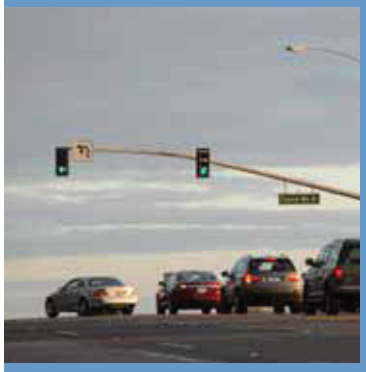
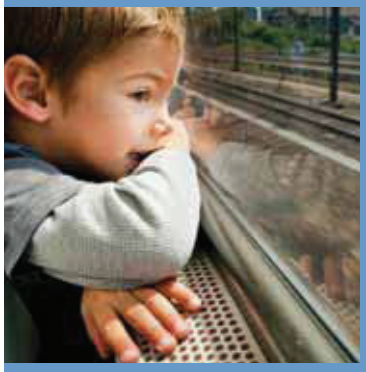
Orange County Transportation Authority
2014 Long Range Transportation Plan



OUTLOOK 2035

Because Mobility Matters



September 12, 2014

OCTA

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List of Acronyms & Abbreviations

ADA	Americans with Disabilities Act
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARTIC	Anaheim Regional Transportation Intermodal Center
ATN	Anaheim Transportation Network
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
County	Orange County
CTP	California Transportation Plan
EAP	Early Action Plan
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	greenhouse gas
GPS	global positioning system
HOT	high-occupancy toll
HOV	high-occupancy vehicle
I-5	Interstate 5
I-405	Interstate 405
LAX	Los Angeles International Airport
LOS	levels of service
LOSSAN	Los Angeles-San Diego-San Luis Obispo
LRTP	Long Range Transportation Plan
Metro	Los Angeles County Metropolitan Transportation Authority
MPAH	Master Plan of Arterial Highways
mph	miles per hour
MPO	Metropolitan Planning Organization
NAAQS	national ambient air quality standards
OC Bridges	Orange County Bridges
OCTA	Orange County Transportation Authority
PCI	pavement condition index
PEIR	Program Environmental Impact Report
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCRRA	Southern California Regional Rail Authority
SCS	Sustainable Communities Strategy
SHOPP	State Highway Operation and Protection Program
SIP	State Implementation Plan
SR-22	State Route 22

SR-55	State Route 55
SR-57	State Route 57
SR-60	State Route 60
SR-73	State Route 73
SR-74	State Route 74
SR-91	State Route 91
SR-133	State Route 133
SR-241	State Route 241
TAP	transit access pass
TDM	Transportation Demand Management
TSM	Transportation System Management

Executive Summary

Introduction

Orange County Transportation Authority (OCTA) is a consolidation of seven entities (Orange County Transportation Commission, Orange County Transit District, Consolidated Transportation Services Agency, Orange County Local Transportation Authority, Orange County Service Authority for Freeway Emergencies, Orange County Congestion Management Agency, and Orange County Service Authority for Abandoned Vehicles) and is the transportation planning agency for Orange County (County). OCTA is responsible for planning and implementation of countywide transportation systems and projects. In this role, OCTA leads the effort to develop a Long Range Transportation Plan (LRTP)—its vision for mobility over the next 20+ years. The LRTP is updated every 4 years to reflect changing demographics, economic trends, and mobility needs.

Orange County's LRTP is an essential building block for Southern California transportation planning efforts (see Figure E-1). OCTA submits its LRTP to the Southern California Association of Governments (SCAG) as the County's transportation input to the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). SCAG is federally required to develop its RTP/SCS every 4 years. Projects must be included in the RTP/SCS in order to be eligible for federal and State funding. Thus, through the LRTP, Orange County's transportation projects and programs are incorporated into the RTP/SCS for Southern California and subsequently programmed for funding in the Federal Transportation Improvement Program (FTIP).

This LRTP update (Outlook 2035) forecasts needs for the 2035 horizon year, prioritizes planned projects, and identifies additional strategies that address those needs, thereby providing safe and efficient mobility for the 2035 horizon. Based on the goals and objectives established by the OCTA Board of Directors (Figure E-2), Outlook 2035 includes projects intended to provide mobility choices to Orange County residents, workers and visitors that range from active transportation to expanded transit, enhanced capacity on, and freeway operational improvements.

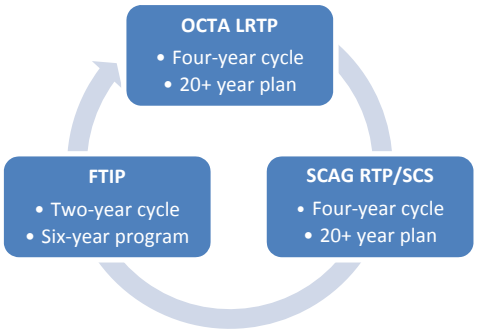


Figure E-1: Regional Planning & Funding Process

The first goal and its objectives reflect OCTA's commitment to deliver the projects and services identified as part of Orange County's voter-approved sales tax for transportation. Measure M2 was drafted in recognition of anticipated long-range transportation needs, and presented a plan to address those needs. Therefore, Measure M2 projects serve as the foundation of this LRTP.

While Measure M2 funding will go far toward improving mobility in Orange County, Measure M2 alone cannot solve all of the County's transportation problems. To ensure that the County's past and future investments are fully utilized, the second goal focuses on improving overall transportation system performance. Outlook 2035 includes projects that improve the efficiency of our infrastructure, thereby reducing delay due to congestion, increasing facility speeds and increasing transit ridership.

Deliver on Commitments	Improve System Performance	Expand System Choices	Support Sustainability
• Prioritize Measure M2 projects • Consistency with M2020 and FTIP	• Increase speeds • Reduce delay • Increase Transit Ridership	• Improve multimodal integration • Invest in new facilities • Expand transit services	• Deliver a financially constrained plan • Maintain infrastructure • Implement environmental strategies • Support sustainable communities strategies

Figure E-2: Goals & Objectives

One of the key themes heard throughout the LRTP planning process, from both the OCTA Board of Directors and the public, has been the importance of supporting and promoting travelers' choices and encouraging their efficient use of all available modes of transportation. Achieving the third goal of expanded system choices will require implementing planned networks and expanding transit services to provide adequate facilities for different modes of transportation. Further, modal networks must be better linked together to facilitate traveler access.

OCTA's final goal is sustainability—investing today to safeguard the future. For the LRTP, the goal of sustainability is applied in multiple areas: maximizing financial resources, maintaining infrastructure, and protecting and preserving Orange County's natural environment.

In summary, Outlook 2035 reflects current commitments and completed transportation studies, and provides a platform for identifying issues and challenges related to mobility in Orange County in the future, along with the proposed actions to address those needs.

The Need for Outlook 2035

Orange County currently has a robust transportation network in place that is the result of past planning efforts dating back to the 1950s, with the County's Master Plan of Arterial Highways (MPAH). The transportation system includes regional highways, arterials and local roads, bus and rail transit, and regional bikeways, all of which were developed to accommodate the growth patterns of the County, and to meet Orange County voter directives through Measure M.

Not surprisingly, Orange County continues to grow (see Figure E-3). This growth will result in increased demand on the County's transportation networks and services. To assess the impact of this increased demand on the performance of the transportation system, the LRTP uses a future 2035 Baseline Scenario.

The 2035 Baseline Scenario serves the purpose of depicting what the transportation system and travel conditions would be like in 2035 given the projected growth and minimal investment, reflecting only the transportation improvements currently funded in the FTIP. Analysis of this scenario highlights where the projected growth will likely have the greatest impacts on the transportation system.

Given the continued growth in population, housing and employment and the Baseline's limited investment in mobility, traffic congestion in 2035 (total vehicle hours of delay) is projected to increase by 166 percent over 2010 conditions. At the same time, vehicle miles traveled will increase while travel speeds decrease. The net result of this analysis is that strategic investment in Orange County's transportation systems is needed to address the anticipated growth.

The Preferred Plan

To address this need, Outlook 2035 identifies a Preferred Plan that completes Measure M2 transportation improvements and adds discretionary projects to reduce congestion and improve mobility. Full lists of the baseline and Preferred Plan projects are provided in Appendices A and B, respectively. This set of planned improvements and services can be delivered within projected funding resources, which total approximately $36.1 billion (year of expenditure).

This financial forecast considers the revenues that will available between now and 2035 from local, State, and federal sources (see Figure E-4). Local funds make up the lion's share of revenues, with Measure M2 as the largest single revenue source at approximately $11.3 billion. Other local funds are derived from retail sales

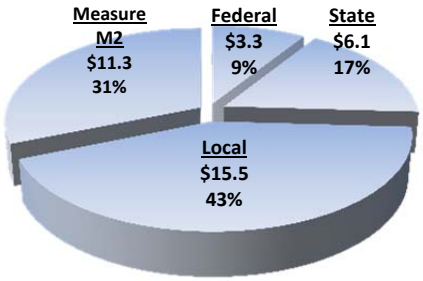


Figure E-4: Fiscal Years 2015-2035 Revenue Forecast (in billions)

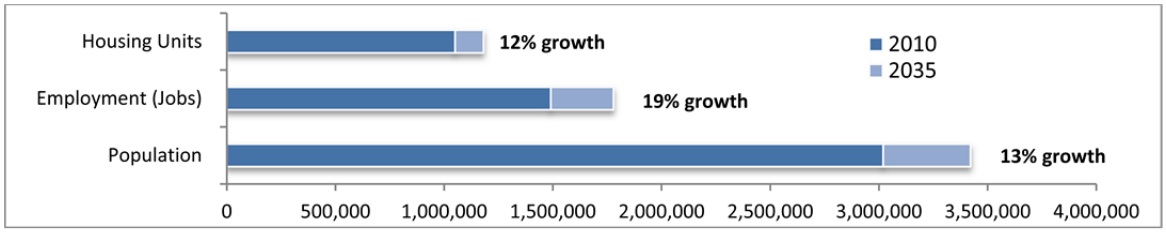


Figure E-3: Projected 2035 Populations, Employment, & Housing Growth

tax, toll revenues, bus fares, and local jurisdictions' general fund investments in transportation projects and maintenance. State funding from gas taxes, program funding, and voter-approved funds for transit capacity, enhancement, and safety adds about $6.1 billion. Finally, federal funds are projected to add approximately $3.25 billion for Outlook 2035 from programs whose purposes include funding transit, highway rehabilitation, alternative transportation, and projects that reduce traffic congestion and improve air quality.

With these funds, the Preferred Plan delivers on Measure M2 commitments and proposes additional projects to improve performance, expand choices, and support sustainability of Orange County's transportation system.

The Measure M2 commitments encompass a range of projects and activities, including (a) reducing freeway bottlenecks, (b) implementing Metrolink expansion, local community bus and guideways, arterial capacity improvements, and signal synchronization projects, and (c) advancing environmental stewardship and mitigation.

Beyond Measure M2 commitments, discretionary projects that are part of the Preferred Plan include limited stop bus and vanpool service on freeways to increase overall facility usage and average vehicle occupancy, as well as enhanced bus service in high-demand areas. Regional highways are enhanced through elimination of bottlenecks, improved high-occupancy vehicle (HOV) facilities and increased connectivity between facilities in order to improve travel time reliability. Bikeway and pedestrian projects on local streets are included to support new travel choices and reduce vehicular demand.

Compared to the 2010 base year conditions, the Preferred Plan results in the addition of:

- New bus and streetcar service on key, high-demand corridors
- Enhanced bus routes to maintain on-time performance
- 20 weekday Metrolink trains
- 650 miles of bikeways
- 820 lane-miles on the MPAH network
- 206 freeway carpool lane-miles
- 236 tollway lane-miles
- 450 vanpools and station vans

Although the planned investments are categorized by modes, it is important to recognize that all of these systems are integrated. Roadways are typically shared by cars, buses, bicycles, and pedestrians. Freeways are used by cars and buses. Likewise, paved trails are often shared by bicycles and pedestrians. The Preferred Plan offers a multi-layered transportation system that provides better connectivity between modes, shared use of the same infrastructure, and improved travel time for all travelers.

Performance of the Preferred Plan

The Preferred Plan investments improve all but one performance measure when compared to the 2035 Baseline Scenario (see Figure E-5). However, the slight increase of less than 1% in vehicle miles traveled can likely be offset by enhanced coordination with local jurisdictions and implementation of strategies identified in the 2012 RTP/SCS. While these investments go a long way toward achieving a sustainable transportation system, there is room for improvement.

As Figure E-5 indicates, the Preferred Plan investments do not preserve the performance of the 2010 Base Year. The rate at which projected travel demand is increasing indicates that the transportation system will require additional improvements beyond what is included in the Preferred Plan. To provide a forward-looking approach, Outlook 2035 outlines a Conceptual Plan that is not constrained by funding limitations, as well as a 4-year Action Plan of studies and monitoring efforts. Together, these identify additional projects and strategies for consideration in future LRTP updates in order to address emerging issues and position OCTA to take advantage of opportunities.

Performance Metrics	2010 Base Year	2035 Baseline	Draft 2035 Preferred	Percent Change from 2035 Baseline
Daily Transit Trips	133,469	164,145	189,407	15.4% Increase
Total Vehicle Hours of Delay	274,646	732,068	509,441	30.4% Decrease
Daily Vehicle Miles Traveled	63,404,082	81,107,114	81,708,206	0.7% Increase
Average Speed – Freeway GP Peak	40.4	34.4	38.9	13.1% Increase
Average Speed – HOV Peak	48.5	57.4	59.9	4.4% Increase
Average Speed – Arterial Peak	30.3	22.7	27.1	19.4% Increase

Figure E-5: 2035 Preferred Plan – Performance Metrics

The Conceptual Plan

The Conceptual Plan includes improvements that have been identified through a variety of planning efforts, such as Major Investment Studies, but are not yet ready for inclusion in the Preferred Plan. It may be that they require additional planning, public input, and/or funding. However, these projects appear to support the goals and objectives of the LRTP. A full list of projects included in the Conceptual Plan is provided in Appendix C.

Projects in the Conceptual Plan that enhance mobility beyond the Preferred Plan include:

- Connection between Santa Ana and Anaheim fixed guideways along Harbor Boulevard
- Proposed Fullerton Streetcar Connection
- 8 new Bravo! routes in high-demand areas
- 36 new weekday Metrolink trains
- 6 Los Angeles-San Diego-San Luis Obispo (LOSSAN) grade separations
- Operational freeway or carpool improvements

Moving Forward

Through the monitoring of travel conditions, consideration of emerging transportation issues, and regular engagement of stakeholders, OCTA fosters informed decision-making in a transparent manner. Emerging issues that will influence future planning efforts include the recent legislative focus on coordinating land use and transportation, the growing interest in active transportation, the development of new technology, and the importance of coordinating with partner agencies.

Through the early outreach process, several additional themes emerged. These guiding themes summarize stakeholder priorities for mobility and include: optimizing transportation systems, educating the public about transportation alternatives, innovating through the use of technology and new real-time transit strategies, collaborating with other planning agencies for regional solutions, and exploring incentives to single-occupant automobile trips.

The emerging issues and stakeholder themes listed above helped to lay the groundwork for a 4-year Action Plan that outlines activities for monitoring, tracking, evaluation, and planning to further develop transportation projects needed in the future. The intent is to develop well-defined projects and strategies for consideration in future LRTP updates that will further improve the transportation system beyond the Preferred Plan.

The Action Plan focuses on the following areas:

- Collaboration on inter-county connectivity
- Study of intra-county opportunities
- Enhancement of transportation outreach and education
- Monitoring of emerging technologies

Conclusion

The LRTP begins with a snapshot of Orange County's transportation system today. Looking to the future, it reflects established programs and completed transportation studies, and identifies transportation issues and challenges along with proposed actions to address them via a Preferred Plan. Even with a Preferred Plan in place, there are transportation demands that cannot be met with available funding. Therefore, Outlook 2035 also outlines a Conceptual Plan that is not limited by the revenue forecast in order to outline projects and services beyond the Preferred Plan that address unmet needs. In addition, Outlook 2035 includes a 4-year Action Plan to continue identifying projects and strategies for consideration in future LRTP updates, through additional studies, continued stakeholder outreach, and the monitoring of emerging technologies.

Chapter 1: Introduction

The Orange County Transportation Authority (OCTA) prepares the Long Range Transportation Plan (LRTP) and submits it to the Southern California Association of Governments (SCAG) so that Orange County's transportation projects and programs will be incorporated into the Regional Transportation Plan (RTP) for Southern California and subsequently programmed in the Federal Transportation Improvement Program (FTIP).

The LRTP, which is updated every 4 years, begins with a snapshot of Orange County's transportation system today. Looking to the future, the LRTP reflects established programs and completed transportation studies, and identifies transportation issues and challenges along with proposed actions to address them.

Developing Orange County's Plan

OCTA's LRTP provides an opportunity to create a vision for mobility in Orange County. It provides us with a chance to pause, look back, see where we've come from, and reflect on the lessons we've learned. It provides us a chance to consider where we want to go and to think big. And it provides us a chance to engage the Orange County community in a dialogue about our collective transportation future.

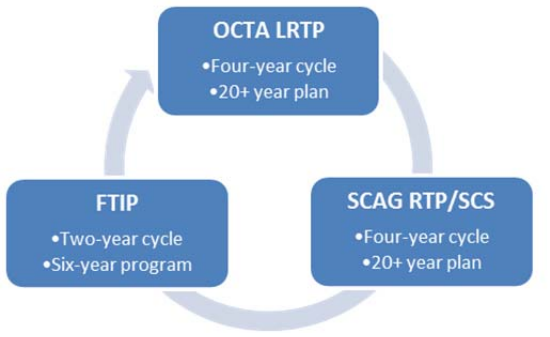
OCTA is designated by the State as the regional transportation planning agency for Orange County (California Government Code Section 29532). As such, OCTA is responsible for planning and implementation of countywide transportation systems and projects. In this role, OCTA leads the effort to develop an LRTP, which is updated every 4 years.

Orange County's LRTP is an essential building block for Southern California transportation planning efforts. It includes projects, priorities, and policies for Orange County's transportation system and provides input to a number of regional, State, and federal planning initiatives. OCTA submits its LRTP to SCAG as the County's input to the RTP, which covers the Counties of Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura.

SCAG is federally required to develop its RTP every 4 years. Projects must be included in the RTP in order to be eligible for federal and State funding. Further, the RTP is the tool used to demonstrate that the Southern California region meets federal air quality requirements as well as State targets for greenhouse gas (GHG) emissions. In addition to air quality conformity, the RTP must demonstrate how the plan can be implemented within available financial resources.

SCAG develops and maintains the 6-year FTIP in close coordination with County Transportation Commissions, which serves as the programming document for the projects included in the RTP. Locally prioritized lists of projects are forwarded to SCAG by County Transportation Commissions, including OCTA. From these lists, SCAG develops the FTIP and analyzes it for conformity with air quality requirements.

The State also prepares a long-range transportation plan—the California Transportation Plan (CTP)—to help guide planning investments statewide. The 2014 CTP is currently being developed, with a focus on integrating multimodal transportation systems that complement regional transportation plans and land use visions, along with reducing GHG emissions.



A more detailed description of the CTP, the RTP, the FTIP, and air quality and transportation conformity requirements is provided in Appendix D.

OCTA recognizes that community input is critical to a successful plan. Throughout the preparation of Outlook 2035, OCTA sought input from a wide range of participants through multiple venues. In addition to extensive discussion by OCTA's Board of Directors, many government and transportation-related organizations participated. Each of the 34 cities in the County and the County of Orange were provided opportunities for input, along with the Orange County Council of Governments, the California Department of Transportation (Caltrans), and the Transportation Corridor Agencies, to name a few. Businesses, nonprofits, university representatives, and several advisory committees provided constructive comments. Residents came to public meetings, workshops, and took online surveys. Multiple community roundtables were held to engage transportation professionals, environmental organizations, active transportation experts, high school youth, and college-aged young adults.

The final product is a roadmap with mobility as its destination. It is OCTA's guidebook for maintaining and enhancing transportation systems in the County. And it provides the community a basis for tracking progress toward shared transportation goals.

Goals and Objectives: Setting the Stage

To set goals for the organization, OCTA asked the questions: (1) "What are our priorities for mobility in Orange County?" (2) "What must we do to accomplish these priorities?" (3) "What are the local, State, and federal mandates that must be considered?"

In response to these questions and with input from the OCTA Board of Directors, the goals and objectives for OCTA were developed and applied to the LRTP.

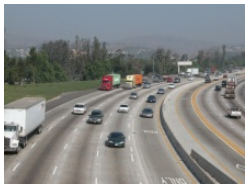
GOAL: Deliver on Commitments

As described previously, Orange County voters have twice affirmed their support of a sales tax for transportation (Measure M in 1990 and Measure M2 in 2006). Each ballot measure included an investment plan that detailed how the sales tax revenues would be spent. All Measure M projects have been completed, and now OCTA must deliver on the Measure M2 commitments made to voters. Thus, Measure M2 projects and programs are part of the foundation of Outlook 2035, the other foundation parts being the committed projects in the M2020 Plan and the FTIP.

Objectives:

- Deliver the Commitments of Measure M2 to the Voters
- Maintain Consistency with the M2020 Plan and the FTIP

GOAL: Improve Transportation System Performance



The purpose of the LRTP is not only building into the future, it is also maximizing the use of what we've got and enhancing it to address growth. To ensure that full advantage is taken of our past and future investments, we must work to maximize their efficiencies (e.g., improving on-time transit performance, expanding Bravo! limited stop bus service, implementing Class II bike lanes and other bicycle facilities over the existing network, synchronizing signals on arterials, and improving freeway bottlenecks).

Objectives:

- Reduce Delay Due to Congestion
- Increase Facility Speeds
- Increase Transit Ridership

GOAL: Expand Transportation System Choices

OCTA's long-range mobility vision embraces choice and encourages use of all modes efficiently for the benefit of both the individual user and the transportation system as a whole. To give travelers real choices, there must be adequate facilities for multiple modes of transportation, and the modal networks need to be linked together.

Objectives:

- Implement Planned Networks
- Expand Transit Services
- Improve Multimodal Integration

GOAL: Support Sustainability

Our decisions must consider our resources (i.e., infrastructure, environmental, and financial) to ensure sustainability and avoid setbacks in the future. We must preserve our natural resources, maintain our infrastructure, and live within our means. Financial sustainability requires disciplined appropriation and accounting to maximize the use of public resources. Along with securing financial resources, Orange County has committed to supporting environmental sustainability through projects that help to protect or enhance the natural environment (such as reducing polluted water runoff from roadways).

Objectives:

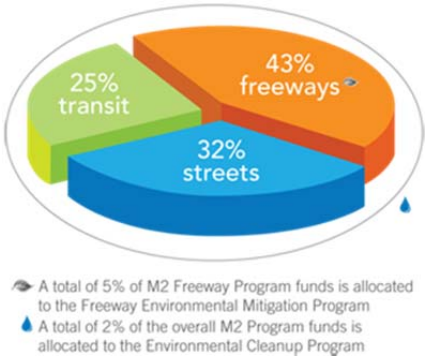
- Support Infrastructure Maintenance
- Support Sustainable Communities Strategies
- Implement Environmental Strategies
- Ensure Financial Sustainability

The Foundation

The Measure M sales tax for transportation was approved twice by Orange County voters: the original Measure M in 1990 and Measure M2 in 2006. Measure M delivered more than $4 billion worth of transportation improvements for Orange County, adding 192 freeway lane-miles, improving 170 intersections and 38 freeway interchanges, and implementing Metrolink service in Orange County, which now carries the equivalent volume of one lane of Interstate 5 (I-5) traffic.

When voters approved Measure M2, they extended the sales tax for specified transportation-related projects and programs through 2041. Extensive research and planning was undertaken to create the Measure M2 investment plan. There are funds designated for freeways, roadways, and transit that cover a wide range of projects (e.g., fixing freeway bottlenecks, synchronizing traffic signals, mitigating environmental impacts, and building railway over- and underpasses).

OCTA must deliver on the commitments made to voters, and as such, Measure M2 projects serve as the foundation of this LRTP.



While Measure M2 funding will go far toward improving transportation in Orange County, Measure M2 alone cannot solve all of the County's transportation problems. In addition to Measure M2, this LRTP reflects planning efforts previously undertaken (e.g., Major Investment Studies), and incorporates many years of extensive research, design work, coordination, cost and benefit analysis, and public input that have gone into planning for mobility in Orange County. This LRTP does not start "from scratch" but builds upon documents that have been prepared by and vetted across a variety of organizations and platforms, including local, regional, State, and federal agencies.

Shortly after Measure M2 passed in 2006, the OCTA Board of Directors adopted an Early Action Plan (EAP) to expedite several transportation projects included in Measure M2. This EAP allowed for delivery of $1.65 billion worth of transportation improvements to be underway by 2012. During the recent recession, Corridor Mobility Improvement Account funds created by Proposition 1B helped to advance these Measure M2 projects.

Subsequent to the EAP, a program called "M2020" was established to continue expediting projects and improving mobility through the year 2020. M2020 covers the approximately 8 year period from 2013 through 2020, and will result in more than $5 billion (year of expenditure) in transportation projects either completed or under construction by 2020. The goal of M2020 is to deliver the majority of the freeway programs by the year 2020 through the strategic use of bonding in order to take advantage of favorable current construction market conditions. In addition, the plan expands rail service hours, funds fixed-guideway connections to Metrolink, and improves street and road conditions.

A Comprehensive Vision

Ultimately, the projects included in the LRTP reflect OCTA's visionary goals and objectives, along with public input, existing commitments, and completed studies. Projects that can be completed with available projected revenues, including Measure M2 dollars, are part of the "Preferred Plan" of the LRTP. Outlook 2035 also considers emerging concepts (again, consistent with goals and objectives), which may require further planning, other revenue sources, and community dialogue. For the most part, these emerging concepts stem from previously completed studies.

Those projects that will require more planning, discussion, and revenue are part of the "Conceptual Plan" of the LRTP. Both the Preferred and Conceptual elements are important to the LRTP. Together they offer a comprehensive vision of Orange County's transportation future.

In addition to Outlook 2035's Conceptual Plan, an action plan is included that identifies improvements and strategies for consideration in future LRTPs. This 4-Year Action Plan includes efforts to monitor and study emerging issues, up-and-coming research and technology, and priorities identified through public participation.

Chapter 2: The Need for Outlook 2035

The projected growth of Orange County's population and employment will outpace available transportation capacity, resulting in increased congestion, delay, and time in transit. Strategic investment in Orange County's transportation systems is needed to address the anticipated growth.

The 2010 Transportation System

The following are descriptions of the transportation improvements and services "on the ground" in 2010, the benchmark year. This system is the result of the evolution and implementation of transportation planning efforts dating back to the 1950s through the County's Master Plan of Arterial Highways (MPAH), and more recently reflects the delivery of Measure M and the passage of Measure M2. The projects and services in the 2010 transportation system were developed in response to the development patterns of the County, the preferred mode choices of travelers, and Orange County voter directives.

Regional Highways

Orange County employees, residents, and businesses are served by an extensive system of regional highways comprising 10 major interstate and state route facilities and the nation's most comprehensive network of managed lanes. The *Highway Design Manual* defines managed lanes as lanes that are proactively managed in response to changing operating conditions in an effort to achieve improved efficiency and performance. Caltrans Traffic Operations Policy Directive 11-02 (March 23, 2011) describes high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, and express lanes as managed lanes. Orange County has HOV lanes and express lanes as part of the regional highway network.

Four regional highway facilities (i.e., I-5, Interstate 405 [I-405], State Route 57 [SR-57], and State Route 91 [SR-91]) function as important regional transportation connections to neighboring counties. In addition to 1,113 lane-miles of general-purpose travel lanes, the regional highway system includes 234 lane-miles of HOV lanes, 285 lane-miles of toll roads, and 40 lane-miles of express lanes (see Figure 2-1).

Orange County's regional highway network is used for a variety of activities: businesses use the regional highways for the movement of their goods. Orange County's service providers use the network to conduct business, and Orange County's residents use the regional highway network for commuting, school, shopping, social, and recreational trips. While the existing regional highway system offers flexibility and utility, high demand results in high levels of congestion during peak hours.

Most of the regional highway system operates near or above capacity, which results in time lost and greater fuel costs experienced by travelers due to congestion and delay. Figure 2-2 illustrates the location and severity of traffic congestion during the morning commute within general-purpose lanes. Average speed during the morning commute period for the system of general-purpose lanes is 38.2 miles per hour (mph).

High demand for travel within HOV lanes can also lead to congestion and slowing. Average speed along the system of HOV lanes is 48.4 mph during the morning and evening commute periods. However, several portions of the HOV system experience lower speeds.

Incidents such as collisions or mechanical breakdown can affect the performance of a regional highway system. Congestion due to incidents can build behind the incident and impact additional facilities. Measure M2 includes funding for freeway service patrols to clear incidents as quickly as possible and minimize the impact on the regional highway network. Pavement quality and maintenance needs are also a consideration. According to the *2013 State of the Pavement Report* (Caltrans, December 2013), 16 percent of the regional highways in Orange County have distressed pavement. The *California Statewide Local Streets and Roads Needs Assessment* (January 2013) provides a similar analysis of roadway facilities that are maintained by local jurisdictions. Within Orange County, the pavement condition index (PCI) is 77 out of 100, which is the highest in the State.

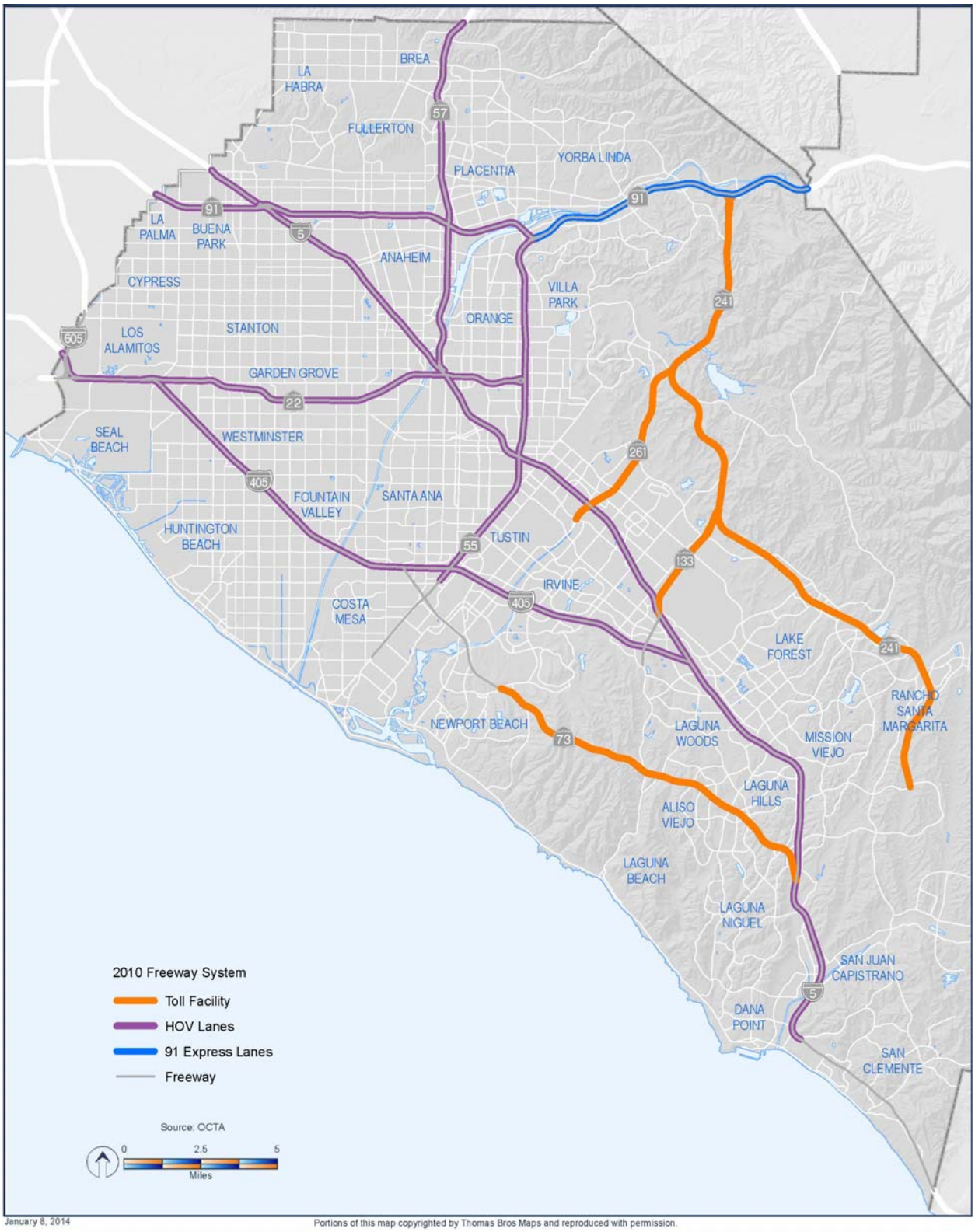


Figure 2-1: Base Year 2010 Regional Highway System

Figure 2-2: 2010 Base Year AM Peak Freeway Congestion Levels

Arterials and Local Roads

Since 1956, Orange County has used the MPAH as a guide and regional planning tool to ensure continuity and consistency of the arterial highway system. Figures 2-3a and 2-3b illustrate the existing lanes for roadways within this system. Approximately 50 percent of daily vehicle miles traveled in Orange County occur on the arterial highway system. Average speed within the system during the a.m. peak period is 29.5 mph.

