

# South Orange County Multimodal Transportation Study Executive Summary

November 2022

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# 1

## Intent of the South Orange County Multimodal Transportation Study

The Orange County Transportation Authority (OCTA) conducts planning studies to identify and plan for the future transportation needs of Orange County. Multimodal transportation studies which also look at innovative technologies serve as the foundation of the long-range planning process by engaging stakeholders to identify priorities, providing focused analysis of transportation opportunities and issues, and recommending a vision for the study area.

OCTA initiated the South Orange County Multimodal Transportation Study (SOCMTS) as an update to the 2008 South Orange County Major Investment Study (SOCMIS). SOCMIS analyzes how mobility in Orange County is expected to evolve between the base year of 2016 and the planning horizon year of 2045. The purpose of SOCMTS is to recommend a long-range vision for the transportation system in south Orange County by identifying potential multimodal transportation improvements and adopting a new Locally Preferred Strategy (LPS) to provide a framework for future transportation system project development. As shown in Figure ES-1, this study will provide input into OCTA's Long-Range Transportation Plan (LRTP), the Southern California Association of Governments' (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and ultimately state and federal funding programs through the Federal Transportation Improvement Program (FTIP).

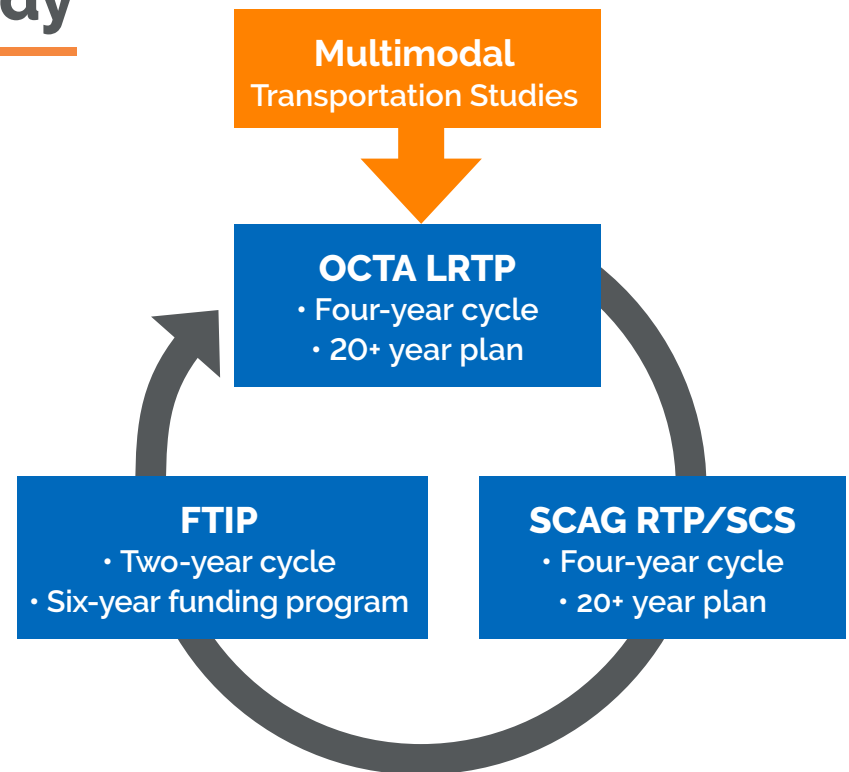


Figure ES-1: Planning and Funding Cycle

\*Note: Numbers in parentheses ( ) in the Executive Summary refer to relevant page numbers in the SOCMTS Final Report and Appendices.

# 2

## Study Area

The south Orange County study area (Figure ES-2) is bounded by State Route 55 (SR-55), Santiago Canyon Road, the San Diego County Line, and the Pacific Ocean coastline. The south Orange County transportation network in 2016 (the study's base year for forecasting travel patterns) includes:

- A system of freeways, toll roads, arterial highways and local streets. Interstate 5 (I-5) and Interstate 405 (I-405) serve as the main spines of the highway network within the study area.
- The Los Angeles - San Diego - San Luis Obispo (LOSSAN) Rail Corridor, served by Metrolink and Amtrak Pacific Surfliner trains at six station locations
- Local, express, and community bus routes, including shuttles and circulators
- Hundreds of miles of bike lanes, shared-use paths, and sidewalks

With a population of 1.1 million in 2016, the south Orange County study area contains approximately 35 percent of the County's total residents. South Orange County is forecast to grow slightly faster than the County as a whole, with 16 percent growth anticipated between 2016 and 2045 compared with 11 percent for overall Orange County. Population growth can increase pressures on the local and regional transportation network when more people are traveling along the same congested corridors.



Figure ES-2: SOCMTS Study Area

# 3

## Public and Stakeholder Engagement

Throughout the study, three different outreach phases were implemented which included a range of engagement methods, both traditional and digital, to maximize public participation and garner thoughtful feedback. This input supported the analysis of multimodal transportation strategy options in order for OCTA to develop a recommendation for an LPS. Each phase included engagement with stakeholders, residents, and elected officials. (The full Public and Stakeholder Participation Report can be found in Appendix A.)

Phase one of the study took place in fall 2020, and included an online public webinar, a key stakeholder virtual roundtable, and a virtual meeting with south Orange County elected officials. A qualitative survey (online and hard copy) was conducted and designed to assess public perception of transportation challenges and improvement strategies in south Orange County. The first phase input helped to define the study's Purpose & Need statement.

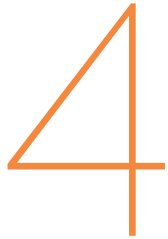
The second phase of the study took place in summer 2021 and included a virtual stakeholders roundtable, elected official's roundtable, a public telephone townhall, and a Virtual Meeting Room (VMR). A qualitative survey (online and hard copy) was also conducted with the goal of assessing the public's priorities on draft strategies and transportation solutions. The second phase input helped to identify the types of multimodal strategies most suitable for south Orange County.

The third and final phase of public involvement took place in winter/spring 2022 and included a virtual stakeholder roundtable, virtual elected official's roundtable, a virtual community meeting, and a VMR. A final qualitative survey (online and hard copy) was designed to determine participants' priorities on proposed multimodal alternatives that improve streets, transit, freeways and bikeways in South Orange County. The third phase input helped to define the SOCMTS LPS.

Public engagement was a key component of the study process and set a foundation for futures stages of development. In total, seven public events were hosted engaging nearly 700 members of the community. The survey and project information reached more than 400,000 people, which resulted in a total of 2,381 surveys collected. The feedback collected during each phase had a common theme that the public and stakeholders would like to see more alternatives to driving such as light rail, trolleys, active transportation, and improved public transit availability and accessibility. The public indicated a willingness to use alternative modes of transportation if the benefits and ease of use were more appealing than using a personal vehicle.



Join our Virtual  
Community Meeting  
Wednesday, March 23  
From 5:30-6:30pm



# Purpose and Need

Freeway and arterial lane additions will soon reach their practical limit in south Orange County due to limited availability of right-of-way. In order to improve mobility and long-term sustainability, future transportation improvements need to enhance system efficiency and make multimodal travel more convenient and effective. With this in mind, the Purpose and Need Statement, summarized in Figure ES-3, was developed in coordination with local and regional stakeholders. (See page 23 for full Purpose and Need Statement.)

