

# TRANSPORTATION ACTIVE TRANSPORTATION SYSTEM

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS



APPENDIX  
ADOPTED | APRIL 2016

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**APPENDIX**  
TRANSPORTATION SYSTEM | ACTIVE TRANSPORTATION  
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# ACTIVE TRANSPORTATION

## INTRODUCTION

The Southern California Association of Governments (SCAG) region's temperate climate and geographic diversity, including expansive beaches, arid deserts, inland valleys and formidable mountains, help explain why more than 18 million people choose to call it home, and why the region continues to experience growth in population, households and employment. Over the course of the next 25 years, population growth and demographic shifts will continue to transform the character of the SCAG region and the demands placed on it for livability, mobility, and overall quality of life. Our future will be shaped by our response to this growth and the demands it places on our systems.

One way SCAG is responding to these challenges is by embracing sustainable mobility options (including active transportation). This report, the Active Transportation Appendix to the 2016 RTP/SCS, represents how the region plans to use active transportation to help meet these challenges over the next 25 years, including longer-trip strategies for commuters and active recreation, integrating active transportation with transit, short-trip strategies for utilitarian trips (shopping, school, local retail), and safety/encouragement. It presents the background, existing conditions, progress since the 2012 RTP/SCS, new strategies, and actions making it easier and safer to walk and bike in Southern California.

## BACKGROUND

### DEFINITION OF ACTIVE TRANSPORTATION

"Active transportation" refers to human powered transportation and low-speed electronic assist devices. Examples include but are not limited to: bicycle, tricycle, wheelchair, scooter, skates, skateboard, push scooter, trailer, and hand cart. For the purposes of this report, the analysis will generically refer to active transportation trips as bicycle and pedestrian trips, since these represent the majority of active transportation trips, and a growing body of data and research is available to support the analysis of the effects of these trips on the broader transportation system.

Walking and bicycling are essential parts of the regional transportation system. Nearly everyone is a pedestrian at some point during the day. Bicycling increases the mobility for those without motor vehicles dramatically. Active transportation is low cost, does not emit greenhouse gases, can help reduce roadway congestion, and expand transit ridership. See [FIGURE 1](#) to learn more.

## BICYCLISTS

### TYPES OF BICYCLISTS

There are two methods of classifying bicyclists. The first is to classify them by the type of trip being taken (commuter, recreation, and utilitarian). The second method is to classify cyclists by their comfort level riding on streets (fearless, confident, concerned, no interest). The first classification helps planners choose where to build bikeways. The second classification helps planners choose the type of bikeway that best meets the community needs.

### CATEGORIES OF BICYCLISTS

#### Bicyclists by Trip Purpose

- **Commuter:** A bicyclist who uses a bicycle to go to/from places of employment, distinct from exercise/recreation or utilitarian. These are typically longer trips and focused on home-to-employment areas in as direct a manner as practical. Some commuter bicyclists ride not by choice, but necessity.
- **Exercise/Recreation:** Primary needs of recreational cyclists are similar to that of commuter bicyclists, except that their travel routes are less focused on access to business, shopping, and other commercial areas. Exercise may also be a motivation for commute trips for those who bicycle by choice, not necessity. These trips can be longer, with focus on hills, and avoiding stop signs/lights. Alternatively, they can be low-speed cruising along dedicated bikeways or local jurisdiction streets.
- **Utilitarian:** Riders may also use bicycles for shopping, dining, and entertainment. These are short trips, often less than 2-3 miles.

It should be noted that trips may involve several purposes, and some trips may fit into more than one category.

#### Bicyclists by Comfort Level

Bicyclists can also be categorized by the type of bikeway/roadway environment they are willing to travel. This method of categorization was originated by the Portland Office of Transportation<sup>1</sup> and has since been used by many local governments to determine what type of facility treatments may provide the greatest benefit in a given location or corridor.

The four types of cyclists are:

1. **Strong and Fearless:** Likely comprises less than one percent of the population. They will ride on most roadways regardless of traffic conditions.
2. **Enthusied and Confident:** Likely comprises six to eight percent of the population.

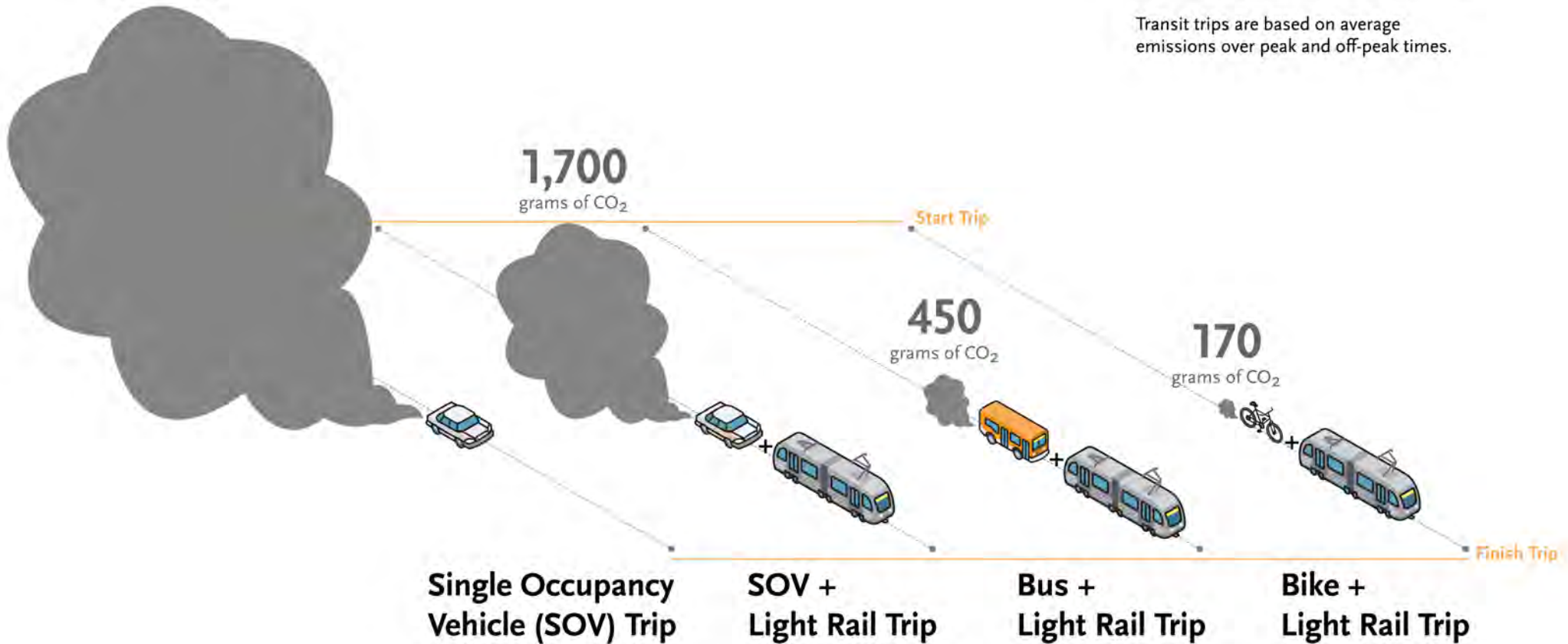
FIGURE 1 Greenhouse Gas Emissions Per Person Per Trip

# Greenhouse Gas Emissions Per Person Per Trip

3,600  
grams of CO<sub>2</sub>

Units are approximate grams of CO<sub>2</sub> equivalent from life-cycle assessment based on long-term emissions projections.

Transit trips are based on average emissions over peak and off-peak times.



Mikhail Chester et al, "Infrastructure and Automobile Shifts: Positioning Transit to Reduce Life-Cycle Environmental Impacts for Urban Sustainability Goals", *Environmental Research Letters* 8, no.1 (2013). doi:10.1088/1748-9326/8/1/015041

- They are comfortable sharing the roadway with automobile drivers, but prefer dedicated bikeways such as bicycle lanes, bicycle boulevards or paths.
  - 3. **Interested but Concerned:** Likely comprises 60 percent of the population. They would like to ride but are not comfortable sharing the roadway with motor vehicles, particularly on streets with faster travel speeds and heavy traffic. They may bicycle ride on neighborhood streets, but rarely venture outside of residential neighborhoods or bicycle paths.
  - 4. **No Way, No How:** Likely comprises about 30-35 percent of the population. This group has no desire to ride bicycles at all, for a variety of reasons.
- FIGURE 2** indicates the average percentages of bicyclists by type, although it must be noted that not all bicyclists fit neatly into any one category.

### TYPES OF BIKEWAYS

A comprehensive bicycle network aims to serve the needs of all categories of bicyclists, covering a wide range of trip purposes and accommodating the needs of bicyclists at different comfort levels. Mekuria, Furth and Nixon<sup>7</sup> proposed a scheme for classifying road types by one of four levels of traffic stress (LTS) that corresponds to the needs of different types of bicyclists. Table 1 shows the general street types for levels of traffic stress.

- LTS 1, the level that most children can tolerate;

- LTS 2, the level that will be tolerated by the mainstream adult population;
- LTS 3, the level tolerated by American cyclists who are “enthused and confident” but still prefer having their own dedicated space for riding; and
- LTS 4, a level tolerated only by those knowledgeable about safe practices for bicycling in traffic, and are characterized as “strong and fearless.”<sup>3</sup>

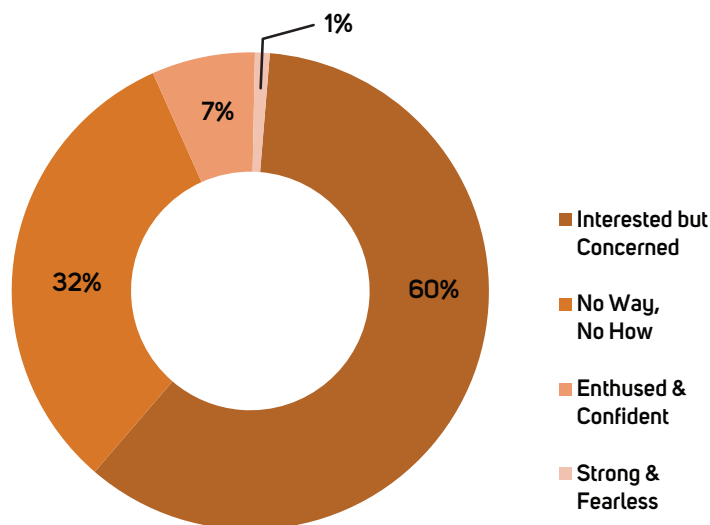
The level of stress is determined by the physical criteria of a roadway as well as traffic conditions and their contributions to stresses placed on bicyclists. Some general factors include:

- Absence or presence of dedicated bikeways
- Roadway/shoulder widths
- Number of travel lanes
- Speed of traffic
- Average daily traffic
- Presence of on-street parking
- Road condition/quality of pavement
- Frequency of driveways

Other stresses may include steep hills, crime danger, lack of lighting, or the aesthetics of the surrounding area. By developing criteria to approximate or visualize the levels of stress involved in biking on a roadway, one may be able to better determine the type of bikeway or facility needed to meet local needs.

A growing number of bicycle facilities and treatments are available to transportation planners within California to make bicycling a safe and attractive choice for all types and levels of riders. These facilities include different types of bicycle lanes, bicycle priority streets (Bicycle Boulevard), bicycle parking facilities, and more recently, services such as bike share.

**FIGURE 2** Four Types of Cyclists



Source: Portland Oregon Department of Transportation

## PEDESTRIANS

### TYPES OF PEDESTRIANS

Categories of pedestrians are similar to categories of bicyclists. They can be grouped by trip purpose, as well as ability or willingness to make a trip by foot (or with a travel-assist device). Pedestrians grouped by trip purpose include:

- Commuters requiring quick and direct access to employment or transit.
- Utilitarian walkers requiring easy, attractive, and safe access to vital services including medical, grocery, public transit, child care, retail, and other key destinations.
- Recreation and fitness pedestrians requiring safe and unobstructed quality infrastructure for unimpeded walking/jogging.

Pedestrians also differ by ability and willingness to walk in different settings. Some pedestrians require assist devices or rest stops to complete their journey. Careful attention in design and placement of utility poles, trees, bus stops, and other necessary items, as well as intersection curb cuts, is necessary to allow mobility for these users. Meeting the needs of these users through the Americans with Disability Act (ADA) requirements will satisfy the needs of other users as well. This is referred to the 8-80 concept, based on the premise that if you build a local jurisdiction that is great for an 8-year-old and an 80-year-old, then you will build a successful local jurisdiction for everyone.<sup>4</sup>

**TABLE 1** Level of Traffic Stress

Speed Limit	Number of Lanes		
	2-3 Lanes	4-5 Lanes	6+ Lanes
Up to 25 mph	LTS1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

*Note: Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes (center turn lane considered a lane); Use higher value otherwise. Source: Mineta Transportation Institute*

### TYPES OF PEDESTRIAN FACILITIES

Sidewalks have several components: the curb zone, furniture zone, pedestrian zone and in commercial districts, the frontage zone<sup>5</sup>

- **Curb Zone:** The area immediately next to the roadway, usually about 4-6 inches wide. The curb zone is placed where pedestrians cross from the sidewalk to the street; it can be a barrier to people with disabilities if not installed properly.
- **Furniture zone/Planter Zone:** The area between the pedestrian walkway and the curb zone. This area is where shade trees, utility poles, traffic meters, bicycle racks, and other necessary obstructions reside. They are often eliminated in newer suburban areas. These areas make it easier for motorists to locate driveways and parking lot entrances. Motorists are then more likely to yield to pedestrians.
- **Pedestrian Zone:** The area where pedestrians walk. It is supposed to be free of obstructions, but rarely is that specified. There is no maximum sidewalk width, and minimum is defined at the local level.
- **Frontage Zone:** The area that separates store fronts, fences, and walls from a pedestrian zone. In residential areas, the “front yard” serves as the frontage zone between the sidewalk and structure.

In rural areas, a paved roadway shoulder wide enough to accommodate pedestrians can help to prevent walking along the edge of travel lanes, thereby reducing the risk of being hit by a motor vehicle.

### INTERSECTION TREATMENTS

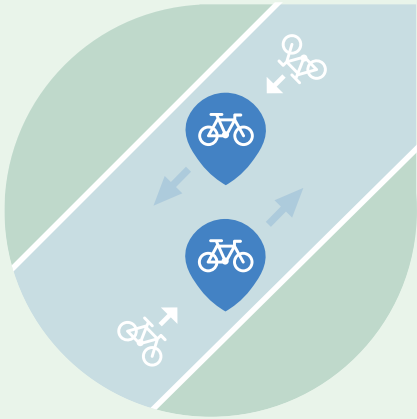
Walkers, bicyclists, buses, trucks, and automobiles converge at intersections, requiring the most concentration from all roadway users. As many modern roadways have been designed for the efficient use of motor vehicle traffic, the consideration of bicyclist and pedestrian safety and convenience has often been a secondary concern. In the SCAG region, nearly 44 percent of all pedestrian injuries are at intersections.<sup>6</sup> To improve intersection safety, the California Department of Transportation (Caltrans) and local agencies are now utilizing a complete streets approach to intersections.<sup>7</sup> The complete streets approach to intersection design has one controlling assumption: “assume bicyclists and pedestrians will be there.” It is better to design to meet pedestrian and bicyclist mobility and safety needs, rather than assume they will not use the facility.<sup>8</sup>

This complete streets approach involves reducing speed for turning movements, improving sight lines for crosswalks and reducing crossing distances. New innovative treatments include:

- Bulb-outs (reduces crossing distance, improves visibility).
- Median sanctuary islands (improves safety for slower pedestrians).

# CLASSIFICATIONS: CALTRANS HIGHWAY DESIGN MANUAL

## Class I Bikeways



## Class II Bikeways



## Class III Bikeways



## Class IV Separated Bikeways



The Caltrans Highway Design Manual currently classifies bicycle lanes, bicycle paths and routes in the following method:

### Class I Bikeways

Class I Bikeways are also known as bicycle paths, shared-use paths or bicycle trails. A Class I Bikeway provides a completely separated right-of-way designated for the exclusive use of bicycles and/or pedestrians with cross flows by motorists minimized. Some of the region's rivers include Class 1 Bikeways. Some of the region's rivers include Class 1 Bikeways. Increasing the number of bikeways along rivers, utility corridors, and flood control channels may provide additional opportunities for "interested but concerned" cyclists."

### Class II Bikeways

Often referred to as a "bicycle lane," a Class II Bikeway provides a striped lane for one-way bicycle travel on a street or highway. Buffered bike lanes include a greater striped separation from travel lanes than traditional bike lanes.

### Class III Bikeways

Class III Bikeways are also known as "bicycle routes" and provide for shared use with pedestrians and/or motor vehicle traffic. Traditionally, they have been represented by signage only. More recently, "sharrow" symbols painted in the travel lane signify Class 3 bikeways.

### Class IV Separated Bikeways

Separated Bikeways are bicycle lanes on a street or highway physically separated from travel lanes occupied by vehicles. Separated Bikeways are in place in several cities in northern and southern California. Caltrans incorporated Separated Bikeways into the California Manual for Uniform Traffic Control Devices (MUTCD) and Highway Design Manual in December 2015.

### Bicycle Boulevards (NACTO Design Manual)

Bicycle Boulevards refer to low speed, mostly residential streets where bicycling and walking are considered the primary modes. Sometimes used for traffic calming, the installation of bicycle boulevards discourage non-local vehicle traffic while allowing free flow of bicyclists. As an example, traffic diverters allow free flow for bicyclists and allow vehicle access to property for homeowners, but direct most motorists to arterial streets. By reducing speeds and access, safety for bicyclists and pedestrians is increased.

The City of Long Beach installed a bicycle boulevard on Vista Street in the Belmont Heights neighborhood. Methods used include traffic circles, a bicycle only signal, road narrowing and barriers forcing motorists to turn left or right while allowing bicyclist access.

- Scramble Crossings (where entire intersections are closed to vehicle traffic for one signal cycle and pedestrians cross in all directions).
- Countdown pedestrian timers (let pedestrians know how much time is left to finish crossing).<sup>9</sup>
- Improved street lamp locations (better illuminate pedestrians during night-time conditions).
- Innovative signals at mid-block crossings, such as in-pavement flashers and Hi-Intensity Activated Crosswalk signals (warn motorists that pedestrians are crossing the roadway).
- Roundabouts on low-speed streets (slows traffic, but can improve traffic flow)

## COMPLETE STREETS

In recognition of the need to accommodate various types and needs of roadway users, the State of California adopted the Complete Streets Act of 2008 (AB 1358) requiring local jurisdictions and counties to incorporate the concept of Complete Streets to any substantive update to their general plan's circulation element. As defined by the National Complete Streets Coalition, Complete Streets are streets designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Complete Streets improve user safety, manage traffic congestion, enhance economic development, and address social justice.<sup>10</sup>

Many of the bicycle and pedestrian facilities described above are core elements of complete streets. Taking a complete streets approach when implementing these facilities can help public agencies make the most efficient use of scarce resources. For example, incorporating complete streets principles into roadway maintenance significantly reduces the cost of implementing active transportation facilities, when compared to delivering a stand-alone active transportation project. For the purpose of the 2016 RTP/SCS, SCAG does not treat Complete Streets as a separate or unique facility type. Rather, the plan focuses on incorporating Complete Streets principles as an approach for integrating bicycle and pedestrian facilities into the design and financial plan for major transportation investments and roadway maintenance.

## LAND USE AND TRAVEL BEHAVIOR

There is a strong relationship between land use and travel behavior. Land use characteristics play a key role in determining the conditions for, and feasibility of, walking and biking in a community, due to the sensitivity of these modes to trip length. Research has found that urban form, transportation supply, and management policies affect VMT, automobile, active transportation, and transit travel through at least eight mechanisms, referred to as the "8 Ds":

1. Density residential and employment concentrations.
2. Diversity: jobs/housing, jobs mix, retail/housing.
3. Design: connectivity, walkability of local streets and non-motorized circulation.
4. Destination: accessibility to regional activities.
5. Distance to Transit: proximity to high quality rail or bus service.
6. Development Scale: critical mass and magnitude of compatible uses.
7. Demographics: household size, income level and auto ownership.
8. Demand Management: pricing and travel disincentives.<sup>11</sup>

A conventional (automobile biased) suburban configuration of streets, blocks and land uses inhibit walking and bicycling trips by design. The result is that the choice to walk or bike to a destination, rather than drive, is discouraged before communities are even built. Land uses such as cul-de-sacs can discourage these short trips by artificially lengthening the trips, as represented by **FIGURE 3**.

A more connected configuration of streets, blocks, and land uses exhibits quantifiable reductions in auto trip generation. This, in turn, lowers social costs related to traffic congestion and air quality and increasing community livability. The average walking trip in the SCAG region is one half mile, or about a ten-minute walk. A majority of trips in the SCAG region less than a quarter mile (67 percent) are walking trips but walking declines rapidly beyond a quarter mile.<sup>12</sup>

Time to bicycle one mile is about five minutes at a casual speed, but only two percent of all trips less than one mile are bicycling trips.<sup>13</sup> **FIGURE 6** and **FIGURE 7** represent short distance walking and bicycling trips, respectively.



## BACKGROUND CONDITIONS

The state of active transportation networks and levels of walking and biking across the region vary dramatically from county to county, local jurisdiction to local jurisdiction and neighborhood to neighborhood. While walking and biking are often viewed as very localized activities, the condition of the network and level of use have significant implications for regional mobility. It is beyond the scope of a regional plan to analyze conditions at the ground level across the entire region. However, this section regarding background conditions aims to describe regional trends and challenges in order to determine what strategies are necessary to improve safety and increase the numbers of bicyclists and pedestrians.

## SAFETY

Safety is a key goal in the plan. Vulnerable roadway users such as pedestrians and bicyclists are street users that lack the protection that operators and passengers of motor vehicles take for granted. In cases of crashes, vulnerable users are at a much greater risk of serious injuries. While overall traffic fatalities have decreased nationwide, and in California the number of bicyclists and pedestrian injuries has increased. The number of fatalities for bicyclists and pedestrians was higher in 2012 than it was in 2007.

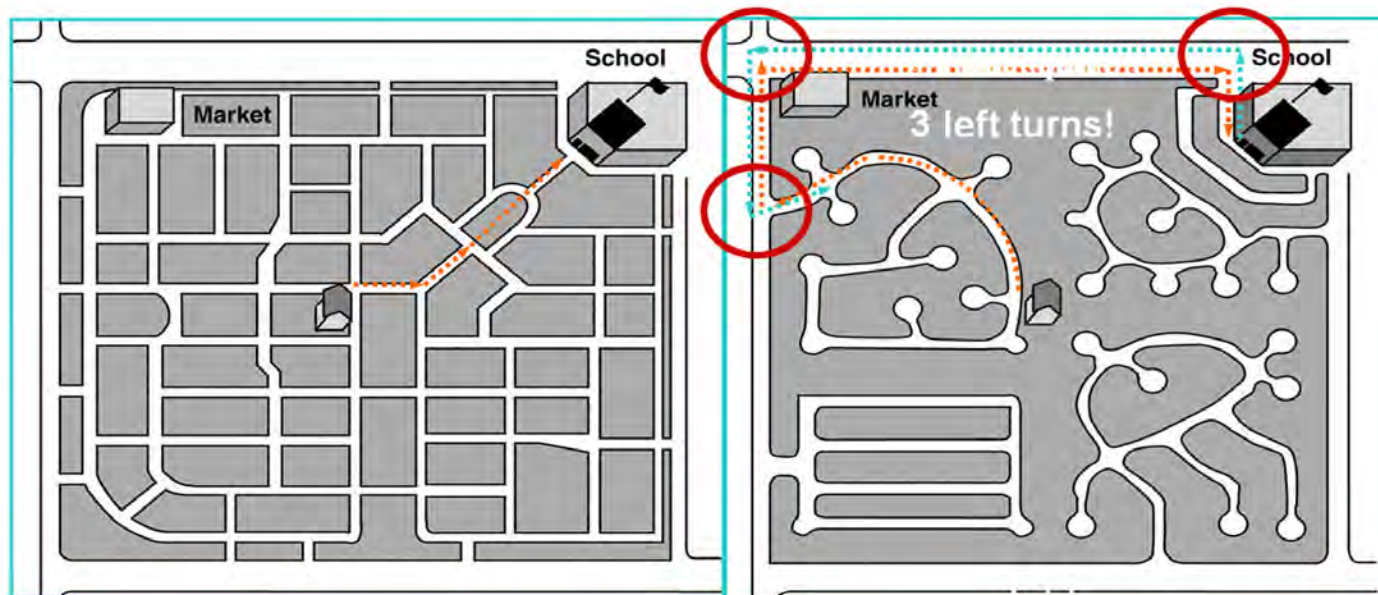
## COLLISIONS AND FATALITIES

While the numbers of bicyclists and pedestrians are increasing, so are injuries and fatalities, although not as fast as the growth in active transportation. In California, 64,127 pedestrians were injured and 3,219 were killed between 2008 and 2012. In 2012 alone, 13,280 pedestrians were injured and 702 pedestrians were killed.<sup>14</sup> In the SCAG region, 27.5 percent and 4.5 percent of all traffic fatalities were pedestrians and bicyclists, respectively, in 2012. Traffic injuries were 6.4 percent and 6.1 percent for pedestrians and bicyclists, respectively, in 2012.

As can be seen from **TABLE 2**, pedestrian fatalities were declining year over year until 2011, with two years of increased fatalities and injuries. Pedestrian fatalities in the SCAG region increased 20 percent between 2011 and 2012. Injuries increased by 6 percent during the same period. The majority of fatalities and injuries are in Los Angeles County, which encompasses half of the regional population. Los Angeles County represented 56 percent and 72 percent of all pedestrians killed and injured, respectively, in the region in 2012.

Bicyclist fatalities declined annually between 2008 and 2010, but increased 52 percent between 2010 and 2011 before decreasing in 2012. The small number of fatalities each year may be a reflection of an annual fluctuation. Bicyclist injuries, however, showed an annual increase each year between 2007 and 2012, increasing by 54 percent between 2007 and 2012.

**FIGURE 3** Comparison: Street Grid vs. Cul-de-Sac



As bicycling has increased dramatically in the SCAG region in the past decade (nearly doubling), it may be that the increased number of bicyclists is reflected in the increased number of injuries. However, this trend is worrisome, and it requires countermeasures as it conflicts with research. The BMJ (formerly the British Medical Journal) found “a non-linear relationship, such that collisions rates declined with increases in the numbers of people walking or bicycling.”<sup>15</sup>

## LOCATIONS OF COLLISIONS

A review of the Statewide Integrated Traffic Reporting System (SWITRS) shows the greatest percentage of collisions causing bicyclist injuries are broadside, indicating collisions at conflict points (intersections, driveway/parking lot entrances) as seen in [FIGURE 4](#).

In reviewing locations of collisions resulting in pedestrian injuries, [FIGURE 5](#) notes the majority take place at an intersection crosswalk, where conflicts typically occur. The second leading location was crossing, but not in a crosswalk. This can be at a legal but unmarked crosswalk, or it could be jaywalking.

As can be seen in [EXHIBIT 1](#) and [EXHIBIT 2](#), bicyclist and pedestrian injury collisions are clustered in urbanized Los Angeles County. Other clusters are along the coast in popular beach cities.

## TIME OF COLLISIONS

**TABLE 2** Pedestrian and Bicyclist Fatalities in the SCAG Region 2007-2012

Year	Pedestrian				Total (all modes)	
	Killed	Injured	Killed	Injured	Killed	Injured
2007	354	7,289	57	4,813	1,740	138,778
2008	321	7,178	61	5,391	1,533	124,975
2009	312	7,224	49	5,840	1,297	120,709
2010	301	6,622	44	6,349	1,172	119,655
2011	303	6,690	67	7,051	1,212	118,981
2012	363	7,087	62	7,428	1,321	121,304

Orange indicated increased incidents; Green indicates decreased incidents  
Source: SWITRS Table 8, 2007 -2012

As represented in [FIGURE 8](#) and [FIGURE 9](#), on an average Monday pedestrian injuries tend to occur during the morning rush hour, drop in number afterward and then climb steadily before peaking again even higher during the afternoon and early evening rush hours. The number of pedestrian injuries drops sharply afterward. The number of pedestrian injuries during an average Saturday start low and then climb during the course of the day, peaking during the afternoon rush hours before dropping dramatically.

As represented in [FIGURE 10](#) and [FIGURE 11](#), bicyclist injuries occurring during an average Monday are similar to pedestrian injuries. There is a peak during the morning rush hour, a drop, then a climb toward an afternoon peak during rush hours, dropping off dramatically afterward. On an average Saturday, bicyclist injuries rise after the morning rush hour, then stay high all day, then drop after the evening rush hours.

## LIGHTING CONDITIONS

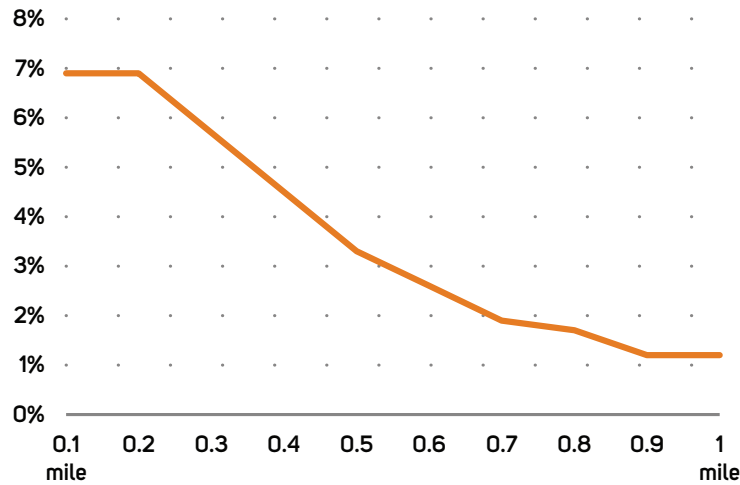
Most collisions resulting in bicyclist or pedestrian injuries occur during daylight hours (see [FIGURE 12](#) and [FIGURE 13](#)). Review of the SWITRS data show that the predominant road condition was “no unusual conditions.” Collisions in the Inland Empire had a higher “Dark – No Street Lights,” with four percent of bicycle injuries, and 13 percent of pedestrian injuries. A review of collisions by month indicate that more pedestrians are involved in collisions in the winter months, while cyclist collisions peak during the summer.

## LAND USE AND ACTIVE TRANSPORTATION

As discussed in the Background section, land use comprises a significant role in the conditions and level of walking and biking in a community. The SCAG region hosts 191 local jurisdictions across six counties, representing a built environment that runs from urban to suburban to rural land uses. While southern California has a reputation for being spread out and auto-oriented, many people live and work in locations with land use patterns that support active transportation. An analysis done for SCAG looked at land uses and active transportation. Dividing the region’s nearly 200,000 land parcels into six different types of land uses, or “place types,” SCAG examined biking and walking in each place type based on regional data collected as part of the 2012 California Household Travel Survey. The survey indicated that walking and biking represented nearly 20 percent of all trips. In the most urban areas, walking, and to a lesser extent bicycling, represented up to 44 percent of all trips,<sup>16</sup> as shown in [TABLE 3](#).

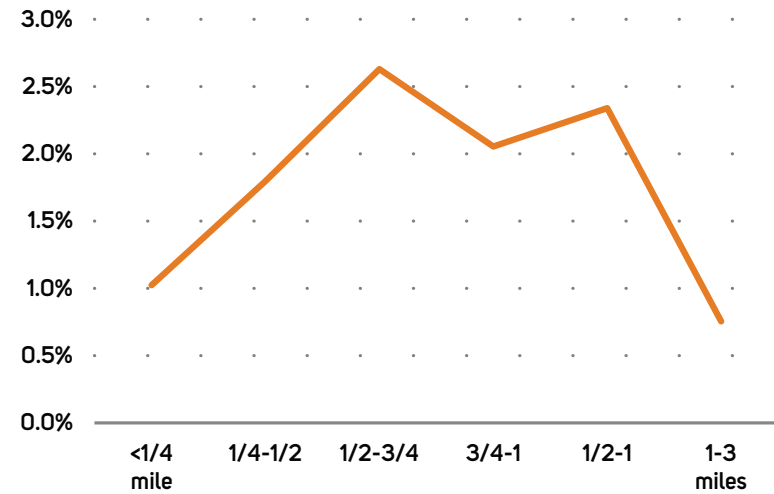
According to the 2012 California Household Travel Survey, 20 percent of lowest density neighborhoods in the SCAG region (<2 households/acre) have no sidewalks. [FIGURE 14](#) and [FIGURE 15](#) suggest less urban environments tend to have less walking, possibly because of the greater distances to goods, services, and jobs.

**FIGURE 6** Walking as % of all Trips < 1 Mile



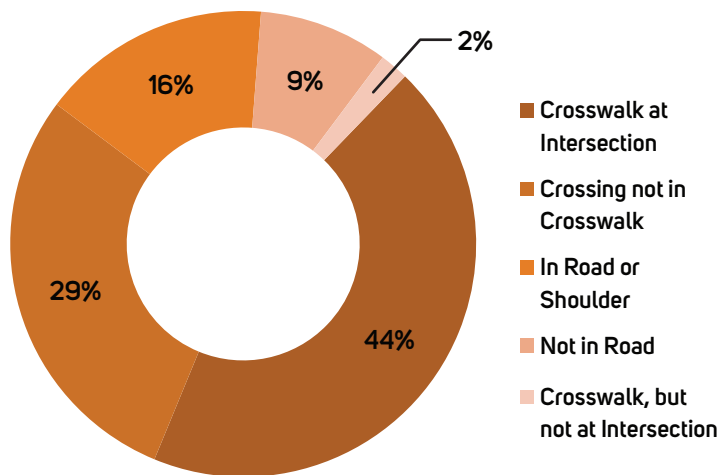
Source: California Household Travel Survey (2012)

**FIGURE 7** Biking as % of all Trips < 3 Miles



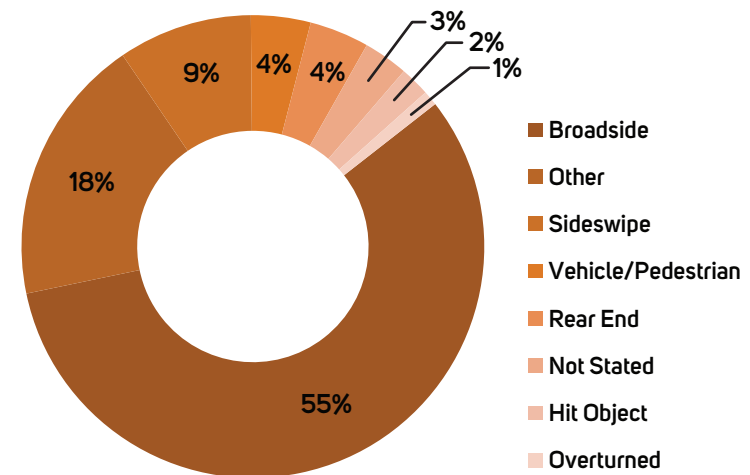
Source: California Household Travel Survey (2012)

**FIGURE 4** Pedestrian Injury Locations



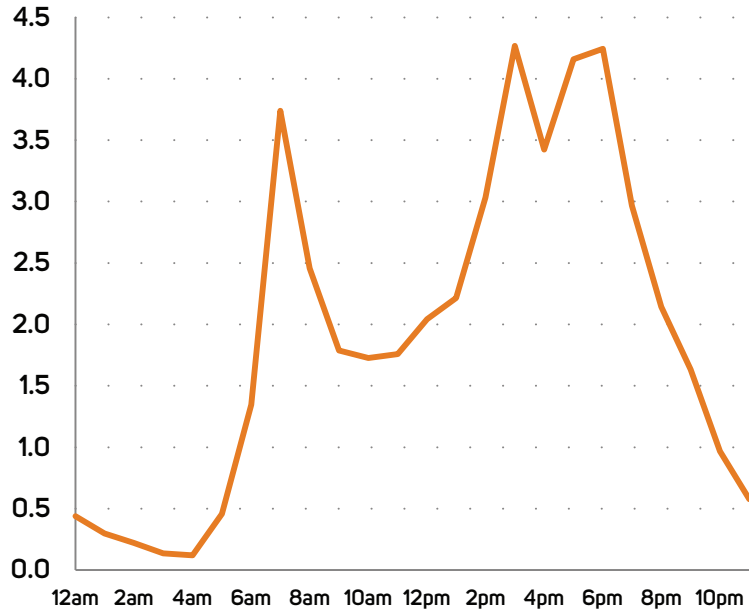
Source: SWITRS

**FIGURE 5** Bicyclist Injuries by Crash Type



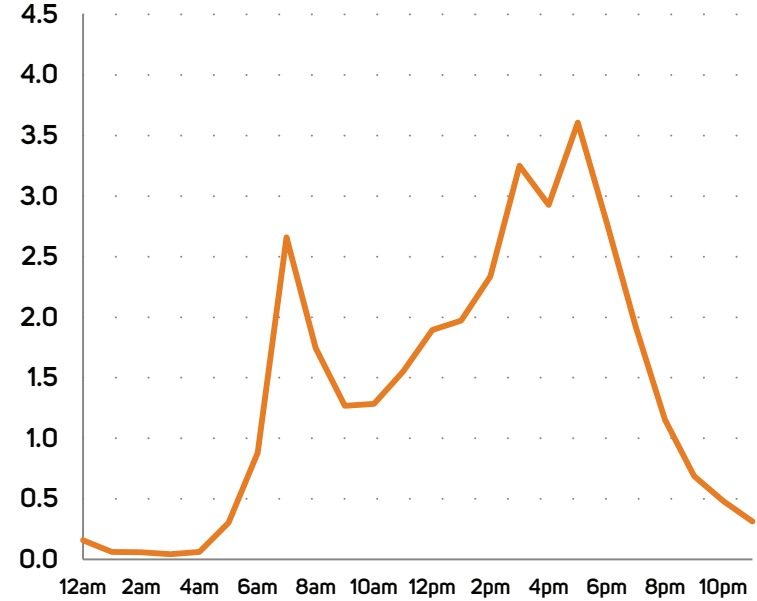
Source: SWITRS

**FIGURE 8** Pedestrian Injuries on Monday



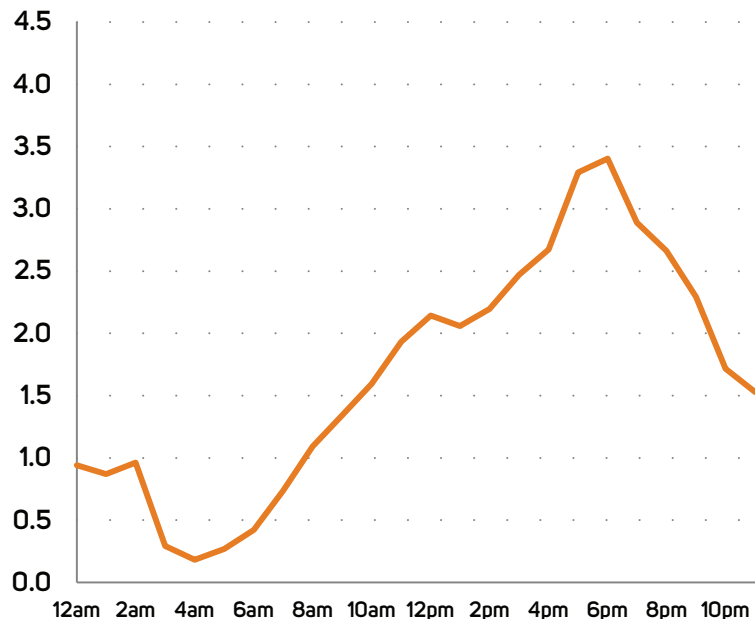
Source: SWITRS

**FIGURE 9** Pedestrian Injuries on Saturday



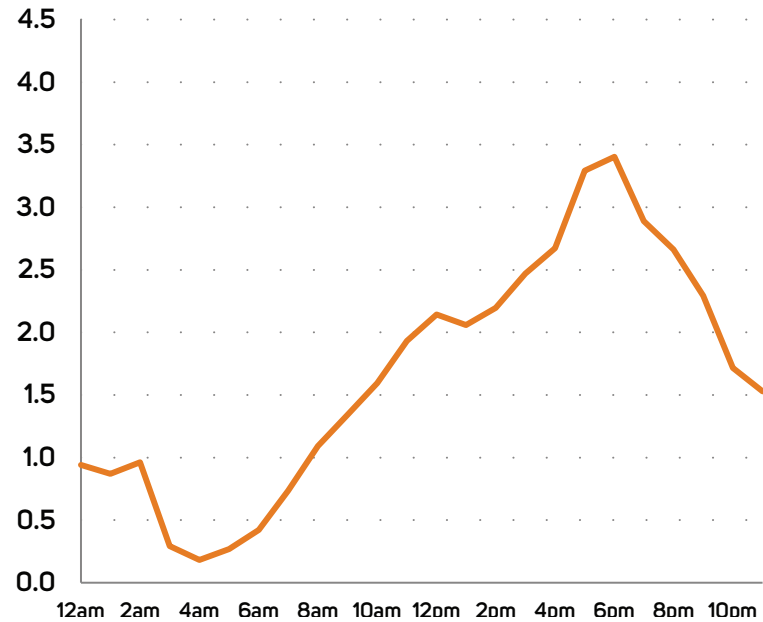
Source: SWITRS

**FIGURE 10** Bicyclists Injuries on Monday



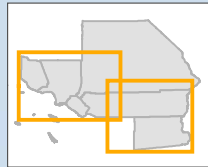
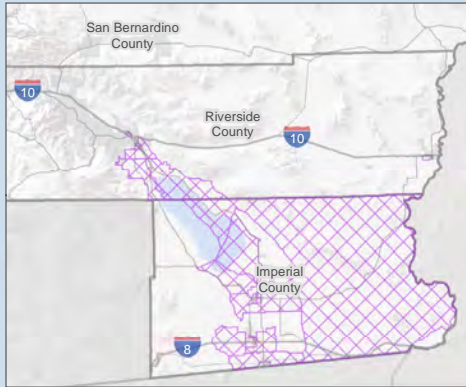
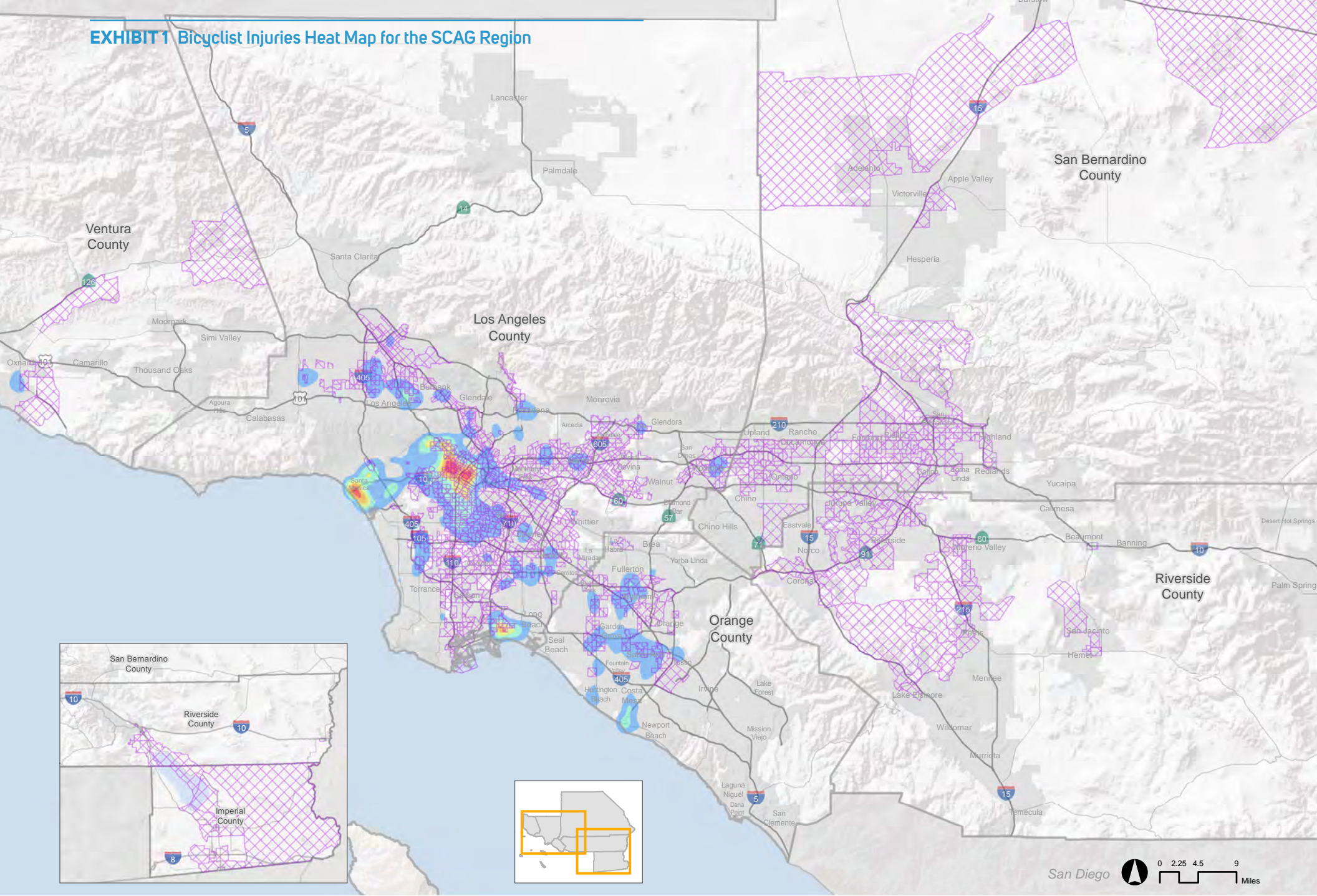
Source: SWITRS

**FIGURE 11** Bicyclists Injuries on Saturday



Source: SWITRS

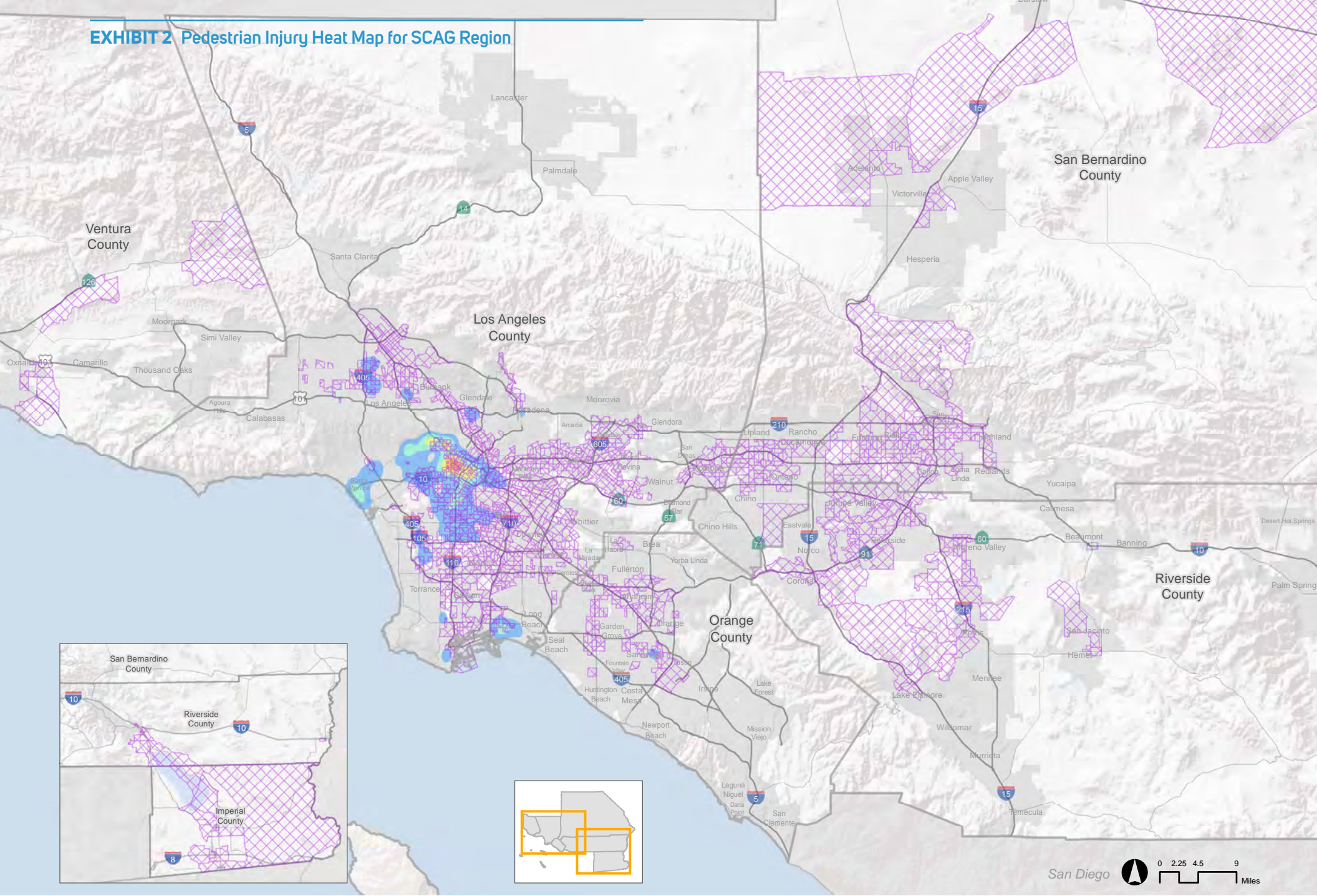
# EXHIBIT 1 Bicyclist Injuries Heat Map for the SCAG Region



- County Boundaries
- Disadvantaged Communities
- Low
- Moderately High
- City Boundaries
- Bike Collision Density**
- Moderately Low
- High
- Freeway
- None to Very Low
- Moderate

(Source: SCAG, 2015)

# EXHIBIT 2 Pedestrian Injury Heat Map for SCAG Region



**Pedestrian Collision Density**

	Low		Moderately Low		High		City Boundaries
	None to Very Low		Moderate		Disadvantaged Communities		Freeway
	Moderately High		County Boundaries				

(Source: SCAG, 2015)

San Diego 0 2.25 4.5 9 Miles

## EXISTING BIKEWAY NETWORK

There are about 3,919 bikeway miles in the region, compared with 70,000 miles of roadway, with the majority in Los Angeles County, followed by Riverside County, then Orange County as seen in **EXHIBIT 3**. Nearly 500 additional miles of bikeways were built since the last plan. **TABLE 4** provides a breakdown of bikeway mileage by county. Regionwide, the existing network is fractured, both on a regional basis, with significant gaps, and between jurisdictions, with small gaps of less than a quarter mile. While there are bicycle parking facilities at most major transit stations, there is often limited bikeway access to transit stations. River bike paths often lack wayfinding and connections to other bikeways. This lack of connectivity discourages bicycling and increases the risks to bicyclists as they attempt to navigate the gaps in the system.

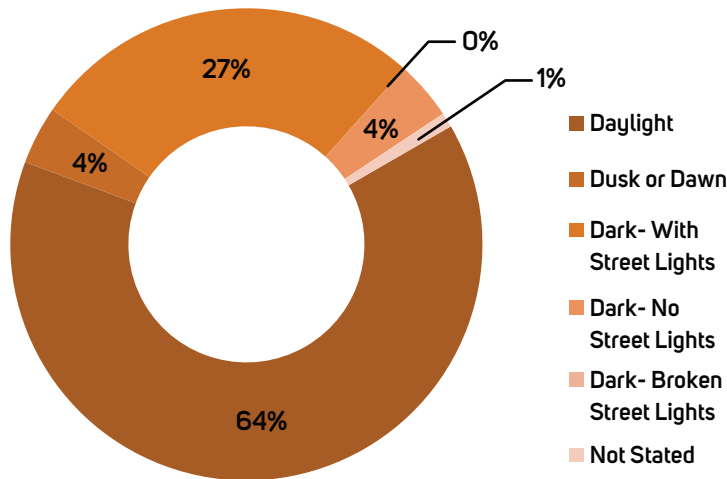
All roads in the SCAG region permit bicyclists, including some freeway shoulders, although for most freeways in the region bicycling is explicitly prohibited. Just because bicycling is permitted on some streets does not mean that a majority of potential bicyclists would consider it safe or comfortable for bike riding.<sup>17</sup> Rough road surfaces can deter bicycle usage. Poor maintenance can cause a bicyclist to unpredictably swerve or be thrown into traffic. The 2014 California Local Streets and Roads Needs Assessment estimated the average pavement condition for each of the six SCAG counties.<sup>18</sup> The estimate suggests that four of the six SCAG counties have roadways that are “at risk” of falling into poor or failed condition (see **TABLE 5**).

In Imperial County, there is no bikeway connectivity between local jurisdictions, townships, or connecting the ports of entry with the rest of the county. The 2012 RTP/SCS established bikeways connecting all seven cities in the county, along with connections to neighboring counties and Arizona. The 2016 RTP/SCS maintains that connectivity.

In Los Angeles County, there are several river bike paths that traverse large portions of the county, but there is limited connectivity between the rivers and neighboring bikeways. There is limited connectivity between local jurisdictions, particularly in the San Gabriel Valley and Los Angeles Basin. There is not adequate bicycle access to high quality transit areas. The 88 local jurisdictions in Los Angeles County have varying capabilities for developing bikeways, as well as differing transportation priorities. Developing and implementing/ completing regional bikeway networks will be difficult and time consuming if planned separately at local government levels. To better connect local jurisdictions, seven of them in the South Bay Council of Governments prepared a multi-jurisdictional bicycle master plan. Similar efforts are underway in the San Gabriel Valley. Los Angeles County Metro is updating their Active Transportation Strategic Plan, as well as performing a Los Angeles River Bikeway Feasibility Study.

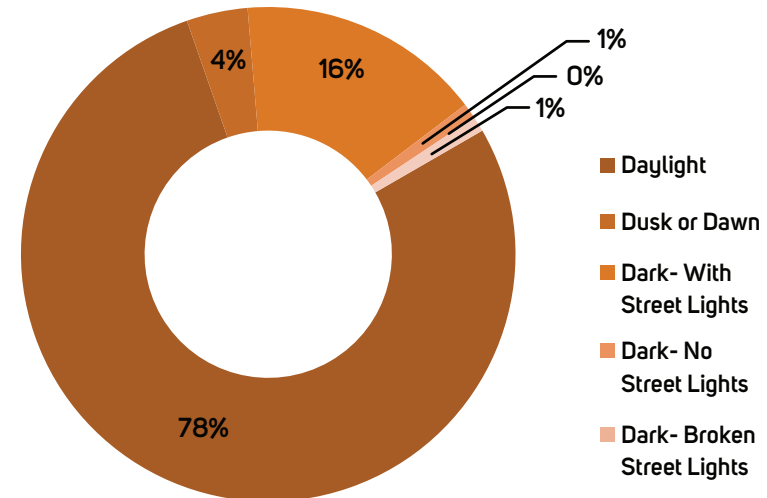
Orange County has a fairly robust bikeway system. Gaps exist in the older areas in north Orange County. Orange County Transportation Authority has developed a regional strategic bikeway system, similar to SCAG’s Regional Bikeway Network, and is in the first stage of implementing a bikeway loop in north Orange County.

**FIGURE 12** Pedestrian Involved Collisions (Lighting Conditions)



Source: SWITRS

**FIGURE 13** Bicyclist Involved Collisions (Lighting Conditions)

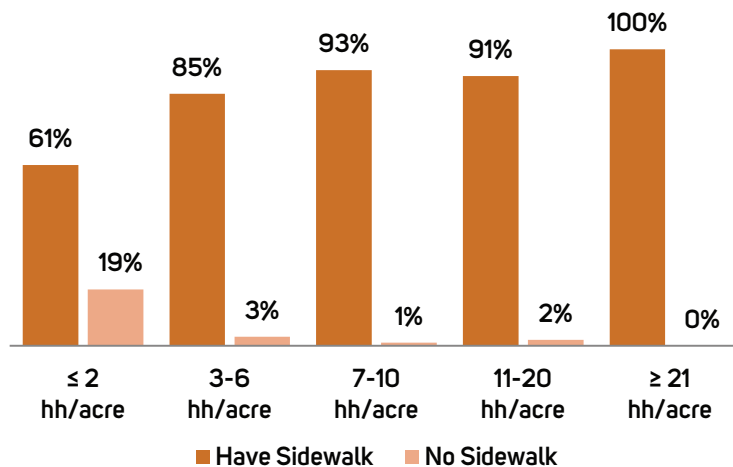


Source: SWITRS

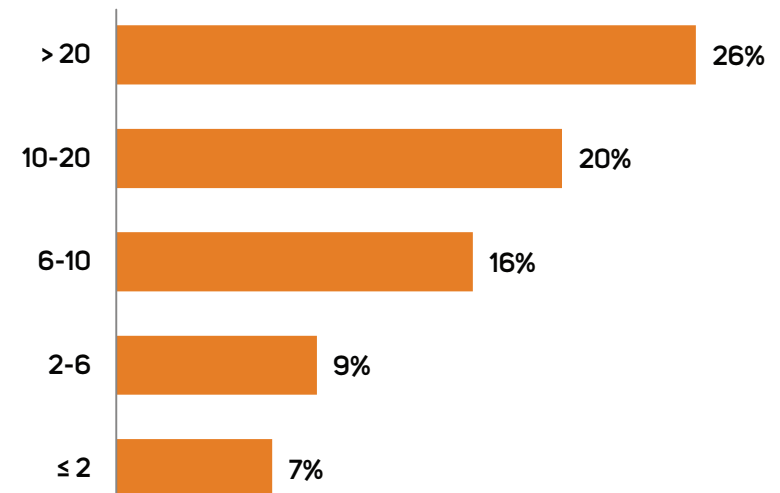
**TABLE 3** Active Transportation Mode Share (2012)

Place Types	Place Type Group	2012
City Mixed Use, City Residential, Town Mixed Use, Urban Commercial, Urban Mixed Use, High Intensity Activity Center	1	18%
Village Commercial, Town Residential, Village Mixed Use, City Commercial, Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High	2	13%
Neighborhood Residential, Village Residential, Campus Residential, Institutional, Suburban Multifamily	3	13%
Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity Center, Industrial/Office/Residential Mixed Low, Office Focus	4	7%
Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks Open Space, Mixed Office and R&D, Low Density Employment Park	5	11%
Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military	6	0%

Source: Fehr and Peers; California Household Travel Survey

**FIGURE 14** Household Density and Sidewalks

Source: California Household Travel Survey (2012)

**FIGURE 15** Percent of Persons Who Walked During a Day by Household Density Per Acre

Source: California Household Travel Survey (2012)



Riverside County has just over 900 miles of unpaved hiking, biking and equestrian trails, and 44 miles of paved bike paths. The county is developing a robust bicycle network in the western portion of the county and the Coachella Valley in the center-east, but it is difficult to connect the two areas. There are still gaps within and between jurisdictions. Traveling east from the Coachella Valley, bicyclists can use freeway shoulders (where permitted) toward Blythe, but there are no dedicated connections along State Route 111 or State Route 86 into northern Imperial County.

San Bernardino County, the region's largest county in terms of square miles has bikeways concentrated in the southwest corner, near the urbanized areas of the region. Traveling east and north, the bikeway connectivity declines within and between local jurisdictions. The county integrated local bike plans into a countywide plan to assist in the application of active transportation grants.

Ventura County has some connections between local jurisdictions (Ventura to Ojai), but lacks regional bike routes and signage.

## BICYCLE PARKING

Bicycle parking in the region consists of two types: bicycle racks for short-term parking, and bicycle lockers or bicycle stations for longer term parking. Bike racks are often found in the furniture zone of sidewalks. They can also be found in parking garages in urban settings like downtown Los Angeles. Bicycle lockers/stations are mostly located near major transit stations, such as Union Station and rail stations. Some transit stations may have dedicated rooms for secure bicycle parking (El Monte, Long Beach, and Covina bike stations) with repair services available. Some companies may have secure bicycle rooms within their building for secure all day parking.

A problem for bicyclists in many areas includes a lack of bicycle parking, forcing them to lock bicycles to signs, light poles, fencing or other objects (which sometimes intrudes on pedestrian space) in order to access their destination. In addition, a lack of wayfinding for bicycle parking in urban areas can mean bicyclists often can't find secure parking even when it is available. The lack of secure bike parking, and the lack of awareness of existing bike parking, may inhibit bicycle riding to major destinations.

Some local jurisdictions have begun incorporating "bicycle corrals" in business districts, taking one on-street automobile parking spot and placing racks that can hold 6-8 bicycles. This frees up sidewalk space, yet provides additional bike parking, increasing the number of potential customers.

Regional bicycle lockers, which provide greater security, are usually rented on a monthly basis to discourage squatters, but this also discourages the occasional cyclist that wants more security than what a bike rack provides.

The City of Los Angeles does provide an online map for bicycle parking within the city.<sup>14</sup> Los Angeles County Metropolitan Transportation Authority provides information regarding bicycle racks/lockers at its transit stations on its Bikeways Map.<sup>20</sup>

A second parking issue for bicyclists looking for long-term bicycle parking in urban areas is the lack of wayfinding signage for bicycle parking. Bicycle racks are often located within an office building's parking garage, but with no signage indicating that bicycle parking exists. Without knowing where they can safely and securely park their bicycles, bicyclists will avoid frequenting that location altogether, or take other modes of transport instead. The California Manual for Uniform Traffic Control Devices (MUTCD) has a standard template (Chapter 9) for bicycle parking signage.

## BICYCLE FRIENDLY DESIGNATIONS

Ten local jurisdictions, one county and six colleges/universities within the SCAG region have been certified by the League of American Bicyclists as "Bicycle Friendly." The Bicycle Friendly designation is based on a number of factors. They are, in order of least friendly to most friendly:

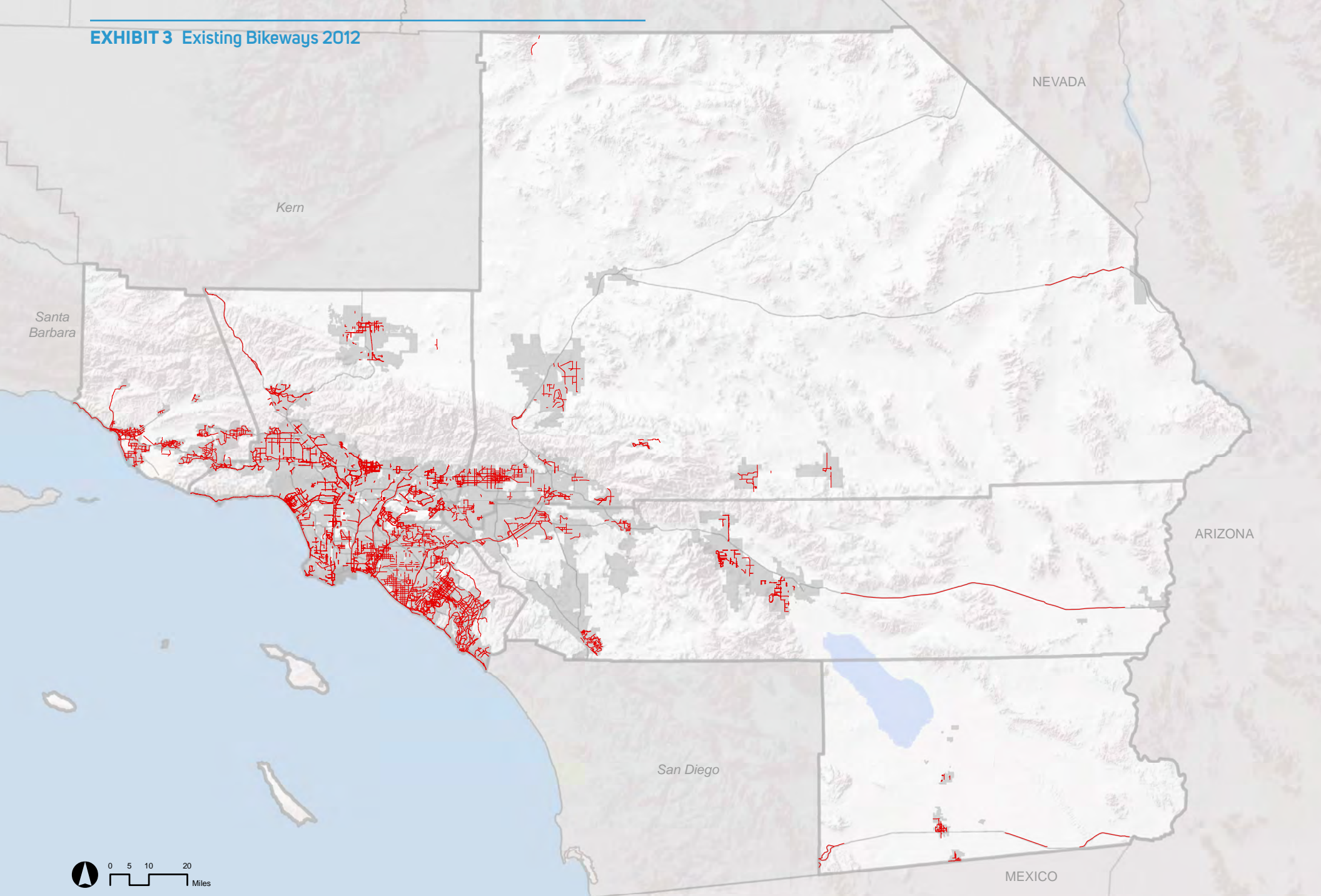
- No designation
- Bronze
- Silver
- Gold
- Platinum
- Diamond

Local jurisdictions, counties, businesses and universities must apply for the designation, and after review by the League of American Bicyclists they are awarded the designation for four years.

### Bicycle Friendly Designations

- Claremont - Silver
- Huntington Beach - Bronze
- Irvine - Bronze
- Long Beach - Bronze
- Orange County - Bronze
- Rancho Cucamonga - Bronze
- Riverside - Bronze

# EXHIBIT 3 Existing Bikeways 2012



- County Boundaries
- City Boundaries
- Freeway
- Existing Bikeways (2012)

**TABLE 4** Miles of Existing Bikeways (2012)

	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Region
<b>Class 1</b>	3	302	259	44	77	61	<b>746</b>
<b>Class 2</b>	4	659	706	248	276	257	<b>2,150</b>
<b>Class 3</b>	82	519	87	129	150	54	<b>1,021</b>
<b>Class 4</b>	-	2	-	-	-	-	<b>2</b>
<b>Total</b>	<b>89</b>	<b>1,482</b>	<b>1,052</b>	<b>421</b>	<b>503</b>	<b>379</b>	<b>3,919</b>

Source: SCAG

**TABLE 5** Pavement Condition Index

County (Cities included)	Lane Miles	Pavement Condition Index (PCI) (2014)	Road	Essential Components*	Bridge	Total	PCI Ranges	Maintenance	
Imperial County	6,087	57	\$1,236	\$107	\$18	\$1,361	71-100	Good-Excellent	Preventative Maintenance
Los Angeles County	57,630	66	\$12,971	\$4,837	\$1,239	\$19,047	51-70	At Risk	Thin HMA Overlays
Orange County	16,808	77	\$2,725	\$2,060	\$71	\$4,856	26-50	Poor	Thick HMA Overlays
Riverside County	16,835	70	\$3,551	\$1,582	\$71	\$5,204	0-25	Failed	Pavement Reconstruction
San Bernardino County	22,249	71	\$4,103	\$1,788	\$243	\$6,134	3,919		
Ventura County	5,530	70	\$1,211	\$630	\$81	\$1,922			

\*Essential Components include bikeways, sidewalk treatments, including curb, gutter and represents 25% of Essential Components spending.

- Santa Clarita - Bronze
- Santa Monica - Silver
- Temecula - Bronze
- Thousand Oaks - Bronze
- University of La Verne - Silver
- University of California Irvine - Silver
- University of California Los Angeles - Bronze
- California Institute of Technology - Bronze
- Pomona College - Bronze
- California State University Long Beach - Silver

## BICYCLING TRIPS IN THE SCAG REGION

The National Personal Transportation Surveys (NPTS) of 1977–1995 and the National Household Travel Surveys (NHTS) indicate that the total number of bike trips in the USA more than tripled between 1977 and 2009, while the bike share of total trips almost doubled, rising from 0.6 percent to 1.1 percent.<sup>21</sup> SCAG modeling indicates a bicycling mode share of 1.5 percent for linked trips (linked trips can be defined as the number of person trips minus the number of transfers between modes). The U.S. Census Bureau’s American Community Survey (ACS) reports nearly twice as many daily bicycle commuters in 2009 as in 2000 and an increase in the United States’ bicycle commute share to 0.6 percent.<sup>22</sup> There has been a similar growing demand across Southern California for bicycle travel, with bicycling increasing more than 70 percent between 2007 and 2012.<sup>23</sup>

The SCAG region had a bicycle commute rate of 0.8 percent in 2012 (see [FIGURE 16](#)), according to the American Community Survey which annually surveys commute trips (a 60 percent increase since 2008). The average commute time for bicyclists in the SCAG region is about 29 minutes. The 2012 California Household Travel Survey noted that the SCAG region’s bicycle mode share for all trips is 1.12 percent. Bicycling mode shares for each county are shown in [TABLE 6](#).

### Bicycle Mode Share by Trip Type:

- All Trips 1.12 percent
- Commute Trips 0.8 percent
- School Trips 1.0 percent
- Shopping Trips 2.0 percent

The California Household Travel Survey (2012) results, when compared with 2012 Vehicle Miles Traveled, indicate four million bicycle trips/day in the SCAG region, averaging 0.95 miles/trip, as shown in [FIGURE 17](#).

While surveys suggest a significant growth from past surveys, they also suggest that mostly the “strong and fearless” (as previously described in the background section) are riding bicycles, along with a smaller portion of the “enthused and confident.” It is likely that very few “Interested but concerned” riders are participating except on recreational bike paths. In addition, it appears that with the majority of bicycle trips less than one mile, bicyclists may be limiting their exposure to motor vehicle traffic. Efforts to increase the percentage of bicyclists beyond the core committed bicyclists would likely require investments in new bikeways and increased connectivity.

## PEDESTRIANS

### PEDESTRIAN TRIPS IN THE SCAG REGION

Walking is the most basic form of transportation. It is the most affordable and environmentally friendly transportation mode. Walking can be for utilitarian, commute, recreational, or fitness purposes.

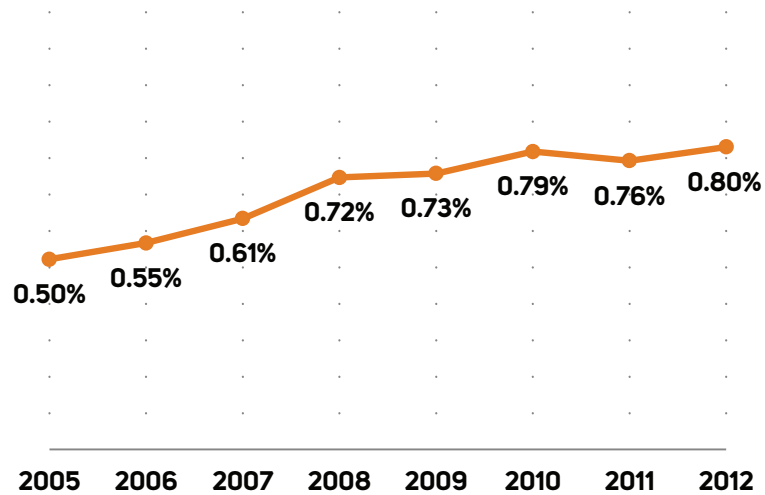
### Pedestrian Mode Share by Trip Type

- All Trips 16.8 percent
- Commute Trips 2.4 percent
- School Trips 18.7 percent
- Shopping 10.4 percent

The weather in the SCAG region is conducive to walking in most areas throughout the year. It is how most transit riders reach their transit station. It is how most neighbors get to know each other and helps strengthen communities. One could argue that all other modes of transportation are alternatives to walking. Walk trips as a percentage of all trips averaged 16.8 percent for the region, with the largest share in Los Angeles County [TABLE 7](#). Commute trips average 2.4 percent, as shown in [FIGURE 18](#). SCAG’s transportation modeling indicates that walking represents 10.7 percent mode share for all linked trips, where transfers between modes are excluded.

Roughly 49 percent of all walking trips are less than a quarter mile and 83 percent of walking trips are less than one half mile, as shown in [FIGURE 19](#).

**FIGURE 16** Growth in Regional Bike Commuters



Source: American Community Survey (3 Yr Average) 2005-2012

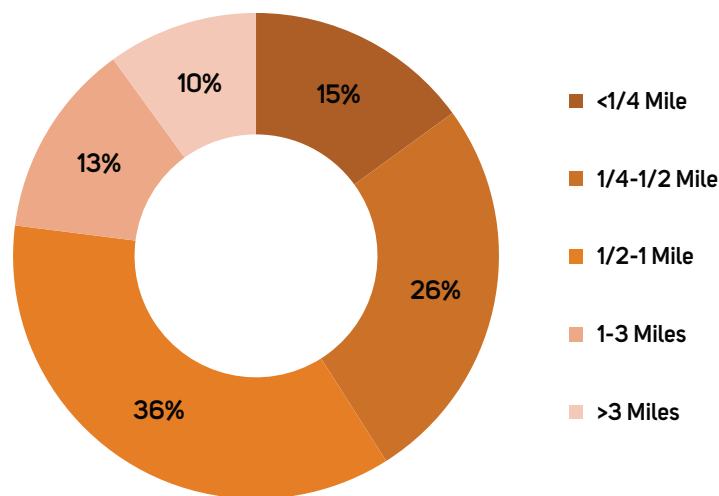
**BARRIERS TO INCREASING WALKING**

The pedestrian network in the SCAG region is hampered by a lack of sidewalk maintenance as well as practices that discourage walking, and a history of traffic engineering that prioritizes the efficient movement of vehicles over pedestrian travel. Tree roots, signage, and utility poles often block sidewalks in older urban and suburban areas. Older areas built before modern-day codes have many sidewalks that do not meet the standards of the Americans with Disabilities Act. In addition, many rural areas lack sidewalks or wide roadway shoulders. Some jurisdictions actively discourage sidewalks to preserve a rural style ambiance, while other jurisdictions design sidewalks with large curb radii, which increase vehicle turning speeds as well as making street crossings longer.

Traffic signalization often forces pedestrians to cross streets at a fast clip (2.8 - 3.6 feet/second),<sup>26</sup> instead of a slower pace (two feet/second) suited toward casual walkers, children, older walkers and wheelchair users. In addition, many intersections lack left turn signals. Drivers, looking for a gap in traffic to make the left turn, may not notice the pedestrian in the crosswalk. Just over 44 percent of all pedestrian injuries occur at intersections in daylight conditions.

However, recent innovations such as median sanctuaries are now being built along major arterials.

**FIGURE 17** Percentage of Biking Trips by Distance



Source: California Household Travel Survey (2012)

**TABLE 6** Bike Trips as Percentage of all Trips

County	Bike Trips as Percentage of All Trips
Imperial County	1.43%
LA County	1.24%
Orange County	1.21%
Riverside County	0.72%
San Bernardino County	0.72%
Ventura County	0.97%
<b>SCAG Region</b>	<b>1.12%</b>

Source: California Household Travel Survey (2012)

Sidewalk maintenance upgrades are also an issue. Many sidewalks were installed when a commercial structure or residential subdivision was built, or when a street was originally paved. Changes in land use aren't necessarily reflected in the sidewalk infrastructure. Upgrading sidewalks in older suburbs can be difficult, as the streets themselves do not meet current code. To bring both sidewalks and streets to code would require obtaining easements or taking property with just compensation.

Sidewalk maintenance often lags in roadway maintenance. The City of Los Angeles has about 2,600 miles of sidewalks needing repair and, at the time of this writing, the city is searching for a funding strategy designed to fix the deficient sidewalks. Even accounting for a 75-year life cycle, many jurisdictions in the SCAG region will have exceeded the design life of their sidewalks during the life of the 2016 Plan. Sidewalks in poor condition often result in pedestrians and wheelchair users traveling in the roadway.

**TABLE 8** provides an overview of common land use types in the SCAG region with typical pedestrian issues.

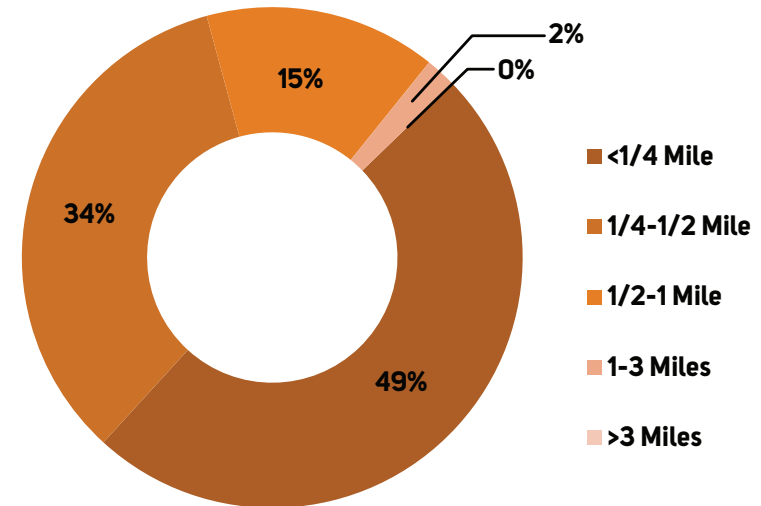
### SUMMARY OF FINDINGS

The SCAG region is making steady progress in active transportation, but more work is needed to meet SCAG goals for active transportation. Bicycling has increased by more than 70 percent since 2007, and pedestrian activity has remained steady after several years of growth. While the number of bicyclists and pedestrians is increasing, so are injuries and

**TABLE 7** Walk Trips as Percentage of all Trips

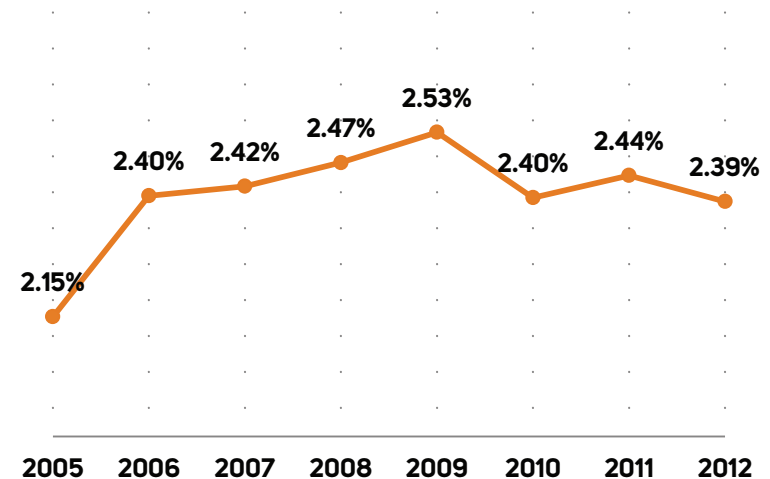
California Household Travel Survey (2012, weighted)	Walk Trips as percentage of all trips (including connections/transfers)
Imperial County	7.8%
LA County	21.7%
Orange County	10.9%
Riverside County	9.4%
San Bernardino County	9.7%
Ventura County	10.9%
<b>SCAG Region</b>	<b>16.8%</b>

**FIGURE 19** Percentage of Walking Trips by Distance



Source: California Household Travel Survey (2012)

**FIGURE 18** Regional Walk Commuters



Source: American Community Survey (3 Yr Average) 2005-2012

fatalities (although not as fast as the growth in active transportation). Total traffic related injuries and fatalities are dropping in the region, yet bicycling and pedestrian injuries have increased. Improving safety will likely require innovative strategies to reduce conflicts between bicyclists, pedestrians, and motor vehicles.

Nearly 500 additional miles of bikeways were built since the last Plan. However, the regional and local bikeway networks remain fragmented with only 3,919 miles of bikeways, and there is little wayfinding signage. The lack of consistent infrastructure inhibits all but the “strong and fearless” bicyclist. Greater separation between bicyclists and vehicle traffic, and a consistently positive rider experience, are necessary to increase bicycle trips. Our dry riverbeds and drainage channels may provide an opportunity to increase Class 1 bikeways. In addition, end-of-trip amenities are necessary for bicycle trips. A lack of secure bicycle parking, particularly for commuting, requires bicyclists to use short-term racks for all-day parking. This increases the opportunity for theft.

Complete Streets strategies to meet the needs of all roadway users - including pedestrians, bicyclists, motorists and transit riders of all ages and abilities (within the context of the street design) for first/last mile-to-transit solutions and short-trip solutions - will be necessary to increase both the number of bicyclists and pedestrians and to increase the distance traveled.

Biking and walking are ideal modes for connecting to transit or nearby shops, and the region is accommodating these modes. The region’s six counties are already pursuing first/last mile solutions to transit or border crossing stations.

Most pedestrian trips are less than one half mile, or a ten-minute walk. Most bicycling trips are less than one mile. The highest mode share is in urban areas, where walking and biking can reach up to 44 percent mode share (the average mode share for active transportation in urban areas is 30 percent, and the average mode share in rural areas is eight percent).<sup>27</sup> To increase average pedestrian trips to over one-half mile, the region would need to make it more convenient and safe to walk. To increase average trip distances for biking to three miles, the region would need to make it more convenient for bicyclists, and provide destinations within the expanded travel sheds, developing bicycle infrastructure for cyclists who want to cycle but are concerned about motor vehicles and safety. Physical separation, such as bicycle paths and separated bicycle lanes is necessary for higher speed streets. Traffic calming, bicycle boulevards, and complete street strategies, meanwhile, help improve safety in residential neighborhoods and lower speed streets.

## 2012 RTP/SCS PROGRESS

The Active Transportation component of the 2016 RTP/SCS (2016 Plan) was developed in consideration of the background conditions described above, and to build off the strategies and progress made on the 2012 Active Transportation Component versus the 2012 RTP/SCS (2012 Plan). In the 2012 RTP/SCS, SCAG proposed a regional bikeway network, assumed all local active transportation plans would be implemented and proposed improving thousands of miles of dilapidated sidewalks at a cost of \$6.7 billion. The 2012 Plan examined access to transit, noting that 95 percent of SCAG residents would be within walking (0.5 mile) or biking (two miles) distance from a transit station, defined as a bus station, light rail station, or heavy rail station. The 2012 Plan examined the portions of the California Coastal Trail within the SCAG region, increasing opportunities for bicyclists and pedestrians to access the trail.

Goals for implementing the 2012 Plan are outlined below, as well as some of the specific actions that were taken over the last four years to advance these goals across the region:

1. Reduce Fatalities and Injuries
  - SCAG partnered with the City of Malibu to develop a safety study for the Pacific Coast Highway within the city, a popular route for bicyclists.
  - Since 2006, SCAG has participated in the California Strategic Highway Safety Plan (SHSP) Steering Committee, bicycling safety subcommittee, pedestrian safety subcommittee and the intersection/interchange safety subcommittee. The California SHSP was established to reduce transportation fatalities throughout California. SHSP is a statewide data-driven traffic safety plan that coordinates the efforts of a wide range of organizations to reduce traffic accident fatalities and serious injuries on all public roads.<sup>28</sup> The most current update to the SHSP was signed in September 2015.
  - SCAG was awarded a \$2.3 million grant to perform a regional safety and encouragement campaign for bicycling and walking.
2. Develop an active transportation friendly environment
  - SCAG collaborated with state and county transportation commissions to develop the new California Active Transportation program (CATP), train local jurisdictions on application procedures and was successful in first and second round of funding with \$661 million being awarded (including local match).
  - Short-term regional active transportation programmed expenditures were greater than assumed in 2012 Plan: The 2015 Federal Transportation Improvement Program (FTIP) for the SCAG region indicates that more than \$520 million was programmed for active transportation projects over the six years of the program, compared with \$400 million projected in the 2012 RTP/SCS.

**TABLE 8** Land Use Types and Typical Pedestrian Issues

Physical Features		Typical Pedestrian Issues	Physical Features		Typical Pedestrian Issues
URBAN CORE (POST WORLD WAR 2)	High-density development	Crosswalk encroachment by motor vehicles	URBAN VILLAGE – NEIGHBORHOOD COMMERCIAL	Mix of uses	Sidewalk obstructions
	Pedestrian-scale	Conflicts with turning vehicles		Pedestrian-scale development, moderate density	Roads can be difficult to cross
	Mix of uses	Aggressive drivers		Many pedestrian amenities	Sidewalk maintenance
	Significant topography	Significant differences between day and night activity		Vibrant streetscapes	Access to transit varies
	Quiet side streets	ADA issues		Quality buffers	Signal timing issues
	Few pedestrian crossing islands	High speeds relative to pedestrian activity		Range of crosswalk treatments	ADA issues
	Wide streets to cross	High traffic volumes on some streets		Sidewalk quality varies	Uncontrolled crossing issues
	Character varies block to block	Large numbers of pedestrians and high demand		High quality pedestrian environment	Large numbers of pedestrians
	Large-scale construction projects blocking sidewalks and lanes	Narrowed sidewalks due to placement of sidewalk cafes or street furniture			Driveways crossing the sidewalk
	Variety of travel options	Driveways crossing the sidewalk			
		Sidewalk closures due to construction			
	Potential conflicts due to the frequency of transit stops and the high number of transit vehicles				
OLDER URBAN CORE (PRE WORLD WAR 2)	Highest-density development	Motor vehicles encroaching crosswalk	COMMERCIAL ARTERIAL	Auto-oriented development and scale	Sidewalk obstructions
	Pedestrian-scale	Conflicts with turning vehicles		Few pedestrian crossing islands/sanctuaries	Wide roads, limited crossing opportunities
	Mix of uses	Aggressive drivers		Very wide roads	High traffic volumes and speeds
	Significant topography	Sidewalk obstructions (e.g. utility poles)		Large distances between traffic signals	Uncomfortable for pedestrian travel due to noise and vehicle speed
	Few pedestrian crossing islands	Significant day and night pedestrian activity		Single-use development	Actual and perceived security after dark
	Few wide streets to cross	ADA Standards issues		Most businesses closed at night	Large parking lots between sidewalk and storefronts in commercial areas
	Large-scale construction projects blocking sidewalks and lanes	High traffic volumes on most streets		Few buffers	ADA issues
	Variety of travel options	Large numbers of pedestrians and high demand		Large Intersections	Signal timing issues
	Plentiful transit	Sidewalk closures due to construction			
		Potential conflicts due to frequency of transit stops, high number of transit vehicles			

Source: Adapted from Seattle Pedestrian Master Plan [http://www.seattle.gov/transportation/ped\\_sper\\_plan.htm#12](http://www.seattle.gov/transportation/ped_sper_plan.htm#12)



TABLE 8 Land Use Types and Typical Pedestrian Issues: Continued

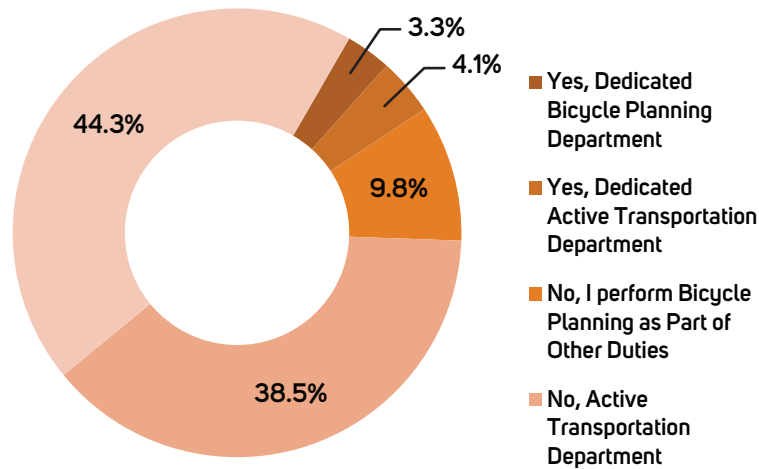
	Physical Features	Typical Pedestrian Issues
MULTIFAMILY RESIDENTIAL	Auto-oriented development and scale	Sidewalk obstructions
	Few pedestrian crossing islands/sanctuaries	Wide roads, limited crossing opportunities
	Very wide roads	High traffic volumes and speeds
	Large distances between traffic signals	Conflicts at driveways (cars blocking sidewalks in front of garages)
	Mostly single-use development	Uncomfortable for pedestrian travel due to noise and vehicle speed
	Few buffers	Actual and perceived security after dark
	Large Intersections	ADA issues
		Signal timing issues
SINGLE-FAMILY RESIDENTIAL (PRE-WW2)	Compact single-use development	Inconsistent curb ramp and sidewalk installation
	Significant traffic calming	Parking in pedestrian travel ways
	Sidewalk presence and quality varies	Erosion in pedestrian travel way and maintenance
	Substandard road width (by today's standards)	Lighting
	Some areas lack sidewalks and curb ramps	Access to transit varies
	Close to shopping/retail areas	Substandard sidewalk width (by today's ADA standards)

	Physical Features	Typical Pedestrian Issues
SINGLE-FAMILY/RESIDENTIAL (POST WW2)	Single-use development	Inconsistent curb ramp and sidewalk installation
	Significant traffic calming	Parking in pedestrian travel ways
	Sidewalk presence and quality varies	Erosion in pedestrian travel way and maintenance
	Quality buffers	Lighting
	Some areas lack sidewalks and curb ramps	Access to transit varies
		ADA issues, particularly in older areas
INDUSTRIAL	Single-use development	Limited sight lines
	Commercial vehicle development and scale	Large turning vehicles
	Large Blocks	Lighting
	Disconnected sidewalk networks	Actual and perceived security after dark
	Few buffers	ADA issues
	Uncomfortable physical environment	Potential conflicts at driveways

Source: Adapted from Seattle Pedestrian Master Plan [http://www.seattle.gov/transportation/ped\\_sper\\_plan.htm#t2](http://www.seattle.gov/transportation/ped_sper_plan.htm#t2)

- New funding approaches emerged: In Los Angeles County, 40 percent of toll road revenues will fund active transportation projects and first mile/last mile projects within three miles of the toll road corridors (\$4.2 - \$5.2 million estimated during one-year demonstration period for active transportation).
  - SCAG developed the Bicycle Route 66 Concept Plan to encourage local discussion and collaboration on the first stage of developing regional bikeways.
3. Increase active transportation usage
- As part of the CATP Encouragement Campaign, SCAG is promoting pop-up campaigns to demonstrate the benefits of investments.
  - Toolkits are also being developed for various stakeholder groups to help encourage active transportation usage and policies.
  - SCAG has encouraged open-streets events, such as Cyclavia, which promote bicycling and walking as safe and fun activities.
4. Encourage development of local plans
- SCAG has provided more than \$10 million in sustainability planning grants to local jurisdictions. More than 35 percent were active transportation or complete streets related projects.
  - There are 191 local jurisdictions and six counties in the SCAG region, each with various policies and plans related to transportation.
    - It is estimated that 112 local jurisdictions/counties have current active transportation plans. About 55 percent of those surveyed reported having active transportation programs, mostly in public works departments (35 percent).
    - About 41 percent of jurisdictions surveyed have completed active transportation plans in the last five years, with half of those in Los Angeles County.
    - Of those jurisdictions that have completed transportation plans, 24 percent do not have an active transportation program. Eighteen percent have a dedicated program and 60 percent have one person, who performs active transportation planning as part of other duties.<sup>29</sup> as shown in [FIGURE 20](#).
  - SCAG has worked with Los Angeles County, Orange County and San Bernardino County to develop first/last mile (to transit) plans, and Riverside Transit Agency is developing a first/last mile study.
  - SCAG has developed joint work programs, which include active transportation with each county.
  - Counties have taken the lead where local jurisdictions have neither the staff nor the money to develop and implement active transportation plans.
- Orange County is developing a strategic bikeway network throughout the county.
  - Imperial and San Bernardino counties have countywide bicycle plans.
  - Ventura County has developed bicycle projects in its congestion management plan.
  - The two major Councils of Government in Riverside County have bicycle master plans or active transportation/trails plans.
  - The Los Angeles County Metropolitan Transportation Authority (Metro) developed a Bicycle Transportation Strategic Plan (2006) and is developing an Active Transportation Strategic Plan for 2016.
  - The Los Angeles County Department of Public Works developed a bicycle plan for unincorporated areas within Los Angeles County.
  - The Los Angeles County Metropolitan Transportation Authority (Metro) works with each local jurisdiction in Los Angeles County to regularly upgrade their geodata with existing and locally proposed bikeways.
- SCAG is expanding its Active Transportation Database as an information tool for local governments in developing their local plans. The Regional Active Transportation Database, an award-winning database created by SCAG and Metro, is used to collect and map bicycle and pedestrian count data at specific intersections to help determine where walking and biking are occurring, compare it to collision data and plan for infrastructure improvements. Success of this program depends on cities and counties conducting these counts and providing the data to SCAG.
5. Develop Safe Routes to School policies
- In Cycle 1 of the California Active Transportation Program, about 41 percent of the funding was allocated to 13 SRTS projects. Fifty-seven percent of SCAG local jurisdictions have completed a SRTS plan, and 17 will be planning SRTS programs as seen in [TABLE 11](#).
  - The San Bernardino Association of Governments (SANBAG), Metro and the Imperial County Transportation Commission (ICTC) have all begun efforts to create countywide Safe Routes to School plans.
  - The Ventura County Transportation Commission and the Riverside County Transportation Commission both have plans to expand planning for Safe Routes to School as part of their joint work programs with SCAG.
  - Several local jurisdictions have completed Safe Routes to School Master Plans, which build off of existing bicycle and pedestrian plans to create a network of safe streets.

**FIGURE 20** Local Active Transportation Staffing



Source: SCAG

- Public health departments and local jurisdictions have also focused on expanding programming and planning efforts in the SCAG region. The Riverside, San Bernardino, Los Angeles and Orange County public health departments have all incorporated Safe Routes to Schools into their programming and outreach efforts with local jurisdictions. **TABLE 9** indicates the SRTS planning process for the SCAG counties.

6. Develop Complete Streets Policies

- Metro became the first County Transportation Commission to adopt a Complete Streets policy.<sup>30</sup>
- OCCOG is developing a Complete Streets Design Manual to be completed in 2016
- SCAG has updated the Federal Transportation Improvement Program (FTIP) guidelines (beginning with the 2017 FTIP) to encourage reporting of active transportation investments that are part of larger projects.
- The SCAG region has about 70 cities that have developed, or plan to adopt Complete Streets strategies, with 43 adopted and 36 planned (**TABLE 10**). Nine (9) local jurisdictions have adopted plans with updates planned in the next few years.

**TABLE 9** Status of County & Regional Safe Routes to School Planning Efforts

County	Status of Efforts
Imperial	In Process
Los Angeles	In Process
Riverside	Will be incorporated into CVAG & WRCOG Active Transportation Plan Updates
San Bernardino	In Process
Orange	In Process
Ventura	Outlined in SCAG Joint Work Program, not yet initiated
SCAG	In Process

Source: SCAG

**TABLE 10** SCAG Local Jurisdictions with Complete Streets Policies by County

County	City	Adopted	Planned	Both
Imperial	1	1	0	0
Los Angeles	37	25	14	4
Orange	16	7	10	2
Riverside	3	1	2	0
San Bernardino	7	4	4	1
Ventura	6	4	4	2

Source: SCAG

**TABLE 11** Number of Local Jurisdictions within SCAG Counties with Safe Routes to School Plans or Programs\*

County	Incorporated Local Jurisdictions	Completed or Initiated	Additional Planned**	Percentage Completed & Planned
Imperial	7	2	1	42%
Los Angeles	88	24	11	40%
Orange	34	14	1	44%
Riverside	28	9	1	36%
San Bernardino	31	3	3	19%
Ventura	10	5	0	50%
<b>Total</b>	<b>198</b>	<b>57</b>	<b>17</b>	<b>37%</b>

\*The number of Safe Routes to School plans and programs was collected through SCAG's local input process for the 2016 RTP/SCS. \*\*This does not include cities that are revising their existing SRTS plans.

## 2016 ACTIVE TRANSPORTATION COMPONENT OF THE 2016 RTP/SCS

### OVERVIEW

The Active Transportation component is a constrained component of the 2016 RTP/SCS (2016 Plan) establishes both long-trip strategies, and short-trip strategies consistent with California Complete Street requirements. Complete Streets are a way of planning, funding and operating streets to enable safe access for all users and abilities, including pedestrians, bicyclists and transit riders. Focusing roadway and land use improvements to meet the needs of everyone from ages 8-80 reflects positively toward meeting the needs of all roadway users within a community, local jurisdiction and region. The active transportation component is part of coordinated regional transportation strategy that supports improved transportation options and opportunities. Improving access for walkers and bicyclists increases safety by reducing conflict points, and slows motor vehicles along residential and other low-speed streets. It improves the environment for active transportation, increases the quality of life, and incorporates public health as a consideration when developing local plans. Further, it expands regional understanding of the role that short-trips play in achieving RTP/SCS goals and performance objectives, while providing a strategic framework to support local planning and project development geared toward serving these trips. It is cost-effective, using a Complete Streets approach to developing and implementing larger transportation projects to reduce total costs.

The 2016 Active transportation component updates the 2012 Plan. As such, it proposes strategies to continue progress made in developing the regional bikeway network; assumes all local active transportation plans will be implemented; and dedicates resources to maintain and repair thousands of miles of dilapidated sidewalks. The 2016 plan also considers new strategies and approaches beyond those proposed in 2012, focusing on ways to augment the plan as well as active transportation analysis tools in order to:

- Better align active transportation investments with land use and transportation strategies to reduce costs and maximize mobility benefits;
- Increase the competitiveness of local agencies for federal and state funding;
- Develop strategies that serve the 8-80 age group to reflect changing demographics and make active transportation attractive to a wider audience;
- Expand regional understanding of the role that short-trips play in achieving RTP/SCS goals and performance objectives, while providing a strategic framework to support local planning and project development geared toward serving these trips; and

- Align active transportation investments in High Quality Transit Areas to increase transit usage.

The Active transportation component has 11 specific strategies for maximizing active transportation in the SCAG region in four broad categories: regional trips, transit integration, short trips; and education/encouragement. All 11 strategies are based on a comprehensive local bikeway and pedestrian network, using Complete Streets principles. These strategies include:

- Regional-Trip Strategies:
  - Regional Greenway Network
  - Regional Bikeway Network
  - California Coastal Trail Access
- Transit Integration Strategies:
  - First/Last Mile (to rail)
  - Livable Corridors (bus corridors)
  - Bike Share Services
- Short-Trip Strategies:
  - Sidewalk quality
  - Local Bikeway Networks
  - Neighborhood Mobility Areas (limited transit)
- Education/Encouragement Strategies
  - Safe Routes to School
  - Safety/Encouragement Campaigns

The strategies are referenced in [TABLE 12](#).

Regional trip strategies are those trips that are made less frequently, but are generally longer. They are primarily bicycle trips for commuting or recreation, with the exception of walking or biking connections to transit. Transit integration uses a Complete Streets approach to developing roadway projects in order to increase the number of people walking or biking to transit, and increasing the transit shed from 0.25 miles and one mile (respectively) to 0.5 mile and three miles (respectively). Short trips are those recreational and utilitarian trips taken every day, and they comprise the bulk of all trips in the region. Education and encouragement are strategies designed to change behavior, improve safety, and increase bicycling and walking trips.

TABLE 12 Active Transportation Investment Framework (constrained)

Proposed Active Transportation Plan Investment Framework	2012 (Existing)	Proposed Improvements	2040 (Existing and Proposed) Planned	Preliminary Cost Estimates	Preliminary Cost Percentage
<b>Regional-Trip Strategy</b>				<b>\$2.8 Billion</b>	<b>22%</b>
Greenways	755 miles	1,543 additional miles of Class 1 and Class 4 Bikeways	2,233 Miles with wayfinding and connections to Regional/local Bikeways	\$2.6 Billion	
Reg. Bikeways (including accessing the California Coastal Trail)	476 miles (excluding Greenways)	1,215 additional miles of Class 2, 3 bikeways (excluding greenways)	1,701 miles, excluding greenways. With Greenways, 2,220 miles	\$194 Million	
<b>Transit Integration Strategy</b>				<b>\$2.2 Billion</b>	<b>17%</b>
First/Last Mile	Some local improvements No Regional Coordination	Bike/Ped Improvements out to 1 mile from 224 rail stations	224 stations (fixed rail/guideway)	\$1.3 Billion	
Bike Share	Active at UCI	880 stations (8,800 bikes)	880 stations (8,800 bikes)	\$390 Million	
Livable Corridors	Local improvements. No Regional Coordination	Bike/ped and land use improvements along and connecting to commercial/retail/ bus transit corridors	Estimated 670 miles of bike/ped improvements to, from and along 154 miles of corridors	\$511 Million	
<b>Short-Trip Strategy</b>				<b>\$7.6 Billion</b>	<b>59%</b>
Sidewalks	Locally implemented. No regional strategy	Maintenance/improvements to existing sidewalks	10,582 miles	\$5.6 Billion	
Local Bikeways	2,686 miles, excluding greenways and Regional Bikeways	6,016 additional miles, excluding greenways and regional bikeways	8,702 miles, excluding greenways or Regional Bikeway Network	\$900 Million	
Neighborhood Mobility Areas	New Strategy	Complete Streets policies/ provisions for residential areas, connecting to local attractors	Focus on areas not served by transit, with favorable demographic and street characteristics	\$1.1 Billion	
<b>Education and Encouragement Strategy</b>				<b>\$288 Million</b>	<b>2%</b>
Safe Routes to School	28% of local jurisdictions covered	Collaboration with Cities and Counties in implementing SRTS Policies/Programs	% of jurisdictions covered increases to 50%	\$280 Million	
Safety/ Encouragement Campaigns	New Strategy. Launched in 2015	Continuation of current campaign every 5 years	5 campaigns between 2016 and 2040	\$8 Million	
<b>Total Estimate</b>				<b>\$12.9 Billion</b>	

Notes: Includes all projects provided by County Transportation Commissions and local active transportation plans. Bikeway Miles assigned to one of three categories (Greenway, Regional Bikeway or Local Bikeway) to prevent double counting. However, in many cases, these facilities will serve multiple purposes. Preliminary Cost Estimates reflect total costs for each integrated strategy.

## REGIONAL TRIP STRATEGIES

The Active transportation component invests \$2.8 billion in the Regional Trip Strategy, focusing on the Regional Greenway Network, Regional Bikeway Network, and accessing and completing the California Coastal Trail. All three strategies provide connectivity between local jurisdictions, establishing a regionwide, interconnected network of bikeways and walk/bike paths.

The Regional Greenway and Bikeway Networks are developed from local existing and planned bikeways and closing gaps. As new bikeways are developed, such as through the Orange County Strategic Bikeway Network and the Los Angeles County (draft) Active Transportation Strategic Plan, they will be incorporated into the networks.

## REGIONAL GREENWAY NETWORK

The regional greenway network (RGN) is a 2,233-mile network designed to increase walking and biking by creating separated bikeways that are designed for most potential bicyclists. It makes use of available open space such as rivers, drainage canals, separated bikeways and utility corridors. See [EXHIBIT 4](#) through Exhibit 11 for examples of the Regional Greenway Network. This strategy meets the concerns of bicyclists and pedestrians who do not want to be traveling near motor vehicle traffic. In addition, the network works toward a re-thinking of our river system. Many of the region's riverbeds have been turned into channels designed to handle 500-year floods flushing water runoff to the ocean. The regional greenway network, combined with river restoration efforts, can create a unique opportunity to create open space/ greenways/wetlands where not only biking or walking can occur, but also kayaking, fishing, and other rare recreation activities for urban environments.

1. CV Link (Coachella Valley) [EXHIBIT 5](#)
2. Santa Ana River Trail [EXHIBIT 6](#)
3. The Emerald Necklace [EXHIBIT 7](#)
  - Los Angeles River [EXHIBIT 20](#)
4. Orange County [EXHIBIT 8](#)
5. Ballona Creek insert map [EXHIBIT 9](#)
6. High Desert Corridor (I-5 to Palmdale to Victorville) [EXHIBIT 10](#)
7. Bicycle Route 33 [EXHIBIT 11](#)

## REGIONAL BIKEWAY NETWORK

The Regional Bikeway Network (RBN) is a 2,220-mile system of 14 interconnected bicycle routes of regional significance, as shown in [EXHIBIT 12](#) through Exhibit 26. The RBN connects local jurisdictions and counties, and it serves as a spine for local bikeway networks and the regional greenway network. It includes on-road and off-road bikeways (including

the regional greenway network) that link major origins and destinations directly, or through connectivity to high quality transit service.

The primary purpose is to serve regional trips, commuting and recreational bicycling, taking local existing and planned bikeways and providing a strategic regional focus. The RBN closes gaps, connects local jurisdictions and provides a regional “backbone” for local bikeways and greenways. By having assigned route names/numbers, bicyclists can more easily travel across jurisdictions without having to frequently consult maps or risk having bikeways end on busy streets. It is anticipated that trips longer than three miles will likely be used in part on the Regional Bikeway Network. The ultimate decision on final route locations and bikeway type rests with local jurisdictions.

1. Bicycle Route 66
2. Bicycle Route 10
3. Bicycle Route 126
4. Pacific Coast Bicycle Route
5. Bicycle Route 5
6. Santa Ana River Trail
7. High Desert Corridor
8. Bicycle Route 33
9. Los Angeles River
10. San Gabriel River
11. Bicycle Route 111
12. Bicycle Route 8
13. Bicycle Route 86
14. Bicycle Route 76

### Bicycle Route 66

Route 66 was a significant component in the development of Southern California throughout the 20th century. Many visitors to Route 66 wish to experience the historic landscapes and architectural and cultural heritage of the route. Continuous from Needles to Santa Monica, the proposed 280-mile bicycle route is on the original Route 66 where possible, and on nearby streets and off-street paths where traffic conditions and local preferences lean toward a lower speed experience with less traffic. Establishing a designated route with signage and dedicated bikeways offers commuting, utilitarian and recreational cyclists with a comfortable facility that is an integrated part of the Southern California regional bikeway system. The route is one of five regional bikeways (along with several greenways) connecting to the ocean and the California Coastal Trail. [EXHIBIT 16](#)

### Bicycle Route 10

Bicycle Route 10, travels (from east to west) from Blythe, mostly along Interstate 10 freeway shoulders (where legal) into the Coachella Valley, connecting to Western Riverside County. It then links to the Santa Ana River Trail into north Orange County where it leaves the trail and travels to Los Angeles County's south bay. The route is one of five regional bikeways (along with several greenways) connecting to the ocean and the California Coastal Trail. [EXHIBIT 17](#)

### Bicycle Route 126

Bicycle Route 126 connects Lancaster and Palmdale to Santa Clarita and Bicycle Route 5, before traveling along the State Route 126 corridor to Ventura County. The route is one of five regional bikeways (along with several greenways) connecting to the ocean and the California Coastal Trail. [EXHIBIT 18](#)

### Pacific Coast Bicycle Route (Bicycle Route 95)

The Pacific Coast Bicycle Route is part of a multi-state recreational trail from the State of Washington to Baja, Mexico. The route was developed by the American Cycling Association for bicycle tourists. The route, once established by local governments and adopted by the California Department of Transportation, will become national Bicycle Route 95. [EXHIBIT 19](#)

### Bicycle Route 5

Bicycle Route 5 travels from Gorman, through the Grapevine and along the shoulder of Interstate 5 until Santa Clarita. Then, using local streets, it connects to the San Fernando Valley and into downtown Los Angeles. A gap still remains that would link Route 5 from downtown Los Angeles to Orange County. [EXHIBIT 20](#)

### Santa Ana River Trail

While technically a greenway, the 110-mile Santa Ana River Trails connects San Bernardino to the ocean and the California Coastal Trail. It is considered a regionally significant bikeway. [EXHIBIT 6](#)

### High Desert Corridor

The High Desert Corridor represents the Complete Streets approach of incorporating active transportation into the initial planning of regionally significant projects. As Caltrans continues planning the High Desert Corridor, a separated bicycle path will be planned/evaluated as part of the scenarios. A separated bicycle path would serve as a bicycling backbone for the projected population growth in that area. The high desert corridor bicycle path connects Victorville in the San Bernardino County to Interstate 5 in north Los Angeles County. The area from Interstate 5 to Palmdale is part of the Los Angeles County Public Works Department bicycle plan for unincorporated areas, and the area from Palmdale to Victorville is part of the High Desert Corridor study. [EXHIBIT 10](#)

### Bicycle Route 33

Bicycle Route 33 is a combination of trails traversing 18 miles that connect Ventura to Ojai and then travel north along State Route 33.

These trails include:

- Ventura Beach Trail;
- Ventura River Trail (Ojai Valley Trail extension); and
- Ojai Valley Trail.

While technically a greenway, the 18-mile portion of the trail connects to the ocean and the California Coastal Trail; it is considered a regionally significant bikeway. [EXHIBIT 11](#)

### Los Angeles River

While technically a greenway, the Los Angeles River Trail connects to the ocean and the California Coastal Trail; it is considered a regionally significant bikeway. Portions of the trail are still being constructed or are in planning stages. The largest segment to be planned is from just north of Los Angeles to the City of Maywood. Rail lines and other commercial development alongside the river require innovative planning to develop greenways. [EXHIBIT 21](#)

### San Gabriel River

While technically a greenway, the San Gabriel River Trails connects to the ocean and the California Coastal Trail and is considered a regionally significant bikeway. The trail connects the City of Duarte to Long Beach. [EXHIBIT 22](#)

### OC LOOP

The OC Loop is a class 1 bikeway that connects to local networks throughout northern Orange County and southern Los Angeles County. [EXHIBIT 8](#)

### BR8

Bicycle Route 8 connects San Diego County and Imperial County before connecting to Arizona. [EXHIBIT 23](#)

### BR111

Bike Route 111 connects the local jurisdictions in Imperial County to the Coachella Valley in Riverside County, along the less traveled State Route 111 on the east side of the Salton Sea. [EXHIBIT 13](#)



### Bicycle Route 86

Bicycle Route 86 connects the City of Mexicali to the Coachella Valley, linking to the CV Link trail and Bicycle Route 10. [EXHIBIT 14](#)

### Bicycle Route 78

Bicycle Route 78 connects the City of El Centro to Blythe. The route is part of the Adventure Cycling Association's "Southern Tier" route, meaning it is part of what may become a designated National Bicycle Route. [EXHIBIT 15](#)

## CALIFORNIA COASTAL TRAIL

In addition to bikeways, local trails have been able to increase accessibility and provide opportunities for active transportation. Trails along the coast of California have been used as long as people have inhabited the region. The California Coastal Trail (CCT), established by the Coastal Act of 1976, is a "continuous public right-of-way along the California coastline; a trail designed to foster appreciation and stewardship of the scenic and natural resources of the coast through hiking and other complementary modes of non-motorized transportation."

The Coastal Initiative Collection (Proposition 20) of 1972 "created six regional commissions and one statewide commission to oversee the use and development of California's 1,000 mile coastline and was designed to address the State legislature's failure to produce an acceptable compromise measure regarding coastal ecology, protection and preservation." Four years later, the Coastal Act established the California Coastal Trail. In 1999, the CCT was designated as California's Millennium Legacy Trail to encourage federal agencies to assist in its development. In 2001, Assembly Concurrent Resolution 20 declared the CCT an official state trail, and Senate Bill 908 directed the Coastal Commission and State Parks Department to develop a plan to complete the CCT by 2008.

In 2003, the Coastal Conservancy developed the Completing the California Coastal Trail plan to provide a strategic blueprint to complete the CCT. The plan attempted to create consistent, connective, and quality trails throughout the length of the state by adhering to the following principles:

- Proximity: the CCT "should be within sight, sound, or at least the scent of the sea."
- Connectivity: the CCT "should effectively link starting points to destinations."
- Integrity: the CCT "should be continuous and separated from motor traffic."
- Respect: the CCT should be "located and designed with a healthy regard for the protection of natural habitats, cultural and archaeological features, private property rights, neighborhoods and agricultural operations along the way."
- Feasibility: the CCT alignment should identify "timely, tangible results with the resources that are available, both interim and long-term."

Government Code Section 65080.1 requires each MPO that includes a "portion of the California Coastal Trail, or property designated from the trail shall coordinate with the State Coastal Conservancy, the California Coastal Commission and Caltrans regarding the development of the trail. The trail must be identified in the RTP."

The following projects have been identified to complete significant portions of the CCT within Ventura, Los Angeles and Orange County:

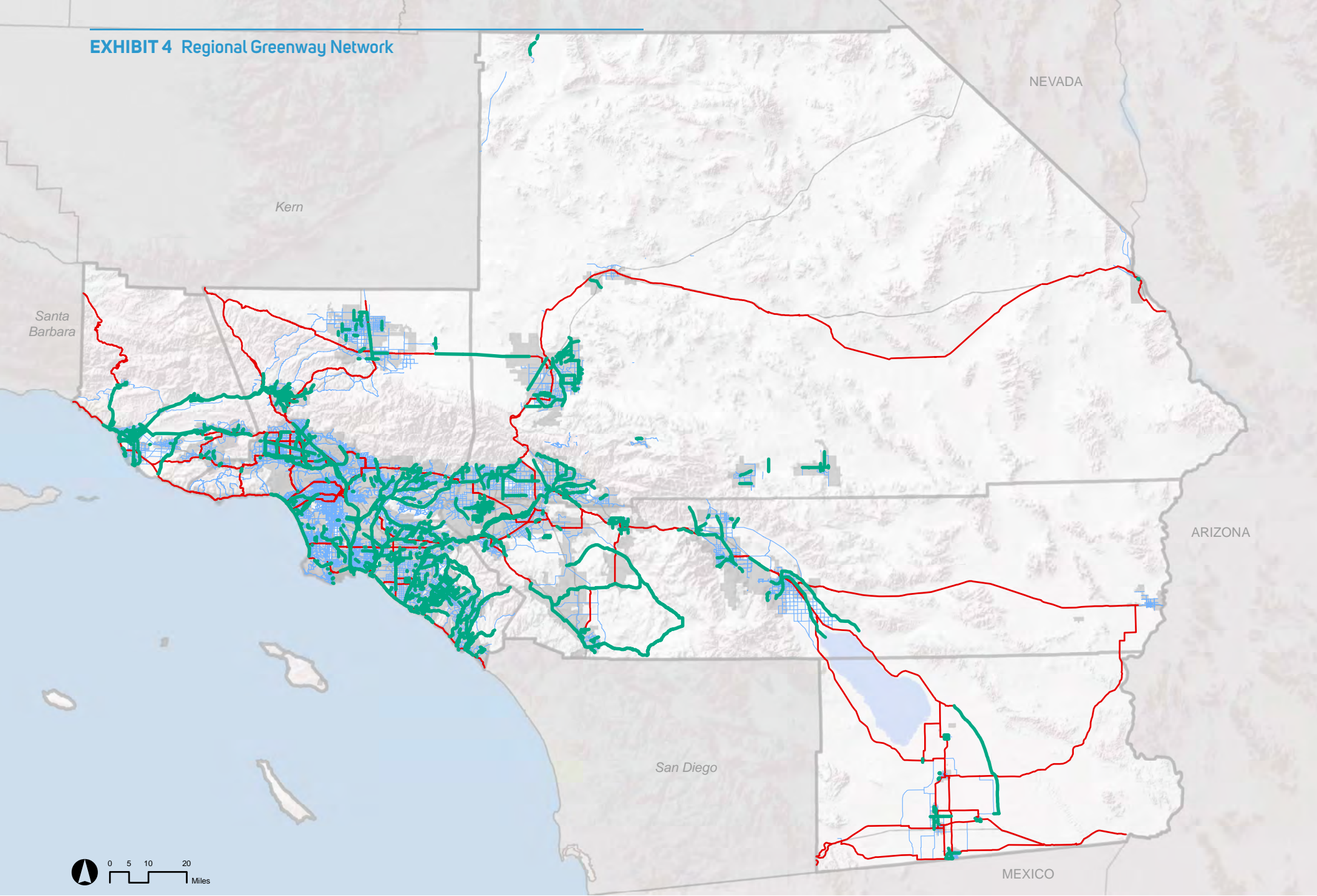
### VENTURA COUNTY

1. Design a recreational access trail along the Santa Clara River to encourage non-motorized access to the coast from inland cities.
2. Encourage the U.S. Navy to provide a shoreline public access connection on the Naval Construction Battalion Center, Port Hueneme, consistent with military security requirements.
3. Provide pedestrian and bicycle paths in conjunction with planning for restoration of the Ormond Beach wetlands, to connect with the trail in Port Hueneme.
4. Work with the City of Oxnard to design and construct recreational support facilities at the terminus of Arnold Road to improve beach access opportunities and avoid impacts to sensitive habitat areas.

### LOS ANGELES COUNTY

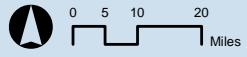
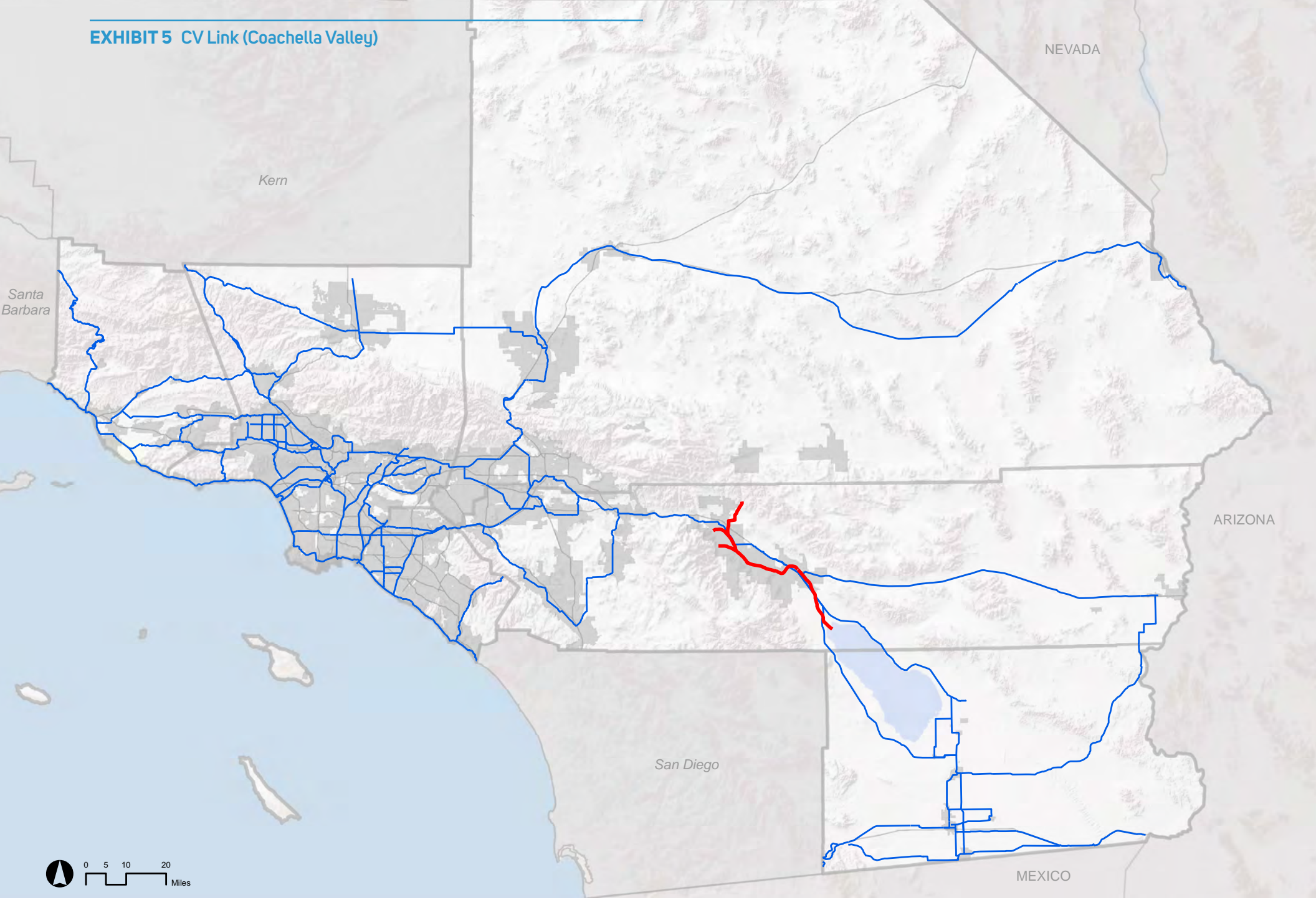
1. Assist Caltrans in evaluating and improving non-motorized access along State Highway 1 corridor, from Leo Carrillo State Beach to the beginning of the South Bay Bicycle Path near Temescal Canyon.
2. Continue to encourage Caltrans and local agencies to extend bicycle and pedestrian improvements through Malibu, through the Malibu/Pacific Coast Highway Safety Plan.
3. Facilitate continuous lateral access along the Malibu shoreline, from Leo Carrillo State Beach to the city limit.
4. Link the inland portions of the Santa Monica Mountains National Recreation Area with the coast by assisting the National Park Service, State Parks, the Santa Monica Mountains Conservancy and the City of Malibu to acquire necessary rights-of-way and develop improvements to complete the Coastal Slope Trail.
5. Extend the pedestrian/bicycle path from Washington Boulevard to the north jetty of Marina Del Rey, and support the seasonal ferry service for pedestrians and cyclists across the channel to Playa del Rey.
6. Assist the Cities of Los Angeles and Long Beach in providing continuous physically separated pedestrian and bicycle access across the replacements for the Vincent Thomas Bridge and Gerald Desmond Bridge linking San Pedro to Long Beach.

# EXHIBIT 4 Regional Greenway Network



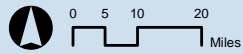
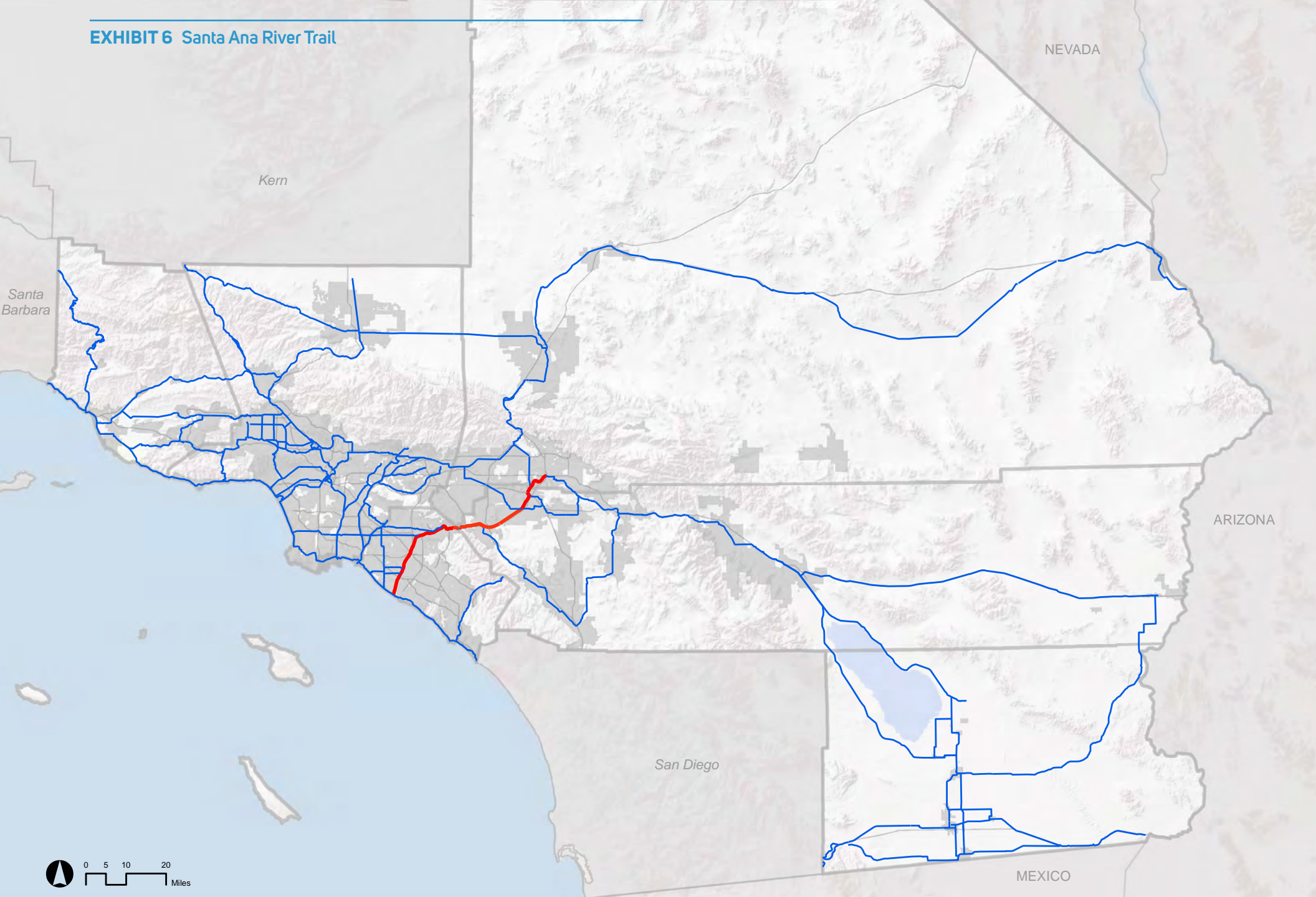
- County Boundaries
- City Boundaries
- Freeway
- Local Bikeway Networks
- Regional Greenway Network
- Regional Bikeway Network

EXHIBIT 5 CV Link (Coachella Valley)



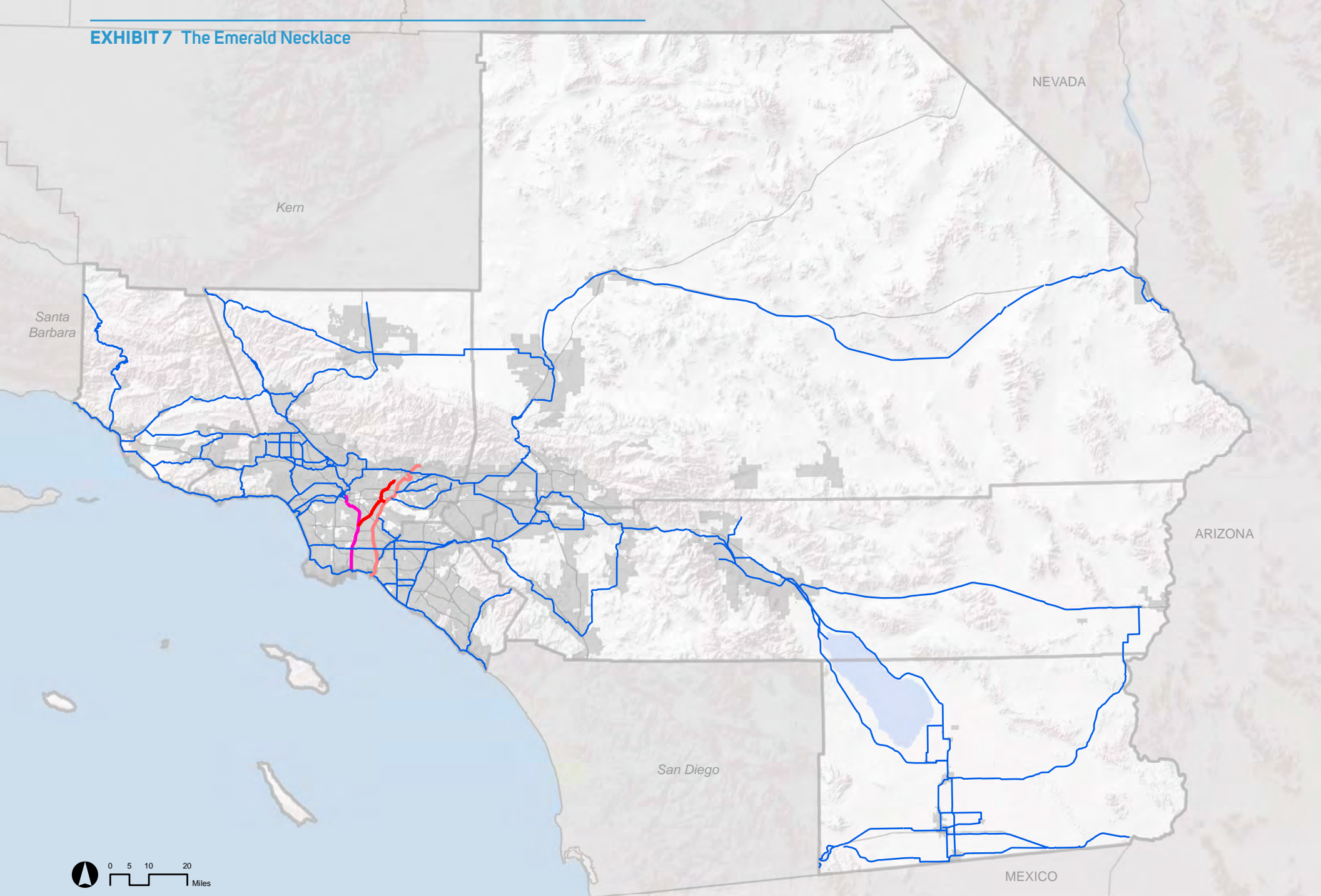
- Regional Bike Routes
- CVLink
- City Boundaries
- Freeway

**EXHIBIT 6** Santa Ana River Trail



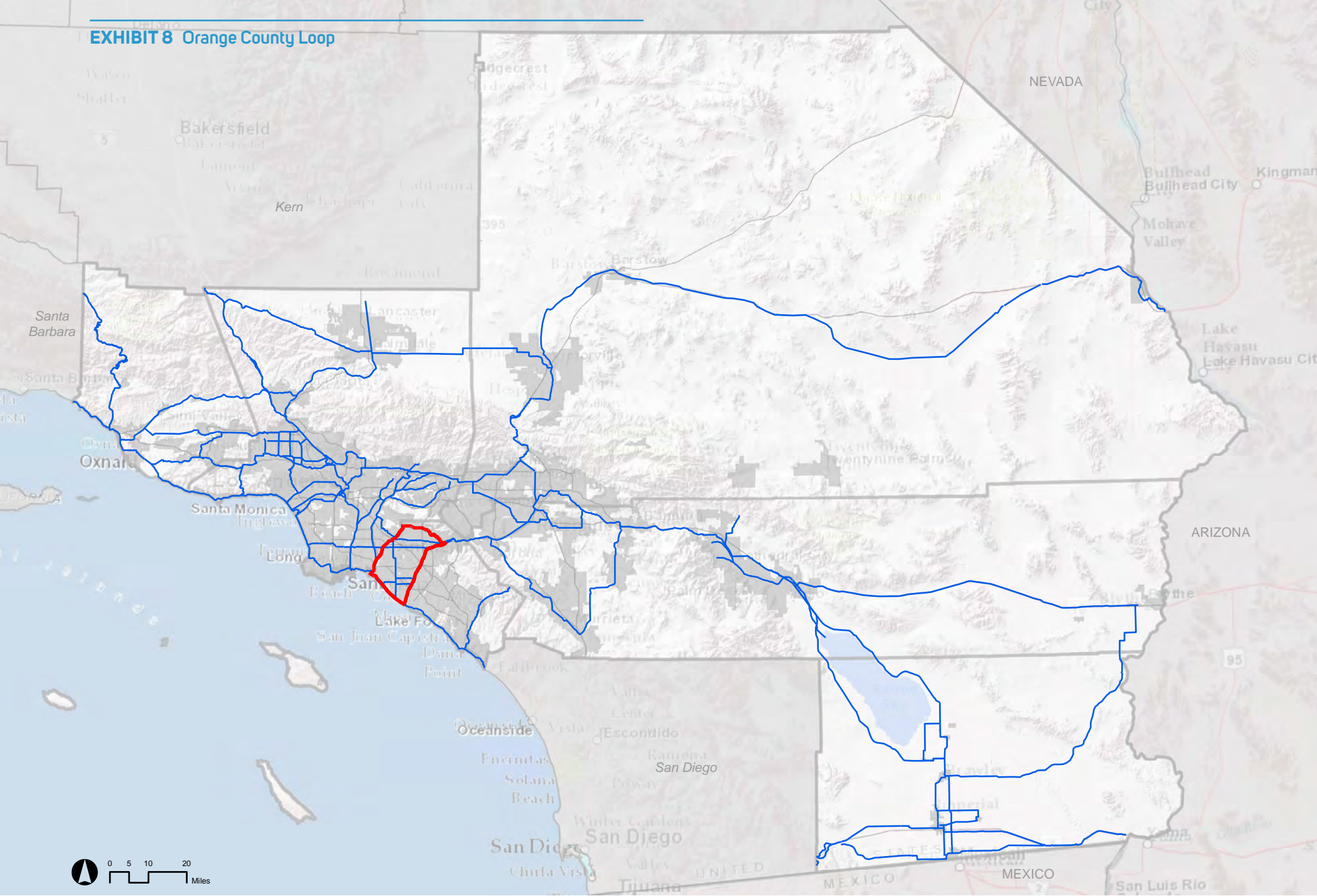
- Regional Bike Routes
- Santa Ana River Trail (IE)
- Santa Ana River Trail (OC)
- City Boundaries
- Freeway

# EXHIBIT 7 The Emerald Necklace



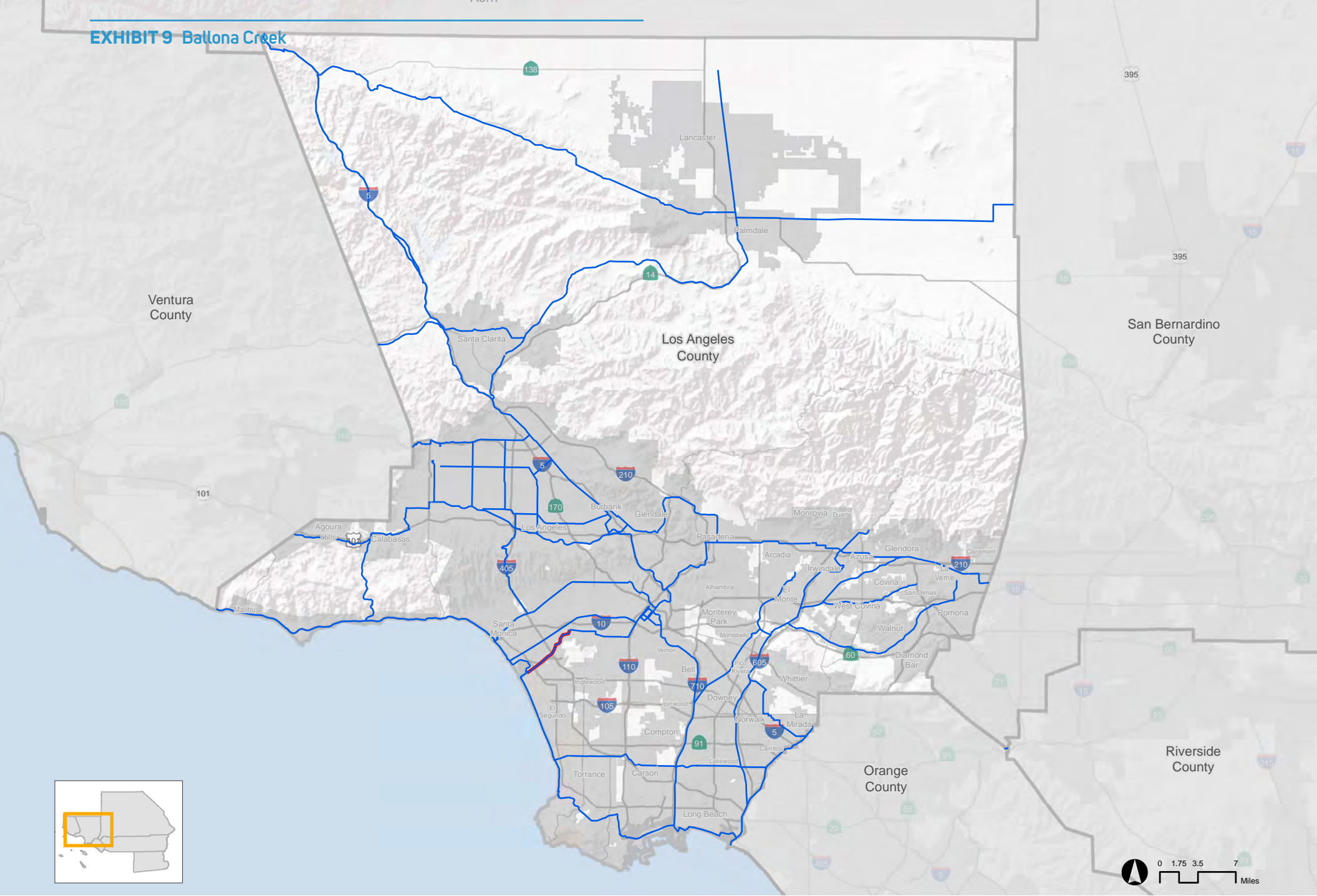
Regional Bikeways San Gabriel River Trail Rio Hondo Trail L.A. River Trail City Boundaries Freeway

# EXHIBIT 8 Orange County Loop



- OC Loop
- Regional Bikeways
- City Boundaries
- Freeway

# EXHIBIT 9 Ballona Creek



County Boundaries

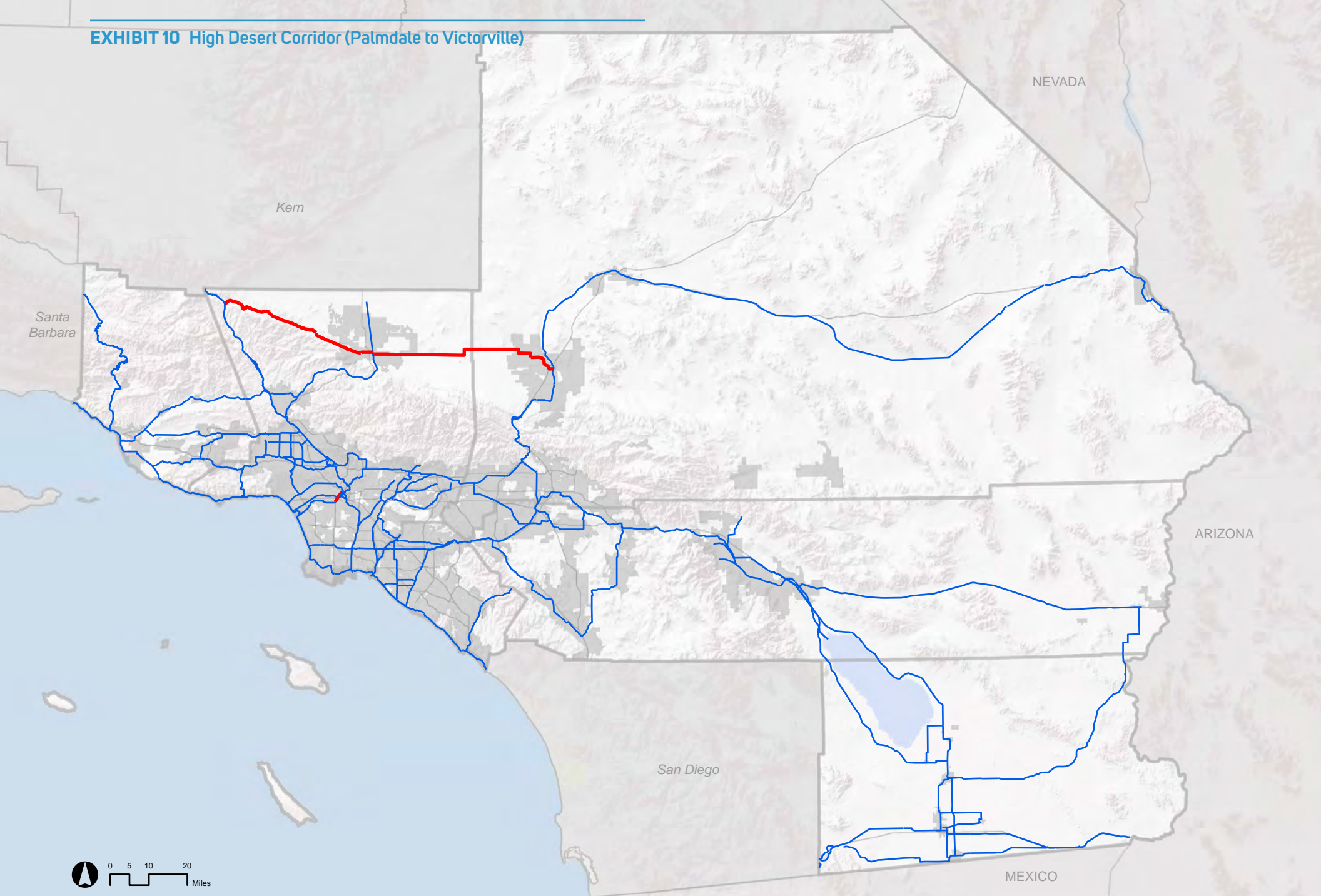
City Boundaries

Ballona Creek Bike Path

Regional Bike Routes within Los Angeles County

(Source: SCAG, 2015)

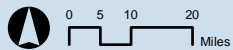
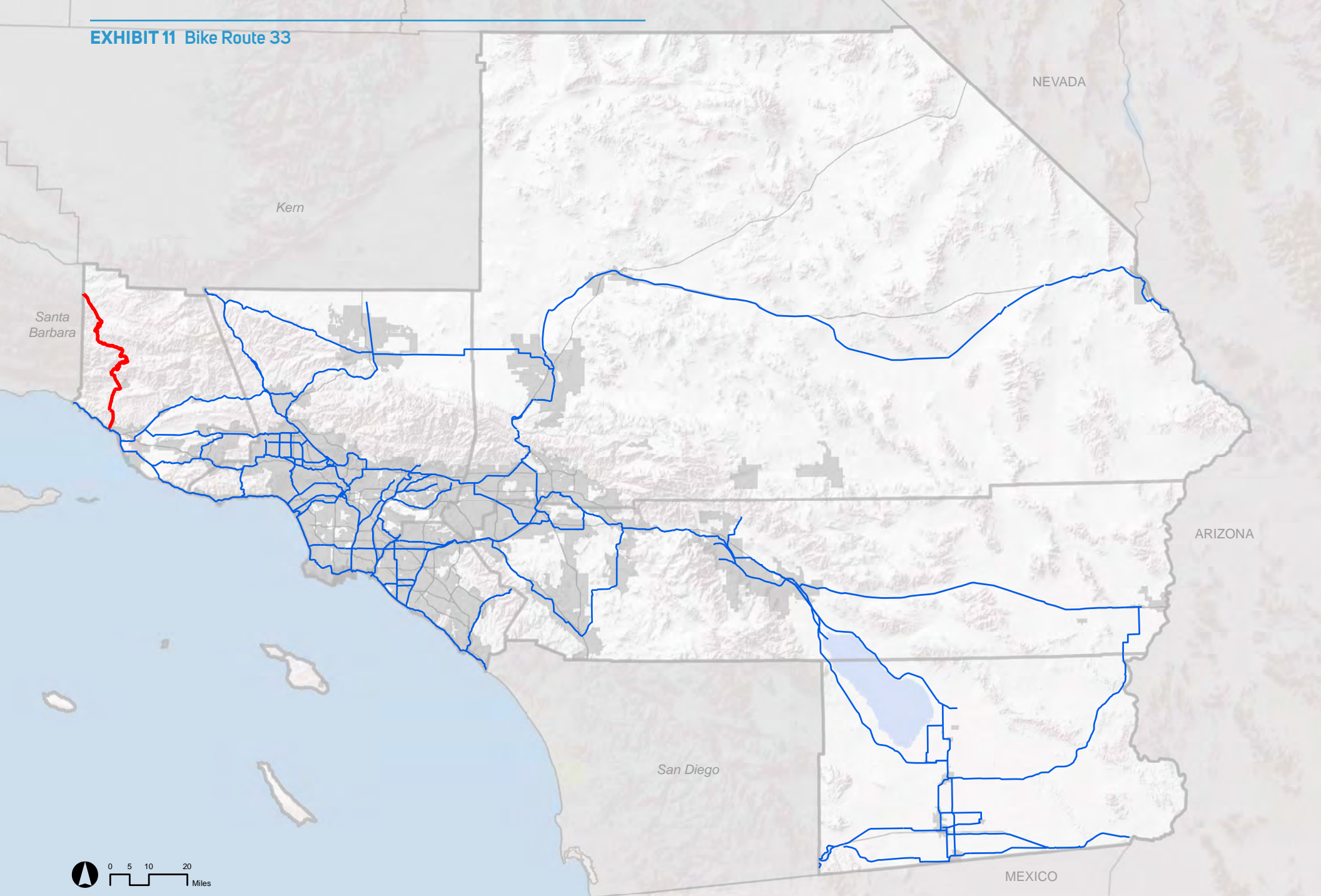
EXHIBIT 10 High Desert Corridor (Palmdale to Victorville)







 Regional Bikeways  High Desert Bikeway  City Boundaries  Freeway

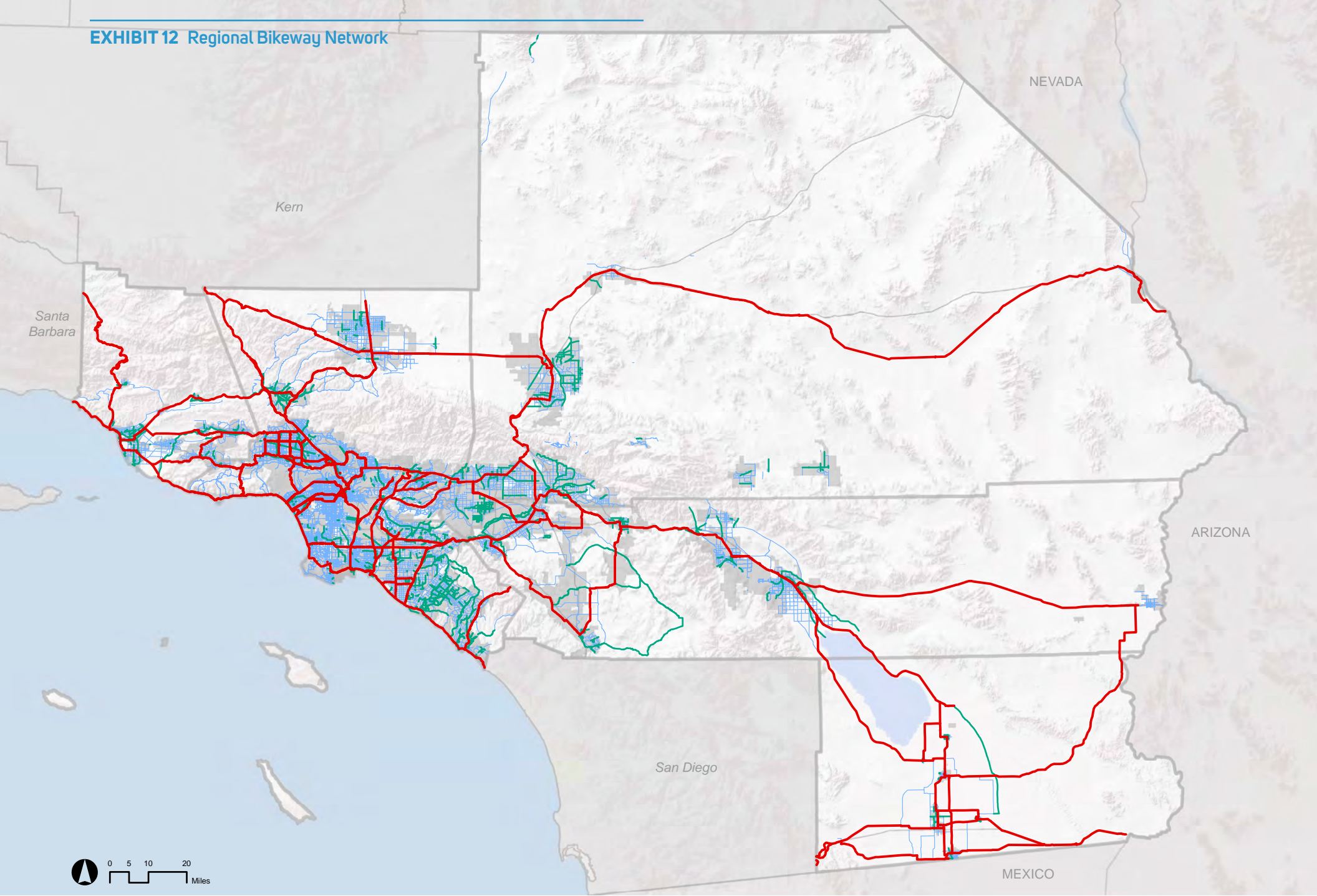


EXHIBIT 11 Bike Route 33



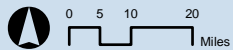
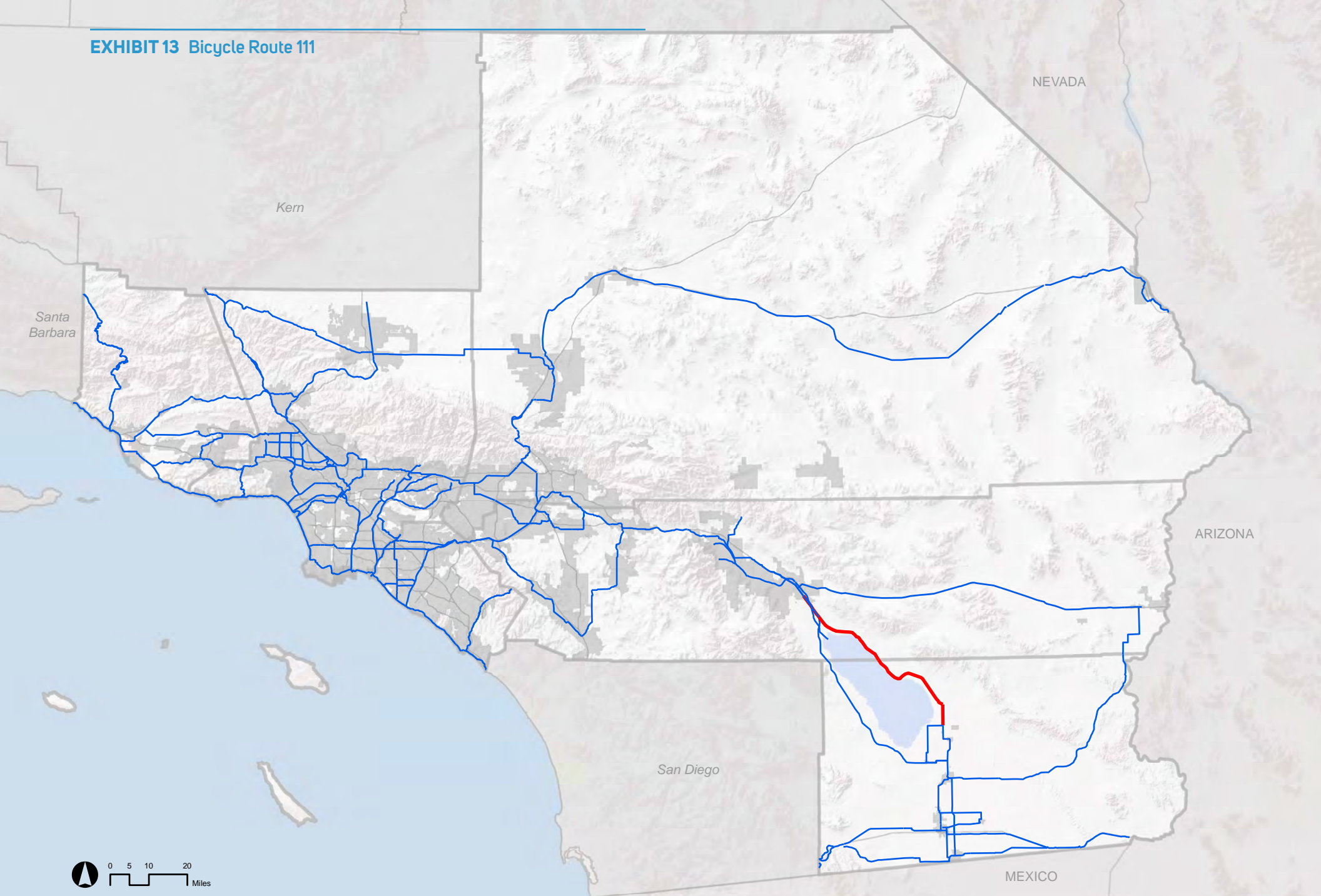
 Regional Bike Routes  Bike Route 33  City Boundaries  Freeway

# EXHIBIT 12 Regional Bikeway Network



- County Boundaries
- City Boundaries
- Freeway
- Local Bikeway Networks
- Regional Greenway Network
- Regional Bikeway Network

EXHIBIT 13 Bicycle Route 111



- Regional Bikeways
- Bike Route 111
- City Boundaries
- Freeway

7. Support the Alameda Corridor Terminus/California Coastal Trail Extension Grade Separation (Pedestrian/Class 1 Bicycle Path bridge)
8. Support the California Coastal Trail Port O' Call Promenade.

## ORANGE COUNTY

1. Implement the planned State Highway 1 improvements between Seal Beach and Anderson Street in Huntington Beach to create a separated non-motorized trail.
2. Encourage local agency efforts to work with private landowners and acquire public access rights necessary to provide a trail connection to the coast from Aliso Creek Regional Park.
3. Encourage local agency land acquisitions, trail design and development to provide a public access connection to the coast from Laguna Coast Wilderness Park.
4. Complete improvements of "missing links" to provide safe pedestrian and bicycle access adjacent to State Highway 1, between the cities of Laguna Beach and Dana Point.
5. Support the effort by the City of San Clemente to provide a safe pedestrian and bicycle trail along the railroad right-of-way west of State Highway 1.

## TRANSIT INTEGRATION

The 2016 RTP/SCS calls for increased development near transit stations, as well as improved access to and from transit. Walking and biking are the simplest methods for reaching transit stations in most situations. The Plan calls for \$2.2 billion in improving bicyclist and pedestrian accessibility to rail transit and along bus transit corridors, improving sidewalks, wayfinding signage and bikeways. This investment is anticipated to increase transit ridership mode share by 9.2 percent regionwide and ten percent in high quality transit areas, according to SCAG's modeling results as represented in [EXHIBIT 24](#).

### FIRST/LAST MILE (RAIL)

Public transportation agencies typically provide bus and rail services that may frame the core of trips. But users must complete the first and last portion on their own; they must first walk, drive or roll themselves to the nearest station. This is referred to the first and last mile of the user's trip, or first/last mile for short, even though actual distances vary by users. Simply put, all [transit] riders must contend with the first/last mile challenge, and the easier it is to access the system, the more likely people are to use it.<sup>31</sup>

The first/last mile strategy uses a Complete Streets approach and land use changes designed to maximize the number of people walking or biking to rail, light rail, and fixed guideway buses so they can access jobs, homes and other destinations. By 2040, 10.6

percent of all people in the SCAG region will live within a half mile of these types of transit stations, and 26.5 percent will live within one mile.

The existing transit access shed is considered one half mile (ten minute walk). The first/last mile strategy will increase the number of people walking within and beyond one-half mile, lengthening the pedestrian access shed to one mile. Bicyclists accessing transit are also anticipated to increase, both within the one-mile bicycle access shed and beyond to a new bicyclist access shed of three miles (15 minute bicycle ride).

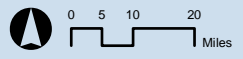
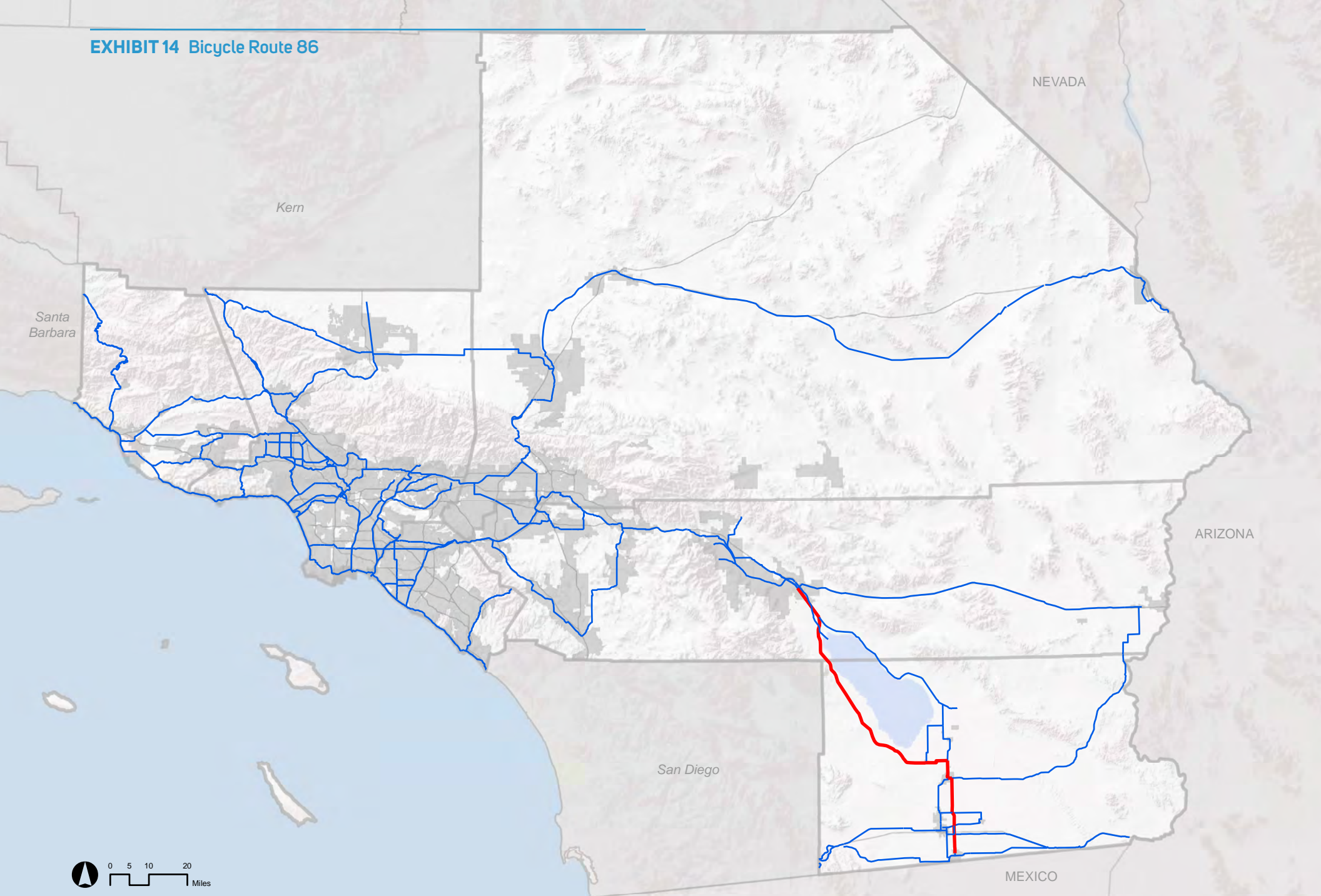
Infrastructure improvements may include dedicated bicycle routes, sidewalk enhancements, mid-block crossing (short-cuts), and reduced waiting periods at traffic signals, bicycle parking, signage, and wayfinding, among others. This represents a significant expansion of the transit system.





This component of the network is designed to increase transit ridership by expanding the number of origins and destinations within a five- to ten-minute walk or bicycle ride of stations. Travel time, not distance, plays the greatest role in mode choice. Reducing travel times to stations can be achieved through dedicated facilities, mid-block crossing (short-cuts), reduced waiting periods at traffic signals, etc.

### Los Angeles County

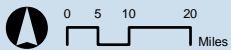
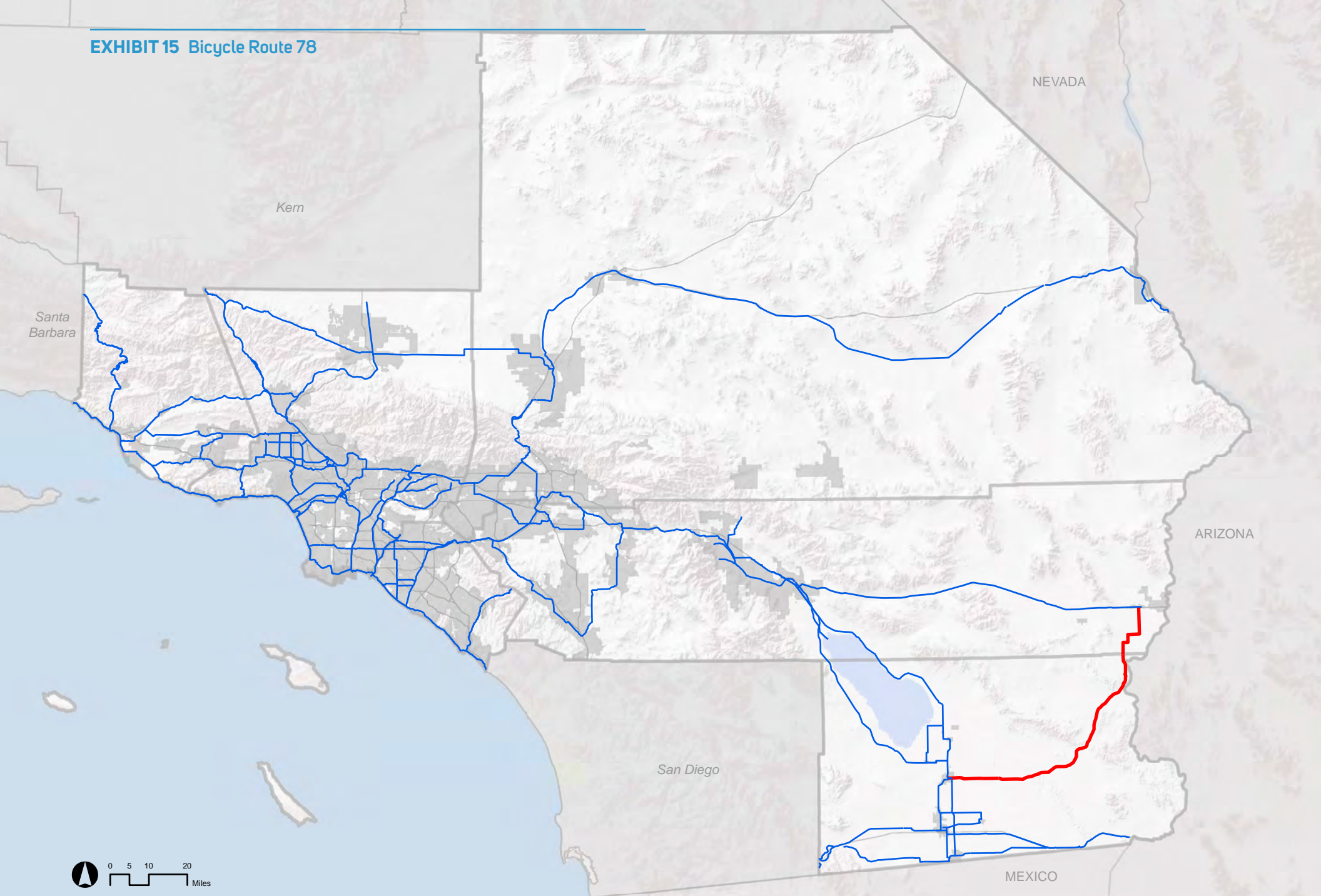
In Los Angeles County, Metro has proposed an extensive active transportation network to support transit integration, including "pathways" that extend a half mile around each of its stations. The "pathways" are envisioned to provide facilities and design elements that are constant across the transit system, to enable seamless and intuitive door-to-door journeys. Pathways will be established along the most heavily traveled routes to stations, connecting riders to and from population and employment centers and major destinations. They will improve and shorten the time it takes to access transit, enhancing the overall transit experience. The "pathways" will also facilitate transfers between modes, including traditional modes such as buses and park & ride lots, as well as new mobility options such as bicycle share and car share that can be "plugged-in" along active transportation networks.

EXHIBIT 14 Bicycle Route 86



 Regional Bike Routes  Bike Route 86  City Boundaries  Freeway

# EXHIBIT 15 Bicycle Route 78







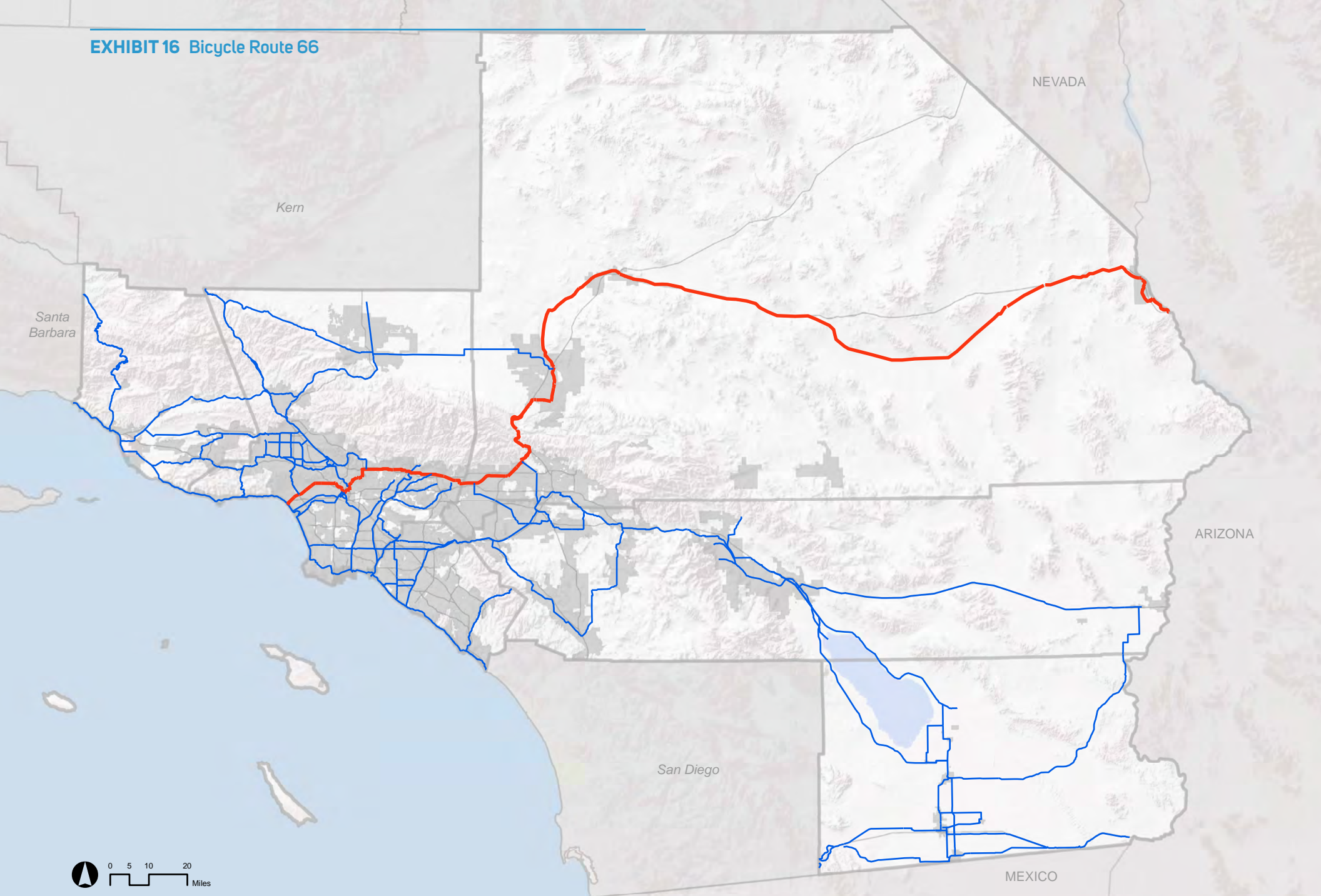
-  Regional Bikeways
-  Bike Route 78
-  City Boundaries
-  Freeway