In addition to automobiles, the arterial highway system also supports bus transit and travel by active transportation such as bicycling. Pavement degradation and congestion affect all three modes. However, Measure M2 included several programs designed to alleviate congestion on the arterial network and preserve pavement quality. These investments are intended not only for automobiles, but also for the benefit of goods movement and active transportation.

Bus Transit

OCTA operates and maintains fixed route and demand-responsive bus transit service, and administers a vanpool and rideshare program for the County. This includes the operation of 40 local routes with headways ranging from 10 minutes to 1 hour. The bus transit system also consists of community shuttle routes, StationLink Metrolink rail feeder routes, intra-county express routes, and inter-county express routes. Inter-county transit connections are also provided by the Los Angeles County Metropolitan Transportation Authority (Metro), the Riverside County Transportation Commission, Cerritos on Wheels, Norwalk Transit, Long Beach Transit, and North County Transit District routes that end in Orange County.

Local bus service supplements OCTA service in some communities. Laguna Beach Transit operates three bus lines every 20 minutes during busy summer months. The Irvine iShuttle operates four shuttles year-round, during morning and evening commute hours, between the Irvine Business Complex employment center and the Tustin Metrolink Station, and between the Irvine Spectrum employment center and the Irvine Metrolink Station. The Anaheim Transportation Network (ATN) operates a system of shuttles every 20 minutes between area hotels and attractions such as the Disneyland Resort®, Anaheim Convention Center, Knott's Berry Farm, and the Anaheim Metrolink Station.

OCTA ACCESS provides Americans with Disabilities Act (ADA) complimentary paratransit for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by a disability. This service includes curb-to-curb and door-to-door service (premium service) as well as same-day taxi service, which meet the requirements of the ADA.

Rail Transit

Both regional passenger rail and commuter rail serve Orange County. Amtrak's Pacific Surfliner provides regional passenger rail service with stops at stations in Fullerton, Anaheim, Santa Ana, Irvine, San Juan Capistrano, and San Clemente. The Surfliner operates 12 northbound and 11 southbound trains per day.

Commuter rail service is provided by the Southern California Regional Rail Authority (SCRRA) under the brand name "Metrolink." Three Metrolink routes operate within Orange County (i.e., Orange County Line, Inland Empire-Orange County Line, and 91 Line), with stops at stations in Buena Park, Fullerton, Anaheim, Anaheim Canyon, Orange, Santa Ana, Tustin, Irvine, Laguna Niguel, San Juan Capistrano, San Clemente, and San Clemente Pier. The Orange County Line operates 15 northbound and 14 southbound trains per weekday. Some of these trips operate only between the Fullerton and Laguna Niguel/Mission Viejo stations as part of OCTA's Metrolink Service Expansion Program. The Inland Empire-Orange County Line operates 8 northbound and 8 southbound trains per weekday. The 91 Line operates 5 westbound and 4 eastbound trains per day. Both the Orange County and Inland Empire-Orange County Lines offer limited service on weekends. Figure 2-4 illustrates Amtrak and Metrolink routes within the County. As shown on Figure 2-4, the passenger rail network provides inter-county connections to Los Angeles, Riverside, and San Diego Counties.

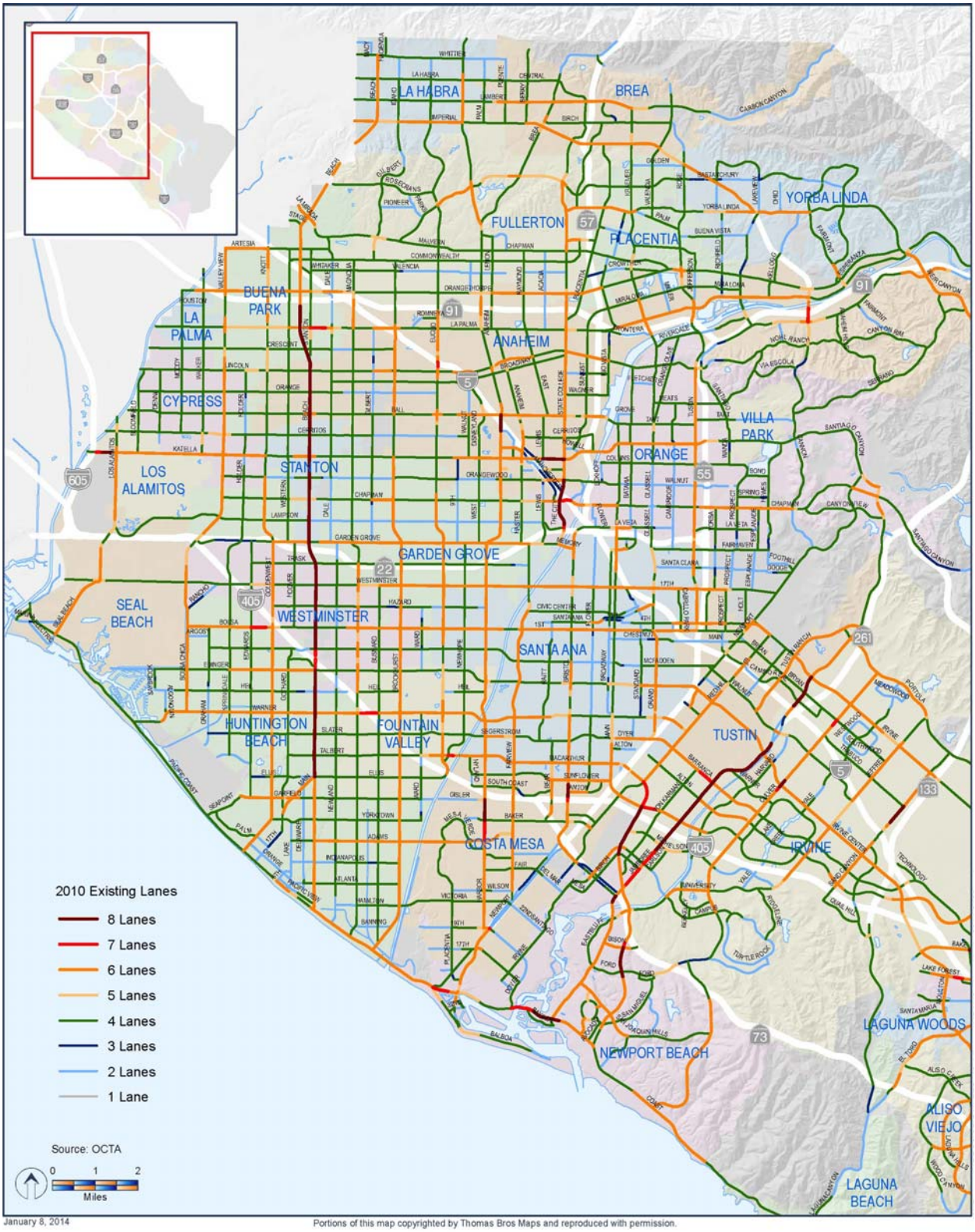


Figure 2-3a: Base Year 2010 MPAH System – North County

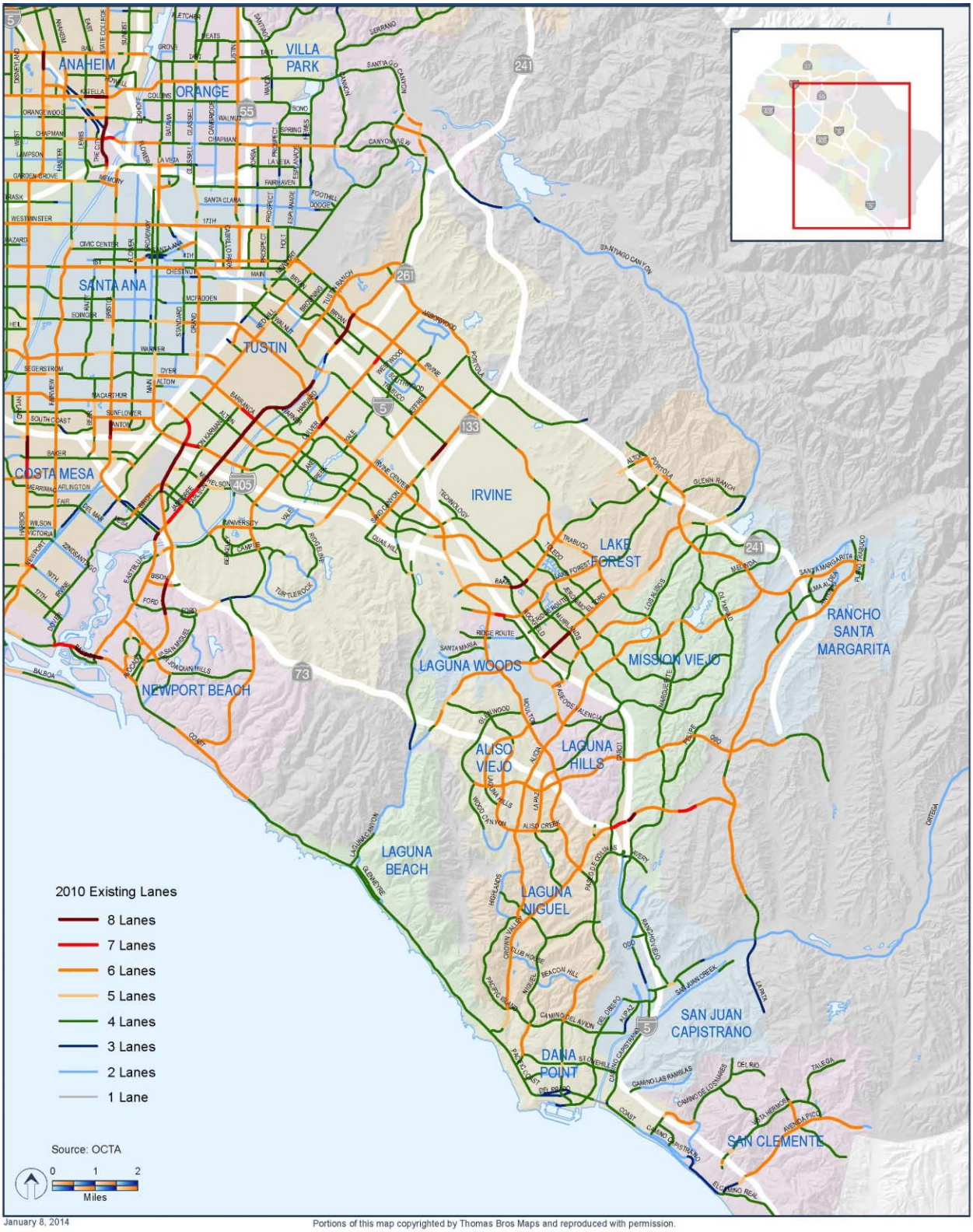


Figure 2-3b: Base Year 2010 MPAH System – South County

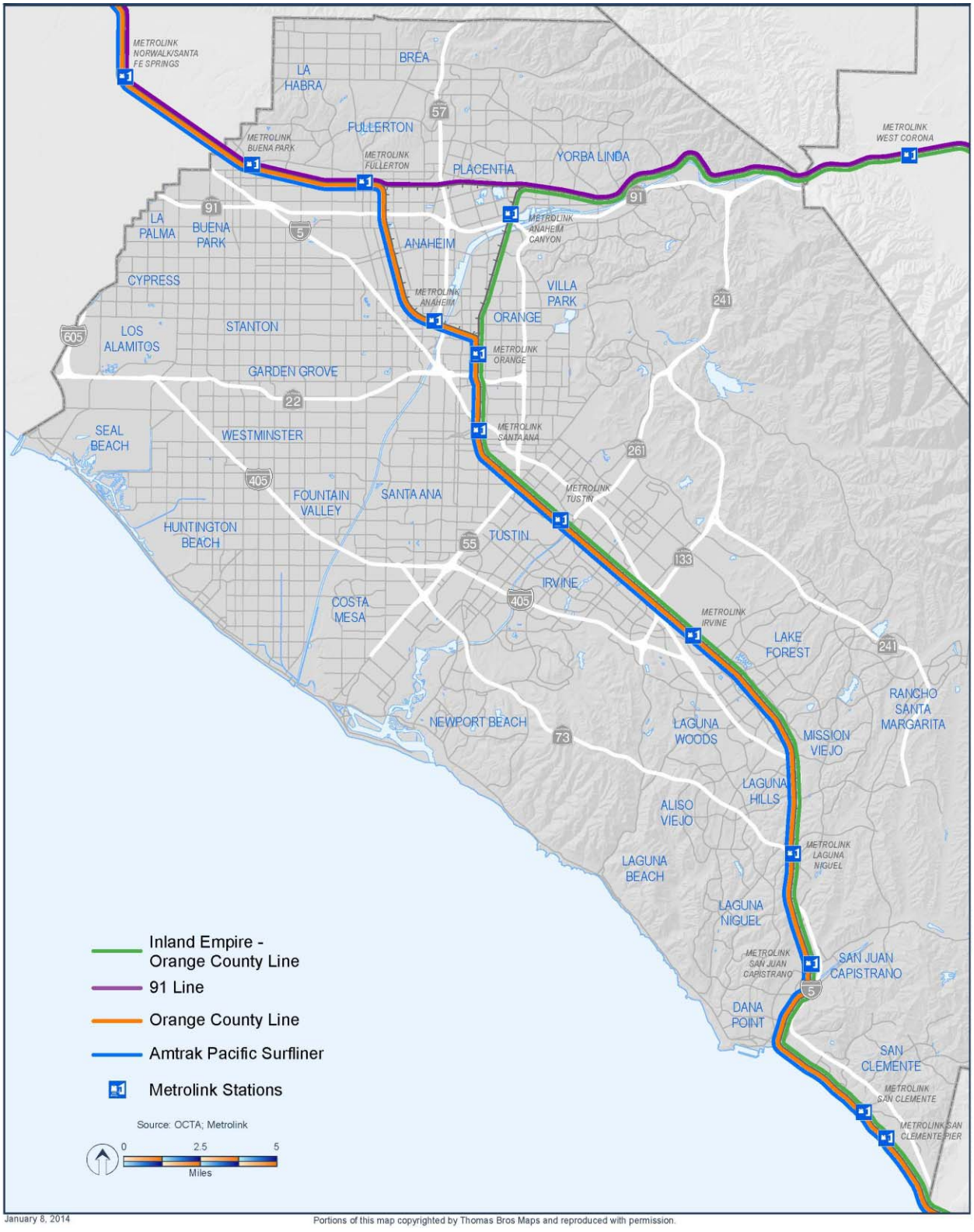


Figure 2-4: Base Year 2010 Rail Transit System

Goods movement by freight train also occurs on these rail lines. The BNSF Railway owns and utilizes the track along the Metrolink 91 Line. The Metrolink Orange County Line and Amtrak Pacific Surfliner operate along the Los Angeles-San Diego-San Luis Obispo (LOSSAN) corridor, which is also used by BNSF Railway freight trains.

Regional Bikeways and Transportation Demand Management

Bicycle facilities are classified by their degree of separation from motor vehicles.

- Class I: Off-street paved bike paths
- Class II: On-road striped and signed bicycle lanes
- Class III: On-road shared-lane signed bicycle routes

Orange County's network of regional highways supports travel by bicycle by providing class II bicycle lanes and class III bicycle routes. Orange County has also constructed several class I off-street bicycle paths. Figures 2-5a and 2-5b illustrate the location and connection of these bicycles paths, lanes, and routes and also provide diagrams illustrating the differences in classification. Orange County currently has 263 miles of off-street bicycle paths, 721 miles of on-street bicycle lanes, and 94 miles of bicycle routes. Bicycle safety is an important consideration for growing this travel mode.

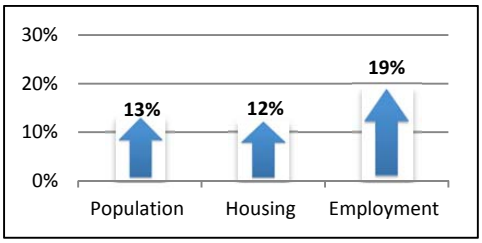
OCTA further supports bicycle travel by equipping OCTA buses with bicycle racks, providing bicycle parking in every car on Metrolink trains, and providing bicycle lockers and racks at Metrolink stations. OCTA buses carry approximately 5,000 bicycles per day. Since 2011, Metrolink trains have included special bicycle cars with room to secure 18 bicycles on the car's lower level. Carrying bicycles on buses and trains helps extend the reach of the fixed-route transit network.

The OCTA Vanpool Program assists commuters working in Orange County. OCTA coordinates with commuters, employers, and private vanpool operators to organize and sustain vanpools, and provides a monthly subsidy for each vanpool to offset vehicle lease and maintenance costs. In addition to Caltrans-maintained park-and-ride lots, OCTA maintains park-and-ride lots throughout the County and supports the Guaranteed Ride Home Program. OCTA provides trip planning tools on their website and on the phone through the new 5-1-1 service. OCTA has also provided the necessary data to Google Transit® to integrate trip planning with other Southern California transit operators. These efforts are designed to reduce single-occupancy commuting.

Orange County in 2035

Population and Employment Growth

Despite its already large population and strong employment centers, Orange County continues to grow. Projections show that the County's population is expected to grow by approximately 400,000 residents (13%), the housing demand is expected to grow by over 125,000 units (12%), and employment is expected to increase by approximately 288,000 jobs (19%). The County's expected growth between 2010 and the horizon year of 2035 are illustrated on Figure E-3 in the Executive Summary and summarized below.



Source: Center for Demographic Research, California State University, Fullerton, Orange County Projections 2010 Modified

Population growth is forecast to occur throughout the County, with increased population density occurring most markedly within the established urban core, largely through infill development. Orange County also has areas with approved entitlements for large residential developments (e.g., La Floresta and Canyon Crest in Brea, the Great Park in Irvine [formerly Marine Corps Air Station, El Toro], the Platinum Triangle in the City of Anaheim, the East Orange planned community in the City of Orange and unincorporated County, and the Rancho Mission Viejo planned community known as The Ranch Plan, which is also located in unincorporated County territory). See Figures 2-6, 2-7, and 2-8 for 2010 population density, 2035 population density, and the change in population density from 2010-2035, respectively.

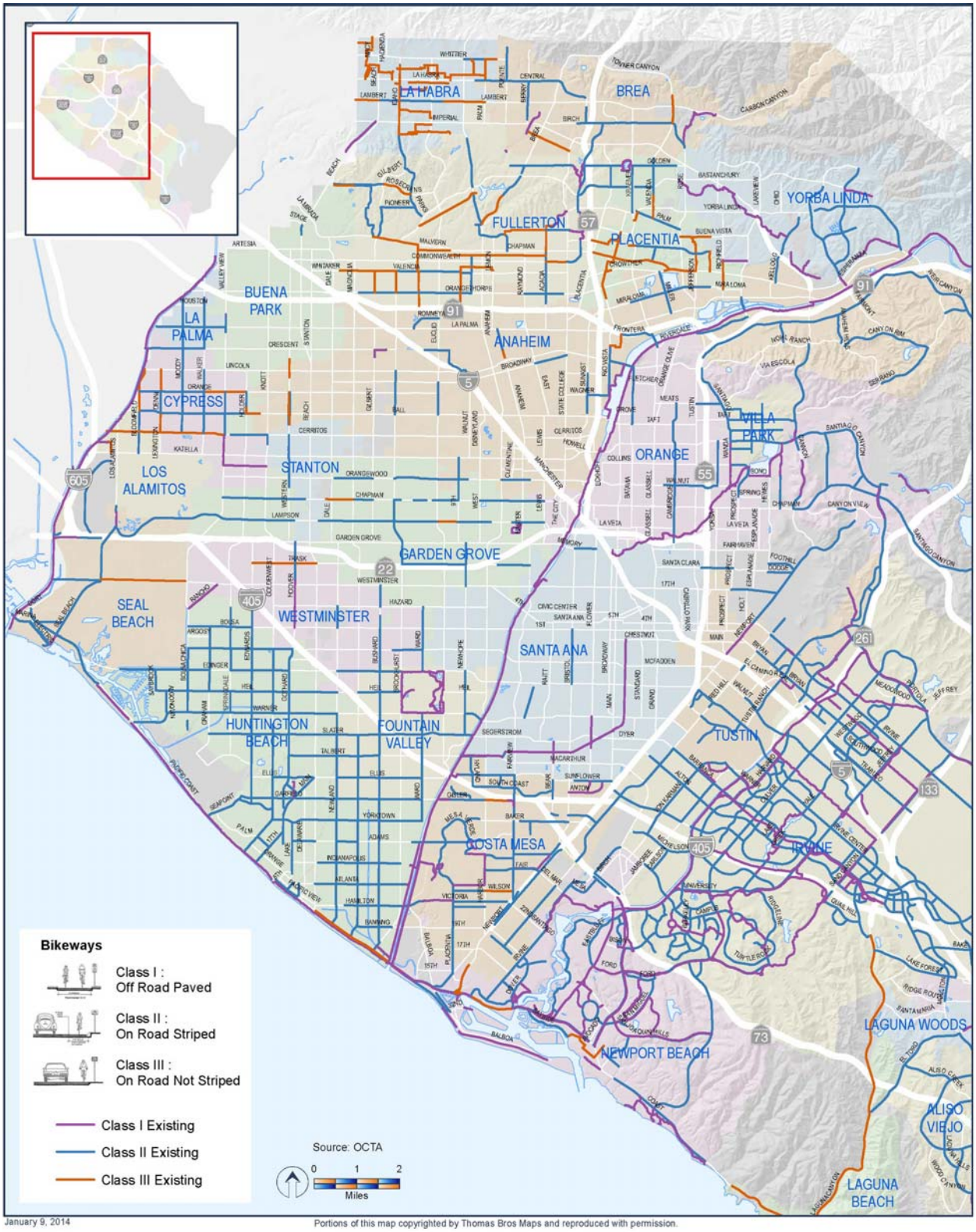


Figure 2-5a: Existing Bikeways – North County

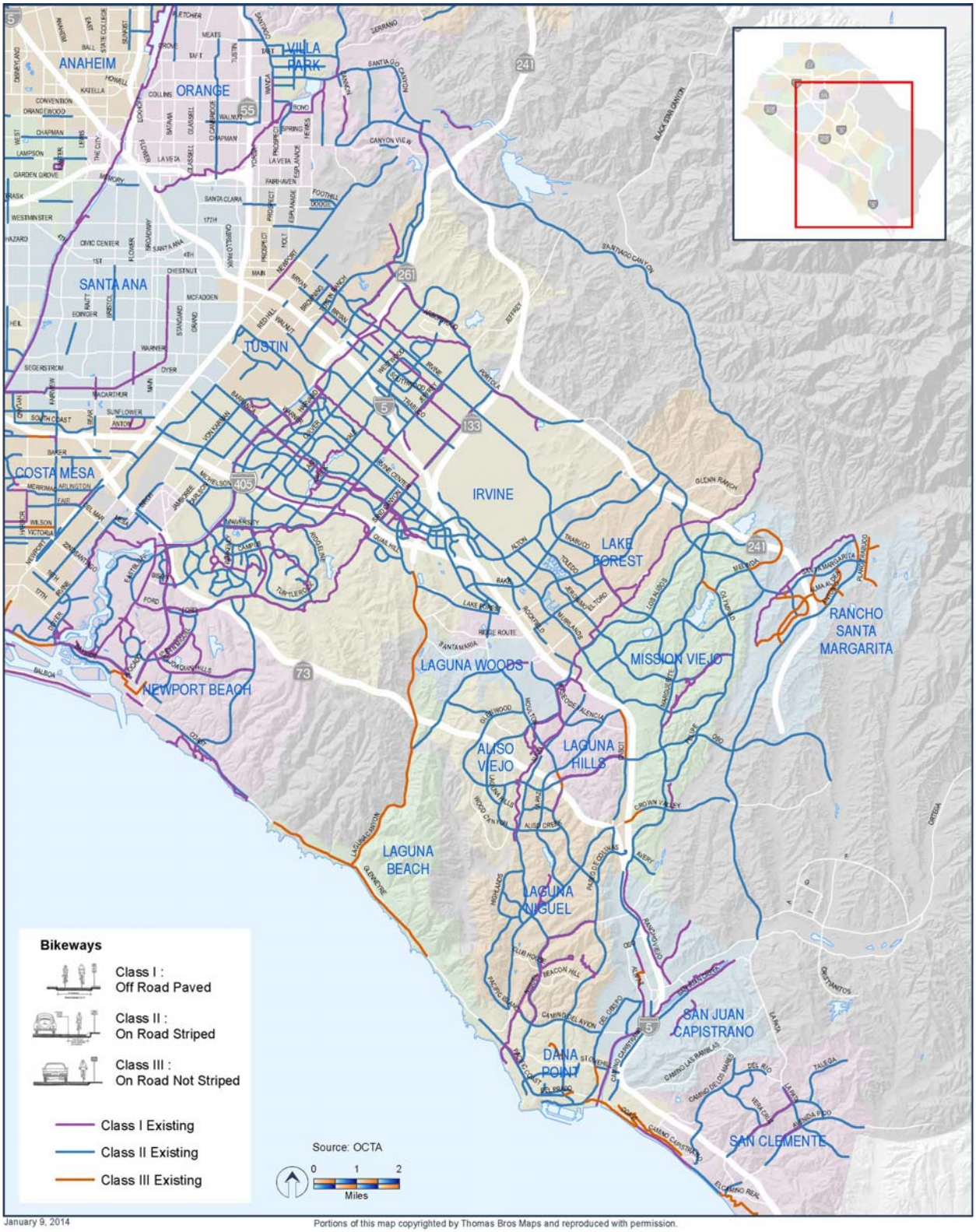


Figure 2-5b: Existing Bikeways – South County

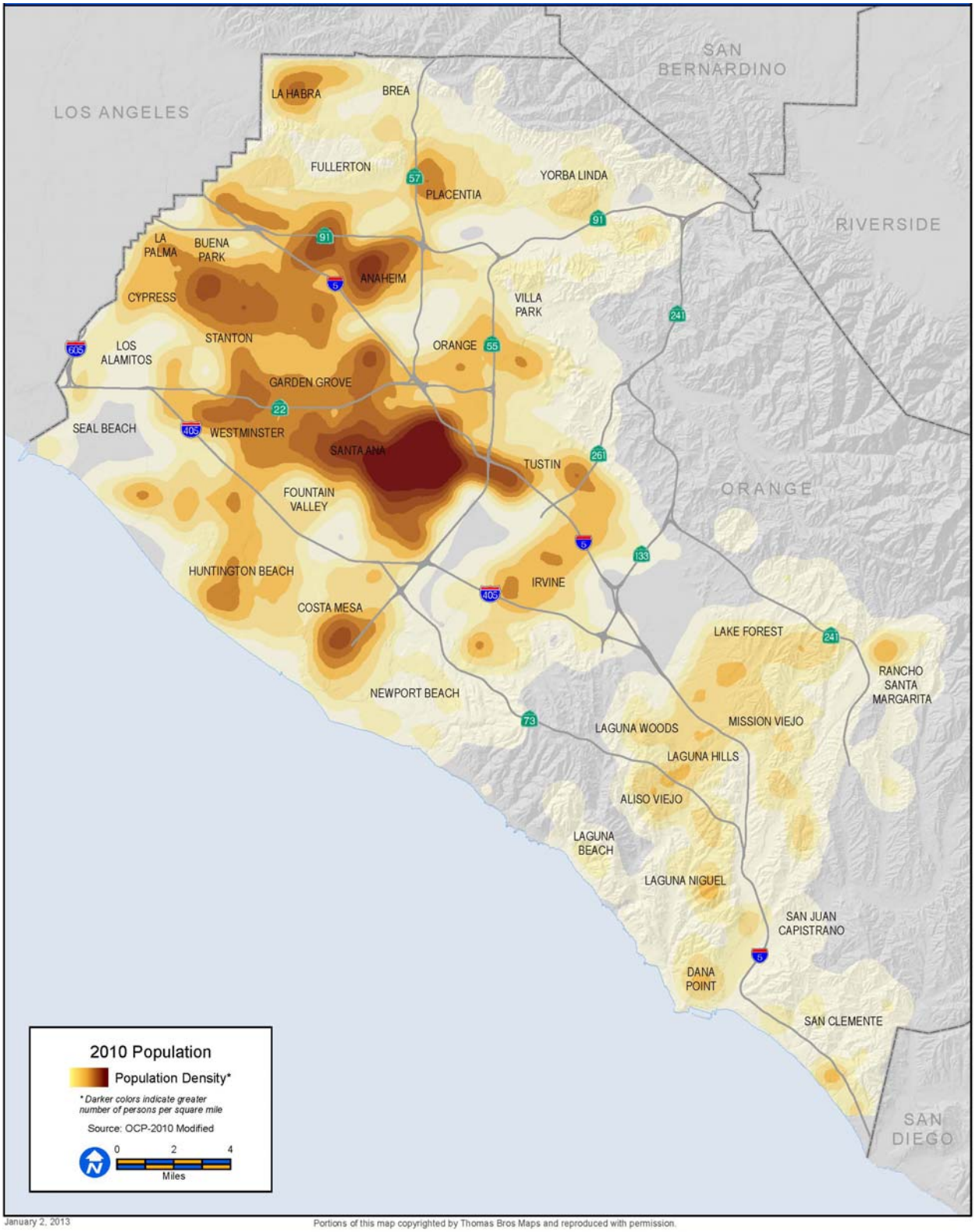


Figure 2-6: 2010 Orange County Population Density

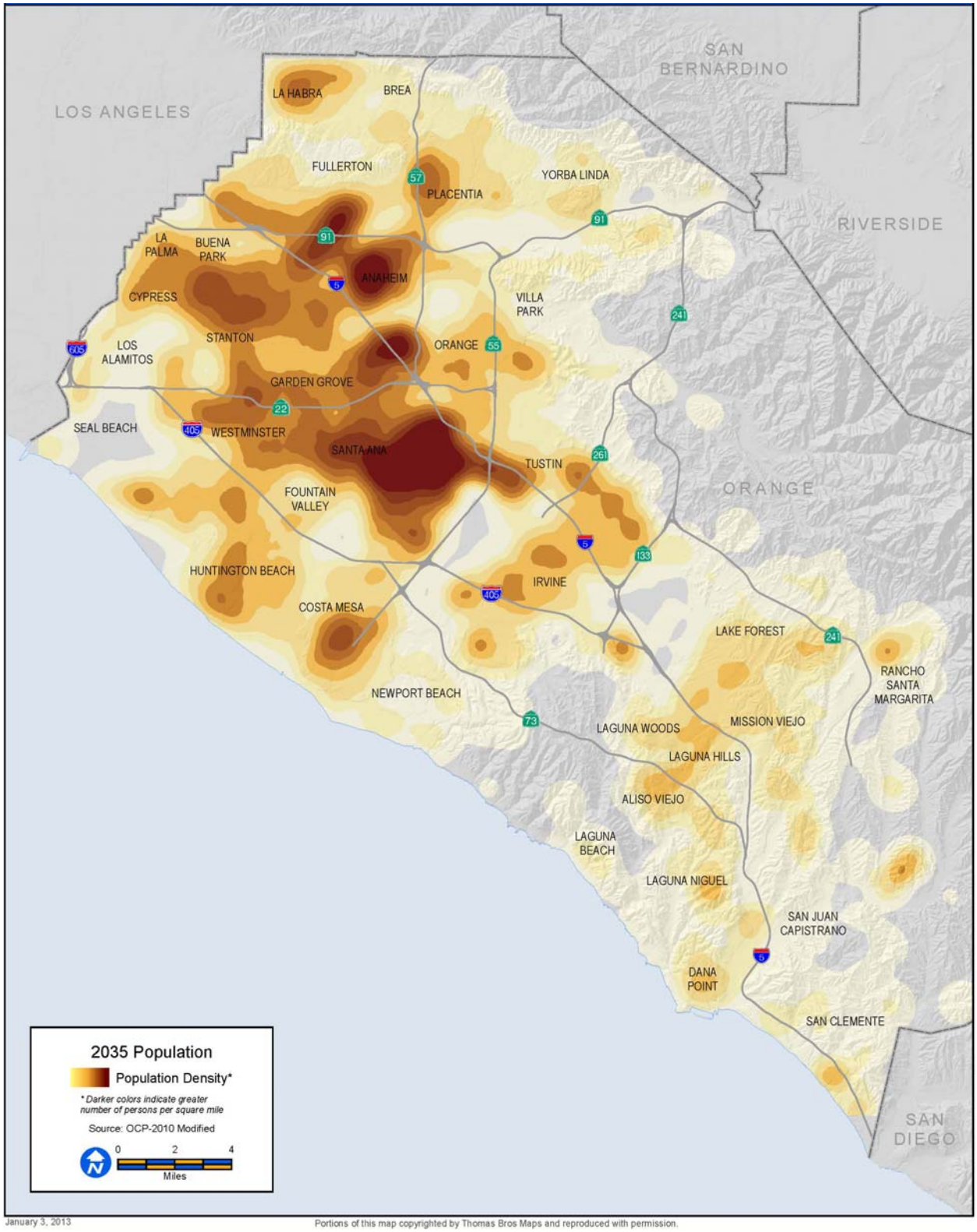


Figure 2-7: 2035 Orange County Population Density

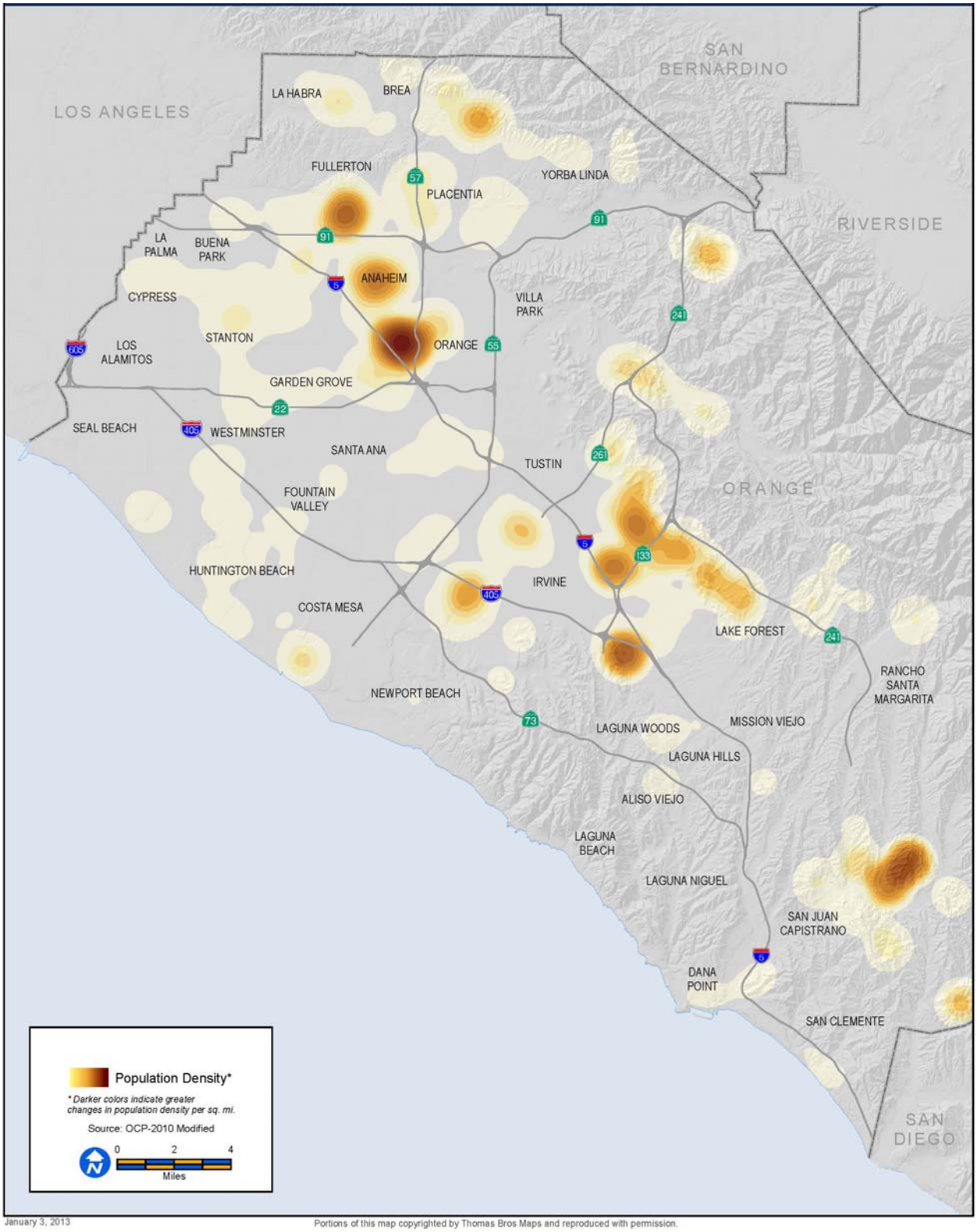


Figure 2-8: 2010 to 2035 Orange County Population Change

Approximately one-third of the housing units projected to be built between 2010 and 2035 are planned on currently undeveloped land. The remaining two-thirds of projected housing units will be infill or redevelopment projects. There will be pockets of increasing housing densification, most notably in Fullerton, Anaheim, Irvine, and the unincorporated South County community of Rancho Mission Viejo. The most housing-dense areas will remain concentrated in the centralized urban cores of Orange County. See Figures 2-9, 2-10, and 2-11 for 2010 housing density, 2035 housing density, and the change in housing density from 2010-2035, respectively.

While employment will continue to become more dense countywide, job growth is projected to occur primarily in the Cities of Irvine, Anaheim, and Tustin, all of which expand on existing employment centers. Other regions of Orange County are projected to increase employment and experience employment densification; however, those increases will be comparatively small when compared to the projected increases in the previously noted areas of the County. See Figures 2-12, 2-13, and 2-14 for 2010 employment density, 2035 employment density, and the change in employment density between 2010 and 2035, respectively.

Figures 2-6 through 2-14 depict this anticipated change in population, housing, and employment, with maps illustrating the conditions in 2010 and 2035, and the changes between these years. To address Orange County's growth, the LRTP must first consider how this growth will affect transportation demand.

2035 Baseline Transportation System

The 2035 Baseline Scenario serves the purpose of depicting what the transportation system and travel conditions would be like in 2035, the horizon year, assuming minimal transportation investment and the growth described above. This baseline scenario includes the existing transportation system investments and only those additional improvements and services that are approved and fully programmed for funding in the FTIP.

Regional Highways

Voter-approved Measure M2 included several projects to improve the regional highway system that focus on the elimination of bottlenecks. OCTA has advanced the environmental documentation phase for all of the Measure M2 regional highway projects so that they will be shelf-ready for implementation as funding becomes available and be ready to compete for any identified funding sources. The Transportation Corridor Agencies have also planned for improvements to the regional highway network. Among these improvements is the continuation of SR-241 south from its current terminus at Oso Parkway, first to Cow Camp Road near Ortega Highway and ultimately to I-5.

Arterials and Local Roads

OCTA administers the Measure M2 Regional Capacity Program, a funding source for local jurisdictions to complete components of the MPAH. OCTA has also funded projects programmed under the Regional Traffic Signal Synchronization Program, which seeks low-cost approaches to reducing congestion through signal-timing modification and coordination. Measure M2 also returns 18 percent of revenues to local jurisdictions based on a fair share formula. Several arterial roadway expansion and extension projects are programmed in the FTIP for construction using funds from these M2 programs and other local funding sources.

Bus Transit

OCTA is examining the cost of operating existing services. Operating costs and riders' changing needs will be considerations for future transit service. As the needs of transit riders change, OCTA will respond with changes to and expansion of fixed route service between 2010 and 2035. For example, Bravo! bus service began operating on Harbor Boulevard between the Fullerton Transportation Center and MacArthur Boulevard in 2013. These buses operate every 10 to 15 minutes with limited stops.

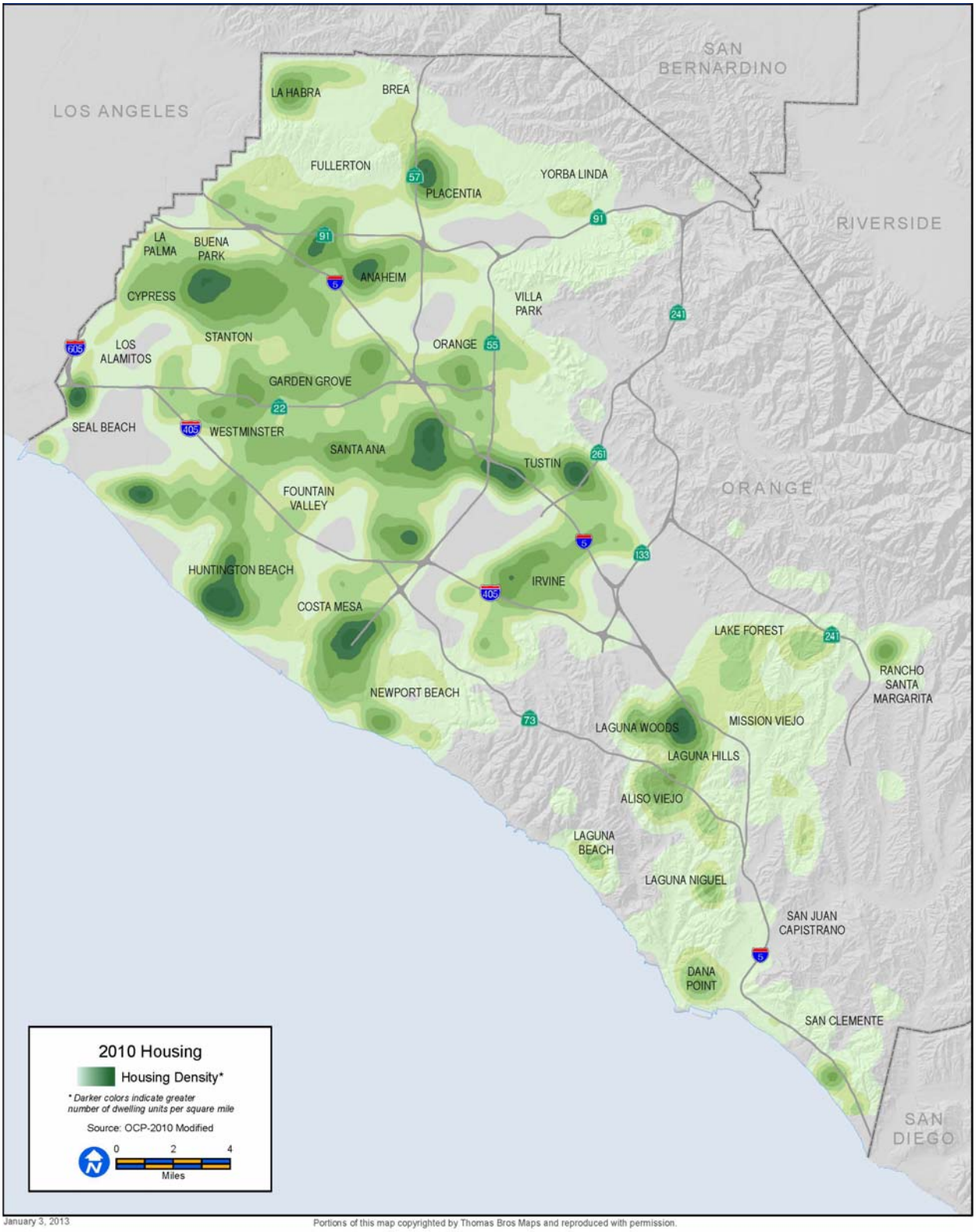


Figure 2-9: 2010 Orange County Housing Density

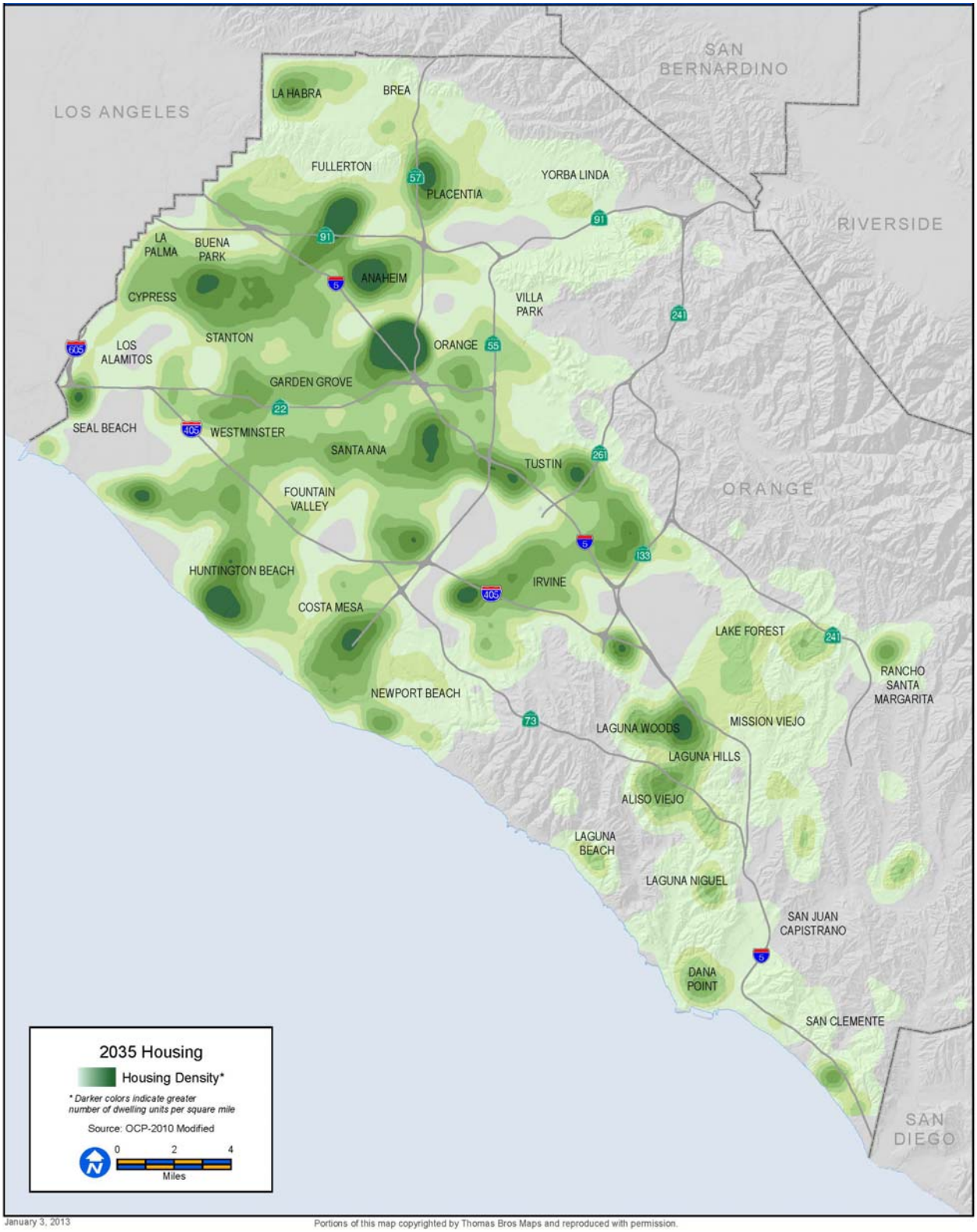


Figure 2-10: 2035 Orange County Housing Density

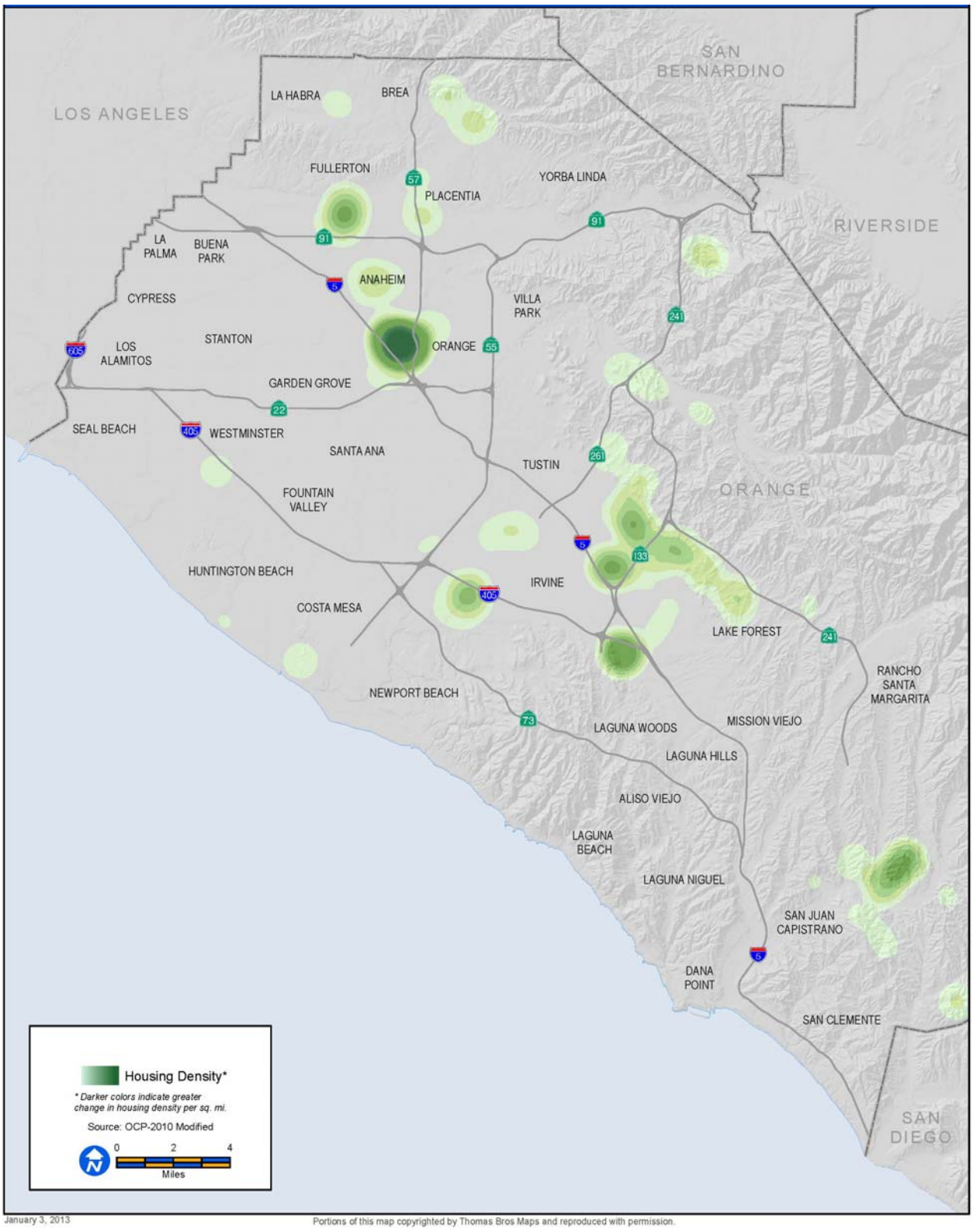


Figure 2-11: 2010 to 2035 Orange County Housing Change

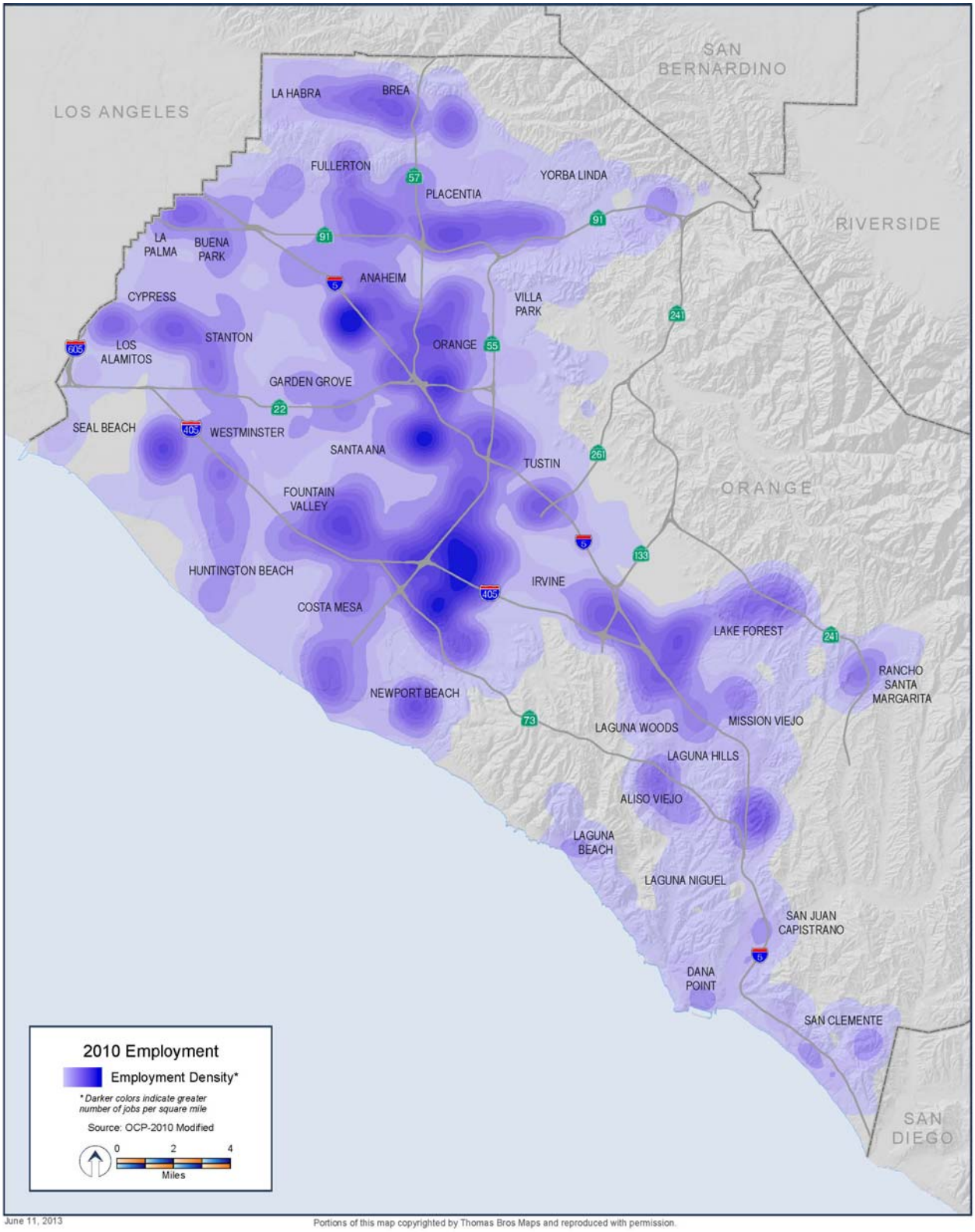


Figure 2-12: 2010 Orange County Employment Density

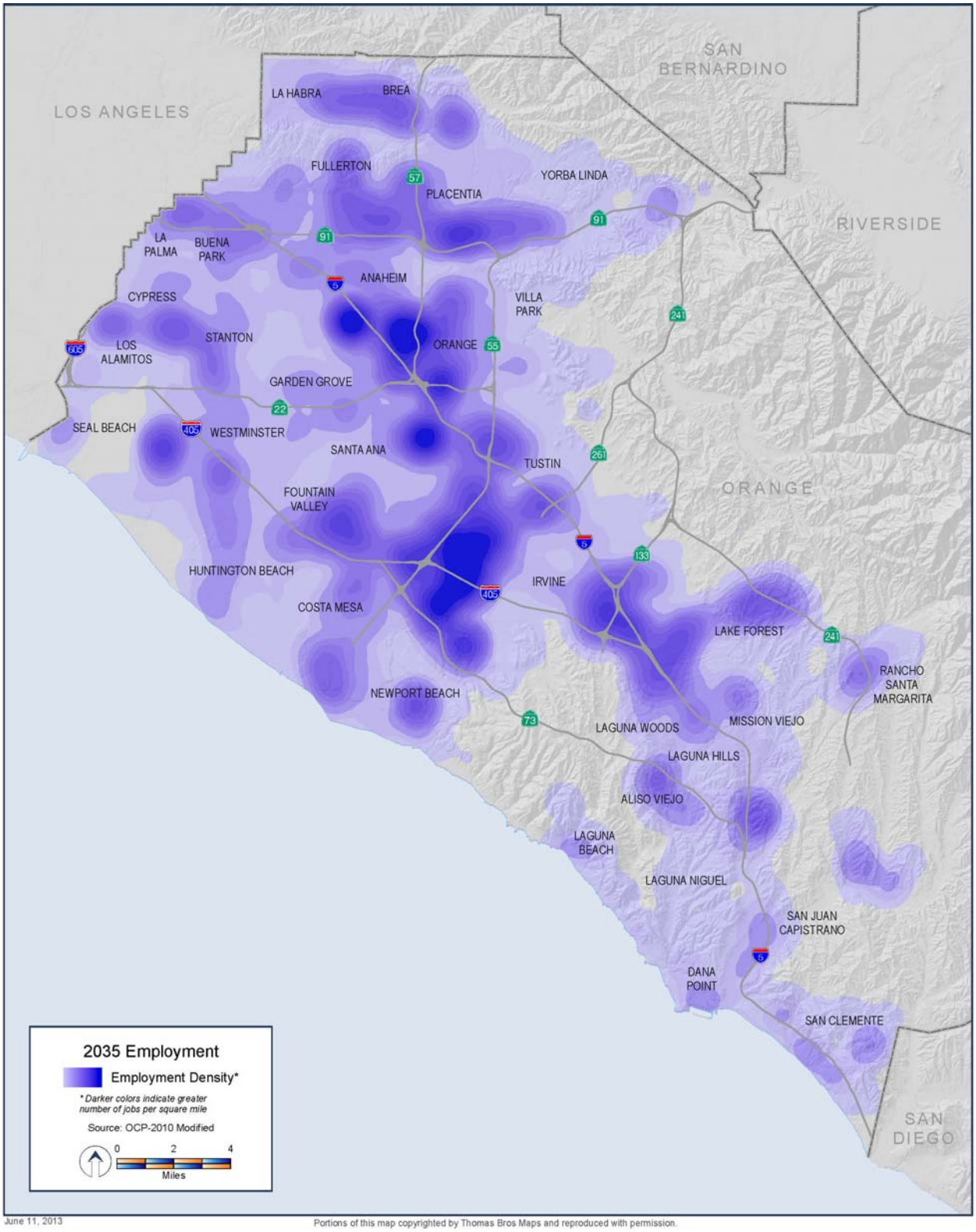


Figure 2-13: 2035 Orange County Employment Density

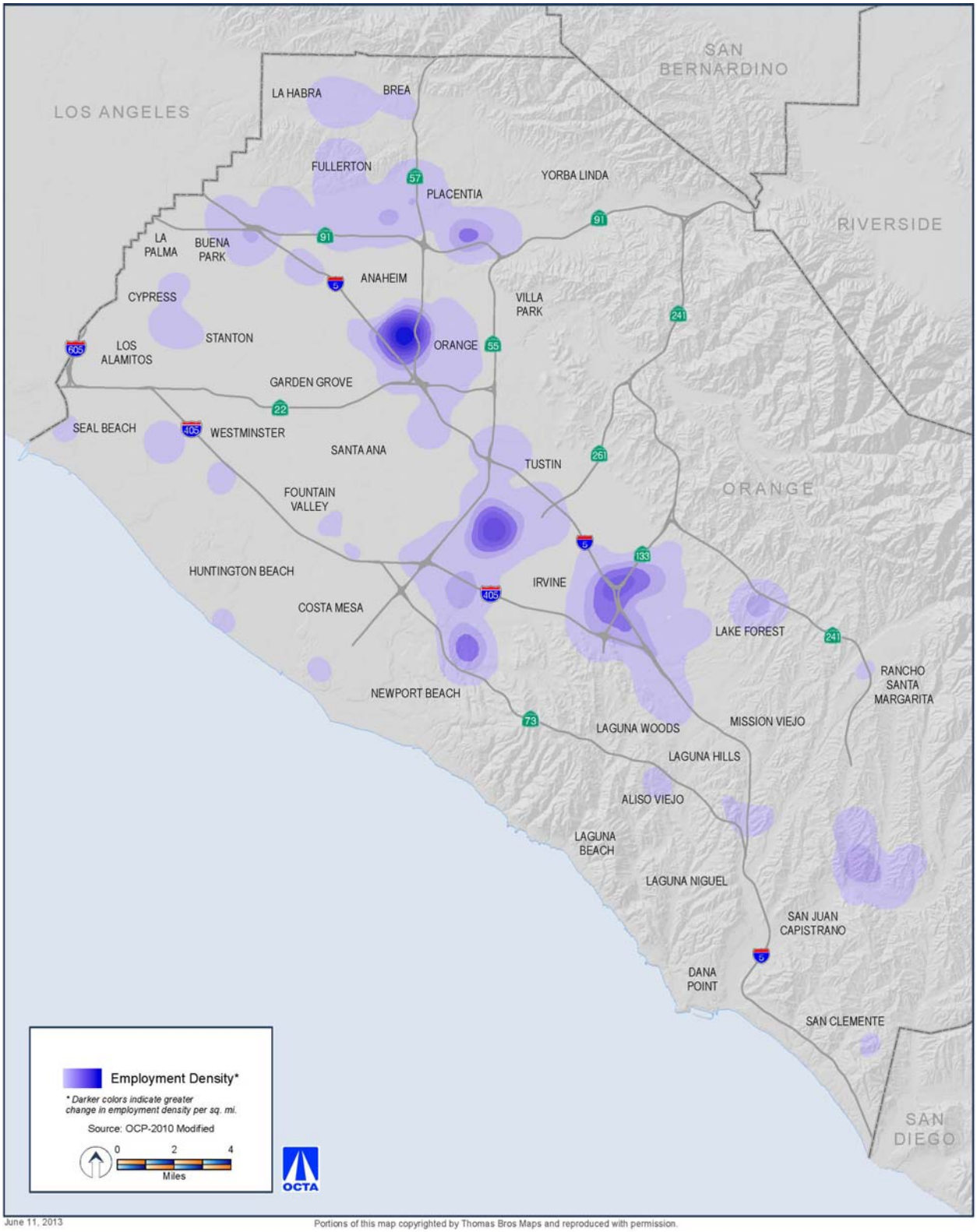
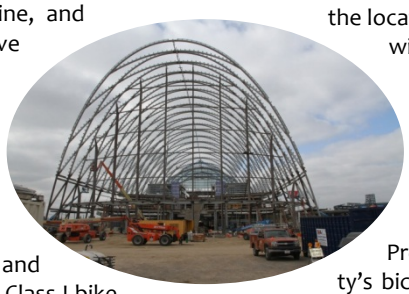


Figure 2-14: 2010 to 2035 Orange County Employment Change

Route 273, an additional intracounty connection between the Laguna Niguel Metrolink station and employment centers in Irvine and Costa Mesa, is planned to begin in the future. This route will take advantage of HOV and tollway facilities to offer express service. Route 722 is also planned as an intercounty express service every 30 minutes during morning and evening commute periods. This route will travel between Santa Ana and Long Beach using State Route 22 (SR-22) for much of the distance. OCTA is examining both customer reaction to service enhancements such as these and opportunities to increase these connections.

Rail Transit

Since 2010, OCTA has purchased new locomotives and rolling stock, constructed turnback and layover facilities, made grade crossing improvements, and has supported increased operational costs associated with higher frequency Metrolink service between Fullerton and Laguna Niguel. Since 2010, 12 additional daily trains operate in Orange County, 10 on the Orange County Line and 2 on the Inland Empire-Orange County Line. In support of expanded Metrolink service, the expansion and improvement of the Fullerton, Orange, Anaheim Canyon, Tustin, Irvine, and Laguna Niguel Metrolink stations have been constructed or are programmed to occur by 2035.



The Anaheim Regional Transportation Intermodal Center (ARTIC) is under construction and anticipated to open in 2014. ARTIC provides a connection between regional rail service and local bus service. Improvements to the Class I bike path along the Santa Ana River at ARTIC will create a connection to another travel mode.

Along with important investments in rail and station capacity, investments are being made to enhance the safety of the rail system. In January 2012, OCTA completed the Railroad Crossing Safety Enhancements Program, which included 52 rail crossing intersections in 8 jurisdictions. Enhancements included new medians, coordinated traffic signals, additional crossing gate arms, new pedestrian swing gates, and improved signage. In addition to the Railroad Crossing Safety Enhancements Program, grade separation of State College Boulevard at the Metrolink tracks is also programmed before 2035.

The Orange County Bridges (OC Bridges) program is designed to address roadway delay and safety hazards resulting from increased goods movement activity from the Ports of Long Beach and Los Angeles across Orange County by train. The OC Bridges program plans grade-separated crossings at Raymond Avenue, State College Boulevard, Placentia Avenue, Kraemer Boulevard, Orangethorpe Avenue, Tustin Avenue/Rose Drive, and Lakeview Avenue. Construction of all of these grade separation projects will be completed by 2016.

Implementation of Positive Train Control began on Metrolink trains in early 2014. This technology tracks the location and speed of passenger trains and will automatically slow or stop them to avoid collisions. All Metrolink trains will have positive train control installed by 2015.

Regional Bikeways

The Bicycle Corridor Improvement Program seeks to enhance Orange County's bicycle infrastructure by providing funds for jurisdictions to construct new bicycle facilities and trails. Projects that improve connectivity between employment and activity centers, close gaps in the current network, have a direct relationship to transit, and have been included in a bicycle plan are prioritized in this program. Several bicycle projects are included in the FTIP and will be constructed before 2035.

In May 2014 Caltrans began administering the Active Transportation Program. Goals of the Active Transportation Program include increasing the proportion of trips accomplished by biking and walking, increasing safety and mobility for non-motorized users, and advancing the active transportation efforts of regional agencies to achieve GHG reduction goals. Through combined federal and State funding, $129.5 million is available competitively through the Active Transportation Program each year statewide. Local jurisdictions can apply for these competitive grants.

Performance of the 2035 Baseline Scenario

The 2035 Baseline Scenario shows what the transportation system and travel conditions would be like in 2035 given the expected growth and modest transportation improvements. This analysis sets the bar for determining the effectiveness of additional investments. The 2035 Baseline Scenario uses the existing transportation system as a given, and adds only those projects and services described above, which are approved and fully funded in the FTIP.

As described earlier and illustrated on Figures 2-6 through 2-14, population, housing, and employment are anticipated to grow in Orange County. This demographic growth, and similar growth in the region, will increase travel demand within and through Orange County. Given the baseline transportation system improvements and increased travel demand, traffic congestion in 2035 (total vehicle hours of delay) is still projected to increase significantly over 2010 conditions. At the same time, vehicle miles traveled increase while travel speeds decrease. In short, Orange County's growth will generate travel demand that exceeds the capacity of the 2035 Baseline Scenario. Travel demand exceeding capacity will mean congestion on Orange County's regional highways, local roadways, rail lines, and bus systems. Congestion is apparent to most Orange County residents when it forms on the regional highway network. Figure 2-15 illustrates anticipated traffic congestion in 2035 on Orange County freeways during the morning commute. Figure 2-16 illustrates traffic congestion on HOV and toll lanes during the same period. Table 2.1 offers a detailed look at the anticipated impacts of growth on the Baseline 2035 system compared to the 2010 base year, which is illustrated on Figure 2-17.

As shown on Figure 2-17, there is an overwhelming need to improve travel times and reduce delays on the Orange County transportation system. Without further improvements, by 2035 in the morning peak period, nearly every freeway will be congested, with only a few free-flowing segments: along State Route 55 (SR-55) south of I-405, eastbound on SR-91, and southbound on I-5 near the southern County border.

In contrast, approximately 27% of the freeway system in Orange County will be consistently congested, while 29% will be severely congested. In fact, every freeway is projected to have segments of severe congestion, most notably along I-5 in both the southern and central regions of the County, including Tustin, Santa Ana, and Anaheim. I-405 is anticipated to experience severe congestion approaching Orange County from the north through Seal Beach and Huntington Beach, as well as northbound through Irvine. SR-55 shows severe congestion where it intersects I-5, while SR-91 has severe congestion through Orange and Anaheim and SR-57 is severely congested north of SR-91. Congestion on regional highways may divert automobile trips onto the arterial network, leading to congestion and delay on these facilities.

Countywide, the demand for travel by transit increases in the baseline scenario. The baseline scenario increases bus transit and Metrolink service based on available funding, but without greater frequency and last-mile connectivity, planned transit in Orange County will not be able to absorb the additional travel demand of commuters.

Table 2.1: Performance of Regional Highways and Arterials in the 2010 Base Year and 2035 Baseline Scenario

	2010 Base Year	2035 Baseline (HOV 2+)[a]	2035 Baseline (HOV 3+)[a]	Change 2010 to 2035 (HOV 3+)
Daily Transit Trips	133,469	164,443	164,145	+23%
Daily Vehicle Trips	8,170,633	9,299,399	9,318,983	+14%
Total Vehicle Hours of Delay	274,646	664,575	732,068	+167%
Daily Vehicle Miles Traveled	63,404,082	80,822,517	81,107,114	+28%
Average Speed – Freeway Peak	40.4 mph	36.6 mph	34.4 mph	-15%
Average Speed – HOV Peak	48.5 mph	44.5 mph	57.4 mph	+18%
Average Speed Arterial Peak	30.3 mph	23.3 mph	22.7 mph	-25%

[a] The performance of the 2035 Baseline Scenario was modeled assuming both an HOV policy of HOV 2+ occupancy and HOV 3+ occupancy. While the current regulations require two people in a vehicle to use carpool lanes, meeting the Federal Highway Administration (FHWA) performance standards may require a three-person-per-carpool requirement in the future. Consequently, the 2035 Baseline was analyzed under both conditions to illustrate how the varying HOV policies will affect the HOV and general-purpose lane performance. Caltrans is the owner and operator of the State Highway System and has the authority to make operational changes such as occupancy requirements. Typically, Caltrans works collaboratively with local and regional stakeholders when making operational changes.

HOV = high-occupancy vehicle
mph = miles per hour

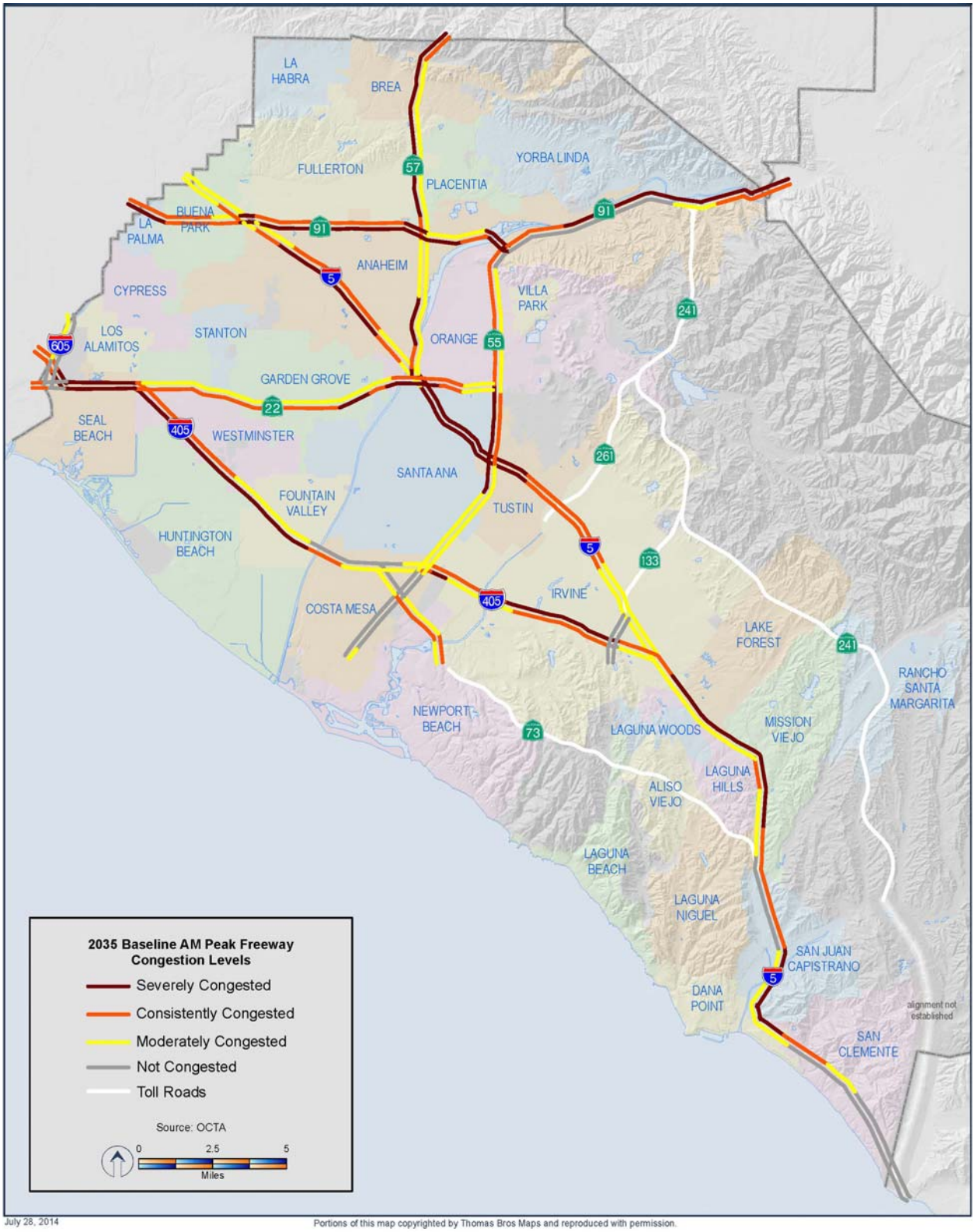


Figure 2-15: 2035 Baseline Scenario AM Peak Freeway Congestion Levels

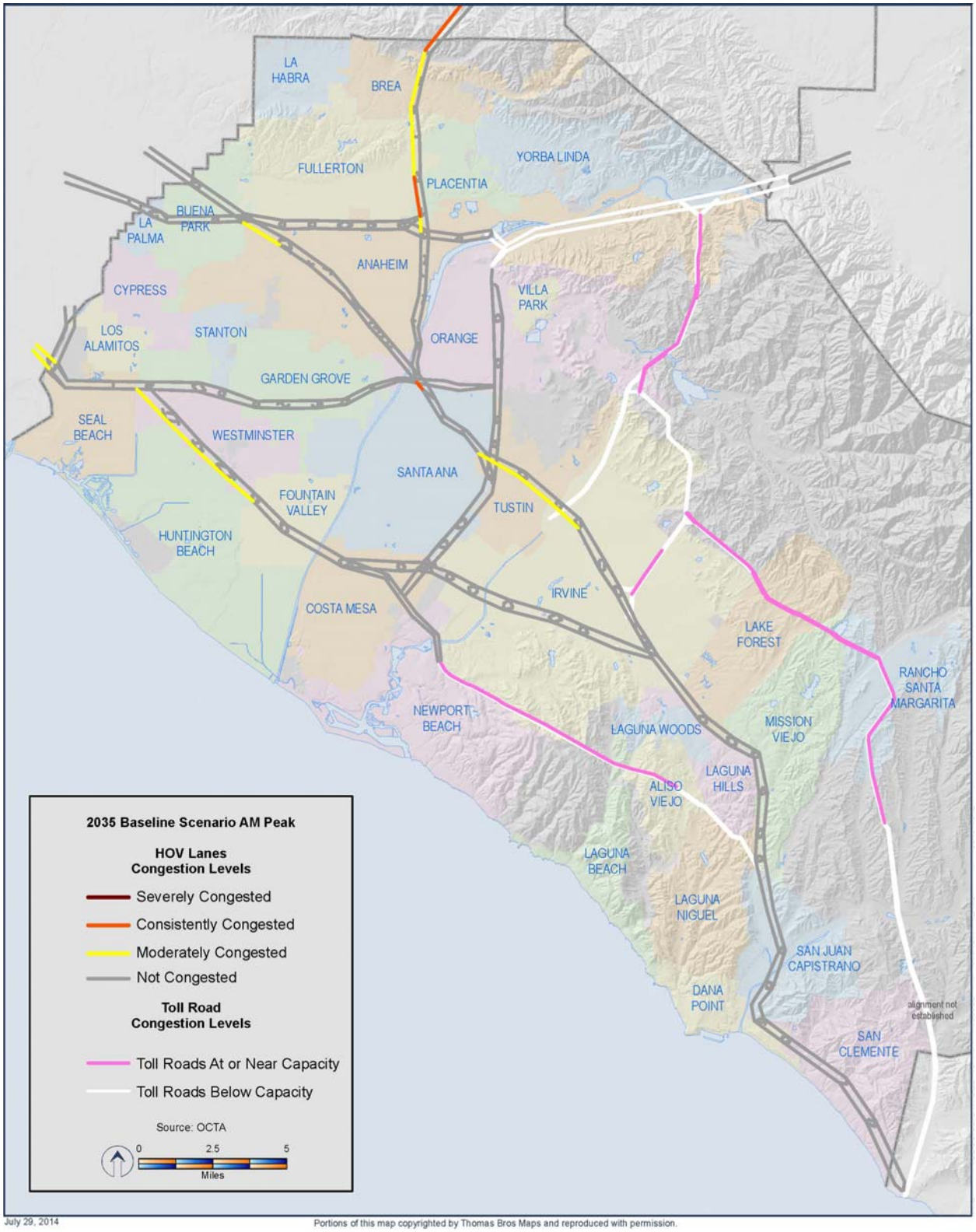


Figure 2-16: 2035 Baseline Scenario AM Peak HOV Lanes and Toll Road Congestion Levels

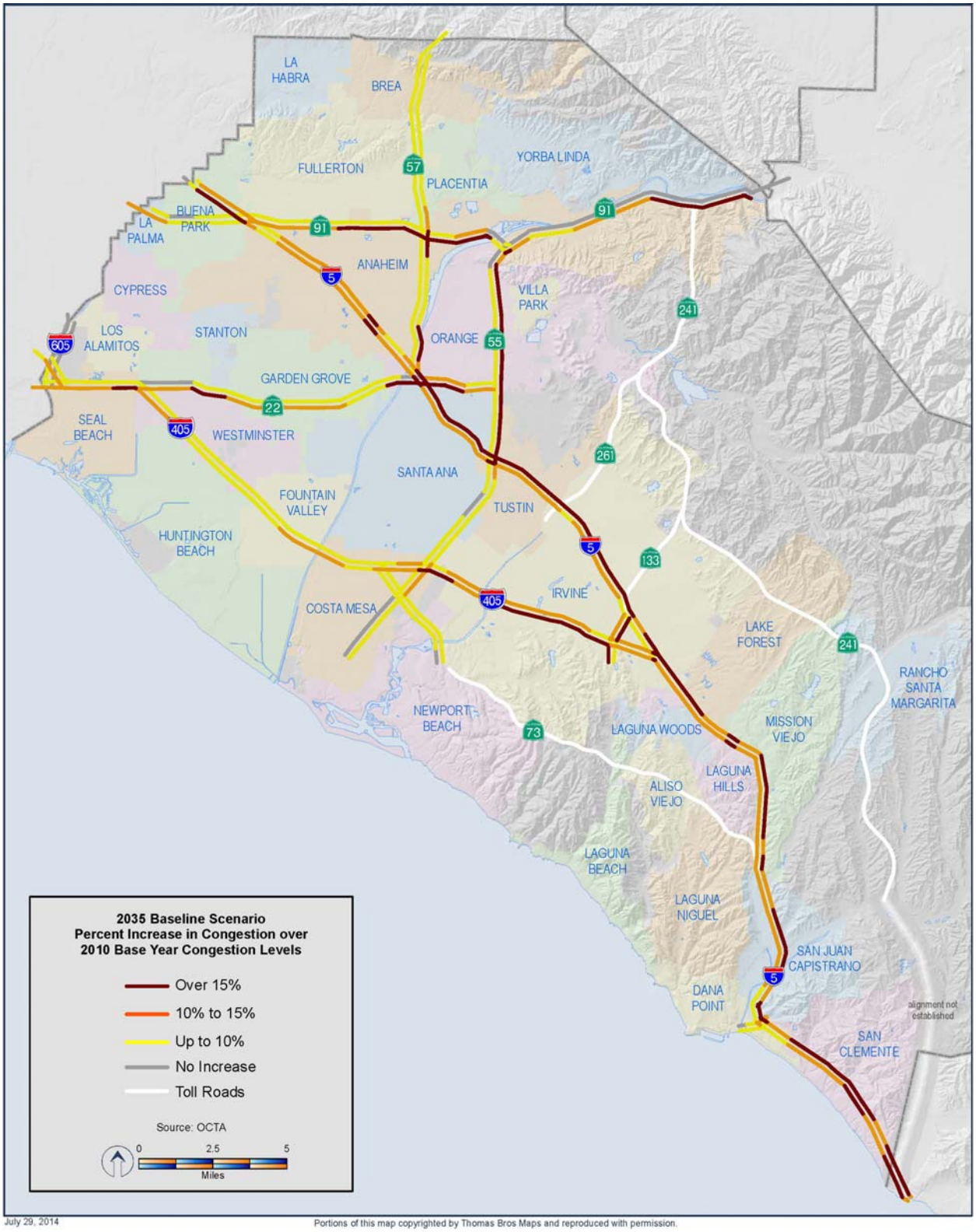


Figure 2-17: 2035 Baseline Scenario AM Peak Freeway Congestion Levels – Percent Increase in Congestion Over 2010 Base Year

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Chapter 3: Preferred and Conceptual Plans

Outlook 2035 conceives a plan that completes Measure M2 transportation improvements and adds discretionary projects within available funding limits to increase system capacity, reduce congestion, and improve mobility (i.e., the Preferred Plan). Recognizing that there will be transportation demands that cannot be met with available funding, Outlook 2035 also outlines a Conceptual Plan to address ongoing needs, develop action plans, conduct additional studies, continue public outreach, and monitor emerging technologies.

Today's Financial Picture

The investments planned for the next 20+ years must be made within available financial resources, with funds included for both project and service delivery as well as ongoing maintenance. Available funding for Outlook 2035 is estimated to total approximately $36.1 billion (year of expenditure), which comes from multiple revenue sources including local, State, and federal funds. Figure 3-1 illustrates projected revenues for each source between 2015 and 2035.

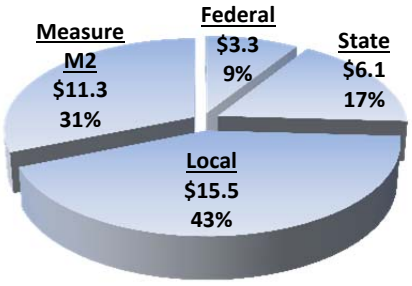


Figure 3-1: Fiscal Years 2015–2035 Revenue Forecast (in billions)

Local funds include Measure M2 dollars, which is the largest local source of dollars at $11.3 billion between Fiscal Years 2015 and 2035. (While the Measure M2 sales tax is authorized through 2041, for planning purposes, the estimate of available revenue for Outlook 2035 covers the period from 2015 to 2035.) Other local funding totals approximately $15.5 billion and comes from multiple sources, including retail sales tax, toll revenues on the transportation corridors and 91 Express Lanes, OCTA bus fares, and local jurisdiction investment in transportation projects and maintenance. Collectively, these local revenues total approximately 75% of the total revenues included in Outlook 2035.

State funding totaling approximately $6.1 billion also comes from several sources, including gas taxes, voter-approved funds for transit capacity, enhancement and safety, and program funding for things like freeway service patrol and GHG emission reductions.

Federal funds are projected to total approximately $3.25 billion and are derived from programs whose purposes vary from funding transit (both capital and operations) to highway construction and rehabilitation, alternative transportation, reducing traffic congestion, and improving air quality.

Funding Commitments, Considerations, and Uncertainties

While $36.1 billion is projected to be available from local, State, and federal dollars, a majority of these funds are already committed for specific projects and programs through the FTIP and Measure M2. Only approximately $9 billion out of the $36.1 billion is expected to be available for new discretionary projects, the majority of which is controlled by local jurisdictions and the Transportation Corridor Agencies. The result is that roughly one-quarter of the $9 billion is available as discretionary funding for OCTA to program through Outlook 2035.

In addition to existing commitments, it is important to consider the variability and uncertainty of several funding sources. For example, Measure M2 funds are impacted by macro-economic forces. The Measure M2 initial revenue projection was $24 billion; however, the recession fall-out dropped those projected revenues to an estimated $15 billion (approximately $11.3 billion from 2015 through 2035).

Further, the purchasing power of transportation dollars is declining due to the flat federal tax on fuel coupled with increasing inflation. Federal funds are especially unpredictable at this time because the current federal transportation authorization expires September 30, 2014, and the federal fuel tax collection authority expires September 30, 2016.

Similarly, State funds are variable and subject to reductions from macro-economic influences and State budget impacts. One example is the State Transit Assistance funds, which have been reduced over time and fluctuate from year to year. Funding for system maintenance is also not guaranteed. There is a $269 million shortfall for transportation maintenance statewide. When OCTA completes a freeway project, the overall life of the freeway is improved for that portion. While this is only true for specific freeway

improvement projects and segments, these projects help to preserve the existing system and benefit the community.

The State Highway Operation and Protection Program (SHOPP)—which is not reflected in this LRTP—designates funds for preservation of the State highway system, but has insufficient funding to preserve and maintain the State's existing transportation infrastructure. While these are State issues, they have an impact on the freeways in Orange County. Over the last 10 years, the projected annual maintenance needs for the State Highway System have more than tripled, and State funding allocations to maintain the State Highway System have not been able to keep pace with the increased maintenance needs. A recent report from the California State Transportation Agency suggests seeking new sources of long-term funding to meet future transportation needs, such as mileage-based user fees and expanded pricing and express lanes.

In summary, the transportation improvements included in Outlook 2035 were developed within the parameters of available funds, taking into consideration existing funding commitments and future uncertainties. This important financial groundwork creates a realistic framework upon which the Preferred and Conceptual Plans are built.

The Preferred Plan

The Preferred Plan sets forth the projects and programs that can be completed with funding expected to be available through 2035. Based on the goals and objectives, the Preferred Plan completes Measure M2 commitments and proposes projects to improve performance, expand choices, and support sustainability of Orange County's transportation system.

Measure M2 commitments encompass a range of projects and activities, including reducing freeway bottlenecks and implementing Metrolink expansion and gateways, local community bus and guideways, arterial capacity improvements, signal synchronization projects, and advancing environmental stewardship and mitigation.

Beyond Measure M2 commitments, discretionary projects that are part of the Preferred Plan include limited stop bus and vanpool service on freeways and tollways to increase overall facility usage and average vehicle occupancy, as well as enhanced bus service in high-demand areas. Regional highways are enhanced through elimination of bottlenecks, improved HOV facilities, and increased connectivity between price-managed facilities (e.g., SR-91 Express Lanes and State Route 241 [SR-241]). Recommended bikeway and pedestrian projects on local streets are included to support new travel choices and reduce vehicular demand.

Compared to the 2010 base year conditions, the Preferred Plan improvements will result in the addition of:

- 176,000 annual hours of new bus and streetcar service on key, high-demand corridors
- 220,000 annual hours for enhancing bus routes and maintaining on-time performance
- 20 weekday Metrolink trains
- 650 miles of bikeways
- 820 lane-miles on the MPAH network
- 206 freeway lane-miles
- 236 tollway lane-miles
- 450 vanpools and station vans

Detailed descriptions, lists, and maps of the Preferred Plan projects follow.

Regional Highways

The highway projects included in the Preferred Plan focus on eliminating bottlenecks and coordination at inter-county connections. HOV operational improvements and HOV-to-HOV connectors are also part of the freeway component of the Preferred Plan and are intended to encourage carpooling. Highway projects also include safety improvements, sound walls, and motorist aid services. A full list of regional highway projects in the Preferred Plan is detailed in Table 3.1. Maps depicting the major freeway improvements are also provided as Figure 3-2.

Arterials and Local Roads

Several arterial roadway programs in the Preferred Plan provide the incentive to implement the MPAH for overall improved performance. Other arterial and local road projects include overpasses, intersection improvements and signal coordination, and transportation studies (e.g., the planning and engineering of needed improvements). Importantly, the Preferred Plan includes funds for arterial pavement rehabilitation, which helps achieve the community's desire to maximize and maintain the existing investment in arterials and local roads. Completion of the MPAH, signal synchronization, and pavement rehabilitation will improve the efficiency of Orange County's arterial roadways (which carry about half of the daily traffic volume), thus reducing delay and GHG emissions. The complete Preferred Plan list of arterial and local road projects is shown on Table 3.2 with a related map on Figure 3-3.

