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2018 Long-Range Transportation Plan

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Executive Summary

2018 Long-Range Transportation Plan

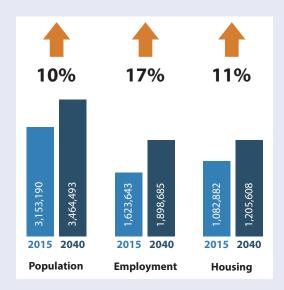
Executive Summary

The Orange County Transportation Authority (OCTA) was created in 1991 through the consolidation of seven separate transportation planning agencies. Since that time, Orange County has transformed from a Los Angeles bedroom community to a vibrant, independent economy of its own. OCTA played a major role in this growth by keeping residents and commuters moving throughout Orange County's 34 cities and the unincorporated County areas. This is exemplified through successful implementation and operation of transportation projects and services over the years, including well over 1 billion bus passenger trips, approximately 62 million Metrolink passenger trips, in excess of 200 miles of freeway lanes constructed, and 2,000 synchronized traffic signals.

In order to accommodate future growth in population, employment, and housing, OCTA must continue to improve upon the existing transportation system. Within this setting, transportation leaders have worked with the general public and partner agencies to develop *Designing Tomorrow*, Orange County's long-range transportation plan to keep its transportation systems operating efficiently, effectively, and in keeping with the needs and desires of its residents.

2040 No Build Conditions

Analysis by the Center for Demographic Research shows Orange County's population, employment, and housing are expected to continue growing for the foreseeable future. To understand how much of an impact the projected growth will have on the transportation system, OCTA analyzed a scenario referred to as 2040 No Build. This scenario considers how the transportation system would operate in 2040 if no investments or changes were made after 2015. The result showed that without additional transportation improvements, the percent of time spent in traffic will increase 41 percent as average speeds decline on Orange County's highways and roadways by approximately six percent. The performance of this 2040 No Build scenario is shown below in comparison to 2015 conditions.



TRANSPORTATION SYSTEM PERFORMANCE SUMMARY (2015 TO 2040)

Performance Metric	2015 Base Year	2040 No Build
Delay as a percent of travel time	15.2%	21.4%
Freeways - AM peak average speed (mph)	38.3 miles per hour	36.2 miles per hour
Arterials - AM peak average speed (mph)	25.7 miles per hour	24.3 miles per hour

Note: AM peak refers to the period between 6AM and 9AM

What is a Long-Range Transportation Plan (LRTP)?

Designing Tomorrow, OCTA's vision for mobility over the next 20+ years, is known as a long-range transportation plan. Orange County's long-range transportation plan is updated every four years to reflect changing demographics, economic trends, and mobility needs. It also serves as Orange County's input into regional planning efforts for southern California. The Southern California Association of Governments (SCAG) is required by the state of California and the federal government to develop a Regional Transportation Plan/Sustainable Communities Strategy, also every four years. Orange County's transportation projects must be included in the Southern California Regional Transportation Plan/Sustainable Communities Strategy in order to be eligible for federal and state funding, and to progress through design and construction.

Establishing the Framework for the Long-Range Transportation Plan

Creating transportation solutions for the future requires developing and analyzing a range of scenarios and ultimately defining a preferred transportation plan. The plan must take into account the many challenges facing a county that is continuing to grow. *Designing Tomorrow* does just that – it contains a set of goals that considers financial constraints, shifting interest in modes of transportation, and environmental regulations. It also supports exploring opportunities that come with the emergence of new technology and innovation that could substantially change the face of transportation in the next 20+ years.

Challenges

- High Cost of Housing
- Limited Land for System Expansion
- Transportation Funding Uncertainties
- Evolving Transit Market
- Disruptive Technologies
- Challenging Emission Standards

Goals

- Deliver on Commitments
- Improve System Performance
- Expand System Choices
- Support Sustainability

The 2040 Improvement Plan

The growing travel demand highlighted in the 2040 No Build scenario is addressed through a financially-constrained multi-modal strategy in the Trend 2040 scenario. This scenario delivers on OCTA's commitments, improves system performance, expands transportation choices, supports sustainability, and aligns with stakeholder input. A listing of the Trend 2040 projects is shown in the tables on the following pages.

TREND 2040 PROJECT LIST - HIGHWAY PROJECTS

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes	Inter- change
	Measure M Pro	ojects			
I-5	Project A – Add one HOV lane in each direction from SR-55 to SR-57, plus auxiliary lanes as needed		x		
I-5	Project B – Add one regular lane NB from truck bypass on-ramp to SR-55; Add one regular lane SB from SR-55 to Alton Parkway; improve merging	x			
I-5	Project C – Add one regular lane in each direction from SR-73 to Alicia Parkway and one HOV lane each in direction from Alicia Parkway to El Toro Road; improve La Paz Road and Avery Parkway interchanges	х	x		x
I-5**	Project C – Add one HOV lane in each direction from Pacific Coast Highway to Avenida Pico, and reconfigure interchange at Avenida Pico		x		x
I-5	Project D – Improve access and merging in the vicinity of El Toro Road				x
SR-55	Project F – Add one regular lane and one HOV lane in each direction from I-405 to I-5, and fix chokepoints	x x			
SR-55	Project F – Add one regular lane in each direction and fix chokepoints from I-5 to SR-22; make other operational improvements from I-5 to SR-91	x			
SR-57	Project G – Add one regular lane NB between Orangewood Avenue and Katella Avenue	x			
SR-57	Project G – Add one NB truck climbing lane from Lambert Road to Los Angeles County line	x			
SR-91**	Project H – Add one regular lane WB from I-5 to SR-57	x			
SR-91**	Project I – Add one regular lane WB from SR- 55 to Tustin Avenue	x			
*Under const	ruction NB - Northbound	ER - East			

*Under construction **Completed since 2015 NB - Northbound SB - Southbound EB - Eastbound WB - Westbound

TREND 2040 PROJECT LIST - HIGHWAY PROJECTS CONTINUED

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes	Inter- change
	Measure M Pro	ojects			
SR-91	Project I – Add one regular lane EB from SR-57 to SR-55; add one regular lane WB from SR-57 NB connector to State College Boulevard; improve interchanges and merging from Lakeview Avenue to Raymond Avenue	X			
SR-91	Project J – Add one regular lane in each direction from SR-241 to county line	X			
I-405*	Project K – Add one regular lane in each direction from I-605 to SR-73 and provide additional capital improvements	x			
I-405	Project L – Add one regular lane in each direction from I-5 to SR-55, and add SB auxiliary lane from SR-133 to Irvine Center Drive	x			
I-605	Project M – Improve interchange at Katella Avenue				x
	Project N – Freeway Service Patrol				
	Additional Pro	ojects			
I-5	Add one HOV lane in each direction from SR-57 to SR- 91		X		
I-5	Add one HOV lane in each direction from Avenida Pico to San Diego County line	x			
I-5	Barranca Parkway HOV interchange improvement - Add SB HOV on-ramp and northbound HOV off-ramp			x	
SR-57	Interchange improvement at Lambert Road				Х
SR-73	Add one HOV lane in each direction from MacArthur Boulevard to I-405		X		
SR-91	Construct overcrossing and interchange at Fairmont Boulevard				x
SR-91	Express Lanes - Operations and maintenance				
I-405*	Add one express lane in each direction from I-605 to SR-73, convert existing HOV to HOT, and provide additional capital improvements			х	
I-405	Add auxiliary lanes from University Drive to Sand Canyon Ave, and from Sand Canyon Ave to SR-133	Х			

*Under construction **Completed since 2015 NB - Northbound SB - Southbound EB - Eastbound WB - Westbound

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes		Inter- change
	Additional Pro	ojects				
I-405	Express Lanes – Operations and maintenance					
	Motorist services (511 service and call box network)					
	Projects from Partn	er Ageno	ies			
SR-241 SR-261 SR-133	Build out to three to four toll lanes in each direction from SR-91 to I-5 (via SR-261 and SR- 133), plus climbing and auxiliary lanes				x	
SR-241	Build out to four to five toll lanes in each direction, plus climbing and auxiliary lanes, south of SR-133				x	
SR-73	Build out to four toll lanes in each direction, plus climbing and auxiliary lanes				x	
SR-133	Add new interchange at Trabuco Road/Great Park Boulevard (North Irvine Transportation Mitigation Program)				x	x
SR-241	Add express lane connector to SR-91 Express Lanes			x	x	x
SR-91	RCTC to add one regular lane from county line to SR-71	x				

TREND 2040 PROJECT LIST - STREETS AND ROADS

Corridor	Description			
Measure M Projects				
Countywide	Project O – Master Plan of Arterial Highways build out			
Grade Separations**	Project O – Grade separations along BNSF corridor at Raymond Ave and State College Boulevard			
Countywide	Project P – Signal synchronization program			
	Additional Projects			
Countywide	Arterial Pavement Rehab			
Grade Separations	Along LOSSAN corridor at 17th Street, State College, and Santa Ana Boulevard			
Countywide	OC Bikeways			
*Under construction				

**Completed since 2015

TREND 2040 PROJECT LIST - TRANSIT

Description

Measure M Projects

Project R – Metrolink Capital – Supports service increase from 54 to 86 weekday trains

Project R – Metrolink Service Expansion Program station improvements

Project S – OC Streetcar

Project U – Senior Mobility Program

Project U – Senior Non-Emergency Medical Transportation Program

Project W – Safe Transit Stops

Additional Projects

OC Bus 360° – Bus Efficiency Strategy

North Harbor Corridor – High-quality transit between Cal State Fullerton and the Santa Ana Regional Transportation Center

17th/Westminster & Bristol Corridor – High-quality transit between the Goldenwest Transportation Center and the University of California, Irvine

South Harbor Corridor – High-quality transit between 17th/Westminster and Hoag Hospital Newport Beach

Bristol & State College Corridor – High-quality transit between Brea Mall and Downtown Santa Ana

Beach Corridor – High-quality transit between Fullerton Park-and-Ride and Downtown Huntington Beach

La Palma Corridor – High-quality transit between Hawaiian Gardens and Anaheim Canyon Station

McFadden & Bolsa Corridor – High-quality transit between Goldenwest Transportation Center and Larwin Square

Main Corridor – High-quality transit between Anaheim Regional Transportation Intermodal Center and the South Coast Plaza Park-and-Ride

Chapman Corridor – High-quality transit between Hewes and Beach

Interstate 5 Corridor – Freeway BRT between Fullerton Park-and-Ride and Mission Viejo/Laguna Niguel Metrolink Station

State Route 55 Corridor – Freeway BRT between Santa Ana Regional Transportation Center and Hoag Hospital Newport Beach

Metrolink Operations (increase from 54 to 86 weekday trains)

OC Flex - On-demand shared-ride microtransit service

LOSSAN – Laguna Niguel to San Juan Capistrano rail passing siding

Transit Security and Operations Center

Vanpool

TREND 2040 PROJECT LIST - OTHER

	· · · · · · · · · · · · · · · · · · ·
Descri	
Desci	

Measure M Projects

Project X – Transportation-related water quality program

Additional Projects

Bond Interest

The Trend 2040 scenario can be delivered within the revenues projected between 2019 and 2040, which amount to approximately \$43.4 billion. The majority of these funds (68 percent) are local sources, while state sources comprise 22 percent and federal sources make up the remaining 10 percent. The allocation of these funds was prioritized to deliver on commitments that include: completion of OC Go (also known as Measure M - Orange County's one-half-cent sales tax for transportation, administered by OCTA); non-OC Go projects that have secured support and funding; as well as maintaining existing infrastructure, transit service levels, and motorist services programs. Delivering on these commitments requires about 84 percent of the available revenues.

PROPOSED TREND 2040 EXPENDITURE BY MODE

Mode	Expenditure	% of Total Cost
Transit Projects	\$18,103,197	42%
Highway Projects	\$9,646,352	22%
Local Projects	\$14,169,720	33%
Other (OC Go Environmental Programs, Bond Interest, etc.)	\$1,471,467	3%

Note: Additional investments in highway safety and maintenance projects are made by the state through the State Highway Operation and Protection Program.

Trend 2040 also includes "additional projects" (as noted in the preceding tables) that go beyond the commitments described above. These projects use the remaining 16 percent, or approximately \$7 billion, of projected funding. These discretionary funds were used to fund projects and services that further address the 2018 long-range transportation plan goals and challenges. These projects are typically selected from plans that have been publicly vetted, such as the OC Transit Vision, Regional Bikeways plans, Metrolink Strategic Plan, and locally preferred alternatives from OCTA's major investment studies.

Changing Carpool Lane Standards

The performance of the carpool lane system in Orange County is a challenge, in that it must comply with federal performance standards that are not being met today. To meet these standards, the California Department of Transportation (Caltrans) is considering exercising its authority to make operational changes that would increase the number of passengers required to three or more. Additionally, Caltrans and neighboring counties are planning to have many of these carpool lanes allow vehicles with fewer than three passengers to also use the carpool lanes for a fee. Since a significant amount of funding is at stake if the federal standards are not met, *Designing Tomorrow* evaluated the options, as shown in the chart below. It was determined that, based on what OCTA knows today, the most reasonable option is to assume that the carpool lane system will likely operate as carpool/tolled express lanes by 2040. Therefore, this was assumed in the analysis of the Trend 2040 scenario.

CARPOOL LANE PERFORMANCE SUMMARY

Metrics	Carpool 2+	Carpool 3+	Express Toll
Meets federal performance standards	×	✓	\checkmark
Managed lane capacity used during morning drive time	70%	30%	60%
Findings summary	Does not meet federal standard due to overuse	Meets federal standard, but underused	Meets federal standard and doubles use compared to carpool 3+

Achieving the Goals and Performance

Trend 2040 keeps promises made to voters through OC Go and meets the long-range transportation plan goal of **delivering on commitments**. The performance metrics below indicate that the efficiency of the Orange County transportation system improves significantly under the Trend 2040 scenario, nearly matching the 2015 Base Year despite a 10 percent increase in population and a 17 percent increase in employment. Therefore, Trend 2040 is meeting the goal of **improved system performance**. Additionally, Trend 2040 supports the goal of **expanding system choices** by investing in development of transit, active transportation, and rideshare options. Finally, Trend 2040 can be accomplished within the funds projected to be available between now and 2040, making the plan **financially sustainable** for OC taxpayers. It also includes system maintenance programs and programs to improve the quality of life for Orange County residents, such as land acquisition and environmental mitigation projects that not only provide open space but also offset greenhouse gas emissions. Thus, Trend 2040 achieves financial, infrastructural, and environmental sustainability.

Taking a closer look at the performance of the Trend 2040 scenario as compared with the 2040 No Build Scenario, the percent of travel time in traffic is reduced 28 percent, while freeway and arterial speeds increase 10 percent and nearly 7 percent, respectively. Additionally, transit trips are projected to increase approximately 6 percent.

Metrics (daily)	2015 Base Year	2040 No Build	Trend 2040
Delay as a percent of travel time	15.2%	21.4%	15.4%
Transit trips	149,000	165,000	174,000
Freeways - AM peak average speed (mph)	38.3	36.2	39.7
Arterials - AM peak average speed (mph)	25.7	24.3	25.9

TRANSPORTATION SYSTEM PERFORMANCE SUMMARY

Note: Trend 2040 assumes managed lanes are operated as carpool/tolled express lanes by 2040

Designing in a Changing World

Advancing technologies and services, ranging from on-demand and remote transportation options to car- and bike-sharing to autonomous vehicles, are already operational or expected to be a part of the transportation landscape in the not-too-distant future. As groundbreaking technologies and services offer new transportation possibilities, they will significantly change travel behavior and patterns, and in turn, greatly impact the infrastructure and support systems needed to keep Orange County residents mobile.

Given this reality, a 20-year transportation plan must acknowledge that change related to new technologies is inevitable. Therefore, *Designing Tomorrow* includes two "discussion scenarios" to explore a sample of many possible futures that may take shape by 2040. The first is the Innovation scenario that considers potential impacts of certain technological innovations on travel behavior, in addition to the Trend 2040 investments and assumptions. The second is the Policy scenario, which builds on the Innovation scenario to also consider how policy changes being discussed at the state and regional levels could further influence travel behavior and leverage some of the technological innovations.

When comparing the performance of the Innovation discussion scenario to Trend 2040, it appears that autonomous vehicles, telecommuting technologies, and on-demand ridehailing services may not provide a focused benefit to the transportation system. Except for average freeway speeds, all other performance measures worsen under the Innovation scenario: arterial speeds decline, transit trips drop, and there is greater delay in travel times. This is primarily due to the assumption that autonomous vehicles will be accessible to many individuals who cannot operate vehicles today, as well as the introduction of zero-occupant trips, which together increase vehicle miles traveled and congestion while reducing transit ridership. However, if policies are put in place to maximize the impact of technology on travel behavior, the performance measures show better outcomes.

Examples of policies that leverage innovations could include: allowing autonomous vehicles to access carpool lanes, like today's clean air vehicle policy; providing telecommuting incentives to businesses; and policies that support ridesharing, including additional park-and-ride lots. Additionally, policies that are more independent from innovations can also substantially influence travel behavior. These could include mileage-based user fees, priced parking, and policies that enhance land use diversity and connectivity with active transportation facilities and transit services. The Policy scenario adds assumptions to the Innovation scenario that are intended to represent the types of policies described above. When comparing the Policy discussion scenario with Trend 2040, system performance improves significantly: there is a nearly 30 percent decrease in travel time delay, and freeway and arterial speeds increase by approximately 9 percent and 8 percent, respectively.

This highlights the important role policy will play to help guide how innovations should be implemented, as well as the level of direct impact policy can have on travel behavior. The development of these influential innovations and policies will continue to be monitored by OCTA for further discussion, as noted in the Short-Term Action Plan.

Metrics (daily)	Trend 2040	Innovation	Policy
Delay as a percent of travel time	15.4%	16.9%	11.7%
Transit trips	174,000	171,000	170,000
Freeways - AM peak average speed (mph)	39.7	39.8	43.1
Arterials - AM peak average speed (mph)	25.9	25.4	28.0

TRANSPORTATION SYSTEM PERFORMANCE SUMMARY

Future Efforts

In closing, *Designing Tomorrow* outlines several conceptual projects that go beyond the Trend 2040 financially constrained scenario that may further achieve the goals of the plan. As these conceptual projects become defined and refined through stakeholder input and environmental analyses, OCTA may consider including them in the financially constrained scenario of future LRTPs.

CONCEPTUAL PROJECT LIST

Description		
Local Arterial Projects		
Crown Valley Parkway – I-5 to Greenfield Drive lane additions beyond MPAH		
Cabot Road – Paseo de Colinas to Camino Capistrano lane additions beyond MPAH		
Harbor Boulevard/Ball Road gradeseparated intersection		
Harbor Boulevard – Warner Avenue to 17th Street lane additions beyond MPAH		
Laguna Canyon Road* – El Toro Road to Canyon Acres Drive		
OC Intersections Assessment recommendations		
MPAH Complete Streets Assessment recommendations		
OC Active recommendations		
Countywide Communications Study (ITS) recommendations		
Highway Projects		
Ortega Highway – Operational Improvements		
I-5 – Avenida Pico to Avenida Vaquero truck lane		
Freeway Chokepoints (TBD)		
Direct access ramps (TBD) – Managed lane and high-capacity transit support		
SR-55 - Improve access and merging in the vicinity of Meats Avenue		
Transit Projects		
Metrolink expansion (increase from 86 to 98 weekday trains)		
Other Projects		
OC Goods Movement Study recommendations		
Projects from Partner Agencies		
SR-73/Glenwood intersection improvement (Phase III) - TCA		
FTC South – SR-241/Oso Parkway to I-5 (San Diego) – TCA		
*Note: Contingent on voter approval of a local sales tax supporting the Laguna Canyon Road project, OCTA will include it in Orange County's		

financially constrained submittal for the 2020 RTP/SCS

Designing Tomorrow also identifies several short-term activities to keep OCTA moving forward by continuing to plan and evolve by working with partner agencies, engaging Orange County communities, and integrating emerging innovations and policies.

2018 LRTP SHORT-TERM ACTION PLAN

Activity	Description		
Orange County Planning Activities			
Coordination with Local Partner Agencies	Continue dialogue with local jurisdictions, Caltrans District 12, TCA, local transit operators, and other local agencies as needed to further intra-county connectivity.		
South Orange County Mobility	Identify multi-modal transportation needs and opportunities in South Orange County.		
Corridor Studies & Improvements	Conduct studies evaluating the feasibility of multi-modal corridor enhancements.		
OC Transit Vision Feasibility Studies	Study options to improve transit service and connectivity along corridors identified through the OC Transit Vision.		
Transit Support Services	Establish a long-term plan for Orange County transit-supportive services, such as OC Flex, Vanpools, and Park-and-Rides.		
Managed Lane Studies	Identify operational enhancements to the HOV network and criteria for potential expansion of priced managed lanes.		
Freeway Chokepoints	Develop long-term freeway chokepoint improvement strategies, assuming OC Go is fully implemented.		
Signal Synchronization	Support local initiatives to maintain and modernize signal synchronization corridors countywide.		
Transportation Demand Management (TDM)	Study opportunities for new or expanded TDM projects.		
Active Transportation Investments	Continue evaluating Orange County's Active Transportation needs, develop long-term plans, and implement programs that address data collection, data management, and safety education.		
Sustainable Transportation Strategies	Coordination with partner agencies on implementation of sustainability strategies.		
Joint Development Studies	Evaluate opportunities for joint developments at OCTA transit terminals to improve transit facilities and connectivity with employment/housing.		
Asset Management	Monitor maintenance needs for existing and new facilities and equipment. Update fleet plans to address zero-emission bus requirements.		
Adaptation Planning	Study infrastructure needs and develop recommendations		
Traffic Model Update	Update Orange County Traffic Analysis Model to incorporate latest socioeconomic data		
Regional Planning Activities			
Coordination with Regional Partner Agencies	Continue dialogue with SCAG, SANDAG, County Transportation Commissions, SCAQMD, Caltrans, and other regional agencies as needed to further inter-county connectivity.		

2018 LRTP SHORT-TERM ACTION PLAN CONTINUED

Activity	Description			
Regional Planning Activities				
Trade Corridors/Goods Movement	Coordinate primarily through SCAG and Metro to plan for projected growth in regional goods movement.			
2020 RTP/SCS	Participate in the development of the 2020 RTP/SCS and initiate dialogue with SCAG and local jurisdictions.			
2028 Olympics	Coordinate with Metro on preparations for the 2028 Olympics.			
Metro Countywide ExpressLanes Strategic Plan	Continue dialogue with Metro and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.			
San Diego's I-5 HOT Lane Project	Continue dialogue with SANDAG and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.			
West Santa Ana Branch/ Pacific Electric Right-of- Way	Continue dialogue with Metro and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.			
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.			
LOSSAN/Green Line Connection	Participate in SCAG's effort 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.			
	Emerging Issues			
Monitor New Technology	Monitor developing technologies and their potential impacts on transportation (e.g., autonomous vehicles, alternative fuels, and smart phone applications).			
Connected Infrastructure Needs Assessment	Study infrastructure needs and identify opportunities to implement and/or complement emerging transportation technologies.			
State and Federal Regulation	Monitor state and federal legislation/regulations.			
State and Federal Funding	Identify strategies and opportunities to access and leverage State and federal funding.			
Transportation Outreach and Education				
Active Transportation Safety	Seek opportunities to enhance public outreach and education related to active transportation safety.			
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.			

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Orange County Today Chapter 1

Key Points:

- High housing costs and limited supply are impacting transportation
- Most Orange County highways, including carpool lanes, are congested during peak hours
- OCTA is working well with local jurisdictions to improve intersections
- Orange County's freeways and roadways are the best maintained in the state
- Orange County's transit market is evolving
- Metrolink ridership is growing, but operating costs are growing faster
- Biking and walking, while currently a small proportion of commuting, can grow with strategic investments
- OCTA's support services improve quality of life in Orange County

Today, Orange County is home to nearly 3.2 million residents. It is one of the densest, most populous counties in the state. In fact, eight percent of California's population lives in Orange County, on half of one percent of the state's land area. Climate, work opportunities, schools, and accessibility to services and entertainment are key reasons why people decide to locate here.

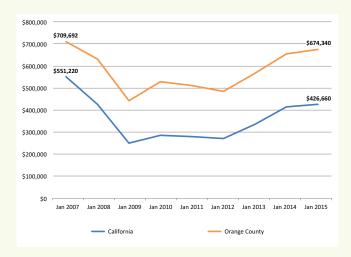
Orange County residents live throughout the 34 cities and unincorporated areas of the county, in a variety of housing types. Orange County's housing and population are relatively dense in the central and northern parts of the county, as shown in **Figure 1.1**. New housing is being built mostly as medium and high-density housing. Of this new housing, more than two-thirds is infill development in the urban cities of central and north Orange County.

Despite new developments, the production of housing is not keeping pace with the needs of our growing population and workforce. As a result, the cost of housing in Orange County is high and growing faster than elsewhere in the state. For example, the median sale price for an existing single-family home reached \$674,340 in January 2015, and only 43 percent of first-time homebuyers in Orange County could afford an entrylevel home, which required an annual income of \$86,870 to qualify. Rent is also out of reach for many individuals and families. In 2015, the median market rent for a one-bedroom apartment was \$1,283 a month. That means an Orange County worker would need an hourly wage of \$24.67 per hour to afford the rent. A minimum wage-worker would have to work 110 hours a week to afford a one-bedroom apartment.¹

These characteristics of the housing market offer insight for why many young and middle-aged professionals are leaving Orange County and why other individuals and families live doubled- and tripled-up in homes.

¹Orange County Community Indicators Report, 2016

MEDIAN EXISTING SINGLE-FAMILY HOME SALE PRICE IN ORANGE COUNTY AND CALIFORNIA (JANUARY 2007-JANUARY 2015)



Source: California Association of Realtors (www.car.org/marketdata/ data/housingdata/)

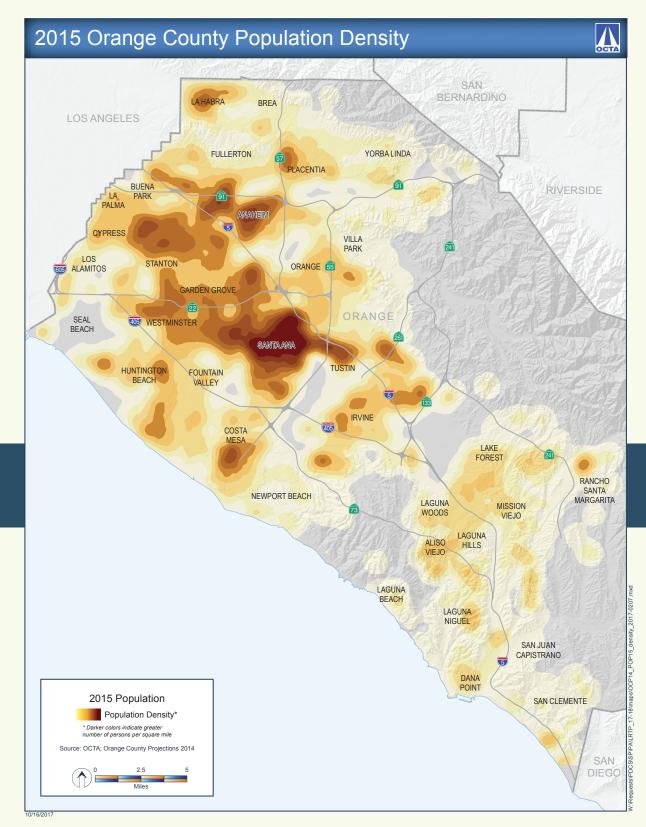
Population and Housing

43%

first-time home-buyers could afford an entry-level home in Orange County in 2015

\$24.67

hourly wage needed to afford a median-priced one-bedroom apartment in Orange County in 2015

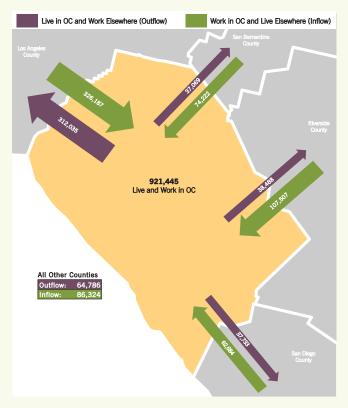


Once a suburb of the greater Los Angeles area, Orange County is now home to its own booming work force with a strong economic base that fuels Orange County's prosperity.

As Orange County's unemployment rate returns to pre-recession levels, the number of people employed increased from 1.39 million in 2010 to 1.52 million in 2015. Central and north Orange County have large employment centers, and there are also pockets of concentrated employment spread throughout the county, as shown in **Figure 1.2**.

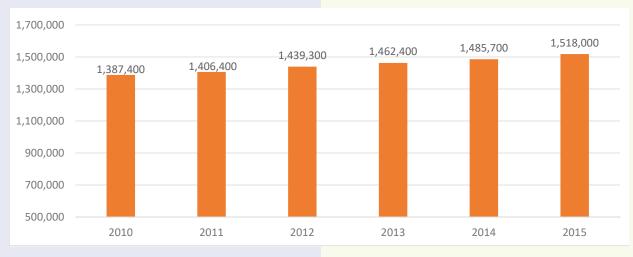
Most Orange County residents both live and work within the county (58 percent). However, about 657,000 people live elsewhere and commute into Orange County to work, compared with about 490,000 residents who commute to work outside of Orange County. This means there is a greater inflow of people coming to Orange County to work – which impacts travel on our network of highways and roads. The greatest flow of traffic is between Los Angeles and Orange counties (flowing nearly evenly into and out of Orange County), while most of the work trips from the Inland Empire and San Diego are commuters traveling into Orange County.

INTERCOUNTY COMMUTING PATTERNS



Source: California Department of Finance, Table E-2 (Population 2016), Table P-1 (Population 2040)

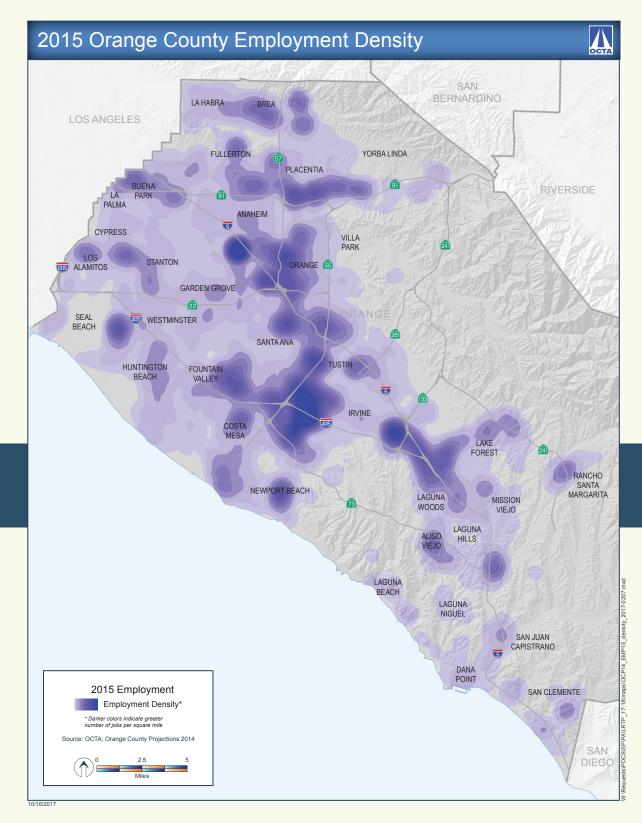
Employment



NUMBER OF PEOPLE EMPLOYED IN ORANGE COUNTY (2010-2015)

Source: California Employment Development Department

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FIGURE 1.2
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TREND IN SELECTED MODES OF TRAVEL TO WORK (2007-2015)



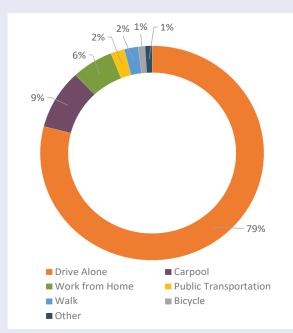
Note: Data is commute mode for workers age 16 and over. "Other means" includes taxi, motorcycle, or other means. *Source: U.S. Census Bureau, American Community Survey, 1-Year Estimates*

How We Move

Most Orange County commuters drive alone to work (79 percent in 2015). The next most common way to travel – and it is a distant second – is carpooling. About nine percent of commuters carpool, while six percent work from home. This increase in working at home may indicate a new trend enabled by advancements in technology and evolving workplace cultures.

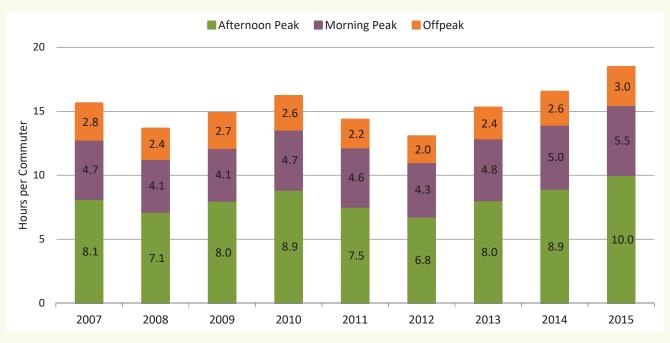
Only two percent take public transportation and two percent walk to work. Declining transit ridership presents a challenge that will be a key element of this plan. Less than one percent of commuters bike and another one percent take some other form of transportation like a taxi or shared ride option. Both driving alone and carpooling have remained relatively steady for more than 10 years. Working at home is trending upward, in contrast with public transportation, which has seen an incremental decline over the past decade.

HOW ORANGE COUNTY COMMUTES (2015)



Source: 2015 American Community Survey, 1-year estimates

ANNUAL HOURS OF DELAY PER COMMUTER AT SPEEDS LESS THAN 60 MILES PER HOUR ON FREEWAYS IN ORANGE COUNTY (2007-2015)



Note: Peak-hour delay is calculated by commuter; offpeak delay is calculated for the entire population. The total number of hours of delay is a combination of per capita and per commuter hours of delay. "Commuter" is defined as persons commuting to work in personal cars, trucks, or vans.

Source: Caltrans, Performance Measurement System; U.S. Census Bureau, American Community Survey, 1-Year Estimates

2015 Travel Conditions

The year 2015 is the base year for this long-range transportation plan. In other words, it is the starting point at which we look at the condition of the various transportation systems in Orange County, from highways to local roads to bus, rail, and active transportation like biking and walking. From this starting point, OCTA can then develop strategies with a range of transportation projects and programs intended to keep residents and workers moving.

Regional Highways

Given that most Orange County residents and workers commute by driving, an effective network of highways is critical to mobility. Unfortunately, as the number of people who live in and commute to Orange County continues to grow, average highway speeds are decreasing. This means commuters are spending more time in traffic, away from home and work. In 2015, travelers spent an average of 18.5 hours sitting in traffic on Orange County highways. **Figure 1.3** maps congestion on Orange County highways in 2015 during the morning peak travel period.

Toll Roads

Orange County's network also includes the Toll Roads, which consist of State Routes 73, 241, 133, and 261. These facilities were originally planned as freeways, but were financed through toll revenue bonds and developer impact fees. Until the bonds are paid and the toll roads are turned over to the state, vehicles are charged a fee that adjusts based on time of day. Toll Road maintenance and enforcement is the responsibility of Caltrans and the California Highway Patrol, respectively, while the Transportation Corridor Agencies (TCA) are responsible for operating the toll collection system. While the Toll Roads are accounted for in analyses within this LRTP, congestion on these facilities was not reported because it is assumed that TCA would adjust tolls to maintain congestionfree facilities. The Short-Term Action Plan described in Chapter 6 includes a freeway chokepoint improvement strategy to address locations where congestion on Orange County's regional highways is at its worst.



PERCENTAGE OF CARPOOL LANES THAT ARE CONGESTED: ORANGE COUNTY (2010-2015)

Note: The term "congestion" in this context refers to the federal definition of carpool "degradation." A carpool lane is considered degraded if the average traffic speed during the morning or evening weekday peak commute hour is less than 45 miles per hour for more than 10 percent of the time over a consecutive 180-day period.

Source: Caltrans, 2010 through 2015 California High-Occupancy Vehicle Lane Degradation Determination Reports

2015 Travel Conditions

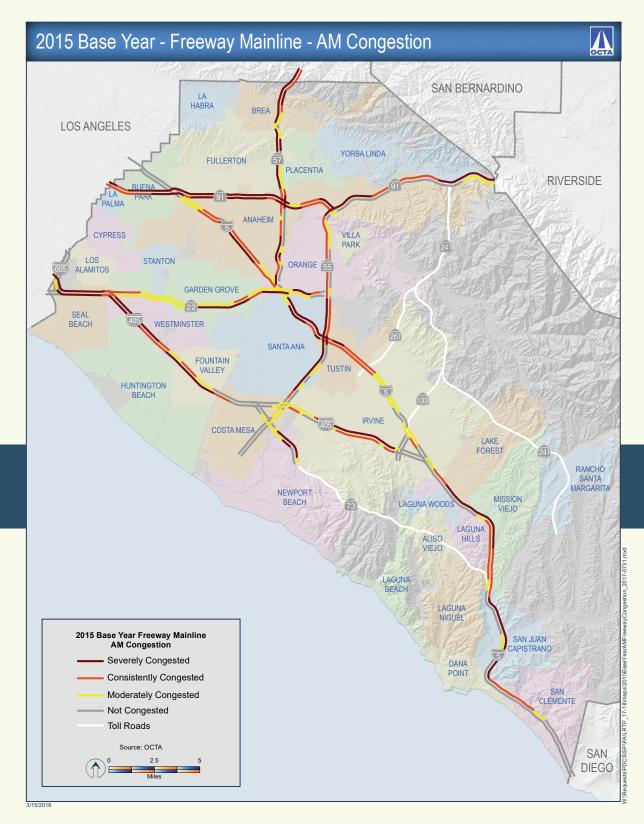
Carpool and Express Lanes

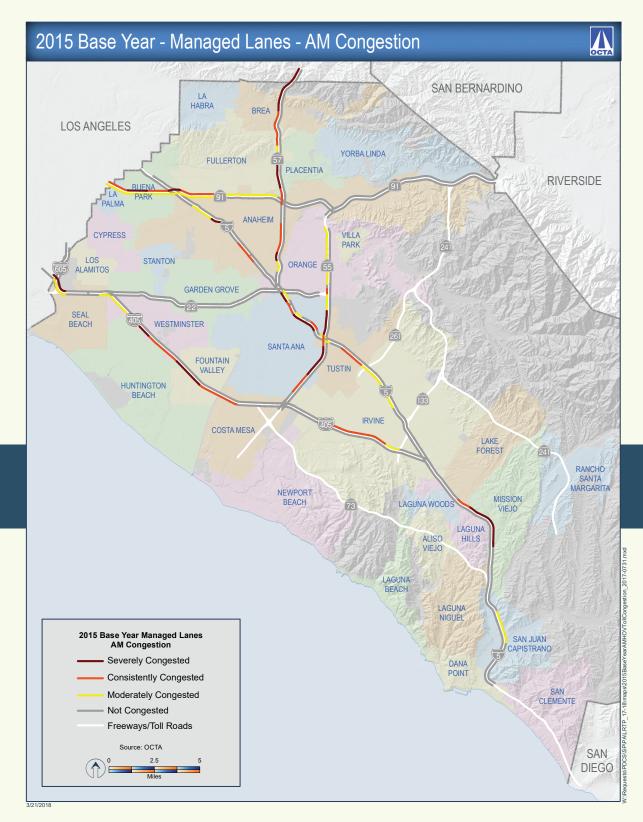
Orange County has the most robust system of carpool lanes (also sometimes referred to as high-occupancy vehicle [HOV] lanes or managed lanes) in the State, with carpool-to-carpool connectors in place on most highways. As of October 2014, carpool lanes provide a way to increase capacity on the highway network, and the good news is that nearly all highways in Orange County have a carpool lane. The bad news is that congestion on Orange County's carpool lanes has steadily increased since the first half of 2012. Fully 80 percent of Orange County carpool lane miles were reported as congested by Caltrans in the first half of 2015, compared to 53 percent in the first half of 2010. This is based on performance standards set by the Federal Highway Administration, which require detailed monitoring of the system that is more sensitive than the method used by OCTA in Figure 1.4.

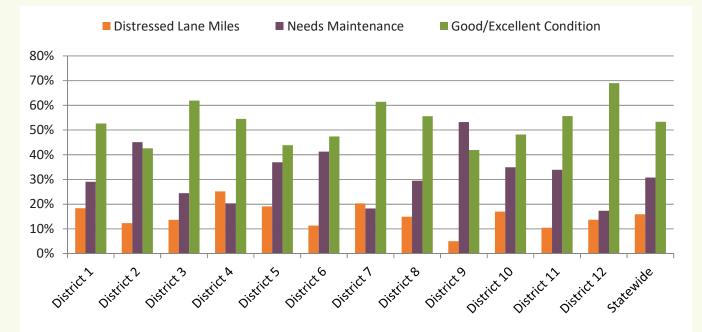
OCTA is also the owner/operator of the highly successful 91 Express Lanes, the first facility of its kind in the state. The 91 Express Lanes, which extend from State Route 55 (SR-55) into Riverside County, experience free-flowing traffic and do not have the same congestion issue as the county's carpool lanes.

As of October 2014, 96.3 percent of Orange County freeway miles had a carpool or express lane. When looking at lane miles, 19 percent of all highway lane miles were carpool or express lanes. **Figure 1.4** maps congestion on Orange County's managed lane system (carpool and express lanes) in 2015 during morning peak travel times.

To tackle the issue of carpool lane congestion, OCTA will conduct Managed Lane Studies to identify operational enhancements to the HOV network, along with criteria for expansion of priced managed lanes. OCTA is also coordinating with neighboring counties to ensure connectivity with their managed lane projects (see Chapter 6, Short-Term Action Plan).







PAVEMENT CONDITION OF STATE-OPERATED HIGHWAYS (2015)

Note: Orange County is District 12. Source: Caltrans State of the Pavement Report 2015, Appendix 4

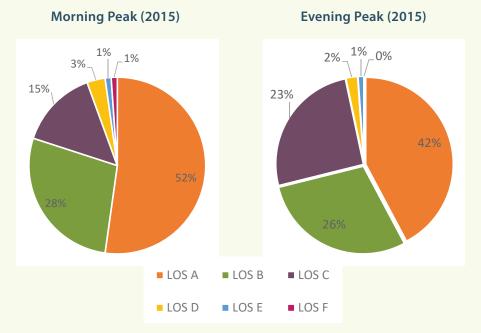
2015 Travel Conditions

Regional Highway Maintenance

All highways, carpool lanes, and express lanes must be maintained. When maintenance is deferred, the pavement becomes degraded and roadway safety can be impacted. Caltrans monitors the status of state highways and tracks their condition, rating highway pavement according to levels of "distress," which range from pavement in poor condition with extensive cracks to pavement providing poor ride quality (the lowest level of distress). In 2015, Caltrans reported that 14 percent of pavement on the state highway system in Orange County was distressed. This is lower than California overall (with 16 percent distressed pavement). Most of the distressed lane miles in Orange County (77 percent) were rated the lowest level of distress, "poor ride quality." Most of the highway pavement in Orange County (69 percent) is in good or excellent condition. This is the highest percentage in the state.

Prior to passage of Senate Bill 1 (SB 1), Caltrans projected an annual shortfall for statewide transportation maintenance in excess of \$250 million. About half of the new roadway maintenance revenue generated by SB 1 would fund improved maintenance of regional highway facilities and about half would be returned directly to local jurisdictions for maintenance of arterials. Additional maintenance revenue from SB 1 should help Orange County and our neighboring counties reduce the percentage of distressed pavement.

OCTA continually monitors maintenance needs for existing and new facilities and equipment. This ongoing asset management is included in the Short-Term Action Plan (Chapter 6).



LEVEL OF SERVICE (LOS) FOR KEY INTERSECTIONS

Source: OCTA, Orange County Congestion Management Program

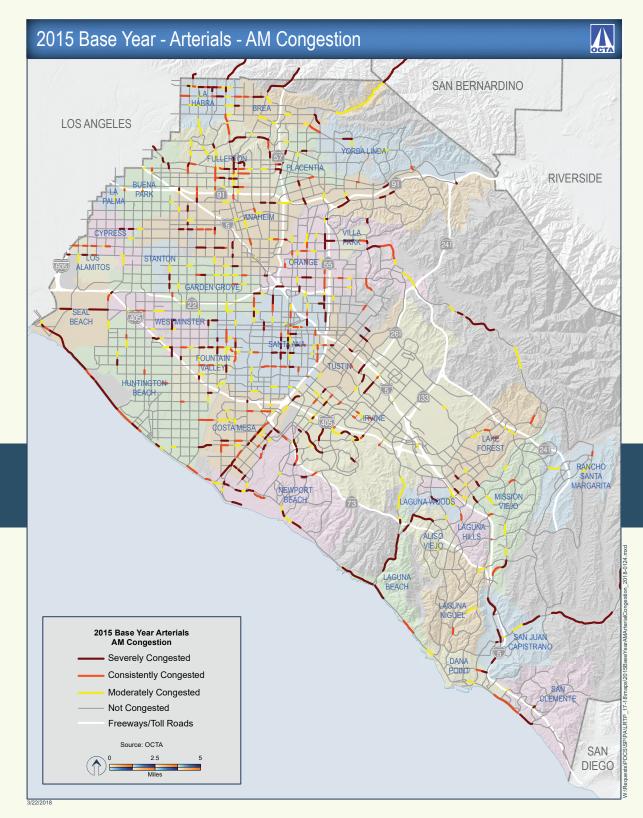
2015 Travel Conditions

Local Roads

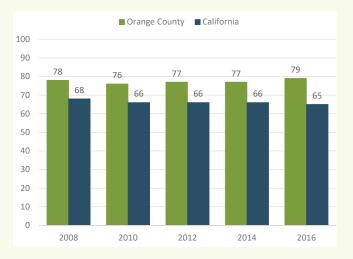
For the most part, Orange County's system of local roads, comprising more than 6,365 lane miles, is built out. This roadway network is coordinated across the county's 34 cities and unincorporated Orange County through the Master Plan of Arterial Highways (MPAH). **Figure 1.5** shows how the MPAH system performed in 2015, mapping congestion on the arterial system during morning peak travel times.

One way to gauge the performance of the roadway system is by tracking congestion at intersections along arterials. Through its Congestion Management Program (CMP), OCTA measures congestion at approximately 100 intersections on key roadways in Orange County. Most of these intersections meet or exceed the CMP performance standards during both morning and evening peak commute hours. Overall, these 100 intersections have seen a 10 percent improvement in levels of service since the CMP began in 1992. Also, through the OC Go half-cent sales tax initiative that is dedicated to transportation, OCTA and its partners from local jurisdictions have invested extensively in coordinating signals to increase traffic throughput (the Regional Traffic Signal Synchronization Program). By the end of 2015, more than 2,000 signalized intersections were synchronized along 540 miles in Orange County. Based on the improvements made, synchronizing signals provided greater traffic flow, with a countywide average of 13 percent time savings, 15 percent faster speeds, and 31 percent fewer stops.

To maintain this positive trend, OCTA will continue to support local initiatives to maintain and modernize signal synchronization corridors countywide (see Chapter 6, Short-Term Action Plan, "Signal Synchronization").



LOCAL ROADS PAVEMENT CONDITION INDEX: ORANGE COUNTY AND CALIFORNIA (2008-2016)



100

- 70 Good-Excellent: Preventative Maintenance
- 50 At Risk: Thin HMA Overlays
- 25 Poor: Thick HMA Overlays
- 0 Failed Construction

Pavement Condition Index Thresholds

A newly constructed road will have a Pavement Condition Index (PCI) of 100, while a failed road will have a PCI of 25 or less. The pavement condition is primarily affected by climate, traffic loads and volumes, construction materials, and age. Pavement with a PCI below 49 is considered poor; between 50 and 70 is considered at risk; between 71 and 85 is good; and 86 and above is considered excellent.

Good to excellent pavements (PCI>70) are best suited for pavement preservation techniques. As pavements deteriorate, more intensive and expensive treatments that address structural adequacy are required. When the pavement has failed (PCI<25), reconstruction is typically required.

Source: California Statewide Local Streets & Roads Needs Assessment 2016

2015 Travel Conditions

Local Road Maintenance

Today, nearly 17,000 lane miles of pavement in Orange County are maintained by local jurisdictions. In addition to local funding, OC Go also provides a source of funding to jurisdictions for maintenance of their roads. Like highways, the pavement condition on local roads is assessed regularly. According to the California Local Streets and Roads Needs Assessment, Orange County's average pavement condition index (PCI) was 79, which is in the "good to excellent" range. Orange County has maintained a good to excellent rating since tracking began and has the highest PCI of all 58 counties in California.



Bus Transit

Currently, OCTA operates a total of 59 bus routes, including six that serve Metrolink stations, three express buses and two Bravo! lines with fewer stops for faster route times, and three express buses that provide service to and from neighboring counties (**Figures 1.6 and 1.7**).

Over the past several years, OCTA has invested in high-quality transit corridors (HQTC), which are routes with more frequent bus service – at 15 minutes or less between buses on the route during peak hours of travel on weekdays. Approximately 12 percent of Orange County's bus system miles were HQTC miles in 2015, and almost 31 percent of Orange County's population lived within one-half mile of an HQTC.



Bus Transit



As the county has recovered from the Great Recession, fewer residents are using the bus. Bus ridership dropped 31 percent in 10 years, while the cost per passenger to operate the buses has steadily increased from \$3.38 per passenger in 2006 to \$4.10 per passenger in 2015. In 2015, there were 15.2 trips per capita on Orange County's fixed-route bus system. In comparison, the U.S. average in 2015 was approximately 13.6 trips per capita (for both urban and rural areas combined).

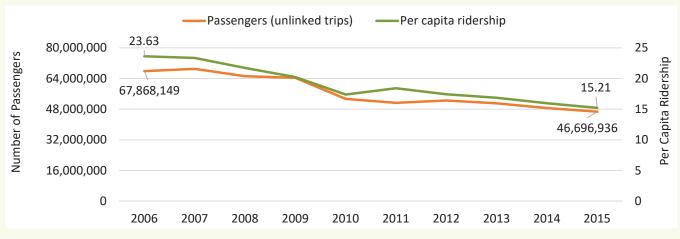
Additionally, passengers are riding buses for shorter trips, with a 15 percent decrease in 10 years in the average distance traveled by bus passengers. A recent study commissioned by the Southern California Association of Governments and conducted by the UCLA Institute of Transportation Studies looked at the trend of falling bus ridership in southern California.² They found that the most significant factor affecting transit use was increasing car ownership. In fact, their study found that car ownership has grown fastest among the most frequent transit riders.

To address concerns about declining ridership, in 2015, OCTA developed an initiative called OC Bus 360° to improve the bus system to better meet the county's needs. OCTA improved the frequency of buses in areas with high demand and reduced costs in areas with low demand. OCTA also launched a real-time bus locator application that allows customers to receive real-time bus locations via smartphone apps such as Transit and Moovit, and implemented Text4Next 2.0, which gives riders real-time bus arrival information via text. Additionally, following a comprehensive public outreach campaign, the OCTA Board approved the new bus branding, "OC Bus."

Going forward, OCTA has identified several activities as part of the Short-Term Action Plan (Chapter 6) to improve bus transit in Orange County. These activities include feasibility studies to improve service and connectivity along specified corridors; establishing a long-term plan for transit-supportive services such as OC Flex, Vanpools, and Park-and-Rides; evaluating opportunities for joint development at transit terminals to improve connectivity with employment and housing; and increased public outreach and education about the advantages of transit use.

² Manville, Michael, et al. *Falling Transit Ridership: California and Southern California*, UCLA Institute of Transportation Studies, January 2018.

BUS TRANSIT RIDERSHIP: ORANGE COUNTY (2006-2015)



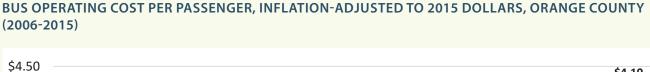
Source: National Transit Database (https://www.transit.dot.gov/ntd/transit-profiles-summary-reports)

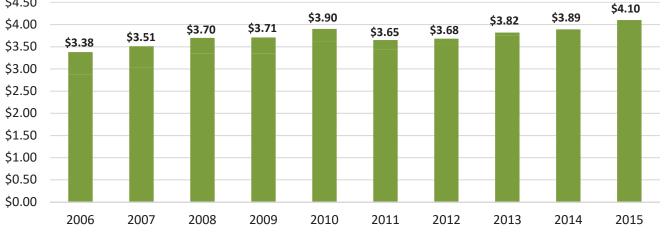
Transit use across the nation, including bus and rail, has remained relatively steady over the past decade.

39 transit boardings per capita California, 2006

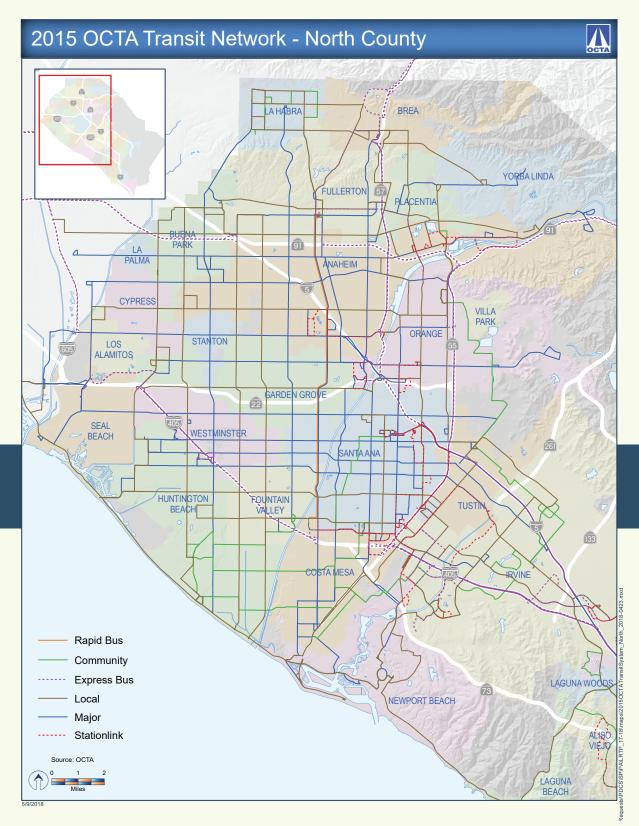
However, similar to Orange County, California transit use declined.

36 transit boardings per capita California, 2015



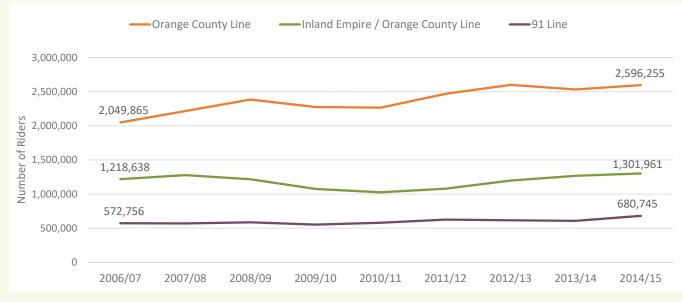


Note: Dollars adjusted using Consumer Price Index Inflation Calculator: https://data.bls.gov/cgi-bin/cpicalc.pl Source: National Transit Database (https://www.transit.dot.gov/ntd/transit-profiles-summary-reports)





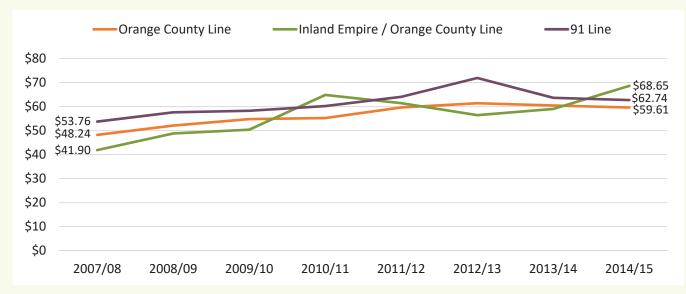
COMMUTER RAIL RIDERSHIP: ORANGE COUNTY LINE, INLAND EMPIRE/ORANGE COUNTY LINE, AND 91 LINE (2007-2015)



Sources: Southern California Regional Rail Authority, Orange County Transportation Authority

Rail Transit

OPERATING COST PER TRAIN MILE: ORANGE COUNTY LINE, INLAND EMPIRE/ORANGE COUNTY LINE, AND 91 LINE (2008-2015)



Source: Southern California Regional Rail Authority, Nominal Costs

FIGURE 1.8



Three Metrolink lines serve Orange County, including the Orange County line, the Inland Empire/Orange County line, and the 91 line. In 2015, Metrolink used these lines to serve Orange County travelers, with 54 trains running on weekdays and 16 trains on weekends.

Ridership on all three rail lines has grown, rising to a total of nearly 4.6 million passengers in 2015. All three commuter rail lines also experienced an increase in the cost to operate. Between 2008 and 2015, the Orange County line had a 24 percent increase in the operating costs per train mile, the Inland Empire/Orange County line had a 64 percent increase, and the 91 line experienced a 17 percent increase in operating costs.

Through coordination efforts identified in the Short-Term Action Plan (Chapter 6), OCTA will work with Metrolink to consider strategies that may reduce operating costs and/or increase revenues to support Metrolink service.

MILES OF BIKEWAYS BY BIKEWAY CLASS: ORANGE COUNTY (2001 AND 2015)



Note: Class I are off-street paved bike paths; Class II are on-road striped and signed bicycle lanes; and Class III are on-road, shared-lane signed bike routes.

Source: Orange County Transportation Authority (2001 & 2009 Commuter Bikeways Strategic Plans, 2014 Long-Range Transportation Plan, and OCTA GIS database, October 2017)

Active Transportation

Orange County continues to add miles to its bikeway, pedestrian, and trails systems, providing new facilities so that more residents have the option of using active transportation. About one percent of Orange County workers bike to work and two percent walk – percentages which haven't changed substantially in 10 years (American Community Survey, 2015).

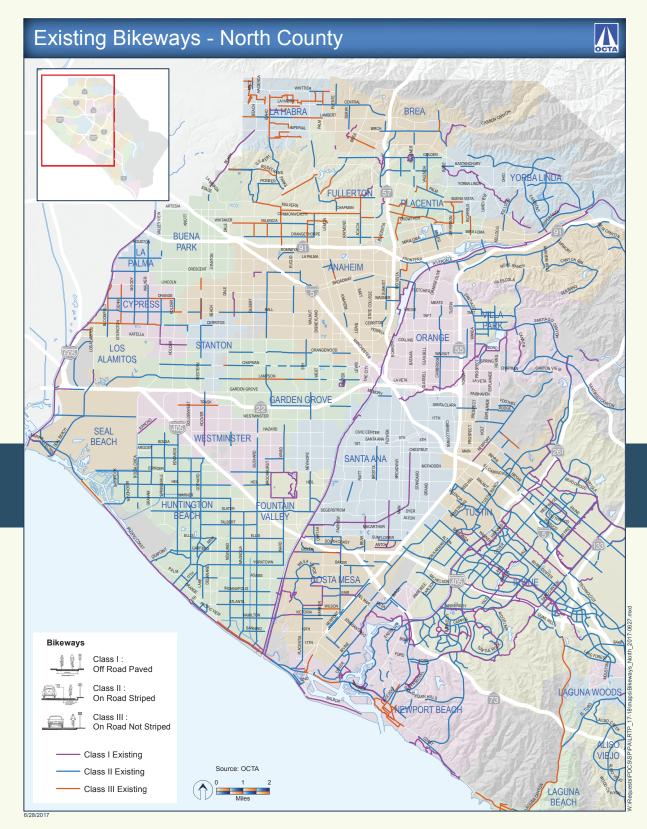
The Southern California Association of Governments conducted an analysis in 2014 of a travel survey related to active transportation. The analysis found that 55 percent of bike trips were for home-based purposes (such as social and recreational noncommute trips). It also found that many pedestrian trips were for mode transfers which complemented transit service. The proportion of people walking and biking increased in higher-density neighborhoods.

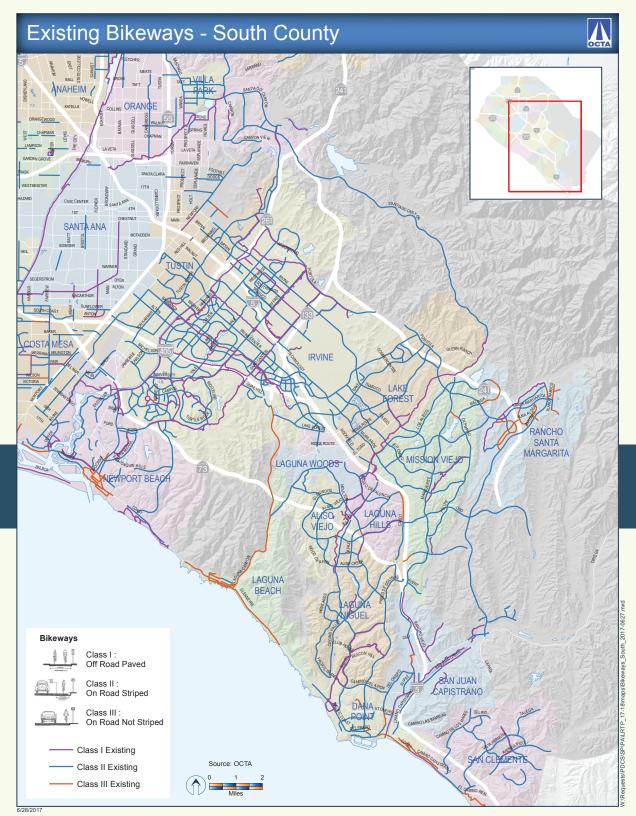
In 2015, the county had approximately 1,060 miles of bikeways. Most (68 percent) were on-road striped

and signed bicycle lanes. Another 24 percent of bikeways were off-street paved bike paths, and the remaining eight percent were on-road, shared-lane signed bike routes.

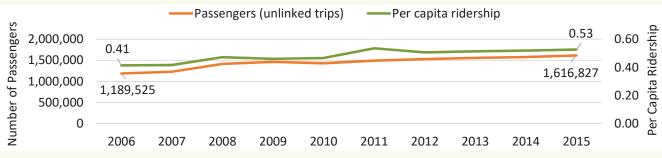
In 2015, OCTA conducted a sidewalk inventory within the roadway network to assess pedestrian access. The inventory was collected for over 1,700 miles of roadway and included an assessment of both sides of the roadway. It found that about 85 percent of roadways have sidewalks (approximately 2,852 miles of sidewalk) and that approximately 506 miles of roadway in Orange County do not have sidewalks (15 percent). **Figures 1.9 and 1.10** illustrate this network.

OCTA will continue to assess Orange County's active transportation needs, with a focus on public outreach and education about active transportation safety (see Chapter 6, Short-Term Action Plan).



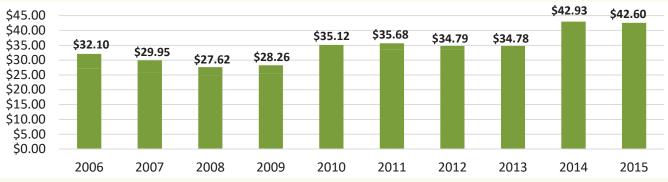


OC ACCESS RIDERSHIP: ORANGE COUNTY (2006-2015)



Source: National Transit Database (https://www.transit.dot.gov/ntd/transit-profiles-summary-reports)

OC ACCESS OPERATING COST PER PASSENGER, INFLATION-ADJUSTED TO 2015 DOLLARS (2006-2015)



Note: Dollars adjusted using Consumer Price Index Inflation Calculator: https://data.bls.gov/cgi-bin/cpicalc.pl Source: National Transit Database (https://www.transit.dot.gov/ntd/transit-profiles-summary-reports)

OC Support Services

OC ACCESS

OC ACCESS is a shared-ride transportation service for people who are unable to use the regular, fixed-route OC Bus service because of functional limitations caused by a disability. OC ACCESS ridership is steadily increasing, along with the cost per passenger to operate the service and the average trip length. Ridership increased 36 percent between 2006 and 2015, while operating costs rose from \$32.10 to \$42.60 per passenger. Meanwhile, the length of the average trip rose from 10.1 to 11.3 miles.





OC Support Services

Motorist Services

Freeway Service Patrol



Orange County's Freeway Service Patrol is a special team of tow trucks that travel Orange County's freeways during peak commuting hours to help motorists with disabled vehicles (for example,

providing a gallon of gas or changing a flat tire). Their job is to keep the freeways moving and reduce congestion by quickly removing disabled vehicles. Freeway Service Patrol services are free to motorists.

ΟСΤΑΡ



The Orange County Taxi Administration Program (OCTAP) is an association of Orange County cities and the County of Orange created to coordinate taxicab service, permitting, and

other administrative functions. OCTA administers the OCTAP program on behalf of the cities and the County of Orange, and works closely with city and county enforcement agencies to support the enforcement of OCTAP regulations and local municipal codes pertaining to the operation of taxicabs in Orange County. OCTAP will sunset in 2019 due to changes in state requirements. However, OCTA is coordinating with local jurisdictions to identify options moving forward.



Call Boxes

There is a network of over 400 call boxes on Orange County freeways to help motorists who break down during hours when Freeway Service Patrol isn't operating or where it is not available, and who don't have another way to call for help. Using the call boxes, motorists can reach an operator at a call center who sends the appropriate service to help.

511



Orange County's 511 service provides up-to-the-minute travel advisories and trip planning information. The 511 Motorist Aid and Travelers' Information System

(MATIS) helps commuters outsmart traffic with:

- Real-time traffic speed, congestion, and incident information
- Live freeway cameras and roadwork advisories
- Bus and rail trip planner
- Scheduled departures for 70+ transit agencies in southern California
- Carpool and ride-matching information
- Park-and-Ride lot locations (website/phone)
- Airport information (website only)
- Bike maps, tips, and resources (website only)
- Local weather conditions (website only)

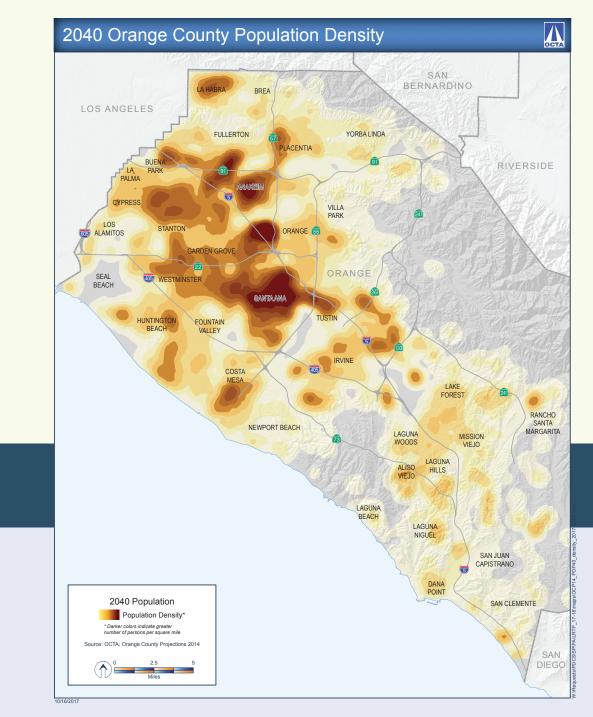
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Chapter 2

Orange County in 2040

Key Points:

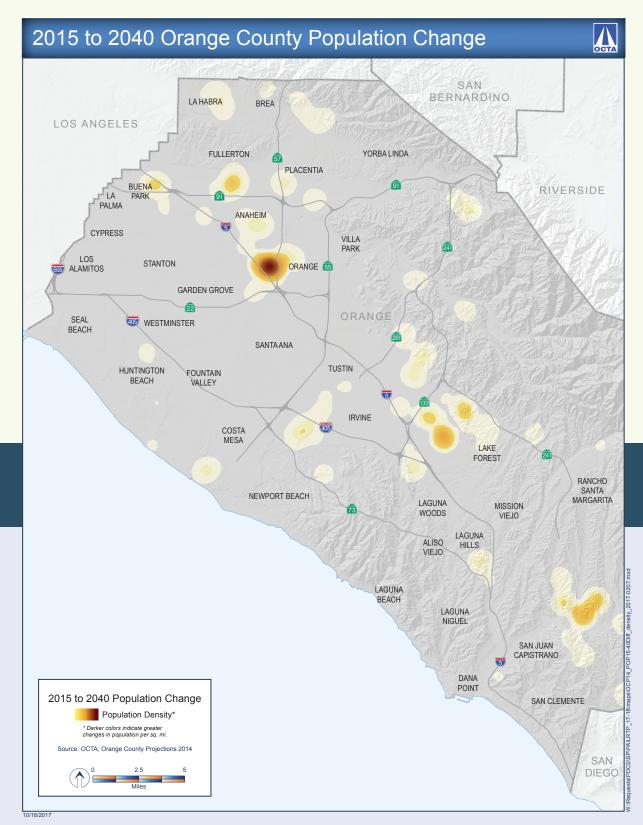
- By 2040, there will be:
 - ✓ 311,000 more residents
 - ✓ 275,000 more jobs
 - ✓ 122,000 more homes
- More trips will occur as population and employment grow
- Without improvements, more time will be lost to traffic

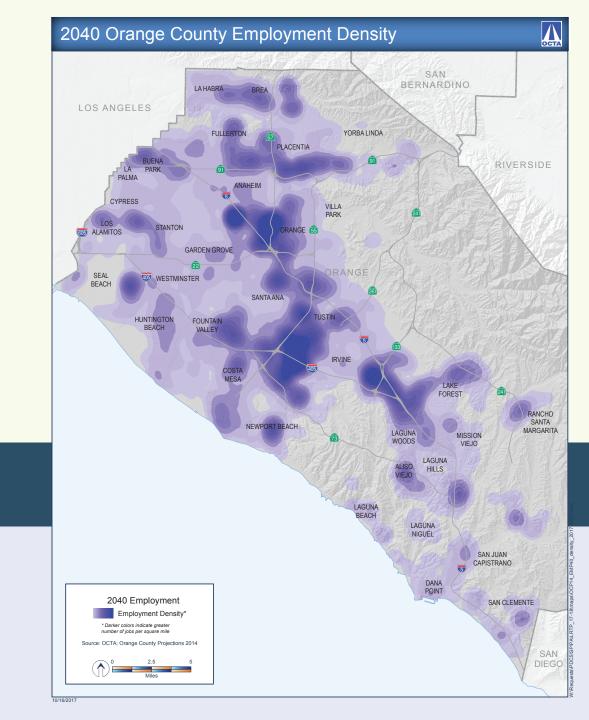


Population and Housing in 2040

Orange County's steady population growth is expected to continue between 2015 and 2040, rising 10 percent to 3.46 million residents. To meet the demand of new residents for homes, it is projected that more than 122,700 housing units will be built, which equates to approximately 11 percent growth in the county's supply of housing.³ This growth is expected to occur in concentrated pockets in the northern, central, and southern parts of the county. **Figure 2.1** is a map of Orange County's population density in 2040; **Figure 2.2** shows where the pockets of growth are expected to occur between 2015 and 2040. These maps illustrate general zones where development is likely to occur, but they do not represent specific development plans.

³ Center for Demographic Research (CDR) at California State University, Fullerton.

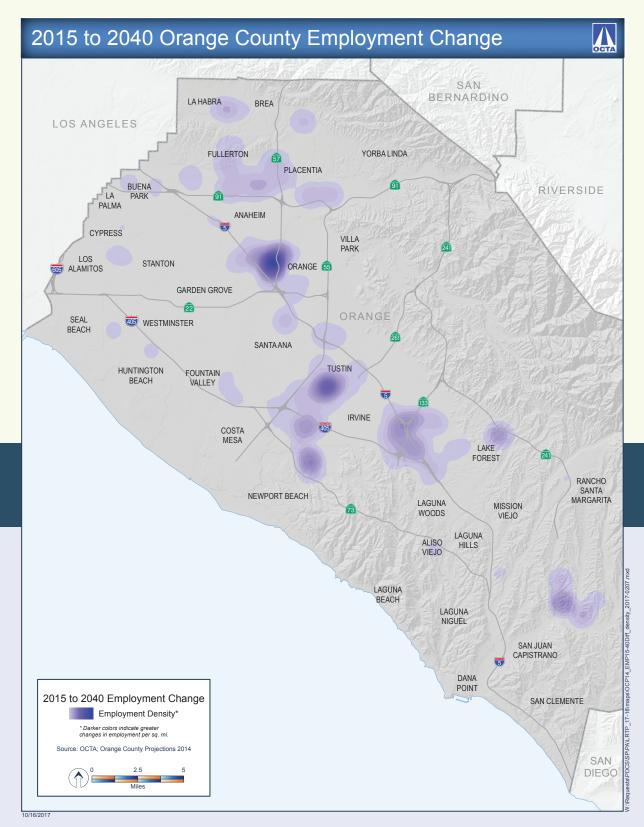


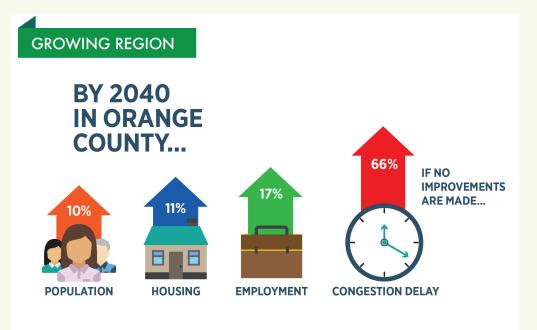


Employment in 2040

Orange County has become a major employment center, drawing workers from throughout southern California. While the double-digit growth in population and housing is significant, Orange County's employment is projected to increase by an even greater margin of 17 percent.⁴ Employment growth generally mirrors the pockets of population and housing growth, with somewhat greater concentration of jobs in central Orange County. **Figure 2.3** illustrates projected employment density in 2040, while **Figure 2.4** shows where employment growth between 2015 and 2040 will be concentrated.

⁴ Center for Demographic Research (CDR) at California State University, Fullerton.





CHANGE IN POPULATION, EMPLOYMENT, HOUSING, AND CONGESTION (2015 TO 2040)

2040, If Work Stopped Today

What would it be like to live in Orange County if no additional improvements were made beyond those already planned and set in motion when the last long-range transportation plan was created? Certainly, there will be more people and more jobs in Orange County in 2040. The trend of insufficient local housing is also expected to continue, resulting in more people living in neighboring counties and commuting to work in Orange County.

Without additional improvements to our transportation system, traffic congestion will increase, travelers will experience deteriorating levels of service on highways and roadways, and costs to motorists will rise. In 2015, the Texas A&M Transportation Institute calculated the cost of congestion for cities and regions across the United States. For each region, they assessed the travel time it takes above that needed to complete a trip at free-flow speeds. Their analysis showed that travel delay in southern California costs motorists an additional \$1,711 and an extra 25 gallons of fuel per year than if traffic were free-flowing.⁵

⁵National Congestion Data (https://mobility.tamu.edu/ums/congestion-data/). Cost of congestion was estimated using a national average travel time value of \$17.67 per person-hour, and average fuel price per gallon for each state.

TRANSPORTATION SYSTEM PERFORMANCE SUMMARY (2015 TO 2040)

Performance Metric	2015 Base Year	2040 No Build
Vehicle passenger delay per capita (minutes)	8.3 minutes per day	12.5 minutes per day
Vehicle passenger travel time per capita (minutes)	54.5 minutes per day	58.5 minutes per day
Delay as a percent of travel time	15.2%	21.4%
Freeways - AM peak average speed (mph)	38.3 miles per hour	36.2 miles per hour
Arterials - AM peak average speed (mph)	25.7 miles per hour	24.3 miles per hour

To assess the extent of potential impacts, OCTA conducted traffic modeling comparing 2015 conditions with 2040 conditions if no further transportation system improvements are made (called "2040 No Build"). With 2040 No Build, drivers will experience increases in daily delay. On average, drivers' daily travel time will increase four minutes per day to 58.5 minutes, as average speeds on highways and roadways drop by anywhere from two to seven miles per hour depending on whether travelers are using local streets, mainline freeways, or a carpool lane.

Figure 2.5 shows how the freeway system performs in morning peak travel times given the 2040 No Build scenario. **Figure 2.6** shows the changes in freeway system performance between 2015 and 2040.

Similarly, **Figure 2.7** shows how the local road system performs during morning peak-hour travel for the 2040 No Build scenario, while **Figure 2.8** shows the change in performance between 2015 and 2040.

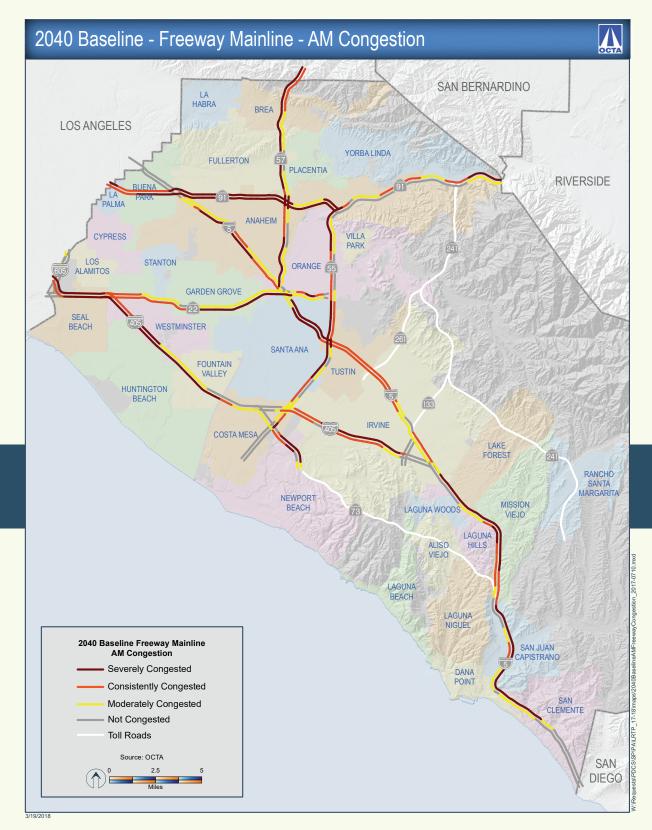
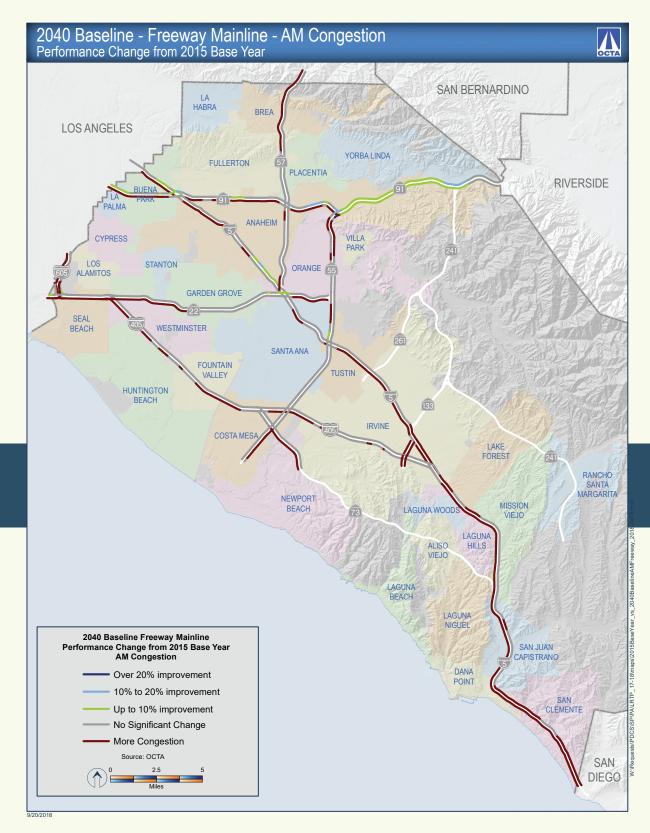
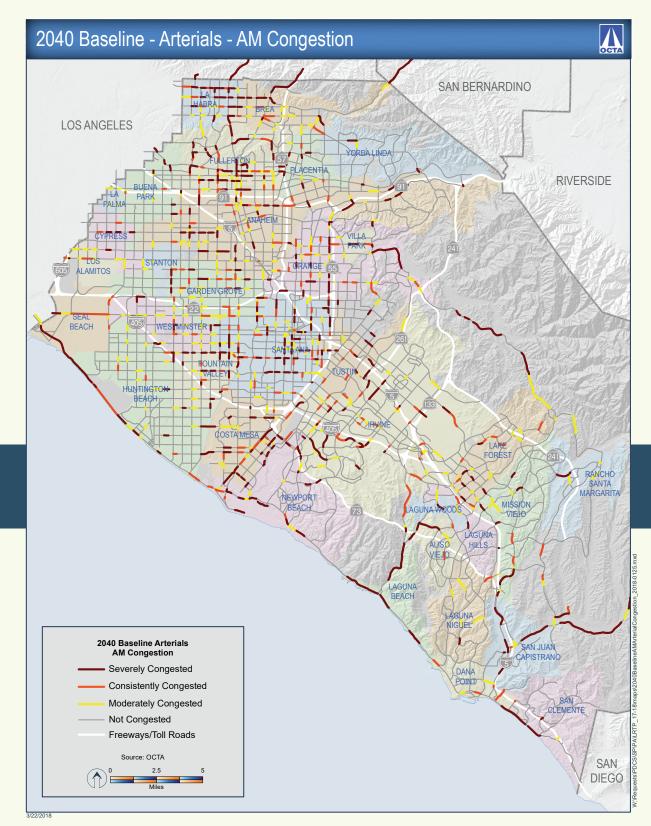
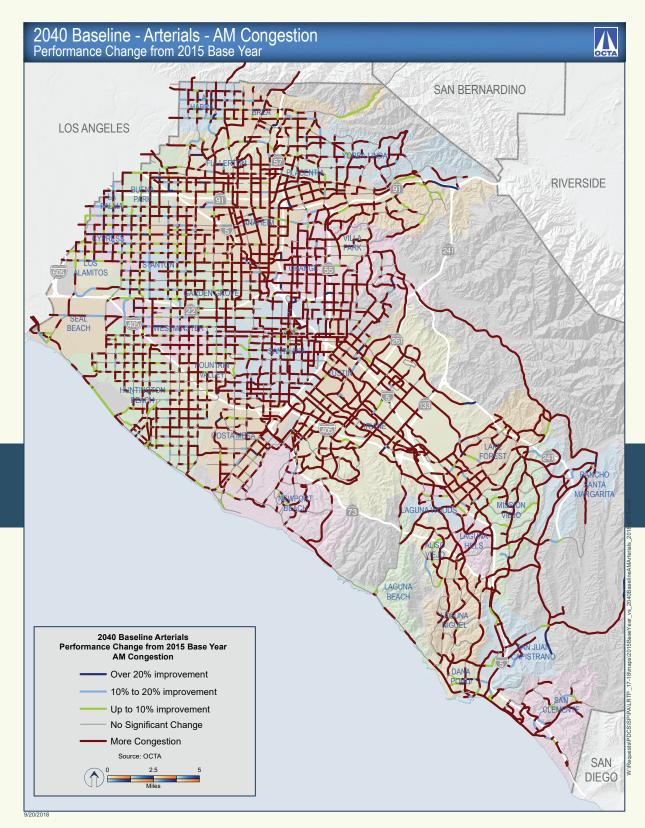


FIGURE 2.6







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Challenges and Goals

Chapter 3

Key Points:

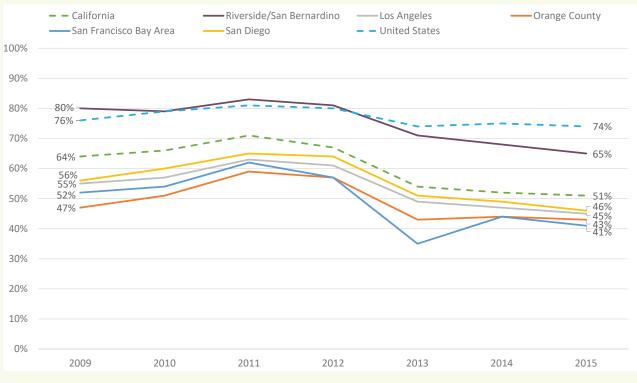
Challenges to addressing traffic growth:

- High Cost of Housing
- Limited Land for System Expansion
- Transportation Funding Uncertainties
- Evolving Transit Market
- Disruptive Technologies
- Challenging Emission Standards

Goals:

- Deliver on Commitments
- Improve System Performance
- Expand System Choices
- Support Sustainability

PERCENTAGE OF FIRST-TIME HOME-BUYERS ABLE TO AFFORD AN ENTRY-LEVEL HOME REGIONAL COMPARISON (2009-2015)



Source: California Association of Realtors (www.car.org)

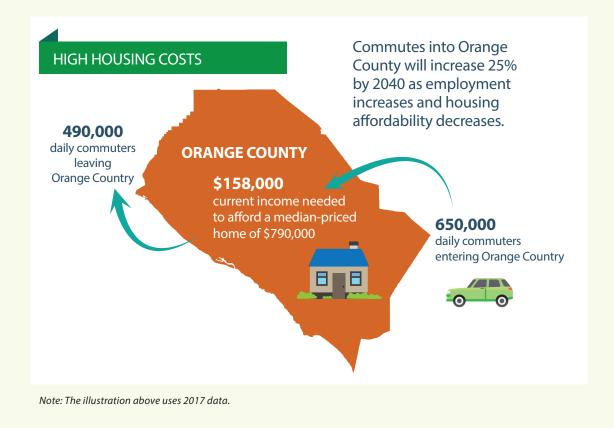
Challenges

The 2018 long-range transportation plan, *Designing Tomorrow*, allows Orange County to address the anticipated growth and improve the efficiency and safety of the transportation system through strategic investments into highways and roadways, bus and rail, active transportation, and other system elements. However, many factors influence Orange County's ability to create change, and there are several challenges to be addressed, from physical and geographic limitations to economic and financial constraints, to regulatory and legislative requirements.

High Cost of Housing

As described earlier, by 2040, Orange County's population will increase by 10 percent, employment will increase by 17 percent, and the current housing shortage is projected to continue.

The cost to own a home or rent an apartment in Orange County is high compared to surrounding counties. In 2015, only 43 percent of first-time home-buyers could afford an entry-level home in Orange County – lower than the California average of 50 percent and all neighboring counties, which range from 45 percent in Los Angeles and San Diego counties all the way to 65 percent in the Inland Empire. Renting in Orange County is equally challenging, with rents averaging about \$1,600 a month for a two-bedroom and \$2,250 a month for a three-bedroom apartment in 2015.



Limited Land for System Expansion

These comparatively high housing costs, coupled with the fact that Orange County is a major employment center, force many would-be residents to live outside of Orange County and commute in for work.⁶ As a result, inbound commutes from other counties are projected to increase 25 percent by 2040.

This growth results in more travel demand, and congestion will worsen without improvements. However, there are limited opportunities to expand roadways and highways without acquiring new right-of-way. Other factors, such as the cost of owning, parking, and maintaining a vehicle, as well as the availability of transit options and the competitiveness of transit travel time compared to driving, also affect how people choose to travel.



Challenges

Transportation Funding Uncertainties

OCTA uses a variety of funding sources to implement transportation-related projects and services, including local OC Go sales tax revenues, and state and federal funding. State and federal dollars may be provided to Orange County on a formula or project basis or may be competitively awarded.

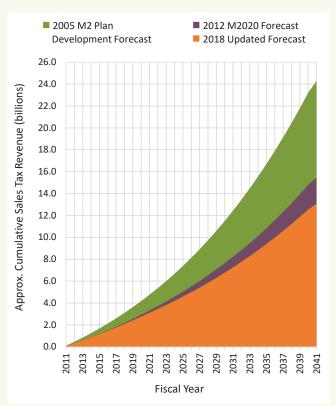
OC Go Sales Tax Revenues

Local OC Go sales tax revenues are expected to be substantially less than initially projected due to the impact of the Great Recession and changes in spending habits. In 2005, when OC Go was being developed, the revenue generated over the life of the 30-year program was expected to total \$24.3 billion. Since the Great Recession, sales tax revenue forecasts have been reduced 46 percent, or \$11.2 billion, and the latest revenue forecast for the life of OC Go is now projected to total \$13.1 billion.

This reduced revenue forecast is caused by the changes in consumer spending habits. Some of the key factors impacting OC Go revenues are lower growth in taxable retail sales as online sales grow; automobile sales are expected to taper off; new construction is expected to slow; and population growth and inflation are projected to slow over the long term. Also, taxable sales as a percentage of overall household expenditures has eroded over time as people spend more money on housing, medical costs, and services that are not taxed. A U.S. Supreme Court decision in June 2018 may result in additional sales tax revenue collected by the state from online transactions. This could significantly change OCTA's revenue forecasts; however, the quantity of potential revenue returned to local jurisdictions is unknown at this time.

OC GO REVENUE FORECAST





Source: OC Go Next 10 Delivery Plan

Senate Bill 1 Uncertainties

SB 1 is a transportation funding bill that was passed by the California Legislature in April 2017. Recognizing a \$59 billion backlog of state highway repairs and a \$75 billion backlog for local streets and roads, SB 1 raises more than \$5 billion per year in perpetuity for transportation projects.

SB 1 provides an increase in transportation funding, but most of the new funds are set aside for maintenance of highways and roadways, and for transit service. Some funds will be available for capital improvements through competitive programs.

The funding sources for SB 1 include increases to the gas tax, diesel tax, and vehicle registration fees. Opposition to these measures resulted in an initiative to repeal SB 1. While that initiative did not gather enough signatures, another similar initiative appears on the ballot in November 2018.

Competitive Funding Programs

Several state and federal funding sources (such as some SB 1 funds, Proposition 1b programs, and the Active Transportation Program) are allocated through competitive award, based on project merit and readiness. OCTA actively pursues funding through competitive programs; however, competitive-based programs are not conducive to long-range planning, as the funds can fluctuate greatly from year to year.

Diminished Transit Revenue

Revenues generated by transit passenger fares comprise a relatively small but important portion of OCTA's funding (approximately \$50 million in 2016). As bus ridership continues to decline in Orange County, so do revenues generated through passenger fares.

ANNUAL VEHICLE REGISTRATIONS: ORANGE COUNTY (2007-2015)



Source: California Department of Motor Vehicles, Forecasting Unit (https://www.dmv.ca.gov/portal/dmv/detail/pubs/media_center/statistics)

Challenges

Evolving Transit Market

Transit ridership is declining nationwide for many reasons. A recent study of transit in southern California found that a dramatic increase in car ownership is a main cause of this current trend. In Orange County, bus ridership declined 31 percent over 10 years, while car ownership has increased. The number of vehicles (autos, trucks, and motorcycles) registered annually in Orange County dipped slightly during the recession but has increased consistently each year since 2011, growing a total of 13 percent between 2011 and 2015 – outpacing the statewide average increase in registered vehicles of nine percent. This presents a challenge as OCTA tries to balance residents' desires for cars with the goals of reduced travel times and increased travel options.

OCTA is taking steps to address the challenge of falling transit ridership as targets for greenhouse gas emissions reductions are increasing.

The OCTA Bus 360° Plan began the process of modernizing the approach to transit by increasing bus service in areas with high demand and reducing service (and costs) in areas with low demand.

In 2017, OCTA prepared The State of OC Transit as a first step in developing the OC Transit Vision. That assessment found that OC Bus service is focused on a select number of hubs, including destinations and connection points; that most of existing OC Bus ridership is concentrated in a few key corridors; and that OC Bus service is concentrated during peak periods. While OCTA is taking steps to address recent ridership declines, limited funding has constrained ridership growth. In addition, Orange County's land uses and demographics present challenges for effective transit services. At the same time, there are opportunities: increased transit use can support greenhouse gas reduction targets, and the future OC Streetcar and Bravo! lines provide a template for ridership growth.



After extensive community engagement, OCTA developed a new OC Transit Vision, which outlines operating, capital, and programmatic priorities, and includes funding and implementation strategies along with land use and other policies needed to support the growth of transit services in Orange County. This new vision for transit is embedded in the *Designing Tomorrow* long-range transportation plan update, either in the financially constrained preferred plan or the discussion of unconstrained future projects.

The OC Transit Vision continues the process of modernizing transit by moving away from a "onesize-fits-all" approach. As described in the OC Transit Vision, some corridors with high demand may benefit from a high-capacity transit service such as streetcar or rapid bus. For example, serving the high concentration of employment in the Irvine Business Complex might be better accomplished using Freeway Bus Rapid Transit rather than standard buses on arterial roadways. Areas with a low density of transit demand might be addressed through flexible "microtransit" such as the pilot OC Flex service. These modernized transit services benefit from technological advances as they strive to serve existing and potential Orange County transit customers while controlling costs.

The Short-Term Action Plan outlined in Chapter 6 includes several strategies for improving transit service in Orange County; enhancing transitsupportive services; coordinating with local partner agencies for transit, employment, and housing connectivity; and increasing public outreach and education.



Challenges

Disruptive Services and Technologies

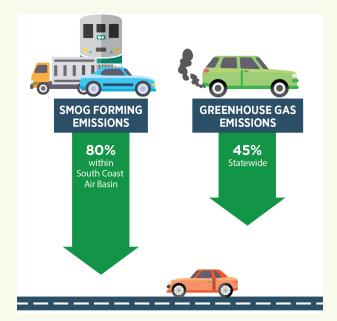
New transportation services like Transportation Network Companies and Automated Carpool Matching, along with new technologies like connected vehicles and cloud-based networking, are increasingly changing how, when, and why people choose to travel. *Designing Tomorrow* must consider mobility innovations and leave room for new technologies and services to change the way people and goods move, enhance efficiencies of our existing systems, and reduce environmental impacts of present-day modes of transportation.

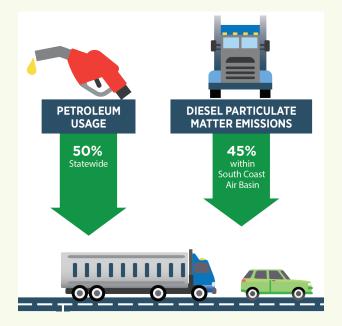
Chapter 5 provides a detailed look at how disruptive services and technology innovations could impact Orange County's future mobility. The Short-Term Action Plan (Chapter 6) includes monitoring of emerging technologies, and identifying opportunities to implement or complement them for the benefit of the traveling public.

Challenging Emission Standards

The South Coast Air Basin, in which Orange County is located, has some of the worst air pollution in the United States, and vehicles are a major contributor. There are multiple pieces of existing legislation and regulations aimed at improving air quality which influence transportation and land use planning.

STATE GOALS TO COMPLY WITH EMISSION REDUCTION STANDARDS BY 2030 MAY REQUIRE DECREASING:





California's landmark Assembly Bill 32 (AB 32, the Global Warming Solutions Act of 2006) required the California Air Resources Board to reduce statewide emissions of greenhouse gases to 1990 levels by 2020. This was followed by approval of Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act of 2008, which increased regulation of greenhouse gas emissions and required improved coordination of land use and transportation projects and established reduction targets for 2020 and 2035 that must be addressed in Regional Transportation Plans. In 2016, Senate Bill 32 (SB 32) expanded on the earlier mandate of AB 32, requiring California to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030.

To comply with federal air quality standards and meet state greenhouse gas reduction goals by 2030, the California Air Resources Board is implementing several strategies to reduce vehicle emissions. They have developed the 2017 Climate Change Scoping Plan and the related 2016 Mobile Source Strategy to shift the California economy away from dependence on fossil fuels, meet air quality standards, achieve greenhouse gas emission reduction targets, and decrease health risk from transportation emissions. They hope to achieve these goals through actions such as slowing the growth in the overall number of miles traveled by passenger vehicles, transitioning transit fleets to cleaner technologies, and promoting zeroemission technologies.

Senate Bill 743 (SB 743), for which rulemaking is still in development, changes how transportation impacts are measured, removing focus on individual vehicle delay. The new rules are expected to have a significant impact on land use and transportation planning. Thanks to early action and acceleration of the OC Go Freeway Program, there are only a few remaining freeway projects that could be hindered, but future longrange plan scenarios beyond OC Go projects will most likely be impacted.

Because of the potential for significant impact to Orange County's transportation plans and investments, the Short-Term Action Plan (Chapter 6) includes ongoing monitoring of state and federal legislation and regulations.



ENVIRONMENTAL



A total of 5% of OC Go Freeway Program funds are allocated to the Freeway Environmental Mitigation Program

A total of 2% of the overall OC Go Program funds are allocated to the Environmental Cleanup Program

Goals and Objectives

Setting Goals, Creating Objectives

To address the increasing travel demand and the range of challenges facing the county, additional investments into Orange County's transportation system are necessary. OCTA uses the long-range transportation plan as a roadmap to make such investments strategically to monitor the effectiveness of current investment strategies and policies. To do so, OCTA outlined a set of goals and objectives that define the expectations for the plan.

The first goal for *Designing Tomorrow* is to **Deliver on Commitments**. Voters in Orange County have twice endorsed a list of projects and programs to improve mobility through a half-cent sales tax (Measure M, now named OC Go). OC Go was originally approved in 1990 and renewed in 2006 to fund transportation investments, covering all modes of transportation including system sustainability and environmental enhancements.

Given changing economic conditions that impacted sales tax revenues, the OCTA Board adopted the Next 10 Plan to ensure delivery of OC Go projects and programs, and to maximize external funds such as state and federal grants. In addition to delivering the set of OC Go projects, this goal includes completing projects in the Federal Transportation Improvement Program (FTIP) and maintaining transit and motorist services such as freeway service patrol, 511, and the Orange County Taxi Administration Program.



OCTA GOALS AND OBJECTIVES

Goals	Objectives
Deliver on Commitments	 Prioritize OC Go (Measure M) Investments Maintain consistency with the Next 10 Plan Maximize external funds to support OC Go (Measure M) and complementary investments
Improve System Performance	 Deploy transit resources in a cost-effective manner Improve efficiency of highways (freeways and toll facilities) and roadways Leverage emerging technologies and services
Expand System Choices	 Deploy on-demand transit service and rideshare options Support improved connectivity for active transportation Explore public/private partnerships for new transportation capacity
Support Sustainability	 Deliver a financially constrained long-range transportation plan and identify opportunities to reduce funding uncertainty Explore environmental and emission reduction strategies System maintenance



Goals and Objectives

The second goal of *Designing Tomorrow* is to **Improve System Performance** – In other words, ensure we are getting the most out of Orange County's existing transportation system. For example, synchronizing signals along a corridor to reduce congestion and increase the flow of traffic through intersections is one way to maximize an existing roadway's performance. Another example is the addition of express lanes to reduce managed lane congestion and offer a reliable travel choice to the public. For transit, improving system performance may be adding passing areas for passenger trains to pass freight trains (improving on-time performance) or improving the frequency of service on heavily used routes so that riders spend less time waiting for a bus.

For active transportation, it could be closing gaps along a bikeway to allow a continuous ride from a common starting point to a popular destination, improving both travel time and safety.



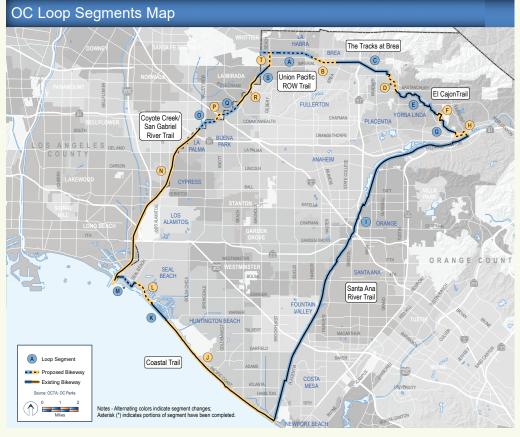
Expand System Choices is the third goal, which seeks to offer the traveling public choices beyond the automobile, and to make those choices more convenient and accessible than ever before. An example of expanding system choice by improving convenience and accessibility is a shuttle that takes passengers from a rail station to within walking distance of their work; improving links between managed lanes and park-and-ride lots; or the use of on-demand ride-hailing services like Uber or Lyft to provide flexible transport to and from transit stations.

Adding miles of strategically located bicycle and pedestrian facilities to the network is also a way to expand system choices. Providing travel choices beyond the single-occupant vehicle also gives Orange County residents opportunities to improve their health and age in place, and it benefits the environment. All plans and programs that are part of *Designing Tomorrow* must **Support Sustainability**, which is the fourth goal. While a fiscally sustainable plan is paramount, sustainability also applies to the quality and longevity of our infrastructure, and the importance of maintaining and enhancing the environment. OCTA will support efforts to comply with requirements for reducing emissions, avoiding impacts to natural resources, and protecting and maintaining infrastructure. Through coordination with partner agencies, funding will be secured to address these requirements to the extent feasible, while avoiding financial impacts to existing and planned services and projects.



Coordination and Collaboration

OCTA works extensively with transportation and planning organizations, within Orange County and with our neighboring counties, to create a seamless transportation network. For example, by working with the Riverside County Transportation Commission, a successful revenue-sharing approach to extend the 91 Express Lanes to the I-15 was developed. This success could lead to partnering with our neighbors, including the Los Angeles County Metropolitan Transportation Authority (Metro) and the San Diego Association of Governments (SANDAG), to discuss developing other inter-county managed lane strategies. Of course, Caltrans is also an important partner for any projects or studies on state facilities. The Los Angeles-San Diego-San Luis Obispo Rail (LOSSAN) Rail Corridor Agency is a joint powers authority coordinating rail travel through a six-county region encompassing 41 stations. The governing board has representatives from rail owners, operators, planning agencies, and elected officials along the rail corridor. OCTA has taken a leadership role by providing staff to administer the agency and oversee the necessary interagency collaboration.



OC Loop 70/30 Plan (2015)

Another example of coordination and collaboration is the OC Loop, a 66-mile loop through Orange County that will provide a mostly off-street bicycle and pedestrian paths in northern Orange County. This project is being developed with 17 cities and the County of Orange. OCTA regularly works with all 34 cities and the County of Orange to plan and deliver a comprehensive Bicycle Corridor Improvement Program for funding bikeway projects countywide.

OCTA has launched a Planning Directors collaborative to engage the county's land use experts and policy makers in the important work of coordination between land use and transportation planning and project implementation. OCTA also hosts many roundtables, technical advisory and policy advisory committees, and stakeholder events addressing a myriad of mobility issues to seek public feedback. The Short-Term Action Plan (Chapter 6) includes continued coordination with local transportation and planning agencies such as Orange County cities, TCA, local transit operators, and Caltrans District 12. Ongoing dialogue with regional agencies like The Southern California Association of Governments, neighboring county transportation commissions, and the Air Qualilty Management District is also part of the Short-Term Action Plan. Some of these activities are countywide in nature, while others are more targeted, such as South Orange County Mobility planning. This page intentionally left blank.

The 2040 Solution Chapter 4

Key Points:

The proposed plan:

- Continues to deliver on commitments such as OC Go
- Improves system performance with efficiency strategies such as signal synchronization
- Increases transit service and adds bikeways to expand system choices
- Delivers projects within available revenues and preserves Orange County's quality of life, **supporting sustainability**



We're Committed



Making Progress

Since 2015, OCTA has completed several projects as part of its commitment to maintaining and enhancing Orange County's transportation network. These OC Go projects include freeway and carpool lane improvements, grade separations for key Orange County rail crossings, and transit projects like Metrolink station and transportation center improvements. A list of these projects illustrating progress since 2015 is shown on the following page. Additionally, OCTA conducted an extensive analysis of countywide bus service known as OC Bus 360°, which provides a framework for modernizing transit services in the county. OCTA has also facilitated inter-agency planning efforts such as the OC Loop to advance active transportation in Orange County.

Freeway Improvement Projects

Since 2015, OCTA has addressed congestion hot spots along SR-91 westbound, SR-57 northbound, and at the interchange of Ortega Highway with I-5.

The I-5 Avenida Pico to San Juan Creek Road Improvement Project adds a carpool lane in both directions on I-5 between Avenida Pico and San Juan Creek Road. The project includes reconstruction of the Avenida Pico interchange, including widening the northbound Avenida Pico on-ramp to three lanes, the addition of a dedicated bicycle lane at the Avenida Pico interchange, on-ramp improvements, and soundwalls where needed. Construction began at the end of 2014 and was completed in 2018.

OC Bridges

In 2017, the last two underpasses in the OC Bridge program were completed – the final projects among a total of seven bridges and underpasses built over five years. These under- or overpasses separate car and pedestrian traffic from the BNSF Railway freight rail line running through Fullerton, Anaheim, and Placentia to improve travel times, cut air pollution by eliminating the need for cars to idle at railroad gates, and enhance safety in the community. The projects include underpasses at State College Boulevard and Raymond Avenue, as well as Placentia Avenue and Kraemer Boulevard, and bridges over the rail line at Lakeview Avenue, Orangethorpe Avenue, and Tustin Avenue/Rose Drive.

OC GO PROJECTS COMPLETED SINCE 2015

OC Go Projects C and D	I-5 HOV lanes from San Juan Creek Road to Avenida Pico			
OC Go Project D	Ortega Highway interchange with I-5			
OC Go Project H	SR-91 westbound from I-5 to SR-57			
OC Go Project I	SR-91 westbound from SR-55 to Tustin Avenue			
OC Go Project O	Grade separations at Lakeview Avenue, Orangethorpe Avenue, Tustin Avenue, Raymond Avenue, State College Boulevard, Kraemer Boulevard, and Placentia Avenue			
OC Go Project R	Laguna Niguel/Mission Viejo Metrolink Station ADA Ramps			
OC Go Project R	San Clemente Beach Trail Safety Enhancements			
OC Go Project R	San Clemente Pier Station Lighting			



OC Bus 360°

The OC Bus 360° work includes:

- Implementation of new, faster bus routes;
- Redeployment of services to improve efficiencies and build ridership; and
- Rollout of new technologies, including mobile ticketing and real-time bus arrival information.

The strategy of focusing service in areas of high demand includes preserving StationLink service as a connection to regional rail and expanding Bravo! express bus service. While OCTA ridership declined by three percent comparing the second quarter of 2017 to 2016, ridership on routes that were improved in October 2016 increased by 19.6 percent (comparing average weekday ridership in September 2017 to September 2016). Additionally, Orange County's one-year bus ridership decline of 3.0% is not as steep as the national average decline of 4.2% over the same time (2016 to 2017, Q2).

New or modified routes are attracting new transit riders. For example, the pilot College Pass Program for Santa Ana College had nearly 3,000 students sign up in the first week, which translates to an additional 171,555 bus boardings. Also, after improving efficiencies for Bravo! 560 service, more than half (57 percent) of riders said their travel time improved by 15 minutes or more.

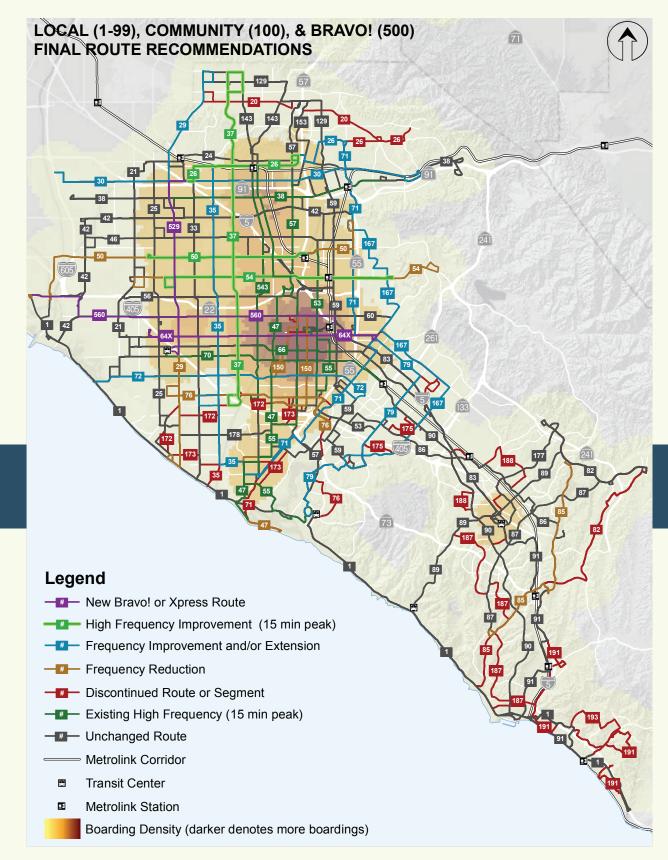
The real-time bus apps that OCTA launched are getting traction, with more than 1 million sessions per month and 300 new mobile ticketing app users per week on average. About seven percent of OCTA's total fare revenue from bus service is from the new mobile ticketing app, which is double the industry average.

OC Bus 360° also includes competitively awarded grants to local agencies for transit services tailored to community needs (referred to as Project V under OC Go). Numerous projects and services are being planned and implemented by local agencies, such as vanpool services from local employment centers to transportation hubs, special event and seasonal services that operate during heavy traffic periods, and local community circulators that carry passengers between various shopping, medical, and transportation-related centers. **Figures 4.1 and 4.2** show OC Bus 360° local and express routes.



We're Committed







OC GO COMMITTED PROJECTS

OC Go Project A	Add second HOV lane on I-5 from SR-55 to SR-57			
OC Go Project B	Add capacity on I-5 from I-405 to SR-55			
OC Go Projects C and D	Add capacity on I-5 from SR-73 to El Toro Road and improve interchanges at La Paz Road and Avery Parkway			
OC Go Project D	Improve El Toro Road Interchange with I-5			
OC Go Project F	Add capacity and improve operations on SR-55 from I-405 to SR-91			
OC Go Project G	Add capacity on SR-57 northbound from Lambert Road to Tonner Canyon Road			
OC Go Project G	Add capacity on SR-57 northbound from Orangewood Avenue to Katella Avenue			
OC Go Project I	Add capacity on SR-91 from SR-55 to SR-57			
OC Go Project J	Add capacity on SR-91 from SR-241 to Riverside County			
OC Go Project K	I-405 Improvement Project from SR-73 to I-605			
OC Go Project L	Add capacity on I-405 from I-5 to SR-55			
OC Go Project M	Katella Avenue Interchange with I-605			
OC Go Project N	Freeway Service Patrol			
OC Go Project O	Implement Master Plan of Arterial Highways			
OC Go Project P	Signal Synchronization Program			
OC Go Project R	Metrolink capital support			
OC Go Project R	Metrolink station improvements			
OC Go Project S	OC Streetcar			
OC Go Project U	Senior Mobility Program and Senior Non-Emergency Medical Transportation Program			
OC Go Project W	Safe Transit Stops			
OC Go Project X	Transportation-related water quality program			

PROJECTS FROM PARTNER AGENCIES

Highway	SR-241/261/133 - Build out 3 to 4 toll lanes in each direction from SR-91 to I-5 (via SR-261 and SR-133), plus climbing and auxiliary lanes
Highway	SR-241 - Build out 4 to 5 toll lanes in each direction, plus climbing and auxiliary lanes
Highway	SR-73 - Build out 4 to 5 toll lanes in each direction, plus climbing and auxiliary lanes
Highway	SR-133 - Add new interchange at Trabuco Road/Great Park Boulevard
Highway	SR-241 - Add express lane connector to SR-91 Express Lanes
Highway	SR-91 - Riverside County Transportation Commission to add one general-purpose lane from county line to SR-71

We're Committed

Continuing Efforts

Between now and 2040, OCTA is proceeding with several additional projects that deliver on commitments, improve system performance, expand system choices, and support sustainability. A list of OC Go projects in development is shown above.

Freeway improvements under development include general and express lanes on a segment of the I-405 and a carpool lane on a segment of the I-5. Additionally, Metrolink service will be maintained at existing levels and improvements at five Metrolink stations (including a new station in Placentia) are anticipated to be completed by 2021. On an annual basis, OCTA partners with local jurisdictions to synchronize traffic signals, address arterial hot spots, and maintain pavement quality through the Regional Traffic Signal Synchronization Program, Regional Capacity Program, and Local Fair Share Program. On the transit side, OC Streetcar is under construction and OCTA is continuing to apply the learnings from the OC Bus 360° effort, which addresses falling transit ridership while increasing travel options for Orange County residents and reducing greenhouse gas emissions.

Motorist assistance programs, such as Freeway Service Patrol and 511, and other projects like the Freeway Environmental Mitigation and Environmental Cleanup programs will remain regularly funded.

I-405 IMPROVEMENT PROJECT LOCATION



I-405 Improvement Project

In cooperation with Caltrans, OCTA is widening the San Diego Freeway between State Route 73 (SR-73) and Interstate 605 (I-605), the Interstate 405 (I-405) Improvement Project, shown above. The project will improve 16 miles of I-405, and add one regular lane in each direction from Euclid Street to I-605, and make improvements to freeway entrances, exits, and bridges.

It also will construct the I-405 Express Lanes from SR-73 to I-605. The new express lanes – incorporating the existing carpool lanes and connectors that opened in 2014 – will be two lanes in each direction. Construction of this project was initiated in 2018 and will be completed by 2023.



We're Committed



I-5 HOV Lane

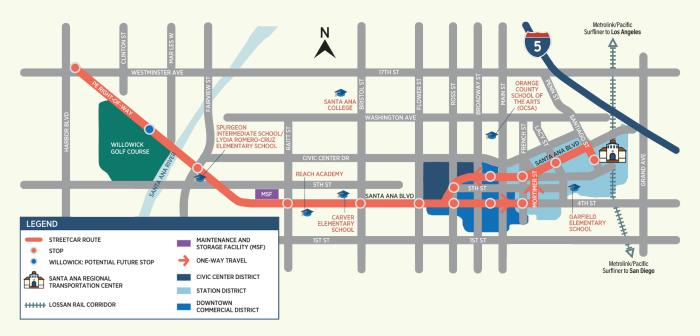
One of the most degraded segments of Orange County's HOV network is the approximately fourmile section on I-5 between the HOV-to-HOV interchanges with SR-55 and SR-57. During busy travel periods, the volume of vehicles using this facility can exceed the capacity of the single HOV lane. As a result, motorists in the HOV lane can experience slow travel speeds and delay. OCTA is addressing this problem by implementing OC Go Project A, which will add a second HOV lane to I-5 between SR-55 and SR-57. Design of this project is complete and construction is anticipated to begin in 2018.

OC Streetcar

OC Streetcar will be the first modern streetcar project to be built in Orange County. Expected to begin carrying passengers in 2021, the OC Streetcar is planned to travel along a 4.1-mile route (see map on the following page) from the Santa Ana Regional Transportation Center, through Downtown Santa Ana and the Civic Center, along the Pacific Electric right-of-way, and connect to a new multimodal transit hub at Harbor Boulevard and Westminster Avenue in Garden Grove. It is intended to enhance resident connectivity between neighborhoods, businesses, and major destinations, as well as to make it possible for Metrolink passengers to rely on public transportation for their entire journey throughout Orange County and beyond.

OCTA became the lead agency in 2014 for project development, engineering, construction, operations, and maintenance, working together with the cities of Santa Ana and Garden Grove. Design and engineering for the project occurred in 2016. Construction is planned to begin in 2018, with project testing and operations starting in 2021.

OC STREETCAR ROUTES



OC STREETCAR BY THE NUMBERS PROJECT FEATURES

OCTA BUS CONNECTIONS: 14

FLEET SIZE: 8

FREQUENCY: 10-15 MINUTES

STOPS: 10 (IN EACH DIRECTION)



STREETCAR CAPACITY: UP TO 175+ PEOPLE

DAILY TRAIN CONNECTIONS AT SARTC: 65+

ROUTE: 4.15 MILES (in each direction)

Freeway Environmental Mitigation Program

OCTA's Freeway Environmental Mitigation Program provides environmental mitigation for the impacts from freeway improvements. Approximately \$274 million is available from OC Go over 30 years.

The Mitigation Program allocates funds to acquire land and restore habitat. Properties are acquired and permanently protected as conservation lands. To date, OCTA has acquired more than 1,300 acres of Preserves in Brea, Laguna Beach, Silverado Canyon, and Trabuco Canyon, as shown in Figure 4.3. A total of 12 restoration projects have also been funded throughout Orange County. Approximately \$30 million has been spent on acquisitions and \$10 million on over 350 acres of habitat restoration activities. While the Environmental Mitigation Program provides open space that protects threatened and endangered species, it also provides co-benefits of reducing greenhouse gases through carbon sequestration and protects the acquired land from future development, which helps to limit potential growth in vehicle miles traveled.

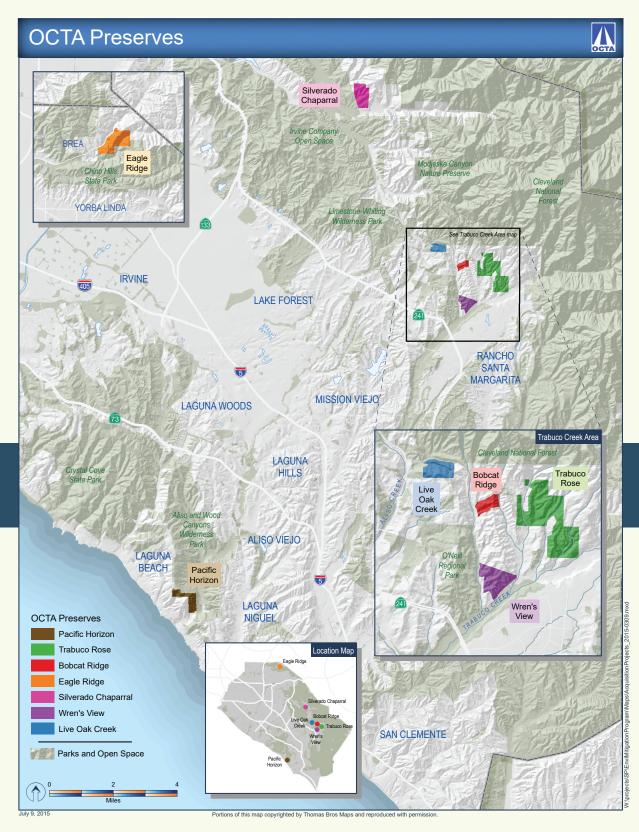
OCTA completed the Final Natural Community Conservation Plan/Habitat Conservation Plan after 2015, which is a state and federal process to protect threatened and endangered species. The Conservation Plan ensures OCTA's wilderness preserves will remain forever protected from development. It also requires OCTA to provide funding for the long-term management of the properties.

In conjunction with the Conservation Plan, Resource Management Plans (RMP) are being developed for each acquired Preserve. These plans will outline how the Preserves are protected, how they will be managed, and will address public access. The Trabuco Canyon and Silverado Canyon RMPs were finalized in late 2017, and the RMPs for the Eagle Ridge and Pacific Horizon Preserves are expected to be completed in 2018.



We're Committed







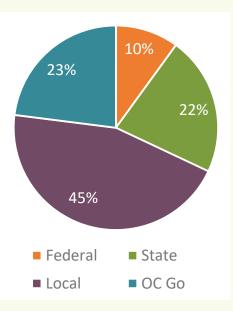
We're Committed

Environmental Cleanup Allocation Program

OCTA has established an Environmental Cleanup Program to improve overall water quality in Orange County from transportation-generated pollution. About \$300 million is available from OC Go over 30 years for this program. Program funds are allocated on a countywide competitive basis to assist jurisdictions in meeting the Clean Water Act requirements for controlling transportationgenerated pollution.

The Tier 1 Grant Program is designed to mitigate the more visible form of pollutants, such as litter and debris that collect on roadways and in storm drains prior to being deposited in waterways and the ocean. To date, approximately \$20.1 million of Tier 1 funding has been awarded to over 150 projects from 33 cities and the County of Orange. The Tier 2 Grant Program consists of funding regional, potentially multi-jurisdictional, capital-intensive projects. Examples include constructed wetlands, detention/infiltration basins, and bioswales, which mitigate pollutants including litter and debris, but also heavy metals, organic chemicals, sediment, and nutrients. To date, approximately \$28 million has been awarded to 22 projects from 12 cities and the County of Orange.

2018 LONG-RANGE TRANSPORTATION PLAN REVENUES BY FUNDING SOURCE (2019-2040)

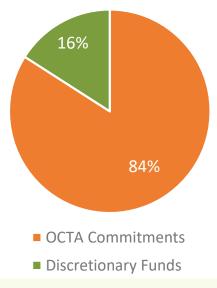


Note: Additional investments in highway safety and maintenance projects are made by the state through the State Highway Operation and Protection Program.

Source: Orange County Transportation Authority

Penciling it Out

2018 LONG-RANGE TRANSPORTATION PLAN EXPENDITURES PROPOSED (2019-2040)



Source: Orange County Transportation Authority

Currently committed improvements and programs will be funded through a variety of sources, including federal, state, and local dollars. OCTA has identified the revenues it expects to receive between 2019 and 2040, which total approximately \$43.4 billion. Federal funds make up about 10 percent of overall revenues and state funds comprise another 22 percent.

The state funds include about \$4 billion projected to be available for Orange County's transportation system from SB 1. While there is a possibility that SB 1 may be repealed, the long-range transportation plan forecast assumes a moderate level of SB 1 funding to benefit the transportation system through highway maintenance and repair, expanded public transit, local street and road repair work, and bicycle and pedestrian projects. The primary impact of an SB 1 repeal would be to local roadway maintenance and existing transit service. While SB 1 helps to expedite planned capital projects, they are not necessarily dependent on those funds. If repealed, it is reasonable to assume that alternative sources could become available by 2040 that would allow the projects to proceed within the horizon of this LRTP.

Local agencies contribute the largest proportion of funds, at 45 percent. These local funds include Transportation Development Act funds, local general fund expenditures for maintenance, developer fees, express lane revenues, and local transit fare revenues. Rounding out available revenues is OC Go, Orange County's half-cent sales tax for transportation, which accounts for 23 percent of revenues anticipated to be available for maintaining and improving mobility in Orange County over the next 20 years.

Of the total \$43.4 billion projected to be available within the long-range transportation plan time frame, the committed improvements and programs are estimated to take about 84 percent (including OC Go projects, Federal Transportation Improvement Program projects, and maintaining current transit levels). This leaves 16 percent, or approximately \$7 billion, for projects beyond OCTA's existing commitments that can further address the challenges and goals of the long-range transportation plan.

The remaining revenues are proposed for implementing additional projects that are beyond commitments and that further address the challenges and goals of the long-range transportation plan. These investments are discussed in more detail in the next section: Beyond Commitments.



Beyond Commitments

The projects proposed for the \$7 billion available after existing commitments were selected because of their ability to address key challenges and goals. Proposed freeway projects include adding managed lanes as well as interchange improvements and overcrossings, which will help to improve system performance. Additional lanes proposed on OCTA's toll roads will build system capacity. Freeway capacity expansion projects proposed as discretionary improvements only occur in areas where right-of-way is available, and these include:

- Interstate 5 Add managed-lane capacity from Avenida Pico to the San Diego County line;
- Interstate 5 Add managed-lane capacity from State Route 57 (SR-57) to State Route 91 (SR-91); and
- SR-73 Add managed-lane capacity from I-405 to MacArthur Boulevard

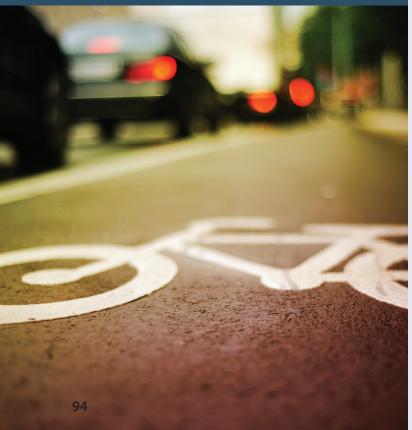
Several transit projects were also identified through the OC Transit Vision and include capital projects as well as operations and maintenance, which together will expand mobility choices for Orange County travelers. OCTA has also added nearzero-emission buses to the transit fleet, and zeroemission buses are being tested. Fleet plans will likely target 2040 to have an entirely zero-emission transit fleet. Metrolink's Strategic Plan provided the framework for rail projects which, along with active transportation projects, also enhance system choices. A complete list of projects proposed for the \$7 billion beyond current commitments is shown on the following page.

TREND 2040 BEYOND COMMITTED PROJECT LIST

Highway	I-405 - Add auxiliary lanes from University Drive to Sand Canyon Avenue, and from Sand Canyon Avenue to SR-133			
Highway	I-5 - Add one HOV lane in each direction from Avenida Pico to San Diego County line			
Highway	I-5 - Add one HOV lane in each direction from SR-57 to SR-91			
Highway	I-5 - Barranca Parkway HOV interchange improvement - Add SB HOV on-ramp and northbound HOV off-ramp			
Highway	SR-57 Interchange improvements at Lambert Road			
Highway	SR-73 - Add one HOV lane in each direction from MacArthur Boulevard to I-405			
Highway	SR-91 - Construct overcrossing and interchange at Fairmont Boulevard			
Local Arterial	Build out planned OC Bikeways			
Local Arterial Local Arterial	Build out planned OC Bikeways Grade Separations along LOSSAN corridor at 17th Street, State College, Boulevard and Santa Ana Boulevard			
	Grade Separations along LOSSAN corridor at 17th Street,			
Local Arterial	Grade Separations along LOSSAN corridor at 17th Street, State College, Boulevard and Santa Ana Boulevard			
Local Arterial Transit	Grade Separations along LOSSAN corridor at 17th Street, State College, Boulevard and Santa Ana Boulevard Implement OC Transit Vision Support expansion of commuter and intercity rail			
Local Arterial Transit Transit	Grade Separations along LOSSAN corridor at 17th Street, State College, Boulevard and Santa Ana Boulevard Implement OC Transit Vision Support expansion of commuter and intercity rail services subject to financial constraints Laguna Niguel to San Juan Capistrano Metrolink Passing			



Beyond Commitments



OC Transit Vision

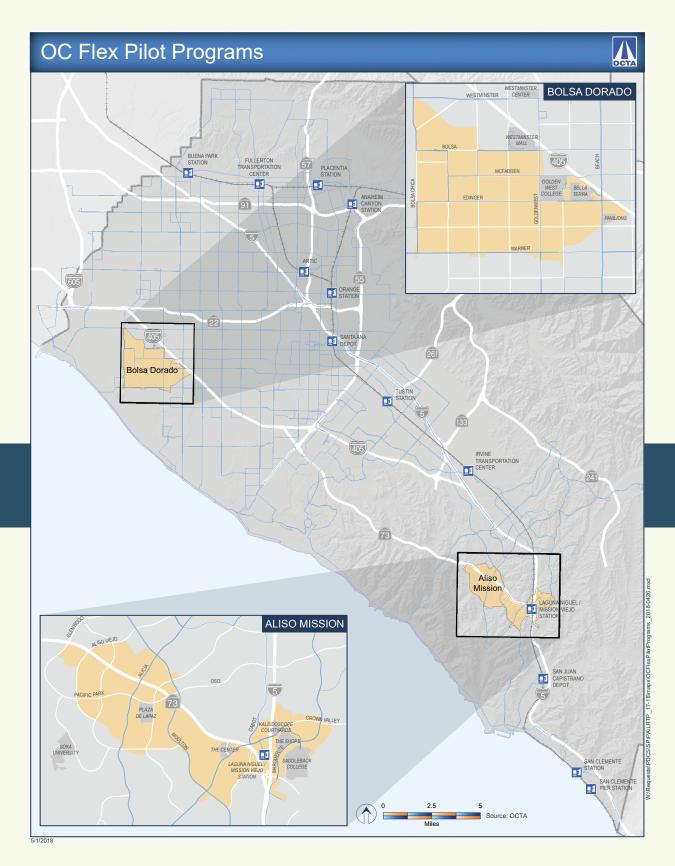
After extensive community input, OCTA developed the OC Transit Vision, which includes operating, capital, and programmatic priorities along with land use and other policies needed to support the growth of transit services in Orange County. The OC Transit Vision identifies corridors with high demand that may benefit from high-capacity transit services such as the OC Streetcar or rapid bus. At the same time, the Transit Vision addresses areas with low density of transit demand through strategies like flexible "microtransit." The pilot OC Flex service is an example of microtransit (**Figure 4.4**).

Metrolink Strategic Plan

After 23 years of operation, Metrolink assessed their infrastructure and services and developed a plan to take commuter rail into the future. Their priority is bringing the stations, tracks, and rail cars up to the latest standards of safety and comfort to ensure a state of good repair and support future growth in the system. They also propose to evaluate the potential for additional reverse commute trips to address shifting travel patterns in the region. Modernizing the system is in the mix of the Strategic Plan, with technology ranging from mobile ticketing to positive train control to new clean, high-horsepower locomotives. Finally, Metrolink will focus on strategic regional partnerships, including with OCTA as the manager of the LOSSAN Rail Corridor Agency, which operates on the same system as Metrolink.

OC Active

OC Active is a comprehensive countywide effort, spearheaded by OCTA, to map out a better plan for walking, rolling, and bicycling in Orange County. "Rolling" includes skating, skateboarding, wheelchairs, and similar rolling modes of transportation. OC Active will evaluate needs, as well as recommend active transportation improvements for all 35 local jurisdictions in Orange County. It will include analyses to identify pedestrian improvement areas and will incorporate all regional and local bikeway planning work completed to date by both OCTA and local jurisdictions. OC Active will help support the development of more sustainable, livable, and efficient mobility, and in doing so will further expand Orange County's travel options while improving systemwide performance.



Mode	Expenditure	% of Total Cost
Transit Projects	\$18,103,197	42%
Highway Projects	\$9,646,352	22%
Local Projects	\$14,169,720	33%
Other (OC Go Environmental Programs, Bond Interest, etc.)	\$1,471,467	3%

Note: Additional investments in highway safety and maintenance projects are made by the state through the State Highway Operation and Protection Program.

Trend 2040

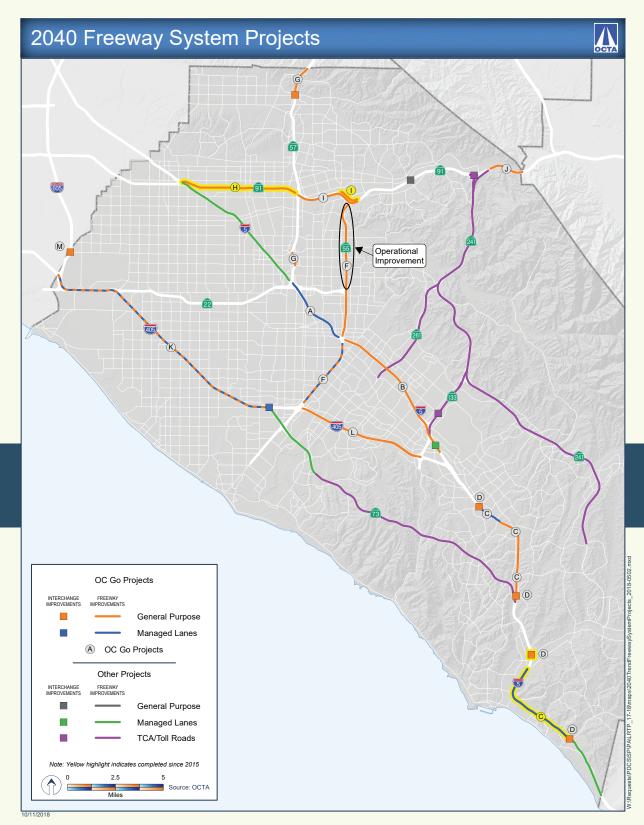
Together, the committed projects and additional discretionary projects constitute the long-range transportation plan, referred to as Trend 2040. It is a holistic approach to addressing mobility across modes.

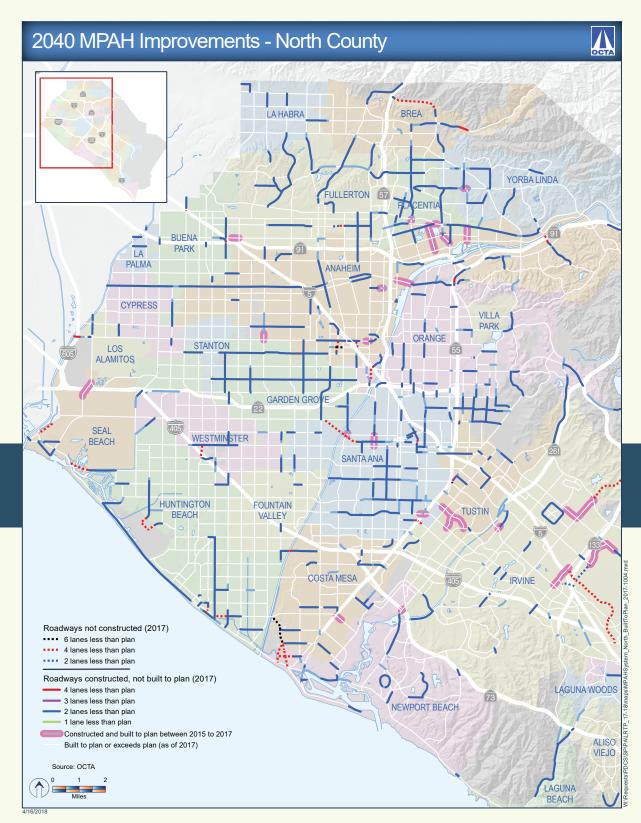
The complete list of Trend 2040 projects includes regional highway, roadway, bus, rail, and bikeway improvements. For carpool lanes, the Trend 2040 scenario assumes a transition to a priced-managed lane approach with a carpool lane requirement of three or more passengers, and single-occupant vehicles allowed with a fee in response to new regulations as detailed later in this chapter.

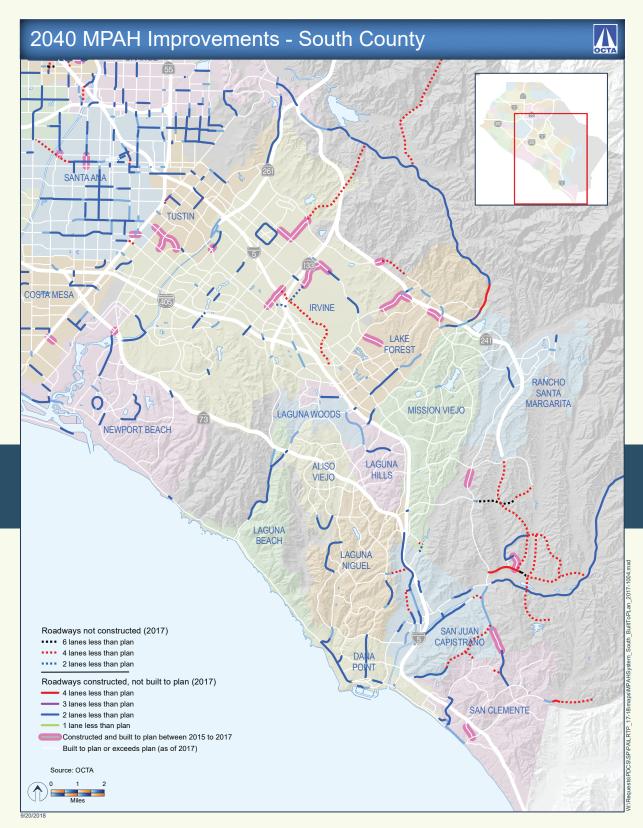
There are also senior mobility projects, roadway pavement rehabilitation, a transportation-related water quality program, vanpools, and Orange County's taxi administration program. All projects in Trend 2040 are within OCTA's financial capability to deliver, which meets the goal of financial sustainability. The list of Trend 2040 projects is provided as **Attachment A**.

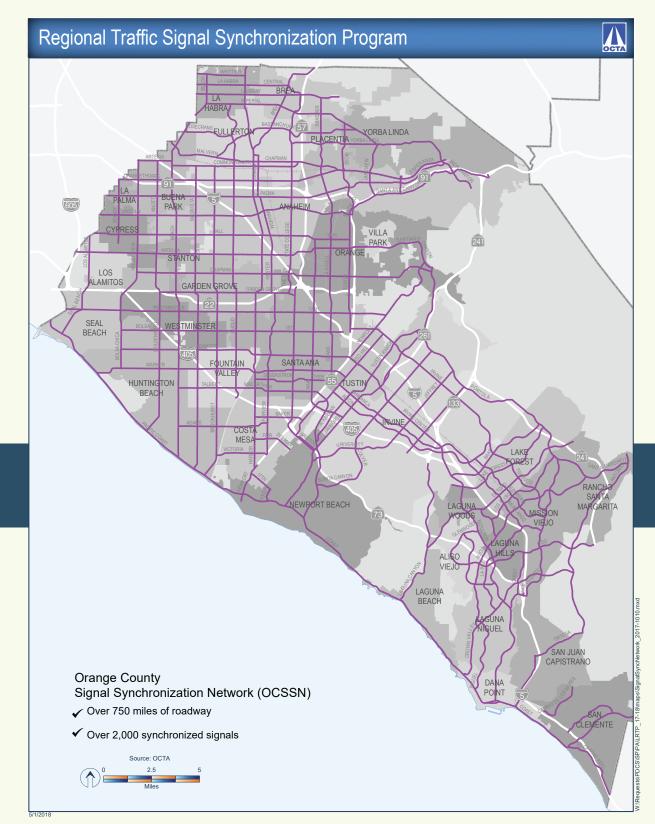
Additionally, all projects go through a public environmental analysis that identifies avoidance and minimization measures, potential impacts, and proposed mitigation measures that may include improvements to multi-modal options and that address policies related to environmental resources, including the Coastal Act, Chapter 3, Section 30240. A map of Orange County Protected Lands and the Coastal Zone Boundary is provided as **Attachment B**.

New infrastructure proposed as part of Trend 2040 is illustrated on the following maps, shown by location within the county and by type of facility or mode of travel (Figures 4.5 - 4.13).

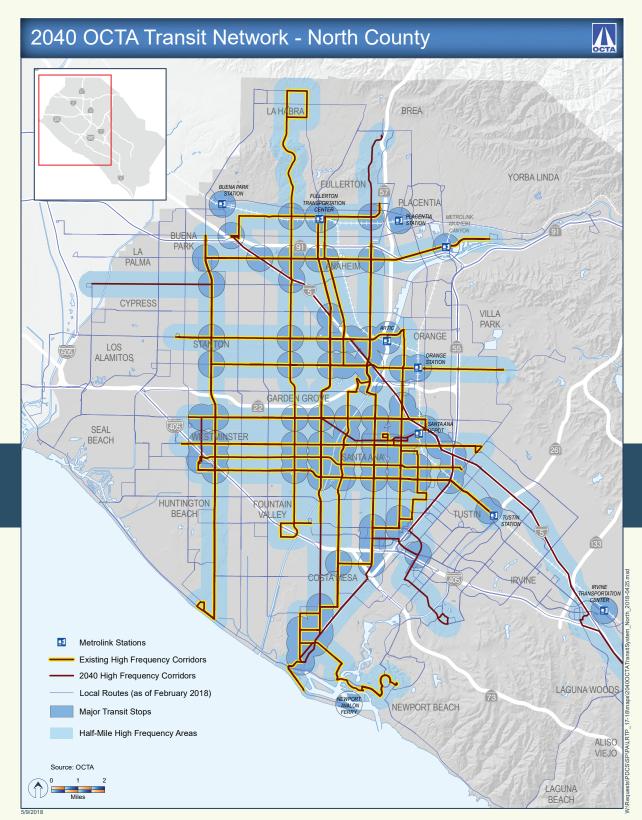


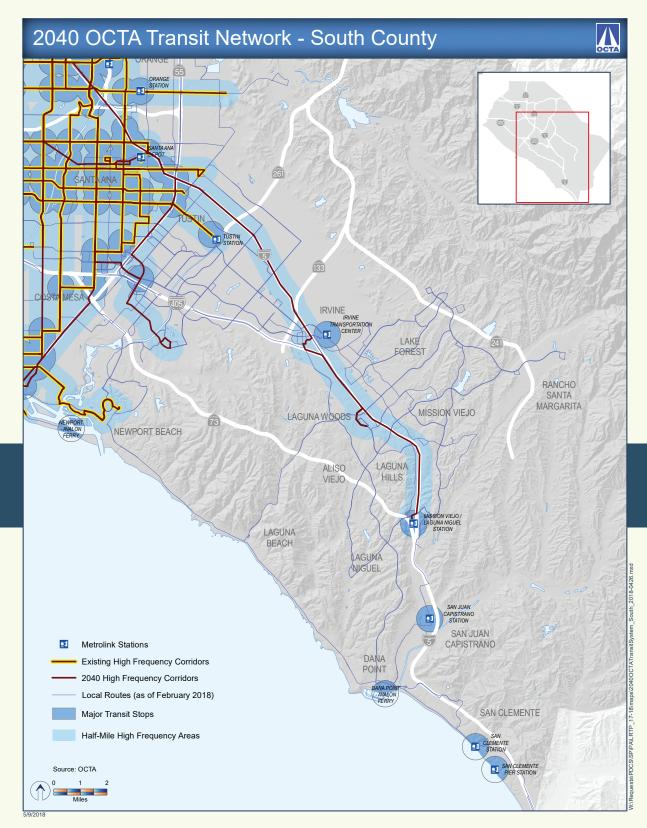


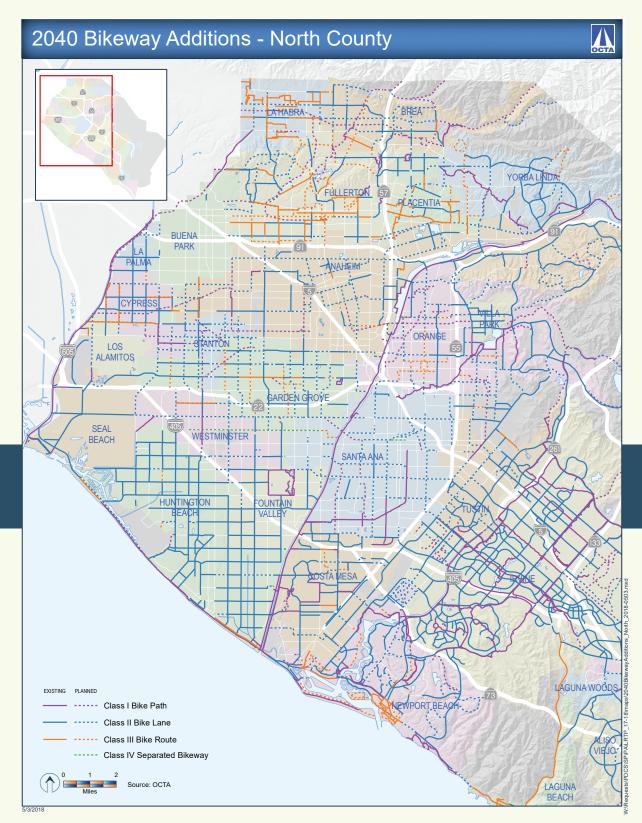












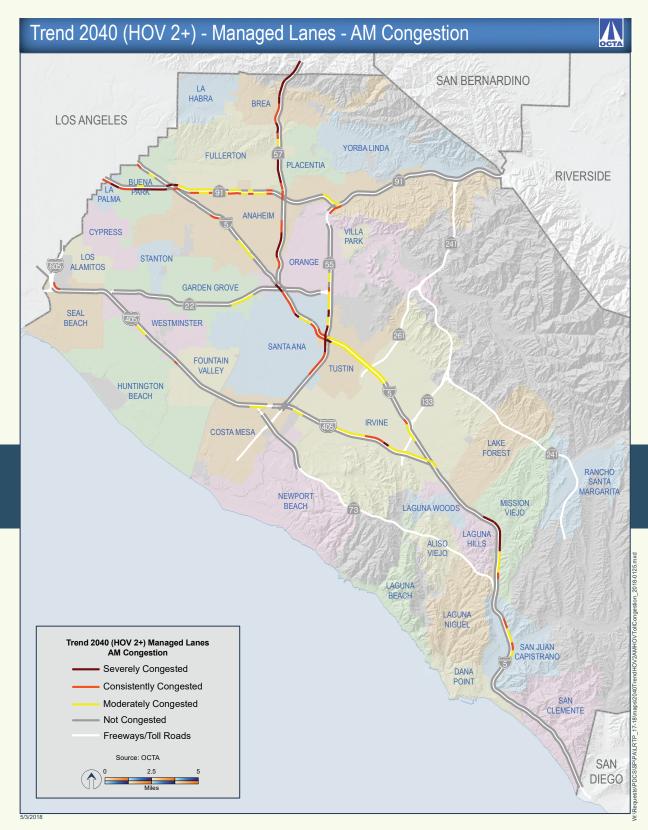




The Managed Lane Conundrum

Trend 2040 assumes that Orange County's carpool lanes require more passengers per car and allow use by single-occupant vehicles for a fee. This is a change from current carpool lane requirements of two or more passengers and no managed-lane fees.

Unfortunately, when the carpool lanes require two passengers per car, Orange County's carpool lane system does not meet federal performance standards of 45 miles per hour for most, but not all of, the system. It is expected that by 2040, Caltrans will need to increase the requirement for carpool lanes to three passengers per vehicle for the entire system to comply with federal standards. In fact, Caltrans already has efforts underway to move in this direction. Given this likely move, OCTA analyzed the Trend 2040 scenario under a three-passenger carpool requirement. The result is that managed lane speeds increase significantly, from an average of 49 to 63 miles per hour. Yet this option, while addressing federal performance standards, has a downside. In this scenario, the carpool lanes operate at only 30 percent of their capacity – an inefficient use of existing highway infrastructure and counter to the goal of improving system performance.



CARPOOL LANE PERFORMANCE SUMMARY

Metrics	Carpool 2+	Carpool 3+	Express Toll
Meets federal performance standards	×	✓	~
Managed lane capacity used during morning drive time	70%	30%	60%
Findings summary	Does not meet federal standards due to overuse	Meets federal standard, but underused	Meets federal standard and doubles use compared to carpool 3+

Arriving at Trend 2040

One way to address the inefficient use of the carpool lanes given 3+ passenger requirements is to allow use of these lanes by single-driver vehicles for a fee. Caltrans has conducted a series of studies regarding conversion of carpool lanes to this type of priced-managed lanes. These studies show that priced-managed lanes operating as 3+ carpool lanes, along with tolled access for other vehicles, would likely meet federal performance standards while balancing mobility and capacity for all users. Since a significant amount of funding is at stake if the federal standards are not met, Caltrans is exploring alternatives, including developing a price-managed lane network in Orange County, and OCTA is anticipating this by assuming a pricedmanaged lane network in the Trend 2040 scenario.

Several of Orange County's neighboring counties also face similar challenges on their highway networks and are proposing priced-managed lanes.

For example, Metro has prepared an express lane implementation plan, and San Bernardino and Riverside counties are expanding their express lane networks. SANDAG is planning for toll lanes on both Interstate 5 to Orange County and Interstate 15 to Riverside County. On a regional level, the 2016 Regional Transportation Plan/Sustainable Communities Strategy prepared by the Southern California Association of Governments included a regional express lane network.

OCTA assessed how a priced-managed lane network would perform in Orange County. This assumption would convert the carpool lanes to 3+ passengers and allow for tolled access by other vehicles, resulting in increased use of the carpool/pricedmanaged lane and an increase in carpool/managed lane speeds to meet federal performance standards.



The exercise of long-range planning requires looking forward with intention – projecting future needs and anticipating environmental, regulatory, and technology changes and innovations. It also requires a look back after grappling with various plan scenarios to ensure that the selected plan – both the approach and activities – achieves the plan goals, addresses the issues, and responds to community desires.

Achieving the Goals

By including the remaining OC Go projects, Trend 2040 keeps promises made to voters and meets the long-range transportation plan goal of **delivering on commitments**. Further, through the performance metrics, Trend 2040 demonstrates improved mobility for all users of Orange County's transportation systems. These metrics show that with Trend 2040, travel times and delays decrease as highway and roadway speeds improve. Additionally, more transit patrons are accommodated and new facilities are built for active transportation commuters and recreationalists. Taken together, the Trend 2040 set of projects and programs meet the goal of **improved system performance**.

The Trend 2040 plan also makes using alternative modes of transportation more viable, thereby **expanding transportation choices**. This is accomplished by completing and connecting alternative transportation networks (such as the OC Streetcar, first/last-mile linkages to transit facilities, and bikeways/access to bikeway facilities) and by providing continued support of motorists through services such as OC Flex, Freeway Service Patrol, and 511.

The Trend 2040 plan can be accomplished within the funds projected to be available between now and 2040, making the plan financially sustainable for OC taxpayers. It also includes programs to improve the quality of life for Orange County residents, such as land acquisition and environmental mitigation projects that not only provide open space but also offset greenhouse gas emissions. Thus, the Trend 2040 plan achieves both **financial and environmental sustainability**.



Reality Check



TRANSPORTATION SYSTEM PERFORMANCE SUMMARY

Metrics (daily)	2015 Base Year	2040 No Build	Trend 2040
Vehicle passenger delay per capita (minutes)	8.3	12.5	8.6
Vehicle passenger travel time per capita (minutes)	54.5	58.5	55.9
Delay as a percent of travel time	15.2%	21.4%	15.4%
Transit trips	149,000	165,000	174,000
Freeways - AM peak average speed (mph)	38.3	36.2	39.7
Arterials - AM peak average speed (mph)	25.7	24.3	25.9
Managed lanes - Meet federal performance standards	×	×	\checkmark

Note: Trend 2040 assumes managed lanes are operated as tolled express lanes by 2040

Performance

When assessed using the performance measures as before, the Trend 2040 scenario improves on the 2040 No Build outcomes and brings Orange County's transportation system close to the performance of the 2015 Base Year. Roadways maintain approximately the same average speeds as in 2015, while freeway speeds improve by only 1.4 miles per hour during the morning peak travel time.

The daily delay for commuters stays essentially the same, with an increase of only 0.3 minute per vehicle passenger per day in 2040 compared to 2015.

A series of maps showing how Orange County's arterials and freeways perform during morning and evening commute periods with and without the improvements proposed in Trend 2040 is provided in **Attachment C**, along with 2015 Base Year performance.



Addressing the Issues



High Cost of Housing

A lack of accessible and affordable housing forces many individuals who are employed in Orange County to live in surrounding counties. While Trend 2040 proposes a multi-modal investment strategy that maintains 2015 conditions despite growing travel demand – thereby improving job accessibility compared to the 2040 No Build scenario - more can be done. One strategy included in Trend 2040 is the use of priced-managed lanes to improve travel conditions for intercounty trips, especially if coordinated with neighboring counties and ridesharing programs. Realistically, however, local land use decisions likely create the best opportunities to reduce projected inter-county travel growth, and OCTA has limited influence over these decisions. It is possible that locating employment and housing closer to Metrolink stations and transit hubs, and developing higher-density and more affordable housing within the county, will help moderate if not eliminate this long-standing Orange County issue.

Growing Traffic and Limited Land

How does Trend 2040 address the problem of growing traffic when there is little right-of-way available for additional freeway or roadway capacity projects? First, its primary focus is the delivery of already-committed OC Go projects. Second, it only includes discretionary capacity projects that can be implemented, mostly within existing right-of-way – specifically, adding carpool lanes on I-5 from SR-57 to SR-91, and from Avenida Pico to the San Diego County line; and on SR-73 from I-405 to MacArthur Boulevard.

Trend 2040 also expands system choices by implementing new transit services and supporting buildout of planned bikeways. Finally, Trend 2040 assumes express lanes that could improve corridor throughput and travel time reliability without additional right-of-way.

Disruptive Services and Technologies

The Innovation and Policy discussion scenarios within the 2018 long-range transportation plan explore how emerging technologies and services may influence how people choose to travel. OCTA proposes continuing to monitor the development of these technologies and services and to look for opportunities to integrate promising technologies and to partner with service providers that may benefit Orange County residents.

Transportation Funding Uncertainties

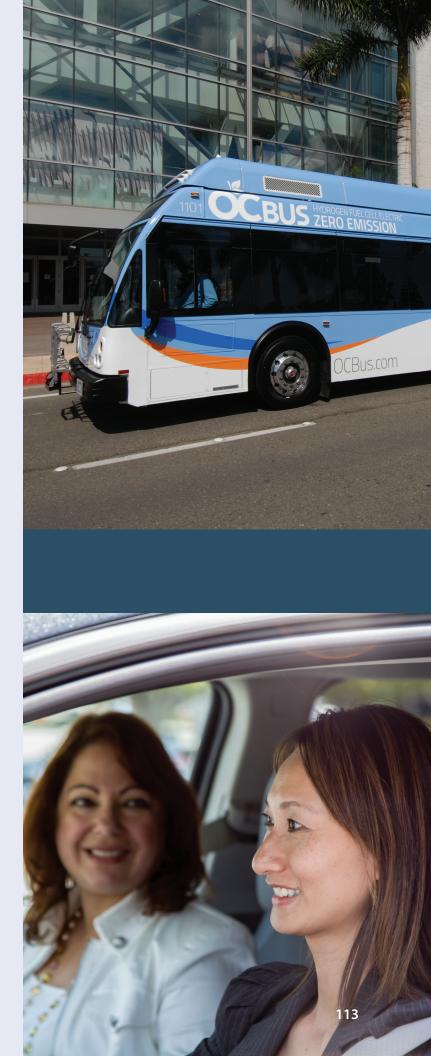
Transportation funding is complex and the current funding environment - such as opposition to SB 1, federal reliance on general fund sources rather than user fees, and competitive-based funding programs - creates uncertainty for long-range planning. Trend 2040's approach to the uncertainty of funding over its 20-year scope is to use a somewhat conservative revenue forecast that is coordinated with the development of the OCTA Comprehensive Business Plan. The forecast assumes that SB 1 is in place but counts on limited revenues from competitive programs. It assumes that Trend 2040 discretionary projects will likely compete well for competitive funds, given that most of them are transit and bikeway improvements, and that freeway capacity projects are managed lane projects. If SB 1 is recalled, it is reasonable to assume that alternative sources could become available by 2040 that would allow planned projects to proceed within the horizon of this LRTP. This will continue to be monitored, as indicated in the Short-Term Action Plan in Chapter 6.

New Vision for Transit

Transit ridership is declining throughout the nation due to increasing rates of auto ownership and high housing costs, among other factors. Trend 2040 attends to the evolving transit market by incorporating both the OC Bus 360° Program that reallocates resources to better serve transit riders and to be more cost-effective, as well as the OC Transit Vision that brings higher-quality transit services to high-demand corridors and introduces new types of services like the on-demand OC Flex pilot projects.

Challenging Emission Standards

Federal emission standards and state goals for reducing greenhouse gas emissions create significant challenges that could impede funding for transportation projects if they are not met. To address this concern, Trend 2040 proposes discretionary investments that improve access to transit and active transportation choices. Further, even the highway-related capacity projects support carpooling and use of zero-emission vehicles. Additional policy decisions could support further integration of zero-emission technology, such as additional purchases of zero-emission buses and/or partnerships with cities or the private sector to implement publicly accessible charging infrastructure at Metrolink stations and OCTA facilities.





Public Input

OCTA conducted a comprehensive public outreach program to elicit input about the long-range transportation plan from a variety of sources, including the general public, elected officials, local jurisdictions, business leaders, transportation professionals, and diversity leaders. The outreach effort used a variety of methods to gather input, such as focus groups, an online survey, a social media campaign, stakeholder meetings and workshops, and leadership meetings.

Generally, there was acknowledgment that there is a need to address the current issues that will likely affect travel demand, services, and infrastructure needs moving forward. In addition, it is vital for OCTA to stay on top of new and emerging trends. Both in-person and online feedback from Orange County residents revealed that the clear majority of OC travelers travel by car and believe freeways and roadways should be priorities for improvements. Specifically, motorists want freeway bottlenecks fixed and signal synchronization put in place along major corridors. Some individuals questioned if changing carpool lanes to 3+ due to state mandates would be impactful enough, while others saw the value in having 3+ carpool lanes due to Orange County's changing population and the use of shared-ride providers.

KEY THEMES OF PUBLIC OUTREACH EFFORTS

Key Theme	Public Sentiment
Keep OC Moving	The general public and stakeholders are looking for congestion relief on local streets and freeways.
Expand Transit Options	Although public input indicates cars continue to be the number one choice of travel, there is growing interest in offering expanded transit options in Orange County.
Be Innovative	It is important that OCTA effectively monitors and engages in the implementation of emerging technologies.

Looking to the future, residents indicated that OCTA should focus on transit opportunities to relieve congestion on both freeways and streets – provided that transit is efficient, accessible, convenient, reliable, and affordable. Suggestions for transit options included more light rail and localized transit such as streetcars or trolleys in local communities.

In terms of innovation, self-driving vehicles were identified as one of the top emerging technologies expected to have the biggest impact on transportation, along with services provided by transportation network companies such as Lyft and Uber. Above is a summary of the key themes that came out of the stakeholder meetings, focus groups, leadership meetings, and online survey. The complete Public Outreach report is provided as Attachment D. This page intentionally left blank.

Designing in a Changing World Chapter 5

Key Points:

- Technology is rapidly evolving
- On-demand transportation options are changing the way people travel
- State goals influence transportation and development
- Collaboration with the private and public sectors is essential

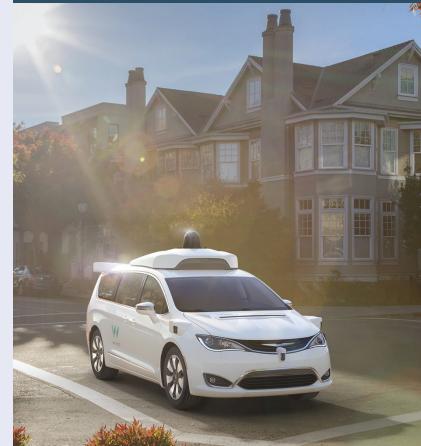
Technology is rapidly advancing, creating new opportunities for private sector industries and individuals to influence transportation. Therefore, it is important to understand how private sector innovations are becoming embedded in the transportation system and creating new mobility options. On their own, these innovations can enhance or diminish mobility for the traveling public. However, if policies are put in place alongside these innovations, the benefits could be secured or even magnified. Such policies are currently being crafted and debated to positively impact travel behavior.

The intent of this discussion about new technology is not to advocate for specific technologies or services to pursue. Rather, it is to acknowledge that such technologies and services already exist – with more certain to emerge in the future – and to open dialogue about how OCTA can prepare for these types of changes.

In response to public input and recent trends, two scenarios have been developed to spark a discussion and explore a sample of many possible futures that may take shape by 2040. The first is the Innovation scenario that considers potential impacts of certain technological innovations on travel behavior, in addition to the Trend 2040 investments and assumptions. The second is the Policy scenario, which builds on the Innovation scenario to consider how policy changes being discussed at the state and regional levels could further influence travel behavior and leverage some of the technological innovations.



New Technologies and Services



RAPIDLY ADOPTED TRANSPORTATION INNOVATIONS

Uber and Lyft Rides in the U.S.	2014 190 million rides 2016 2.2 billion rides
Carsharing in the U.S.	2007 About 3,000 members 2017 About 1.4 million members

Bikesharing in the U.S. 2016 28 million trips 2017 35 million trips

Uber & Lyft: Dogtiev, Artyom. Uber Revenue and Usage Statistics (2017). Business of Apps, www.businessofapps.com/data/uber-statistics/#1.

Carsharing: Bert, Julien. What's Ahead for Car Sharing? The New Mobility and Its Impact on Vehicle Sales. Boston Consulting Group, www.bcg.com/ publications/2016/automotive-whats-ahead-car-sharing-new-mobilityits-impact-vehicle-sales.aspx.

Bikesharing: Bike Share in the US: 2017. National Association of City Transportation Officials, nacto.org/bike-share-statistics-2017/. Before diving into how these scenarios might impact the performance of Orange County's future transportation systems, a review of some emerging technologies will be helpful. The private sector is rapidly innovating transportationrelated technology. For example, zero-emission and alternative-fueled vehicles are fast becoming part of the transportation landscape, along with real-time ridesharing, telecommuting, and carand bike-sharing services that operate in many cities across the nation.

Public transit systems are incorporating new technology to improve overall operations and user experience. For example, Global Positioning System technology allows tracking of buses and train locations, which can be used to provide realtime information to customers, improving the transit experience and ease-of-use. Looking to the not-too-distant future, fully automated and connected vehicles are on the horizon, along with delivery robots and drones. These innovations may become part of our daily routines before we are able to understand exactly how they impact travel behavior. Even harder to imagine, but potentially just as real, are technologies such as Hyperloop (a tube through which a pod carrying people and goods could travel at very high speeds using electromagnets and vacuum technology) and flying cars.

An example of how significant changes can occur in a very short time frame is seen in the exponential growth of transportation network companies (TNCs) like Uber and Lyft. Four years ago, TNCs were not given significant consideration in the development of the 2014 long-range transportation plan. Yet today, they are a common travel option for Orange County residents and they are even being used to supplement fixed-route bus service. Other innovations that are becoming commonplace are car- and bike-sharing services and mobile ticketing for transit, to name a few.



The Innovation Scenario

To examine the potential impact on Orange County's future mobility, OCTA considered various assumptions that can be modeled to reflect private sector innovations. These assumptions are discussed in more detail under Influencing Travel Behavior. To identify and incorporate these assumptions, OCTA coordinated with partner planning agencies and reviewed recently published research. The assumptions for this scenario reflect innovations related to ridesharing, autonomous vehicles, and telecommuting. Each of these is further discussed below.

Ridesharing

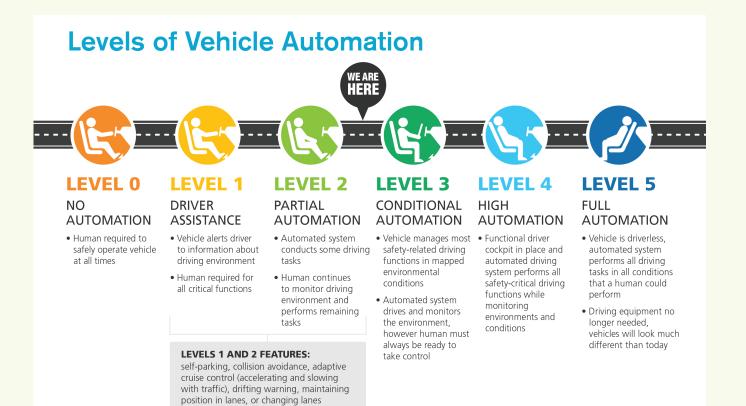
On-demand ridesharing allows users to request a ride in real time using a mobile application. This ride could be via dynamic carpooling such as Scoop and Waze Carpool, which fill empty seats in a vehicle by matching drivers and passengers in real time. It could also be through ride-hailing services like uberPOOL and Lyft Line, which provide a discounted rate to passengers willing to share a ride to a similar destination. Ride-hailing services, also called transportation network companies (TNCs) in California, are distinguished from taxicab services because they are e-hailed. TNC services have been established in more than 700 U.S. cities, with Uber providing over 5.5 million rides per day and Lyft providing about 1 million rides per day.

The benefits of dynamic carpooling services include cost-sharing by passengers as well as a reduction in congestion and greenhouse gas emissions from fewer vehicles on the roadways. There is also the potential for decreased vehicle ownership, which may result in a savings for some. However, TNC drivers are likely adding single-occupant trips between drop-offs and pick-ups, and they are also competing for curb space with delivery vehicles, bicyclists, and others. As these services continue to grow, more focus will need to be put on curbside pick-up/drop-off zones rather than traditional long-term parking spaces.

Bike-sharing and scooter-sharing are two other examples of how the private sector is providing alternatives to drive-alone trips. These services allow people to share in a fleet of bikes and/ or scooters through short-term rentals, usually within urban areas or beach cities. Technology makes these sharing services more convenient, with the ability for electronic payment, location identification, and automatic locking/ unlocking. Electric bikes and scooters offer these same conveniences but open access to people who need to go farther distances or who are not interested in breaking a sweat for that trip. Transporatation demand management strategies, such as the rideshare options described above, will continue to be studied and tested by OCTA as indicated in the Short-Term Action Plan in Chapter 6.







Source: Levels of automation defined by Society of Automotive Engineers (SAE) International and used by U.S. Department of Transportation

The Innovation Scenario

Autonomous Vehicles

There are five levels of autonomous vehicles, ranging from partially automated to fully automated. Many vehicles sold today include features such as selfparking, collision avoidance, adaptive cruise control, drifting warning, and maintaining the vehicle's position in lanes. These are typically Level 1 or 2 autonomous vehicles that require a driver. Level 3 vehicles still require a driver in some situations but can function autonomously much of the time. Full automation (Level 5) uses technology such as Global Positioning Systems, sensors and cameras to perform all the functions needed to drive without any human assistance. The difference between Levels 4 and 5 is that Level 4 vehicles can only operate in areas where the vehicle has access to mapping and other spatial data, whereas Level 5 vehicles could operate using onboard sensors alone. Manufacturers such as Tesla and Waymo are testing conditional and high-automation vehicles (Levels 3 and 4), and fully automated vehicles are not far behind. Car manufacturers estimate fully autonomous vehicles could be available commercially as early as 2020.

While the technology is continuing to develop and still requires rigorous testing, it holds a lot of potential. By communicating with other vehicles and infrastructure, plus using advanced onboard sensors, these vehicles could safely operate much closer together than human-operated vehicles. This could result in more efficient use of freeway capacity and smooth the flow of traffic, reducing congestion on highways. Further, more than 90% of accidents can be tied to human choice or error, according to the National Highway Traffic Safety Administration. Autonomous vehicles could significantly reduce the number of accidents and fatalities while also improving safety for pedestrians and bicyclists.



Also, if autonomous vehicles are incorporated into TNC and goods movement fleets, the removal of labor expenses would reduce the cost of providing services. Similarly, reduced labor costs with autonomous buses and heavy trucks could allow for increases in service levels.

However, autonomous vehicles could also have negative impacts on the transportation systems. Without policies related to practices such as universal safety standards, vehicle design, and the use of autonomous vehicles on public roadways, there could be an increase in overall vehicle miles traveled, increased congestion on roadways, and an increase in energy consumption and air pollution. Introduction of autonomous vehicles will result in "zero-passenger" trips if vehicles are traveling to pick up a passenger, park, or make a delivery. The technology inherent in autonomous vehicles raises questions about security and hacking, and ultimately driver safety. Also, while autonomous vehicles may open new mobility options for populations that could not previously use automobiles, such as seniors or the disabled, the resulting impact could be more vehicles on the road and therefore increased congestion.



The Innovation Scenario

Telecommuting

Telecommuting (in other words, working remotely) is gaining popularity nationally, and the same is true in Orange County. In fact, six percent of Orange County workers over age 16 report that they telecommuted in 2016 – more than those who walk, bike, or take public transportation to work combined. However, the benefits of telecommuting are not clear-cut. On one hand, telecommuting has the potential to remove cars from Orange County roadways during peak travel times, thereby decreasing congestion.

On the other hand, people who do not drive to an office during rush hour may still run errands or make other additional trips. Also, the ability to telecommute may allow people to live farther from their work, resulting in longer commutes if they do commute to the office. Regardless, as technology continues to improve communication and information-sharing capabilities, it is likely the use of telecommuting will continue to grow in Orange County and elsewhere.



The Policy Scenario

The Policy scenario explores how some of the concepts outlined in the Innovation scenario could be managed and further leveraged through public policy. It also includes other policies that are being considered and implemented primarily at the state and regional levels, such as pricing strategies and strategies that encourage infill development and alternatives to driving.

These are being analyzed in this long-range transportation plan to consider what kind of impact they could have on travel behavior and system performance.



The Policy Scenario



Leveraging Private Sector Innovations through Policy-Setting

Ridesharing technology can be supported through policies that incentivize the use of on-demand rideshare services for short trips. Traditionally, publicly supported ridesharing services have been offered for longer commutes, such as vanpools for longer trips to work. To also encourage ridesharing for shorter trips, policies can be developed that focus on first- and last-mile connections and other local trips. An example of this type of service is the OC Flex, which is an ondemand, micro-transit service (approximately 5 to 12 passengers) that operates like some of the TNC rideshare services, picking up multiple passengers and taking them to destinations in a similar area. The primary differences are that OC Flex is designed to carry more passengers, operates in a specified area, and would have a lower cost for users.

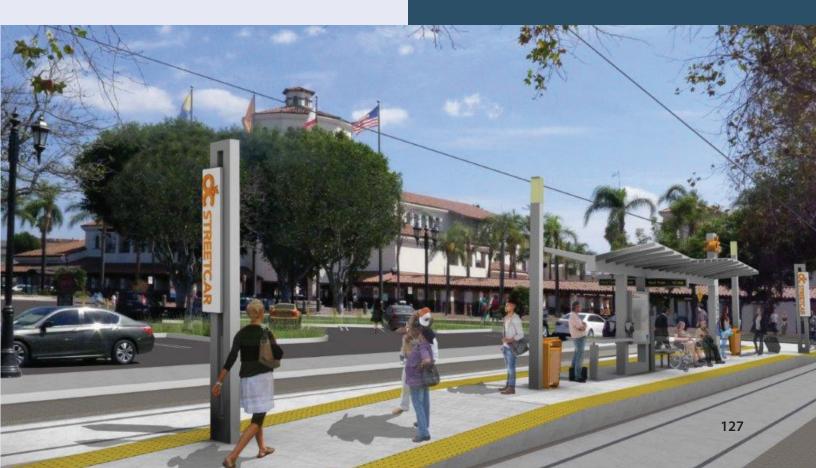
For automated vehicles, public policy could be established to allow and encourage autonomous vehicles to use carpool or express lanes. Experts have estimated that if vehicles operating on a facility reach at least 50 percent autonomous, the benefits from the vehicle-to-vehicle communication technologies and onboard systems that allow autonomous vehicles to safely operate closely together can significantly increase the capacity of the facility. Therefore, policies could be designed to concentrate autonomous vehicles in managed lanes to expedite reaching the 50 percent threshold.

The use of telecommuting could be enhanced with public policies that provide incentives, such as tax breaks for companies that allow employees to telecommute. This could reduce the number of peak-period commute trips by either removing the commute altogether, or by allowing employees to work remotely during peak periods and commute during off-peak times. The latter could be a more feasible option for companies that need employees on-site but want to provide their employees with the benefit of an easier commute and a more flexible schedule. However, an increase in telecommuting in any form will help to reduce travel demand and congestion.

Promoting Active Transportation

Active transportation, sometimes called non-motorized transportation, is a way of getting around that is powered by human energy, like bicycling or walking. Policies are being put in place through legislation that attempts to change land use patterns to be more conducive to active transportation. For example, SB 375 (the Sustainable Communities and Climate Protection Act of 2008) promotes development patterns that will reduce sprawl and give people transportation options so they can drive less. SB 743 provides alternative criteria for assessing transportation impacts under the California Environmental Quality Act. The alternative criteria must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Public Resources Code Section 21099(b)(1)). The state's goal is to at least double active transportation mode shares for bicycling and walking. This would be accomplished primarily through shifts in land use and investing in bike lanes, sidewalks, and other supporting infrastructure.







The Policy Scenario

Shifting or Changing the Costs of Driving

The Southern California Association of Governments recently completed a comprehensive study of value pricing strategies (the Express Travel Choices Study), which looked at how allowing commuters to know the true cost of their travel could result in a more efficient use of the transportation system and help the region meet mobility needs. A variety of policies could be implemented that change or shift an individual's cost of driving. For example, the state could shift from the current gas tax, which is dependent on combustion vehicles, to a mileagebased user fee that more equitably collects fees from all vehicles. Another example is the use of cordon pricing strategies where the state or a region charge drivers to access cordoned areas through tolls at defined boundaries or through the sale of passes to drive in the cordoned area. Parking fees are another driving-related cost-based approach that could be used to influence travel behavior. It is anticipated that increasing the cost of driving would likely have the most significant impact on travel behavior of all the innovations and policies discussed in this long-range transportation plan but would also likely carry the most controversy since so many individuals would be impacted.



A Seamless Highway Network

Trend 2040 assumes that managed lanes on freeways will be operated as tolled express lanes by 2040. Orange County also has a network of toll roads currently operated by the Transportation Corridor Agencies (TCA), which include State Routes 73, 133, 241, and 261. When the toll roads were established, there was an agreement that TCA would turn the toll roads over to the state to become freeways once all bonds used to build the facilities were paid off. Although this will likely occur after 2040, the Policy scenario explores how Orange County commuter travel patterns could change once this transaction takes place. To examine the potential level of change, the toll lane network is assumed to operate as freeways with tolled express lanes, consistent with the Trend 2040 freeway system. This would create a seamless travel experience on Orange County's freeways, with consistent lane configurations and operations throughout the network. This results in an expanded freeway network while retaining a reliable travel option with tolled express lanes.

INNOVATION SCENARIO ASSUMPTIONS

Technology	Impact	Justification
Ridesharing	The analysis assumes 5 percent of single- occupant vehicles shift to multiple- occupant vehicles, resulting in 5 percent of daily average trips moving from general-purpose lanes to carpool lanes.	According to the California Transportation Plan, the state assumes a 5 percent increase in carpool vehicles.
Autonomous Vehicles	The analysis assumes that autonomous vehicles induce a 10 percent increase in total vehicle trips. This results in 8 percent growth in total vehicle miles traveled. However, there is also an increase of general-purpose lane capacity of 8 percent.	With fully automated vehicles, there will be zero-occupant trips, more access to vehicles (e.g., by seniors, disabled, and others), and lower operating costs for businesses, resulting in higher overall vehicle miles traveled. An increase in the proportion of automated vehicles on Orange County's roadways will increase overall capacity because of their ability to operate safely more closely to other vehicles.
Telecommuting	The analysis assumes that rates of people working remotely will increase by 2.1 percent, which results in a corresponding decrease in vehicle trips of 2.1 percent.	According to the California Transportation Plan, the state assumes a 2.1 percent increase in telecommuting.

Influencing Travel Behavior

The Innovation and Policy scenarios were tested to predict their potential impact on travel behavior and generate thought about their applicability to future planning work, as shown in the tables above and on the following page. This analysis is not a forecast but rather an opportunity to explore a range of innovations and engage the public and policy-makers in discussion about potential policy direction.

POLICY SCENARIO ASSUMPTIONS

Policy	Impact	Justification
Autonomous Vehicles	As with the Innovation scenario, the analysis assumes that autonomous vehicles induce a 10 percent increase in total vehicle trips. However, with policies in place to guide the use of autonomous vehicles, in addition to an 8 percent increase in general lane capacity, there is a 40 percent increase in express lane capacity.	When policies are in place to concentrate automated vehicles into express lanes, the advantages of safe, close operations are magnified.
Active Transportation	The analysis assumes that the number of people who bike or walk to work (at distances of three miles or less) doubles, resulting in a reduction of vehicle trips with distances of less than three miles by 21 percent. This translates to an overall reduction in vehicle trips on the system of 9.3 percent.	According to the California Transportation Plan, the state aims to double pedestrian and bicycle commuting.
Cost of Driving	The analysis assumes that implementation of pricing strategies will result in a 20 percent decrease in overall vehicle trips, which is roughly equivalent to a 17 percent decrease in vehicle miles traveled.	According to the California Transportation Plan, the state assumes the use of expanded pricing policies.
Toll Road Bonds	The analysis assumes that the four TCA toll roads become public facilities. This expands Orange County's highway network and assumes the TCA corridors include both general-purpose and express lanes, consistent with the Trend 2040 network.	Bonds used to build the toll roads were originally to be paid off, and the toll roads tuned over to the state, by 2036. The TCA refinanced the bonds in 2011 and 2014, and these are expected to be paid by 2050. Once the bonds are paid down, the corridors will be turned over to the state to operate as freeways. Because of available right-of-way on the corridors, express lanes can also be implemented within the corridors, which will maintain consistency with Orange County's highway network.

TRANSPORTATION SYSTEM PERFORMANCE SUMMARY

Metrics (daily)	Trend 2040	Innovation	Policy
Delay as a percent of travel time	15.4%	16.9%	11.7%
Transit trips	174,000	171,000	170,000
Freeways - AM peak average speed (mph)	39.7	39.8	43.1
Arterials - AM peak average speed (mph)	25.9	25.4	28.0

Innovation and Policy Scenario Performance

The Innovation and Policy scenario assumptions could significantly impact the performance of Orange County's transportation system, increasing overall system capacity, expanding the use of alternative modes of transportation, reducing congestion, and impacting traffic flow. While the measures are rough, the high-level impact of these concepts was estimated using the long-range transportation plan performance measures.

When comparing the performance of the Innovation scenario to Trend 2040, it appears that technology alone does not provide significant benefits to the transportation system.

Except for average freeway speeds, which are essentially the same for both scenarios, all other performance measures worsen under the Innovation scenario: arterial speeds decline slightly, transit trips drop, and there is greater delay in travel times. If policies are put in place to maximize the impact of technology on travel behavior, the performance measures show better outcomes. When comparing the Policy scenario with Trend 2040, system performance improves: there is a decrease in travel time delay as freeway and arterial speeds increase. Transit trips, however, decline. A summary of the performance measure outcomes for the Trend 2040, Innovation, and Policy scenarios is shown in the table above.



Looking ahead, it is evident that as new technology and innovations become embedded within the various transportation modes and systems in Orange County, there will be corresponding changes in travel behavior and impacts on the transportation system's usage and efficiencies. OCTA will monitor technology as it evolves as well as state policies that influence how that technology is used. OCTA will also continue to define its role in advancing innovative technology for the benefit of Orange County travelers. Because technology could radically change the mobility of the future, it is in the public's interest that good policy responds to and keeps pace with innovations as they occur.

The following chapter describes some immediate actions that begin to flesh out this juxtaposition of technology, policy, and OCTA's role in maximizing their benefit for Orange County.

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A Living Document Chapter 6

Key Points:

- The plan is updated regularly to respond to changing conditions
- Conceptual projects require more research, development, funding, and/or public input
- A Short-Term Action Plan identifies OCTA planning efforts that influence the next LRTP





Orange County's long-range transportation plan is ever-evolving. By law, it must be updated every four years. Realistically, however, the specific needs of Orange County travelers are continuously changing, and new technology and innovative solutions regularly surface. Orange County's transportation leaders must develop systems to respond to changing travel demands and keep up with innovations in the fields of transportation and planning.

Conceptual Transportation Projects

Several transportation concepts and projects have been identified that go beyond the proposed financially constrained scenario, Trend 2040, but which support the long-range transportation plan goals and objectives. They have typically been vetted through high-level planning efforts, such as major investment studies, but require more research, development, funding, and/or public input. As these concepts become defined and refined through stakeholder input and environmental analyses, OCTA may consider including them in the financially constrained scenario, subject to funding availability.

One such project that was the subject of many public comments received throughout the development of this LRTP was the proposed extension of State Route 241, known as the Foothill Transportation Corridor (FTC) - South. TCA is currently analyzing a number of alignment alternatives that avoid sensitive resource areas. Once TCA commits to a single alignment that successfully avoids sensitive resource areas, as well as gains support from responsible agencies and affected communities, OCTA would consider moving the project to the financially constrained (i.e., Trend 2040) scenario.

Please refer to the table on the next page for Conceptual Transportation Projects.

CONCEPTUAL PROJECT LIST

Description

Local Arterial Projects

Crown Valley Parkway – I-5 to Greenfield Drive lane additions beyond MPAH

Cabot Road – Paseo de Colinas to Camino Capistrano lane additions beyond MPAH

Harbor Boulevard/Ball Road grade separated intersection

Harbor Boulevard – Warner Avenue to 17th Street lane additions beyond MPAH

Laguna Canyon Road* – El Toro Road to Canyon Acres Drive

OC Intersections Assessment recommendations

MPAH Complete Streets Assessment recommendations

OC Active recommendations

Countywide Communications Study (ITS) recommendations

Highway Projects

Ortega Highway – Operational Improvements

I-5 – Avenida Pico to Avenida Vaquero truck lane

Freeway Chokepoints (TBD)

Direct access ramps (TBD) – Managed lane and high-capacity transit support

SR-55 - Improve access and merging in the vicinity of Meats Avenue

Transit Projects

Metrolink expansion (increase from 86 to 98 weekday trains)

Other Projects

OC Goods Movement Study recommendations

Projects from Partner Agencies

SR-73/Glenwood intersection improvement (Phase III) - TCA

FTC South – SR-241/Oso Parkway to I-5 (San Diego) – TCA

*Note: Contingent on voter approval of a local sales tax supporting the Laguna Canyon Road project, OCTA will include it in Orange County's financially constrained submittal for the 2020 RTP/SCS



Short-Term Action Plan

OCTA has identified several short-term activities which build on the foundation of the long-range transportation plan. These activities are grouped into the categories of local and regional planning, emerging issues, and transportation outreach and education, and include all modes of transportation. They further the goals outlined in the long-range transportation plan, keeping OCTA moving forward by continuing to plan and dream, work with partners, consider all segments of Orange County's community, and make room for new technologies, regulations, and partnerships.

SHORT-TERM ACTION PLAN ACTIVITIES

	Orange County Planning Activities
Coordination with Local Partner Agencies	Continue dialogue with local jurisdictions, Caltrans District 12, TCA, local transit operators, and other local agencies as needed to further intra-county connectivity.
South Orange County Mobility	Identify multi-modal transportation needs and opportunities in South Orange County.
Corridor Studies & Improvements	Conduct studies evaluating the feasibility of multi-modal corridor enhancements.
OC Transit Vision Feasibility Studies	Study options to improve transit service and connectivity along corridors identified through the OC Transit Vision.
Transit Support Services	Establish a long-term plan for Orange County transit-supportive services, such as OC Flex, Vanpools, and Park-and-Rides.
Managed Lane Studies	Identify operational enhancements to the HOV network and criteria for potential expansion of priced managed lanes.
Freeway Chokepoints	Develop long-term freeway chokepoint improvement strategies, assuming OC Go is fully implemented.
Signal Synchronization	Support local initiatives to maintain and modernize signal synchronization corridors countywide.
Transportation Demand Management (TDM)	Study opportunities for new or expanded TDM projects.
Active Transportation Investments	Continue evaluating Orange County's Active Transportation needs, develop long-term plans, and implement programs that address data collection, data management, and safety education.
Sustainable Transportation Strategies	Coordination with partner agencies on implementation of sustainability strategies.
Joint Development Studies	Evaluate opportunities for joint developments at OCTA transit terminals to improve transit facilities and connectivity with employment/housing.
Asset Management	Monitor maintenance needs for existing and new facilities and equipment. Update fleet plans to address zero-emission bus requirements.
Adaptation Planning	Study infrastructure needs and develop recommendations.
Traffic Model Update	Update Orange County Traffic Analysis Model to incorporate latest socioeconomic data.
	Regional Planning Activities
Coordination with Regional Partner Agencies	Continue dialogue with SCAG, SANDAG, County Transportation Commissions, SCAQMD, Caltrans, and other regional agencies as needed to further inter-county connectivity.
Trade Corridors/Goods Movement	Coordinate primarily through SCAG and Metro to plan for projected growth in regional goods movement.

SHORT-TERM ACTION PLAN ACTIVITIES

Regional Planning Activities					
2020 RTP/SCS	Participate in the development of the 2020 RTP/SCS and initiate dialogue with SCAG and local jurisdictions.				
2028 Olympics	Coordinate with Metro on preparations for the 2028 Olympics.				
Metro Countywide ExpressLanes Strategic Plan	Continue dialogue with Metro and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.				
San Diego's I-5 HOT Lane Project	Continue dialogue with SANDAG and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.				
West Santa Ana Branch/ Pacific Electric Right-of- Way	Continue dialogue with Metro and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network.				
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.				
LOSSAN/Green Line Connection	Participate in SCAG's effort 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.				
	Emerging Issues				
Monitor New Technology	Monitor developing technologies and their potential impacts on transportation (e.g., autonomous vehicles, alternative fuels, and smartphone applications).				
Connected Infrastructure Needs Assessment	Study infrastructure needs and identify opportunities to implement and/or complement emerging transportation technologies.				
State and Federal Regulation	Monitor state and federal legislation/regulations.				
State and Federal Funding	Identify strategies and opportunities to access and leverage state and federal funding.				
	Transportation Outreach and Education				
Active Transportation Safety	Seek opportunities to enhance public outreach and education related to active transportation safety.				
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.				

Attachment A

Trend 2040 Projects

TREND 2040 PROJECT LIST - HIGHWAY PROJECTS

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes	Inter- change
	Measure M Proje	cts			
I-5	Project A – Add one HOV lane in each direction from SR-55 to SR-57, plus auxiliary lanes as needed		x		
I-5	Project B – Add one regular lane NB from truck bypass on-ramp to SR-55; add one regular lane SB from SR-55 to Alton Parkway; improve merging	x			
I-5	Project C – Add one regular lane in each direction from SR-73 to Alicia Parkway and one HOV lane in each direction from Alicia Parkway to El Toro Road; improve La Paz Road and Avery Parkway interchanges	x	x		x
I-5**	Project C – Add one HOV lane in each direction from Pacific Coast Highway to Avenida Pico, and reconfigure interchange at Avenida Pico		x		x
I-5	Project D – Improve access and merging in the vicinity of El Toro Road				x
SR-55	Project F – Add one regular lane and one HOV lane in each direction from I-405 to I-5, and fix chokepoints	x	x		
SR-55	Project F – Add one regular lane in each direction and fix chokepoints from I-5 to SR-22; make other operational improvements from I-5 to SR-91	x			
SR-57	Project G – Add one regular lane NB between Orangewood Avenue and Katella Avenue	x			
SR-57	Project G – Add one NB truck climbing lane from Lambert Road to Los Angeles County line	x			
SR-91**	Project H – Add one regular lane WB from I-5 to SR-57	X			
SR-91**	Project I – Add one regular lane WB from SR-55 to Tustin Avenue	X			
SR-91	Project I – Add one regular lane EB from SR-57 to SR-55; add one regular lane WB from SR-57 NB connector to State College Boulevard; improve interchanges and merging from Lakeview Avenue to Raymond Avenue	х			
SR-91	Project J – Add one regular lane in each direction from SR-241 to county line	X			
I-405*	Project K – Add one regular lane in each direction from I-605 to SR-73 and provide additional capital improvements	X Eastbound			

*Under construction **Completed since 2015

EB - Eastbound WB - Westbound

TREND 2040 PROJECT LIST - HIGHWAY PROJECTS CONTINUED

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes	Toll Roads	Inter- change
	Measure M Proje	cts				
I-405	Project L – Add one regular lane in each direction from I-5 to SR-55, and add SB auxiliary lane from SR-133 to Irvine Center Drive	x				
I-605	Project M – Improve interchange at Katella Avenue					x
	Project N – Freeway Service Patrol				-	
	Additional Proje	cts				
I-5	Add one HOV lane in each direction from SR-57 to SR- 91		x			
I-5	Add one HOV lane in each direction from Avenida Pico to San Diego County line		x			
I-5	Barranca Parkway HOV interchange improvement - Add SB HOV on-ramp and NB HOV off-ramp					x
SR-57	Interchange improvement at Lambert Road					X
SR-73	Add one HOV lane in each direction from MacArthur Boulevard to I-405		x			
SR-91	Construct overcrossing and interchange at Fairmont Boulevard					x
SR-91	Express Lanes - Operations and maintenance					
l-405*	Add one Express lane in each direction from I-605 to SR-73, convert existing HOV to HOT, and provide additional capital improvements			x		
I-405	Add auxiliary lanes from University Drive to Sand Canyon Avenue, and from Sand Canyon Avenue to SR-133	x				
I-405	Express Lanes – Operations and maintenance					
	Motorist services (511 service and call box network)					

*Under construction **Completed since 2015 NB - Northbound SB - Southbound EB - Eastbound WB - Westbound

TREND 2040 PROJECT LIST - HIGHWAY PROJECTS CONTINUED

Corridor	Description	Regular Lanes	HOV Lanes	Express Lanes		Inter- change
	Projects from Partner	Agencies	;			
SR-241 SR-261 SR-133	Build out to 3 to 4 toll lanes in each direction from SR-91 to I-5 (via SR-261 and SR-133), plus climbing and auxiliary lanes				x	
SR-241	Build out to 4 to 5 toll lanes in each direction, plus climbing and auxiliary lanes, south of SR-133				x	
SR-73	Build out to 4 toll lanes in each direction, plus climbing and auxiliary lanes				x	
SR-133	Add new interchange at Trabuco Road/Great Park Boulevard (North Irvine Transportation Mitigation Program)				x	x
SR-241	Add express lane Connector to SR-91 Express Lanes			x	x	x
SR-91	RCTC to add one regular lane from county line to SR-71	X				

TREND 2040 PROJECT LIST - STREETS AND ROADS

Corridor	Description				
	Measure M Projects				
Countywide	Project O – Master Plan of Arterial Highways build out				
Grade Separations**	Project O – Grade separations along BNSF corridor at Raymond Avenue and State College Boulevard				
Countywide	Project P – Signal synchronization program				
	Additional Projects				
Countywide	Arterial Pavement Rehab				
Grade Separations	Along LOSSAN corridor at 17th Street, State College Boulevard, and Santa Ana Boulevard				
Countywide	OC Bikeways				

*Under construction

**Completed since 2015

TREND 2040 PROJECT LIST - TRANSIT

Description

Measure M Projects

Project R – Metrolink Capital – Supports service increase from 54 to 86 weekday trains

Project R – Metrolink Service Expansion Program station improvements

Project S – OC Streetcar

Project U – Senior Mobility Program

Project U – Senior Non-Emergency Medical Transportation Program

Project W – Safe Transit Stops

Additional Projects

OC Bus 360° – Bus Efficiency Strategy

North Harbor Corridor – High-quality transit between Cal State Fullerton and the Santa Ana Regional Transportation Center

17th/Westminster & Bristol Corridor – High-quality transit between the Goldenwest Transportation Center and the University of California, Irvine

South Harbor Corridor – High-quality transit between 17th/Westminster and Hoag Hospital Newport Beach

Bristol & State College Corridor – High-quality transit between Brea Mall and Downtown Santa Ana

Beach Corridor – High-quality transit between Fullerton Park-and-Ride and Downtown Huntington Beach

La Palma Corridor – High-quality transit between Hawaiian Gardens and Anaheim Canyon Station

McFadden & Bolsa Corridor – High-quality transit between Goldenwest Transportation Center and Larwin Square

Main Corridor – High-quality transit between Anaheim Regional Transportation Intermodal Center and the South Coast Plaza Park-and-Ride

Chapman Corridor – High-quality transit between Hewes and Beach

Interstate 5 Corridor – Freeway BRT between Fullerton Park-and-Ride and Mission Viejo/Laguna Niguel Metrolink Station

State Route 55 Corridor – Freeway BRT between Santa Ana Regional Transportation Center and Hoag Hospital Newport Beach

Metrolink Operations (increase from 54 to 86 weekday trains)

OC Flex – On-demand shared-ride microtransit service

LOSSAN – Laguna Niguel to San Juan Capistrano rail passing siding

Transit Security and Operations Center

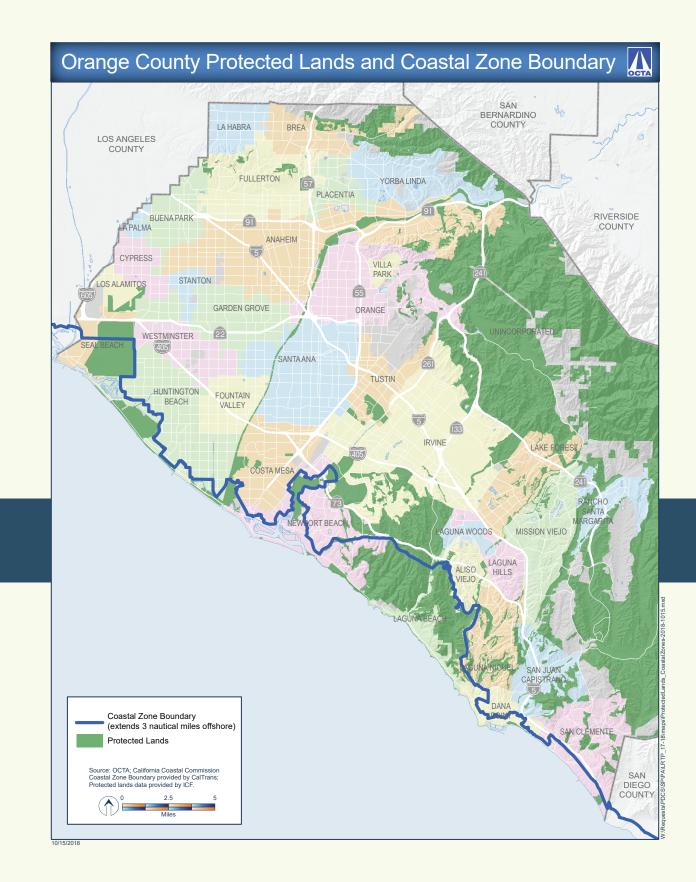
Vanpool

TREND 2040 PROJECT LIST - OTHER

Description		
Measure M Projects		
Project X – Transportation-related water quality program		
Additional Projects		
Bond Interest		

Attachment B

Orange County Protected Lands and Coastal Zone



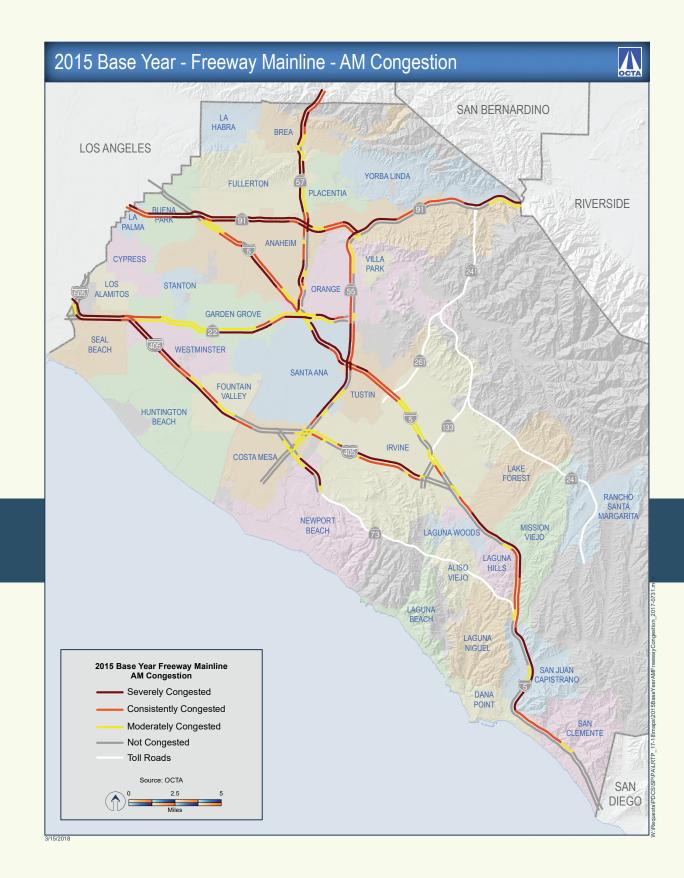
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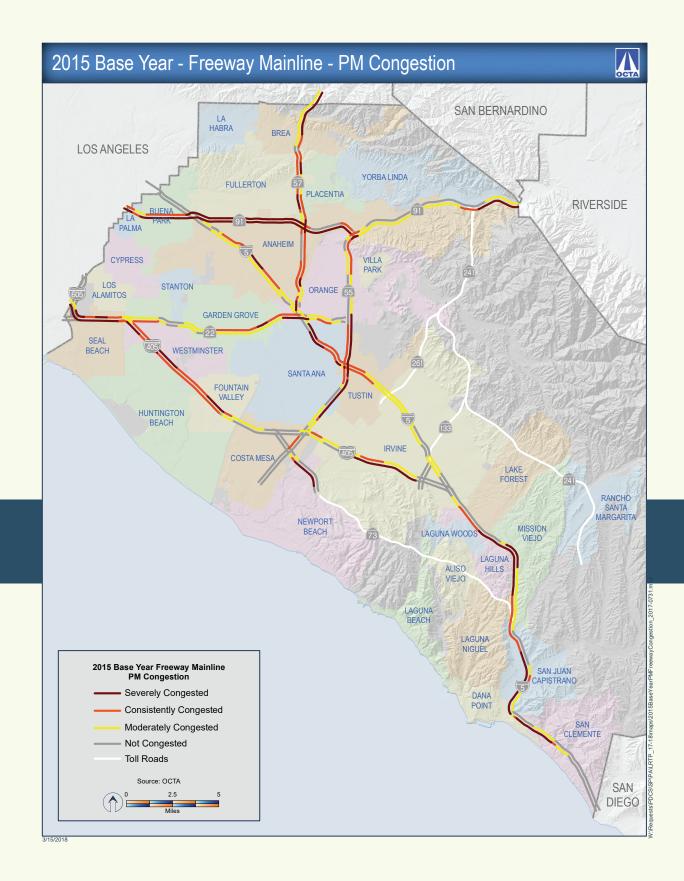
Performance Maps: Base Year 2015, 2040 No Build, and Trend 2040 This page intentionally left blank.

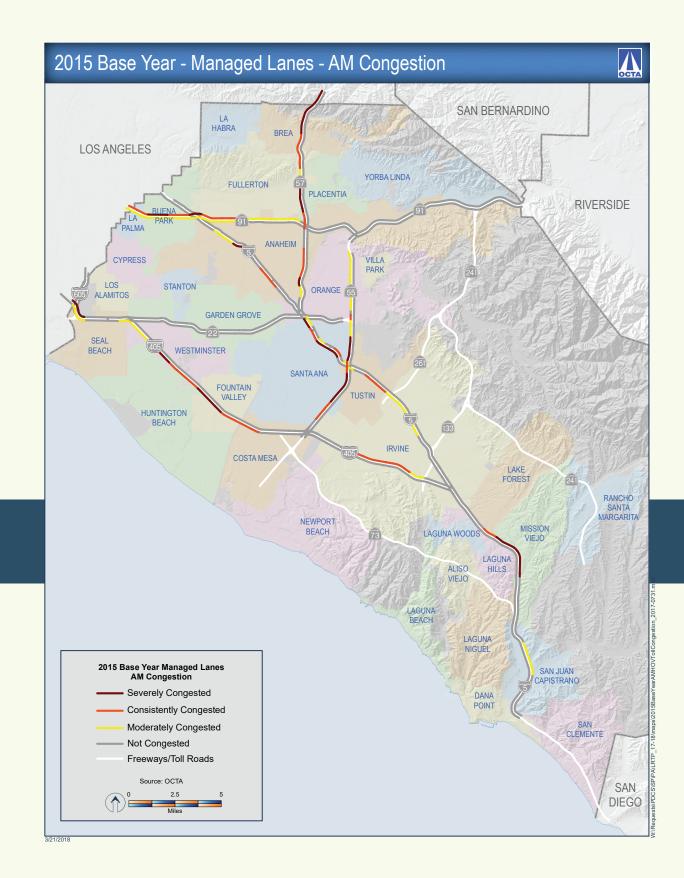
TRANSPORTATION SYSTEM PERFORMANCE SUMMARY

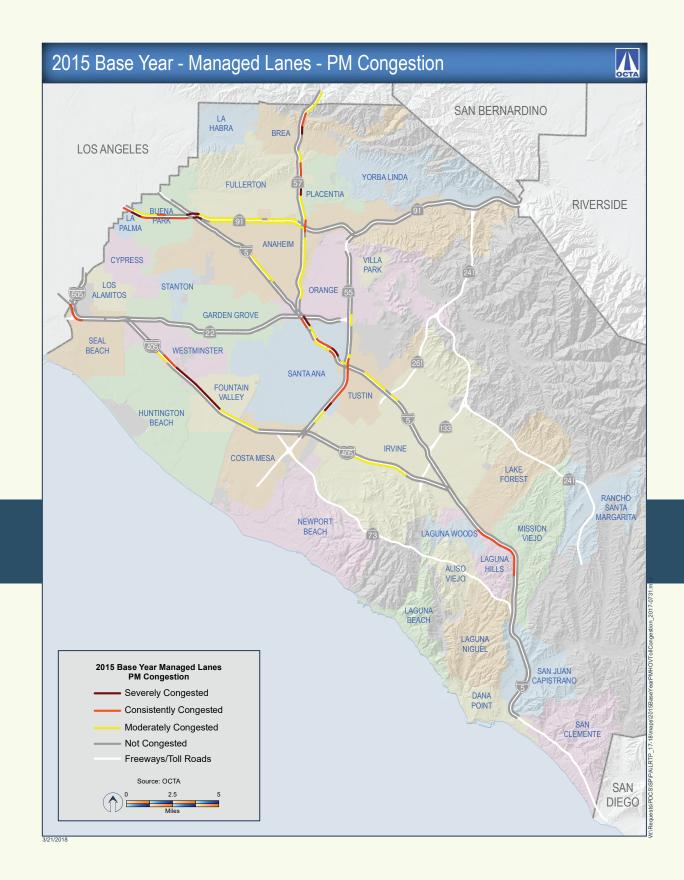
Metrics (daily)	2015 Base Year	2040 No Build	Trend 2040
Vehicle passenger delay per capita (minutes)	8.3	12.5	8.6
Vehicle passenger travel time per capita (minutes)	54.5	58.5	55.9
Delay as a percent of travel time	15.2%	21.4%	15.4%
Transit trips	149,000	165,000	174,000
Freeways - AM peak average speed (mph)	38.3	36.2	39.7
Freeways - PM peak average speed (mph)	40.6	39	41.6
Arterials - AM peak average speed (mph)	25.7	24.3	25.9
Arterials - PM peak average speed (mph)	26.7	25.7	37.1
Managed lanes - Meet federal performance standards	×	×	

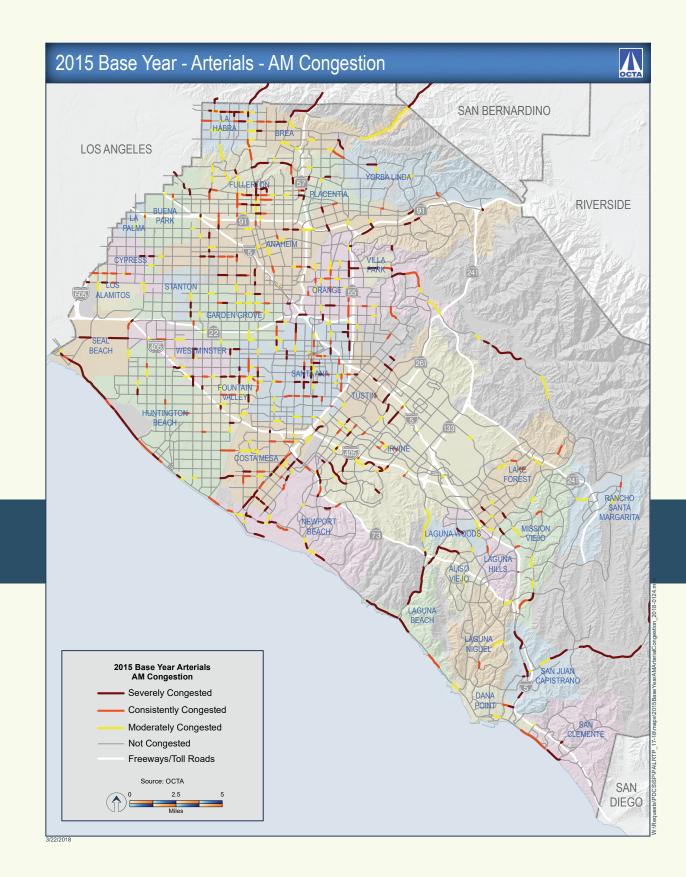
Note: Trend 2040 assumes managed lanes are operated as tolled express lanes by 2040



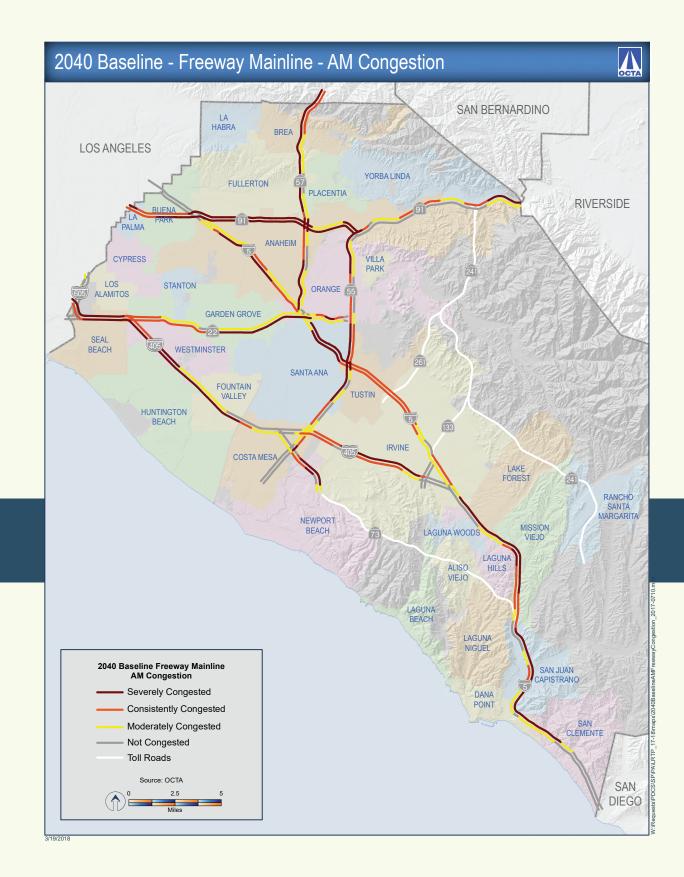


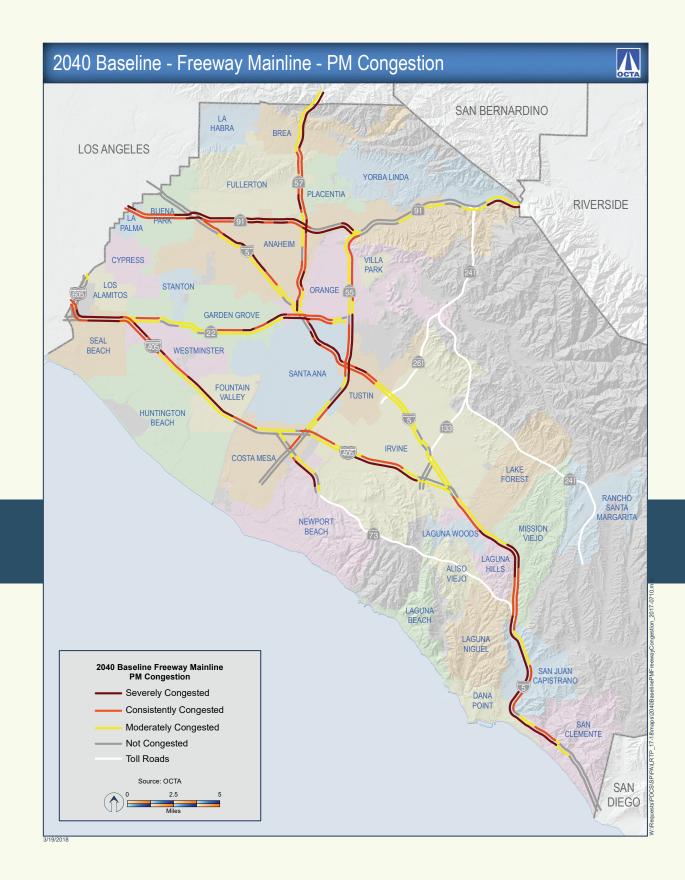




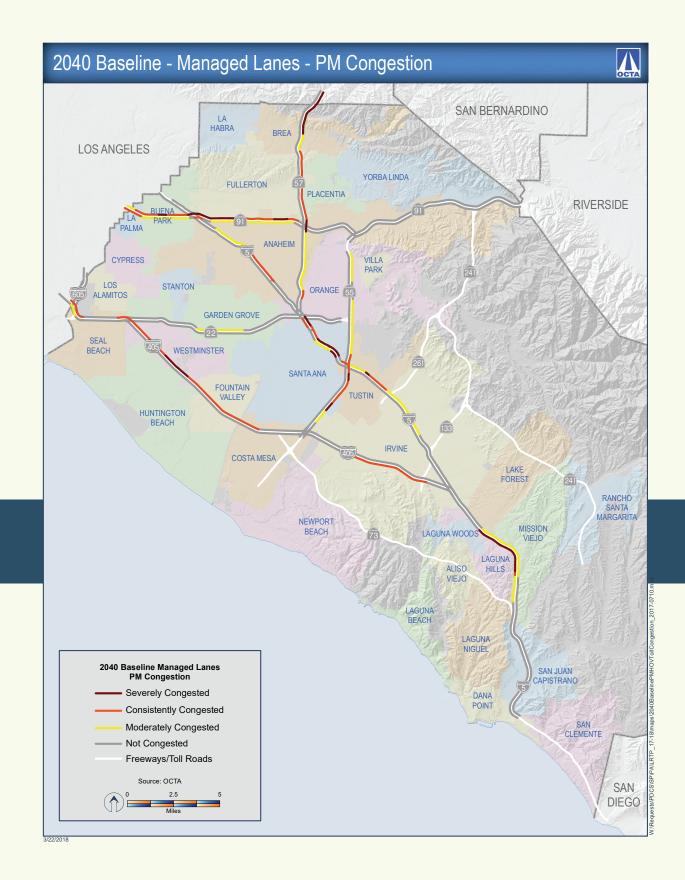


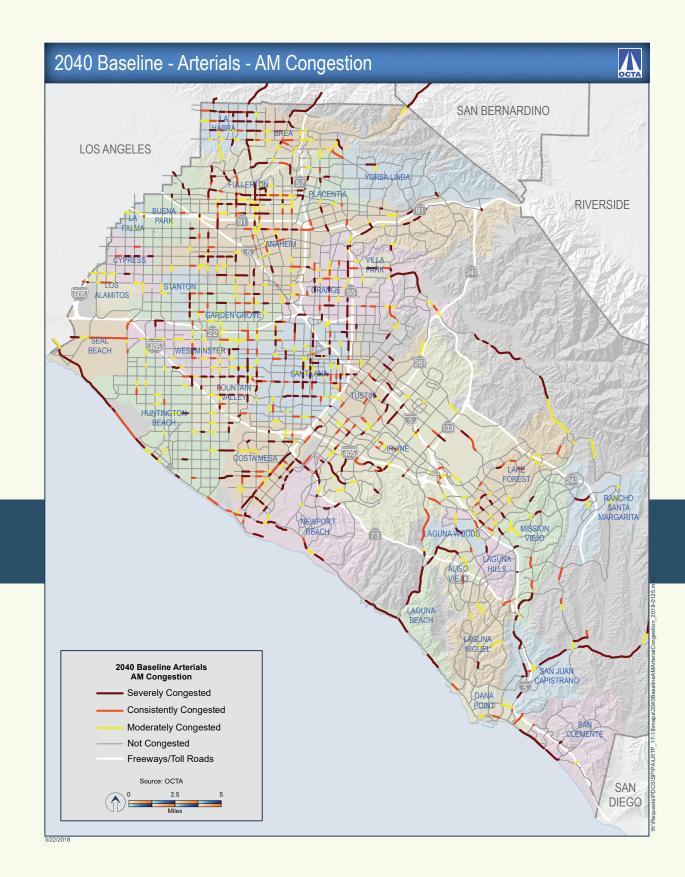


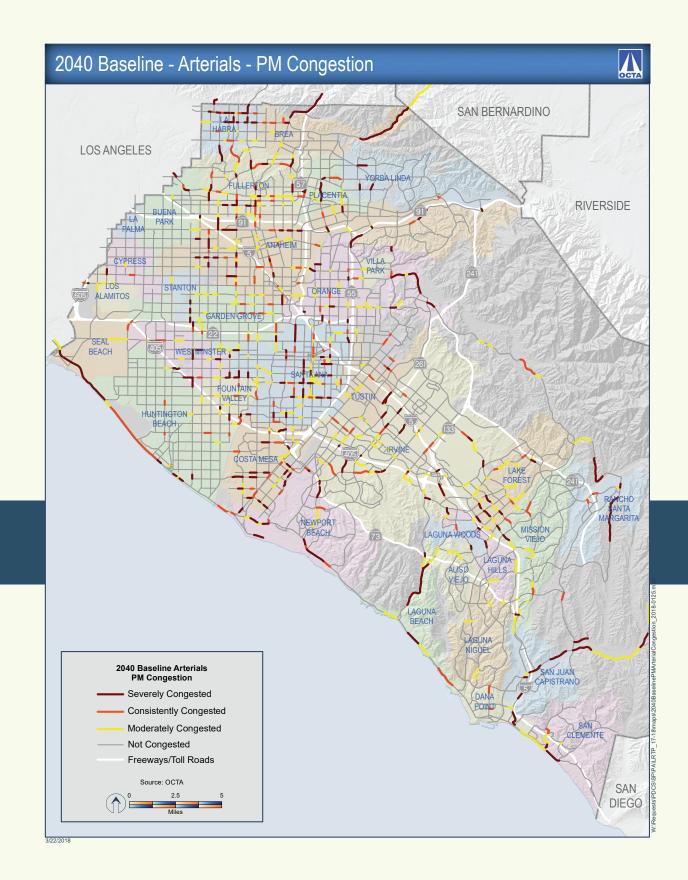


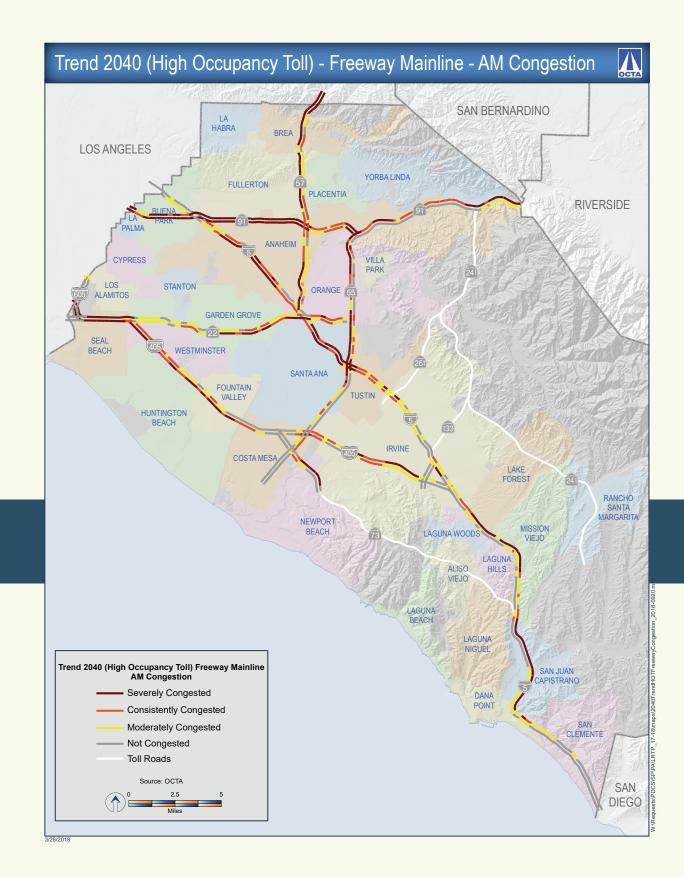


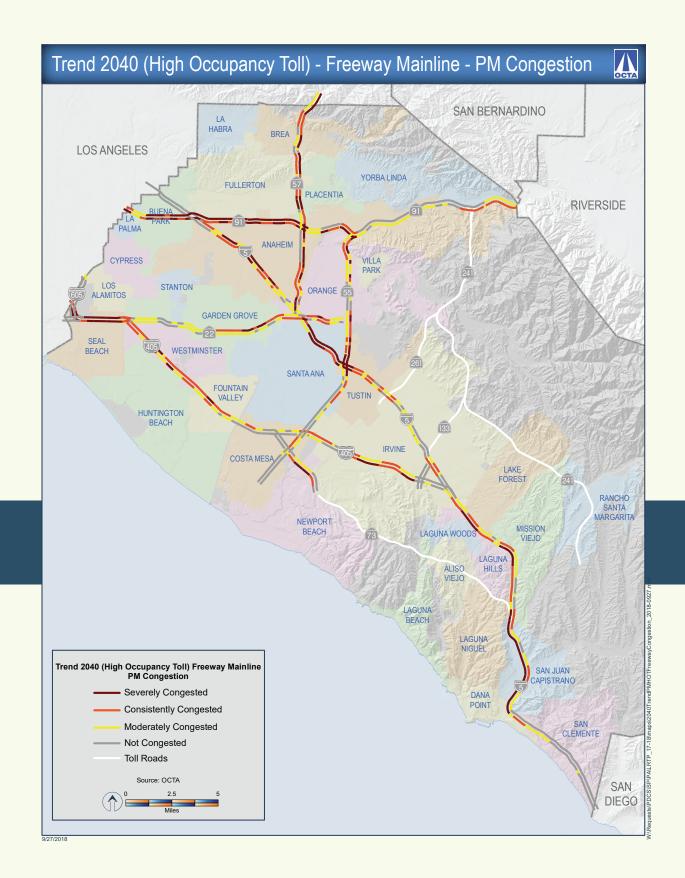


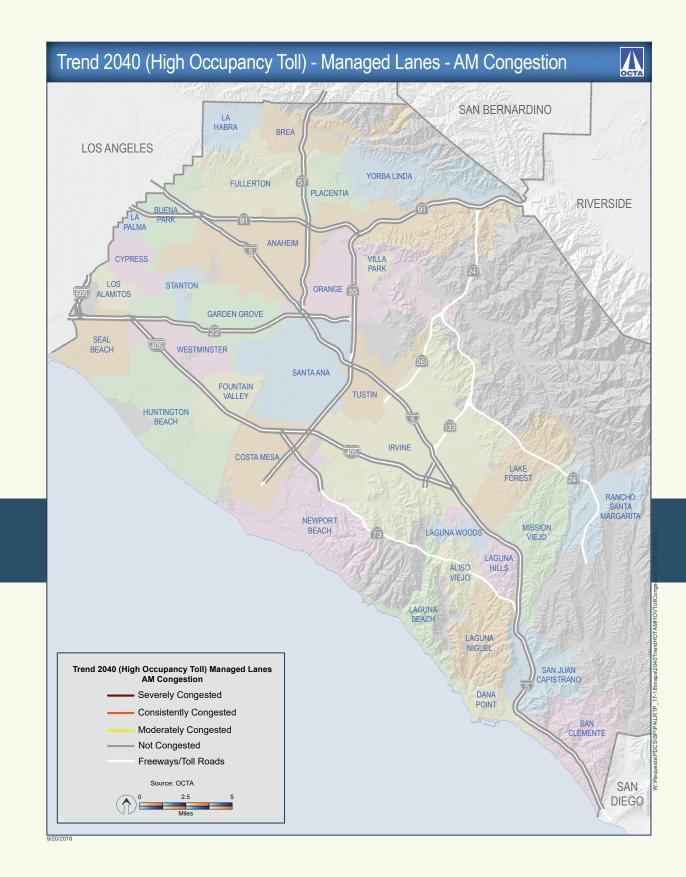


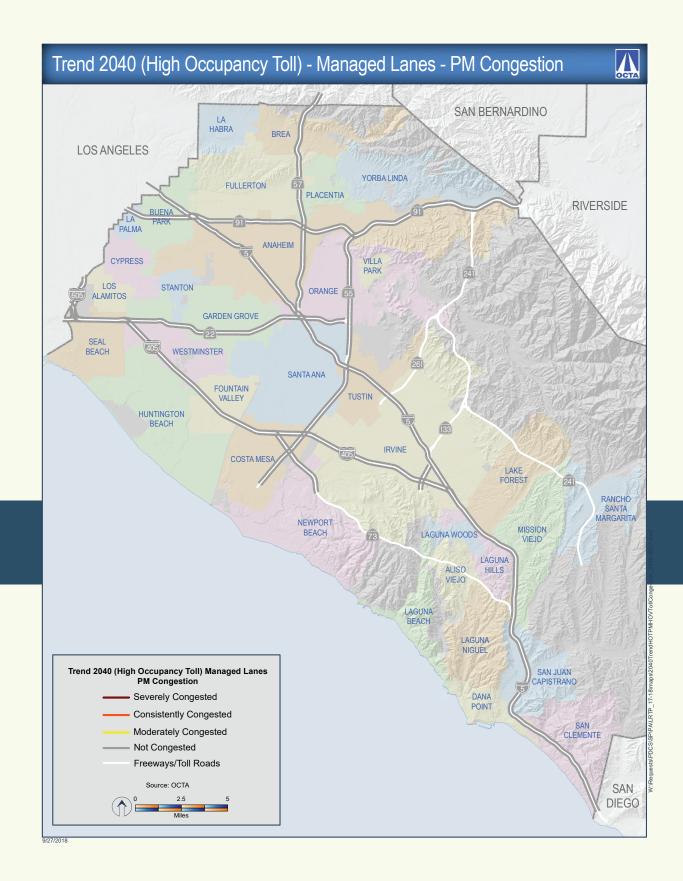


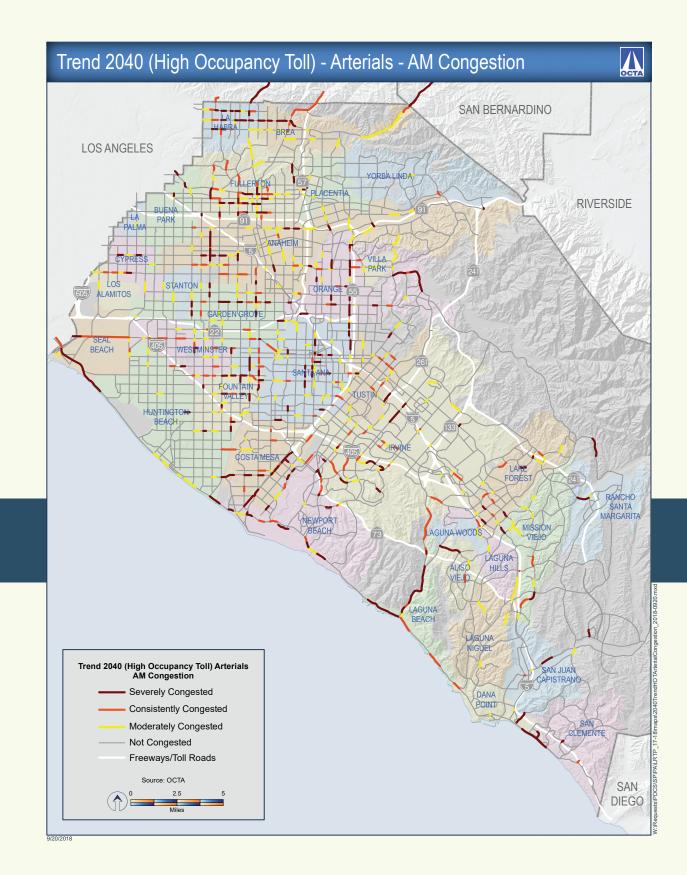


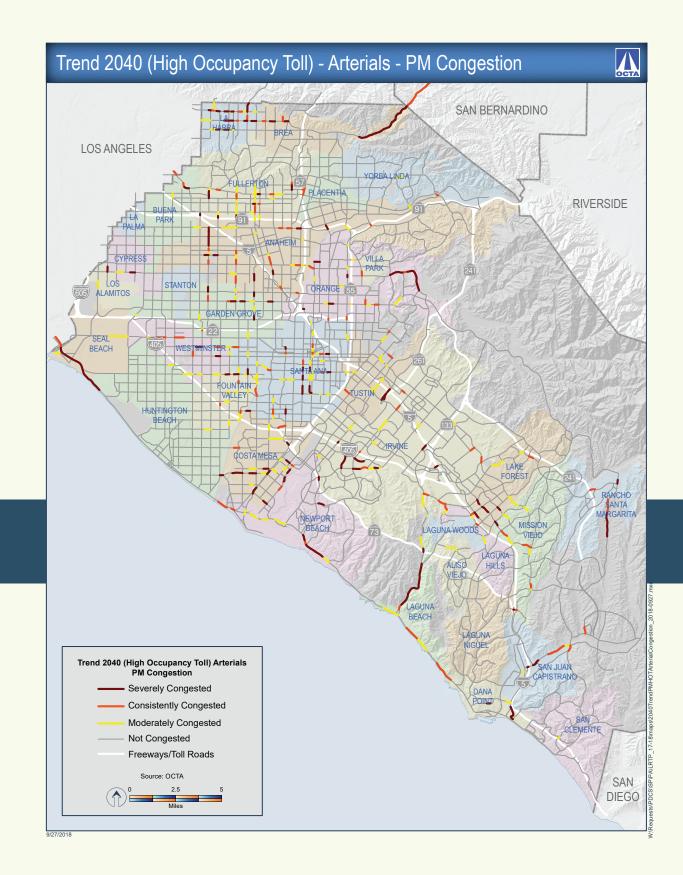












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Attachment D

Public Outreach Report

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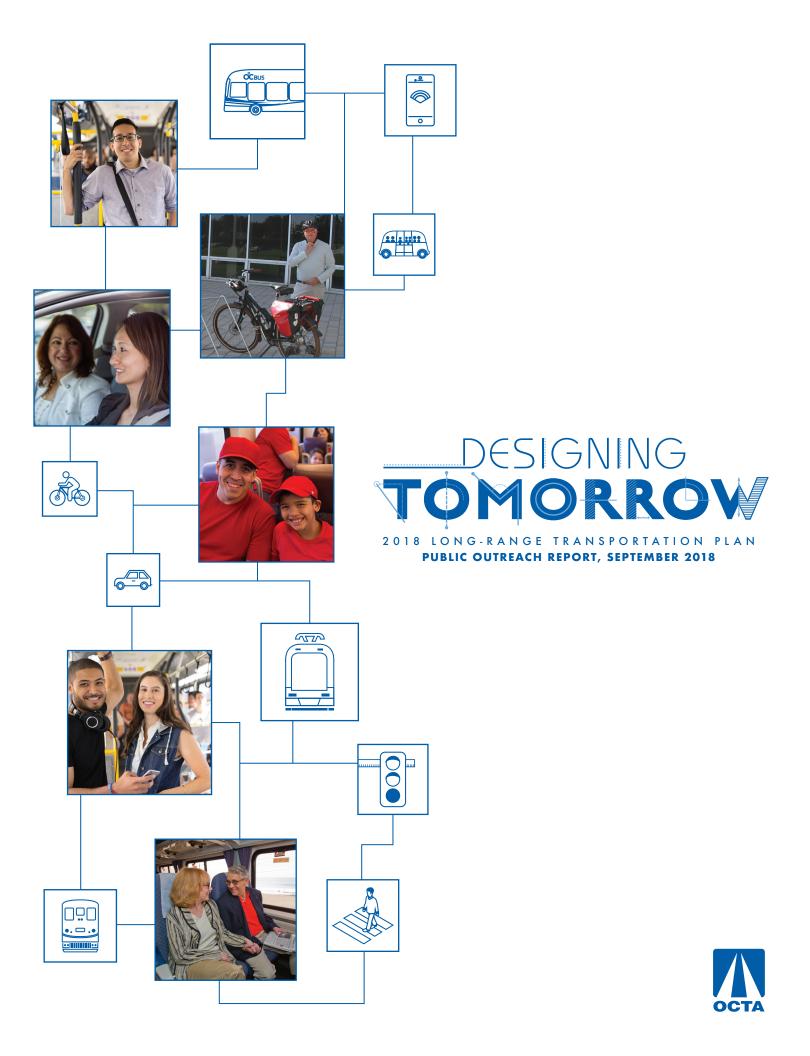




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Public Outreach Report

Background

The Orange County Transportation Authority is updating its Long-Range Transportation Plan (LRTP or Plan), looking ahead to the year 2040. As part of the process, a comprehensive public outreach program was designed to elicit public comment from a variety of sources, including the general public, elected officials, local jurisdictions, business leaders, transportation professionals, and diversity leaders.

The goals of the LRTP are to assess the performance of the transportation system over a 20+ year horizon, and to identify the projects that best address the needs of the system based on expected population growth, housing, and employment growth, while taking forecast financial assumptions into account at the same time. The LRTP provides both a financially constrained plan, which considers funding limitations and an unconstrained plan, which contains a vast array of potential improvements should additional funding sources become available.

Phase One – Provide Context and Identify Priorities

Public Outreach Objectives

The key objectives of Phase One included informing and educating key audiences about evolving demographics and transportation options, key issues and challenges while obtaining input to shape the draft transportation plan that reflected the public's feedback and priorities.

Outreach Tactics

Phase One included a variety of activities designed to solicit public input from a broad spectrum of people including: focus groups, website/online survey, social media campaign, stakeholder meetings/workshops, and leadership meetings.

Outreach Audiences

The LRTP impacts all of Orange County, therefore, targeted audiences were both broad and comprehensive including general public, transportation professionals/organizations, business and community leaders, elected officials, city/county officials, diverse community leaders, influential Orange County leaders, transit/rideshare users, OCTA's public committees, students, and environmental community.

More than 11,000 people provided direct feedback via the online survey and through participation in outreach meetings.

Phase One Key Findings

Generally, there was acknowledgement by key stakeholders there is a need to address the current key issues that will likely affect travel demand, services and infrastructure needs moving forward. In addition, it is vital to identify new and emerging innovative and technological trends.

Key Themes

Following are the key themes that came out of the stakeholder meetings, focus groups, leadership meetings and online survey responses:

- Keep Orange County Moving The public and stakeholders are looking for congestion relief on local streets and freeways
- Expand Transit Options Although public input indicates cars continue to be the number one choice of travel, there is growing interest in offering expanded transit options in Orange County
- Be Innovative It's important that OCTA effectively monitors and engages in the implementation of emerging technologies

Phase One Summary

The Phase One outreach efforts met the goal of informing and educating the public about the LRTP's key issues and challenges OCTA is facing when planning for the future of transportation. The overall feedback indicated the public and stakeholders want to see further improvements to relieve congestion on freeways and local streets. There is growing interest in offering expanded transit options and the feedback further indicates that monitoring and engaging in the implementation of emerging technologies is vital.

Phase Two – Educate the Public and Seek Feedback on the Plan

Public Outreach Objectives

Moving into Phase Two, momentum was built upon the outreach conducted in Phase One and the input received from stakeholders. The objectives of Phase Two were:

- Inform and educate key audiences about the transportation options and key issues and challenges
- Gather input from target audiences on key Plan elements

Outreach Tactics

Phase Two included a variety of activities designed to solicit public input from a broad spectrum of people including: website/online survey, telephone town hall, quantitative survey, social media campaign, pop-up events, video, art and photo contest, and public open house.

Outreach Audiences

The LRTP affects all of Orange County, therefore, targeted audiences were both broad and comprehensive including general public, transportation professionals/organizations, business and community leaders, elected officials, city/county officials, diverse community leaders, influential Orange County leaders, transit/rideshare users, OCTA's public committees, students, and environmental community. The OCTA Citizens Advisory Committee served as the Stakeholder Working Group and provided input on a regular basis. The following is a list of stakeholders that were invited to provide feedback on the plan. The majority of them also helped notify the public about the release of the Draft LRTP. **External Stakeholders**

- All 34 Orange County cities
- Association of California Cities Orange County
- Board of Supervisors
- California Coastal Commission
- California Department of Transportation District 12
- County of Orange
- Environmental/Conservation Groups
- John Wayne Airport
- League of California Cities
- Metrolink
- Mobility 21
- Orange County Business Council
- Orange County chambers of commerce
- Orange County libraries
- South Coast Metro
- Spectrumotion
- Universities
- Women in Transportation Seminar Orange County

Internal Stakeholders

- OC Bus Customers
- Interstate 405 Improvement Project Database
- Citizens Advisory Committee
- Taxpayer Oversight Committee
- Diverse Community Leaders Group
- Environmental Cleanup Allocation Committee
- Environmental Oversight Committee
- Special Needs Advisory Committee
- Teen Council
- Rideshare and Vanpool Programs Employers

Partner agencies:

- California Department of Transportation
- Los Angeles County Metropolitan Transportation Authority
- Riverside County Transportation Commission
- San Bernardino County Transportation Authority
- San Diego Association of Governments
- Southern California Association of Governments
- Transportation Corridor Agencies

Key Themes

During Phase Two, the public was able to provide direct input via two surveys, a telephone town hall (two sessions) and the public open house. Throughout all platforms, participants acknowledge the importance of reducing congestion and improving travel conditions.

Following are the key themes that came out of the surveys, telephone town hall and public open house:

- Keep Orange County Moving Respondents are looking for congestion relief on local streets and freeways. Signal synchronization and maintenance/repair concerns continue to be a top priority. Respondents at the public open house voiced the need for freeway improvements.
- Expand Transit Options Although public input indicates cars continue to be the number one choice of travel, there is growing interest in offering expanded transit options in Orange County
- Do Everything Respondents were provided the opportunity to share input on a variety of transportation options. Many indicated support for more transit options, more rail service, increased bus service, more bike paths and more technology enhancements to improve the transportation experience.

Outreach Strategies

Phase Two included a variety of activities and strategies to educate the public about transportation options, key issues and challenges, gather input on plan elements and measure support for the Plan. Coordinated messaging to the public focused on "Four Ways to Participate:" an online survey, telephone town halls, community open house, and art and photo contest. Other outreach strategies are also identified in this section.

Four Ways to Participate

MetroQuest Survey - The MetroQuest online survey was launched by OCTA on August 13 and was open for public comment for seven (7) weeks closing on September 28, 2018. The survey was an online platform for Orange County residents to provide their feedback on potential transportation improvements and to let OCTA know how they get around Orange County. 1,230 surveys were completed with a 67% completion rate. 55% of the surveys were completed via the web platform and 45% were completed via the mobile platform. The complete MetroQuest survey results are included as *Appendix A*.

Telephone Town Hall - A forum was conducted via telephone on September 12 allowing participants to call-in and learn about the Plan from OCTA executive leaders and ask questions in a live, one-hour format. Two calls were conducted: one in north county and one in south county and both included a Spanish simulcast.

Community Open House - As a project finale to showcase the LRTP, a community open house was held at OCTA headquarters on September 22, 2018 with 70 people in attendance. This event served not only as a countywide open invitation for the public to learn about the plan but was also an opportunity to raise awareness and share information about other ongoing projects, including OC Streetcar and OC Active. The event was advertised with a focus on being family-friendly, and included train rides, treats, face painting and other fun activities available to guests. The Plan was summarized in a presentation format on electronic smartboards. Team members shared details about the Plan while reviewing screens, videos and other attachments on the smartboard. The public was able to provide comments via the MetroQuest survey and comment cards at the open house. Details about the event and participating agencies and organizations are included in *Appendix B*.

Art and Photo Contest - An Art and Photo contest was designed to encourage Orange County students to showcase their talents with the themes explored in the Plan. The contest was open to all Orange County schools from kindergarten to college/university in four age categories. The contest themes include:

- The Future of Transportation
- A Smooth Ride Ahead (highway or road improvements)
- All Aboard (rail technologies)
- Blue Skies Ahead (air quality)
- People Power or Human Power (bicycles, walking and skateboards)
- The Wheels on the Bus (transit)

Public online voting of 12 entries was encouraged with final voting at the public open house. First, second, and third place winners were selected in the categories and awarded gift cards. The entries were also displayed at the public open house. The entries and the Art and Photo contest flyer promoting the contest is included in *Appendix C*.

Additional Outreach Strategies

- Attitudinal and Awareness Survey OCTA's 2018 survey included questions to help inform OCTA's development of the 2018 Plan. The survey was conducted in June 2018 and included 2,525 randomly selected Orange County adult residents. The survey followed a mixed-method design that employed multiple recruiting methods (telephone and email) and multiple data collection methods (telephone and online). The interviews averaged 18 minutes in length and were conducted in English, Spanish, and Vietnamese. The survey results focusing on the Plan are included as Appendix D.
- Informational Video A two-minute information video was created to clearly explain the purpose and need for the plan while highlighting ways for the public to provide input. A shorter 20-second version was created for social media sharing.
- Pop-Up Events To promote the online survey, the project team staffed seven (7) project booths at large community events and Metrolink stations throughout the county. At each event, the project team provided an overview of the project, informed the public about the Art and Photo Contest, and promoted the community open house. The primary objective was encouraging participation in the MetroQuest survey. Participants had the option of taking the survey online on a tablet provided or by hard copy. The project team displayed OCTA branded giveaways to attract more visitors to the booth and incentivize survey completion. For a complete list of survey locations, please see *Appendix E*.
- Social Media Campaign/Notification A social media campaign accompanied by more traditional notification efforts were key elements in seeking public comment on the Plan. Both social media and traditional tactics were employed to ensure farreaching communication efforts. The following is an overview of all tactics implemented.

- Social Media Toolkit A toolkit with a menu of graphics and accompanying content for use on Facebook, Instagram, Twitter, eblast and newsletters was created for use by cites, government agencies, non-profits and other organizations. The toolkit also included a link to the project video with content to promote the video. The social media tool kit is included as *Appendix F*.
- Website The project website, <u>www.OCTA.net/LRTP</u> provided an overview of the Plan as well as the project video to provide viewers with an easy-tounderstand overview of the project. The website received 20,136 views. Also included on the page were details and links on the "Four Ways to Participate:"
 - Online survey link to the MetroQuest survey
 - Telephone Town Hall details on participating and then following the town halls, recordings of both town halls in north and south county.
 - Community Open House details on the September 22 Community Open House including a PDF link with event details.
 - Art and Photo Contest details on the contest including a link to vote online.
- Facebook Four advertisements and one post were developed to share and promote the Plan and participation. One post highlighted the four ways to participate, while four paid advertisements highlighted each of the "Four Ways to Participate:" online survey, telephone town hall, community open house, and art and photo contest. All posts were boosted to ensure further reach. The paid advertisements began the week of August 20 and the four elements were timed to coincide with the element milestones. The advertisement and posts are included as Appendix G.
- Eblast Three eblasts were created and distributed to the Plan stakeholder database as well as other appropriate external and internal stakeholders as previously identified reaching nearly 7,000 stakeholders each time. The first eblast identified the "Four Ways to Participate," the second eblast promoted the telephone town halls and the third eblast promoted the community open house. The three eblasts are included as *Appendix H*.
- On the Move Blogs OCTA publishes a blog with brief articles highlighting key initiatives. For the Plan, five separate announcements were published highlighting "Four Ways to Participate." The announcements/articles included in the blog are in *Appendix I*.
- Orange County Register Online Advertisement An online advertisement on the Orange County Register's website promoting the community open house event was published from Saturday, September 15 through Saturday, September 22 with over 50,000 impressions during the one-week advertising run. The online advertisement is included as *Appendix J*.
- Postcard A hard-copy postcard was designed to inform the public on the "Four Ways to Participate." The postcard was distributed at pop-up events and copies provided to area businesses and libraries throughout Orange County.

As part of the extended outreach, public access venue locations were identified to assist with supplemental outreach and included senior and community centers in every city throughout the county. Bundles of post cards were mailed to these locations with requested placement in areas of high traffic volume for public viewing. The postcard is included as *Appendix K*.

Results

MetroQuest Survey

The qualitative survey was launched by OCTA to create an online platform for Orange County residents to provide their feedback on potential transportation improvements and let OCTA know how they travel around Orange County. The survey is included *as Appendix L*. The survey research utilizes a nonprobability sample, which means that results cannot be considered representative of the total population of interest. Informal research methods such as this are useful to explore a group's opinions and views, allowing for the collection of rich and verifiable data. This data can reveal information that may warrant further study and is often a cornerstone for the generation of new ideas.

Based on survey results, the majority of the 1,230 survey respondents (66%) drive a car alone as their main mode of transportation, followed by carpooling (14%). Expanding bus/train services was the highest ranked transportation improvement priority for respondents which shows an increasing interest for transit services in the County. Rail options, including commuter and light rail, are the most popular transit options. Strong support for signal synchronization and connecting signals with cars were among other noteworthy results of the survey. The following are the survey key findings:

Transportation Priorities:

Survey respondents were asked to pick the top three strategies to be included in the LRTP. Expanding bus and train services is both the most popular and the most important priority for the respondents. This is followed up by signal synchronization and better maintenance/repair of the freeways and arterial roads.

- 1. Expand bus/train service
- 2. Signal synchronization
- 3. Better maintenance/repair

Technology:

Survey respondents were asked if they would or would not support connecting traffic signals to cars so drivers could be alerted of traffic ahead of time. A total of 78% supported the idea.

When survey respondents were also asked if they would or would not support a mileagebased fee to help manage growth in trips and congestion, there was minimal support. Only 29% supported the idea. Transit Priorities:

Survey respondents were asked to pick their top transit options. Commuter train and streetcar/light rail were the highest transit priorities for respondents followed by bus rapid transit.

- 1. Commuter Train (22%)
- 2. Streetcar/Light Rail (21%)
- 3. Bus Rapid Transit [less stops] (18%)
- 4. Special events express shuttles (16%)
- 5. On-demand shared ride community shuttles (14%)
- 6. Bus (9%)

Managed Lanes:

Survey respondents were asked which of the following three strategies they would support to keep carpool lanes flowing during peak periods. The majority of respondents support requiring at least 3 people in a vehicle to qualify for the carpool lane rather than adding more lanes.

- Require at least 3 people in a vehicle in order to qualify for the carpool lane, but also allow single or two-person vehicles the opportunity to use the carpool lane for a fee (39%)
- Require at least 3 people in a vehicle in order to qualify for the carpool lane (35%)
- Build additional carpool lanes on freeways, even if it is very expensive and may require purchasing private properties to widen the freeway (26%)

Bike Improvement Priorities:

Survey respondents were asked how to best improve bicycling in Orange County. The top three options were close to equally distributed as seen below:

- 1. Adding bike lanes (29%)
- 2. Improving street signage and pavement markings (28%)
- 3. Maintaining existing facilities (24%)
- 4. Developing bike-share programs (19%)

Travel Behavior:

Survey respondents were asked about their main mode of transportation. The majority of respondents drive alone, followed by carpooling/vanpooling and bus transit. Only 3% of respondents selected active transportation (biking and walking).

- 1. Drive alone (66%)
- 2. Carpool/Vanpool (15%)
- 3. Bus (8%)
- 4. Metrolink/Amtrak (4%)
- 5. Bike (2%)
- 6. On-demand service (2%)
- 7. Other (2%)
- 8. Walk (1%)
- 9. Paratransit (0.04%)

Public Comments

A total of 110 comments and eight letters were received during the public comment period. The comments were submitted via online comment forms, during the Telephone Town Hall and at the open house. All comments are included as *Appendix M*.

The majority of comments were related to:

- Expanding bus service throughout the County
- Adding more Metrolink service and possible light rail transit options
- Improving freeways to meet increased population demand
- Considering how autonomous vehicles can be incorporated into the system
- Incorporating more ride sharing services and technology into the plan
- Opposing additional toll roads

Telephone Town Hall

A live, one-hour telephone forum was conducted both in North County and South County and was presented in English and Spanish. The OCTA presenters included CEO Darrell Johnson, Executive Director of Planning Kia Mortazavi and Chairwoman Lisa Bartlett representing South County and Vice Chair Tim Shaw representing North County. The Telephone Town Hall was promoted via the OCTA website, media, OCTA blog, e blasts and social media. More than 20 questions were asked and ranged from topics related to streetcar expansion, signal synchronization, safety on busses and on the roads for EMTs, rail system improvements and bus service. The following is how many people participated in the two forums:

- A total reach of 6,558 callers listened for a least 1+ minutes.
- 956 callers listened for more than 5 minutes.
- A total of 385 callers participated for the entirety of the two calls.

Attitudinal and Awareness Survey

Every few years, OCTA conducts an Attitudinal & Awareness Survey to gather data on Orange County residents' awareness, perceptions, and priorities with respect to OCTA as well as the projects, programs, and services it provides. A portion of the 2018 survey was used to gather input about OCTA's development of the Plan. The survey included 2,525 respondents.

The survey results indicate that Orange County residents have clear preferences with respect to the projects they think should be prioritized in the Plan. At the top of the list were fixing potholes and repairing roadways (91% high or medium priority) and projects that had a direct connection to reducing traffic congestion, including fixing freeway bottlenecks at interchanges, merge areas, and on/off ramps (90%), synchronizing traffic signals on major roadways (87%), and widening freeways, where possible (80%).

Transit and rideshare improvements were also prioritized by residents, including increasing and expanding commuter rail service on Metrolink and Amtrak (74%),1increasing and expanding bus services (70%), increasing carpool, vanpool, and rideshare programs (65%), adding faster express bus services (62%), adding streetcar services in areas with high potential ridership (60%), and creating on-demand shared ride community shuttles (57%).

Residents also prioritized projects that would support active transportation, including improving and repairing the network of sidewalks (65%) and improving the network of bike paths (52%).

When compared to the other projects tested, residents were less apt to prioritize improvements related to carpool lanes, toll roads, and autonomous vehicles. Specifically, less than 4-in-10 respondents rated as a high or medium priority adding carpool lanes to toll roads (36%), enhancing infrastructure to accommodate autonomous, driverless vehicles (35%), and adding toll lanes on existing highways (28%).

Phase Two Summary

The feedback received indicates an interest by the public and stakeholders to see further improvements to relieve congestion on freeways and local streets with a growing interest in providing more transit options as an additional means of helping travelers move throughout Orange County. The feedback further indicates it is important to prepare for current and emerging technologies as improvements are considered.

Appendix A

MetroQuest Survey

Overview

The MetroQuest survey was launched by OCTA to create an online platform for Orange County residents to provide their feedback on potential transportation improvements and let OCTA know how they get around Orange County.

The qualitative MetroQuest survey was launched by OCTA to create an online platform for Orange County residents to provide their feedback on potential transportation improvements and let OCTA know how they travel around Orange County. The survey began on August 13, 2018 and closed seven weeks later on September 28, 2018. 1,230 surveys were completed with a completion rate of 67%. 55% of surveys were completed on the web, while 45% of surveys were completed on mobile devices.

The survey research utilizes a nonprobability sample, which means that results cannot be considered representative of the total population of interest. Informal research methods such as this are useful to explore a group's opinions and views, allowing for the collection of rich and verifiable data. This data can reveal information that may warrant further study and is often a cornerstone for the generation of new ideas.

Emerging Themes

Based on survey results, the majority of survey respondents (66%) drive a car alone as their main mode of transportation, followed by carpooling (14%). Expanding bus/train services was the highest ranked transportation improvement priority for respondents which shows an increasing interest for transit services in the County. Rail options, including commuter and light rail, are the most popular transit options. Strong support for signal synchronization and connecting signals with cars were among other noteworthy results of the survey. The following are the survey key findings:

Transportation Priorities

Survey respondents were asked to pick the top three strategies to be included in the LRTP. Expanding bus and train services is both the most popular and the most important priority for the respondents. This is followed up by signal synchronization and better maintenance/repair of the freeways and arterial roads.

Most Popular Transportation Priorities:

- 1. Expand bus/train service (ranked 603 times)
- 2. Signal synchronization (ranked 553 times)
- 3. Better maintenance/repair (ranked 508 times)
- 4. Expand technology use (ranked 357 times)
- 5. Widen freeways and streets (ranked 306 times)
- 6. Improve bikeways and sidewalks (ranked 289 times)
- 7. Increase rideshare (ranked 193 times)
- 8. Add tolled express lanes (ranked 93 times)

Technology

Survey respondents were asked if they would or would not support connecting traffic signals to cars so drivers could be alerted of traffic ahead of time. A total of 78% supported the idea.

When survey respondents were also asked if they would or would not support a mileage-based fee to help manage growth in trips and congestion, there was minimal support. Only 29% supported the idea.

- 1. Support connecting traffic signals with cars so you can get alerted of traffic congestion
 - a. Yes (78%)
 - b. No (22%)
- 2. Support a mileage-based fee to help manage growth in trips and congestion
 - a. No (71%)
 - b. Yes (29%)

Transit Priorities

Survey respondents were asked to pick their top transit options. Commuter train and streetcar/light rail were the highest transit priorities for respondents followed by bus rapid transit.

- 1. Commuter Train (22%)
- 2. Streetcar/Light Rail (21%)
- 3. Bus Rapid Transit [less stops] (18%)
- 4. Special events express shuttles (16%)
- 5. On-demand shared ride community shuttles (14%)
- 6. Bus (9%)

Managed Lanes

Survey respondents were asked which of the following three strategies they would support to keep carpool lanes flowing during peak periods. The majority of respondents support requiring at least 3 people in a vehicle to qualify for the carpool lane rather than adding more lanes.

- 1. Require at least 3 people in a vehicle in order to qualify for the carpool lane, but also allow single or two-person vehicles the opportunity to use the carpool lane for a fee (39%)
- 2. Require at least 3 people in a vehicle in order to qualify for the carpool lane (35%)
- 3. Build additional carpool lanes on freeways, even if it is very expensive and may require purchasing private properties to widen the freeway (26%)

Bike Improvement Priorities

Survey respondents were asked how to best improve bicycling in Orange County. The top three options were close to equally distributed as seen below:

- 1. Adding bike lanes (29%)
- 2. Improving street signage and pavement markings (28%)
- 3. Maintaining existing facilities (24%)
- 4. Developing bike-share programs (19%)

Appendix A Public Outreach Report Long Range Transportation Plan (LRTP) MetroQuest Survey Overview

Travel Behavior

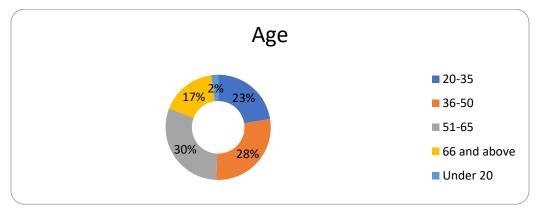
Survey respondents were asked about their main mode of transportation. The majority of respondents drive alone, followed by carpooling/vanpooling and bus transit. Only 3% of respondents selected active transportation (biking and walking).

- 1. Drive alone (66%)
- 2. Carpool/Vanpool (15%)
- 3. Bus (8%)
- 4. Metrolink/Amtrak (4%)
- 5. Bike (2%)
- 6. On-demand service (2%)
- 7. Other (2%)
- 8. Walk (1%)
- 9. Paratransit (0.04%)

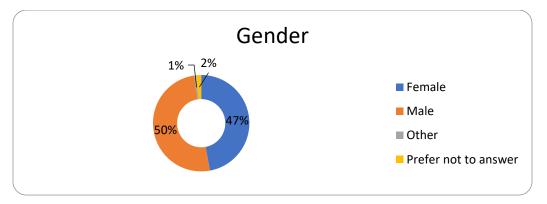
Demographics

The majority of respondents are age 36 or older and the gender ratio was close to evenly split.





Gender



Top Home Zip Codes

Of the 885 respondents who completed the zip code section, 98% were from Orange County.

- 1. 92673 (165) San Clemente
- 2. 92672 (80) San Clemente
- 3. 92694 (21) Ladera Ranch/Rancho Mission Viejo
- 4. 92626 (18) Costa Mesa
- 5. 92630 (18) Lake Forest
- 6. 92675 (18) San Juan Capistrano
- 7. 92646 (17) Huntington Beach
- 8. 92805 (15) Anaheim
- 9. 92806 (15) Anaheim
- 10. 92683 (14) Westminster
- 11. 92688 (14) Rancho Santa Margarita

Appendix **B**

Community Open House Event

Community Open House Overview

As a project finale to showcase the LRTP, a community open house was held at OCTA headquarters on September 22, 2018. This event served not only as a countywide open invitation for the public to learn about the Plan but was also an opportunity to raise awareness and share information about other ongoing projects, including OC Streetcar and OC Active. The event was advertised with a focus on being family-friendly, and included train rides, treats, face painting and other fun activities available to guests. General details for the event are below.

Date	Meeting Location	Number of Stations	Number of Attendees
Saturday, September 22, 2018 9:00 am – 12:00 pm	OCTA Headquarters Outdoor Motor Court 550 S. Main Street Orange, CA	17	70+



OCTA LRTP

Event Activities and Vendor

In addition to the LRTP related stations, an effort was made to contact and invite vendors that had a connection to transportation. Booth partners and corresponding activities for this event included the following:

• Lime Scooters

This station was set-up in a cordoned off section of the parking garage and provided visitors an opportunity to test drive the company's signature motorized scooters. This booth also provided Lime branded promotional giveaway items.

• Selman Chevrolet Electric Vehicle Display

This booth consisted of a local dealership display of the Chevy Bolt electric vehicle. Information was also provided on other Chevrolet products and local dealer contacts.



OC Transit Police

Two OC Transit deputes were on-hand to distribute information related to rail safety for National Rail Safety month during September. The popular K-9 unit was also present and greeted many excited young visitors.

OC Active

As one of the designated passport stops, this booth had a live project survey, branded promotional items and ice cream treats for each visitor. Staff provided an overview of the OC Active project while soliciting input on preferences and use of walking and bicycle facilities in Orange County.

OC Bus

An OC Bus was on display and open for the public to tour. A large display map of OCTA bus routes allowed visitors to see the span of service. The bus operator was on hand throughout the entire event to answer questions and share service information.

• OC Health Care Agency

A county health educator staffed the booth providing several engaging activities were available, including an egg drop demonstration which underscored the importance of wearing a helmet while bike riding. A prize wheel and promotional giveaways were also provided.



OC Parks

Staff from OC parks provided information on the park system and local trails, including upcoming planned improvements across the region. Small give-away items were also on hand.

OC Streetcar

Construction will begin soon for this project and visitors were asked to provide their vote

for the branding design of the streetcar. This booth was also a designated passport stop and water bottles were distributed as part of the stamp reward.

• Waze

This booth was specifically promoting the Waze carpool program. Branded promotional giveaway items were also available, including T-shirts and bags.

 LRTP - Future of Transportation Interactive Screens

The Plan was summarized in a presentation format on three electronic smartboards. Team members shared details about the Plan while reviewing screens, videos and other attachments on the smartboard to provide a visual explanation of the Plan to the public.





LRTP Transportation Survey

The public had the opportunity to complete an online survey. The online platform for Orange County residents provided a portal to receive feedback on potential transportation improvements and provide travel mode preferences and use.

Visitors to the LRTP Interactive Screens and Survey receive passport stamps and bags of kettle corn for their participation in these activities.

In addition to the stations, OCTA also sponsored the following free activity booths:

- Face Painting
- Train Rides
- Art Photo Contest Voting Station
- Sidewalk Chalk Art
- Coloring/Sticker Booth
- Kettle Korn
- Water Station
- Ice Cream Station

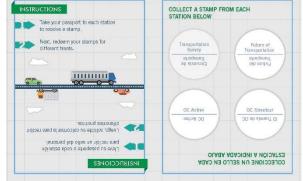


Day of Event Activities

Upon arrival, guests were directed to a registration booth in the center of the event space, where they received a warm welcome and event passport document. They were encouraged to visit all the booths and activities, but the passport was designed to direct attention to four designated areas:

- Future of Transportation Screens
- Transportation Survey
- OC Streetcar
- OC Active

At each station, participants could provide their input on projects and were given a passport stamp and treat in exchange for their visit. Many of those attending brought their children with them and were excited to visit the face painting booth, take a ride on the train, tour an OC bus, meet the OC Transit K-9 unit and show their artistic side with the coloring and chalk stations. Adults also had fun taking a spin using a Lime scooter, learning about Waze carpool program and receiving information on Chevrolet's latest electric vehicle. On average, visitors stayed for over an hour engaging with staff and enjoying the event.







Art & Photo Contest Summary

Art and Photo Contest Overview

The Orange County Transportation Authority held an Art and Photo contest to provide Orange County students an outlet to showcase themes explored in the Plan. The contest was open to all Orange County schools from Kindergarten to College/University. To split up prizes based on grade, four grade level categories were developed. The grade categories were K-6 (Elementary), 7-8 (Middle School), 9-12 (High School) and College/University. Participants were asked to follow themes explored in the LRTP which included:

- **The Future of Transportation** The sky is the limit! Share your vision for transportation in Orange County
- **A Smooth Ride Ahead** Let's make the roads less bumpy and congested through highway or road improvements
- **All Aboard** Boarding the train to the future using rail technologies (High-Speed, Light Rail, Commuter Rail) to move more people
- Blue Skies Ahead Improving our air quality through transportation
- **People Power** or **Human Power** Moving Orange County with non-motorized transportation, including bicycles, walking and skateboards
- **The Wheels on the Bus** Hop on the bus to improve and create new transit options and experiences

The contest opened for online submission on August 13 and closed on September 10, 2018. Students were encouraged to submit entries via a Typeform form and attach their artwork as a graphic file. Twelve entries were submitted online. Eight of the entries were from K-6 students, three from 9-12 and one from a college/university. No 7-8 grade students submitted an entry. Following the deadline, the public was asked to vote for their favorite submission online at the OCTA LRTP website and participants at the community open house also voted by sticker dot voting.

Notification

To promote the contest, an email notification was sent to 899 schools in Orange County. The email blast provided an overview of the contest and how to submit. Flyers were mailed to 50 different community organizations promoting the contest. OCTA sent an email notification to their database about the art contest. The project team, identified seven schools within a two-mile radius of OCTA and drop off flyers to each school to send home with the students. The flyer was sent home with 4,970 students.

OCTA promoted the contest via their social media channels. At the start of the contest, a social media post was featured on the Facebook page.

Winners

Following the LRTP Community Open House on September 22, 2018 the contest winners were notified. The winners for each grade category were:

Grades K-6

- 1. Maisha Ingraham
- 2. Lina Nazar
- 3. Ahmad Mezher

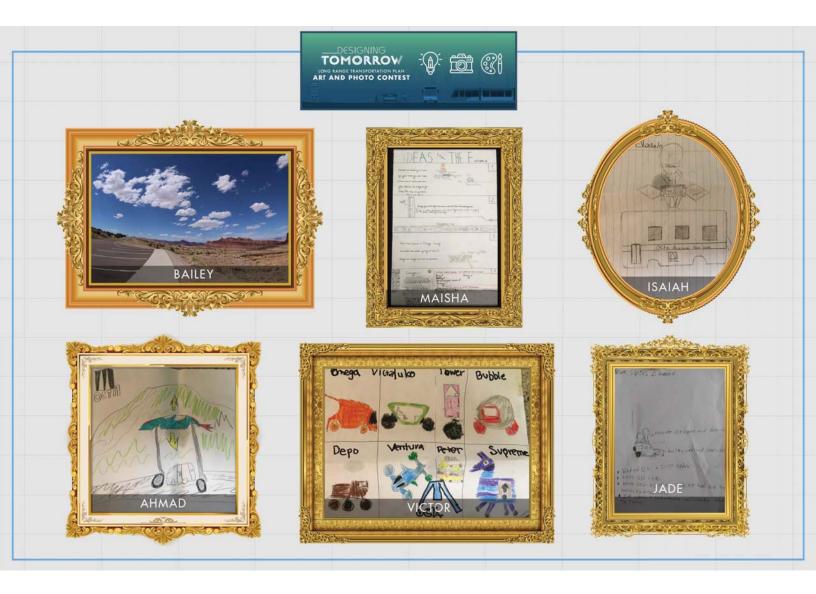
Grades 9-12

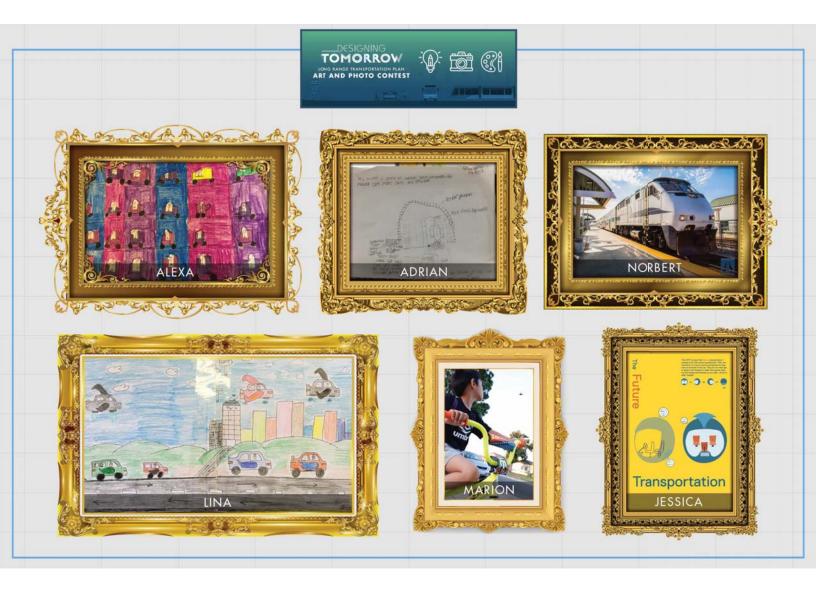
- 1. Jessica Lee
- 2. Bailey Pettey
- 3. Marion Flores

University/College

1. Norbert Tsi

The first-place award was a \$200 gift card, second-place was \$100 gift card and third-place was \$50.





DESIGNING TOMORROV 2018 LONG RANGE TRANSPORTATION PLAN

The Long Range Transportation Plan (LRTP) is a 20-year blueprint for transportation improvements in Orange County.

ARTWORK AND PHOTO CONTEST



OCTA is seeking innovative, creative and interesting artwork and photos from students that showcases themes explored in the Long Range Transportation Plan. For contest rules and ideas, visit **www.octa.net/LRTP**.

CONTEST THEMES



The Future of Transportation - The sky is the limit! Share your vision for transportation in Orange County



A Smooth Ride Ahead - Let's make the roads less congested through highway or road improvements

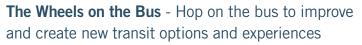


All Aboard - Boarding the train to the future using rail technologies

Blue Skies Ahead - Improving our air quality through transportation



People Power - Moving Orange County with non-motorized transportation, including bicycles and walking



AWARDS

First Place – A \$200 gift card Second Place - A \$100 gift card Third place – A \$50 gift card

Awards will be presented to students in each grade level category (grades K-6, 7-8, 9-12 and university/college).

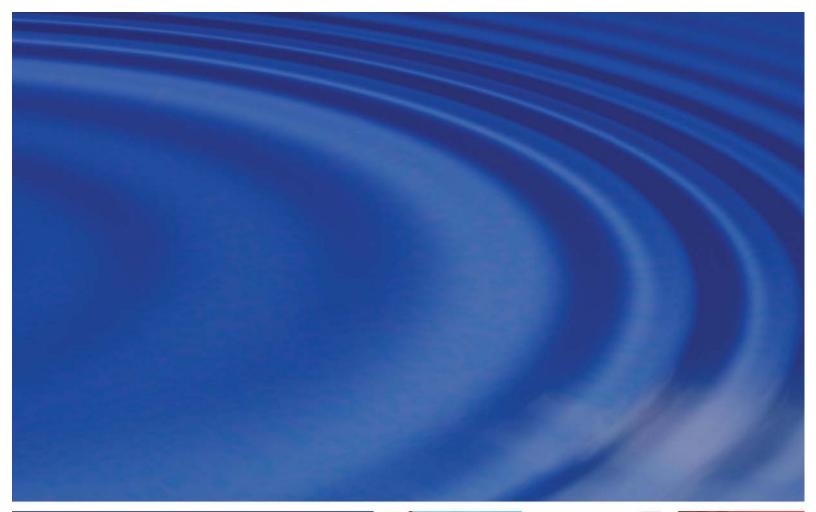
All entries submitted become the property of the Orange County Transportation Authority and may be reprinted.

Participants will need to submit all entries as graphic files to OCTA by filling out the form at **tinyurl.com/LRTPContest** by **August 31, 2018**.



Appendix **D**

Attitudinal & Awareness Survey



ATTITUDINAL & AWARENESS SURVEY SUMMARY REPORT

PREPARED FOR





AUGUST 31, 2018



1592 N Coast Highway 101 Encinitas CA 92024 760.632.9900 www.tn-research.com

I N T R O D U C T I O N

The Orange County Transportation Authority (OCTA) is the county transportation agency responsible for planning, funding, and delivering transportation improvements in Orange County including freeway, street, and transit systems. As part of OCTA's commitment to enhancing customer satisfaction by understanding, connecting with, and serving its diverse communities and partners, the Authority periodically conducts an *Attitudinal & Awareness Survey* to gather data on Orange County residents' awareness, perceptions, and priorities with respect to OCTA as well as the projects, programs, and services it provides.

From the outset, the *Attitudinal & Awareness Survey* has been designed to track opinions on key questions and performance metrics over time, as well as provide an opportunity for OCTA to gather information on topics of particular interest to OCTA at the time of the survey. The 2018 survey followed this same approach, with certain question series tracked form prior studies, and others new to the 2018 survey to help inform OCTA's development of the 2018 Long Range Transportation Plan (LRTP).

By collecting and analyzing current opinion data and comparing the results to prior related surveys where appropriate, this study provides OCTA with statistically reliable information that can be used to make sound, strategic decisions in a variety of areas—including establishing regional priorities, project and program development/evaluation, planning, and public communications.

GOALS OF STUDY To assist in this effort, OCTA selected True North Research to design the research plan and conduct the study. Broadly defined, the 2018 survey was designed to:

- Measure awareness and perceptions of OCTA.
- \cdot Gather input on priorities and strategies for the 2018 Long Range Transportation Plan (LRTP).
- Profile residents' travel behavior and their use of the transportation system in Orange County.
- · Identify the sources residents primarily use for information about news and events in Orange County and assess their satisfaction with OCTA's communication efforts.
- Measure public awareness of Measure M and OC Go.
- Gather relevant demographic and background information.

OVERVIEW OF METHODOLOGY A full description of the methodology used for this study is included later in this report (see *Methodology* on page 48). In brief, a total of 2,525 randomly selected Orange County adult residents participated in the survey between June 17 and June 30, 2018. The survey followed a mixed-method design that employed multiple recruiting methods (telephone and email) and multiple data collection methods (telephone and online). The interviews averaged 18 minutes in length and were conducted in English, Spanish, and Vietnamese. The results presented in this report are representative at the countywide level, as well as within the five Supervisorial Districts identified in Figure 1 on the next page.

LONG RANGE TRANSPORTATION PLAN

Over the next 20 years, Orange County's population is expected to increase by 10% and the number of people employed in the County is expected to increase by 17%. These changes will naturally lead to greater traffic congestion unless improvements are made to the County's transportation system. To help ensure that Orange County's transportation system is prepared for these changes and to relieve traffic congestion, OCTA is in the process of updating the Long Range Transportation Plan (LRTP).

The general goals of the 2018 LRTP are to assess the performance of the transportation system over a 20+ year horizon and identify the projects that best address the needs of the system based on expected population, housing, and employment growth while taking forecast financial assumptions into account at the same time. In other words, the LRTP will identify priority projects, improvements, and mobility strategies to improve the transportation system, keep people moving, and relieve traffic congestion, while keeping a realistic view of financial constraints.

LONG RANGE TRANSPORTATION PLAN PRIORITIES To help inform the LRTP update, the 2018 survey asked residents to prioritize among a list of 15 transportation projects and strategies shown in Figure 17 on the next page. The format of Question 7 was straightforward: after informing respondents that there are a variety of projects and strategies that *could* be part of the Long Range Transportation Plan, respondents were asked whether each project shown in Figure 17 should be a high, medium, or low priority—or if the project should not be included in the Plan? To encourage respondents to prioritize, they were reminded that not all of the projects can be high priorities.

As shown in Figure 17 on the next page, Orange County residents have clear preferences with respect to the projects they think should be prioritized in the Long Range Transportation Plan. At the top of the list were fixing potholes and repairing roadways (91% high or medium priority) and projects that had a direct connection to reducing traffic congestion, including fixing freeway bottlenecks at interchanges, merge areas, and on/off ramps (90%), synchronizing traffic signals on major roadways (87%), and widening freeways, where possible (80%).

Transit and rideshare improvements were also prioritized by residents, including increasing and expanding commuter rail service including Metrolink and Amtrak (74%), increasing and expanding bus services (70%), increasing carpool, vanpool, and rideshare programs (65%), adding faster express bus services (62%), adding streetcar services in areas with high potential ridership (60%), and creating on-demand shared ride community shuttles (57%).

A majority of residents also prioritized projects that would support active transportation, including improving and repairing the network of sidewalks (65%) and improving the network of bike paths (52%).

At the other end of the spectrum, residents were less apt to prioritize improvements related to carpool lanes, toll roads, and autonomous vehicles. Specifically, less than 4-in-10 respondents rated as a high or medium priority adding carpool lanes to toll roads (36%), enhancing infrastructure to accommodate autonomous, driverless vehicles (35%), and adding toll lanes on existing highways (28%).

ong Range Transportation Plar

Question 7 As I read the following list of projects and strategies that could be part of the Long Range Transportation Plan, please indicate whether you think it should be a high priority, a medium priority, or a low priority. If you think that a project or strategy should not be part of the Plan, please say so. Please keep in mind that due to limited funds, not all of the items can be high priorities.

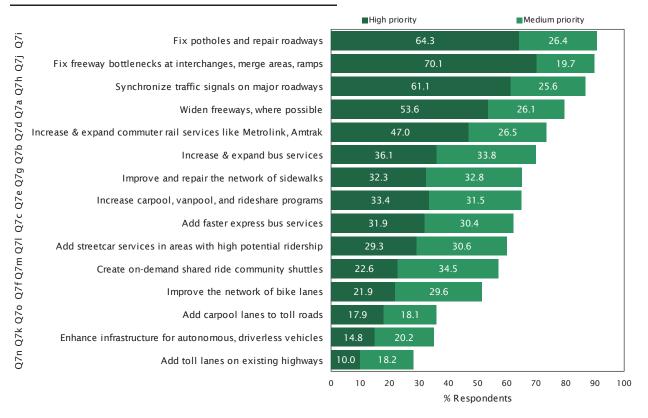


FIGURE 17 TRANSPORTATION PRIORITIES

Tables 4-6 on the next page show how the percentage of respondents who rated each potential project or strategy as a *high* priority varied by primary transportation mode when traveling in Orange County, commuting to work or school at least times per week, and Supervisorial District. The top three priorities within each subgroup are highlighted in green.

The three top-rated projects for each subgroup generally followed the *overall* results within commute status subgroups, Supervisorial Districts, and among those whose primary mode was driving alone or carpool/vanpool. However, those who primarily used public transit or active transportation (bike/walk) to travel in Orange County expressed different priorities, with public transit users assigning a higher than average rating to increasing and expanding bus services and commuter rail services, and those who primarily walk or bike assigning the top three slots to increasing and expanding commuter rail services, adding faster express bus services, and improving and repairing the network of sidewalks. In addition, residents who commuted to school at least three times per week assigned a much higher than average high-priority rating to adding faster express bus services.

TABLE 4 TRANSPORTATION PRIORITIES BY OVERALL & PRIMARY MODE (SHOWING % HIGH PRIORITY)

		Primary Mode (Q10)			
	Overall	Drive	Carpool /	Public	Bike /
		alone	Vanpool	transit	Walk
Fix freeway bottlenecks at interchanges, merge areas, and on/off ramps	70.1	70.3	71.1	67.6	48.3
Fix potholes and repair roadways	64.3	63.8	67.6	60.4	52.3
Synchronize traffic signals on major roadways	61.1	63.8	60.4	52.1	43.6
Widen freeways, where possible	53.6	53.8	58.0	45.5	17.9
Increase & expand commuter rail services including Metrolink and Amtrak	47.0	45.9	43.2	60.8	71.3
Increase & expand bus services	36.1	32.9	30.7	75.7	36.7
Increase carpool, vanpool, and rideshare programs	33.4	30.4	37.2	32.0	39.9
Improve and repair the network of sidewalks	32.3	25.2	37.2	50.6	60.9
Add faster express bus services	31.9	29.6	26.4	51.7	65.8
Add streetcar services in areas with high potential ridership	29.3	29.7	26.6	32.0	25.8
Create on-demand shared ride community shuttles	22.6	21.2	23.8	28.7	31.1
Improve the network of bike lanes	21.9	19.4	21.1	24.6	54.9
Add carpool lanes to toll roads	17.9	13.8	21.3	26.7	10.7
Enhance infrastructure to accommodate autonomous, driverless vehicles	14.8	16.4	12.5	13.3	10.9
Add toll lanes on existing highways	10.0	8.8	12.0	14.6	10.0

TABLE 5 TRANSPORTATION PRIORITIES BY COMMUTE 3+ TIMES PER WEEK & DISTRICT

	Commute 3+ Times Per Week (Q12)			
	Yes. work	Yes,	Tele-	No work,
	Tes, WORK	school	commute	school
Fix freeway bottlenecks at interchanges, merge areas, and on/off ramps	73.0	65.5	69.2	67.7
Fix potholes and repair roadways	61.8	57.8	67.7	74.5
Synchronize traffic signals on major roadways	61.6	52.9	66.8	63.9
Widen freeways, where possible	55.5	43.9	54.6	55.1
Increase & expand commuter rail services including Metrolink and Amtrak	49.7	48.5	41.4	41.1
Increase & expand bus services	34.4	50.2	23.8	38.7
Increase carpool, vanpool, and rideshare programs	32.3	40.1	25.7	37.4
Improve and repair the network of sidewalks	29.9	42.3	28.9	35.7
Add faster express bus services	30.6	53.2	22.8	29.2
Add streetcar services in areas with high potential ridership	29.6	30.4	26.9	28.7
Create on-demand shared ride community shuttles	22.1	21.4	21.0	25.8
Improve the network of bike lanes	19.2	31.8	22.2	25.5
Add carpool lanes to toll roads	17.9	12.9	14.4	22.0
Enhance infrastructure to accommodate autonomous, driverless vehicles	15.7	9.9	13.7	15.3
Add toll lanes on existing highways	8.9	15.8	8.8	11.2

TABLE 6 TRANSPORTATION PRIORITIES BY DISTRICT (SHOWING % HIGH PRIORITY)

			District		
	One	Two	Three	Four	Five
Fix freeway bottlenecks at interchanges, merge areas, and on/off ramps	64.1	73.2	76.3	67.2	70.9
Fix potholes and repair roadways	65.2	64.8	62.4	67.1	61.1
Synchronize traffic signals on major roadways	52.5	65.8	61.3	61.0	66.7
Widen freeways, where possible	56.8	48.9	51.5	55.3	55.6
Increase & expand commuter rail services including Metrolink and Amtrak	46.1	47.5	45.6	43.8	53.0
Increase & expand bus services	37.1	37.8	34.9	40.2	28.9
Increase carpool, vanpool, and rideshare programs	38.2	30.4	29.1	39.7	27.9
Improve and repair the network of sidewalks	41.4	36.1	25.9	30.8	24.6
Add faster express bus services	39.3	29.9	28.8	34.3	25.2
Add streetcar services in areas with high potential ridership	29.5	28.5	26.6	30.4	31.7
Create on-demand shared ride community shuttles	24.9	21.8	18.8	24.6	22.2
Improve the network of bike lanes	23.7	22.6	22.2	20.5	20.2
Add carpool lanes to toll roads	19.6	20.4	15.7	19.6	13.0
Enhance infrastructure to accommodate autonomous, driverless vehicles	12.9	13.5	15.2	16.0	17.1
Add toll lanes on existing highways	10.0	12.3	9.8	8.0	9.7

ADDITIONAL PRIORITIES? Recognizing that the list of projects and strategies tested in Question 7 was not exhaustive, Question 8 asked respondents to identify any projects or strategies *not* previously mentioned that they think should be a high priority for inclusion in the Long Range Transportation Plan. Question 8 was posed in an open-ended manner, which allowed respondents to mention any potential project or strategy that came to mind without being prompted by—or restricted to—a particular list of options. True North later reviewed the verbatim responses and grouped them into the categories shown in Figure 18. Categories that received less than 0.5% of responses are not shown.

Question 8 Is there a project or strategy I didn't mention that you think should be a high priority for inclusion in the Long Range Transportation Plan?

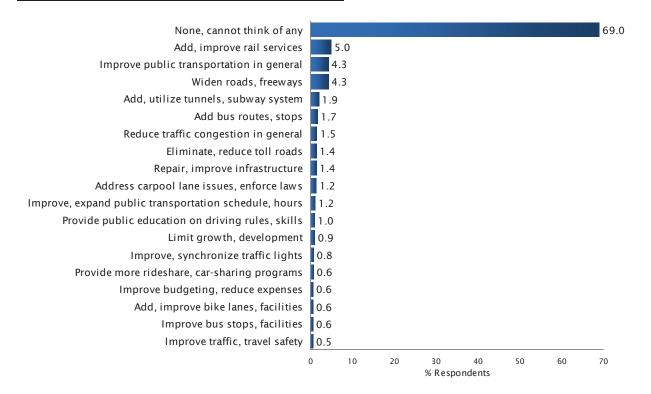


FIGURE 18 ADDITIONAL HIGH PRIORITY PROJECTS, STRATEGIES

More than two-thirds (69%) of residents indicated there were no additional high priority projects that should be included in the Long Range Transportation Plan, or that none came to mind. It is also noteworthy that the top specific responses to Question 8 simply repeated categories that had in fact been addressed in Question 7, including adding/improving rail services (5%), improving public transportation in general (4%), and widening roads/freeways (4%).

CARPOOL CONGESTION SOLUTIONS Federal regulations require carpool lanes on local freeways to operate at 45 miles per hour during peak periods. If local carpool lanes do not meet this performance standard, Orange County could lose federal funding for transportation projects or face other penalties. After providing the aforementioned background information to respondents, Question 9 presented three strategies being considered by Caltrans to keep car-

pool lanes flowing during peak periods and asked respondents whether they supported or opposed each strategy.

As shown in Figure 19, none of the approaches to reducing peak-period congestion in carpool lanes tested in Question 9 achieved majority support, and the levels of support for each strategy were more consistent than what one might expect. Although the general strategy of widening freeways to reduce traffic congestion is popular among Orange County residents (see *Transportation Priorities* on page 24), support for widening freeways to build additional *carpool* lanes on freeways is less so, especially when respondents are informed that it would be very expensive and may require purchasing private properties (44%). Requiring at least three people in a vehicle to use the carpool lane as a strategy to reduce peak-period congestion was somewhat less popular among survey participants (37%), although when combined with allowing single- or two-person vehicles the opportunity to use the carpool lanes for a fee (HOT lane), support ticked up to 40%.

In sum, although none of the strategies achieved majority support, it is notable that the most expensive approach for addressing congestion in carpool lanes (building additional carpool lanes) did not find substantially higher support than strategies that would accomplish the task far more cost-effectively (i.e., HOT lanes). Moreover, it is also important to keep in mind that even the most popular strategies for addressing carpool lane congestion are likely to find tepid support, at best, for the simple reason that the majority of adults are not regular users of carpool lanes. Those who do not use carpool lanes tend to exhibit less interest in making improvements to these lanes.

Question 9 Federal regulations require that our local freeways include carpool lanes, and that the carpool lanes operate at 45 miles per hour during peak periods. If local carpool lanes do not meet this performance standard, Orange County could lose federal funding for transportation projects or face other penalties. To keep carpool lanes flowing during peak periods, there are several strategies being considered by Caltrans. As I read the following strategies, please indicate whether you would support or oppose each strategy.

	■Strongly support ■Sor	newhat sup	oport Somew	hat oppose	Strongly oppose	Not sure
Q9a	Build additional carpool lanes on freeways, even if it is very expensive, may require purchasing private properties to widen freeway	15.7	28.6	23.	0 25.8	6.9
Q9c	Require at least 3 people in a vehicle in order to qualify for carpool lane, but also allow single or two-person vehicles the opportunity to use carpool lane for a fee	16.8	23.2	17.0	39.0	4
Q9b	Require at least 3 people in a vehicle in order to qualify for the carpool lane	15.3	21.6	22.1	36.6	4
		0 10	20 30	40 50 % Responde	60 70 80 nts	90 100

FIGURE 19 CARPOOL LANE STRATEGIES



Pop-Up Events

Pop-Up Events

To promote the online survey, the project team staffed seven (7) project booths at large community events and Metrolink stations throughout Orange County. At each event, the project team provided an overview of the project, informed the public about the Artwork and Photo Contest, and reminded residents about the community open house on September 22, 2018. The project team also promoted the MetroQuest survey and encouraged the public to take the survey. They had the option to take the survey online on an iPad provided or through hard copy. At each booth, project materials were available for visitors to take. The project team also displayed OCTA branded giveaways to attract more visitors to the booth and incentivize them to complete thesurvey. Please refer to the table below for a list of all the events attended for the project.

Event #	Date	Event	Location	Number of Surveys Completed
1	9/5/2018	Metrolink Fullerton Train Station Pop-Up Table	120 E Santa Fe Ave. Fullerton, CA 92832	8 surveys
2	9/8/2018	City of Westminster Dia de la Familia	7200 Plaza St. Westminster, CA 92683	14 surveys
3	9/10/2018	Metrolink Buena Park Train Station Pop-Up Table	8400 Lakeknoll Dr. Buena Park, CA 90621	4 surveys
4	9/12/2018	Metrolink Irvine Train Station Pop-Up Table	15215 Barranca Pkwy. Irvine, CA 92618	12 surveys
5	9/13/2018	Metrolink Tustin Train Station Pop-Up Table	2975 Edinger Ave. Tustin, CA 92780	8 surveys
6	9/18/2018	Metrolink San Juan Capistrano Train Station Pop-Up Table	26701 Verdugo St., San Juan Capistrano CA 92675	1 survey
7	9/20/2018	Metrolink San Clemente Train Station Pop-Up Table	1850 Avenida Estacion San Clemente, CA 92672	6 surveys

Appendix **F**

Social Media Toolkit





As of August 23, 2018

2018 Long Range Transportation Plan E-Communications Toolkit

Introduction

Orange County Transportation Authority (OCTA) is in the final phase of developing the 2018 Long Range Transportation Plan (LRTP). The LRTP is OCTA's plan in addressing travel needs for the next 20 years as the County grows in population, infrastructure, and employment.

For this final phase of the 2018 LRTP, we are seeking input from Orange County residents through Sept. 28. We would appreciate your help in sending out information to your constituents on how they can participate in planning our County's transportation future.

The tool kit below provides content that conveys brief information about the LRTP. You can easily copy and paste content that best resonates with your audience into your social media platforms, newsletters, and blogs. Please remember to tag @goOCTA in your social media posts (i.e. Facebook, Instagram, Twitter) so that we can easily track information sharing. The following link at <u>octa.net/LRTP</u> contains details on how your constituents can give us feedback.

Thank you for your help in promoting OCTA's Long Range Transportation Plan!







As of August 23, 2018

FACEBOOK

We have already created a ready to share Facebook post. Just click on the link, and hit share!

https://www.facebook.com/32401940026/posts/10156364049490027/.

Post shown below



Shape the future of transportation in Orange County in four ways – survey, Telephone Town Hall, community meeting, art contest. Choose one or all! Thank you. https://goo.gl/GP1JR4

HELP US PLAN YOUR TOMORROW	
International	-Ille







As of August 23, 2018

INSTAGRAM

Image ready to post:



Caption:

Help OCTA shape the future of transportation in Orange County in four ways – survey, Telephone Town Hall, Family Open House, and/or art contest. #linkinbio*

*Please consider temporarily linking our Irtp webpage to your Instagram account bio

- 1. Go on your profile
- 2. Click/ tap the "edit" button on the top right
- 3. Copy and Paste this link

http://octa.net/Projects-and-Programs/Plans-and-Studies/Long-Range-Transportation-Plan/2018-LRTP/

- 4. Click/ tap "done"
- 5. Post our photo
- 6. Hash tag #linkinbio (as in the caption above)

If not, you can caption your post

Help OCTA shape the future of transportation in Orange County in four ways – survey, Telephone Town Hall, Family Open House, and/or art contest by visiting octa.net/Irtp.







As of August 23, 2018

TWITTER

We already have a tweet up and ready. Just retweet our @goOCTA post. Click on this "post" link, and hit the retweet button.



OR retweet by copy and pasting the url to the post which is https://twitter.com/goOCTA/status/1032380181682388992

You can also embed our tweet and use your own caption. We would ask that you use @goOCTA in your caption if you do so.





E-Communications Toolkit Orange County Transportation Authority



As of August 23, 2018

SHARE OUR VIDEO!



Please consider sharing our <u>video</u>, instead of an image, on Facebook, twitter, or any other means that would support it!

You can share the video itself by visiting the YouTube link and hitting the "share button" then choosing your preferred media, or copy and paste our link at https://www.youtube.com/watch?v=GUhQaz9eLcA.

Caption:

Help OCTA shape the future of transportation in Orange County in four ways – survey, Telephone Town Hall, Family Open House, art contest by visiting octa.net/Irtp





E-Communications Toolkit Orange County Transportation Authority



As of August 23, 2018

NEWSLETTERS/E-BLAST



Text:

Orange County Transportation Authority (OCTA) is now shaping the future of Orange County transportation! We're paving the way towards the year 2040 based on projected increases in population, housing, and employment. We need help from Orange County residents like you! What do you want your daily journey to look like?

Four Ways to participate:

- **Survey:** Give your input online, help us see OC through your eyes.
- Art Contest: Students! Show us your transportation vision, win up to \$200! *
- Telephone Town Hall: Share your ideas with the experts on Sept. 12
- Family Open House: Bring the whole family for a fun night on Sept. 22

* Art contest open to students K - college. See contest rules for details.

[Learn More Button]

Learn More leads to the LRTP website at <u>http://octa.net/Projects-and-Programs/Plans-and-Studies/Long-Range-Transportation-Plan/2018-LRTP/</u>



Appendix G

Facebook Advertisements and Posts





Appendix H

Eblasts

Share.



OCTA is now shaping the future of Orange County transportation! We're paving the way towards the year 2040 based on projected increases in population, housing, and employment. We need help from Orange County residents like you! What do you want your daily journey to look like?

Four Ways to participate:

- Survey: Give your input online, help us see OC through your eyes. Art Contest: Students! Show us your transportation vision, win up to \$2000 . .
- Telephone Town Hall: Share your ideas with the experts on Sept. 12
 Open House Title: Bring the whole family for a fun night on Sept. 22



Share:

DESIGNING TOMORROW

2018 LONG RANGE TRANSPORTATION PLAN

Let's Talk about Transportation's Future at Our Telephone Town Hall

Your kindergartener today will be driving to work in 20 years.

What will their commute look like in the year 2040?

On Wednesday, Sept. 12, take the opportunity to talk to OCTA Chief Executive Officer, Darrell Johnson and other Orange County transportation leaders about OCTA's draft Long Range Transportation Plan (LRTP), a blueprint for the future of OC transportation that analyzes travel conditions based on projections for 2040.

Give your input on what the future of Orange County transportation should look like during our Telephone Town Hall.

Register online and we'll call you the day of the event.

You can also call us at the following numbers:

North County - 5:30 PM South County - 7 PM English 888-400-1932 Spanish 888-400-9342

Learn more about LRTP here:



Orange County Transportation Authority 550 S. Main Street. PO Box 14184 Orange, CA 92863-1584, USA

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Enjoy Some Family Fun and Discuss the Future of Transportation

Bring your whole family to a free and fun open house this Saturday. We'll have activities for kids including train rides, face painting and bus and bike activities, as well as information about OCTA's draft Long Range Transportation Plan (LRTP), a blueprint for the future of OC transportation that analyzes travel conditions based on projections for 2040.

FAMILY OPEN HOUSE

Saturday, Sept. 22 9 AM to Noon Orange County Transportation Authority 550 S. Main Street, Orange, CA 92888 Park in adjacent structure on Bedford Road

Learn more about LRTP here:



Appendix I

OCTA Blogs





Search blog

Q

Events Showcase OC's Transportation Future

Thursday, September 20, 2018

f Share V Tweet Share

With a fun family open house this weekend and a Telephone Town Hall earlier in the month. Orange County residents have opportunities to make their voices heard about the future of transportation in Orange County.

Bring your whole family to a free and fun open house this Saturday. Sept. 22. We'll have activities for kids like train rides and face painting and information about transportation and the OCTA's draft Long Range Transportation Plan (LRTP), a blueprint for the future of OC transportation that analyzes travel conditions based on projections for 2040.

As part of OCTA's Telephone Town Hall, on Sept. 12 nearly 1,000 people participated in a phone call with a panel of experts about the future of transportation. OCTA Chief Executive Officer, Darrell Johnson and others answered multiple questions about OCTA's draft Long Range Transportation Plan (LRTP), a blueprint for the future of OC transportation that analyzes travel conditions based on projections for 2040.

Take a moment to listen in.

You can also participate by taking an online survey. Please let us know what transportation improvements are important to you and tell us how you get around Orange County. The survey closes on Sept. 28.

Learn more about the LRTP here.



FREEWAY

ONTHE MOVE

Search blog

Help Shape the Future of Transportation in Orange County

Wednesday, August 22, 2018



Every four years, OCTA develops a blueprint for the future that examines the county's expected transportation needs, accounting for changes in demographics, the economy, and available funding.

Just released, the draft 2018 long range plan analyzes travel conditions based on projections for 2040, which assume a 10 percent growth in population, 11 percent growth in housing, and 17 percent growth in employment in Orange County.

The plan details projects and services almed at accommodating the increasing need for transportation. It also explores how emerging innovations – including autonomous and electric vehicles and Transportation Network Companies such as Uber and Lyft – might impact transportation.

OCTA is asking the public to provide feedback on the draft plan. There are four ways you can offer input, including a telephone town hall on Sept. 12, a community open house on Sept. 22, and an online survey and K-college art contest, both available now. To learn more about the long-range plan and how to voice your opinion, click here.



Q





Search blog



Let's Talk about Transportation's Future during Our Telephone Town Hall

Wednesday, September 5, 2018

if Store 🛛 🖌 Tuest: 🖂 Store

Our kindergarteners today will be driving to work in 20 years.

What will their commute look like in the year 2040?

On Sept. 12. take the opportunity to talk to OCTA Chief Executive Officer, Darrell Johnson and other Orange County transportation leaders about OCTA's draft Long Range Transportation Plan (LRTP), a blueprint for the future of OC transportation that analyzes travel conditions based on projections for 2040.

Give your input on what the future of Orange County transportation should look like during our Telephone Town Hall.

Register online and we'll call you the day of the event.

You can also call us at the following numbers.

North County - 5:30 PM South County - 7 PM

English <u>888-400-1932</u> Spanish <u>888-400-9342</u> 888-400-1932

In addition to the Telephone Town Hall, there are three other way to

provide input on the draft LRTP:

- Take an online survey. Please take a few minutes to let us know what transportation improvements are important to you and tell us how you get around Orange County.
- Bring your whole family to a fun open house Sept. 22. We'll have activities for kids and information about transportation and the LRTP.
- Encourage the students in your life (kindergarten through college) to share artwork and photos that showcase themes related to the LRTP for a chance to win \$50, \$100, and \$200 gift cards.

Q



Every four years, OCTA develops a blueprint for the future that examines the county's expected transportation needs, accounting for changes in demographics, the economy, and available funding. Just released, the draft 2018 Long Range Transportation Plan analyzes travel conditions based on projections for 2040. We'd like your input on the draft plan. Please take the time to take a survey, attend an open house, call in to a telephone town hall, or encourage students to participate in an art contest. Your feedback will help shape the future of Orange County transportation.



Darrell Johnson



On Sept. 12, you can help shape the future of transportation with a simple phone call by participating in OCTA's Telephone Town Hall. Call and talk to me or the other participating transportation leaders about the draft Long Range Transportation Plan (LRTP), a 20-year blueprint for transportation improvements in Orange County. It's an easy way to weigh in without leaving home. Check out the article on the Telephone Town Hall for more information. Talk to you on Sept. 12.



Darrell Johnson

Appendix J

Newspaper Advertisement



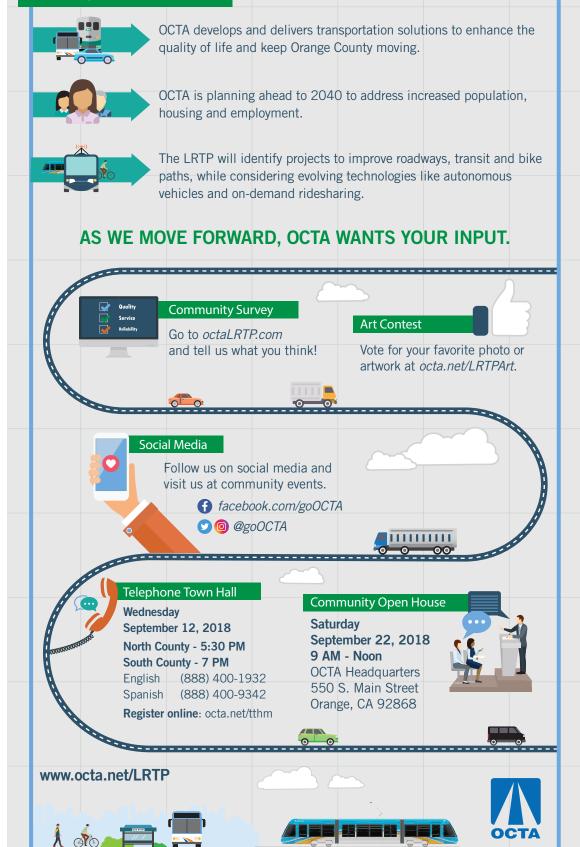
Appendix K

Postcard

DESIGNING **TOMORROW** 2018 LONG RANGE TRANSPORTATION PLAN

The Long Range Transportation Plan (LRTP) is a 20-year blueprint for transportation improvements in Orange County.

WHAT IS THE LRTP?



DESIGNING **TOMORROW** 2018 LONG RANGE TRANSPORTATION PLAN

El Plan de Transporte a Largo Plazo (LRTP, por sus siglas en inglés) es un plan de acción de 20 años para mejoras de transporte en el Condado de Orange.

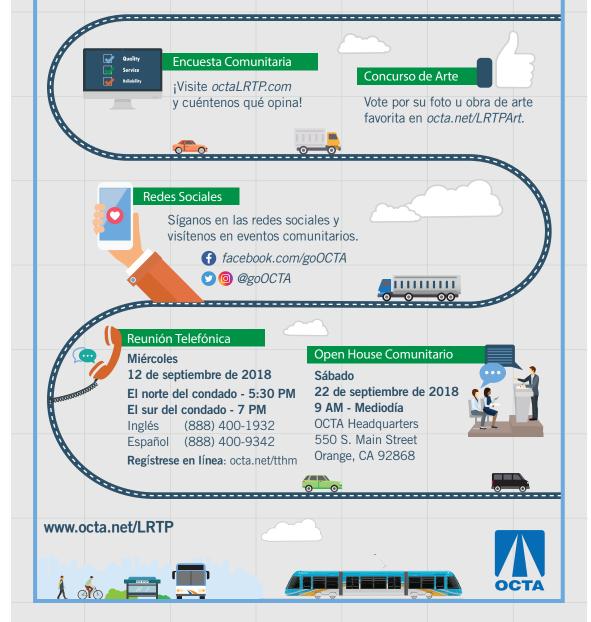
¿QUÉ ES EL LRTP?



OCTA planea con anticipación para el 2040 considerando el aumento de la población, vivienda y empleos.

El LRTP identificará proyectos para mejorar carreteras, el transporte público y rutas para bicicletas, considerando la evolución de la tecnología, como los vehículos autónomos y la demanda de viajes compartidos.

A MEDIDA QUE AVANZAMOS, OCTA QUIERE CONOCER SUS OPINIONES.



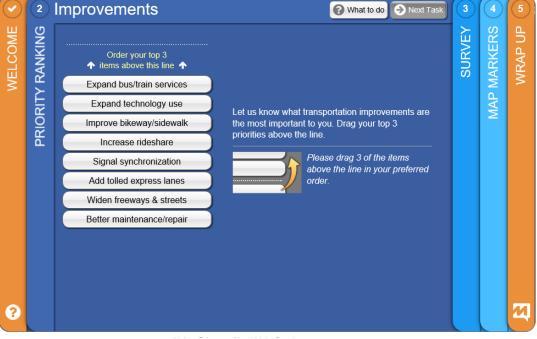
Appendix L

MetroQuest Survey Screenshots



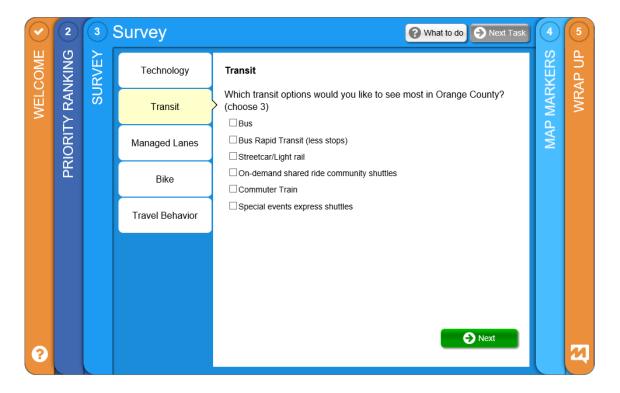
MetroQuest Online Engagement Tool







\bigcirc	2	3	Survey	What to do Next Task			
WELCOME	RANKING	SURVEY	Technology	> Technology	KERS	WRAP UP	
WEL		SU	Transit	Traffic signals can be connected with cars with the right technology. Would you support connecting traffic signals with cars so you can get alerted of traffic congestion ahead of you?	MAP MARKERS	WR.	
	PRIORITY		Managed Lanes	Yes	MAI		
	Ч		Bike	Autonomous vehicles will make travel easier for many people which			
			Travel Behavior	could lead to an increase in the number of car trips and congestion on local streets. Would you support a mileage-based fee to help manage growth in trips and congestion?			
				Yes			
				Next		_	
?							

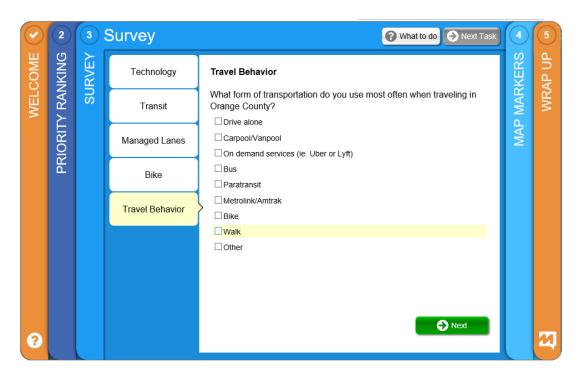


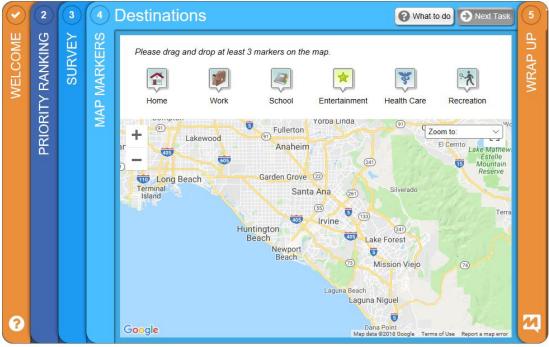


\bigcirc	2	3	Survey	What to do Next Task 4 5		
OME	KING	SURVEY	Technology	Managed Lanes	KERS	P UP
WELCOME	/ RAN	SUI	Transit	To keep carpool lanes flowing during peak periods, which strategy would you support?	MAP MARKERS	WRAP
	PRIORITY RANKING		Managed Lanes	Build additional carpool lanes on freeways, even if it is very expensive and may require purchasing private properties to widen the freeway Require at least 3 people in a vehicle in order to qualify for the carpool lane	MAP	
	PR		Bike	Require at least 3 people in a vehicle in order to qualify for the carpool lane, but also allow single or two-person vehicles the opportunity to use the carpool lane for a fee		
			Travel Behavior			
				S Next		
?						24

\bigcirc	2	3	Survey	What to do Next Task	5
WELCOME	IKING	SURVEY	Technology	Bike S	WRAP UP
WEL	PRIORITY RANKING	SU	Transit	Bike How can we best improve bicycling in Orange County? Adding bike lanes Developing bike-share programs and facilities Improving street signage and pavement markings	WR,
	RIORIT		Managed Lanes	Developing bike-share programs and facilities Improving street signage and pavement markings Maintaining existing facilities	
	Ч		Bike	>	
			Travel Behavior		
?				€ Next	21









\bigcirc	2	3	4	5) Thank you!			
WELCOME	PRIORITY RANKING	SURVEY	MAP MARKERS	WRAP UP	Final Questions (Optional) What is your age? Select ~ What is your gender? Select ~ What is your home zip code? Type	Thank You! We appreciate your feedback. It will help us evaluate the transportation priorities and design a better system! To learn more about the project, please visit our <u>website</u> .		
3				হ	Stay up to date by entering your email: Type Submit Final Questions Skip			

Appendix M

Submitted Comments

C: Evec A

06 2018



September 4, 2018

Darrell Johnson, Chief Executive Officer Orange County Transportation Authority P.O. Box 14184 Orange, CA 92863-1584

Dear Mr. Johnson:

The Draft Long-Range Transportation Plan (LRTP) currently includes a conceptual project along Laguna Canyon Road (SR-133) between El Toro Road and Canyon Acres Drive. This project is listed in the Conceptual Project List for Local Arterial Projects in your executive summary and on page 135 of the draft LRTP.

Even though this section of Laguna Canyon Road is owned and maintained by Caltrans, the City of Laguna Beach at its own expense (over \$650,000) completed a draft Project Study Report for the design and construction of utility undergrounding, sidewalks, pathways, bike lanes, and improved access to transit facilities. These proposed elements do not exist on the roadway today which makes the project a perfect fit for the goals of the LRTP regarding the shifting interest in modes of transportation.

In July 2018, the City applied for an Active Transportation Program grant for the next design phase of the project which is the preparation of the project approval and environmental document. This next step in the planning process also fits the goals of the LRTP for Active Transportation Investments through Orange County and Regional Planning Activities.

Laguna Canyon Road (SR-133) carries over 40,000 vehicles per day and certainly most of these trips simply pass through Laguna Beach. Laguna Canyon Road is truly a regional asset and therefore a regional responsibility. The proposed active transportation improvements on a State controlled highway are too significant for Laguna Beach to implement on its own.

With the information provided in the Active Transportation Program grant application and the draft Project Study Report, I encourage you to advance the Laguna Canyon Road – El Toro to Canyon Acres Drive project from the concept list to the project list.

Sincerely,

John Pietig, City Manager

505 FOREST AVE.

LAGUNA BEACH, CA 92651

TEL (949) 497-3311



Office of Mayor and City Councilmembers Phone: (949) 361-8322 Fax: (949) 361-8283 Website: http://san-clemente.org E-mail: CityCouncil@san-clemente.org Tim Brown, Mayor Chris Hamm, Mayor Pro Tem Kathy Ward, Councilmember Lori Donchak, Councilmember Steve Swartz, Councilmember

James Makshanoff, City Manager

c: Expe Sta

07 2018

September 5, 2018

Darrell Johnson Chief Executive Officer Orange County Transportation Authority P.O. Box 14184 Orange, CA 92863-1584

Subject: Support for 2018 Long Range Transportation Plan

Dear Mr. Johnson:

This letter is to express the San Clemente City Council's support for the 2018 Long Range Transportation Plan. We appreciate OCTA's leadership and coordination to develop a forwardlooking plan that will keep transportation systems within Orange County operating efficiently and effectively, with consideration for local needs and desires. In particular, the City of San Clemente supports the Trend 2040 Improvement Plan which reflects stakeholder input to improve system performance and expand transportation choices. The City also supports implementation of pricemanaged lanes when these are thoughtfully evaluated and coordinated by OCTA to determine where within the existing transportation network these would be most effective. Similarly, the City supports conversion of toll roads to freeways which include price-managed lanes to facilitate a seamless highway network within Orange County. Finally, we strongly support the recommended short-term action plan to study south Orange County mobility by identifying multi-modal transportation needs and opportunities. Given the evolution of the transportation climate with the emergence of disruptive services and technologies, travel conditions and assumptions contained in the South Orange County Major Investment Study completed over 10 years ago need to be addressed. OCTA's expertise in regional transportation planning is needed to lead this important effort to build consensus around a locally-preferred strategy for addressing mobility in south Orange County.

We support the 2018 Long Range Transportation Plan and look forward to continued collaboration with OCTA to keep our existing transportation systems operating as efficiently and effectively as possible for the benefit of all who rely on these important systems.

Sincerely,

Tim Brown Mayor

Comments from Conservation Groups on OCTA's LRTP

September 21, 2018

Sent via email to: mespino@octa.net and gnord@octa.net

Mr. Darrell Johnson Chief Executive Officer Orange County Transportation Authority (OCTA) 550 S. Main St. P.O. Box 14184 Orange, CA 92863-1584

Re: Comments on OCTA's Draft 2020 Long Range Transportation Plan

Dear Mr. Johnson:

Thank you for the opportunity to comment on the Orange County Transportation Authority's (OCTA) draft 2018 Long Range Transportation Plan (LRTP). The groups listed below represent thousands of members and environmental activists who care deeply about protecting Orange County's public lands and open spaces. This letter provides feedback on draft LRTP.

We appreciate the four goals listed in the Plan of: delivering on commitments, improved system performance, expanding system choices, and financial sustainability. Thank you for recognizing the importance of staying on top of new and emerging trends, be it related to ride sharing opportunities or technology-based mobility solutions. The process of completing an LRTP serves many purposes, from leveraging funding to identifying the goals of the voter-approved transportation sales tax measure to allowing flexibility with discretionary funds for future projects. The latter allows the Authority to be nimble as trends and technologies emerge, and as human behaviors related to transportation and goods movement change.

Policy changes at the state level have already impacted transportation, housing, sustainability, and planning goals locally and regionally. These will all impact—if they haven't already impacted—how OCTA provides for Orange County's mobility needs now and in the future, especially as it relates to topics such as promoting telecommuting incentives to business and advocating for policies that enhance land use diversity.

The 2018 LRTP Action Plan includes several activities worth commenting on:

- South Orange County Mobility Promoting mobility options in South Orange County, we believe, will eliminate the need for the Transportation Corridor Agency's proposed—and highly controversial—241 South Toll Road. We appreciate that on page 90, the "Beyond Commitments" outlines improving Interstate 5. Improvements there have the very real potential to prove the 241 South is an unneeded roadway.
- 2. Signal Synchronization Light synchronization has proven beneficial throughout the County and adding this feature to existing congested roadways will keep traffic flowing. We believe continued implementation of signal synchronization will not only keep cars moving, but also provide the co-benefit of reduced vehicle emissions, which in turn helps meet the mandates of

AB 32 and SB 375. Less time at street lights also means there is a time savings—thus improving quality of life for system users.

- Joint Development Studies Creating improved transit terminals and connectivity will assist with local transit ridership and provide easier, environmentally friendlier, and more cost effective mobility options for communities across the county. Options that link housing and employment centers will be most effective and as infill projects occur—a rider base will exist to utilize the system.
- 4. 2028 Olympics In the 1980s Southern California adopted policies to reduce traffic congestion on roadways and freeways in anticipation of the Olympics. These solutions (such as modified work schedules, improved transit connections, and telecommuting) provided not just temporary—but opportunities for permanent—solutions to our long term transportation congestion across the Southland. We support coordinating with LA Metro, but also encourage expanding that coordination to other transportation agencies in neighboring counties to set both short and long term goals as well as temporary and permanent goals for this unique opportunity.

Chapter 1: Orange County Today

It was not at all surprising to read that 79% of OC drivers commute to work *alone*. Perhaps additional incentives, carpool lots, outreach to businesses, or technological options (like a "ride share" app) may be promoted by OCTA. Funding opportunities may be also available from the Southern California Association of Governments (SCAG), or the state or federal government to provide capital for this endeavor.

We were pleased to see that OCTA has launched a real-time bus locator app. With the advance of technology and exponential use of smart phones—creating an app to inform bus users is a great investment and time saver.

Providing access to our park system and throughout our communities via trails and trail connectors is important. This provides residents and visitors with an additional alternative and active transportation options for getting from Point A to Point B. We continue to support construction of additional (but appropriately located) bikeways throughout the county.

Chapter 2: Orange County in 2040

Figures 2.1 and 2.2 indicate population density increases and changes between 2015 and 2040. It appears in several locations that protected natural lands have not been removed from the inventory of "growth" locations. For example, in Figure 2.1 it indicates additional projected growth in Brea, Placentia, Anaheim Hills, and Orange. In reality, quite a bit of the lands in Brea have already been recently developed, so those density allocations have already occurred there. Further, some of the lands showing an increase in population density are actually already protected as parkland. In one instance, lands projected for a change also include the Olinda Landfill, which is actually slated to become a regional park managed by OC Parks. Both of these figures should be updated for the final LRTP and should include the removal of the protected lands from these maps to set an accurate baseline condition and accurately portray where projected growth can actually occur. (See Attachments 1 and 2).

We recognize OCTA is not in the business of dictating housing policy, but the right type of stock certainly plays into traffic congestion especially from out-of-county trips. While there appears to be a trend of "insufficient housing" identified in the Plan, this may actually have to do with cost of the

housing and the cost of the *proposed* housing. Many of the projects being approved at the local and regional level include housing types in the multi-million-dollar category—far from what workers driving into Orange County likely can afford. Acknowledgement of this "on the ground" reality would be an added benefit to the Plan.

Chapter 3: Challenges and Goals

It was unfortunate to read that the sales tax measure's revenue projections are substantially less than originally projected. We realize this can have cascading impacts across all Renewed Measure M2 (M2, now OC Go) project categories (freeways, streets and roads, and transit).

As indicated on page 73 of the Plan "While a fiscally sustainable plan is paramount, sustainability also applies to the quality and longevity of our infrastructure, and the importance of maintaining and enhancing the environment." We support and encourage OCTA to apply the same comprehensive mitigation approach as was done with the M2 Project List for additional projects that are incorporated into OCTA's expenditure plan. OCTA's Environmental Mitigation Program (EMP) is a national model and the Authority should continue its forward thinking programs for the benefit of the environment, project delivery, budgets, and permitting—to name a few.

This part of Southern California is one of 20 global hotspots of biodiversity. This means our unique habitats and species are threatened with extinction due to development. Many species at risk are endemic—meaning they are species only found here. As projects move forward—especially those NOT captured by the EMP we ask that a comprehensive mitigation approach be implemented.

The concept of "microtransit" appears to be a good one. We hope through the OC Flex program that additional areas with low transit demand may be helped through this new opportunity.

With an eye towards sustainability across the board, we appreciate the goal to "Support Sustainability" and the objective to "explore environmental and emission reduction strategies." The conservation community offers its support and partnership in this effort—especially as it relates to meeting the goals of SB 375 and the SCAG Regional Transportation Plan/Sustainable Community Strategy including the Natural and Farmlands Appendix objectives. