$45,659,000	\$45,572,000
Southwest	Unincorporated	SR-79 (Eastern Bypass/Washir)	SR-79 (Winchester)	Borel	4.52	\$11,423,000	\$11,423,000
Southwest	Unincorporated	SR-79 (Eastern Bypass)	Borel	Vino	4.04	\$25,386,000	\$25,386,000
Southwest	Unincorporated	SR-79 (Eastern Bypass/Anza)	Vino	SR-79 (Constance)	4.49	\$12,250,000	\$12,250,000
Southwest	Unincorporated	SR-79 (Eastern Bypass/Anza)	SR-79 (Constance)	Santa Rita	1.14	\$7,891,000	\$7,891,000
Southwest	Unincorporated	SR-79 (Eastern Bypass/Anza)	Santa Rita	Fairview	1.77	\$9,659,000	\$9,659,000
Southwest	Unincorporated	SR-79 (Eastern Bypass)	Fairview	Paia	1.48	\$8,076,000	\$8,076,000
Southwest	Unincorporated	SR-79 (Eastern Bypass)	Paia	I-15	4.21	\$61,917,000	\$61,917,000
Southwest	Unincorporated	SR-79 (Winchester)	Keller	Thompson	2.47	\$8,845,000	\$8,845,000
Southwest	Unincorporated	SR-79 (Winchester)	Thompson	La Alba	1.81	\$6,499,000	\$3,623,000
Southwest	Unincorporated	SR-79 (Winchester)	La Alba	Hunter	0.50	\$1,805,000	\$762,000
Southwest	Unincorporated	SR-79 (Winchester)	Hunter	Murietta Hot Springs	1.14	\$0	\$0
Subtotal					295.15	\$2,099,632,000	\$1,854,504,000

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	\$7,146,000	\$7,146,000
Central	Menifee	Goetz	Juanita	Lesser Lane	2.61	\$6,112,000	\$5,930,000
Central	Menifee	Goetz	Newport	Juanita	1.36	\$0	\$0
Central	Menifee	Holland	Antelope	Haun	1.00	\$13,022,000	\$13,022,000
Central	Menifee	McCall	Menifee	SR 79 (Winchester)	4.45	\$10,417,000	\$10,417,000
Central	Menifee	McCall	SR-79 (Winchester)	Warren	2.58	\$6,033,000	\$6,033,000
Central	Menifee	McCall	I-215	Aspel	1.23	\$18,666,000	\$18,666,000
Central	Menifee	McCall	Aspel	Menifee	0.95	\$4,469,000	\$4,469,000
Central	Menifee	Murrieta	Ethanac	McCall	1.95	\$3,244,000	\$3,244,000
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	\$37,173,000	\$37,173,000
Central	Moreno Valley	Eucalyptus	I-215	Towngate	1.00	\$2,691,000	\$2,691,000
Central	Moreno Valley	Eucalyptus	Towngate	Frederick	0.67	\$0	\$0
Central	Moreno Valley	Frederick	SR-60	Alessandro	1.55	\$0	\$0
Central	Moreno Valley	Heacock	Cactus	San Michele	2.79	\$9,762,000	\$6,726,000
Central	Moreno Valley	Heacock	Reche Vista	Cactus	4.73	\$0	\$0
Central	Moreno Valley	Heacock	San Michele	Harley Knox	0.74	\$2,992,000	\$2,476,000
Central	Moreno Valley	Ironwood	SR-60	Redlands	8.46	\$35,509,000	\$35,509,000
Central	Moreno Valley	Lasselle	Eucalyptus	Alessandro	1.00	\$2,145,000	\$2,145,000
Central	Moreno Valley	Lasselle	Alessandro	John F Kennedy	1.00	\$2,871,000	\$2,871,000
Central	Moreno Valley	Lasselle	John F Kennedy	Oleander	3.14	\$0	\$0
Central	Moreno Valley	Moreno Beach	Reche Canyon	SR-60	1.37	\$37,210,000	\$37,210,000
Central	Moreno Valley	Nason	Ironwood	Alessandro	2.02	\$37,376,000	\$37,376,000
Central	Moreno Valley	Pigeon Pass	Ironwood	SR-60	0.43	\$0	\$0
Central	Moreno Valley	Pigeon Pass/CETAP Corridor	Cantarini	Ironwood	3.23	\$2,317,000	\$2,317,000
Central	Moreno Valley	Reche Canyon	Reche Vista	Moreno Beach	4.02	\$0	\$0
Central	Moreno Valley	Redlands	Locust	Alessandro	2.68	\$41,922,000	\$41,226,000
Central	Moreno Valley	Sunnymead	Frederick	Perris	2.02	\$0	\$0
Central	Perris	Ellis	SR-74 (4th)	I-215	1.92	\$52,378,000	\$52,378,000
Central	Perris	Evans	Placentia	Nuevo	1.50	\$1,968,000	\$1,968,000
Central	Perris	Evans	Morgan	Ramona	0.59	\$1,388,000	\$1,388,000
Central	Perris	Evans	Nuevo	I-215	1.99	\$16,024,000	\$16,024,000
Central	Perris	Evans	Oleander	Ramona	0.99	\$0	\$0
Central	Perris	Evans	Placentia	Rider	0.58	\$0	\$0
Central	Perris	Evans	Rider	Morgan	0.49	\$1,158,000	\$1,158,000
Central	Perris	Goetz	Lesser	Ethanac	1.04	\$2,438,000	\$1,957,000
Central	Perris	Harley Knox	I-215	Indian	1.53	\$21,286,000	\$21,286,000
Central	Perris	Harley Knox	Indian	Perris	0.50	\$447,000	\$447,000
Central	Perris	Harley Knox	Perris	Evans	1.03	\$7,391,000	\$7,391,000
Central	Perris	Nuevo	I-215	Murrieta	1.36	\$20,658,000	\$20,658,000
Central	Perris	Nuevo	Murrieta	Dunlap	1.00	\$4,313,000	\$4,313,000
Central	Perris	Placentia	I-215	Indian	0.37	\$34,039,000	\$34,039,000
Central	Perris	Placentia	Indian	Redlands	1.00	\$2,339,000	\$2,339,000
Central	Perris	Placentia	Redlands	Wilson	0.25	\$0	\$0
Central	Perris	Placentia	Wilson	Evans	0.75	\$8,540,000	\$8,540,000
Central	Perris	SR-74 (Matthews)	I-215(mostly in Perris)	Ethanac	1.25	\$15,791,000	\$15,791,000
Central	Unincorporated	Briggs	SR-74 (Pinacate)	Simpson	2.50	\$11,713,000	\$11,713,000
Central	Unincorporated	Briggs	Simpson	Newport	1.53	\$8,585,000	\$8,585,000
Central	Unincorporated	Center (Main)	I-215	Mt Vernon	1.50	\$33,463,000	\$33,463,000
Central	Unincorporated	Ellis	Post	SR-74	2.65	\$6,205,000	\$6,205,000
Central	Unincorporated	Mount Vernon/CETAP Corridor	Center	Pigeon Pass	0.61	\$1,887,000	\$1,887,000
Central	Unincorporated	Nuevo	Dunlap	Menifee	2.00	\$8,022,000	\$8,022,000
Central	Unincorporated	Pigeon Pass/CETAP Corridor	Cantarini	Mount Vernon	3.38	\$21,086,000	\$21,086,000
Central	Unincorporated	Post	Santa Rosa Mine	Ellis	0.44	\$0	\$0
Central	Unincorporated	Redlands	San Timoteo Canyon	Locust	2.60	\$0	\$0
Northwest	Corona	6th	SR-91	Magnolia	4.84	\$0	\$0
Northwest	Corona	Auto Center	Railroad	SR-91	0.30	\$12,296,000	\$0
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	0.61	\$4,706,000	\$4,706,000
Northwest	Corona	Magnolia	Sherborn	Rimpau	0.39	\$0	\$0
Northwest	Corona	Magnolia	Rimpau	Ontario	1.17	\$0	\$0
Northwest	Corona	Main	Grand	Ontario	0.88	\$2,063,000	\$1,951,000
Northwest	Corona	Main	Ontario	Foothill	0.74	\$0	\$0
Northwest	Corona	Main	Hidden Valley	Parkridge	0.35	\$1,248,000	\$957,000
Northwest	Corona	Main	Parkridge	SR-91	0.86	\$0	\$0
Northwest	Corona	Main	SR-91	S. Grand	0.86	\$4,728,000	\$4,728,000
Northwest	Corona	McKinley	Hidden Valley	Promenade	0.57	\$0	\$0
Northwest	Corona	McKinley	Promenade	SR-91	0.33	\$0	\$0
Northwest	Corona	McKinley	SR-91	Magnolia	0.31	\$42,142,000	\$40,242,000
Northwest	Corona	Ontario	I-15	El Cerrito	0.94	\$3,388,000	\$3,388,000
Northwest	Corona	Ontario	Lincoln	Buena Vista	0.32	\$1,152,000	\$631,000
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	\$1,768,000	\$1,768,000
Northwest	Corona	Ontario	Fullerton	Rimpau	0.42	\$0	\$0
Northwest	Corona	Ontario	Rimpau	I-15	0.60	\$0	\$0
Northwest	Corona	Railroad	Auto Club	Sherman	1.97	\$12,296,000	\$12,296,000
Northwest	Corona	Railroad	Sherman	Main (at Grand)	1.26	\$4,534,000	\$3,028,000
Northwest	Corona	River	Corydon	Main	2.27	\$0	\$0
Northwest	Corona	Serfas Club	SR-91	Green River	0.96	\$0	\$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Northwest	Norco	1st	Parkridge	Mountain	0.26	\$601,000	\$601,000
Northwest	Norco	1st	Mountain	Hamner	0.26	\$0	\$0
Northwest	Norco	2nd	River	I-15	1.44	\$3,365,000	\$2,321,000
Northwest	Norco	6th	Hamner	California	1.71	\$15,791,000	\$15,791,000
Northwest	Norco	Arlington	North	Arlington	0.97	\$2,282,000	\$2,282,000
Northwest	Norco	California	Arlington	6th	0.98	\$3,517,000	\$3,517,000
Northwest	Norco	Corydon	River	5th	1.46	\$5,254,000	\$5,254,000
Northwest	Norco	Hamner	Santa Ana River	Hidden Valley	3.05	\$10,953,000	\$10,953,000
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	\$4,316,000	\$4,316,000
Northwest	Norco	North	California	Arlington	0.81	\$0	\$0
Northwest	Norco	River	Archibald	Corydon	1.14	\$4,090,000	\$2,328,000
Northwest	Riverside	14th	Market	Martin Luther King	0.89	\$0	\$0
Northwest	Riverside	1st	Market	Main	0.08	\$0	\$0
Northwest	Riverside	3rd	Chicago	I-215	0.36	\$0	\$0
Northwest	Riverside	Adams	SR-91	Arlington	1.56	\$0	\$0
Northwest	Riverside	Adams	SR-91	Lincoln	0.54	\$12,296,000	\$12,296,000
Northwest	Riverside	Buena Vista	Santa Ana River	Redwood	0.30	\$0	\$0
Northwest	Riverside	Canyon Crest	Central	Country Club	0.59	\$0	\$0
Northwest	Riverside	Canyon Crest	Country Club	Via Vista	0.94	\$2,568,000	\$1,854,000
Northwest	Riverside	Canyon Crest	Via Vista	Alessandro	0.68	\$0	\$0
Northwest	Riverside	Canyon Crest	Martin Luther King	Central	0.95	\$0	\$0
Northwest	Riverside	Central	Chicago	I-215/SR-60	2.15	\$0	\$0
Northwest	Riverside	Central	SR-91	Magnolia	0.76	\$2,725,000	\$2,725,000
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	\$26,390,000	\$26,390,000
Northwest	Riverside	Columbia	Main	Iowa	1.09	\$28,087,000	\$28,087,000
Northwest	Riverside	Iowa	Center	3rd	2.25	\$26,507,000	\$26,507,000
Northwest	Riverside	Iowa	3rd	University	0.51	\$0	\$0
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	Adams	Washington	1.55	\$0	\$0
Northwest	Riverside	Lincoln	Van Buren	Adams	1.54	\$0	\$0
Northwest	Riverside	Lincoln	Washington	Victoria	1.43	\$5,132,000	\$5,132,000
Northwest	Riverside	Lincoln	Victoria	Arlington	0.28	\$0	\$0
Northwest	Riverside	Madison	SR-91	Victoria	0.86	\$12,296,000	\$12,296,000
Northwest	Riverside	Magnolia	BNSF RR	La Sierra	3.09	\$12,296,000	\$12,296,000
Northwest	Riverside	Magnolia	La Sierra	Harrison	2.70	\$0	\$0
Northwest	Riverside	Magnolia	Harrison	14th	5.98	\$12,296,000	\$12,296,000
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	\$7,573,000	\$6,890,000
Northwest	Riverside	Mission Inn	Redwood	Lemon	0.79	\$0	\$0
Northwest	Riverside	Overlook	Sandtrack	Alessandro	0.32	\$0	\$0
Northwest	Riverside	Overlook	Washington	Bodewin/Via Montecito	0.56	\$0	\$0
Northwest	Riverside	Overlook	Bodewin/Via Montecito	Crystal View	0.81	\$3,213,000	\$3,213,000
Northwest	Riverside	Overlook	Crystal View	Via Vista	0.55	\$12,723,000	\$12,723,000
Northwest	Riverside	Overlook	Via Vista	Sandtrack	0.63	\$2,504,000	\$2,504,000
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	\$32,306,000	\$32,306,000
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	\$4,851,000	\$4,851,000
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	Madison	Washington	0.52	\$0	\$0
Northwest	Riverside	Washington	Victoria	Hermosa	2.05	\$7,372,000	\$7,372,000
Northwest	Riverside	Wood	JFK	Van Buren	0.70	\$821,000	\$821,000
Northwest	Riverside	Wood	Van Buren	Bergamont	0.11	\$0	\$0
Northwest	Riverside	Wood	Bergamont	Krameria	0.39	\$365,000	\$365,000
Northwest	Unincorporated	Archibald	San Bernardino County	River	3.63	\$13,258,000	\$7,236,000
Northwest	Unincorporated	Armstrong	San Bernardino County	Valley	1.53	\$1,376,000	\$1,169,000
Northwest	Unincorporated	Bellgrave	Cantu-Galleano Ranch	Van Buren	0.29	\$675,000	\$609,000
Northwest	Unincorporated	Cantu-Galleano Ranch	Hamner	Wineville	0.94	\$0	\$0
Northwest	Unincorporated	Cantu-Galleano Ranch	Wineville	Bellgrave	1.82	\$6,821,000	\$6,821,000
Northwest	Unincorporated	Dos Lagos (Weinick)	Temescal Canyon	I-15	0.21	\$0	\$0
Northwest	Unincorporated	El Cerrito	I-15	Ontario	0.56	\$1,304,000	\$1,304,000
Northwest	Unincorporated	Etiwanda	San Bernardino County	SR-60	1.00	\$0	\$0
Northwest	Unincorporated	Etiwanda	SR-60	Limonite	3.00	\$0	\$0

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
Northwest	Unincorporated	Hamner	Bellgrave	Amberhill	0.42	\$974,000	\$974,000
Northwest	Unincorporated	Hamner	Amberhill	Limonite	0.49	\$2,302,000	\$1,850,000
Northwest	Unincorporated	Hamner	Limonite	Schleisman	1.00	\$2,333,000	\$2,333,000
Northwest	Unincorporated	Hamner	Schleisman	Santa Anna River	1.29	\$26,069,000	\$25,696,000
Northwest	Unincorporated	Hamner	Mission	Bellgrave	1.11	\$2,598,000	\$2,557,000
Northwest	Unincorporated	Harley John	Washington	Scottsdale	0.12	\$0	\$0
Northwest	Unincorporated	Harley John	Scottsdale	Cajalco	1.19	\$2,783,000	\$2,783,000
Northwest	Unincorporated	La Sierra	Victoria	El Sobrante	2.22	\$0	\$0
Northwest	Unincorporated	La Sierra	El Sobrante	Cajalco	2.36	\$0	\$0
Northwest	Unincorporated	Limonite	Archibald	Hamner	1.99	\$4,673,000	\$4,373,000
Northwest	Unincorporated	Limonite	Hamner	I-15	0.62	\$17,236,000	\$16,754,000
Northwest	Unincorporated	Limonite	I-15	Wineville	0.40	\$0	\$0
Northwest	Unincorporated	Limonite	Wineville	Etiwanda	0.99	\$0	\$0
Northwest	Unincorporated	Limonite	Etiwanda	Van Buren	2.72	\$12,737,000	\$9,299,000
Northwest	Unincorporated	Limonite	Van Buren	Clay	0.79	\$1,857,000	\$1,857,000
Northwest	Unincorporated	Limonite	Clay	Riverview	2.45	\$0	\$0
Northwest	Unincorporated	Market	Rubidoux	Santa Ana River	1.74	\$12,440,000	\$11,753,000
Northwest	Unincorporated	Mission	Milliken	SR-60	1.61	\$0	\$0
Northwest	Unincorporated	Mission	SR-60	Santa Ana River	7.39	\$0	\$0
Northwest	Unincorporated	Mockingbird Canyon	Van Buren	Cajalco	4.34	\$11,831,000	\$11,576,000
Northwest	Unincorporated	Riverview	Limonite	Mission	0.95	\$0	\$0
Northwest	Unincorporated	Rubidoux	San Bernardino County	Mission	2.65	\$15,791,000	\$15,791,000
Northwest	Unincorporated	Temescal Canyon	Ontario	Tuscany	0.65	\$1,411,000	\$1,411,000
Northwest	Unincorporated	Temescal Canyon	Tuscany	Dos Lagos	0.91	\$0	\$0
Northwest	Unincorporated	Temescal Canyon	Dos Lagos	Leroy	1.10	\$3,011,000	\$3,011,000
Northwest	Unincorporated	Temescal Canyon	Leroy	Dawson Canyon	1.89	\$5,145,000	\$5,145,000
Northwest	Unincorporated	Temescal Canyon	Dawson Canyon	I-15	0.28	\$15,791,000	\$15,791,000
Northwest	Unincorporated	Temescal Canyon	I-15	Park Canyon	3.41	\$10,619,000	\$10,619,000
Northwest	Unincorporated	Temescal Canyon	Park Canyon	Indian Truck Trail	2.55	\$6,949,000	\$6,949,000
Northwest	Unincorporated	Valley	Armstrong	Mission	0.48	\$0	\$0
Northwest	Unincorporated	Washington	Hermosa	Harley John	3.96	\$9,283,000	\$9,283,000
Northwest	Unincorporated	Wood	Krameria	Cajalco	2.99	\$6,998,000	\$6,998,000
Pass	Banning	8th	Wilson	I-10	0.54	\$0	\$0
Pass	Banning	Highland Springs	Oak Valley (14th)	Wilson (8th)	0.73	\$2,634,000	\$1,317,000
Pass	Banning	Highland Springs	Cherry Valley	Oak Valley (14th)	1.53	\$5,505,000	\$2,753,000
Pass	Banning	I-10 Bypass South	I-10	Apache Trail	3.29	\$30,085,000	\$30,085,000
Pass	Banning	Lincoln	Sunset	SR-243	2.01	\$0	\$0
Pass	Banning	Ramsey	I-10	Wilson (8th)	1.70	\$0	\$0
Pass	Banning	Ramsey	Wilson (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	\$10,517,000	\$10,517,000
Pass	Banning	Sun Lakes	Highland Springs	Highland Home	1.33	\$0	\$0
Pass	Banning	Sunset	Ramsey	Lincoln	0.28	\$43,195,000	\$43,195,000
Pass	Banning	Wilson (8th)	Highland Home	Wilson (8th)	2.51	\$0	\$0
Pass	Banning	Wilson (8th)	Highland Springs	Highland Home	1.01	\$3,614,000	\$3,614,000
Pass	Beaumont	1st	Viele	Pennsylvania	1.28	\$4,605,000	\$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	\$2,311,000	\$0
Pass	Beaumont	Highland Springs	Wilson (8th)	Sun Lakes	0.76	\$18,524,000	\$17,158,000
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	\$20,540,000	\$0
Pass	Beaumont	Oak Valley (STC)	Beaumont City Limits	Cherry Valley (J St / Central Overl	3.46	\$0	\$0
Pass	Beaumont	Oak Valley (STC)	Cherry Valley (J St / Central Overl	I-10	1.67	\$3,902,000	\$0
Pass	Beaumont	Pennsylvania	6th	1st	0.53	\$15,791,000	\$0
Pass	Beaumont	Viele	4th	1st	0.31	\$1,116,000	\$0
Pass	Beaumont	Viele	6th	4th	0.50	\$28,197,000	\$0
Pass	Calimesa	Bryant	County Line	Singleton	0.38	\$0	\$0
Pass	Calimesa	Calimesa	County Line	I-10	0.80	\$32,306,000	\$32,306,000
Pass	Calimesa	Cherry Valley	Roberts	Palmer	0.50	\$1,163,000	\$0
Pass	Calimesa	County Line	I-10	Bryant	1.76	\$18,948,000	\$18,948,000
Pass	Calimesa	Desert Lawn	Cherry Valley	Champions	1.61	\$3,764,000	\$3,764,000
Pass	Calimesa	Singleton	Bryant	Condit	1.86	\$10,160,000	\$10,160,000
Pass	Calimesa	Singleton	Condit	Roberts	0.85	\$35,357,000	\$35,357,000
Pass	Unincorporated	Cherry Valley	Highland Springs	Noble	0.95	\$4,462,000	\$4,462,000
Pass	Unincorporated	Cherry Valley	Noble	Desert Lawn	3.40	\$42,766,000	\$42,766,000
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	\$13,195,000	\$13,195,000
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	\$3,586,000	\$1,789,000
San Jacinto	Hemet	SR-74	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	\$6,881,000	\$4,938,000
San Jacinto	Hemet	Stetson	Cawston	State	2.52	\$0	\$0
San Jacinto	Hemet	Stetson	Warren	Cawston	1.00	\$2,341,000	\$2,341,000
San Jacinto	Hemet	Warren	Esplanade	Domenigoni	4.99	\$14,195,000	\$13,396,000

Table 4.4 - TUMF Network Cost Estimates (continued)

AREA PLAN DIST	CITY	STREETNAME	SEGMENTFROM	SEGMENTTO	MILES	TOTAL COST	MAXIMUM TUMF SHARE
San Jacinto	San Jacinto	Esplanade	Ramona	Mountain	0.20	\$1,434,000	\$1,434,000
San Jacinto	San Jacinto	Esplanade	Mountain	State	2.55	\$0	\$0
San Jacinto	San Jacinto	Esplanade	State	Warren	3.53	\$8,275,000	\$8,275,000
San Jacinto	San Jacinto	Sanderson	Ramona	Esplanade	3.55	\$8,310,000	\$4,162,000
San Jacinto	San Jacinto	SR-79 (North Ramona)	State	San Jacinto	1.02	\$0	\$0
San Jacinto	San Jacinto	SR-79 (San Jacinto)	7th	SR-74	2.25	\$0	\$0
San Jacinto	San Jacinto	SR-79 (San Jacinto)	North Ramona Blvd	7th	0.25	\$886,000	\$886,000
San Jacinto	San Jacinto	State	Ramona	Esplanade	1.99	\$0	\$0
San Jacinto	San Jacinto	State Street	Gilman Springs	Quandt Ranch	0.76	\$5,958,000	\$5,348,000
San Jacinto	San Jacinto	State Street	Quandt Ranch	Ramona	0.70	\$0	\$0
San Jacinto	San Jacinto	Warren	Ramona	Esplanade	3.47	\$8,130,000	\$8,130,000
San Jacinto	Unincorporated	Gilman Springs	Sanderson	State	2.54	\$6,796,000	\$4,733,000
San Jacinto	Unincorporated	SR-79 (Winchester)	SR-74 (Florida)	Domenigoni	3.23	\$0	\$0
Southwest	Lake Elsinore	Diamond	Mission	I-15	0.24	\$559,000	\$533,000
Southwest	Lake Elsinore	Grand	Lincoln	Toft	1.29	\$0	\$0
Southwest	Lake Elsinore	Grand	Toft	SR-74 (Riverside)	0.86	\$1,206,000	\$1,206,000
Southwest	Lake Elsinore	Lake	I-15	Lincoln	3.10	\$22,141,000	\$20,582,000
Southwest	Lake Elsinore	Mission	Railroad Canyon	Bundy Canyon	2.39	\$0	\$0
Southwest	Lake Elsinore	SR-74 (Collier/Riverside)	I-15	Lakeshore	2.10	\$15,078,000	\$11,647,000
Southwest	Lake Elsinore	SR-74 (Grand)	Riverside	SR-74 (Ortega)	0.64	\$4,567,000	\$3,937,000
Southwest	Lake Elsinore	SR-74 (Riverside)	Lakeshore	Grand	1.74	\$11,212,000	\$10,949,000
Southwest	Murietta	California Oaks	Jefferson	I-15	0.32	\$33,444,000	\$33,444,000
Southwest	Murietta	California Oaks	I-15	Clinton Keith	2.26	\$0	\$0
Southwest	Murietta	Jefferson	Murietta Hot Springs	Cherry	2.26	\$0	\$0
Southwest	Murietta	Jefferson	Palomar	Nutmeg	1.02	\$4,779,000	\$4,779,000
Southwest	Murietta	Jefferson	Nutmeg	Murietta Hot Springs	2.37	\$17,005,000	\$16,105,000
Southwest	Murietta	Los Alamos	Jefferson	I-15	0.38	\$4,271,000	\$4,271,000
Southwest	Murietta	Los Alamos	I-15	I-215	1.39	\$5,002,000	\$4,792,000
Southwest	Murietta	Murietta Hot Springs	I-215	Margarita	1.48	\$0	\$0
Southwest	Murietta	Murietta Hot Springs	Jefferson	I-215	1.11	\$0	\$0
Southwest	Murietta	Murietta Hot Springs	Margarita	SR-79 (Winchester)	1.01	\$2,362,000	\$1,448,000
Southwest	Murietta	Nutmeg	Jefferson	Clinton Keith	1.97	\$0	\$0
Southwest	Murietta	Whitewood	Clinton Keith	Los Alamos	2.01	\$0	\$0
Southwest	Temecula	Jefferson	Cherry	Rancho California	2.29	\$0	\$0
Southwest	Temecula	Margarita	Murietta Hot Springs	SR-79 (Temecula)	7.38	\$0	\$0
Southwest	Temecula	Old Town Front	Rancho California	I-15/SR-79	1.45	\$0	\$0
Southwest	Temecula	Pechanga	SR-79 (Temecula)	Via Gilberto	1.32	\$0	\$0
Southwest	Temecula	Pechanga	Via Gilberto	Pechanga Road	1.44	\$0	\$0
Southwest	Temecula	Rancho California	Jefferson	Margarita	1.89	\$19,962,000	\$18,384,000
Southwest	Temecula	Rancho California	Margarita	Butterfield Stage	1.96	\$10,818,000	\$10,818,000
Southwest	Temecula	SR-79 (Temecula)	I-15	Pechanga	0.64	\$1,502,000	\$123,000
Southwest	Temecula	SR-79 (Temecula)	Pechanga Road	Butterfield Stage	3.08	\$0	\$0
Southwest	Wildomar	Baxter	I-15	Palomar	0.37	\$16,654,000	\$16,654,000
Southwest	Wildomar	Bundy Canyon	Mission	I-15	0.94	\$3,358,000	\$3,358,000
Southwest	Wildomar	Central	Baxter	Palomar	0.74	\$2,642,000	\$2,642,000
Southwest	Wildomar	Mission	Bundy Canyon	Palomar	0.84	\$0	\$0
Southwest	Wildomar	Palomar	Clinton Keith	Jefferson	0.74	\$1,723,000	\$1,723,000
Southwest	Wildomar	Palomar	Mission	Clinton Keith	2.79	\$6,534,000	\$6,534,000
Southwest	Unincorporated	Briggs	Scott	SR-79 (Winchester)	3.39	\$7,946,000	\$7,946,000
Southwest	Unincorporated	Butterfield Stage	Murietta Hot Springs	Rancho California	1.78	\$20,587,000	\$20,587,000
Southwest	Unincorporated	Butterfield Stage	Rancho California	SR-79 (Temecula)	2.30	\$6,261,000	\$6,261,000
Southwest	Unincorporated	Butterfield Stage	SR-79 (Winchester)	Auld	2.28	\$6,221,000	\$6,221,000
Southwest	Unincorporated	Butterfield Stage	Auld	Murietta Hot Springs	2.23	\$19,685,000	\$19,685,000
Southwest	Unincorporated	Central	Grand	Palomar	0.51	\$1,834,000	\$1,834,000
Southwest	Unincorporated	Grand	Ortega	Central	6.98	\$25,052,000	\$25,052,000
Southwest	Unincorporated	Horse Thief Canyon	Temescal Canyon	I-15	0.17	\$395,000	\$395,000
Southwest	Unincorporated	Indian Truck Trail	Temescal Canyon	I-15	0.18	\$16,612,000	\$16,612,000
Southwest	Unincorporated	Murietta 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	Indian Truck Trail	Lake	1.21	\$4,124,000	\$4,124,000
Subtotal					471.25	\$1,824,257,000	\$1,680,884,000
Totals					766.40	\$ 3,923,889,000	\$ 3,535,388,000
Network						\$ 166,945,000	\$ 61,826,000
Transit						\$ 107,916,420	\$ 107,916,420
Administration						\$ 62,367,000	\$ 59,959,000
MSHCP						\$ 4,261,117,420	\$ 3,765,089,420
Total							

Table 4.5 – TUMF Transit Cost Estimates

AREA PLAN DIST	LEAD AGENCY	PROJECT NAME	LOCATION	UNITS (number/ length in miles)	TOTAL	MAXIMUM TUMF SHARE
Regional	RTA	Regional Transit Centers	Various locations region wide	11	62,205,000	23,037,000
Regional	RTA	Bus Stop Amenities Upgrade	Various locations region wide	70	1,890,000	700,000
Northwest/Central	RTA	Central Spine Service Capital	Corona, Riverside, Moreno Valley	24	13,200,000	4,888,000
Northwest/Pass	RTA	SR60 Regional Flyer Capital	SR-60 corridor from SB Co. to Banning	45	24,750,000	9,166,000
Northwest/San Jacinto	RTA	I-215/SR74 Regional Flyer Capital	I-215/SR-74 corridor from Riverside to San Jacinto	37	20,350,000	7,536,000
Northwest/Southwest	RTA	I-15 Regional Flyer Capital	I-15 Corridor from SB Co. to Temecula	49	26,950,000	9,981,000
Regional	RTA	Regional Flyer Vehicle Fleet	Various routes region wide	32	17,600,000	6,518,000
Total					166,945,000	61,826,000

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 2035 Baseline network in RivTAM and the model was run to determine the relative impacts on traffic conditions. To quantify the impacts of the TUMF Network improvements, the various traffic measures of effectiveness described in **Section 3.1** for the 2007 and 2035 base networks were again calculated for the 2035 TUMF Network scenario. The results for VMT, VHT, VHD, and total VMT experiencing unacceptable level of service (LOS E) were then compared to the results presented in **Table 3.1** for the no-build conditions. The 2035 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 VMT on arterial facilities experiencing LOS of E or worse will decrease by 14% 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 33%. It should be noted that the total VMT on the arterial system **increases** by 8% 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 2035, 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 8%, VHT on the arterial system decreases by 6% indicating traffic is able to move more efficiently. Additionally, a substantial benefit is observed on the freeway system with VHT reduced by 5% following TUMF improvements. By completing TUMF improvements, the total VHD experienced by all area motorists would be reduced by 24% over the levels that would be experienced in 2035 without TUMF improvements. These results highlight the overall effectiveness of the TUMF Program to mitigate the cumulative regional transportation impacts of new development.

**Table 4.6 – Regional Highway System Measures of Performance
(2035 Base versus 2035 TUMF Network)***

Measure of Performance (Daily)	2035 (Base)**	2035 (TUMF Network)**	% Change
VMT - TOTAL ALL FACILITIES	60,772,353	62,457,677	3%
VMT – FREEWAYS	32,920,502	32,321,916	-2%
TOTAL ARTERIAL VMT	27,851,851	30,135,761	8%
VHT - TOTAL ALL FACILITIES	2,385,725	2,274,736	-5%
VHT - FREEWAYS	1,301,737	1,230,030	-6%
TOTAL ARTERIAL VHT	1,083,988	1,044,706	-4%
VHD - TOTAL ALL FACILITIES	1,049,291	909,428	-13%
VHD – FREEWAYS	704,578	647,606	-8%
TOTAL ARTERIAL VHD	344,713	261,822	-24%
VMT LOS E – TOTAL ALL FACILITIES	50,001,659	47,005,020	-6%
VMT LOS E – FREEWAYS	31,864,589	31,321,324	-2%
TOTAL ARTERIAL VMT w/ LOS E or worse	18,137,070	15,683,696	-14%
% of ARTERIAL VMT w/ LOS E or worse	36%	33%	

* Based on RivTAM

** Volume is adjusted by PCE factor

NOTES:

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. Daily capacity was calculated as ten times AM peak hour capacity)

LOS E or Worse was determined by V/C ratio that exceeds a 0.9 threshold 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 improvements on the TUMF system, 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 bring together 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 current level of 1.57 million to a future level of over 2.54 million in 2035, while employment is projected to grow from a current level of 516,000 to a future level of over 1,091,000 (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 long-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, grade

separation of at-grade rail crossings, or expansion of intersections where two network roads intersect. The completion of improvements to the arterial roadway system would enhance regional mobility and reduce the total vehicles hours of travel (VHT), vehicle hours of delay (VHD) and the share of traffic experiencing congestion (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 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 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 2035 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 vehicle trips within and between each of the zones. **Table 5.2** shows the percentage of 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 - 2035 Vehicle Trips By WRCOG Zone

From \ To	Northwest	Central	Pass	Hemet/San Jacinto	Southwest	Outside WRCOG	TOTAL
Northwest	1,649,453	125,529	12,488	13,513	48,805	492,036	2,341,824
Central	122,107	634,680	17,147	38,879	62,276	93,426	968,516
Pass	12,329	17,266	297,383	15,493	4,294	76,059	422,823
Hemet/San Jacinto	13,455	39,533	15,999	637,823	34,764	31,824	773,399
Southwest	48,092	62,597	4,328	34,323	911,069	67,825	1,128,235
Outside WRCOG	483,400	92,063	73,415	30,557	67,110		746,546
TOTAL	2,328,835	971,669	420,761	770,588	1,128,320	761,171	6,381,343

Based on RivTAM Year 2035 Base scenario

Table 5.2 - 2035 Percent Vehicle Trips By WRCOG Zone

From \ To	Northwest	Central	Pass	Hemet/San Jacinto	Southwest	Outside WRCOG	TOTAL
Northwest	70.4%	5.4%	0.5%	0.6%	2.1%	21.0%	100%
Central	12.6%	65.5%	1.8%	4.0%	6.4%	9.6%	100%
Pass	2.9%	4.1%	70.3%	3.7%	1.0%	18.0%	100%
Hemet/San Jacinto	1.7%	5.1%	2.1%	82.5%	4.5%	4.1%	100%
Southwest	4.3%	5.5%	0.4%	3.0%	80.8%	6.0%	100%

Based on RivTAM Year 2035 Base scenario

Table 5.3 summarizes the calculation of the split between the Backbone and Secondary highway networks as derived from the trip values provided in **Table 5.1**. 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. 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. 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 43.4% of the lane-miles on the future TUMF system, and the Secondary network includes approximately 56.6% of the lane-miles.

The Backbone network is therefore assigned all of the inter-zonal trips plus 43.4% of the intra-zonal trips. The Secondary network is assigned 56.6% of the intra-zonal trips and none of the inter-zonal trips. The overall result is that 52.0% of the regional travel is assigned to the Backbone network and 48.0% 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 Vehicle Trips	6,381,343				
Less Internal/External Vehicle Trips	-1,507,717				
Total Vehicle Trips Internal to Western Riverside County	4,873,626				
Vehicle Trips Between TUMF Zones	743,218				
Vehicle Trips Within TUMF Zones	4,130,408				
TUMF Future Network Lane-Miles	3,377.2	1,465.2	43.4%	1,912.0	56.6%
Vehicle Trips Between TUMF Zones	743,218	743,218	100.0%	0	0.0%
Vehicle Trips Within TUMF Zones (as share of intra-zonal trips)	4,130,408	1,792,597	43.4%	2,337,811	56.6%
Total Vehicle Trips Assigned	4,873,626	2,535,815	52.0%	2,337,811	48.0%

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, 2035 Base person trip productions from RivTAM were aggregated by trip purpose. RivTAM produces person trips (irrespective of mode choice) on the basis of six trip purposes: home-based-work (HBW), home-based-other (HBO), home-based-school K-12 (HBS), home-based-college/university (HBC), 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, person trip productions were aggregated into home-based person trips (combining the first four purposes: HBW, HBO, HBS, HBC) and non-home-based person trips (combining the last two purposes: WBO, OBO). The home-based person trips represent 69.2% of the total future person trips, and the non-home-based person trips represent 30.8% of the total future person trips 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 - Residential vs. Non-Residential Person Trip Production

PERSON TRIP PURPOSE	PERSON TRIP PRODUCTION VOLUME	PERSON TRIP PRODUCTION SHARE
Home-Based-Work	1,516,967	17.6%
Home-Based-Other	3,659,649	42.5%
Home-Based-School K-12	711,193	8.3%
Home-Based-College/University	67,119	0.8%
Work-Based-Other	562,715	6.5%
Other -Based-Other	2,083,468	24.2%
TOTAL	8,601,111	100.0%
Home-Based Trips (Residential Uses)	5,954,928	69.2%
Non-Home-Based Trips (Non-Residential Uses)	2,646,182	30.8%

Based on the SCAG 2004 Regional Transportation Plan, Year 2030 Plan scenario.

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 \$4.26 billion. Existing funding obligated for improvements to the TUMF system totals \$270.8 million while unfunded improvement needs generated by existing development represent \$330.1 million of the total cost. The balance of the unfunded TUMF system improvement needs is \$3.77 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 \$3.77 billion in unfunded future improvement needs, 69.2% (\$2.61 billion) will be assigned to future new residential development and 30.8% (\$1.16 billion) 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 \$2.61 billion. Since this future transportation system improvement need is generated by new residential development anticipated through the Year 2035, the fee will be spread between the residential developments projected to be constructed between 2007 and 2035. The projected residential growth from year 2007 to 2035 is 351,679 households (or dwelling units) as is indicated in **Table 2.1**.

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 RCCDR forecasts included in **Appendix B**, single family dwelling units (including mobile homes) are forecast to constitute 62.6% of the residential dwelling units in the region in 2035.

Data provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, Eighth Edition (2008) show that, on average, single-family dwelling units generate 9.57 vehicle trips per dwelling unit per day, whereas apartments (considered to be representative of higher density multi-family dwelling units) generate 6.72 vehicle trips per unit per day⁷. If the fees are to be weighted in proportion to the trip generation

⁷ Based on ITE Trip Generation (2008), the “Apartment” land use category has trip generation characteristics indicative of a wide range of higher density multi-family residential development. The Trip Generation Manual indicates that the apartments category encompasses “a wide variety of units with different sizes, price ranges, locations and ages.”

characteristics of the units, single-family residential units should be assigned a fee level that is 1.42 times the level of the fee assigned to each multi-family unit to levy the necessary \$2.61 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 (\$2.61 billion)							
RESIDENTIAL SECTOR	2007 Dwelling Units	2035 Dwelling Units	Dwelling Unit Change	Trip Generation Rate	Trip Change	Percentage of Trip Change	Fee/DU
Single-Family	395,409	552,154	156,745	9.57	1,500,050	53.4%	\$8,873
Multi-Family	134,880	329,814	194,934	6.72	1,309,956	46.6%	\$6,231
TOTAL	530,289	881,968	351,679		2,810,006	100.0%	
Household data based on RivTAM; Trip Generation based on ITE <u>Trip Generation</u> (2008).							

6.2 Non-Residential Fees

The portion of the unfunded future improvement cost allocable to new non-residential development through the TUMF is \$1.16 billion. Estimates of employment by sector were obtained from the RCCDR socioeconomic data included in **Appendix B**. From the 2035 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 developed by SCAG in its Land Use Density Conversion Factors for the Long Range Corridor Study San Bernardino and Riverside Counties (Cordoba Corporation/PBQD, August 20, 1990) and OCTA in its Orange County Subarea Modeling Guidelines Manual (June 2001). 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 – Eighth Edition (2008), and were assigned to the non-residential categories as follows: Industrial – 3.2 trips per employee, Retail – 15.4 trips per employee⁸, Service – 4.2 trips per employee, and Public – 14.3 trips per employee. 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 \$1.16 billion 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

⁸ The median trip generation rate for 'Retail' was reduced by 43% to reflect the influence of pass-by trips using the weekday PM peak median pass-by trip rate for retail uses as derived from the ITE Trip Generation Handbook (June 2004).

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 (\$1.16 billion)						
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	101,211	3.2	318,815	8.6%	57,535,808	\$1.73
Retail	47,594	15.4	732,948	19.7%	21,758,982	\$10.49
Service	338,226	4.2	1,420,549	38.1%	105,461,087	\$4.19
Government/Public	87,888	14.3	1,252,404	33.6%	39,061,333	\$9.98
TOTAL	574,919		3,724,715	100.0%	223,817,210	
Employment Change data based on RCCDR; Trip Generation based on ITE (2008); Change in Square Feet conversion factor based on Cordoba (1990) and OCTA (2001).						

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 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 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	156,745	\$8,873	\$1,390.8
Multi Family Residential	DU	194,934	\$6,231	\$1,214.6
Industrial	SF GFA	57,535,808	\$1.73	\$99.3
Retail	SF GFA	21,758,982	\$10.49	\$228.2
Service	SF GFA	105,461,087	\$4.19	\$442.3
Government/Public	SF GFA	39,061,333	\$9.98	\$389.9
MAXIMUM TUMF VALUE				\$3,765.1