Table 3.1: Regional Highway Component of the Preferred Plan

Project	Description
Freeway Service Patrol and Callbox Program	Countywide Freeway Service Patrol and Callbox Program
Interstate 5 (I-5)	Add one mixed-flow lane in each direction on I-5 from Avery Parkway to Alicia Parkway, extend second HOV lane from El Toro Road to Alicia Parkway, and reconstruct Avery Parkway and La Paz Road interchanges
	Add one mixed-flow lane in each direction on I-5 between I-405 and SR-55
	Add one HOV lane in each direction on I-5 between Avenida Pico and San Diego County Line
	Access and merging improvements on I-5 between El Toro Road and Los Alisos Boulevard
	Add southbound HOV on-ramp and northbound HOV off-ramp on I-5 at Barranca Parkway
	Add one mixed-flow lane each direction on I-5 between SR-57 and SR-91
State Route 55 (SR-55)	Add interchange and auxiliary lanes on SR-55 at Meats Avenue
	Add one mixed-flow lane in each direction on SR-55 between I-405 and I-5
	Add one mixed-flow lane in each direction on SR-55 between I-5 and SR-22 and operational improvements between SR-22 and SR-91
State Route 57 (SR-57)	Add northbound auxiliary truck climbing lane on SR-57 between Lambert Road and Los Angeles County Line
	Interchange improvement at SR-57/Lambert Road
	Add one northbound mixed-flow lane on SR-57 between Orangewood Avenue and Katella Avenue
State Route 73 (SR-73)	Construct HOV connector at SR-73/I-405
	Construct interchange at SR-73/Glenwood Drive with collector-distributor to Aliso Creek
	Add one HOV lane each direction on SR-73 between MacArthur Boulevard and I-405
State Route 91 (SR-91)	Construct connector from northbound SR-241 to eastbound SR-91 HOV/HOT lane and between westbound SR-91 HOV/HOT lane to southbound SR-241
	Add one eastbound mixed flow lane on SR-91 (from SR-57 to SR-55), add one westbound mixed-flow lane (from Glassell Street to State College Boulevard), and interchange improvements at Glassell Street, Tustin Avenue, Lakeview Avenue, and northbound SR-57
	Construct interchange and overcrossing at SR-91/Fairmont Boulevard
	SR-91 Corridor Improvement Project between SR-241 and Pierce Street (Riverside County)
State Route 133 (SR-133)	Construct interchange at SR-133/Trabuco Road
State Route 241 (SR-241)	Construct interchange at SR-241/Jeffrey Road
	Construct interchange at SR-241/Weir Canyon Road
	Interchange improvement at SR-241/SR-261
	Add one mixed-flow lane in each direction on SR-241 between SR-261 and Portola Parkway
	Add two mixed-flow lanes in each direction on SR-241 between Portola Parkway and Santa Margarita Parkway
	Add one mixed-flow lane in each direction on SR-241 between Santa Margarita Parkway and Oso Parkway
Interstate 405 (I-405)	Restripe I-405 to continuous access HOV lane between I-5 and SR-73
	Add one mixed-flow lane in each direction on I-405 between SR-73 and I-605
	Add one mixed-flow lane in each direction on I-405 between I-5 and SR-55 and southbound auxiliary lanes from University Drive to Irvine Center Drive
Interstate 605 (I-605)	I-605 at Katella interchange improvement

Note: Project descriptions are subject to change through the project development process.
HOT = high-occupancy toll
HOV = high-occupancy vehicle
SR-22 = State Route 22
SR-261 = State Route 261

Table 3.2: Local Roadway Component of the Preferred Plan

Project	Description
Master Plan of Arterial Highways Projects (MPAH)	OCTA funding of local project completing MPAH
Regional Traffic Signal Synchronization Program	OCTA funded and facilitated coordination of traffic signals across jurisdictional boundaries
Arterial Pavement Rehabilitation Program	Countywide preservation of pavement quality
17th Street Grade Separation	Grade separation of 17th Street at Metrolink/freight rail tracks
Santa Ana Boulevard Grade Separation	Grade separation of Santa Ana Boulevard at Metrolink/freight rail tracks

Note: Project descriptions are subject to change through the project development process.
OCTA = Orange County Transportation Authority

Figure 3-2: 2035 Preferred Scenario Regional Highway Improvement Areas

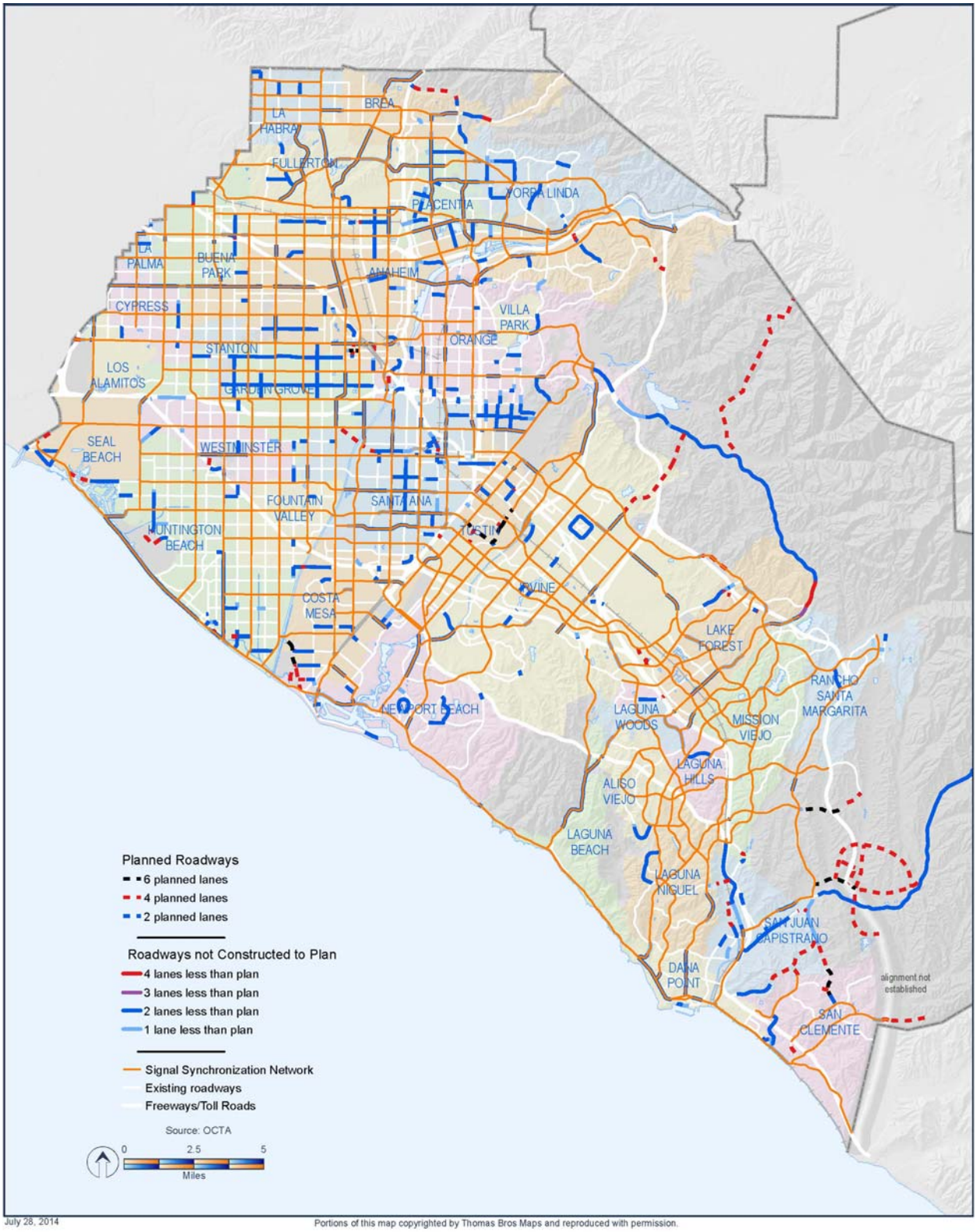


Figure 3-3: 2035 Preferred Scenario Roadway Improvements

Bus Transit

In 2011, OCTA completed a Transit System Study that identified geographic areas likely to provide the most efficient use of transit resources. This led to the Short-Range Transit Plan, which is a guiding document for improving service on local routes that identified potential new routes for limited-stop service. New transit service and expanded service hours are planned for areas with high ridership potential (e.g., high-density housing or employment), consistent with the recommendations of the Transit System Study. As mentioned previously, OCTA has begun implementing limited-stop service with the Bravo! service and planned intracounty and intercounty express routes. These services are expanded in the Preferred Plan.

In addition to new Bravo! and express bus routes, there is a noteworthy improvement to local bus route frequencies through high-demand areas within the County. Transit assistance for the elderly and handicapped in addition to vanpool and park-and-ride program expansion are also included in the Bus Transit element of the Preferred Plan. The list of bus transit projects in the Preferred Plan is detailed in Table 3.3, and a map depicting transit improvements is provided as Figure 3-4.

Rail Transit

As discussed previously, Figures 2-7 through 2-15 illustrate population, housing, and employment density changes. Density is projected to increase throughout the area served by Metrolink rail transit. In order to serve this increased demand, the Metrolink Service Expansion Program will continue to provide a higher frequency of rail service through 2035. Specifically, 4 additional trains will operate daily on the Orange County Line and 4 additional trains will operate daily on the 91 Line over the baseline condition. In total, 20 additional trains will operate in Orange County above the 2010 service levels. The program also provides for safety and operational improvements to the railroad infrastructure necessary to support existing and expanded train service, including grade-crossing improvements, track improvements, signal and communications system improvements. Implementation of positive train control to reduce the potential for accidents and the purchase of new rolling stock with advanced energy-absorbing designs to reduce the chance of injuries in an accident will be completed in the Preferred Plan.

As mentioned previously, expansion and improvement of the Fullerton, Anaheim, Anaheim Canyon, Orange, Tustin, Irvine, and Laguna Niguel Metrolink stations are planned to accommodate the additional train service. The ARTIC station in Anaheim will open in 2014. In the Preferred Plan, ARTIC will accommodate connections with a planned streetcar route to major activity centers in Anaheim including neighborhoods, work, recreation, convention, entertainment, and sports venues. In its full buildout, ARTIC will provide a connection between regional rail service, high-speed rail (the California High-Speed Rail Phase 1 plan includes a one-seat ride between San Francisco and Los Angeles/Anaheim), the local streetcar, local bus service, the Santa Ana River regional bikeway, and other transportation services.

Table 3.3: Bus Transit Component of the Preferred Plan

Project	Description
Implement Short-Range Transit Plan (Capital)	Purchase of new buses necessary to implement Short-Range Transit Plan
Implement Short-Range Transit Plan (Operations)	Expansion of bus service hours and routes consistent with the Short-Range Transit Plan
Senior Mobility Program	Service to fill the gap between fixed-route and paratransit services
Safe Transit Stops Program	Provide additional amenities to ease the transfer between bus lines and improve safety for bus riders
Community-Based Circulators Program	New transit routes within Orange County communities
Dana Point	Summer weekend trolley system along Pacific Coast Highway
Huntington Beach	Special event shuttle during US Open of Surfing competition and Fourth of July
La Habra	Year-round fixed route service through La Habra connecting to St. Jude Hospital and the Fullerton Transportation Center
Laguna Beach	New off-season trolley service through Laguna Beach
Lake Forest	Connection between Irvine train station and Oakley, Inc. in Foothill Ranch
Lake Forest	Connection between Irvine train station and Ossur Americas in Foothill Ranch

Figure 3-4: 2035 Preferred Scenario Bus Service Improvements

Streetcars

Anaheim Rapid Connection

The Anaheim Rapid Connection is a 3.2-mile streetcar route that will provide a high-capacity, frequent, and easy-to-use last mile connection to ARTIC, high-density development in the Platinum Triangle, The Anaheim Resort®, and the Anaheim Convention Center.

The streetcar is proposed to have two stops along Katella Avenue in the Platinum Triangle, one stop at Anaheim Garden Walk, one stop near the Disneyland and Disney California Adventure entrance plaza, and one stop at the Anaheim Convention Center. Anaheim Rapid Connection could begin operation as early as 2018. The City of Anaheim has identified potential funding sources for Anaheim Rapid Connection operations and maintenance, including farebox revenue, advertising, retail, and dedicated funding from the Anaheim Tourism Improvement District.

Santa Ana/Garden Grove Fixed Guideway Project

A streetcar is also proposed to enhance the last mile connection between the Santa Ana Transportation Center and the Santa Ana Civic Center. The streetcar would operate on a 4.1-mile route and connect to a new multimodal transit center in Garden Grove, near the intersection of Harbor Boulevard and Westminster Avenue. The Santa Ana/Garden Grove Fixed Guideway could begin operation as early as 2018.

Rail projects contained in the Preferred Plan are shown in Table 3.4. The maps depicting rail improvements are provided as Figures 3-5 and 3-6.

Regional Bikeways

OCTA has become more active in regional bikeway planning in recent years by participating in the Regional Bikeways Planning initiative, which is a countywide effort among OCTA, local jurisdictions, and bicycle stakeholders. OCTA roles include facilitating planning of the regional bikeways network, coordinating both internal and external agencies, and addressing regional priorities. While OCTA initiates and coordinates this planning process, it is the local jurisdictions that bring projects from concept to concrete.

To date, a Bikeways Strategy has been completed for the 1st, 2nd, and 4th Supervisorial Districts in Orange County, with Bikeways Strategies expected for Districts 5 and 3 in 2014 and 2015, respectively. An example of projects that will occur as a result of OCTA's regional bikeway planning is the 66-mile bicycle loop. This loop will close gaps that currently exist between the Santa Ana River Trail, the San Gabriel River/Coyote Creek, and the Pacific Coast Highway. Regional Bikeway projects contained in the Preferred Plan, along with a related map, are shown on Table 3.5 and Figure 3-7, respectively. In addition to this planning effort, OCTA completed the Metrolink Station Nonmotorized Accessibility Strategy in June 2013 to improve first and last mile connections to Metrolink stations.

Transportation System Management & Transportation Demand Management

There is a system challenge in Orange County relating to lack of available right-of-way. Simply put, Orange County does not have the space to continue adding lanes—and therefore capacity—to the existing footprints of regional highways and arterials. For example, a recent study showed that to meet expected travel demand on Newport Boulevard in the Cities of Costa Mesa and Newport Beach, the roadway would need to double in size from its current 6-lane configuration to 12 lanes, which is an impossibility given the existing

Table 3.4: Rail Transit Component of the Preferred Plan

Project	Description
Metrolink Capital	Purchase of new equipment to facilitate expansion plans
Metrolink Operations	Increase from 54 weekday trains to 62 weekday trains through Orange County
Anaheim Rapid Connection Fixed Guideway	Proposed streetcar connection between the Anaheim Regional Transportation Intermodal Center and popular destinations in Anaheim
Santa Ana/Garden Grove Fixed Guideway	Proposed streetcar between Santa Ana train station, through Santa Ana, and connection to a new transportation center in Garden Grove
Transit Extensions to Metrolink Program (Operations)	Improved rubber tire last-mile connections between Metrolink stations and nearby employment or residential centers

Table 3.5: Bikeways & Transportation Demand Management Component of the Preferred Plan

Project	Description
Vanpool Operations	Continued support and expansion of vanpool options
OC Bikeways Projects	Improved connections between Orange County bike infrastructure and to other travel modes

Figure 3-5: 2035 Preferred Scenario Metrolink and Fixed Guideway Improvements

Figure 3-6: 2035 Preferred Scenario Railroad Grade Separations

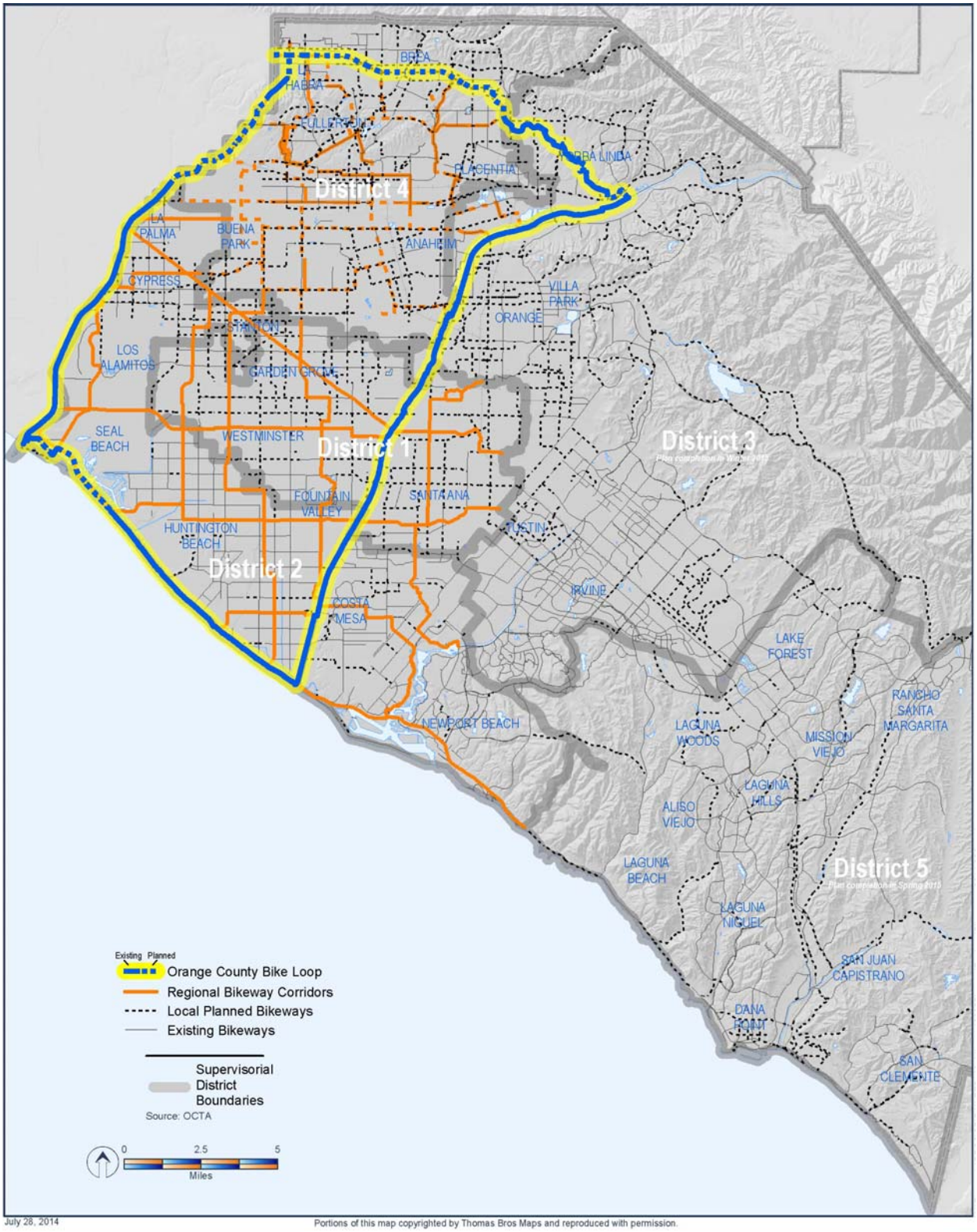


Figure 3-7: 2035 Preferred Scenario Bikeway Improvements

land uses. That study illustrates the point that we can't build our way out of traffic congestion. However, projects that manage transportation demand and systems are one way to address this challenge.

Transportation System Management (TSM)

TSM seeks to improve the efficiency of existing facilities through the application of technical innovations and by minimizing sources of nonrecurring delay. For regional highways, TSM includes hot-spot projects previously described that address the geometric issues that cause congestion. In addition, Measure M2 currently funds and will continue to fund the Freeway Service Patrol. This program allows incidents to be quickly removed from the regional highways, thereby limiting the amount of time that incidents reduce a facility's capacity. For arterial roadways, system management is supported by the Regional Traffic Signal Synchronization Program, which coordinates operation of Orange County's traffic signals across city boundaries using intelligent transportation systems, resulting in improved mobility for the region. Improved freeway ramp metering to better coordinate with synchronized arterials could improve the performance of both regional highways and arterials. In addition, local revenue return provides money to local jurisdictions to fund their capital improvement plans to address arterial hot spots. These programs ensure that funding support is in place in the future to maximize the utility of and reduce the delay on Orange County's arterial roadway network.

Transportation Demand Management (TDM)

TDM policies reduce travel demand for both the regional highways and arterial roadways. In addition to providing financial support for local TDM measures, OCTA is the designated Congestion Management Agency for Orange County, responsible for reporting on and monitoring of the Congestion Management Program (CMP). As part of the CMP, cities were required to adopt a TDM ordinance. While adoption of a TDM ordinance is no longer required, most cities still maintain the ordinances previously implemented. These ordinances are designed to support the provision of infrastructure at worksites that enable employees to choose an alternative to solo driving. OCTA further supports TDM by supporting first-mile/last-mile travel through StationLink buses, planning support for bikeway improvements, administration and financial support of the vanpool program, maintaining a ride-matching database for commuters seeking a carpool or vanpool, providing training for employee transportation coordinators, and the Guaranteed Ride Home Program.

OCTA plans to undertake a number of initiatives to further encourage TDM activities, including the expansion of vanpools (which will require expanded park-and-ride lots), active transportation integrated as a first-mile/last-mile solution, and fulfilling countywide initiatives through the SCS, thereby linking land use and transportation. To integrate active transportation as a first-mile/last-mile solution, OCTA has completed the Nonmotorized Metrolink Accessibility Study. Examples of strategies to increase coordination of land use and transportation include: supporting transit-oriented development; promoting land use patterns that encourage the use of alternatives to the single-occupant automobile; eliminating bottlenecks on freeways and arterials; and applying Complete Street practices to arterials and freeways to maximize efficiency.

Multi-Modal Systems Within Systems Offer Choice and Maximize Resources

The various modes that comprise Orange County's transportation system are described separately for clarity above. However, the Preferred Plan is a deliberate strategy to integrate modes into one holistic mobility network. The integration of modes improves traveler choices, speed, and reliability.

As evidenced by the lists of transportation improvements, the Preferred Plan includes a comprehensive and integrated mobility commitment. For example, more Metrolink trains on the Orange County Line will reduce vehicular demand on I-5, better pedestrian and bikeway connections to Metrolink stations will increase Metrolink ridership, and improved bikeway connections will reduce demand on city streets.

Regional highway improvements provide greater capacity for commuters and also allow efficient passage for goods and materials, thereby supporting the regional economy. In addition, regional highway improvements include managed lanes that increase passenger ridership, system efficiency, and air quality improvements.

Further, these projects and services result in a multi-layered transportation system that provides better connectivity between modes, multiple use of the same infrastructure, and improved travel time for all travelers. They can be thought of as "systems within systems" (i.e., transportation systems operating within the same corridor and sharing similar infrastructure in order to enhance access to travel choices while improving the efficiency of infrastructure investments). One desired outcome of the Preferred Plan is to consider how a commute trip today made entirely by single-occupant passenger cars would in the future be completed with a bicycle ride to a Metrolink station, then to a regional stop, followed by a bus ride to the final destination. The Preferred Plan allows for these choices and this type of trip linkage. Other examples of systems within systems that integrate different modes of travel include limited stop bus and vanpool service on freeways and express lanes, and express trains offering limited stop service on rail corridors (with local trains serving all stations).

Performance of the Preferred Plan

Measuring Success

Performance measures provide a tool for decision-makers and the community to understand and assess how well the various LRTP scenarios "perform." These measures help demonstrate how the Preferred Plan element of the LRTP benefits the established goals and objectives for the Orange County transportation system. For several of the performance measures, quantitative analysis is conducted by modeling the Preferred Plan's travel conditions, and comparing those conditions with a Baseline Scenario. For other performance measures, qualitative indicators are used (e.g., consistency with Measure M2, enhanced active transportation [bike lane miles, bike share stations and bike lockers], increases in StationLink routes, investment in maintenance projects, and advocacy such as letters of support to SCAG on behalf of local projects). The resulting outcomes of the performance measures, when applied to the Preferred Plan, provide evidence to demonstrate the success of those plans.

The performance measures are shown in Table 3.6, with the linkage to the established goals.

Seeing Results

The Preferred Plan's performance in improving mobility is measured by indicators that tie to the goals and objectives. These indicators include vehicle hours of delay, vehicle miles traveled, and travel speeds as well as meeting the established policy goals (e.g., delivery of Measure M2). With the Preferred Plan, the travel conditions in 2035 show improvement across all but one performance measure when compared to the 2035 Baseline Scenario, as shown in Table 3.7.

Table 3.6: 2035 Preferred Plan Performance Metrics

Goal	Performance Measure
Deliver on Commitments	Measure M2 projects included in the scenario
	M2020 projects included in the scenario for completion by 2020
Improve Performance	Daily hours of delay due to congestion
	Average peak period freeway, HOV, and roadway speeds
	Daily transit trips
Expand Choices	Expenditure by mode; service miles of each mode
	Number of new routes (beyond baseline routes) and total revenue vehicle-hour growth
	Number of new linkages between transit and last-mile options (i.e., shuttles, bus transit links to Metrolink, bicycle and pedestrian amenities)
Support Sustainability	Investment in maintenance; Measure M2 Local Fair Share dollars
	Number of High Quality Transit Corridors and their associated frequencies of service
	Acres of environmental mitigation lands; Investment in Project X
	Demonstrate a balanced budget

HOV = high-occupancy vehicle

Table 3.7: Results of the Preferred Plan

	2035 Baseline Scenario	2035 Preferred Plan	Change from Baseline
Daily Transit Trips	164,145	189,407	+15.4%
Daily Vehicle Trips	9,318,983	9,293,054	-0.3%
Total Vehicle Hours of Delay	732,068	509,441	-30.4%
Daily Vehicle Miles Traveled	81,107,114	81,708,206	**+0.7%**
Average Speed – Freeway Peak	34.4 mph	38.9 mph	+13.1%
Average Speed – HOV Peak	57.4 mph	59.9 mph	+4.4%
Average Speed Arterial Peak	22.7 mph	27.1 mph	+19.4%

Note: HOV modeled at HOV 3-plus in 2035.
HOV = high-occupancy vehicle
mph = miles per hours

The Preferred Plan delivers Measure M2 commitments by including all Measure M2 projects, and prioritizing Measure M2020 projects for funding and early implementation. Transportation system performance is improved through investment in new facilities, expansion of transit services, and improved integration of multiple modes of travel to increase systemwide efficiency and capacity. Transportation choices are expanded for Orange County residents and workers as networks are completed and more connections are made between those networks (gap closures and first-mile/last-mile connections). Taken in total, the projects and programs in the Preferred Plan support a sustainable system—both financially and environmentally—for mobility in Orange County. Table 3.8 provides a detailed analysis of the projects included in the Preferred Plan as they relate to the overall goals and objectives.

The increase in Daily Vehicle Miles Traveled is a function of the County's growth in population and employment. It is important to note that OCTA does not have control over the location, type, or intensity of land use development throughout Orange County. These decisions are the purview of local jurisdictions. Growth in population, employment, and related land uses is at the discretion and under the authority of local agencies. OCTA's role is to coordinate an efficient transportation system, providing improvements within the context of financial and environmental constraints as well as the planned land uses developed by other agencies. Because the Preferred Plan meets the objectives of improved system performance end expanded travel choices with its transportation investments, the total projected vehicle miles traveled increase less than 1 percent from the 2035 Baseline.

Increases in rail and bus transit service, connection of regional bikeways, and focused attention on regional highway and local roadway bottlenecks will improve mobility in Orange County and reduce delay due to congestion compared to the baseline scenario. Even with implementation of the Preferred Plan, however, demand for travel on regional highways will still exceed capacity in 2035. Figure 3-8 illustrates anticipated traffic congestion on Orange County freeways during the morning commute, and reductions in congestion as a result of the Preferred Plan are illustrated on Figure 3-9. Figure 3-10 illustrates traffic congestion on HOV and toll lanes during the morning commute, and reductions to congestion in HOV and toll lanes are illustrated on Figure 3-11.

The Preferred Plan is working toward its goals and objectives, and provides a comprehensive set of improvements to address population growth and anticipated travel demands. As evidenced by its successful performance across several measures, the Preferred Plan is a good plan for OCTA's investment in transportation. However, more things could be done to enhance mobility in Orange County if additional resources become available.

Table 3.8: Meeting Goals and Objectives

	GOALS	Deliver on Commit-ments		Improve Transporta-tion System Performance			Expand Transportation System Choices			Support Sustainability		
	OBJECTIVES	Deliver M2 Projects	Consistency with M2020	Reduce Delay from Congestion	Increase Facility Speeds	Increase Transit Ridership	Invest in New Facilities	Expand Transit Service	Improve Multimodal Integration	Maintain Existing Infrastructure	Support Sustainable Communities Strategies	Implement Environmental Strategies
Regional Highways												
Freeway Service Patrol and Callbox Program		●		●	●						●	●
Add one mixed-flow lane in each direction on I-5 from Avery Pkwy to Alicia Pkwy, extend second HOV lane from El Toro Rd to Alicia Pkwy, and reconstruct Avery Pkwy and La Paz Rd interchanges		●	●	●	●		●		●		●	●
Add one mixed-flow lane in each direction on I-5 between I-405 and SR-55		●	●	●	●						●	●
Add one HOV lane in each direction on I-5 between Avenida Pico and San Diego County Line		●	●	●	●		●		●		●	●
Access and merging improvements on I-5 between El Toro Rd and Los Alisos Blvd		●	●	●							●	●
Add SB HOV on-ramp and NB HOV off-ramp on I-5 at Barranca Parkway				●			●		●		●	
Add one mixed-flow lane each direction on I-5 between SR-57 and SR-91				●	●						●	
Add interchange and auxiliary lanes on SR-55 at Meats Ave				●			●				●	
Add one mixed-flow lane in each direction on SR-55 btwn I-405 and I-5		●	●	●	●						●	●
Add one mixed-flow lane in each direction on SR-55 btwn I-5 and SR-22 and operational improvements btwn SR-22 and SR-91		●	●	●	●						●	●
Add NB auxiliary truck climbing lane on SR-57 btwn Lambert Rd and Los Angeles County Line		●	●	●	●						●	●
Interchange improvement at SR-57/Lambert Rd		●	●	●	●						●	●
Add one NB mixed-flow lane on SR-57 btwn Orangewood Ave and Katella Ave		●	●	●	●						●	●
Construct HOV connector at SR-73/I-405				●			●		●		●	
Construct interchange at SR-73/Glenwood Dr with collector-distributor to Aliso Creek				●			●					
Add one HOV lane each direction on SR-73 btwn MacArthur Blvd and I-405					●		●		●		●	
Construct connector from NB SR-241 to EB SR-91 HOV/HOT lane and btwn WB SR-91 HOV/HOT lane to SB SR-241		●	●	●	●		●		●		●	●
Add one EB mixed-flow lane on SR-91 (from SR-57 to SR-55), add one WB mixed-flow lane (from Glassell St to State College Blvd), and interchange improvements at Glassell St, Tustin Ave, Lake-view Ave, and NB SR-57		●	●	●	●						●	●
Construct interchange and overcrossing at SR-91/Fairmont Blvd		●	●	●			●					●
SR-91 Corridor Improvement Project btwn SR-241 and Pierce St (Riverside County)		●	●	●	●		●				●	●
Construct interchange at SR-133/Trabuco Rd				●	●		●					
Construct interchange at SR-241/Jeffrey Rd				●	●		●					
Construct interchange at SR-241/Weir Canyon Rd				●	●		●					
Interchange improvement at SR-241/SR-261				●							●	
Add one mixed-flow lane in each direction on SR-241 btwn SR-261 and Portola Pkwy				●	●						●	

	GOALS	Deliver on Commit-ments		Improve Transporta-tion System Performance			Expand Transportation System Choices			Support Sustainability		
	OBJECTIVES	Deliver M2 Projects	Consistency with M2020	Reduce Delay from Congestion	Increase Facility Speeds	Increase Transit Ridership	Invest in New Facilities	Expand Transit Service	Improve Multimodal Integration	Maintain Existing Infrastructure	Support Sustainable Communities Strategies	Implement Environmental Strategies
Regional Highways (Continued)												
Add two mixed-flow lanes in each direction on SR-241 btwn Portola Pkwy and Santa Margarita Pkwy				●	●						●	
Add one mixed-flow lane in each direction on SR-241 btwn Santa Margarita Pkwy and Oso Pkwy				●	●						●	
Restripe I-405 to continuous access HOV lane between I-5 and SR-73				●	●				●		●	
Add one mixed-flow lane in each direction on I-405 btwn SR-73 and I-605		●	●	●	●						●	●
Add one mixed-flow lane in each direction on I-405 btwn I-5 and SR-55 and SB auxiliary lanes from University Dr to Irvine Center Dr		●	●	●	●						●	●
I-605 at Katella Interchange improvement		●	●	●							●	●
Arterials and Local Roads												
Master Plan of Arterial Highways Projects		●	●	●	●		●		●		●	
Regional Traffic Signal Synchronization Program		●	●	●	●	●			●		●	
Arterial Pavement Rehabilitation Program									●	●		
17th Street Grade Separation				●			●		●		●	
Santa Ana Boulevard Grade Separation				●			●		●		●	
Bus Transit												
Senior Mobility Program		●	●				●	●			●	
Safe Transit Stops Program		●	●						●		●	
Community Based Circulators Program		●	●			●	●	●	●		●	
Implement Short-Range Transit Plan (Capital)						●	●	●	●		●	
Implement Short-Range Transit Plan (Operations)						●		●	●	●	●	
Rail Transit												
Metrolink Capital						●	●	●	●		●	
Metrolink Operations (increase from 54 weekday trains to 62)						●		●	●	●	●	
Anaheim Rapid Connection Fixed Guideway		●		●		●	●	●	●		●	
Santa Ana/Garden Grove Fixed Guideway		●		●		●	●	●	●		●	
Transit Extensions to Metrolink Program (Operations)		●		●		●	●	●	●		●	
Transportation Demand Management												
Vanpool Operations				●		●			●		●	
OC Bikeways						●	●		●		●	
Other												
Senior Non-Emergency Medical Transportation Program						●		●	●			
Environmental Cleanup Program												●

Blvd = Boulevard
btwn = between
Dr = Drive
EB = eastbound
HOT = high-occupancy toll
HOV = high-occupancy vehicle
I-405 = Interstate 405
I-5 = Interstate 5
I-605 = Interstate 605
NB = northbound
Pkwy = Parkway
Rd = Road
SB = southbound
SR-133 = State Route 133
SR-22 = State Route 22
SR-241 = State Route 241
SR-261 = State Route 261
SR-55 = State Route 55
SR-57 = State Route 57
SR-73 = State Route 73
SR-91 = State Route 91
St = Street
WB = westbound

Figure 3-8: 2035 Preferred Scenario AM Peak Freeway Congestion Levels

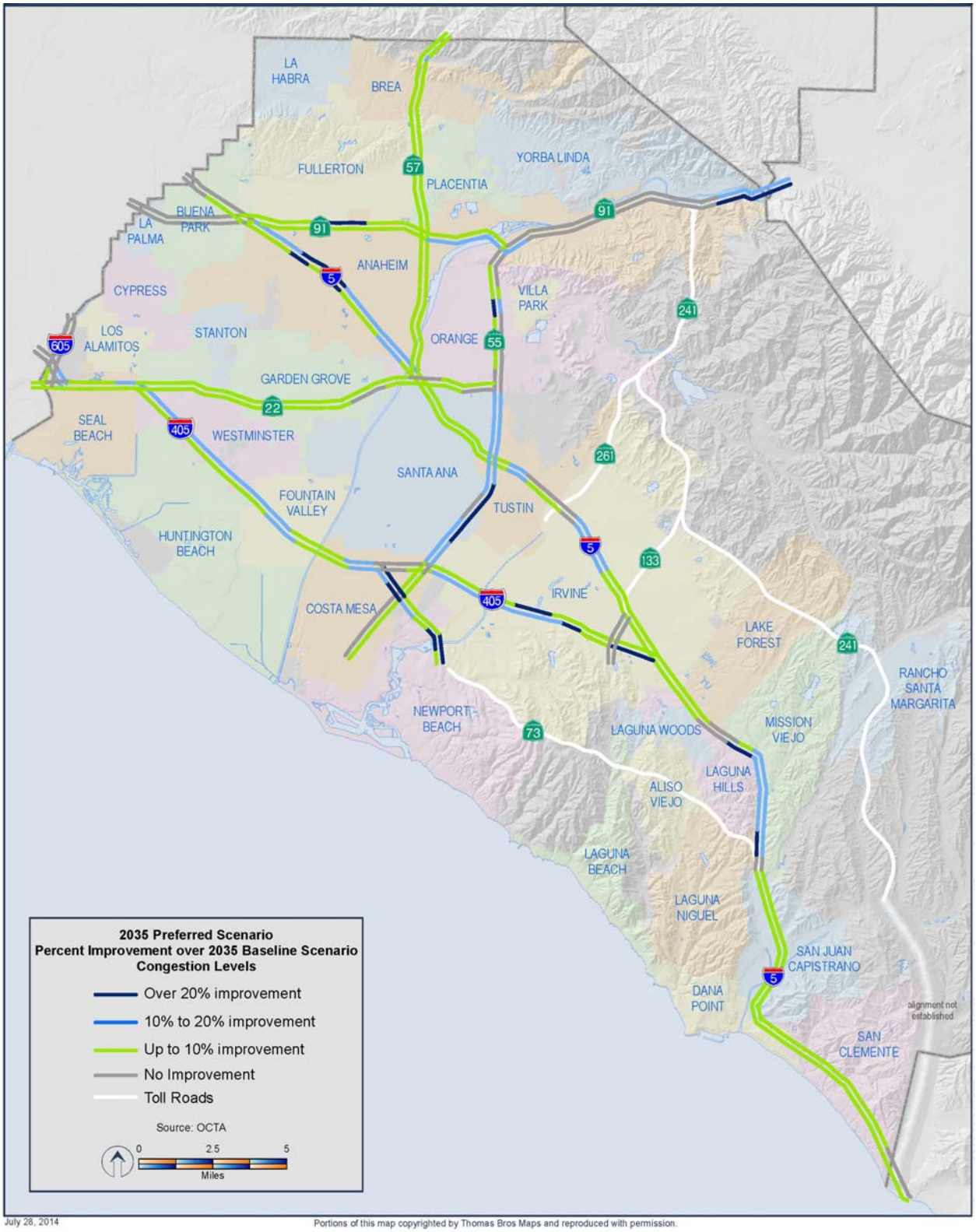


Figure 3-9: 2035 Preferred Scenario AM Peak Freeway Congestion Levels – Percent Improvement over 2035 Baseline Scenario

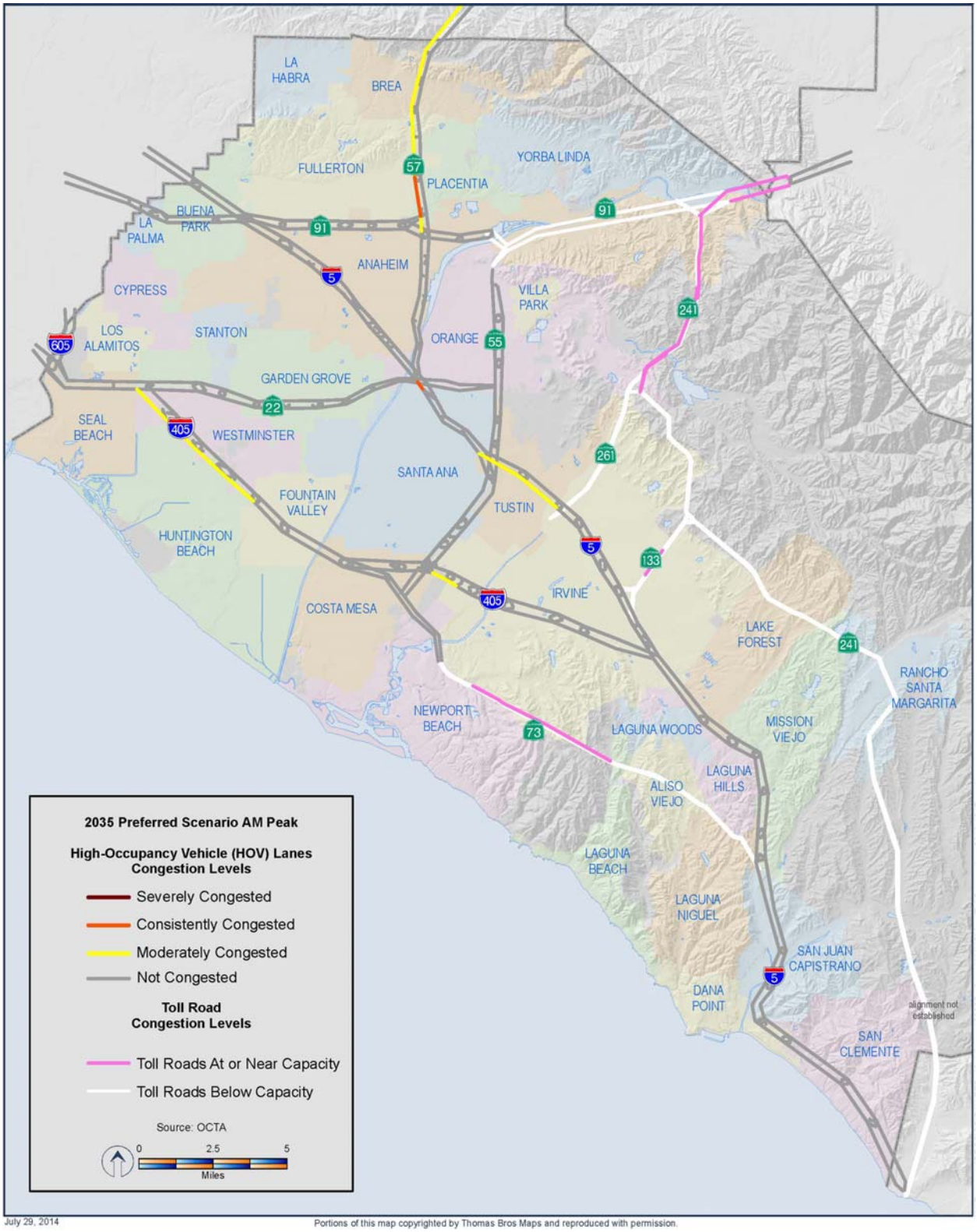


Figure 3-10: 2035 Preferred Scenario AM Peak High-Occupancy Vehicle (HOV) Lanes and Toll Road Congestion Levels

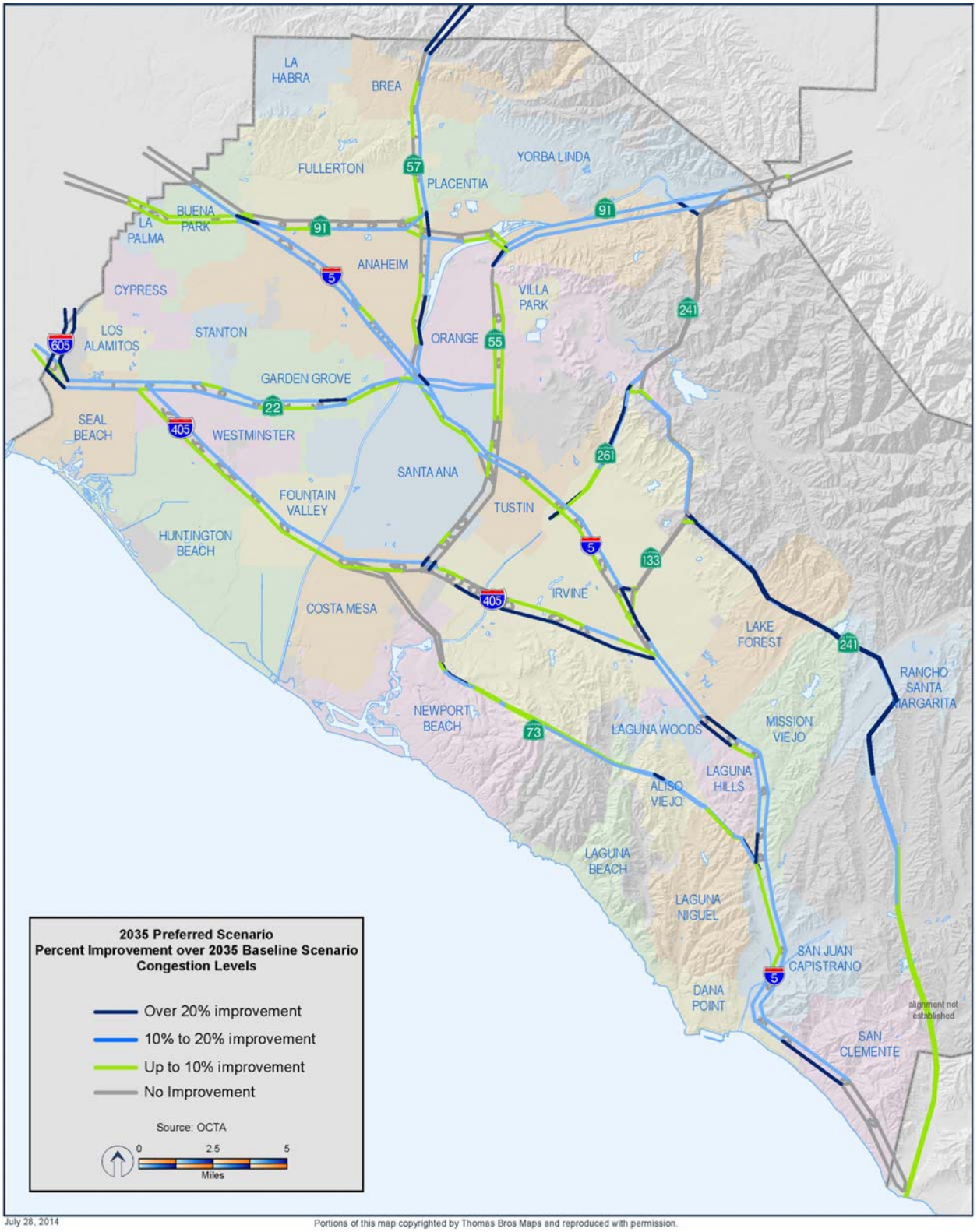


Figure 3-11: 2035 Preferred Scenario AM Peak HOV Lanes and Toll Road Congestion Levels – Percent Improvement over 2035 Baseline Scenario

The Conceptual Plan

Given the reality of funding constraints, the Preferred Plan addresses many, but not all, of the mobility needs for Orange County. Therefore, Outlook 2035 offers a Conceptual Plan that suggests additional future efforts to address these mobility needs. This Conceptual Plan includes improvements that have been identified through a variety of planning efforts, such as Major Investment Studies. Projects in the Conceptual Plan that may be implemented to enhance mobility beyond the Preferred Plan scenario, but that require additional funding and/or study include:

- Connection between Santa Ana and the Anaheim Fixed Guideways along Harbor Boulevard
- Proposed Fullerton Streetcar Connection
- 8 new Bravo! routes in high-demand areas
- 36 new weekday Metrolink trains, including greater frequency to Los Angeles
- 6 LOSSAN grade separations
- Operational freeway or carpool improvements

For a variety of reasons, these further projects are not yet ready for inclusion in a Preferred Plan. It may be that the planning has not yet been completed or vetted with public dialogue and input. Funding sources may need to be developed. The projects may not be ready for implementation until after the 2035 horizon year of this LRTP. Additionally OCTA must be responsive to actions occurring outside the agency, such as State activity and legislative mandates (e.g., statewide high-speed rail or sustainable communities legislation), other County or planning agencies, and private enterprise.

OCTA must also continue to be engaged in the development of the 2016 RTP, for which SCAG will likely include regional strategies that extend beyond the OCTA LRTP. These strategies may include a regional HOT network, increased integration of land use and transportation, shifts in the location of land use development, and other efforts to increase revenues and reduce vehicle miles traveled and GHG emissions. Local jurisdictions will be involved in this collaborative process with SCAG as well, particularly on proposed land use strategies and development assumptions that may emerge.

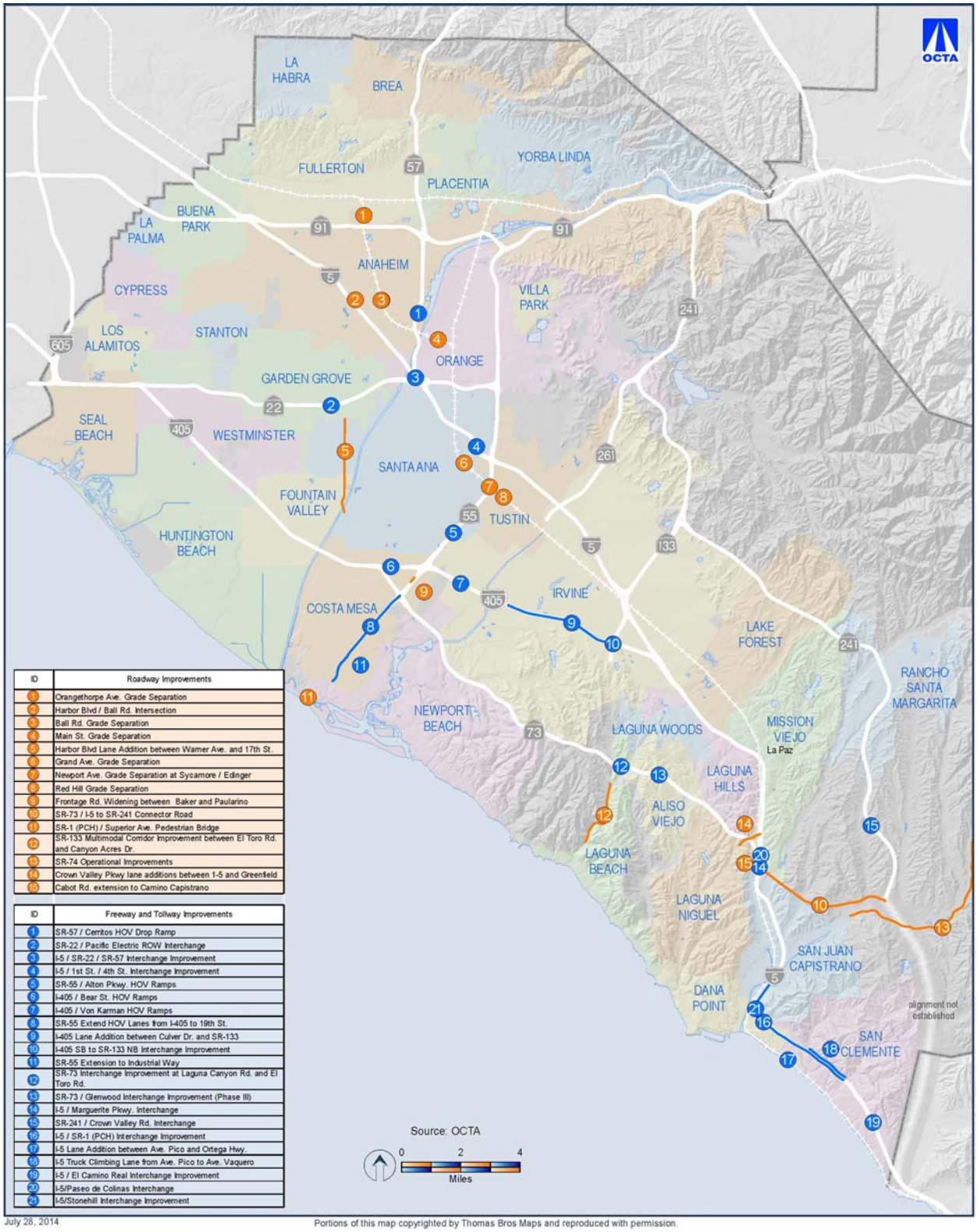
Examples of projects and programs that are embodied in the Conceptual Plan are described in greater detail below.

Operational improvements that could be made to regional highways if funding were identified include the additional direct HOV ramps planned for I-405/Von Karman Avenue, I-405/Bear Street, SR-55/Alton Parkway, and SR-57/Cerritos Avenue. Projects identified to address hot spots of congestion on the regional highway network include adding a truck climbing lane to I-5 northbound between Pico Avenue and Avenida Vaquero, adding one mixed-flow lane in each direction to I-5 between State Route 74 (SR-74) and Pico Avenue, extending SR-55 to Industrial Way, and adding one mixed-flow lane in each direction to I-405 between State Route 133 (SR-133) and Culver Drive. The buildout of the planned toll corridors is also planned but not programmed. General-purpose interchange improvements are also planned for I-5/SR-22/SR-57, I-5/El Camino Real, I-5/Pacific Coast Highway, I-405/SR-133, State Route 73 (SR-73)/Glenwood, and SR-73/El Toro Road. New general-purpose interchanges are planned for I 5/Stonehill Drive, SR-241/Crown Valley Parkway, and SR-241/Cow Camp Road.

OCTA administers the Regional Capacity Program, the Regional Traffic Signal Synchronization Program, and the Local Fair Share Program from Measure M2, which help local jurisdictions fund arterial and local roadway capacity and operational improvements as well as pavement preservation. These programs will provide revenue through 2041 for arterial and local roadway projects that are not yet identified. Some projects being considered include widening the SR-55 frontage road between Paularino Avenue and Baker Street, providing additional lanes on Harbor Boulevard between Warner Avenue and 17th Street, and creating a grade-separated intersection between Harbor Boulevard and Ball Road. Vehicle and pedestrian delay would be reduced by providing a pedestrian bridge over Pacific Coast Highway at Superior Avenue. The location of conceptual roadway and regional highway improvements are illustrated on Figure 3-12.

Additional arterial intersections with the LOSSAN railroad corridor could be grade separated from the railroad to improve safety and mobility for both the users of the railroad and the users of the road. Additional locations where grade separations are contemplated are Orangethorpe Avenue, Ball Road, Main Street, Grand Avenue, Newport Avenue, and Red Hill Avenue.

Over the planning period, OCTA will work toward implementing the recommendations of the Transit System Study. Bus transit operational assistance from State and federal sources is a key constraint to OCTA's ability to expand transit service and is unknown at this time. Operational improvements could include additional fixed-route routes, additional service on high-demand routes, expansion of the Bravo! limited stop bus service, or increased inter-county connections. Additionally, OCTA will consider plans to provide lateral and last-mile connections from transit to



ID	Roadway Improvements
1	Orangethorpe Ave. Grade Separation
2	Harbor Blvd / Ball Rd. Intersection
3	Ball Rd. Grade Separation
4	Main St. Grade Separation
5	Harbor Blvd Lane Addition between Warner Ave. and 17th St.
6	Grand Ave. Grade Separation
7	Newport Ave. Grade Separation at Sycamore / Edinger
8	Red Hill Grade Separation
9	Frontage Rd. Widening between Baker and Paularino
10	SR-73 / I-5 to SR-241 Connector Road
11	SR-1 (PCH) / Superior Ave. Pedestrian Bridge
12	SR-133 Multimodal Corridor Improvement between El Toro Rd. and Canyon Acres Dr.
13	SR-74 Operational Improvements
14	Crown Valley Pkwy lane additions between I-5 and Greenfield
15	Cabot Rd. extension to Camino Capistrano

ID	Freeway and Tollway Improvements
1	SR-57 / Cerritos HOV Drop Ramp
2	SR-22 / Pacific Electric ROW Interchange
3	I-5 / SR-22 / SR-57 Interchange Improvement
4	I-5 / 1st St. / 4th St. Interchange Improvement
5	SR-55 / Alton Pkwy. HOV Ramps
6	I-405 / Bear St. HOV Ramps
7	I-405 / Von Karman HOV Ramps
8	SR-55 Extend HOV Lanes from I-405 to 19th St.
9	I-405 Lane Addition between Culver Dr. and SR-133
10	I-405 SB to SR-133 NB Interchange Improvement
11	SR-55 Extension to Industrial Way
12	SR-73 Interchange Improvement at Laguna Canyon Rd. and El Toro Rd.
13	SR-73 / Glenwood Interchange Improvement (Phase III)
14	I-5 / Marguerite Pkwy. Interchange
15	SR-241 / Crown Valley Rd. Interchange
16	I-5 / SR-1 (PCH) Interchange Improvement
17	I-5 Lane Addition between Ave. Pico and Ortega Hwy.
18	I-5 Truck Climbing Lane from Ave. Pico to Ave. Vaquero
19	I-5 / El Camino Real Interchange Improvement
20	I-5/Paseo de Colinas Interchange
21	I-5/Stonehill Interchange Improvement

Figure 3-12: 2035 Conceptual Scenario Roadway and Regional Highway Improvements

destinations through service such as StationLink, shuttles, and vans. The locations of conceptual transit improvements are illustrated on Figure 3-13.

The Metrolink Service Expansion Program and LOSSAN Strategic Plan conceive of additional capital improvements, including new sidings and up to 98 daily trains serving Orange County stations, with increased mid-day trains between Orange County and Los Angeles Union Station. This will further the desire for greater regional rail and transit coordination. Improvements to Orange County's Metrolink stations included in the Conceptual Plan include expanding the Santa Ana station to serve limited stop buses and planned fixed-guideway rail transit.

The Anaheim streetcar and Santa Ana/Garden Grove streetcar included in the Preferred Plan would both terminate on Harbor Boulevard. These transit lines are being planned and will be constructed with compatible technology that allows them to be potentially connected along Harbor Boulevard at a future date. The City of Fullerton has completed conceptual planning for a streetcar that would operate between the Fullerton Transportation Center, Fullerton College, and California State University at Fullerton. All three of these transit lines could potentially be linked through future planning efforts.

The supervisorial district bikeway planning efforts facilitated by OCTA will result in an actionable list of projects that are included in the Preferred Plan and potentially additional conceptual projects. For example, the City of Laguna Beach intends to construct improved bicycle infrastructure on Laguna Canyon Road between El Toro Road and Canyon Acres Drive, but these improvements have not yet been engineered. In addition to building bicycle infrastructure, enhancements to the bicycle mode could also take the form of expanded opportunities for bike sharing. OCTA is currently partnering with the City of Fullerton to test bike sharing between the Fullerton Transportation Center, downtown, and local colleges/universities. If the test is successful, bike sharing could proliferate throughout Orange County.

Performance of the Conceptual Plan

Similar to the Preferred Plan, the Conceptual Plan was assessed using the performance measures described previously. The Conceptual Plan builds on the accomplishments of the Preferred Plan and further benefits mobility for Orange County. The Conceptual Plan increases the frequency of both rail and bus transit, which facilitates an increase in peak-hour and off-peak hour transit trips. If additional funding were available to address arterial and regional highway bottlenecks, delay experienced on these facilities could be further reduced but not eliminated. With the Conceptual Plan, the travel conditions in 2035 show improvement across all but one performance measure when compared to the Preferred Plan, as shown in Table 3.9. While delay is decreased, areas of congestion would still remain on the regional highway system as illustrated on Figures 3-14 and 3-15. The improved mobility of the Conceptual Plan supports commute trips and discretionary social and shopping trips. This improved mobility improves the quality of life for Orange County residents but also results in a slight increase of daily vehicle miles traveled over the Preferred Plan.

Table 3.9: Results of the Conceptual Plan

	2035 Baseline Scenario	2035 Preferred Plan	2035 Conceptual Plan	Change from Baseline
Daily Transit Trips	164,145	189,407	206,698	+25.9%
Daily Vehicle Trips	9,318,983	9,293,054	9,274,419	-0.5%
Total Vehicle Hours of Delay	732,068	509,441	488,514	-33.3%
Daily Vehicle Miles Traveled	81,107,114	81,708,206	82,001,540	**+1.1%**
Average Speed – Freeway Peak	34.4 mph	38.9 mph	39.6 mph	+15.1%
Average Speed – HOV Peak	57.4 mph	59.9 mph	59.5 mph	+3.7%
Average Speed Arterial Peak	22.7 mph	27.1 mph	27.4 mph	+20.7%

Note: HOV modeled at HOV 3-plus in 2035.
HOV = high-occupancy vehicle
mph = miles per hour

Figure 3-13: 2035 Conceptual Transit Improvements

Figure 3-14: 2035 Conceptual Scenario AM Peak Freeway Congestion Levels

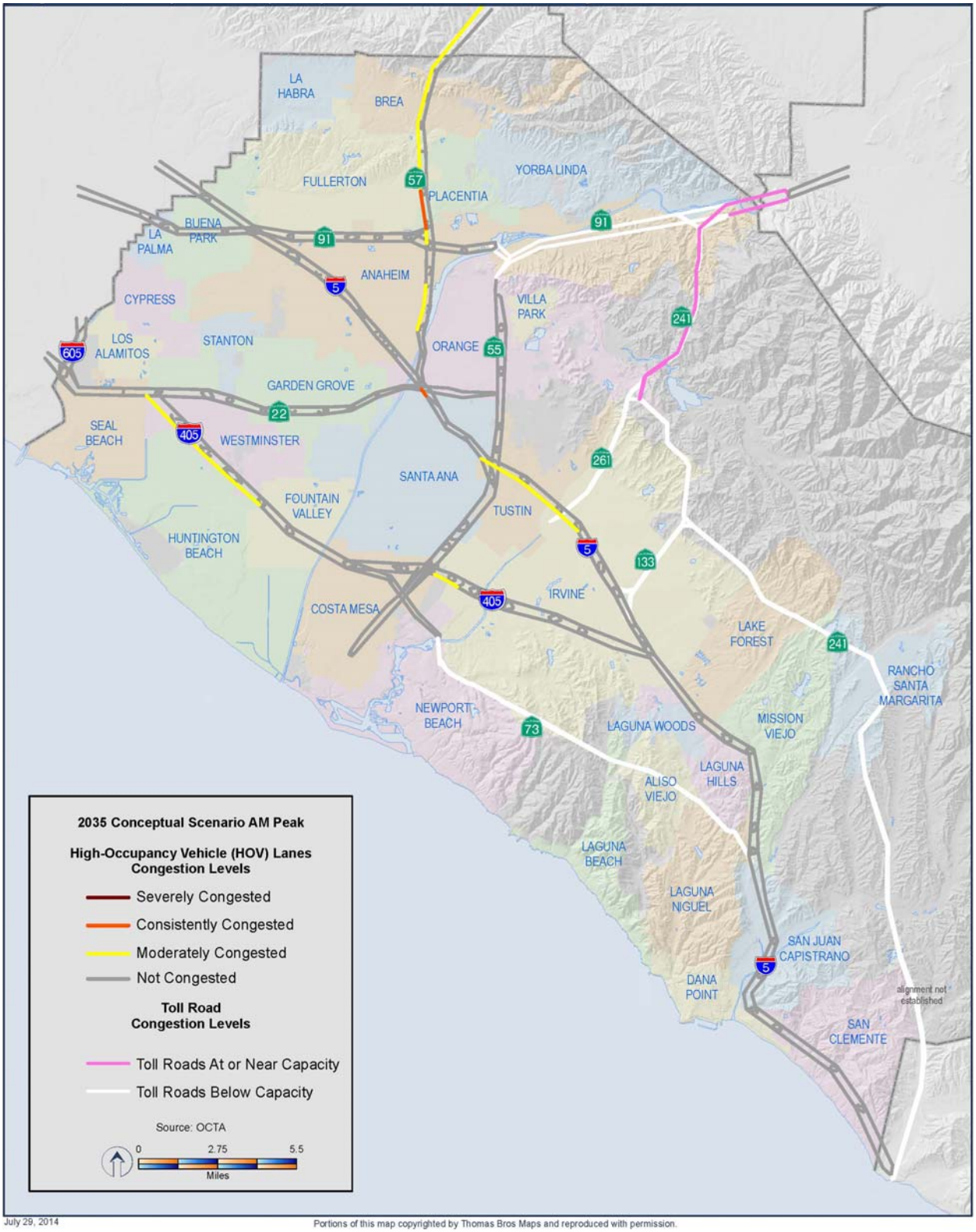


Figure 3-15: 2035 Conceptual Scenario AM Peak High-Occupancy Vehicle (HOV) Lanes and Toll Road Congestion Levels

Chapter 4: Short-Term Action Plan

Outlook 2035 includes an Action Plan with additional studies, continued stakeholder outreach, and monitoring of emerging technologies in order to continue identifying projects and strategies for consideration in future LRTP updates.

Moving Forward

Proactive planning is essential in a world that is constantly changing. Through continuous monitoring of travel conditions, consideration of emerging issues and their potential impact on the transportation system, and regular engagement of the public, OCTA fosters informed decision-making in a transparent manner. To this end, Outlook 2035 identifies several immediate projects for investigation and implementation over the next 4 years that are rooted in principals and emerging issues identified through the Outlook 2035 public outreach efforts and planning process.

Reflecting Public Input

Several themes emerged from stakeholders and the public as critical for the development and ultimate implementation of the LRTP (see Appendix E for a report of all public input received through the LRTP outreach effort). These guiding themes summarize the public's priorities for mobility as described below.

Optimize Transportation Systems

Several strategies can be used to ensure that the County's existing investment in transportation is maximized. In short, it is doing more with what we have already invested. Fulfilling the vision of the Measure M2 funding plan and completing the Measure M2 list of projects will fundamentally achieve this strategy. Activities may include improving transportation connections both locally and regionally as well as within and between modes. New services may be added to existing networks, and the completion of networks or gap closures can also increase the overall capacity of existing transportation systems. Reducing system bottlenecks will also improve system efficiency. Activities to maximize existing networks and improve system operations (e.g., signal synchronization projects and new TDM strategies) fall within this category.

Transportation system performance is also essential to support economic activity in Orange County. Too much congestion hampers economic activity (e.g., the provision of services and the movement of goods). Maintenance and optimization of the regional highways system as well as streets and arterials will ensure reliable paths for the movement of goods and services by trucks and heavy-duty vehicles. Continued planning, programming, and construction of grade separations, dual tracking, and other rail improvements will enhance this movement of goods over rail systems.

Maintain Streets and Highways

Not only is it important to maximize use of the systems that Orange County has invested in, it is similarly critical to maintain the County's investment in these systems. Orange County has over 6,365 lane-miles of streets in the MPAH network and 1,673 lane-miles of regional highways. Ongoing maintenance of these facilities must be a priority in order to retain their usefulness and extend their lifecycles.

Educate the Public

One of the common themes heard through community outreach was the need to educate people about transportation alternatives, bicycle safety, and managed lanes. OCTA provides information on transit options on its website and at train stations, but additional efforts may be needed to reach audiences who are unfamiliar with travel alternatives. It was also expressed that outreach is needed to clarify how lane management techniques can maximize the throughput of regional highways. Enhanced education and outreach efforts could facilitate greater use of all of Orange County's transportation systems by residents, workers, and visitors alike.

Innovate

There was significant public discussion around the opportunity for new transit strategies, especially rail, and for providing real-time transit information. Given the fact that Orange County's freeways are built out, OCTA needs to develop projects and activities that

incentivize people to choose alternatives to their automobiles (i.e., to offer them more mobility choices). Such choices may be significantly enhanced through the use of technology.

Collaborate on Regional Solutions

OCTA must continue to work diligently with the County and its cities to implement relevant projects and services, and to link land use development to transportation plans. The most successful plans are those that acknowledge the changing demographics of the County and reflect the needs of the future population profile. Further, traffic does not stop at County borders, and OCTA must be proactive with neighboring counties to identify regional projects to improve inter-county travel. OCTA is a funding participant in the second phase of SCAG's Express Travel Choices study, which seeks to develop a concept of how a regional network of express lanes would operate. Additionally, Caltrans is currently preparing a Managed Lanes Network Study for Orange County. This study is looking for methods to optimize system performance, enhance overall people throughput, and improve travel reliability. OCTA acknowledges that other transportation planning agencies (i.e., FHWA, SCAG, Caltrans, and the Transportation Corridor Agencies) all have a role in funding and improving transportation in Orange County.

Explore

There is a desire to explore incentives for carpools on toll roads, expansion of bus service and the vanpool program, dedicated lanes for transit on streets and freeways, new bikeways, and the potential for managed lanes. The public has identified a need to encourage the use of alternatives to the automobile. Improved facilities, public education, and incentives are suggested as ways to change drivers' perceptions and encourage alternatives to driving alone. However, for commuters and travelers with mode flexibility, psychological factors such as habits and social norms influence mode choice and must be considered. OCTA is experimenting with additional methods for informing the public of transit and active transportation options, trip planning, and active transportation safety by producing the Adventure Series of videos for the internet. If feedback demonstrates that this form of marketing is effective, it could be expanded.

New and Emerging Issues

Changes Since the 2010 LRTP Update

Measure M2

Much has happened in Orange County since the 2010 update to the LRTP. Importantly, the Measure M2 sales tax went into effect in March 2011, marking the continued commitment of voters to transportation improvements through a designated local funding source. Sales tax proceeds are driven in large part by the economy. At the time of the 2010 LRTP update, Orange County was still reeling from the effects of the Great Recession. Today, the County is experiencing economic recovery across multiple sectors. As of December 2013, Orange County's unemployment rate was 5.2%, which is the lowest rate since 2008 and is lower than both the State's and nation's unemployment rates.

Sustainable Communities Strategy

In April of 2012, SCAG adopted the 2012–2035 RTP, which for the first time included an SCS as required by Senate Bill (SB) 375. SB 375 targets regional GHG emissions with the aim of integrating land use and transportation planning in order to reduce emissions from automobiles and light-duty trucks. In response, Orange County developed its own Orange County SCS, which was incorporated into the 2012 SCAG RTP/SCS. A description of OCTA's efforts toward sustainability is included in Appendix F.

Legislatively, there have been changes as well. SB 743 was signed into law in September of 2013. This bill may fundamentally change transportation impact analysis as part of California Environmental Quality Act (CEQA) compliance by eliminating auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. SB 743 changes the focus to the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses.

Active Transportation

Countywide, there has been an increased interest in active transportation such as bicycling. OCTA is responding by coordinating regional bikeway planning efforts and supporting local jurisdictions' efforts to seek funding to bring projects to fruition. Linking active transportation with future rail service, OCTA completed the Metrolink Station Nonmotorized Accessibility Strategy in June 2013, which builds upon other efforts by OCTA and local cities to expand transportation choices. The Nonmotorized Accessibility Strategy serves as a reference for local cities to improve safety, address existing barriers, and increase the number of Metrolink riders who walk or bicycle to and from the stations through changes to the physical environment.

Beyond the coordination of OCTA and local agencies, Caltrans has acknowledged active transportation and has adopted a policy relating to Complete Streets, stating: "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."

Staying Ahead of the Curve

Coordinating Transportation and Land Use

It is important to note that OCTA does not have control over the location, type, or intensity of land use development throughout Orange County. These decisions are under the purview of local jurisdictions. Growth in population and employment are additional factors that are difficult for local jurisdictions to predict and manage. OCTA's role is to coordinate an efficient transportation system that provides improvements within the context of financial and environmental constraints as well as the planned land uses developed by other agencies.

Still, the issue of land use and local control impacts the transportation system. The location, type, and amount of land development impacts travel demand and the related transportation improvements that are needed systemwide. While OCTA has no purview over land use, it is linked to the transportation system, and State legislation increasingly seeks to strengthen that linkage. This greater transportation/land use linkage will require OCTA and other local and regional organizations (e.g., the Orange County Council of Governments and SCAG) to continue to closely coordinate transportation decisions with land use decisions moving forward.

For example, OCTA may plan for increased transit investments, but to be most effective, those investments must be supported by transit-oriented land use patterns. Housing growth is projected to occur in and adjacent to areas that are forecasted for increased employment growth. This will create opportunities to link housing and jobs in a way that affords pedestrian, cycling, and transit choices for home/work travel.

Additionally, intensification of both employment and housing will enhance the built environment for mixed uses, transit-oriented and transit-adjacent developments, and multi-use projects along pedestrian and bicycle facilities. This will result in more of the working population living proximate to high-quality transit corridors for rubber tire transit as well as Orange County's Metrolink stops.

Technology

Complex factors drive technological change, including break-through technologies, market competition, manufacturing capability, economics, and consumer needs. OCTA must monitor technological advances and be prepared to address them as part of future planning efforts that anticipate, recognize, and adapt to change. While technologies impacting transportation are generally developed in the private sector, it is the responsibility of OCTA to take advantage of technology opportunities that improve efficiencies when appropriate. To this end, OCTA has developed an Emerging Technology Policy, which is included in the LRTP as Appendix F.

For example, major auto manufacturers, such as Nissan and Mercedes Benz, have stated that autonomous vehicles will be available at dealerships by 2020, and Google and Tesla are targeting 2016–2017. In addition to potential self-driven vehicles, there are more vehicles each year that monitor and communicate with each other to actively avoid accidents. Impacts on roadways and freeways are speculative, but there is potential for increased capacity on existing infrastructure over the life of the LRTP.

Alternative fuel vehicles are also becoming more commonplace. As battery efficiencies and charging technologies improve, electric vehicles will become more viable to more people. Natural gas infrastructure is present throughout most of Orange County. Improved storage technology could make this fuel a viable option for many commuters. Hydrogen fuel cell technology also continues to advance and could become more prevalent in coming years. It should be noted that Orange County is home to 9 of the 42 hydrogen fueling stations active or in development in California. While the alternative fuel vehicles reduce emissions, the vehicles still contribute to wear and tear on infrastructure. Therefore, as these vehicles gain in market share, the issue of the gas tax revenue shortfalls will be worsened.

Other technologies such as electronic boarding passes, real-time transit information, and social networking could influence future travel behaviors. Metro, Foothill Transit, and Santa Clarita have

integrated rail and bus ticketing into one Transit Access Pass (TAP) card that transit riders can use to transfer between transit carrier and transit modes. Use of these electronic boarding passes reduces the amount of time buses wait while boarding passengers and reduces the time it takes riders to transfer between modes. Both outcomes improve travel time and make transit more attractive to potential users. Metro has also introduced Nextrip Service, which provides bus and rail vehicle arrival times to customers with global positioning system (GPS) enabled phones. This service, combined with social networking tools that allow transit providers to inform riders of delays in real time, remove an element of the unknown that could otherwise be a barrier to transit use.

Private sector companies are also offering new transportation services such as bike sharing and car sharing, and they may look to invest in Orange County. The State is currently developing a framework of regulations for peer-to-peer car sharing, which could standardize such services and potentially make it easier for businesses and local jurisdictions to coordinate implementation. Bike sharing and car sharing at transit nodes like Metrolink stations could provide another option for commuters seeking a last-mile option.

Inter-County Connections

Coordination with regional partner agencies will be essential to regional mobility. Looking at the issue of inter-county connections, there are several potential projects on the horizon. The San Diego Association of Governments' I-5 express lanes project appears to be moving forward as illustrated on Figure 4-1. This will add lanes south of the Orange County/San Diego border and would result in a bottleneck entering Orange County. To address the bottleneck, an extension of the HOV lanes from Avenida Pico to the San Diego border is proposed for study in the Outlook 2035 Preferred Plan, but moving beyond study to implementation would require a new source of funds not yet identified.

Another study, proposed by SCAG, would seek to improve transit connections between Orange County and the Metro Green Line light rail system. If the proposed study moves forward, it would look to improve the transit connection between Orange County's Metrolink stations and Los Angeles International Airport (LAX). Connecting the Metro Green Line to the Norwalk Metrolink station could provide a viable transit option to and from LAX, which in turn would help to relieve regional congestion. This potential study could result in project recommendations for future consideration.

Metro is also preparing to select an alignment for the Gold Line Eastern Extension – Phase 2. The project will extend the Gold Line from the existing terminus at Pomona Boulevard and Atlantic Boulevard in East Los Angeles along one of two potential alignments: State Route 60 (SR-60) alignment, which would generally follow SR-60 to the City of South El Monte; and the Washington Boulevard alignment, which would generally follow Garfield Avenue and Washington Boulevard to Lambert Road in the City of Brea. If the SR-60 alignment is selected, there would be limited potential for an Orange County connection.

Intra-County Opportunities

Coordination with local partner agencies such as local jurisdictions, Caltrans District 12, the Transportation Corridor Agencies, and local transit operators will be essential to Orange County's mobility. As demand on the freeway system is outpacing capacity, the public is looking to alternatives to the single-occupant automobile. There is an immediate opportunity to continue to advance projects that enhance and promote alternatives such as regional bikeway planning efforts to identify priority corridors, multimodal sidewalks and Neighborhood Electric Vehicle paths, and fixed-guideway projects. Other projects geared toward making better use of the systems already in place include signal synchronization projects on multiple corridors throughout the County, improved transit connections, and TDM projects. Further, the County's carpool lanes continue to increase in congestion, which lowers their incentive for use. An opportunity exists for exploration of a 3+ HOV occupancy pilot project as one step toward developing solutions to improved carpool lane conditions. Caltrans has stated a preference for a multi-faceted approach to address HOV lane congestion.

OCTA's 4-Year Action Plan

While implementation of the specific projects to address these issues and opportunities may not

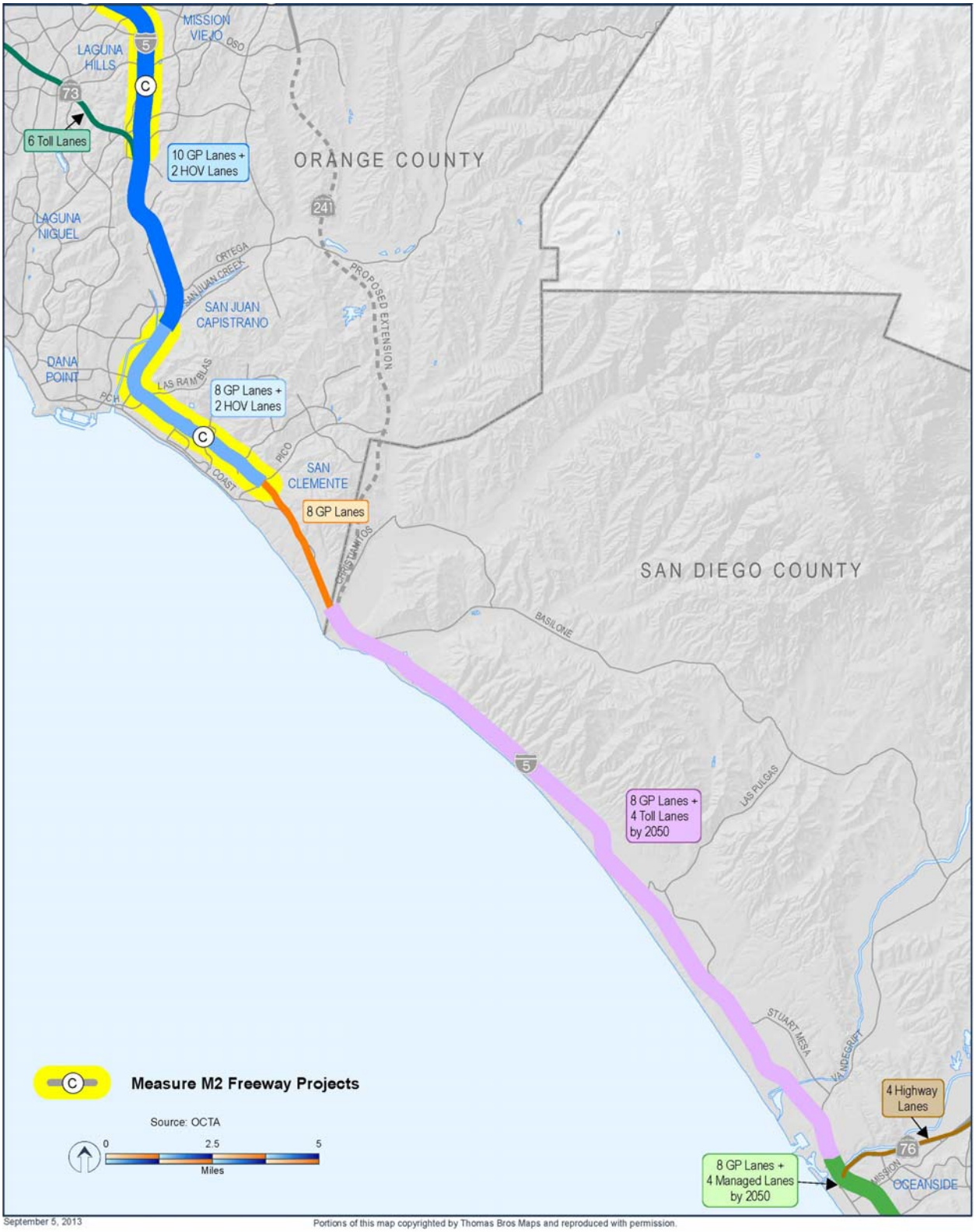


Figure 4-1: Regional Highway Improvements – Orange and San Diego Counties

be fully developed for inclusion in the Preferred Plan of the 2014 LRTP, OCTA continues to monitor, track, evaluate and plan for future infrastructure investment needs. Further, several projects and studies have been identified for a short-term action plan to respond to these issues and opportunities and further advance OCTA's goals and objectives.

A listing of the projects and programs in the 4-year Action Plan are found in Table 4.1. They include collaborative planning work on inter- and intra-county projects. As key inter-county projects progress through planning and conceptual design, OCTA will initiate dialogue with appropriate agencies and develop recommended near-term actions. This will allow OCTA to clearly identify potential impacts, coordinate improvements and schedules, and ensure that OCTA is poised to maximize the inter-county connectivity of these projects. Likewise, there are several opportunities for additional study on intra-county projects as well as initiation of projects with potential for enhancing network efficiency both immediately and in the long term. For example, the short-term action plan includes initiation or completion of over 200 miles and nearly 750 intersections of signal synchronization, as well as multiple regional bikeway planning efforts. The 4-year Action Plan also includes educational components related to alternative transportation options, including public transportation and non-motorized transportation as well as bicycle and pedestrian safety programs.

Other emerging issues to be addressed by the short-term action plan include State and federal funding opportunities and continued coordination for the 2016 RTP/SCS, and tracking the implementation of the State and federal legislation impacting transportation and linking transportation and land use. As mentioned previously, new technologies are monitored on an ongoing basis, including connected vehicles and smart phone applications that have the potential to increase capacity and reduce travel delay by maximizing the existing network and allowing people to access real-time information and electronic ticketing.

Table 4.1: Short-Term Action Plan

	Description
Inter-County Projects	
LOSSAN/Green Line Connection	Continue dialogue with SCAG and appropriate agencies to identify impacts to and opportunities for connectivity. Metro is the lead agency for planning, constructing, and operating major transit capital investments in Los Angeles County such as this connection.
Gold Line Eastern Extension – Phase 2	Continue dialogue with Metro and appropriate agencies to identify impacts to and opportunities for connectivity with Orange County's transportation network.
I-405 Corridor Master Plan	Participate in SCAG's study, which aims to coordinate this inter-county facility with regional partners.
San Diego's I-5 HOT Lane Project	Initiate dialogue with SANDAG and appropriate agencies to identify impacts to and opportunities for connectivity with Orange County's transportation network.
91 Express Lanes Extension into Riverside County	Continue dialogue with RCTC and appropriate agencies to advance the Express Lane extension.
Coordination with Regional Partner Agencies	Continue dialogue with SCAG, SANDAG, County Transportation Commissions, SCAQMD, Caltrans Headquarters, and other regional agencies as needed to further inter-county connectivity.
SCAG Express Travel Choices	Continue participation in the regional conversation regarding future express travel choices.
Intra-County Projects	
Caltrans Managed Lanes Network Study	Continue dialogue with Caltrans and local agencies to identify opportunities and constraints within the Orange County managed lanes network.
Multi-Modal Sidewalks/Neighborhood Electric Vehicles	Support study of opportunities for multimodal sidewalks/Neighborhood Electric Vehicle paths.
3+ HOV Pilot Study	Study opportunities for a 3+ HOV occupancy pilot project.
Guideways	Support and continue to advance planning for Anaheim, Santa Ana/Garden Grove, and Fullerton fixed guideways.
Harbor Boulevard Transit Study	Conduct feasibility study for connecting proposed Project S fixed-guideway projects along Harbor Boulevard.
Transportation Demand Management (TDM)	Study opportunities for new or expanded TDM projects.
Sustainable Transportation Strategies	Coordination with partner agencies on implementation of transportation-related strategies within the Orange County SCS.

Table 4.1: Short-Term Action Plan (Continued)

	Description
Intra-County Projects (Continued)	
Regional Bikeways	Develop implementation plans for priority corridors identified in District 3 and District 5 Bikeway Strategies.
OC Loop	Support implementation of OC Loop and coordination efforts.
Transit Facility Project Study Reports	Initiate project study report equivalents for transit facilities to determine existing and future capacity levels and other transit requirements.
Signal Synchronization	Initiate implementation of signal synchronization along 23 corridors countywide.
Pacific Coast Highway Corridor Study	Identify a broad range of transportation opportunities and improvements for enhancing regional mobility along this coastal route.
Coordination with Local Partner Agencies	Continue dialogue with local jurisdictions, Caltrans District 12, TCAs, local transit operators, and other local agencies as needed to further intra-county connectivity.
Toll Roads Coordination	Explore opportunities for improved coordination and connectivity.
Emerging Issues	
Monitor New Technology	Monitor developing technologies and their potential impacts on transportation (e.g., autonomous vehicles, alternative fuels, and smart phone applications).
State and Federal Regulation	Monitor State and federal legislation/regulations.
State and Federal Funding	Seek opportunities to access and leverage State and federal funding.
Maintenance Needs	Monitor maintenance needs for existing and new facilities.
2016 RTP/SCS	Participate in the development of the 2016 RTP/SCS and initiate dialogue with SCAG and local jurisdictions to identify, promote, and support implementation of SCS.
Transportation Outreach and Education	
Active Transportation Safety	Seek opportunities to enhance public outreach and education related to active transportation projects.
Transit Use and Trip Planning	Explore new approaches to increase use of modes other than single-occupant vehicles, including enhanced transit and active transportation facilities, public education, and incentives.

Caltrans = California Department of Transportation
HOT = high-occupancy toll
HOV = high-occupancy vehicle
I-405 = Interstate 405
I-5 = Interstate 5
LOSSAN = Los Angeles-San Diego-San Luis Obispo
Metro = Los Angeles County Metropolitan Transportation Authority
RCTC = Riverside County Transportation Commission
RTP = Regional Transportation Plan
SANDAG = San Diego Association of Governments
SCAG = Southern California Association of Governments
SCAQMD = South Coast Air Quality Management District
SCS = Sustainable Communities Strategy
TCAs = Transportation Corridor Agencies

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Appendix A: Detailed Year 2035 Baseline Project List

Location	From	To	Description	Completion Date	Cost ($000, YOE) FY 2015–2035
Regional Highways					
I-5	La Paz Rd		Interchange improvement	2012	Previously Funded
I-5	Camino Capistrano		Interchange improvement	2014	Previously Funded
I-5	Camino de Estrella		Interchange improvement	2011	Previously Funded
I-5	Crown Valley Pkwy		Interchange improvement	2012	Previously Funded
I-5	Avenida Pico	Avenida Vista Hermosa	Add one HOV lane in each direction and reconfigure Avenida Pico interchange	2017	$86,669
I-5	Avenida Vista Hermosa	PCH	Add one HOV lane in each direction	2017	Previously Funded
I-5	PCH	San Juan Creek Rd	Add one HOV lane in each direction	2016	Previously Funded
I-5	SR-55	SR-57	Add one HOV lane in each direction for a total of four lanes	2019	$39,125
I-5	Ortega Hwy		Interchange improvement	2015	$1,210
I-5	Tustin Ranch Rd	Jamboree Rd	Add SB auxiliary lane	2012	Previously Funded
I-5	Jamboree Rd		Interchange improvement	2013	Previously Funded
I-5			Restripe to continuous access HOV lane	2018	$6,550
SR-55	Edinger Ave	Dyer Rd	Add SB auxiliary lane	2011	Previously Funded
SR-55	Dyer Road	MacArthur Boulevard	Add southbound auxiliary lane	2012	Previously Funded
SR-55	Paularino Ave	17th St	Restripe to continuous access HOV lane	2012	Previously Funded
SR-55	MacArthur Blvd		Widen NB on-ramp	2012	Previously Funded
SR-55	MacArthur Blvd		Widen SB on-ramp	2012	Previously Funded
SR-57	Orangethorpe Ave	Lambert Rd	Add one NB mixed-flow lane	2014	Previously Funded
SR-57	Katella Ave	Lincoln Ave	Add one NB mixed-flow lane	2014	Previously Funded
SR-91	SR-55	Tustin Ave	Extend WB auxiliary lane	2016	Previously Funded
SR-91	SR-57	I-5	Extend WB auxiliary lane through interchanges	2016	Previously Funded
SR-91	SR-241	SR-55	Add one EB mixed-flow lane (from SR-55 to SR-241), add EB auxiliary lane (from SR-55 to Lakeview Ave), and one WB mixed-flow lane (SR-241 to Imperial Hwy)	2013	Previously Funded
SR-91	SR-241	SR-71	Add one EB mixed-flow lane	2011	Previously Funded
I-405	SR-22	I-605	Construct HOV connectors at SR-22 and I-605, and add a second HOV lane in each direction on I-405 between the direct connectors	2014	$10,475
I-405	1 mile north of Jeffery Rd	Culver Dr	Add NB deceleration lane	2014	Previously Funded
SR-241/SR-261	SR-91	I-5	Widen to four lanes in each direction	2030	$557,333
SR-241	Oso Pkwy	SR-261	Widen to four lanes in each direction	2030	$151,668
SR-241/SR-133	I-5	Oso Pkwy	Widen to four lanes in each direction	2030	$1,021,856
SR-73	I-5	Bison Ave	Widen to four lanes in each direction	2030	$327,000

Location	From	To	Description	Completion Date	Cost ($000, YOE) FY 2015–2035
Arterials and Local Roads					
Countywide			Orange County Signal Improvement Program	2012	Previously Funded
Countywide			Master Plan of Arterial Highways improvements	2017	$76,105
Jeffrey Rd	LOSSAN		Grade separation	2012	Previously Funded
Kraemer Blvd	BNSF		Grade separation	2014	Previously Funded
Lakeview Ave	BNSF		Grade separation	2017	$18,338
Orangethorpe Ave	BNSF		Grade separation	2016	Previously Funded
Placentia Ave	BNSF		Grade separation	2014	Previously Funded
Raymond Ave	BNSF		Grade separation	2018	$14,062
Sand Canyon Ave	LOSSAN		Grade separation	2014	Previously Funded
State College Blvd	BNSF		Grade separation	2018	$5,745
State College Blvd	LOSSAN		Grade separation	2017	$80,800
Tustin Ave/Rose Ave	BNSF		Grade separation	2016	$7,529
Del Prado Ave/PCH	Blue Lantern	Copper Lantern	Reconfigure PCH to four lanes and reconfigure Del Prado Ave to two lanes	2014	Previously Funded
Imperial Hwy	Los Angeles County Line	Harbor Blvd	Widen from four to six lanes	2011	Previously Funded
Bus Transit					
Countywide			Countywide fixed-route, express, and paratransit (capital)	2035	$1,040,145
Countywide			Countywide fixed-route, express, and paratransit (operations)	2035	$8,978,920
Rail Transit					
Countywide			Metrolink capital	2035	$546,826
Countywide			Metrolink operations (54 weekday trains)	2035	$779,357
Fullerton Transportation Center			Parking expansion	2012	Previously Funded
Placentia			Construct new Metrolink station and rail siding	2014	Previously Funded
Orange Transportation Center			Parking expansion	2017	Previously Funded
Anaheim Canyon Metrolink Station			Station improvements	2014	Previously Funded
Laguna Niguel/ Mission Viejo Metrolink Station			Station improvements including ADA undercrossing	2015	Previously Funded
Anaheim Station			Construct Anaheim Regional Transportation Intermodal Center, Phase 1	2014	Previously Funded
Tustin Metrolink Station			Parking expansion	2012	Previously Funded
Laguna Niguel/ Mission Viejo Metrolink Station			Parking expansion	2013	Previously Funded
Santa Ana Transportation Center			Planning and conceptual engineering of transportation center expansion	2015	Previously Funded
Transportation Demand Management					
Countywide			Countywide bikeway and pedestrian improvements	2016	$12,717
Imperial Hwy	Main St		Construct pedestrian bridge over Imperial Hwy	2014	Previously Funded
Lemon St	Santiago Creek	Valley Dr	Recreational trail improvements	2012	Previously Funded
Moulton Pkwy	400 ft north of El Toro Rd	500 ft north of Santa Maria Ave	Complete streets improvements	2013	Previously Funded

Location	From	To	Description	Completion Date	Cost ($000, YOE) FY 2015–2035
Transportation Demand Management (Continued)					
Santiago Creek	Tustin Ave	Collins Ave	Extend the Class I bikeway 2 miles	2012	Previously Funded
Newport Blvd	Main St	Irvine Blvd	Reconstruct bicycle trail	2014	Previously Funded

Note: Project descriptions are subject to change through the project development process.

ADA = Americans with Disabilities Act
Ave = Avenue
Blvd = Boulevard
BNSF = BNSF Railway
btwn = between
Dr = Drive
ft = feet
FY = Fiscal Year
HOV = high-occupancy vehicle
Hwy = Highway
I-5 = Interstate 5
I-405 = Interstate 405
I-605 = Interstate 605
LOSSAN = Los Angeles-San Diego-San Luis Obispo Rail Corridor
NB = northbound
PCH = Pacific Coast Highway
Pkwy = Parkway
Rd = Road
SB = southbound
SR-22 = State Route 22
SR-55 = State Route 55
SR-57 = State Route 57
SR-71 = State Route 71
SR-73 = State Route 73
SR-91 = State Route 91
SR-133 = State Route 133
SR-241 = State Route 241
SR-261 = State Route 261
St = Street
WB = westbound
YOE - Year of expenditure

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Appendix B: Detailed Year 2035 Preferred Plan Project List

Location	From	To	Description	Completion Date	Cost ($000, YOE) FY 2015–2035
Regional Highways					
Countywide			Freeway Service Patrol and Call-box Program	2035	$247,158
I-5	El Toro Rd	SR-73	Add one mixed-flow lane in each direction from Avery Pkwy to Alicia Pkwy, extend second HOV lane from El Toro Rd to Alicia Pkwy, and reconstruct Avery Pkwy and La Paz Rd interchanges	2022	$518,700
I-5	I-405	SR-55	Add one mixed-flow lane in each direction	2023	$728,120
I-5	Avenida Pico	San Diego County Line	Add one HOV lane in each direction	2035	$285,821
I-5	El Toro Rd	Los Alisos Blvd	Access and merging improvements	2023	$57,954
I-5	Barranca Pkwy		Add SB HOV on-ramp and NB HOV off-ramp	2035	$41,888
I-5	SR-57	SR-91	Add one mixed-flow lane each direction	2035	$335,103
SR-55	Meats Ave		Add interchange and auxiliary lanes	2023	$60,000
SR-55	I-405	I-5	Add one mixed-flow lane in each direction	2021	$268,577
SR-55	I-5	SR-91	Add one mixed-flow lane in each direction btwn I-5 and SR-22 and operational improvements btwn SR-22 and SR-91	2023	$148,460
SR-57	Lambert Rd	Los Angeles County Line	Add NB auxiliary truck climbing lane	2035	$124,600
SR-57	Lambert Rd		Interchange improvement	2018	$41,949
SR-57	Orangewood Ave	Katella Ave	Add one NB mixed-flow lane	2030	$34,500
SR-73	I-405		Construct HOV connector	2035	$314,159
SR-73	Glenwood Drive		Construct interchange with collector-distributor to Aliso Creek	2019	$9,000
SR-73	MacArthur Blvd	I-405	Add one HOV lane each direction	2035	$221,812
SR-241	SR-91		Construct connector from NB SR-241 to EB SR-91 HOV/HOT lane and btwn WB SR-91 HOV/HOT lane to SB SR-241	2020	$180,000
SR-91	SR-55	SR-57	Add one EB mixed-flow lane (from SR-57 to SR-55), add one WB mixed-flow lane (from Glassell St to State College Blvd), and interchange improvements at Glassell St, Tustin Ave, Lakeview Ave, and NB SR-57	2025	$416,000
SR-91	Fairmont Blvd		Construct interchange and overcrossing	2030	$88,930
SR-91	SR-241	Pierce St (Riverside County)	SR-91 Corridor Improvement Project	2035	Funded by RCTC
SR-133	Trabuco Rd		Construct interchange	2020	$101,154
SR-241	Jeffrey Rd		Construct interchange	2018	$15,000
SR-241	Weir Canyon Rd		Construct interchange	2018	$15,060

Location	From	To	Description	Completion Date	Cost ($000, YOE) FY 2015–2035
Regional Highways (Continued)					
SR-241	SR-261		Interchange improvement	2018	$20,070
SR-241	SR-261	Portola Pkwy	Add one mixed-flow lane in each direction	2035	$132,708
SR-241	Portola Pkwy	Santa Margarita Pkwy	Add two mixed-flow lanes in each direction	2035	$265,417
SR-241	Santa Margarita Pkwy	Oso Pkwy	Add one mixed-flow lane in each direction	2035	$56,875
I-405	I-5	SR-73	Restripe to continuous access HOV lane	2020	$1,000
I-405	SR-73	I-605	Add one mixed-flow lane in each direction	2020	$1,241,464
I-405	I-5	SR-55	Add one mixed-flow lane in each direction and SB auxiliary lanes from University Dr to Irvine Center Dr	2023	$374,540
I-605	Katella Ave		Interchange improvement	2035	$50,060
Arterials and Local Roads					
Countywide			Master Plan of Arterial Highways	2035	$2,731,003
Countywide			Regional Traffic Signal Synchronization Program	2035	$694,125
Countywide			Arterial Pavement Rehabilitation Program	2035	$5,964,068
17th St	LOSSAN		Grade separation	2017	$55,000
Santa Ana Blvd	LOSSAN		Grade separation	2015	$80,000
Bus Transit					
Countywide			Senior Mobility Program	2035	$173,531
Countywide			Safe Transit Stops Program	2035	$30,600
Countywide			Community-Based Circulators Program	2035	$277,600
Countywide			Implement Short-Range Transit Plan (capital)	2035	$97,445
Countywide			Implement Short-Range Transit Plan (operations)	2035	$791,165
Rail Transit					
Countywide			Metrolink capital	2035	$95,100
Countywide			Metrolink operations (increase from 54 weekday trains to 62)	2035	$135,540
Anaheim			Anaheim Rapid Connection Fixed Guideway	2020	$318,000
Santa Ana/Garden Grove			Santa Ana/Garden Grove Fixed Guideway	2019	$238,000
Countywide			Transit Extensions to Metrolink Program (operations)	2035	$817,764
Transportation Demand Management					
Countywide			Vanpool operations	2035	$49,954
Countywide			OC Bikeways	2035	$420,039
Other					
Countywide			Senior Non-Emergency Medical Transportation Program	2035	$138,825
Countywide			Environmental Cleanup Program	2035	$482,562
			Debt service	2035	$2,296,500

Note: Project descriptions are subject to change through the project development process.

Ave = Avenue
Blvd = Boulevard
btwn = between
Dr = Drive
FY = Fiscal Year
HOT = high-occupancy toll
HOV = high-occupancy vehicle
I-5 = Interstate 5
I-405 = Interstate 405
I-605 = Interstate 605
LOSSAN = Los Angeles-San Diego-San Luis Obispo Rail Corridor
NB = northbound
Pkwy = Parkway
RCTC = Riverside County Transportation Commission
Rd = Road
SB = southbound
SR-22 = State Route 22
SR-55 = State Route 55
SR-57 = State Route 57
SR-73 = State Route 73
SR-91 = State Route 91
SR-133 State Route 133
SR-241 = State Route 241
SR-261 = State Route 261
St = Street
WB = westbound
YOE = Year of expenditure

Appendix C: Detailed Year 2035 Conceptual Plan Project List

Location	From	To	Description
Regional Highways			
I-5	1st St/4th St		Interchange improvement
I-5	Marguerite Pkwy		Construct interchange
I-5	Paseo de Colinas		Construct interchange
I-5	Ortega Hwy	Avenida Pico	Add one mixed-flow lane in each direction
I-5	Pico Ave	Avenida Vaquero	Add one NB truck climbing lane
I-5	El Camino Real		Interchange improvement
I-5	PCH		Interchange improvement
I-5	SR-57/SR-22		Interchange improvement
I-5	Stonehill Dr		Construct interchange
SR-22	Pacific Electric ROW		Construct interchange
SR-55	I-405	Industrial Way	Extend SR-55 from 19th St to Industrial and extend HOV lane from I-405 to 19th St
SR-55	Alton Pkwy		Construct HOV ramps
SR-57	Cerritos Ave		Construct HOV ramps
SR-73	Glenwood Dr		Interchange improvement
SR-73	El Toro Rd/SR-133		Interchange improvement
SR-241	Crown Valley Pkwy		Construct interchange
SR-241	Cow Camp Rd		Construct interchange
I-405	Von Karman Ave		Construct HOV ramps
I-405	Bear St		Construct HOV ramps
I-405	SR-133		Interchange improvement
I-405	SR-133	Culver Dr	Add one mixed-flow lane in each direction
Arterials and Local Roads			
Cabot Rd	Paseo de Colinas	Camino Capistrano	Construct the Cabot Road to Camino Capistrano Bridge
New Expressway	SR-73	SR-241	Construct a four-lane limited access road connecting both I-5 and SR-73 to Antonio Pkwy and Cow Camp Rd
Ortega Hwy	I-5	County line	Operational improvements
Frontage Rd	Baker St	Paularino St	Widen and restripe SR-55 Frontage Rd
Harbor Blvd	Warner Ave	17th St	Add one lane in each direction beyond MPAH
Crown Valley Pkwy	I-5	Greenfield Dr	Add one lane in each direction beyond MPAH
Harbor Blvd	Ball Rd		Grade-separated intersection
Ball Rd	LOSSAN		Grade separation
Grand Ave	LOSSAN		Grade separation
Main St	LOSSAN		Grade separation
Newport Ave	LOSSAN		Grade separation
Orangethorpe Ave	LOSSAN		Grade separation
Red Hill Ave	LOSSAN		Grade separation
Bus Transit			
Countywide			Transit System Study improvements
Countywide			Zero-emission transit investments (bus & rail)
Rail Transit			
Countywide			LOSSAN Strategic Plan (capital) including third main track in Irvine and Serra siding infrastructure projects
Countywide			Metrolink operations (increase from 62 weekday trains to 98)
Fullerton			Fullerton College Connector fixed guideway
Garden Grove			Connect Anaheim and Santa Ana/Garden Grove fixed guideways
Fullerton Transportation Center			Add higher-density, mixed-use, transit-oriented development

Location	From	To	Description
Rail Transit (Continued)			
Santa Ana Transportation Center			Expand to include fixed-guideway station, bus rapid transit station, reconstructed and additional parking, pedestrian bridges, and circulation improvements
Transportation Demand Management			
SR-133	El Toro Rd	Canyon Acres Dr	Multimodal corridor improvements
PCH	Superior Ave		Construct pedestrian bridge over PCH
Vanpool Park-and-Ride Enhancements			Assess existing and future capacity levels to accommodate growth in vanpool services.
Countywide			Sustainable transportation strategies

Note: Project descriptions are subject to change through the project development process.

Ave = Avenue
Blvd = Boulevard
Dr = Drive
FY = Fiscal Year
HOT = high-occupancy toll
HOV = high-occupancy vehicle
Hwy = Highway
I-5 - Interstate 5
I-405 - Interstate 405
LOSSAN - Los Angeles-San Diego-San Luis Obispo Rail Corridor
MPAH = Master Plan of Arterial Highways
NB = northbound
PCH = Pacific Coast Highway
Pkwy = Parkway
Rd = Road
ROW = right-of-way
SR-22 - State Route 22
SR-55 - State Route 55
SR-57 - State Route 57
SR-73 = State Route 73
SR-133 State Route 133
SR-241 - State Route 241
St = Street
YOE - Year of expenditure

Appendix D
Integration Into Southern California Regional Transportation Plan/Sustainable Communities Strategy

Southern California Regional Transportation Plan/Sustainable Communities Strategy

The Southern California Association of Governments (SCAG), a federally-designated Metropolitan Planning Organization (MPO), prepares a Regional Transportation Plan (RTP) for Southern California. The Southern California RTP covers the Counties of Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura. SCAG must develop an RTP every 4 years in order for the region's transportation projects to be eligible for federal and State funding. The RTP identifies regional transportation strategies to address mobility needs by using growth forecasts and economic trends for at least a 20-year period and considers broader economic, environmental, and quality-of-life goals. The Orange County Transportation Authority (OCTA) submits its LRTP to SCAG as Orange County's input to the RTP.

In April of 2012, SCAG adopted the 2012–2035 RTP. For the first time, the 2012–2035 RTP included a Sustainable Communities Strategy (SCS). This new element of the RTP is required by the State through Senate Bill (SB) 375. SB 375 targets regional greenhouse gas (GHG) emissions with the aim of integrating land use and transportation planning in order to reduce emissions from automobiles and light duty trucks. While the RTP is required by federal planning regulations, the SCS element is required and approved at the State level.

The RTP/SCS outlines a plan for meeting regional emissions reduction targets established by the California Air Resources Board (ARB). In the SCAG region, SB 375 allows a subregional Council of Governments and County Transportation Commission to work together to propose a subregional SCS. For the inaugural SCS, Orange County prepared a subregional SCS that SCAG incorporated into the 2012 Southern California RTP/SCS. For the next iteration, SCAG will prepare both elements of the 2016 RTP/SCS, and OCTA will submit Outlook 2035 as Orange County's input into the regional transportation planning effort.

Whenever an RTP is developed, a corresponding Program Environmental Impact Report (PEIR) is also prepared to disclose any significant impacts of the RTP on the environment. This PEIR is required by law (i.e., the California Environmental Quality Act [CEQA]). SCAG prepared a PEIR for the 2012–2035 RTP and will prepare a PEIR for the 2016 update to the RTP/SCS. The PEIR evaluates regional environmental impacts, both direct and indirect, as well as growth-inducing impacts and cumulative impacts of the overall RTP.

Federal Transportation Improvement Program (FTIP)

The FTIP is a listing of capital transportation projects proposed over a 6-year period. As the MPO, SCAG is responsible for developing and maintaining the FTIP for the SCAG region. SCAG prepares the FTIP every other year on an odd-year cycle. The FTIP is the programming document for the projects included in the RTP. Locally prioritized lists of projects are forwarded to SCAG by County Transportation Commissions (e.g., OCTA). From this list, SCAG develops the FTIP and analyzes it for conformity with air quality requirements.

Air Quality and Transportation Conformity

The Clean Air Act is the federal law that governs air quality. It sets standards (i.e., national ambient air quality standards [NAAQS]), for the amount of pollutants that can be in the air. If an area does not meet the air quality standards, it is designated a "nonattainment" area.

A State Implementation Plan, called a SIP, outlines a plan for achieving the goals of the Clean Air Act and meeting the NAAQS. For the South Coast Air Basin, which covers the Southern California region, the South Coast Air Quality Management District (SCAQMD) prepares an Air Quality Management Plan (AQMP) that is submitted to the United States Environmental Protection Agency (EPA) as the official State Implementation Plan (SIP) for the region. The AQMP is prepared by the SCAQMD in conjunction with ARB, SCAG, and EPA. The plan incorporates a comprehensive strategy aimed at controlling pollution from all sources, including mobile sources (like vehicles) and stationary sources.

Because Southern California does not meet the air quality standards for pollutants, it is a nonattainment

area. As such, the RTP must demonstrate "transportation conformity." This means that a conformity determination must be made by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), showing that the transportation projects in the RTP support the goals of the SIP and do not degrade air quality. In other words, the total emissions projected from projects in the RTP and FTIP must be shown to be within the motor vehicle emission limits established in the SIP.

In addition to air quality conformity, the RTP must demonstrate how the plan can be implemented within available financial resources. It identifies the current and anticipated revenue sources and financing to accomplish the projects and programs included in the financially-constrained plan (in the LRTP this is referred to as the Preferred Plan).

California Transportation Plan

The California Transportation Plan (CTP) is a statewide LRTP prepared in response to federal and State requirements. The CTP, which is updated every 5 years, defines performance-based goals, policies, and strategies focused on achieving a statewide, integrated, multimodal transportation system. The 2040 CTP is currently being developed with plan approval scheduled for December 2015 by the Secretary of the Transportation Agency.

The CTP provides a common policy framework to guide transportation investments and decisions in the State. In response to SB 391, the 2040 CTP is being prepared in conjunction with the California Interregional Blueprint, which seeks to ensure that the State-level transportation plan integrates multimodal transportation systems that complement regional transportation plans and land use visions. The CTP is also tasked with identifying the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs.

Appendix E:
Public Outreach Report

This report will be available soon under separate cover.

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APPENDIX F: SUSTAINABILITY AT OCTA, 2014

Introduction

As the transportation planning agency for Orange County, OCTA's primary mission is to develop and deliver transportation solutions to enhance the quality of life and keep Orange County moving. In this role, OCTA has coordinated with partner agencies and stakeholders to conduct regional and facility planning and to implement projects that benefit all modes of transportation.

As community needs have changed and the transportation planning policy environment has responded, OCTA has also evolved. For example, when it became evident in the early 1980s that federal and State funds for essential transportation projects would be severely curtailed, OCTA led the effort to define critical systemwide needs and to seek voter approval to become a "self-help" county, generating funds through the Measure M local sales tax for transportation.

Today, the State is at the forefront of the issue of sustainability, giving increased attention to the issues surrounding mobility, air quality, and climate change. In this environment of heightened awareness and interest in transportation-related sustainability, OCTA has embraced regional efforts to reduce greenhouse gas (GHG) emissions. OCTA is responding by coordinating closer than ever before with partner agencies and stakeholders to plan and implement effective and sustainable transportation solutions that enhance the quality of life in Orange County.

Advancing Sustainability through the Long Range Transportation Plan (LRTP)

In 2011, OCTA and the Orange County Council of Governments (OCCOG) adopted the first ever Orange County Sustainable Communities Strategy (OC SCS) that identifies land use, transportation, and environmental strategies, which together promote sustainability. The OC SCS was developed in response to the GHG emission reduction requirements established by the State through the Sustainable Communities and Climate Protection Act of 2008, Senate Bill 375. The strategies identified in the OC SCS include the following:

Sustainability Strategies
A. Support transit-oriented development.
B. Support infill housing development and redevelopment.
C. Support mixed-use development and thereby improve walkability of communities.
D. Increase regional accessibility in order to reduce vehicle miles traveled (VMT).
E. Improve jobs-to-housing ratio.

Sustainability Strategies
F. Promote land use patterns that encourage the use of alternatives to single-occupant automobile use.
G. Support retention and/or development of affordable housing.
H. Support natural land restoration and conservation and/or protection offering significant carbon mitigation potential via both sequestration and avoidance of increased emissions due to land conversion.
I. Eliminate bottlenecks and reduce delay on freeways, toll roads, and arterials.
J. Apply Transportation System Management and Complete Street practices to arterials and freeways to maximize efficiency.
K. Improve transit modes through enhanced service, frequency, convenience, and choices.
L. Expand and enhance Transportation Demand Management practices to reduce barriers to alternative travel modes and attract commuters away from single-occupant vehicle travel.
M. Continue existing, and explore the expansion of, highway pricing strategies.
N. Implement near-term (Transportation Improvement Program and Measure M2 Capital Action Plan) and long-term (LRTP 2035 Preferred Plan) transportation improvements to provide mobility choices and sustainable transportation options.
O. Acknowledge current sustainability strategies practiced by Orange County jurisdictions and continue to implement strategies that will result in or support the reduction of GHG emissions.

In addition to identifying sustainable strategies, the OC SCS reviewed a series of policy briefs conducted by researchers from the University of California (Irvine and Davis campuses) for the California Air Resources Board. Those policy briefs summarized the academic literature on land use and transportation policies that could reduce VMT and GHG emissions. The briefs focused on the magnitude of potential impact of changes in policy, assigning categories including high, high-medium, low-medium, low, and no impact.

The table below identifies projects and programs in OCTA's LRTP—along with other activities put into place by OCTA—that accomplish these strategies. Several of the projects and programs advance more than one sustainable strategy. Where appropriate, the policy briefs were applied to indicate the potential impact category. However, the policy briefs did not consider every possible strategy; therefore, some projects and programs do not include a potential impact category.

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Support Transit Oriented Development**		
Transit Extensions to Metrolink (M2 Project S)	**Description:** Implements transit service to and from Orange County Metrolink stations. **Benefit:** Supports transit-oriented development and improves access to commuter rail service.	High-Medium
Metrolink Gateways (M2 Project T)	**Description:** Provides connections with existing and planned local, regional, and statewide transit (i.e., the Anaheim Regional Transportation Inter-modal Center). **Benefit:** Supports transit-oriented development by improving access to a wide range of transit ser-vices.	High-Medium
Metrolink Station Nonmotorized Accessibility Study	**Description:** Identifies opportunities to improve nonmotorized access to Metrolink stations. **Benefit:** Supports transit-oriented development by recommending nonmotorized facilities and ameni-ties within Metrolink station areas.	High-Medium
• **Support Transit-Oriented Development** • **Support Land Uses to Reduce SOV** • **Improve Regional Accessibility to Reduce VMT**		
Bike Share Pilot Project	**Description:** Implements short-term bicycle rentals at the Fullerton Metrolink Station. **Benefit:** Supports transit-oriented development and land uses to reduce single-occupant vehicles (SOV), and improves regional accessibility by providing a viable alternative to cars for solo com-muters, linking riders to nearby destinations, and improving accessibility of transit.	Low
• **Support Land Conservation as a Sequestration Strategy**		
Freeway Environ-mental Mitigation Program	**Description:** Comprehensive environmental mitiga-tion for the impacts from freeway improvements. **Benefit:** Supports land conservation by ensuring land will not be developed and therefore will not induce auto-related GHG emissions.	
• **Eliminate Bottlenecks and Reduce Delay**		
LRTP Projects to Eliminate Bottle-necks and Reduce Congestion	**Description (Multiple Projects)** Eliminate bottlenecks on I-5: • SR-55 to El Toro (M2 Project B) • El Toro to SR-73 (M2 Project C) • El Toro Interchange (M2 Project D) • Ortega Interchange • Along the high-occupancy vehicle (HOV) lane between Pico and Pacific Coast Highway and between the SR-55 and SR-57 (M2 Project A)	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Eliminate Bottlenecks and Reduce Delay (cont.)**		
	Eliminate bottlenecks on I-405: • SR-73 to I-605 (M2 Project K) • SR-55 to I-5 (M2 Project L) Eliminate bottlenecks on SR-91: • I-5 to SR-57 (M2 Project H) • SR-55 to SR-57 (M2 Project I) • SR-55 to SR-71 (M2 Project J) Eliminate bottlenecks on SR-55 from I-405 and SR-22 (M2 Project F) Eliminate bottlenecks on SR-57 (M2 Project G) Eliminate Bottlenecks at SR-22 Access (M2 Project E) Eliminate Bottlenecks on the I-605 Interchange with Katella Avenue (M2 Project M)	
	Benefit: Reduces sources of systemwide delay by eliminating bottlenecks along freeways, HOV lanes, and interchanges, and thereby reduces GHG emissions tied to vehicle delay.	
SR-55 Newport Boulevard Study	**Description:** Identification of corridor-specific activities to address traffic congestion and delay at the transition between the freeway and arterial street system.	
	Benefit: Eliminates congestion and vehicle delay.	
Breaking Down Barriers	**Description:** Focuses on improving the delivery of necessary transportation improvements.	
	Benefit: Reduces delay by ensuring efficient, on-time implementation of transportation projects that will result in improvements to the system.	
Regional Planning Efforts	**Description:** Transportation planning projects such as the South County Major Investment Study.	
	Benefit: Identification of multi-modal approaches that, upon implementation, will reduce traffic congestion and delay.	
Rail Grade Separations	**Description:** Implementation of railroad grade separations of vehicles from rail transit.	
	Benefit: Improves transit by enhancing safety and reducing delay for both rail and vehicle modes.	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Eliminate Bottlenecks and Reduce Delay** • **Apply TSM and Complete Streets Practices**		
Freeway Service Patrol (M2 Project N)	**Description:** Quickly addresses traffic incidents on key freeway segments during peak hours.	High-Medium
	Benefit: Reduces a source of delay by maximizing traffic flow through existing freeway corridors.	
Local Fair Share Funding (M2 Project Q)	**Description:** Provides funds to Orange County cities to augment existing funds for local transportation projects	
	Benefit: Improves local multimodal transportation systems (e.g., pavement restoration, adding bike lanes, improving pedestrian safety along school routes, and addressing arterial bottlenecks).	
• **Apply TSM and Complete Streets Practices**		
Regional Signal Synchronization (M2 Project P)	**Description:** Synchronize over 2000 signalized intersections throughout the County.	
	Benefit: Applies Transportation System Management (TSM) by minimizing starting and stopping and maintaining traffic flow at an even speed where vehicles operate most efficiently. Coordination of traffic signals provides collateral benefits to buses and bicycles as well.	
Regional Capacity Program (M2 Project O)	**Description:** Coordination with local agencies on rail/roadway grade separations and arterial improvements including complete streets strategies.	
	Benefits: Reduced vehicle delay and improved multimodal infrastructure	
Regional Bikeways Planning	**Description:** Supports development of a county-wide bicycle network that provides access to regional origins and destinations.	Low
	Benefit: Applies complete streets practices by enhancing access and connections for bicycle commuters.	
• **Apply TSM and Complete Streets Practices** • **Improve Transit Modes**		
Text4Alerts and Text4Next	**Description:** Mobile phone text messaging service that provides the next three scheduled arrival times for your specific stop.	
	Benefit: Builds ridership by making transit-based trip planning easier.	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Improve Transit Modes**		
High Frequency Metrolink Service (M2 Project R)	**Description:** Investment Metrolink rail service in Orange County.	High-Medium
	Benefit: Improves rail transit by making commuting by rail more attractive through improved rail infra-structure and service.	
Transit Extensions to Metrolink (M2 Project S)	**Description:** Implements transit service to and from Orange County Metrolink stations.	High-Medium
	Benefit: Improves access to commuter rail service.	
Metrolink Gateways (M2 Project T)	**Description:** Provides connections with existing and planned local, regional, and statewide transit (i.e., the Anaheim Regional Transportation Inter-modal Center).	High-Medium
	Benefit: Improves access to a wide range of transit services.	
Expanded Mobility Choices (M2 Project U)	**Description:** Stabilizes transit costs for seniors and persons with disabilities	
	Benefit: Maintains transit as a viable transportation option for seniors and persons with disabilities.	
Community Circula-tors (M2 Project V)	**Description:** Localized transit circulators.	High-Medium
	Benefit: Improves transit by offering community-specific transit options to replace frequent automo-bile trips within a community.	
Safe Transit Stops (M2 Project W)	**Description:** Improves the busiest bus stops with additional amenities	
	Benefit: Improves bus transit by improving ingress and egress safety as well as the overall bus experi-ence.	
• **Expand & Enhance TDM Practices**		
I-5 HOV: SR-55 to SR-57 (M2 Project A)	**Description:** Addition of a second HOV lane in both directions on the I-5.	
	Benefit: Implements Transportation Demand Management (TDM) practices by providing an addi-tional incentive for carpooling by improving the interchange of HOV traffic between SR-55, I-5, and SR-57.	
I-5 HOV: Pico to Pacific Coast High-way	**Description:** Extends the HOV lanes on I-5 south of Pacific Coast Highway to Avenida Pico.	
	Benefit: Implements TDM practices by providing an additional incentive for carpooling.	
I-5 HOV: Pico to County Line	**Description:** Extends the HOV lanes on I-5 south of Avenida Pico to the San Diego County line.	
	Benefit: Implements TDM practices by providing an additional incentive for carpooling.	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Expand & Enhance TDM Practices (cont.)**		
Local Fair Share Funding (M2 Project Q)	**Description:** Provides funds to Orange County cities to augment existing funds for local transportation projects.	
	Benefit: Supports TDM practices by enhancing local jurisdictions' ability to manage travel demand and maximize transportation efficiency along arterials.	
Transportation Coordinator Training	**Description:** Training for managers of employer-based TDM programs.	
	Benefit: Supports and enhances TDM practices by making ridesharing programs easier for employers to implement and manage.	
• **Coordinate with Local Agencies to Support Practices that Reduce GHG**		
Regional Signal Synchronization (M2 Project P)	**Description:** Synchronize over 2000 signalized intersections throughout the County.	
	Benefit: Supports practices to reduce GHG by minimizing starting and stopping and maintaining traffic flow at an even speed where vehicles operate most efficiently.	
Intercounty & Interagency Collaboration	**Description:** Collaborative efforts including, but not limited to: • Coordination with the Riverside County Transportation Commission to reduce delay on SR-91 between SR-55 and SR-71 (M2 Project J). • Collaborating with the Los Angeles County Metropolitan Transportation Authority and the Southern California Association of Governments (SCAG) to study the viability of transit service along Pacific Electric right-of-way between Los Angeles and Orange Counties. • Leading the Regional Bikeways Planning effort. • Making OCTA's geographic databases available to local planning staff to assist the coordination of land use and transportation planning. • Actively participating in the coordination of intercounty multimodal connectivity.	
	Benefit: Furthers the implementation of actions and projects that will ultimately reduce GHG emissions.	
Regional Capacity Program (M2 Project O)	**Description:** Coordination with local agencies on rail/roadway grade separations and arterial improvements including complete streets strategies.	
	Benefits: Reduced vehicle delay and improved multimodal infrastructure	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Coordinate with Local Agencies to Support Practices that Reduce GHG (cont.)**		
Rail Grade Separations	**Description:** Implementation of railroad grade separations of vehicles from rail transit.	
	Benefit: Improves transit by enhancing safety and reducing delay for both rail and vehicle modes.	
Local Fair Share Funding (M2 Project Q)	**Description:** Provides funds to Orange County cities to augment existing funds for local transportation projects.	
	Benefit: Enhances local jurisdictions' ability to reduce GHG emissions through projects that improve bicycle level of service and reduce vehicle delay.	
• **Implement Committed Transportation Improvements**		
Measure M2 Committed Transportation Improvements	**Description (Multiple Projects)**: • Bottleneck elimination projects on the I-5, SR-22, SR-55, SR-57, SR-91, I-405, and I-605 Interchange (described in detail above). • Freeway Environmental Mitigation Program • Freeway Service Patrol (M2 Project N) • Regional Capacity Program (M2 Project O) • Regional Signal Synchronization (M2 Project P) • Local Fair Share Funding (M2 Project Q) • High Frequency Metrolink Service (M2 Project R) • Transit Extensions to Metrolink (M2 Project S) • Metrolink Gateways (M2 Project T) • Expanded Mobility Choices (M2 Project U) • Community Circulators (M2 Project V) • Safe Transit Stops (M2 Project W) • Environmental Clean Up (M2 Project X)	No Impact
	Benefit: A comprehensive approach to implementing committed transportation projects that will address system needs, reduce congestion, and improve access to transportation alternatives to the SOV.	
• **Other Environmental Strategies**		
Environmental Clean Up Program (M2 Project X)	**Description:** Encourages local implementation of water treatment strategies that supplement existing water quality programs.	
	Benefit: Supports land conservation by reducing transportation-related pollution and improving water quality.	

TRANSPORTATION, LAND USE, AND ENVIRONMENTAL STRATEGIES FOR SUSTAINABILITY		Potential GHG Impact Category
• **Other Environmental Strategies (cont.)**		
Clean Fuel Bus Fleet	**Description:** Transition of OCTA's bus fleet from diesel fuel to compressed natural gas.	
	Benefit: Compressed natural gas vehicles produce fewer GHG emissions.	
Public Education and Outreach	**Description:** Engaging the public with outreach transit trip planning and bicycle safety	
	Benefit: Increased transit and bicycle use reduces SOV use and related environmental impacts.	

New Roles for OCTA

In keeping with commitments to Orange County voters, OCTA is advancing projects, plans, and programs consistent with Measure M2 to improve mobility, provide choices, and address sustainability. Beyond the M2 Program, OCTA is working to create a framework for sustainable planning and project development in Orange County. In this emerging role, OCTA has become an active facilitator and convener with local agencies and stakeholders.

For example, OCTA has been the primary facilitator and proponent of the regional bikeway planning effort. OCTA has successfully completed comprehensive planning for regional bikeways in north Orange County (Supervisorial District 4), west and central Orange County (Supervisorial Districts 1 and 2), and is embarking on collaborative planning for regional bikeways in South County (Supervisorial District 5) and to the east (Supervisorial District 3). These comprehensive plans create a prioritization for bicycling infrastructure and a framework for local agencies to compete for State and regional funds to implement facilities according to local plans and schedules.

Another example is OCTA's partnership with the OCCOG in the creation of the OC SCS—a plan to reduce regional GHG emissions over the next 20 years. OCTA continues to collaborate with OCCOG and the SCAG in the development of the second generation of the regional Sustainable Communities Strategy to be incorporated into the 2016 Regional Transportation Plan. OCTA is currently working with local jurisdictions to link land use with multimodal transportation through projects such as Fullerton's College Town, Dana Point's Walkable Communities Project, and the Santa Ana/Garden Grove Fixed Guideway Project. These efforts are helping to successfully reduce GHG emissions and implement the OC SCS.

Furthermore, OCTA is currently facilitating a comprehensive, multimodal study of Pacific Coast Highway through the eight local agencies along the Orange County coast. This study will be context sensitive, will consider complete streets, and will lead to recommendations that support and encourage safe multimodal transportation along one of the heaviest traveled commuter and recreational routes in Orange County.

Finally, OCTA is also incorporating solar energy panels in its buildings and bus and maintenance yards. OCTA is investigating LEED programs and green building practices for new structures and other building methods to reduce energy consumption and GHG emissions. Further, OCTA is a participant in a countywide alternative fuels panel and is evaluating the migration of the vehicle fleet to alternative fuels, which means less reliance on fossil fuels and greater improvement to air quality and reduction in GHG emissions. In fact, nearly all of OCTA's buses and many of OCTA's fleet vehicles already run on compressed natural gas (CNG).

Orange County's BikeShare Pilot Project: A Case Study in Sustainability

Orange County has more than 1,000 miles of bikeways with an additional 650 miles planned. With the increasing emphasis and interest in active transportation, it makes sense that OCTA would introduce a bike-sharing program, known as BikeShare, to improve mobility and close the gaps between commuters' starting points and their final destinations—the so-called first and last miles.

BikeShare allows rail and bus commuters in the City of Fullerton the chance to get to school, work, or make a short trip around town without getting into a car. Fullerton was chosen to pilot the program because the 2-square-mile area includes a Metrolink station, a downtown business area, and three college and university campuses. Data gathered during the pilot program will help OCTA understand the benefits of expanding the program to other parts of Orange County.

Users can sign up for an annual membership; however, short-term passes for 1 day or 1 week are also available. Members get access to an unlimited number of trips, making it ideal for short trips around the city. Those wanting to use the bikes for longer trips (over 30 minutes) can do so for an additional fee.

The bikes are designed with safety and ease of use in mind. They include a bright white frame, reflective tire sidewalls, front and rear lights, and a bell. The bikes also include puncture-resistant tires. Bike users can access safety information and an updated station map with real-time information about bicycle availability at the kiosks where bikes are accessed.

Bikes can be docked at any BikeShare station and users receive an electronic receipt via e-mail when their bike is docked and locked. BikeShare initially has 10 stations where bikes can be checked out, including at Fullerton City Hall, Fullerton Transportation Center, the SOCO parking structure, College Plaza shopping center, First Christian Church, Fullerton College, and four locations at California State University, Fullerton.

Appendix G: Emerging Technology Policy

It is Orange County Transportation Authority (OCTA) policy to consider inclusion of experimental transit projects in future transportation planning studies based on the ability to evaluate performance according to the principles below:

- The system will be evaluated based on the number of years it has been in continuous test service.
- The system must have a proven safety record based on accident history.
- There must be sufficient data to demonstrate long-term system and vehicle reliability.
- The system's construction, operation, and maintenance costs must be established based on similar projects currently in operation and must be compared with other alternatives, including more established transit technologies.
- The system's average revenue and farebox recovery must be evaluated and compared with other transit alternatives.
- A competitive vendor pool must be available to construct and maintain the system.

If an experimental transit system is not currently in revenue service in another location, it is difficult to gather reliable statistics regarding the long-term safety, reliability, and operation and maintenance costs of the technology. Therefore, OCTA will not invest taxpayer dollars in technologies that have not been fully developed and tested for a reasonable period of time.

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OUTLOOK 2035

Because Mobility Matters