**Figure ES-3: SOCMTS Purpose and Need**

Need	Purpose/Objectives	Why is this Important?
<b>Make public transit, bicycling, and walking more convenient and accessible</b>	<ul style="list-style-type: none"> <li>• Increase availability of transit service and infrastructure for biking and walking</li> <li>• Provide convenient connections between travel modes (ex. transit and biking)</li> <li>• Coordinate with and land-use development</li> </ul>	Historical land development patterns and transportation network favor driving. Convenience and accessibility of transit, biking, and walking must be improved to make these modes viable alternatives to auto travel.
<b>Decrease the overall number of trips made each day and improve safety and efficiency</b>	<ul style="list-style-type: none"> <li>• Reduce overall travel demand</li> <li>• Enhance transportation safety and efficiency</li> <li>• Better utilize available freeway lanes, carpool lanes (high-occupancy vehicle [HOV] lanes), and street space</li> </ul>	Population, employment, and travel demand continue to grow, and increasing traffic congestion makes it harder for travelers to know how long their trip will take. With limited opportunity to increase roadway system capacity, future travel reliability can be improved by enhancing safety, making the transportation system more efficient, and eliminating the need for some travel.
<b>Protect the environment and preserve transportation infrastructure</b>	<ul style="list-style-type: none"> <li>• Increase zero-emission vehicles</li> <li>• Improve access to clean, affordable travel options</li> <li>• Preserve transportation infrastructure from natural disasters</li> <li>• Minimize adverse environmental impacts</li> </ul>	Vehicular travel is a significant contributor to air pollution and greenhouse gas emissions, which negatively affect air quality and worsen climate change. Risks like rising sea level and wildfires threaten some elements of the transportation system. Environmental protection and system preservation will be important considerations in making transportation decisions.
<b>Adapt to new transportation technologies and services</b>	<ul style="list-style-type: none"> <li>• Consider autonomous vehicles or electric charging infrastructure</li> <li>• Pursue proven technologies</li> <li>• Support equity and innovation</li> <li>• Support telework strategies</li> </ul>	Technology is emerging rapidly, and travel behavior is evolving, accelerated by the COVID-19 pandemic. Transportation strategies need to incorporate flexibility so future decisions can take advantage of new technologies and adapt to new conditions.

# 5

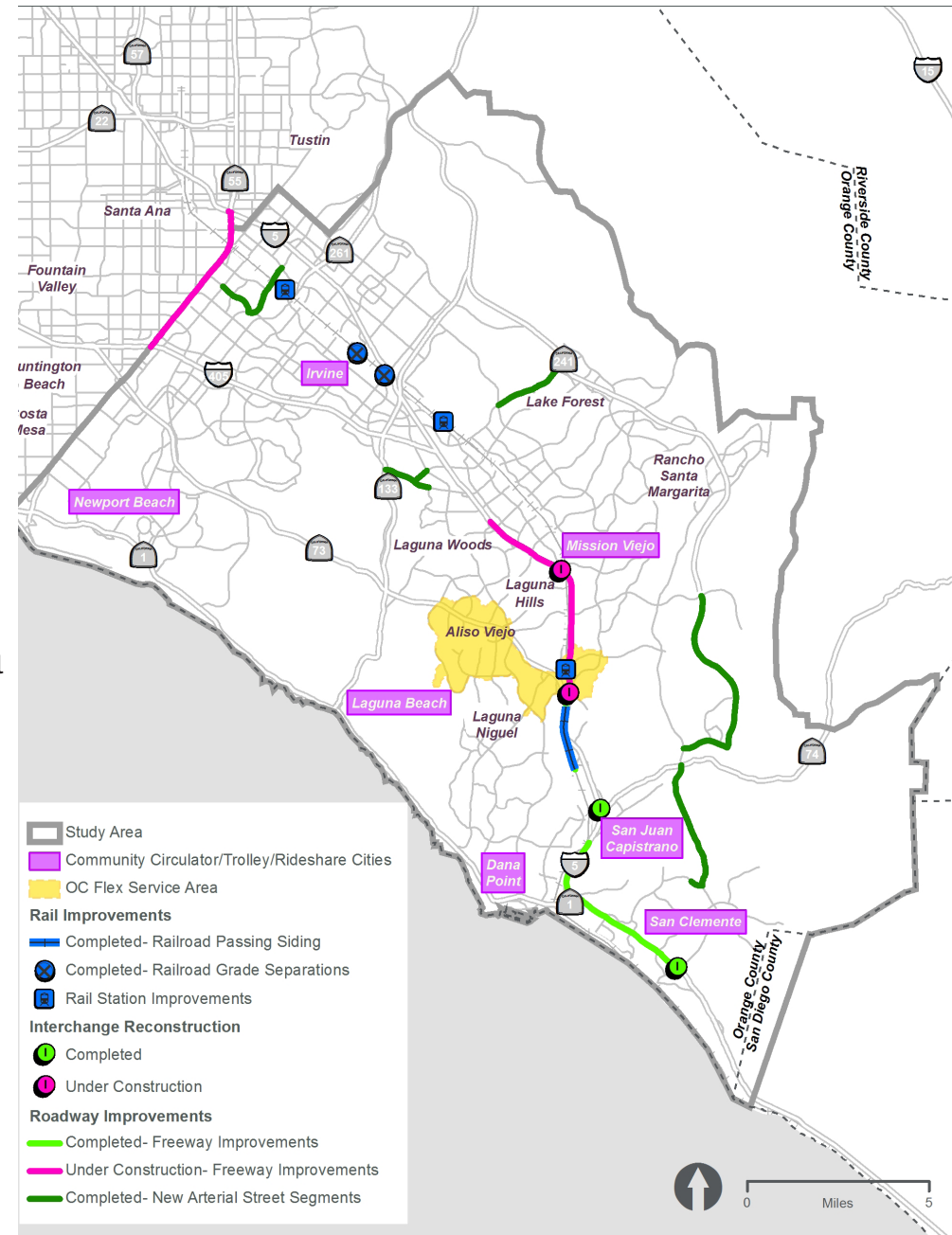
## Completed Projects and 2045 Core Elements

Since completing SOCMIS in 2008, numerous improvement projects representing nearly \$1.4 billion of investment have been constructed or are under construction in south Orange County – many of them as part of Measure M2, Orange County's voter-approved half-cent sales tax program to improve transportation. Figure ES-4 illustrates major projects that have been completed or are under construction.

In addition to the types of projects shown on the map, improvements have included arterial street enhancements, intersection enhancements, street rehabilitation, traffic signal synchronization, rail crossing improvements, bicycle and pedestrian facilities, and senior mobility programs. Table ES-1 summarizes the projects constructed or under construction since 2008 by type of project.

**Table ES-1: Summary of Improvements in South Orange County 2008-2022**

Type of Project	No. of Projects	Cost (\$ Million)
Freeway/Interchange Improvements	3	\$878
Arterial Improvements	51	\$142
Arterial Intersection Improvements	18	\$11
Street rehabilitation	42	\$21
Traffic Signal Synchronization	46	\$54
Railroad Improvements	1	\$33
Rail Crossing Improvements/Grade seps	18	\$109
Bicycle and Pedestrian Facilities	22	\$18
Train Station Improvements	6	\$51
Community Transit	17	\$33
Senior Mobility Programs	14	\$11
Environmental Mitigation Projects	21	\$9
Miscellaneous Improvements	32	\$15
<b>TOTAL</b>		<b>\$1,385</b>



**Figure ES-4: New Arterial Streets and Freeway, Rail, and Community Transit Improvements 2008-2022**

# 2045 CORE ELEMENTS

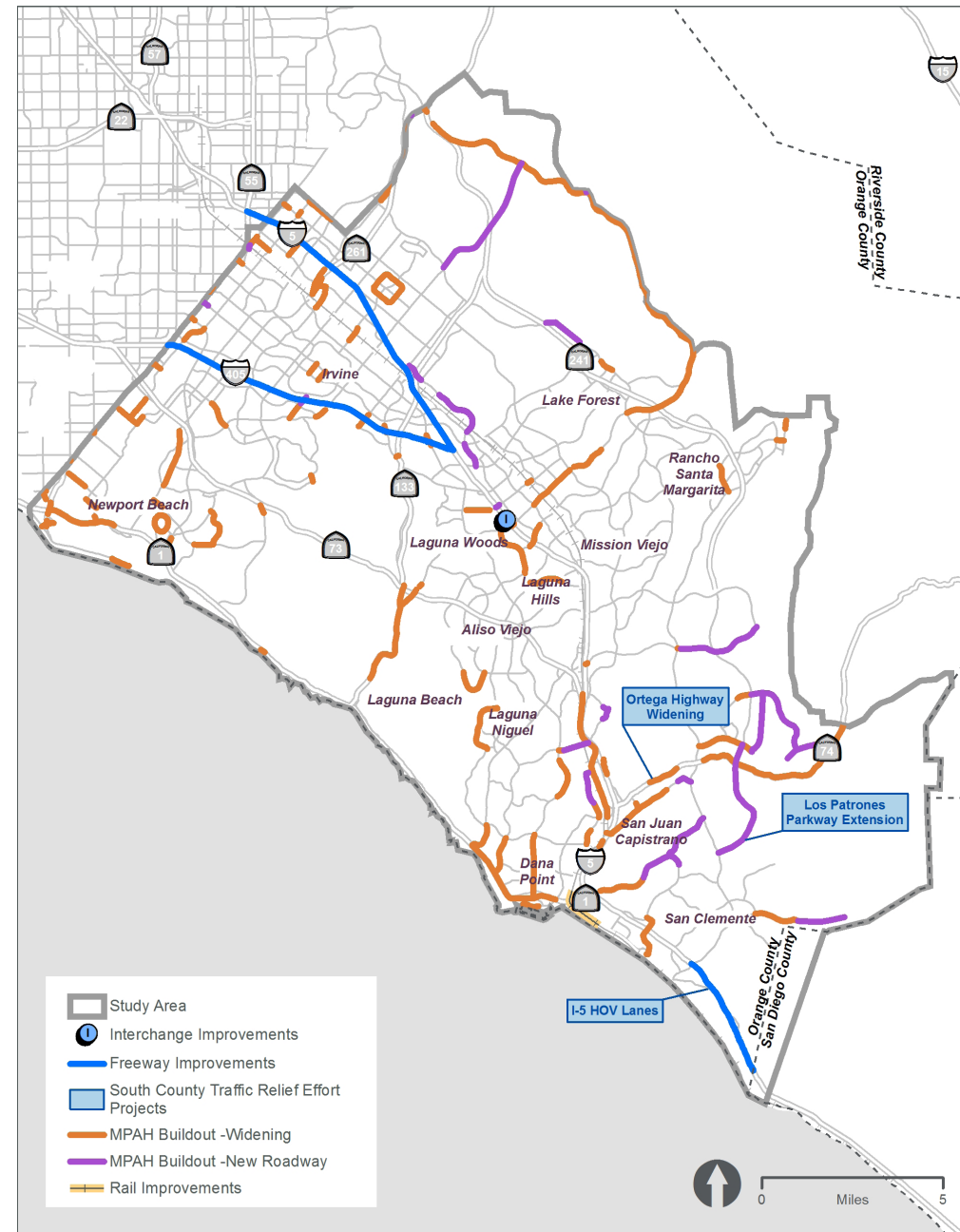
The Core Elements are south Orange County projects that have not yet started construction in 2022, but are funded or committed to be implemented by 2045. The Core Elements include projects funded by Measure M2, projects identified at the conclusion of the South County Traffic Relief Effort in 2020, planned improvements on the Orange County Master Plan of Arterial Highways (MPAH), and a rail improvement project from the Metrolink Southern California Optimized Rail Expansion (SCORE) program. The Core Elements are shown in Table ES-2 and Figure ES-5.

**Table ES-2: 2045 Core Elements**

Project	Source
I-5 Improvements between I-405 and SR-55	Measure M2
I-405 Improvements between I-5 and SR-55	Measure M2
El Toro Road/I-5 Interchange Improvement	Measure M2
I-5 HOV Lane from Avenida Pico to San Diego County Line	South County Traffic Relief Effort
Los Patrones Parkway Extension from Cow Camp Road to Avenida La Pata	South County Traffic Relief Effort
Ortega Highway Widening between Calle Entradero and Reata Road	South County Traffic Relief Effort
Planned MPAH Improvements	Orange County Master Plan of Arterial Highways
Serra Siding Double-Tracking Project	Metrolink SCORE Program

The SOCMTS modeling and performance analysis shows the need for additional multimodal strategies beyond the 2045 Core Elements to address the study's Purpose and Need and move south Orange County toward a more sustainable future (see pages 29-30). Highways and arterial streets are reaching their practical limit in terms of available right-of-way, and roadway improvements alone are unlikely to address some of the region's long-term goals. Multimodal strategies are needed that address overall transportation demand, system efficiency, transit accessibility, capacity, reliability, and equity.

Multimodal strategies applicable to south Orange County were identified through assessment of local and national best practices, current transportation policies and programs, and public and stakeholder input. Recommended strategies are identified in the LPS section which follows.



**Figure ES-5: 2045 Core Elements**



# 6

## Locally Preferred Strategy and Implementation Actions

The SOCMTS LPS includes a mix of projects, programs, and policy strategies designed to meet the study's Purpose and Need and arrive at an equitable action plan for implementation. The foundation of the LPS is the Core Elements set of projects shown in Figure ES-5 above, including the commitments from Measure M2 to improve I-5 and I-405, three near-term arterial and HOV improvements and a rail passing siding. The multimodal strategy elements that comprise the LPS are shown in Table ES-3, and illustrated in Figures ES-6 through ES-9.

The LPS elements represent a group of interlinked components that work together to provide south Orange County residents, workers, and visitors with more varied, cost-effective, convenient, and safe travel options. As a long-term strategy, the LPS provides an overall framework and direction that OCTA will use to shape its transportation decision-making processes. Once the vision is established, recommendations for new projects and programs can be considered in the future for inclusion in OCTA's LRTP and SCAG's RTP/SCS, for subsequent funding and implementation. Potential projects identified during the SOCMTS analysis are shown to illustrate each strategy element.

Actions needed to implement the LPS are summarized in Figure ES-10. (The full action plan can be found on pages 41-44 of the SOCMTS report.) Implementing the improvement strategies will require ongoing coordination with state and local agencies which have jurisdiction over elements of the study area's transportation system.

### EQUITY IN THE LPS

Equity will continue to be a foundational component in the identification, prioritization, and implementation of transportation improvements in south Orange County. SOCMTS has identified areas with socioeconomic or environmental disadvantages to better understand the impacts of transportation decisions on those communities. The following actions are recommended so that Equity can be incorporated as a guiding factor within the implementation of all the recommended strategy areas.

- Assess travel patterns and mobility needs of the Equity Focus Communities identified in south Orange County
- Develop grassroots engagement in the transportation decision-making process with Equity Focus Community members

Additional information on the SOCMTS equity analyses is included in Appendix E of the SOCMTS Final Report.

Table ES-3: SOCMTS LPS

Strategy Element	Complete 2045 Core Elements	Roadway Infrastructure & Operations Improvements	High-Frequency Transit	Local Circulators/Shuttles
Objective	Complete Measure M2 and other project commitments	Improve the operational efficiency of the south Orange County roadway and freeway network	Provide enhanced bus and rail services on major corridors, enabling more travelers to utilize transit	Continue the Project V community circulator program, providing tailored local connectivity and first/last mile service
Potential Projects	<p>[see Figure ES-5 on page ES-6]</p> <ul style="list-style-type: none"> <li>• I-5 Improvements between I-405 and SR-55</li> <li>• I-405 Improvements between I-5 and SR-55</li> <li>• El Toro Road/I-5 Interchange Improvement</li> <li>• I-5 HOV Lanes from Avenida Pico to San Diego County Line</li> <li>• Los Patrones Parkway Extension from Cow Camp Road to Avenida La Pata</li> <li>• Ortega Highway Widening between Calle Entradero and Reata Road</li> <li>• Improvements planned in the Orange County MPAH</li> <li>• Serra Siding Double-Tracking Project</li> </ul>	<p>Chokepoint Improvements</p> <ul style="list-style-type: none"> <li>• Northbound I-5 truck climbing lane in San Clemente</li> <li>• SB SR-133 / SB I-5 ramp weave</li> <li>• Other chokepoint improvements identified in ongoing Freeway Chokepoint Improvement Study</li> </ul> <p>Operations Improvements</p> <ul style="list-style-type: none"> <li>• Signal synchronization</li> <li>• Advanced Traffic Management Systems</li> <li>• Transportation Systems Management and Operations (TSMO)</li> <li>• Intelligent Transportation Systems</li> <li>• Integrated Corridor Management</li> </ul>	<ul style="list-style-type: none"> <li>• Increased Metrolink train frequency</li> <li>• Bus Rapid Transit (BRT) on I-5 and SR-55 (consistent with the Freeway BRT Concept Study)</li> </ul>	<ul style="list-style-type: none"> <li>• Dana Point Trolley</li> <li>• Laguna Beach Trolley</li> <li>• San Clemente Trolley</li> <li>• Mission Viejo Shuttle</li> <li>• iShuttle</li> <li>• Balboa Peninsula Trolley</li> <li>• San Juan Capistrano Trolley</li> <li>• New circulators in other communities that qualify</li> </ul>

Figure ES-6: Potential Project Examples



Advanced Traffic Management Systems



Metrolink



Local Circulators

Table ES-3 (continued): SOCMTS LPS

Strategy Element	Mobility Hubs	Microtransit / OC Flex	Active Transportation	Transportation Demand Management
Objective	Provide convenient, centralized locations where various transportation services connect	Expand on-demand local transportation zones which address gaps in the OC Bus network and improve access to high-frequency transit	Improve connectivity and safety for the bicycle and pedestrian network, including connections to transit and mobility hubs	Enhance system performance by encouraging travel when/where capacity exists, including reducing peak-hour trips and promoting transit and active transportation modes
Potential Projects	<ul style="list-style-type: none"> <li>• New South Orange County Rail Station</li> <li>• Laguna Hills Transportation Center</li> <li>• Network of regional, local, and neighborhood hubs based on the ongoing Orange County Mobility Hubs Study (see map of conceptual hub locations in Figure ES-7)</li> </ul>	<ul style="list-style-type: none"> <li>• Aliso Viejo / Laguna Niguel / Mission Viejo</li> <li>• San Clemente</li> <li>• Tustin/Irvine</li> <li>• Irvine Spectrum</li> <li>• Laguna Beach</li> <li>• UC Irvine / Newport Center</li> <li>• Laguna Hills / Lake Forest</li> <li>• Costa Mesa / Newport Beach</li> <li>• Dana Point / San Juan Capistrano</li> </ul> (see map of potential microtransit zones in Figure ES-8)	<ul style="list-style-type: none"> <li>• Complete OC Connect, OC Central Loop, OC South Loop, and regional bikeways (see map in Figure ES-9 below)</li> <li>• Provide protected bicycle facilities or improved bikeways on arterial streets connecting residential and employment concentrations and mobility hubs</li> <li>• Provide local bicycle feeder routes to mobility hubs, regional bikeways, and the regional transit network</li> <li>• Create safe, walkable routes for circulation in high activity areas</li> </ul>	<ul style="list-style-type: none"> <li>• Specific TDM elements to be identified in upcoming OCTA TDM Strategy Study, possibly including:                             <ul style="list-style-type: none"> <li>o Transit subsidies for students</li> <li>o Support for carpools, vanpools, schoolpools</li> <li>o Transit passes for potential users of mobility hubs</li> <li>o Incentives for active transportation use</li> <li>o Support for telework</li> </ul> </li> </ul>

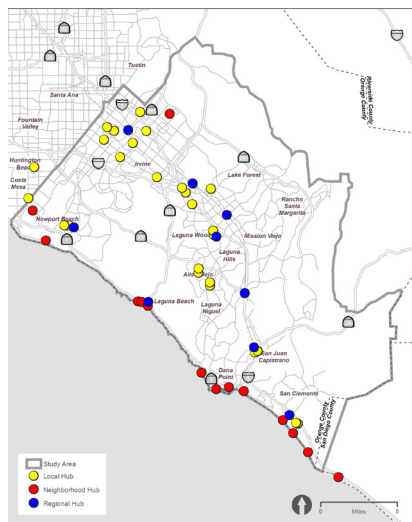


Figure ES-7: Conceptual Mobility Hubs (full-size map in SOCMTS Final Report, Figure 4-1)

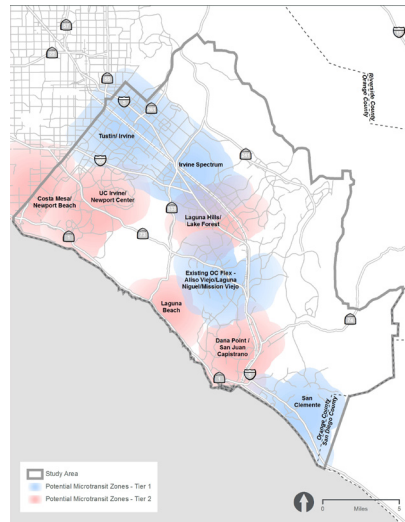


Figure ES-8: Potential Microtransit Zones (full-size map in SOCMTS Final Report, Figure 4-2)

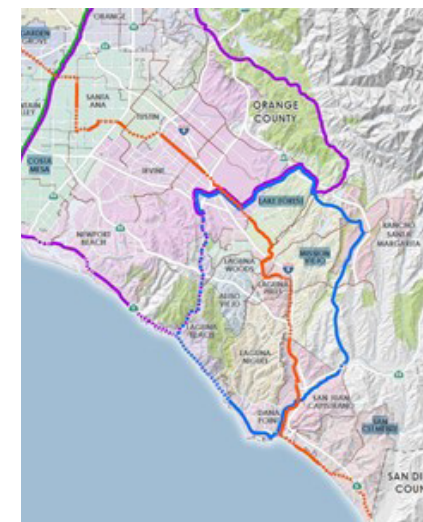


Figure ES-9: Regional Bikeways to be completed (full-size map in SOCMTS Final Report, Figure 4-3)

**Figure ES-10: Implementation Actions**

The following presents a list of actions for moving forward to implement the strategy elements of the LPS.

\*Note: Numbers in parentheses ( ) refer to relevant page numbers in the SOCMTS Final Report and Appendices.

**2045 Core Elements (pg 27)**

Continue project development process to implement:

- The extension of Los Patrones Parkway as a non-tolled facility from Cow Camp Road to Avenida La Pata
- Widening and restriping of Ortega Highway between Calle Entradero and Reata Road
- The southern extension of carpool lanes on Interstate 5 from Avenida Pico to the San Diego County line
- I-5 improvements between I-405 and SR-55
- I-405 improvements between I-5 and SR-55
- El Toro Road/I-5 interchange improvement
- Planned MPAH improvements
- Serra Siding double-tracking project

**Local Circulators/Shuttles (pg 42)**

- Develop a post-2041 funding strategy for local circulators
- Consider opportunities to expand local circulator service
- Encourage consideration of all potential users in local planning for circulator services

**Active Transportation (pg 43)**

- Continue coordinated planning and implementation of the regional bikeway system
- Consider programs to support the implementation of low-stress streets
- Consider programs to support active transportation use

**Roadway Infrastructure & Operations Improvements (pg 41)**

- Pursue project-level development for priority chokepoints
- Develop countywide TSMO plan
- Develop a post-2041 funding strategy for roadway operations projects
- Explore potential emerging technology strategies

**Mobility Hubs (pg 42)**

- Pursue project-level studies and a potential mobility hub pilot project to advance mobility hubs in south Orange County consistent with the countywide mobility hubs strategy
- Identify funding opportunities for mobility hubs

**Transportation Demand Management (pg 44)**

- Pursue implementation of TDM programs and actions identified in the upcoming countywide TDM Strategy

**High-Frequency Transit (pg 41)**

- Develop corridor-level plans and recommendations for improvements identified in the OC Transit Vision
- Refine the OC Transit Vision to align with the Making Better Connections Study and updated data on long-term transit ridership trends
- Participate in planning and developing recommendations related to the Metrolink SCORE program and future service levels
- Periodically assess and recommend modifications to multimodal connections at rail stations

**Microtransit (pg 43)**

- Develop guidelines for implementing additional microtransit service areas
- Conduct market analysis and recommend priority areas for microtransit
- Develop a monitoring program for any new services to support the achievement of key performance indicators



Prepared for the Orange County  
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