EXHIBIT 16 Bicycle Route 66






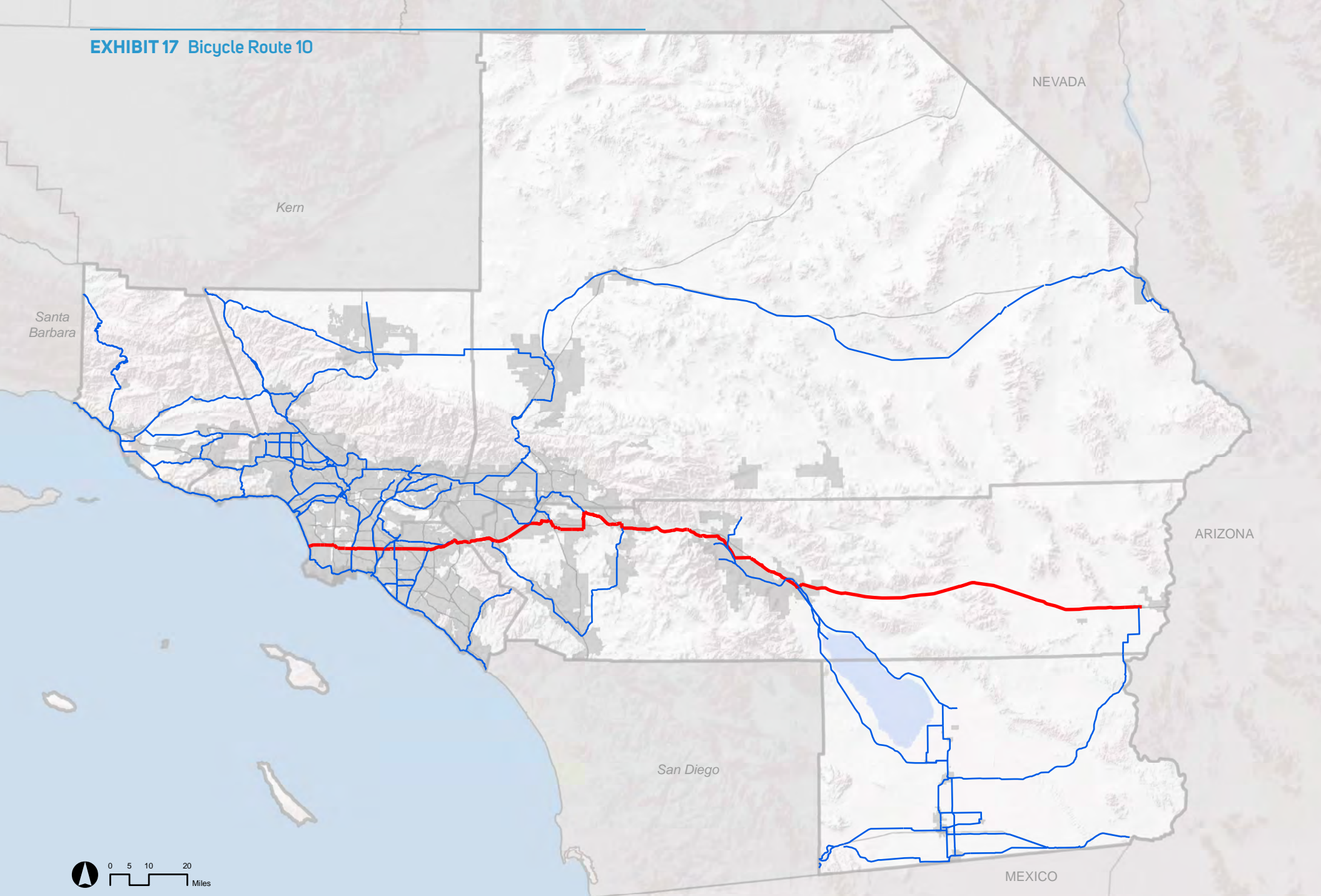




 Other Regional Bike Routes  Bike Route 66  City Boundaries  Freeway

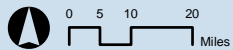
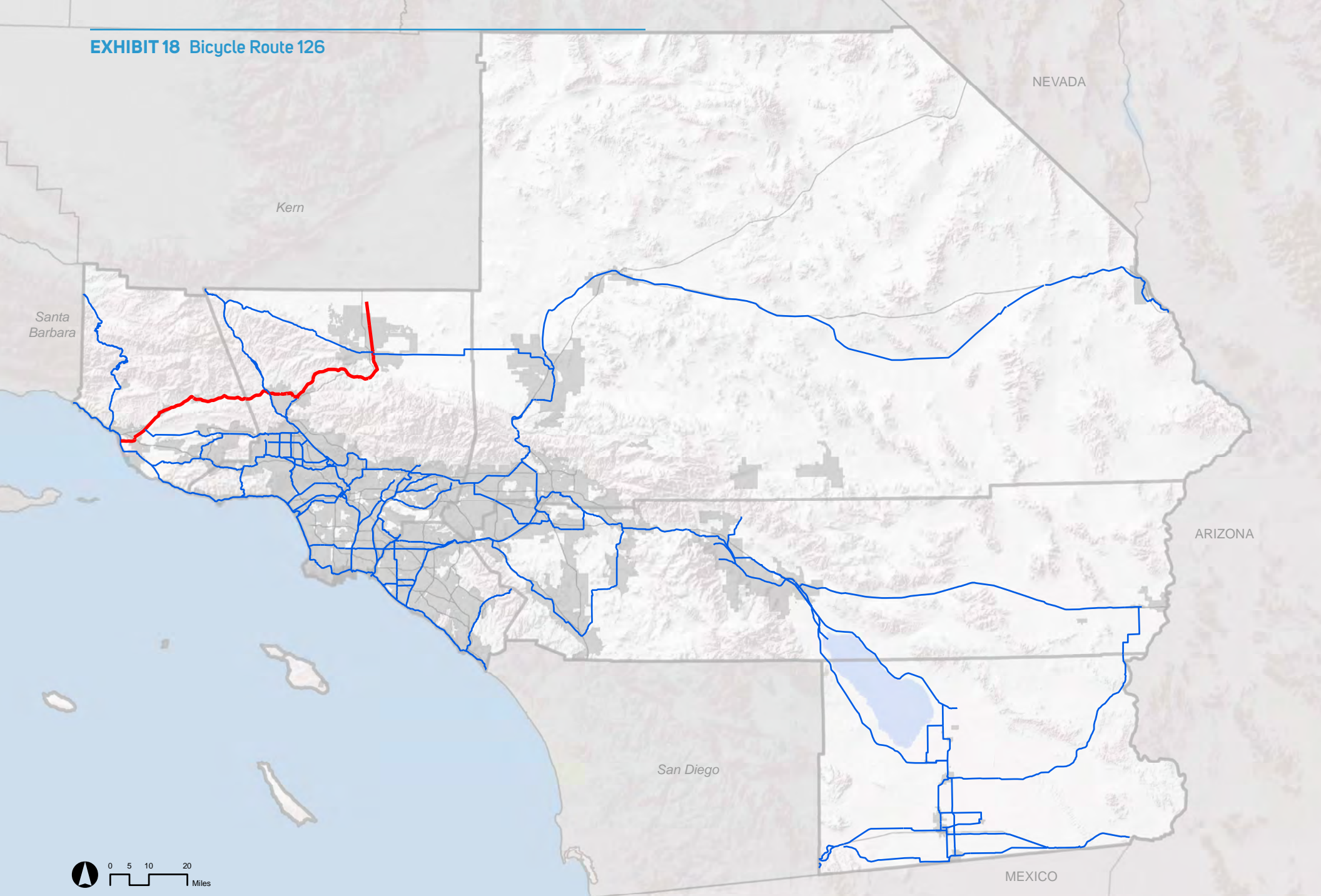
EXHIBIT 17 Bicycle Route 10



 Regional Bike Routes  Bike Route 10  City Boundaries  Freeway



**EXHIBIT 18** Bicycle Route 126







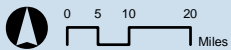
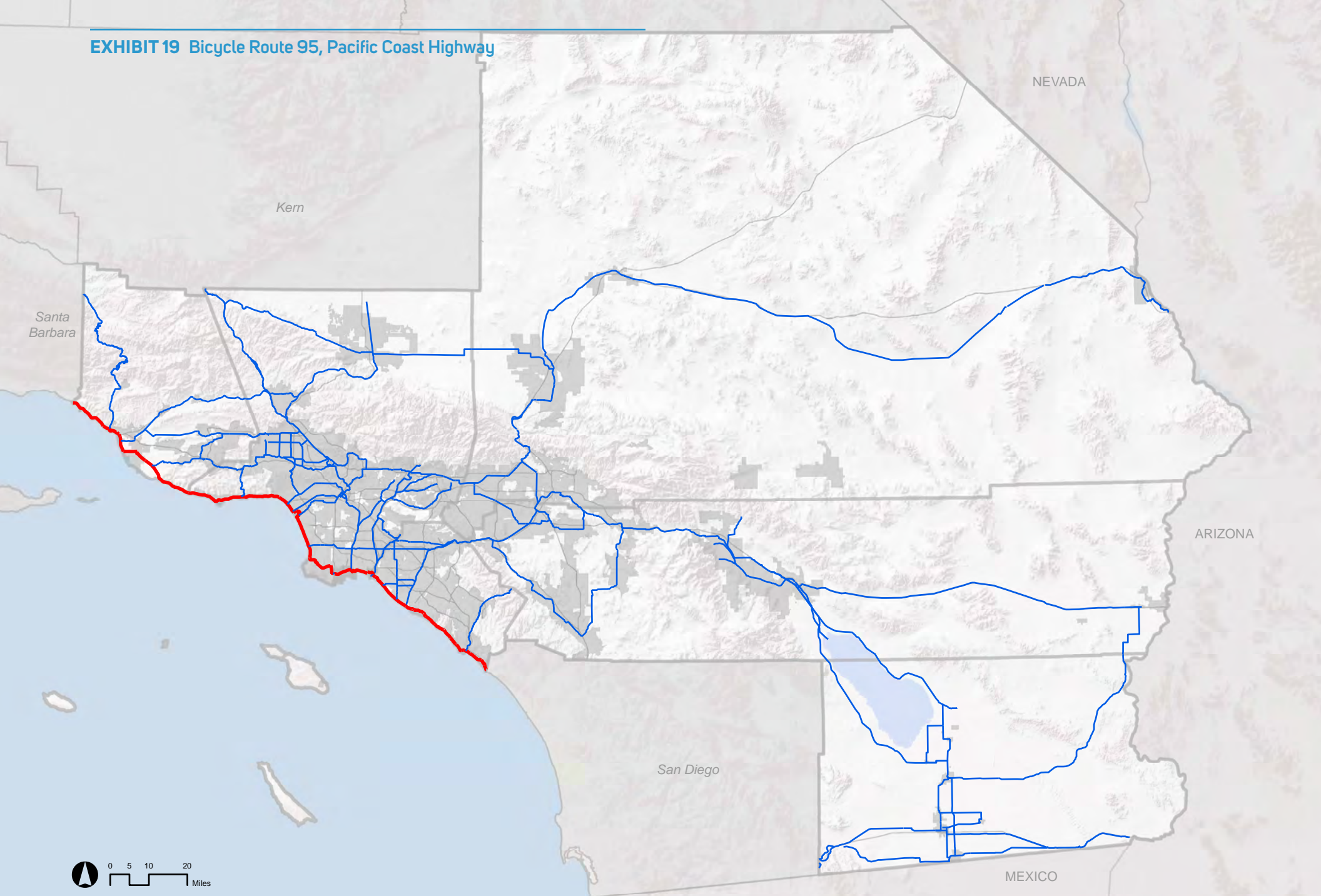
 Regional Bike Routes  Bicycle Route 126  City Boundaries  Freeway

EXHIBIT 19 Bicycle Route 95, Pacific Coast Highway







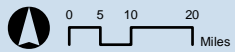
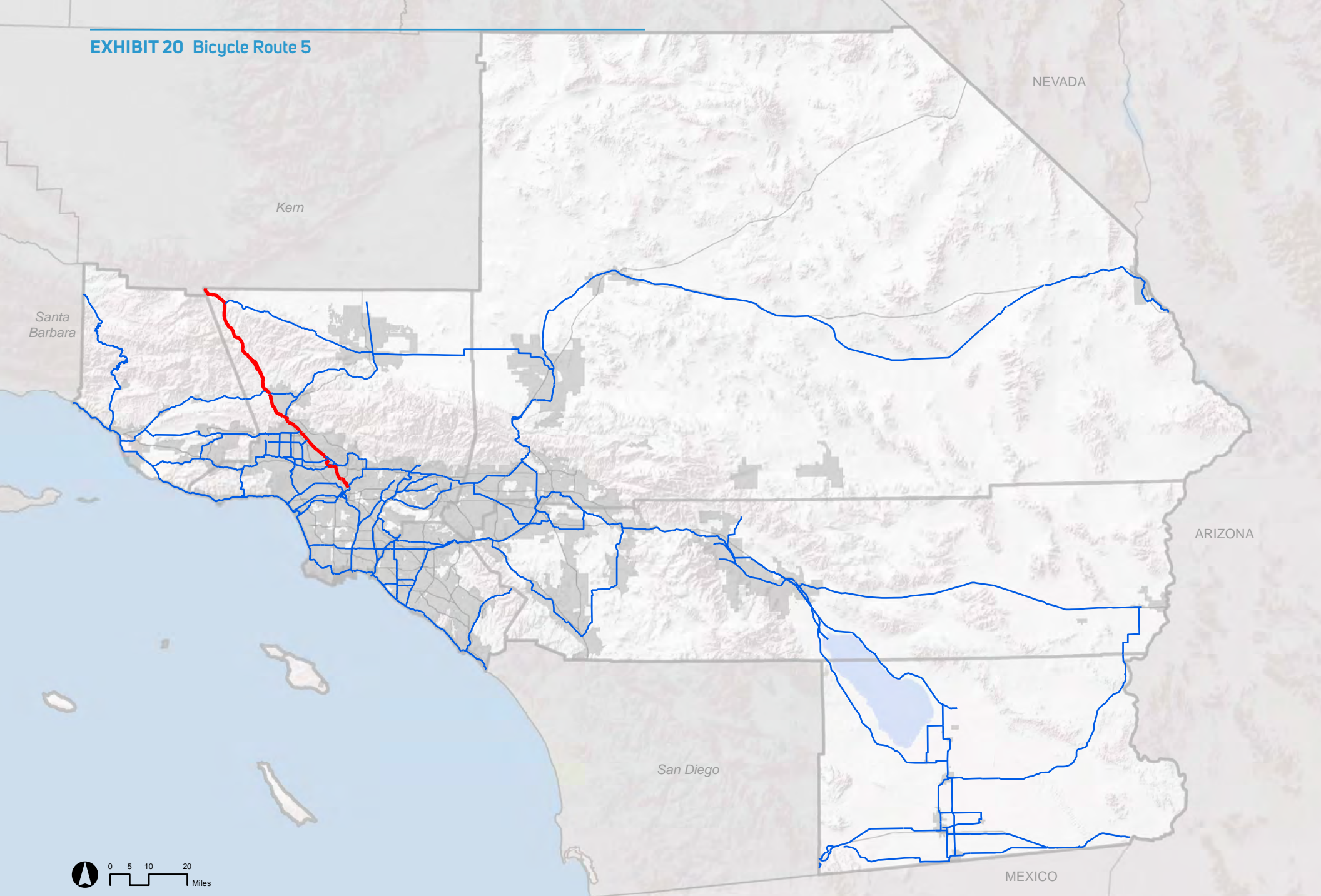
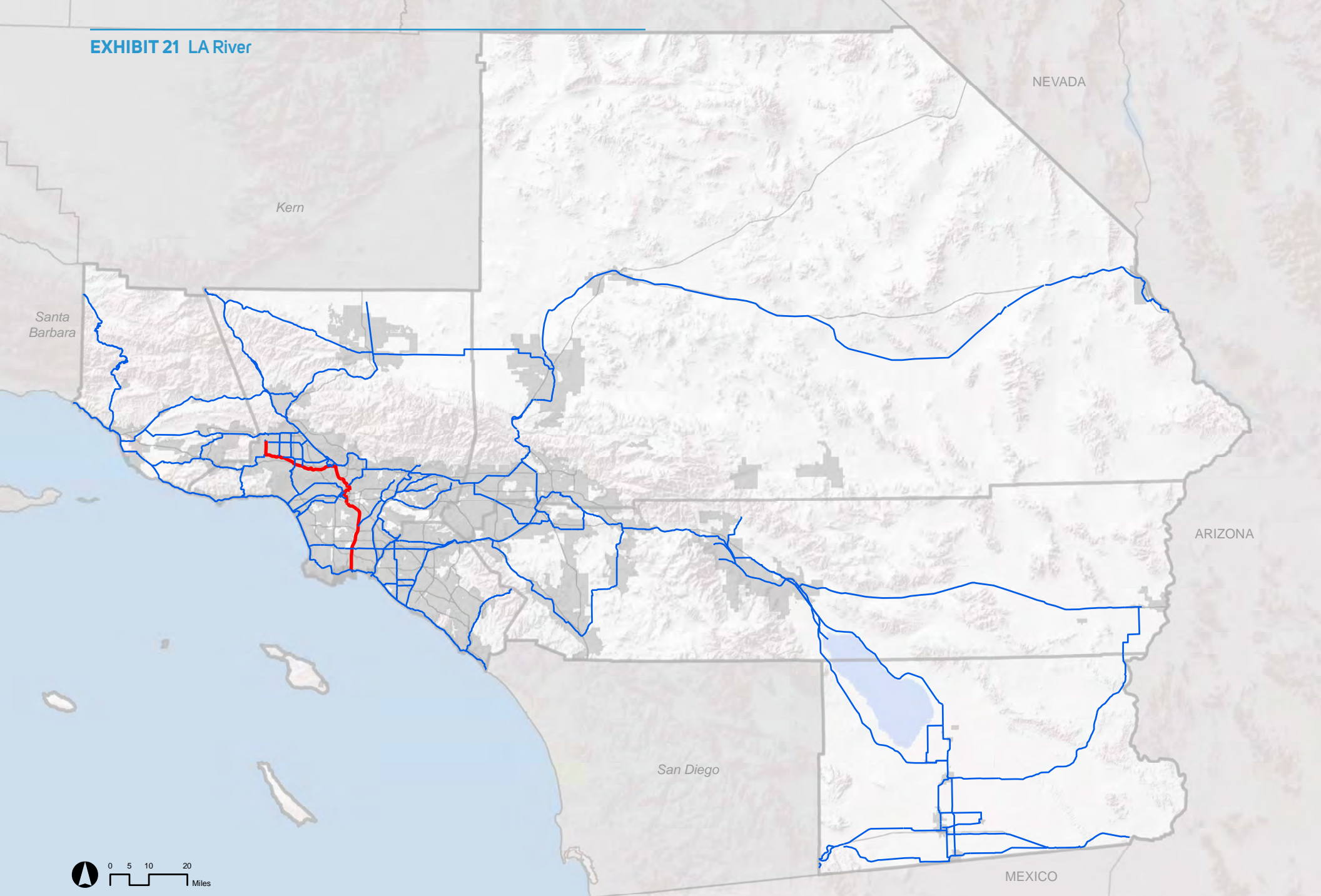
 Regional Bike Routes  Pacific Coast Hwy Bike Route  City Boundaries  Freeway

EXHIBIT 20 Bicycle Route 5



Regional Bike Routes    **Bike Route 5**    City Boundaries    Freeway

EXHIBIT 21 LA River







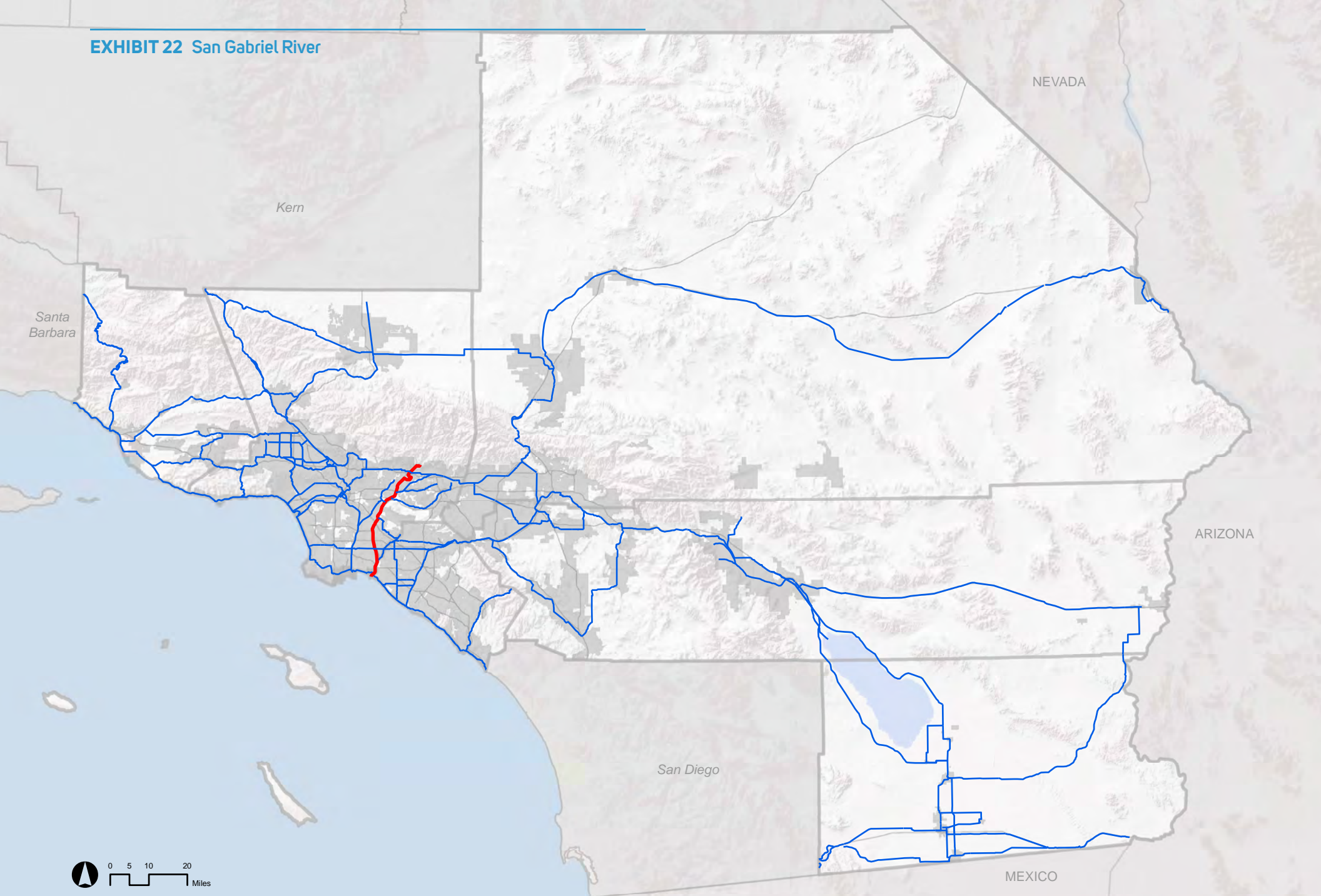
 Regional Bike Routes  Los Angeles River Bike Path  City Boundaries  Freeway

EXHIBIT 22 San Gabriel River



NEVADA

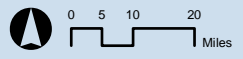
Kern

Santa Barbara

ARIZONA

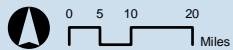
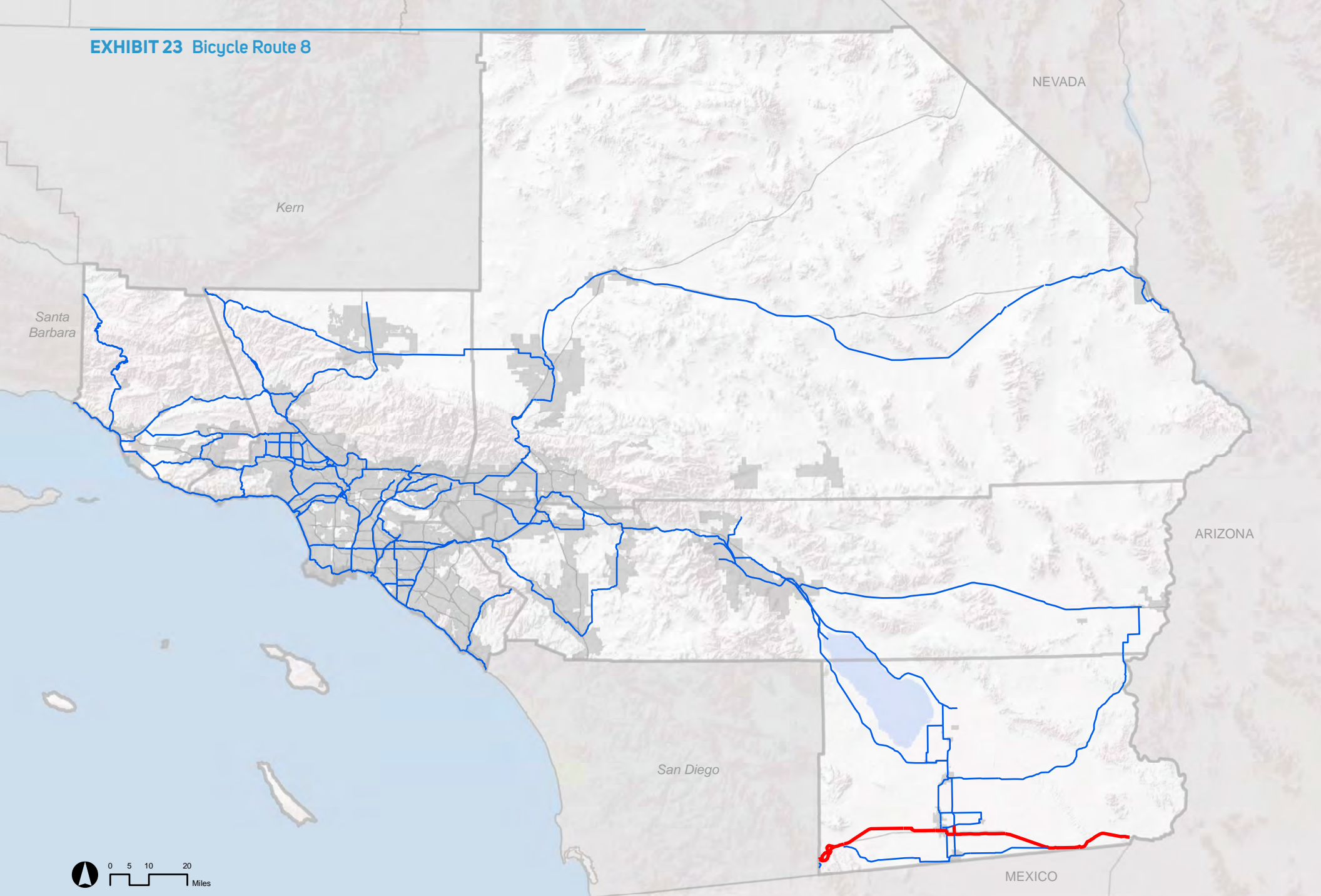
San Diego





MEXICO



- Regional Bikeways
- San Gabriel River Bike Trail
- City Boundaries
- Freeway

**EXHIBIT 23** Bicycle Route 8



 Regional Bike Routes  Bicycle Route 8  City Boundaries  Freeway

## Orange County

The Orange County Transportation Authority (OCTA) has developed a report<sup>34</sup> listing recommendations to 11 local jurisdictions, as well as area-wide recommendations around their Metrolink stations. The Authority's research of existing conditions indicates that many Metrolink stations are not bicycle- or pedestrian-friendly. The report includes a detailed listing of recommendations, similar to Metro, but leaves it to local jurisdictions on how to coordinate and combine strategies as shown in **TABLE 13**.

## San Bernardino County

The San Bernardino Associated Governments (SANBAG) developed a report<sup>35</sup> examining ten stations for improvements.

The report also noted that most stations have a good mix of residential and small scale commercial development, with walking and biking dispersed throughout the day, making them ideal for first mile/last mile strategies. Some other areas (Montclair, Rancho Cucamonga) are located in commercial areas and feature more peak-period active transportation activity.

## Investments to Fixed-Guideways

The regional strategy builds upon planned investments proposing enhancements at 224 rail and fixed-guideway bus stations by 2040, including:

- All Los Angeles County light-rail, subway, Metrolink, and Orange Line bus stations
- All Orange County Metrolink Stations and OC Bravo busway
- All San Bernardino County Metrolink stations and SBx busway
- All Riverside County Metrolink stations
- All Ventura County Metrolink stations

## LIVABLE CORRIDORS (BUS)

Livable Corridors link increases in density to investments in roadway design, bus stop amenities, and active transportation accessibility by local jurisdictions, to improvements in bus frequency. First and foremost, the concept combines the land use visions prepared for these corridors with an increase in the level of transit service. Second, the concept calls for increased Complete Streets investments to make these corridors and the intersecting arterials safe for biking and walking. **FIGURE 21** and **FIGURE 22** represent active transportation access to (first/last mile) and (access) along each corridor.

Active transportation investments focus on sidewalk maintenance/enhancement, intersection improvements, bicycle lanes and boulevards to facilitate safe and easy access to mixed-use, commercial nodes where residents can meet most of their daily needs and

access bus-rapid transit service to connect to other regional destinations. This strategy also promotes the inclusion of bicycle lanes, shared bus-bicycle lanes, or separated bikeways along or parallel to the main corridor to promote inter-regional connectivity. Sixteen corridors are considered as part of this strategy, as they have completed studies funded through SCAG's Compass Blueprint studies.

## BIKE SHARE

Bike share is a point-to-point service that combines the convenience of a bicycle with the accessibility of public transportation.<sup>36</sup> Using closely packed bicycle rental kiosks in heavily urbanized areas where the population and/or employment is greater than 10,000 per square mile, bike share is a strategy designed to replace short-distance automobile trips, reduce parking demand and complement local bus services such as the City of Los Angeles' DASH. Most importantly, bike share acts as a first/last mile strategy and should be closely integrated with high quality transit stations. Bike share exists in numerous local jurisdictions in the United States. Los Angeles County Metro and various local jurisdictions are working to implement bike share within the county beginning in 2016.

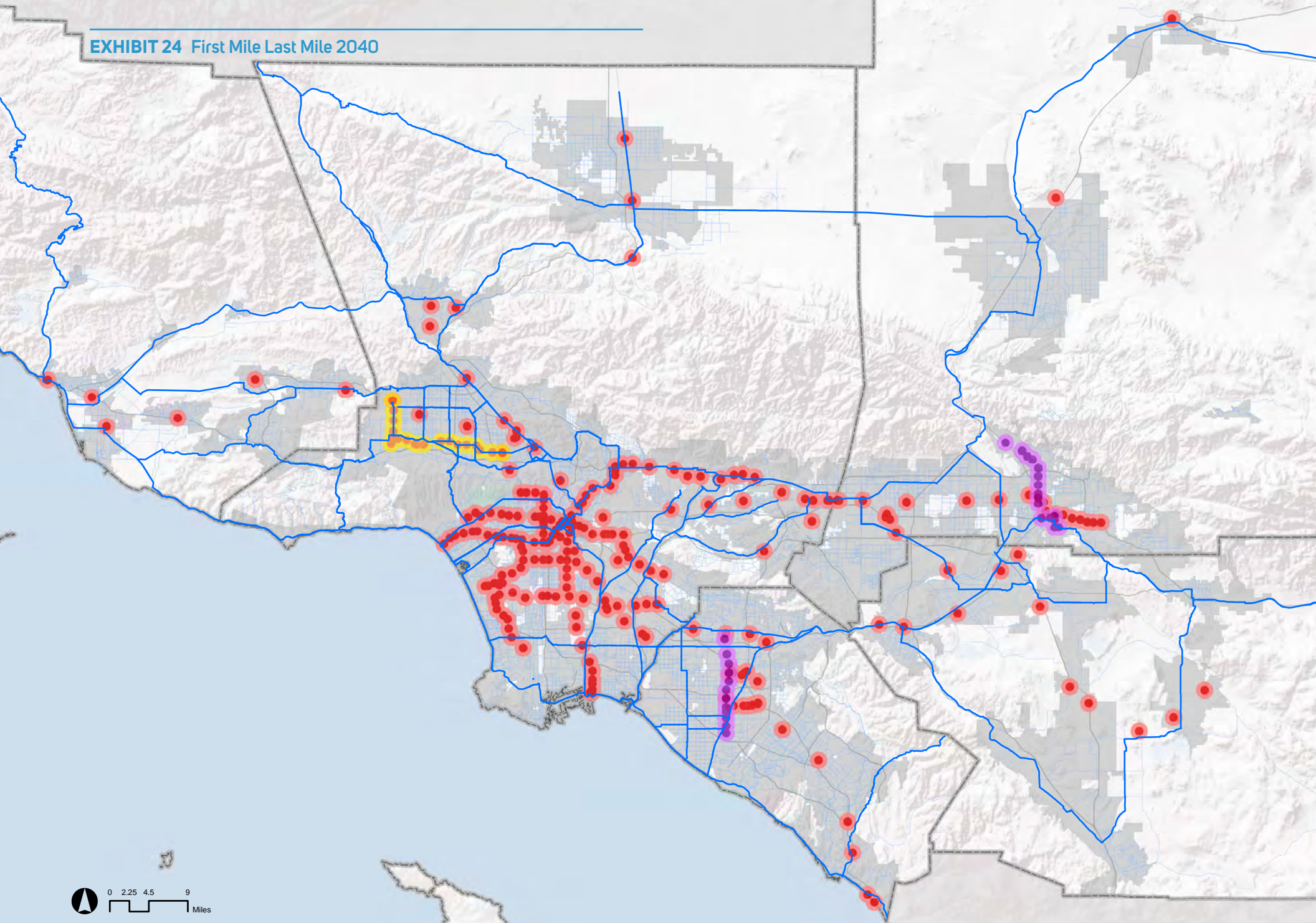
In the SCAG region, small and very small bike share programs exist, varying from less tech-reliant programs to full-fledged but still small programs at universities. These programs exist or will exist in the next year at U.C. Irvine (ZotWheels), Occidental College and UCLA.

A new, full fledged program in Santa Monica began bike share service in November 2015. Los Angeles County Metro will initiate service in downtown Los Angeles in spring 2016 and plans to expand Bike Share into other parts of Los Angeles. Long Beach is also preparing to roll out a bike share program

Bike share can impact travel behavior by increasing bicycle mode share rates as people use the more readily available bicycle option and shift away from transit or car travel. Bike share can also enable multi-modal trips. The first IT-based bike share program saw 20 million trips in its first year of operations, suggesting that bike share programs have the potential for a sizable travel behavior impact. Some programs have reported notable mode shift after the introduction of bike share. In Barcelona, the bicycle mode share doubled in 2007 to 1.76 percent. In Paris, the mode share increased from about one percent to 2.5 percent following the introduction of bike share. In Washington D.C., a survey of the Smart Bicycle members showed that 16 percent of bike share trips would have otherwise been made by car. In Lyon, the bicycle mode share went up by seven percentage points. These results suggest that bike share may make an impact on travel behavior in the SCAG region, especially as the region continues to improve bicycle infrastructure.

Montreal's bike share program was deployed as part of its first/last mile strategy. SCAG assumptions about transit ridership could be modified if bike share programs expand as a first/last mile transit solution. As the SCAG region continues to support and model various efforts to address the first/last mile strategy, bike share would be one possible consideration.

**EXHIBIT 24** First Mile Last Mile 2040



County Boundaries	<b>sbx_bffrs</b>	<b>SBx and OC Bravo Stops</b>	<b>Orange Line Stops</b>	<b>Rail Transit Stations</b>	<b>Regional/Greenway</b>
City Boundaries	<b>BUFFER</b>	<b>BUFFER</b>	<b>BUFFER</b>	<b>BUFFER</b>	<b>Local Bikeways</b>
Freeway	0.5 Mile	0.5 Mile	0.5 Mile	0.5 mile	
	1 Mile	1 Mile	1 Mile	1 mile	

Source: SCAG, 2015



**TABLE 13** OCTA First/Last Mile area recommendations

Item #	Recommended Improvement
1	Develop a consolidated bicycle locker rental program for all Orange County stations to provide consistent rental procedures and policies. Provide an online information and application center and signage at each station directing users to visit the website.
2	On an annual basis, evaluate bike locker and rack usage and consider increasing bicycle parking or implementing demand management techniques if the existing bicycle parking is consistently at capacity or a waitlist exists.
3	Add bike rack and locker locations to each station diagram map.
4	Encourage local agencies to upgrade bicycle and motorcycle detection at intersections within a half-mile radius of a station.
5	Conduct a lighting assessment at each station to identify and address areas with insufficient or inconsistent lighting.
6	Provide video surveillance system at each station platform area, unless security guards are present. Provide signage indicating that the station is monitored by video.
7	Ensure all improvements to stations and adjacent public areas are ADA compliant. Prioritize improvements identified in existing ADA transition plans that are adjacent to the station areas.

Source: OCTA MetroLink Station Non-Motorized Access Study (2012)

The 2016 RTP/SCS assumes a minimum of four stations per square mile, with as many as 16 stations per square mile in heavily urban areas; and ten bicycles per station. Usage is estimated at 4.1 trips per bicycle per day, with an average trip length equal to two miles. Usage will likely spread beyond that planned by Los Angeles County Metro, City of Santa Monica and City of Long Beach. The plan estimates growth to possibly 880 stations.

## SHORT-TRIP STRATEGIES

Trips less than three miles represent 38 percent of all trips in the SCAG region. Increasing the percentage of these short trips made by bicycling and walking can potentially have a significant impact on greenhouse gas emissions and public health. SCAG proposes to invest \$7.6 billion in short-trip strategies.

Short trip strategies are designed to provide active transportation options to a broader segment of the population by increasing the quality and density of sidewalks and bikeways. Land use is interrelated with the transportation options that residents have to access nearby destinations, whether they be transit stations, schools, parks or local destinations. The short-trip strategies outlined in this document are designed to complement the transit integration strategies, and they help further integrate active transportation into the context of local land uses.

Land use and transportation options are also interrelated with the health of residents. Walking or bicycling regularly can reduce the chances for obesity or other diseases related to a sedentary lifestyle, such as diabetes and high blood pressure. While incorporating the short trip strategies in the 2016 RTP/SCS is anticipated to increase the number of walking and biking trips, there is most notably the public health benefit. More people walking or bicycling daily helps individuals meet the minimum activity requirements to maintain healthy bodies.

According to the Centers for Disease Control and Prevention,<sup>37</sup> adults need 150 minutes weekly of moderate-intensity aerobic activity, such as brisk walking and muscle strengthening exercises at least two days per week. Children need 60 minutes of moderate-intensity aerobic activity daily and vigorous activity plus muscle strengthening at least three days per week.

## SIDEWALKS

Walking is the primary form of transportation. Nearly all trips in the region begin with some form of walking. Sidewalks are integral parts of the Transit Integration strategy, the Livable Corridors strategy and the Mobility District strategy. Sidewalks are critical for children to get to nearby schools or parks. Where new construction occurs, using the Complete Streets approach to residential development or business districts will increase pedestrian safety and ease of access.

FIGURE 21 First/Last Mile

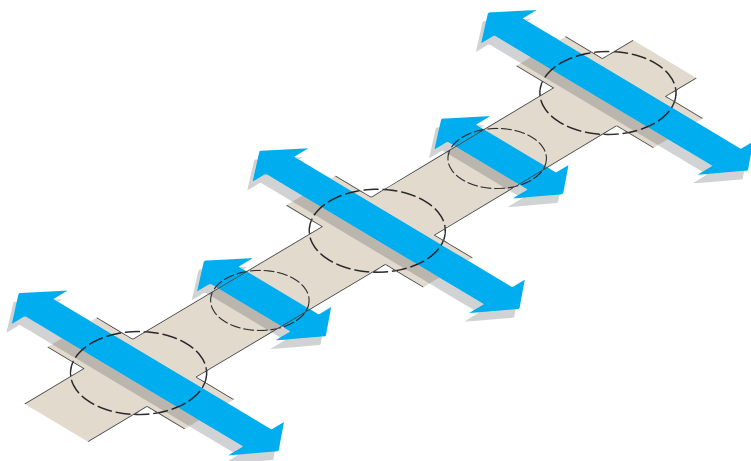
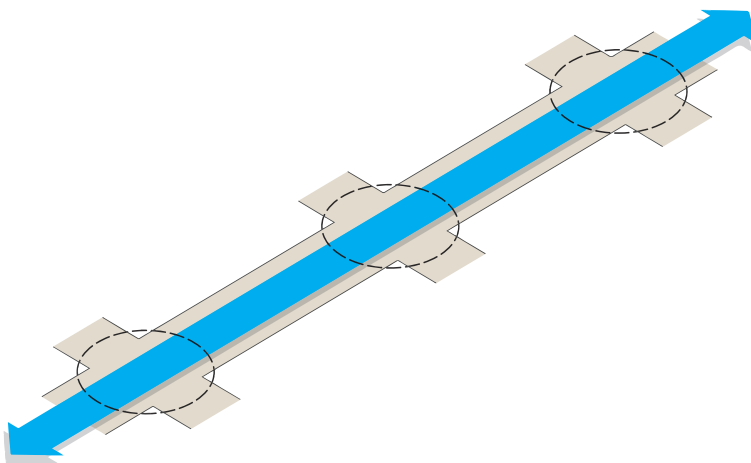


FIGURE 22 Corridor Access



## LOCAL BIKEWAY NETWORK

Local Bikeway Networks are considered both a regional strategy and local strategy. Where the Regional Bikeway Network and Regional Greenway Network focus on regional connectivity, the Local Bikeway Networks provide the bikeway density that complements the interconnectivity of the regional bikeway network, providing additional first mile/last mile connectivity to local shops, schools, employment, and recreational activities. The 3,900 miles of existing bikeways in the region are comprised of local networks. The planned 9,177-mile local bikeway network is the foundation of the regional bikeway network and the regional greenway network, as they are mostly comprised of local bikeways. The starting points and end points for all bikeway trips in the region are supported by this density of bikeways.

Local governments are responsible for implementing most transportation infrastructure. Just over 3,900 miles of local bikeways existed in 2012, and local governments have proposed an additional 8,850 miles.<sup>38</sup> This density of bikeways is likely to have an increasingly positive impact on the number of bicyclists and bicyclist trips. Anecdotal evidence from New York City and other cities indicate that an increased density of bikeways increases transportation safety. Streets with bicycle lanes in New York City have 40 percent fewer collisions involving injuries and fatalities. Portland, Oregon and San Francisco, California have bicycle path/lane ratios to lane miles at 0.054 and 0.078, respectively, as a way to quantify bikeway quality and density. SCAG's comparable ratio is 0.039.<sup>39</sup>

According to a study conducted by the Oregon Transportation Research and Education Consortium (OTREC) in 2008, bicyclists would travel 0.27 miles to use a designated bikeway. While a significant portion of the region has access to bikeways, only a small percentage uses bikeways for their daily work commutes (less than one percent). The lack of bicycling commute trips may be attributed to the type of bikeways, confidence of the rider, adequate facilities at their destination (bicycle parking, showers, etc.), and accessibility to their desired destinations. The total local and regional Greenway and Bikeway Networks, at build out, will be about 12,769 miles.

Many local bicycle plans were developed considering only Class 1, Class 2 or Class 3 bikeways, but SCAG strongly encourages local jurisdictions to consider bicycle boulevards in low-speed, low-traffic areas where bicycling and low-speed electric vehicles would have priority over motorized vehicles. In addition, SCAG encourages local jurisdictions to consider separated bikeways where appropriate for new projects, and for rehabilitating Class 2 and 3 bikeways. Appropriate signalization is necessary to enable crossing arterials, and connecting to other residential streets and local destinations. **TABLE 14** indicates the mileage of local bikeways including contributions to the Regional Greenway Network (existing and proposed).

Maps of existing and proposed bikeways for each county are provided:

- Imperial County is illustrated in [EXHIBIT 25](#)
- Los Angeles County is illustrated in [EXHIBIT 26](#)
- Orange County is illustrated in [EXHIBIT 27](#)
- Riverside County is illustrated in [EXHIBIT 28](#)
- San Bernardino County is illustrated in [EXHIBIT 29](#)
- Ventura County is illustrated in [EXHIBIT 30](#)

## NEIGHBORHOOD MOBILITY AREAS

Where livable corridors focus on connections to a corridor, Neighborhood Mobility Areas focus on connections within the district. The strategy includes policies designed to encourage replacing single and multi-occupant automobile use with biking, walking, skateboarding, and neighborhood electric vehicles. Complete Streets strategies, such as traffic calming, bicycle priority streets (bicycle boulevards) and pedestrian connectivity increase physical activity, and improve connectivity to the regional bikeway/greenway networks, local businesses and parks. Green Streets policies, designed to capture water run-off can provide an aesthetically pleasing appearance while capturing, cleaning and storing stormwater.

Criteria for Neighborhood Mobility Areas include:

- These areas are not served in high quality transit areas or within the livable corridor strategy areas
- Population and employment will grow to 20,000 per square mile by 2040

Streets that are lower speeds result in environments more conducive to walking or biking. An example of an existing mobility district is the residential area surrounding the 2nd Street Corridor in Long Beach, between East Livingston Drive and Bay Shore Avenue.

## EDUCATION AND ENCOURAGEMENT

### SAFETY AND ENCOURAGEMENT CAMPAIGNS

Getting more people to bicycle and walk is not just about building the infrastructure. They must feel safe biking and walking. Safety campaigns that include advertising, public service announcements and media kits are all part of a suite of safety education strategies. Other strategies include educating bicyclists, pedestrians and motorists on the rights and responsibilities of sharing the road.

### SAFE ROUTES TO SCHOOL

Safe Routes to School is a comprehensive Travel Demand Management (TDM) strategy

aimed at encouraging children to walk and bicycle to school. It includes a wide variety of implementation strategies centered on the “6 Es” – Education, Encouragement, Engineering, Enforcement, Evaluation and Equity. When implemented, the 6 Es improve safety, reduce congestion and vehicle miles traveled (VMT), improve air quality and increase the physical activity rates of students and their parents which improves public health outcomes.

The SCAG region is home to more than three million public and private school K-12 students, representing about 18 percent of the region’s population.<sup>40</sup> The travel demands of these students have significant impacts on the regional transportation system. Schools act as major trip generators during the A.M. peak period, and they also have direct impacts on the performance of the transportation system in the afternoon when students are released. [TABLE 15](#) provides an indication of the distances children travel when going to school.

The impact of schools on transportation congestion is important to understand, given trends of parents increasingly choosing to drive their children to schools,<sup>41</sup> school busing cuts,<sup>42</sup> and the tendency for new schools to be built on the outskirts of communities where land is cheaper. Planning for school transportation has become increasingly important in the wake of many school districts eliminating their busing programs throughout California due to budget cuts.

**Reduced Congestion:** Increasing the number of children walking or biking to school can reduce congestion. According to national data, journey-to-school vehicle trips account for 10-14 percent of personal vehicle trips during the morning peak hour commute.<sup>44</sup> These trips have impacts on regional travel trends, including congestion and public health impacts resulting from air quality around schools.<sup>45, 46</sup> Studies have shown that successful SRTS programs can significantly reduce vehicle trips and increase the percentage of students who walk and bicycle to school.<sup>47</sup> As documented by successful programs in California, if implemented regionwide, SRTS programs have the potential to reduce the number of vehicles on the streets during the most congested periods of the day.<sup>48</sup>

**Increased Physical Activity:** Children who are driven from school also skip a valuable opportunity to incorporate physical activity into their daily lives, which can have adverse health implications.<sup>49</sup> The Center for Disease Control recommends that children get a minimum of 60 minutes of physical activity per day.<sup>50</sup> Children who frequently walk and bicycle to school often achieve 25 percent more physical activity than those who don’t and have been shown to gain 58 percent less body fat.<sup>51, 52</sup>

**Improved Safety:** Traffic safety, after the distance to school, is the second most common barrier perceived by parents that prevents their children from walking and bicycling to school.<sup>53</sup> SRTS programs address this by installing traffic safety devices and conducting programs such as walking school buses. When implemented systematically across local

jurisdictions, these improvements have shown dramatic reductions in pedestrian injuries.<sup>53</sup>

## SCENARIO DEVELOPMENT

To evaluate the various strategies, in combination with highway, transit, and other transportation and land use strategies in the 2016 RTP/SCS, SCAG developed four comprehensive scenarios for comparison. Scenario 1 is the most constrained, allowing only local plans and no regional input. Scenarios 2-4 build upon each other, with scenario 4 including the most extensive investment approach. The scenarios were used as an outreach tool to gain input of the planning strategies from elected officials and stakeholders. A high level overview of the strategies is included in [TABLE 16](#).

These investments complement the land use and transportation strategies proposed for four scenarios, which are further described in the Sustainable Communities Strategy chapter.

A matrix delineating investment packages associated with each scenario considered in the development of the plan can be found in [TABLE 17](#).

## EVALUATION

In order to estimate the benefits of the 2016 RTP/SCS, SCAG developed a methodology to compare the plan at build-out in 2040 with existing (2012) conditions and a (2040) baseline scenario that examined what if existing trends continue, but no coordinated investment.

The RTP preferred plan (scenario 3) was compared with the 2012 base year conditions and the baseline (scenario 1), using the Scenario Planning Model (SPM) and Urban Footprint model as inputs into the travel demand model. The SPM maintained by SCAG is a quick response tool allowing SCAG to evaluate and test various land use scenarios in support of the RTP/SCS. The current SPM implements the Urban Footprint tool as developed by Calthorpe Analytics with support from Fehr & Peers and others. Urban Footprint has been applied for Vision California (Statewide study for California High Speed Train) and other efforts in California, the United States, and internationally.

For active transportation, an active transportation enhancement to the SPM was developed and used for post processing evaluation for the preferred plan to compare it against the baseline. The SPM is a parcel-based model that differentiates the parcels into 35 different "Place Type" groupings that have differing land use and demographic assumptions where active transportation infrastructure is existing and planned. For convenience, the 35 place types were combined into six common categories based on densities:

**TABLE 14** Local Bikeways Existing and New Construction

Local Bikeway Networks	Existing	Proposed	2040 Network
Class 1*	755	Allocated in Regional Greenway Network	
Class 2	2,142	3,663	5,805
Class 3	1,020	2,352	3,372
<b>Totals</b>	<b>3,917</b>	<b>6,015</b>	<b>9,932</b>

\*Class 1 to be moved to RGN  
Source: SCAG

**TABLE 15** SCAG Regional School Trips

SCAG Regional School Trips	Walk	Bike	School Bus	All other modes
< 1/4 mile	80%	1.90%	0.80%	19.40%
< 1/2 mile	69%	1.70%	0.70%	39.20%
< 1 mile	48%	2.10%	1.10%	71.00%
< 3 miles	21%	1.40%	3.60%	82.90%
<b>All School Trips</b>	<b>14.50%</b>	<b>1.00%</b>	<b>4.40%</b>	<b>78.20%</b>

Source: California Household Travel Survey (2012)

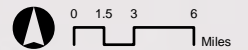
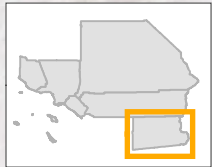
EXHIBIT 25 Imperial County

Riverside  
County

ARIZONA

Imperial  
County

MEXICO



Regional Bikeways

Existing Class 1

Existing Class 2

Existing Class 3

Proposed Class 1

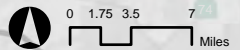
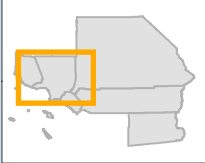
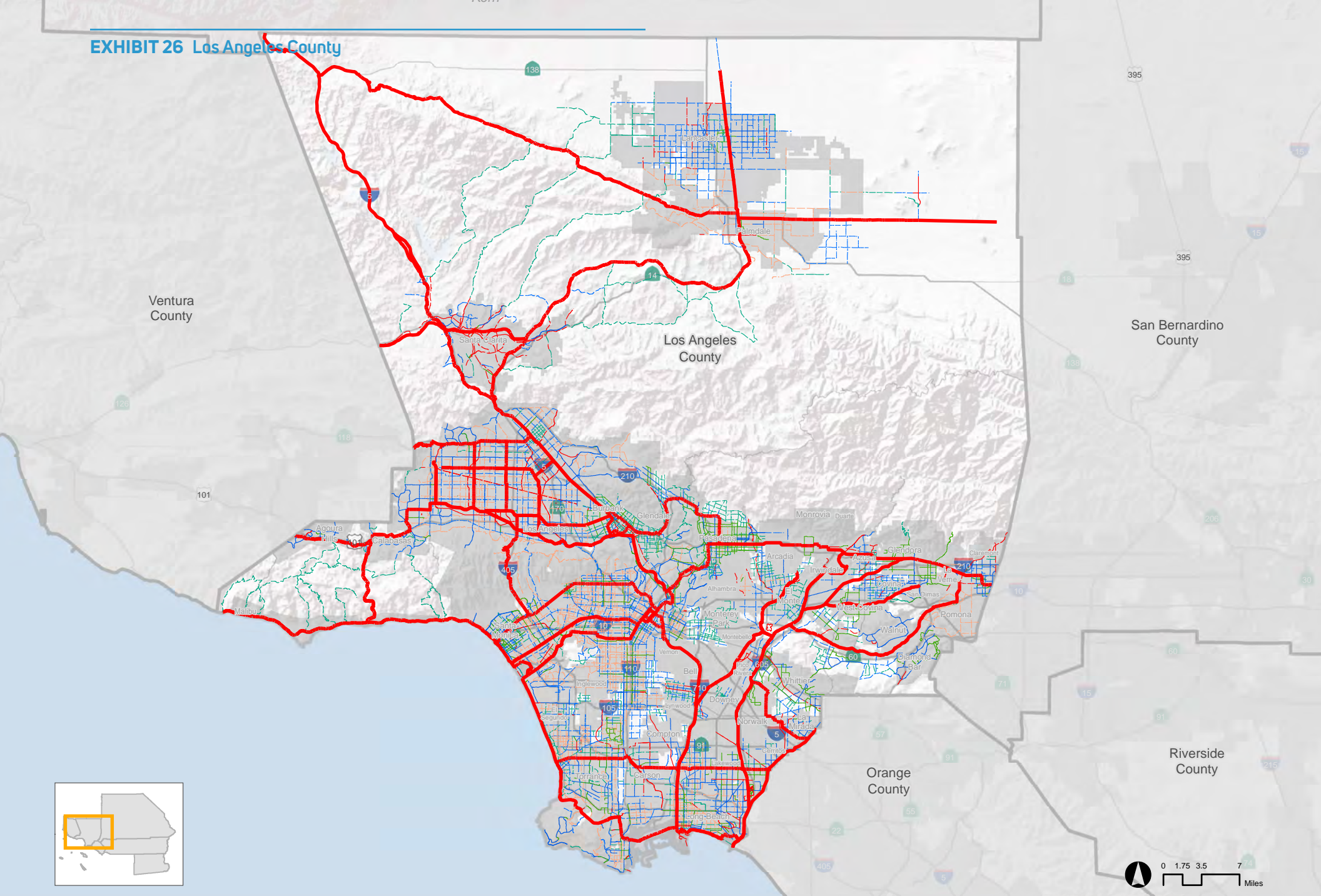
Proposed Class 2

Proposed Class 3

County Boundaries

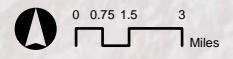
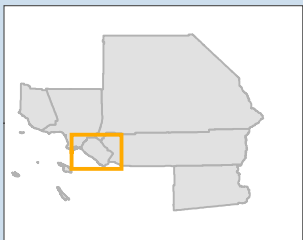
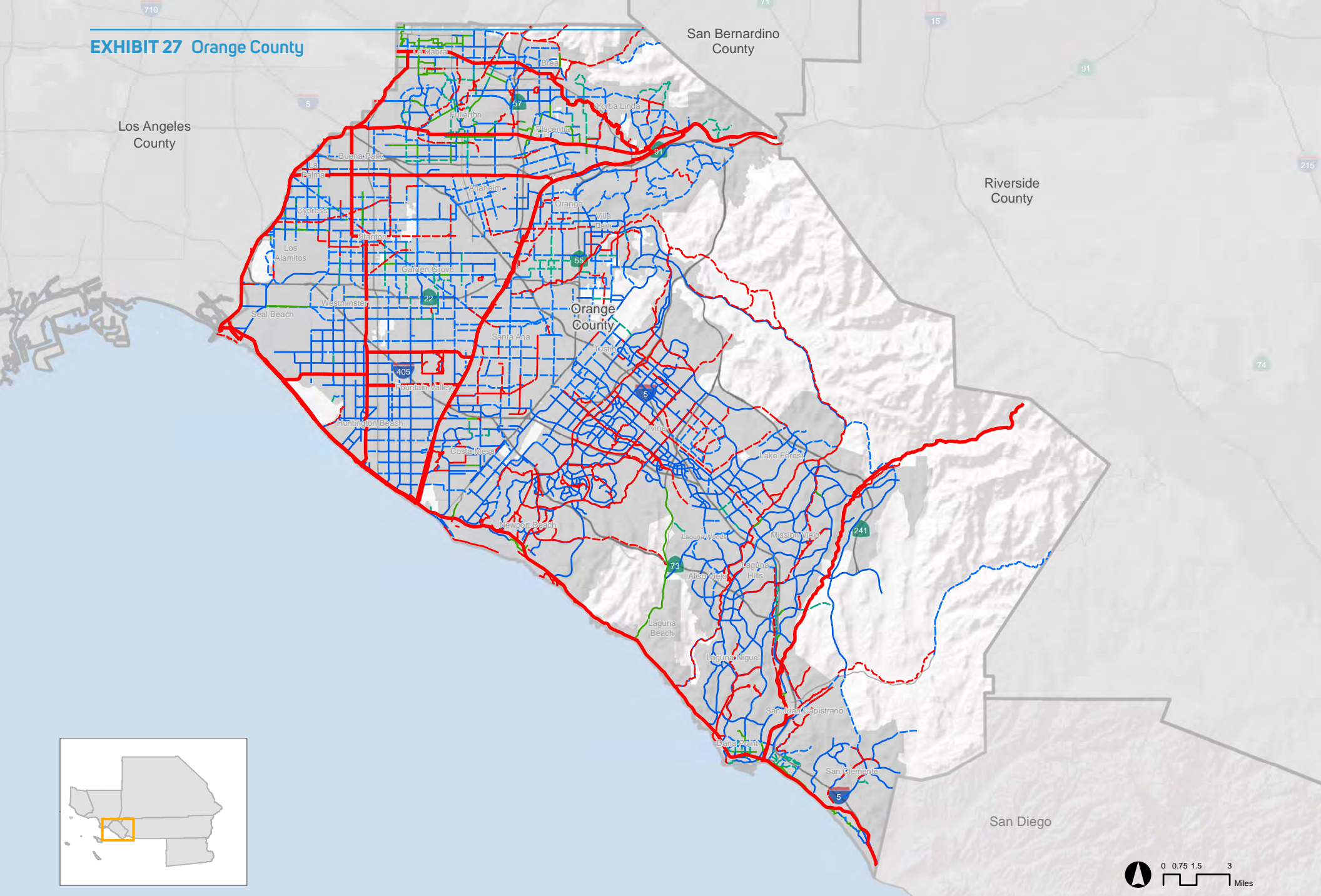
City Boundaries

# EXHIBIT 26 Los Angeles County



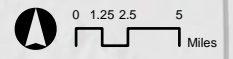
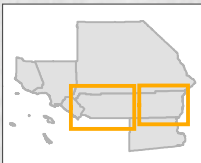
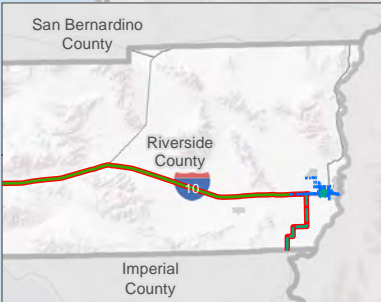
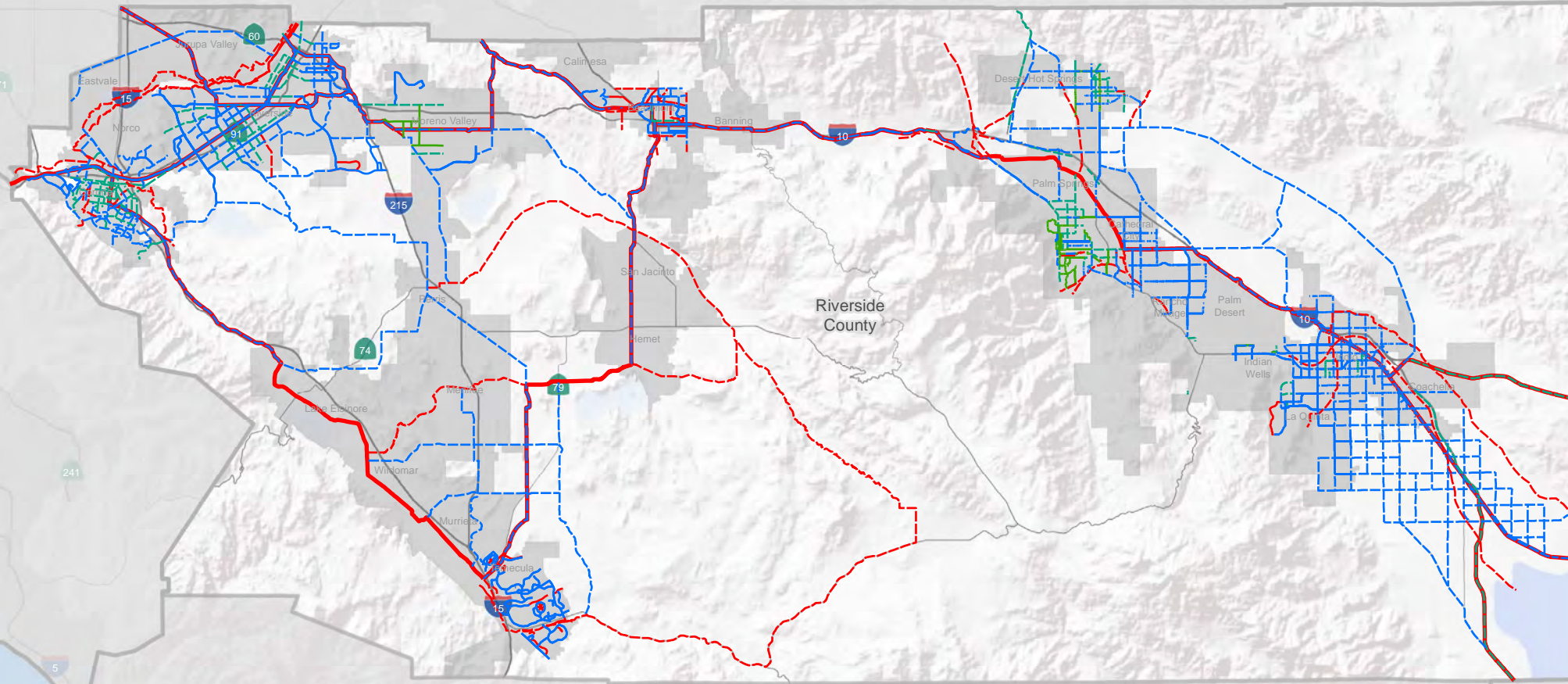
- ↗ Regional Bikeways
- ↗ Existing Class 1
- ↗ Existing Class 2
- ↗ Existing Class 3
- ↗ Existing Cycletrack
- ↗ Proposed Class 1
- ↗ Proposed Class 2
- ↗ Proposed Class 3
- ↗ Proposed Cycletracks
- ↗ Proposed Bike Friendly Streets
- City Boundaries
- County Boundaries

# EXHIBIT 27 Orange County



- ↖↗ Regional Bikeways
- Local Bikeways**
- ↖↗ Existing Class 1
- ↖↗ Existing Class 2
- ↖↗ Existing Class 3
- - - ↖↗ Proposed Class 1
- - - ↖↗ Proposed Class 2
- - - ↖↗ Proposed Class 3
- City Boundaries
- County Boundaries

**EXHIBIT 28 Riverside County**

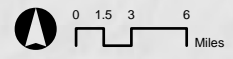
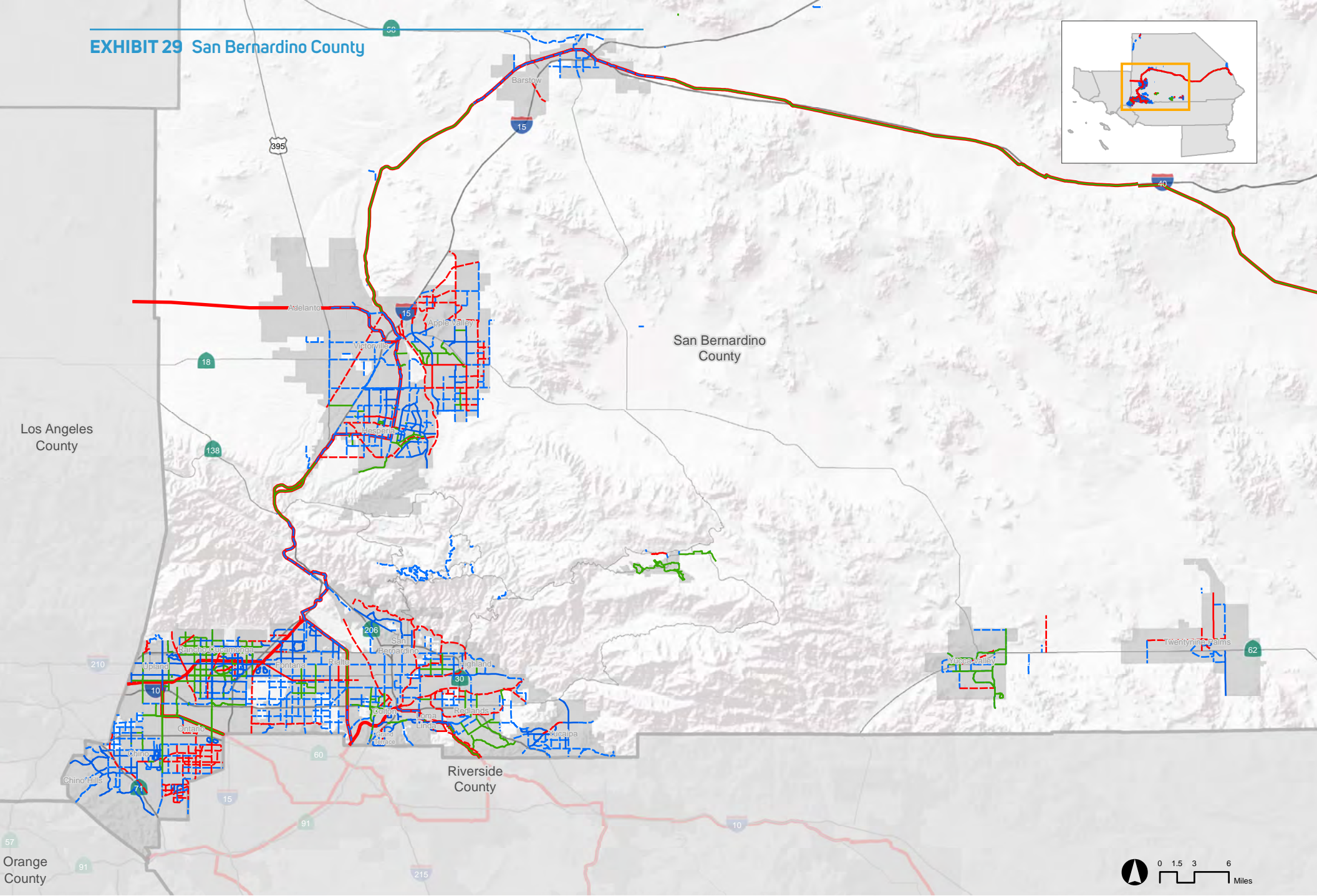
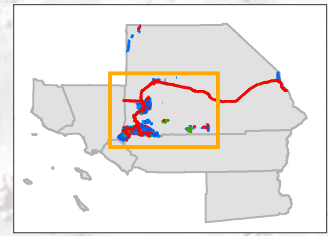


- Regional Bikeways
- Existing Class 1
- Existing Class 2
- Proposed Class 2
- Existing Class 3
- Proposed Class 3
- Proposed Class 1

Source: SCAG

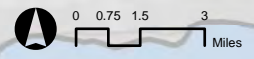
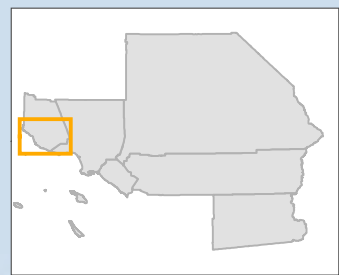
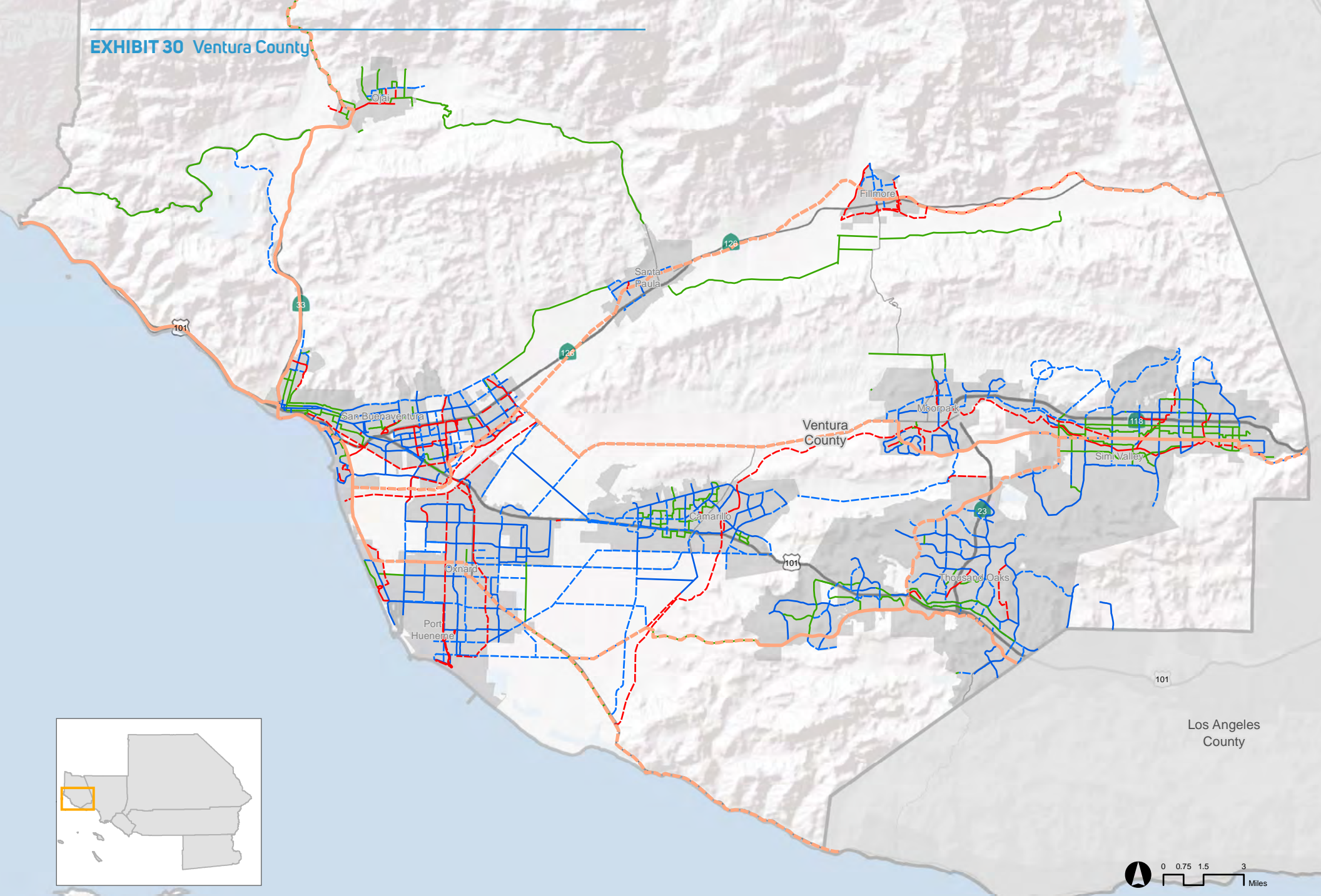


EXHIBIT 29 San Bernardino County



- Existing Class 1
- Existing Class 3
- Proposed Class 2
- Existing Class 2
- Proposed Class 1
- Proposed Class 3
- Regional Bikeways
- County Boundaries
- City Boundaries
- Freeway

EXHIBIT 30 Ventura County



- Regional Bikeway Network (Existing)
 — Existing Class 1
— Existing Class 3
- - Proposed Class 1
- - Proposed Class 3
 City Boundaries
- - Regional Bikeway Network (Proposed)
 — Existing Class 2
- - Proposed Class 2

- City Mixed Use, City Residential, Town Mixed Use, Urban Commercial, Urban Mixed Use, High Intensity Activity Center
- Village Commercial, Town Residential, Village Mixed Use, City Commercial, Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High
- Neighborhood Residential, Village Residential, Campus Residential, Institutional, Suburban Multifamily
- Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity Center, Industrial/Office/Residential Mixed Low, Office Focus
- Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks Open Space, Mixed Office and R&D, Low Density Employment Park
- Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military.

The SPM Active Transportation Enhancement uses a standard statistical technique called multinomial logistic regression. The data underlying the model includes as its dependent variable the mode of travel chosen by each individual in the CHTS [and SCAG Travel Demand Model] (e.g., bike, walk, walk to transit, transit or drive); and as independent variables characteristics of the built environment such as mix of land uses, properties of the active transportation infrastructure such as bike lanes, and various socio-economic variables describing the travelers such as their age and worker status. The purpose of the analysis is to determine whether there is a relationship between the dependent and the independent variables, and if so, to quantify it. In particular, it is important to consider the possibility that there is not a relationship between the dependent variable and one or more of the independent variables, but rather, any apparent patterns connecting them could instead be explained as just random variability of the data. A variable is considered to be statistically significant in the model if the patterns it exhibits are sufficiently strong and pervasive to make it unlikely to occur randomly. The “likelihood” of the model coefficients represents the probability of obtaining values matching the underlying data from a model with those coefficients. Model coefficients are chosen to maximize their likelihood.

The results indicate that mode share and trips will increase. Implementing the Active transportation component would increase walking and biking (linked) trips in SCAG’s most urban areas by 113 percent and 273 percent, respectively. In the most rural areas of SCAG, walking (linked) trips would decrease by 20 percent, but bicycling (linked) trips would increase 16 percent, per SCAG’s modeling analysis.

A comparison of (weighted) trips from 2012 (base year), modeling results for 2040 Scenario 1 (baseline) and 2040 (plan) indicate the preferred plan performs better than the baseline scenario.

For accessing transit, the plan, with its emphasis on transit integration, increases transit mode share nine percent (beyond the plan without active transportation enhancements). The 2040 plan’s transit mode share growth from 2012 exceeds the (2040) Baseline’s growth with 52 percent growth versus eight percent growth respectively, as seen in [TABLE 18](#).

In High Quality Transit Areas, the (2040) Plan bests the (2040) Baseline in transit ridership, by increasing transit mode share from 2012 by 54 percent compared to eight percent, respectively. Walking and biking also increase in HQTAs by 39 percent and 93 percent in the 2040 Plan, but only four percent and 26 percent in the 2040 Baseline, respectively. ([TABLE 19](#)).

An analysis of the 2012 California Household Travel Survey indicates that the most urban areas of the SCAG have as much as 44 percent active transportation (unlinked) mode share, with an average of 18 percent for linked trips.<sup>36</sup>

Walking and biking mode shares (weighted trips) increase in the most urban areas to 22 percent and three percent respectively in the 2040 Plan and in the most rural areas of SCAG increase to nine percent and two percent respectively for weighted trips. [TABLE 20](#).

The modeling results represent a conservative estimate regarding the benefits of active transportation based on available data and existing tools, and provides a common methodology to compare scenarios. As new data become available and model refinements continue, the results can fluctuate.

## FINANCIAL PLAN

The financial plan deploys several strategies to implement nearly \$13 billion of active transportation investments included in the plan. About two thirds of the revenues are assumed to support stand-alone active transportation projects; the remaining is assumed to be implemented through a Complete Streets approach in which funding identified for regional and local roadway maintenance and repair results in the restoration or implementation of new active transportation facilities. Costs can be reduced significantly through the practice of integrating active transportation into larger projects. The RTP/SCS Financial Plan assumes the following:

- **Capital Projects (\$8.1 billion)**
- **Regionally Significant Local Roads (\$4.8 billion)**

SCAG assumes other non-transportation and local funding sources will be used to implement active transportation projects across the region. For example, the City of Los Angeles has been pursuing non-transportation related federal funds for the Los Angeles River revitalization. The Army Corps of Engineers plan for the river has passed committee and is now awaiting authorization. SCAG’s financial estimates would not include these investments. The levels of investment are detailed in [TABLE 20](#).

To gain a better understanding of local sources that will be used for active transportation but are captured by the regional plan, SCAG conducted a survey of local jurisdictions. In the survey, the majority of respondents indicated that federal and state grant programs formed the basis of their bicycle infrastructure program. Nearly 68 percent use local funds for matching federal grants. However, nearly 41 percent have dedicated set-asides to fund sidewalk repair. Other revenues may be dedicated to local projects (including maintenance and repair) that would not be captured in the survey without extensive review of all local project expenditures, including individual maintenance projects, developer fees dedicated to roadway/sidewalk infrastructure, property sales, etc. Plan Implementation

Implementing the plan will require collaboration with our local, state, and federal partners. Below are the steps to guide SCAG staff over the course of the planning horizon.

### **Strategy: Develop a regional bikeway network linking cities, counties, and intrastate/interstate bicycle routes**

- SCAG will collaborate with local jurisdictions to help adopt and implement the proposed SCAG Regional Bikeway Network, Regional Greenway Network, and local bikeway networks to help connect all local jurisdictions in the SCAG region via bikeways.
- SCAG will collaborate with local jurisdictions to help plan, coordinate, and implement access to the California Coastal Trail.

- SCAG will support construction of bikeways and pedestrian paths that connect communities with and along “main streets” and business districts.
- SCAG will support commercial/office building standards that provide secure bicycle parking and amenities for bicyclists.
- SCAG will collaborate with local jurisdictions and stakeholders to better integrate active transportation into non-traditional disciplines, such as public health, watershed management, and open space.
- SCAG will provide assistance to local jurisdictions and stakeholders across agencies and disciplines in developing and implementing local Active Transportation plans.
- SCAG will work to connect and integrate the Regional Bikeway Network and Regional Greenway network with designated historic and scenic trails.

### **Strategy: Increase bicyclist and pedestrian access to transit**

- SCAG will support and encourage the development of “First Mile/Last Mile” plans and projects.
- SCAG will support and encourage the development of “bike share” plans and projects.
- SCAG will support and encourage the development of coordinated land use, transit and active transportation strategies in “Livable Corridors.”
- SCAG will provide assistance to local jurisdictions and transit agencies in developing areas at and around High Quality Transit Areas to make them more pedestrian and bicyclist friendly.
- SCAG will support planning and construction of bikeways and pedestrian paths that connect communities with and along transit corridors.

### **Strategy: Increase the number of short trips taken by walking or biking**

- SCAG will provide assistance to local jurisdictions in developing and implementing local active transportation plans.
- SCAG will assist local jurisdictions in researching innovative methods for funding and repairing/upgrading of sidewalks.
- Support active transportation strategies that increase the desirability and value of local communities.

### **Strategy: Encourage implementation of complete streets policies**

- SCAG will provide assistance to local jurisdictions in developing and implementing Complete Streets Plans.
- SCAG will encourage local jurisdictions to develop and implement Complete Streets policies.

TABLE 16 Scenario Overview

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
		No Build Baseline	2012 Plan/ Updated with Local Input	Policy A	Policy B
				Updated 2012 Policies for Active Transportation, Env. Justice, etc.	Push the Envelope Comprehensive Short Trip Strategies
REGIONAL STRATEGIES	Greenways	X	X	P	P+
	Reg. Bikeways	X	P	P+	P++
TRANSIT INTEGRATION	First/Last Mile	X	X	P	P
	Bike Share	X	X+	P	P+
	Livable Corridors	X	X	P	P
SHORT-TRIP STRATEGIES	Sidewalks				
	Local Bikeways	P	P	P	P
	Mobility Neighborhoods	X	X	X	P
EDUCATION AND ENCOURAGEMENT	Safe Routes to School	P	P	P+	P+
	Safety/Encouragement Campaigns	X	X	P	P+

X = not in plan, P= planned, + equals enhanced

TABLE 17 Scenario Matrix

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
		No Build Baseline	2012 Plan/ Updated with Local Input	Policy A	Policy B
				Updated 2012 Policies for Active Transportation, Env. Justice, etc.	Push the Envelope Comprehensive Short Trip Strategies
REGIONAL STRATEGIES	Greenways	Remains at existing 755 miles	1,800 Miles (as part of local bikeways)	2,223 Miles with wayfinding and connections to Regional/local Bikeways	Increased Class 1 connections to Local and Regional Networks.
	Reg. Bikeways	0% complete	2,100 Miles	2,220 Miles, which includes Greenways	Same Mileage, but converts many Class 2 into Class 1 or Class 4 Bikeways
TRANSIT INTEGRATION	First/Last Mile	0% complete	0% complete	224 HQT stations (fixed rail/guideway)	Increase in stations to include High Quality Bus Transit Stations
	Bike Share	0% complete	0% complete	880 stations (8,800 bikes)	Increase to 1,084 stations
	Livable Corridors	0% complete	0% complete	Estimated 670 miles	Estimated 1,295 Miles
SHORT-TRIP STRATEGIES	Sidewalks	7,576 miles of bikeways repaired/constructed	10,000 miles repaired	10,582 miles	10,582 miles
	Local Bikeways	7,042 miles	7,042 Miles	9,177 miles (excluding Greenways and Reg Bikeways)	New local plans/imp- (9,500 miles total)
	Mobility Neighborhoods	0% complete	0% complete	Focus on areas not served by transit, with favorable demographic and street characteristics	Increase in areas as part of complete streets/mobility planning
EDUCATION AND ENCOURAGEMENT	Safe Routes to School	n/a	% of schools covered increases to 40%	% of schools covered increases to 50%	% of schools covered increases to 75%
	Safety/Encouragement Campaigns	n/a	n/a	Campaign every 5 years	Campaign every 3 years

- SCAG will encourage local jurisdictions to prioritize and implement projects/ policies to comply with ADA requirements.
- SCAG will support implementation of Complete Streets policies within existing residential districts and new residential district designs.
- SCAG will work with local jurisdictions in locating areas where pedestrian and bicycling investments can provide increased benefits.
- SCAG will work to integrate complete streets principles into regional active transportation plans and strategies.
- SCAG will encourage the incorporation of “Green Streets” policies as part of Complete Streets Plans.

**Strategy: Encourage the development and use of Intelligent Traffic Systems (ITS) technologies to benefit active transportation**

- SCAG will collaborate with ITS stakeholders to help promote and implement ITS strategies that benefit active transportation.
- SCAG will encourage the implementation of bicycle traffic signals where warranted.
- SCAG will encourage the development and implementation of crosswalk count-down timers that can be easily understood by roadway users.
- SCAG will encourage experimentation with innovative technologies that may benefit active transportation, in accordance with federal regulations.

**TABLE 18 Comparison Between 2012 (Base Year), 2040 (Baseline) and 2040 (Plan)**

Mode Share	2012 (Base year)	2040 (Baseline)	2040 Plan	2040 Baseline Increase over 2012 (percentage)	2040 Plan Increase over 2012 (percentage)
Walk	10.6%	10.7%	13.5%	1.2%	27.9%
Bike	1.3%	1.6%	2.2%	21.4%	71.0%
AT	11.9%	12.3%	15.7%	3.4%	32.5%
Transit	2.1%	2.2%	3.1%	7.9%	51.5%

Source: SCAG

**TABLE 19 Active Transportation Impact on Impact On High Quality Transit Areas**

Mode Share	2012 (Base year)	2040 (Baseline)	2040 Plan	2040 Baseline Increase over 2012 (percentage)	2040 Plan Increase over 2012 (percentage)
Walk	12.6%	13.1%	17.4%	3.9%	38.7%
Bike	1.4%	1.8%	2.8%	26.3%	92.9%
AT	14.0%	14.9%	20.2%	6.2%	44.2%
Transit	2.8%	3.0%	4.3%	8.0%	53.6%

Source: SCAG

**TABLE 20 Estimated Active Transportation Mode Share by Place Type (weighted trips)**

Place Type	2012		2040 Plan	
	Walk Trips	Bike Trips	Walk Trips	Bike Trips
Very Urban	16.7%	1.4%	22.4%	3.4%
Mostly Urban	14.5%	1.9%	18.4%	3.6%
Semi Urban	11.5%	1.4%	16.9%	2.2%
Suburban	10.6%	1.2%	14.7%	1.9%
Semi Rural	7.0%	1.0%	6.9%	1.2%
Rural	9.8%	1.2%	8.9%	1.6%

Source:

**Strategy: Help develop a safe transportation environment in the SCAG region**

- SCAG will work with local jurisdictions to provide comprehensive active transportation safety education for all road users.
- SCAG will partner with local stakeholders/jurisdictions to provide bicycle-safety curricula to the general public.
- SCAG will assist local jurisdictions in the development of bicycle/ pedestrian master plans.
- SCAG will work with our regional and state partners to explore opportunities that support safety education and encouragement strategies.
- SCAG will work with local jurisdictions to help focus on bicycling and walking safety to reduce multi-modal conflicts.
- SCAG will support development of training opportunities for law enforcement agencies.
- SCAG will support the development of bicycle and pedestrian audit opportunities for local public works departments.
- SCAG will assist local jurisdictions in the development of Pedestrian Safety Action Plans by conducting workshops.
- SCAG will support improvements to roadway design standards that increase bicyclist and pedestrian safety.
- SCAG will continue to represent Southern California on the California Bicycle Advisory Committee and the California Strategic Highway Safety Plan (SHSP) Steering Committee and active transportation emphasis areas.
- SCAG will work with local jurisdictions to help implement innovative designs and engineering projects that have been shown to improve bicyclist and pedestrian safety.

**Strategy: Establish Safe Routes to School policies for the region**

- SCAG will continue to work with counties to develop county Safe Routes to School policies and programs as part of the joint-work program.

**Strategy: Improve active transportation modeling in the region**

- SCAG will update and maintain the regional active transportation database/ clearinghouse for use by all jurisdictions.
- SCAG will work to develop active transportation modeling capabilities as part of the regional Travel Demand Model.
- SCAG will collaborate with state and local agencies to improve active transportation modeling capabilities.
- SCAG will encourage local jurisdictions to procure automated active transportation counters as part of infrastructure development

**Strategy: Collaborate, coordinate and cooperate with federal, state, and local agencies to implement the 2016 RTP/SCS Active Transportation Plan**

- SCAG will collaborate with county transportation commissions to integrate elements of the Active transportation component into Joint-Work programs.
- SCAG will work to secure regular funding for active transportation coordination activities.

**Strategy: Increase funding for active transportation in the SCAG region**

- SCAG will support regulatory and legislative solutions that can increase funding for active transportation safety, infrastructure, and education.
- SCAG will identify opportunities and strategies to maximize regional project competitiveness for state and federal funding.
- SCAG will work with Caltrans to help ensure adequate funding for active transportation planning as part of California Active Transportation Program grants.
- SCAG will assist and facilitate educational opportunities for local jurisdictions in the timely completion of required forms and documentation for California Active Transportation Program (CATP) grants, FHWA planning grants, Cap-and-Trade grants, and other opportunities.
- SCAG will support a streamlined Caltrans approval and regulatory process for low-cost projects.
- SCAG will work with Caltrans in reducing unnecessary paperwork for smaller infrastructure and non-infrastructure/planning projects.
- SCAG will work with Caltrans to help strengthen the CATP process.

**Strategy: Support improved documentation/reporting of active transportation expenditures in the region**

- SCAG will work with county transportation commissions to improve documentation of active transportation projects in FTIP and RTP submittals and local project funding/maintenance.
- SCAG should develop regular reports on active transportation implementation and funding, including FTIP allocations, grant allocations, and local spending.

## STRATEGIC PLAN BEYOND 2040

There is great potential that active transportation will expand beyond what is proposed in the 2016 RTP/SCS. Policies designed to reduce greenhouse gas emissions will continue to bring greater consideration of active transportation as part of a comprehensive set of greenhouse gas reduction strategies by local governments in a more multi-modal environment.



As transit service expands and a wider range of shared-mobility options become available, active transportation will serve regional mobility, ensuring that people can quickly, easily, and safely transfer from one mode to the next. Active transportation also plays a critical role in realizing the region's land use vision, which includes accommodating more people in vibrant, mixed-use communities, and urban centers. Sidewalks and active transportation networks contribute to the attractiveness and economic vitality of mixed-use communities. They also play a key role in congestion reduction, and mobility.

## EXPANDED REGIONAL GREENWAY NETWORK

As new local active transportation plans are developed beyond what is considered in the constrained plan, new innovative strategies will be proven to be effective and incorporated into the region. One such innovation is the idea of greater physical separation of bicyclists and motor vehicles, particularly on higher speed streets. Converting bicycle lanes into separated bikeways and focusing investment in Class 1 bikeways is considerably more expensive than bicycle lanes or sharrows, but they have been shown to increase ridership.<sup>54</sup> The SCAG region currently has four miles of separated bikeways, which have been implemented on an "experimental" basis. Caltrans recently incorporated separated bikeways into the California Manual for Uniform Traffic Control Devices (MUTCD). Local governments can freely incorporate separated bikeways without incurring liability. In the Strategic Plan, SCAG assumes about 230 miles of new separated bikeways or those converted from bicycle lanes on arterial streets.

As part of developing separated bikeways, the strategic plan envisions greater integration of watershed planning, river rehabilitation and bicyclists/pedestrian access. The Strategic Plan further envisions the use of open area drainage channels that were once creeks and the maintenance roads next to them, for walking and biking. It envisions a greater coordination of rights of way under utility lines.

Bike share can be expanded beyond the 880 stations envisioned in the constrained plan. As it is such a new area for implementation, more local jurisdictions may wish to incorporate bike share where feasible. The Strategic Plan anticipates an additional 204 stations (bringing the total to 1,084 stations), should funding become available.

## LIVABLE CORRIDORS

Pedestrian travel will also increase substantially as a consequence of higher density development. New treatments installed as part of routine roadway maintenance, such as bulb-outs, sanctuary islands, and innovative mid-block crossing signals (e.g., the High-intensity Activated crosswalk Beacon or HAWK) will help increase pedestrian safety.

Funding for some of these treatments will be part of the development process or through focused developer fees, or other innovative funding strategies. These treatments will expand livable corridors by 93 percent beyond the 16 areas in the Constrained Plan into new areas focusing on transit growth and new "village" development along new corridors. Funding for some of these treatments will come during the development process, through focused developer fees, or by pursuing other innovative funding strategies. Meanwhile, bicycle treatments such as increased racks and long-term secure parking will increase the convenience of biking.

## NEIGHBORHOOD MOBILITY AREAS

Using Complete Streets principles and applying them aggressively in the planning and implementation of neighborhood roadway improvements will increase mobility further. Traffic calming, combined with land use changes, will provide more opportunities for bicycling and walking in less urban settings such as local "village areas" with sidewalk café seating and local farmers markets. Connections to these villages will be promoted by strategies that tackle the first/last mile challenge that transit faces. Bicycle boulevards and other lower-speed streets that give bicycles priority have been shown to be effective at calming traffic while increasing safety and bicyclist connectivity. The Strategic Plan sees local governments increasing the use of Complete Streets principles in their roadway improvements, expanding these areas beyond what is in the Constrained Plan, increasing bikeway density and improving the quality of life for even more residents.

## NOTES: MOTIONS & RECOMMENDATIONS

### 2012 RTP/SCS IMPLEMENTATION MOTION

As the 2012 RTP/SCS was adopted, SCAGs Regional Council also adopted a framework for implementing the 2012 RTP/SCS. The relevant part of the motion for active transportation is:

- Broaden SCAG's role as a provider of technical assistance in regional and local planning efforts for active transportation through three distinct planning projects:
  - Active Transportation Strategic Funding Plan: To identify current and additional sources of local, regional and state sources of funding for active transportation, including both bicycle and pedestrian systems, to enable accelerated implementation of active transportation projects throughout the SCAG region.
  - Regional Complete Streets Plan: To outline policies that ensure that all highway and roadway projects are safe for all users and to set a policy framework to prioritize complete streets projects in the 2016 RTP; and, to

encourage county transportation commissions and local governments to implement complete streets in highway and roadway projects.

- **Regional Safe Routes to School Plan:** To provide a regional strategy to make walking and bicycling to and from school safer by expanding on existing regional efforts, identifying opportunities for a dedicated regional Safe Routes to School funding source, developing a School Siting Policy and a Joint Use Policy to be included in the 2016 Sustainable Communities Strategy.

In developing these plans, SCAG should convene representatives from local jurisdictions, counties, councils of governments, public health, and other stakeholders and provide additional technical assistance in the form of planning, data collection, and modeling. These plans should be prepared for timely inclusion in the 2016 RTP/SCS. SCAG should amend its Overall Work Program (OWP) to include the costs of these plans.

## SUBCOMMITTEE RECOMMENDATIONS

In 2012, SCAG established six subcommittees tasked with guiding staff towards implementing the 2012 RTP/SCS. Three of these subcommittees (active transportation, Public Health and Sustainability) had direction applicable to active transportation. The subcommittees included elected officials and relevant stakeholders, and the public was invited to participate.

### The Active Transportation Subcommittee issued the following guidance:

1. Develop a definition of active transportation which recognizes the varying types and needs of active transportation users
  - Existing: active transportation refers to transportation such as walking or using a bicycle, tricycle, velomobile, wheelchair, scooter, skates, skateboard, push scooter, trailer, hand cart, shopping car or similar low-speed electrical devices. (Source: 2012-2035 RTP/SCS)
  - Proposed: active transportation refers to human powered transportation and low-speed electronic assist devices. Examples include but are not limited to bicycle, tricycle, wheelchair, scooter, skates, skateboard, push scooter, trailer and hand cart.

**Next Steps:** Disseminate local definition throughout the organization and its deliberative bodies.

Pending further discussion and action by TC and Regional Council, include language in developing the 2016 RTP/SCS.

2. Consider and refine the availability of data and information to evaluate the RTP/SCS relative to active transportation policy.

- Provide the technical foundation for any potential improvements to performance measures and indicators by conducting research and identifying best methods for RTP/SCS scenarios evaluation and monitoring.
- Strengthen performance indicators to facilitate measuring the benefits of active transportation development.
- Expand our data collection efforts by working with counties, local jurisdictions and stakeholders.

**Next Steps to 2016 RTP/SCS Development:** Identify and assist local agencies that are adopting Active Transportation plans and programs. Train local planners through SCAG Programs.

3. Develop, with partner agencies, a methodology for selecting and prioritizing regionally supported active transportation projects
  - Continue to work with local jurisdictions in coordinating and integrating active transportation data and plans.
  - Support the development of cost effectiveness data and methodology to determine which projects may have the greatest benefit/cost.
  - Work with partners and stakeholders in public health, land use planning, environmental quality and habitat conservation to further enhance active transportation options.

**Next Steps:** Continue to work with partners to develop methodologies that may determine active transportation demand (e.g. walkscore/bicycle score) and benefits of projects.
4. Seek opportunities to promote and support transportation investments with an active transportation component.
  - Support regulatory framework that considers active transportation an integral part of all transportation planning and development.
  - Support regulatory framework that considers active transportation an integral part of land use planning and development.
  - Support and promote the consideration and accommodation of active transportation users, particularly in under-served communities, in all transportation projects, where applicable.
  - Support goals and principles of Complete Streets recognizing context of local land uses.
  - Support and seek opportunities to promote and implement safety in active transportation.
  - Continue to support research and/or development of best practices to justify investment in active transportation.

- Support and seek opportunities to increase active transportation funding (including, but not limited to Safe Routes to School, Cap-and-Trade, River Parkway Grants, legislative strategies and other public and private grant opportunities.
- Seek opportunities to streamline environmental review of active transportation projects.

**Next Steps to 2016 RTP/SCS Development:** Develop cost effective investments and strategies that promote active transportation as part of 2016 RTP/SCS development process, subject to further stakeholder input and technical review and work with transportation finance division to quantify costs and identify funding.

#### The Public Health Subcommittee issued the following guidance:

1. Seek opportunities to promote transportation options with an active component/physical activity
  - Support goals and principles of Active Transportation Work Plan, as it pertains to public health for all communities, particularly sensitive communities.
  - Promote active transportation as a means to encourage active and healthy lifestyles and as a means to reduce greenhouse gas emissions and reduce vehicle miles traveled (VMT).
  - Support and seek opportunities to further promote safety (including both related to crime and violence and to collision and injury) in active transportation.

**Next Steps to 2016 RTP/SCS Development:** Develop cost effective investments and strategies that promote an active lifestyle as part of 2016 RTP/SCS development process, subject to further stakeholder input and technical review and work with transportation finance division to quantify costs and identify funding and was discussed further at Joint Meeting No. 6 with the Active Transportation, Public Health, and Sustainability Subcommittees.

#### The Sustainability Subcommittee issued the following guidance:

1. In addition to these three areas, the Sustainability Committee found common ground with the Active Transportation and Public Health Subcommittees in supporting the promotion of active transportation
  - Seek opportunities to promote transportation options with an active component/physical activity.
  - Support goals and principles of the Active Transportation Work Plan, as it pertains to sustainability.
  - Promote active transportation as a means to encourage active and healthy lifestyles.

- Support and seek opportunities to promote safety in active transportation.
- Identify and assist jurisdictions planning for transit, active transportation, and transit oriented development (TOD) by providing regional case studies and economic development data.
- Support the deployment of zero- or near zero-emissions vehicle technology.

**Next Steps to 2016 RTP/SCS Development:** Develop cost-effective investments and strategies that promote active lifestyle as part of 2016 RTP/SCS development process, subject to further stakeholder input and technical review and work with transportation finance division to quantify costs and identify funding.

## 2014 SCAG GENERAL ASSEMBLY MOTION

Regional Council Members Michele Martinez and Leslie Daigle introduced a motion at the 2014 General Assembly, directing SCAG to expand its current work related to active transportation to include the regional coordination of safety and encouragement activities.

1. That the General Assembly of the Southern California Association of Governments approves to support a regional safety initiative in an effort to reduce highway carnage, human suffering and economic loss by partnering with member agencies, county transportation commissions and other stakeholders on an annual public education, awareness and behavioral campaign to change dangerous behavior, reduce pedestrian and bicyclist fatalities and injuries, while educating everyone about safe usage of roadways.
2. That the SCAG General Assembly supports a comprehensive local and regional bikeway network, prioritize and encourage bicycle-friendly projects, especially separated bicycle lanes, streets and neighborhoods and allows bicyclists to safely connect with public transit, employment centers, schools, shopping areas and recreational facilities.
3. That the SCAG General Assembly encourages member cities to prepare city-wide bicycle and pedestrian master plans to improve bicycle and pedestrian infrastructure, create education and safety programs and identify funding opportunities.
4. That SCAG General Assembly will support increased enforcement of roadway safety laws and make all roadway users, including drivers, pedestrians and bicyclist aware of such enforcement efforts.
5. That the SCAG General Assembly authorizes and directs the Executive Director to submit a copy of this Resolution to the appropriate representatives to inform jurisdictions about the necessity of the 5 Es: Engineering, Education, Encouragement, Law Enforcement and Evaluation and Planning.

## NOTES: STATE POLICIES

AB 1358 (2008) Complete Streets Act: AB 1358 requires all cities or counties, when performing any substantive updates to the Circulation Element of their General Plan “to plan for a balanced, multi-modal transportation network that meets the needs of all users of streets, roads and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan.” (Source: AB1358)

Caltrans Deputy Directive 64 (Revision 1): DD-64-R1 is a policy statement committing Caltrans to Complete Streets. DD64-R1 has led to the rewriting of various manuals and guidelines detailing Caltrans procedures. It states in part:

*“The California Department of Transportation (Department) provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations and maintenance activities and products on the State highway system. The Department views all transportation improvements as opportunities to improve safety, access and mobility for all travelers in California and recognizes bicycle, pedestrian and transit modes as integral elements of the transportation system.”*

Caltrans Deputy Directive 64 (Revision 2): DD-64-R2

SB 375 and AB 32: Assembly Bill 32 (AB 32) sets greenhouse gas reduction targets to achieve goals for the reduction of greenhouse gas emissions from all sectors and while Senate Bill 375 (SB 375) requires Metropolitan Planning Organizations to adopt a sustainable communities strategy or alternative planning strategy that would achieve reductions in greenhouse gas emissions from automotive and light duty trucks.

SB-99: SB-99 consolidates various state and federal active transportation funding programs into one “Active Transportation Program.” Safe Routes to School, Bicycle Transportation Account and federal Transportation Alternatives Programs are now part of one grant program.

SB-743: SB-743 removes Level of Service requirements for transit infill development and would exempt CEQA requirements. For first mile/last mile strategies, the law makes it easier and less costly to develop active transportation projects in high quality transit areas.

AB 1193 The Protected Bikeways Act: Allows and encourages the design and construction for protected bikeways (Class IV Bikeway or “separated bikeway”) incorporating the definition of protected bikeways into Section 890.4 of the California Streets and Highways Code.

NACTO Guide: Caltrans endorsed<sup>56</sup> using the National Association of City Transportation Officials (NACTO) Guidelines for street improvements along with the Highway Design Manual and MUTCD.

## NOTES

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- <sup>6</sup> California Highway Patrol (2012) California Statewide Integrated Traffic Records System
- <sup>7</sup> California Dept. of Transportation. (2010) Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians
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- <sup>11</sup> Calthorpe Associates (2012) Urban Footprint Technical Summary
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- <sup>25</sup> Ibid
- <sup>26</sup> California Department of Transportation (March 30, 2012) Traffic Operations Policy Directive 12-01 Retrieved from <http://www.dot.ca.gov/hq/traffops/policy/12-01.pdf>
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**SOUTHERN CALIFORNIA  
ASSOCIATION of GOVERNMENTS**

**MAIN OFFICE**

818 West 7th Street, 12th Floor  
Los Angeles, CA 90017  
(213) 236-1800

[www.scag.ca.gov](http://www.scag.ca.gov)

**REGIONAL OFFICES**

Imperial County  
1405 North Imperial Avenue, Suite 1  
El Centro, CA 92243  
Phone: (760) 353-7800  
Fax: (760) 353-1877

Orange County  
OCTA Building  
600 South Main Street, Suite 1233  
Orange, CA 92868  
Phone: (714) 542-3687  
Fax: (714) 560-5089

Riverside County  
3403 10th Street, Suite 805  
Riverside, CA 92501  
Phone: (951) 784-1513  
Fax: (951) 784-3925

San Bernardino County  
Santa Fe Depot  
1170 West 3rd Street, Suite 140  
San Bernardino, CA 92410  
Phone: (909) 806-3556  
Fax: (909) 806-3572

Ventura County  
950 County Square Drive, Suite 101  
Ventura, CA 93003  
Phone: (805) 642-2800  
Fax: (805) 642-2260

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**APPENDIX**

TRANSPORTATION SYSTEM | ACTIVE TRANSPORTATION

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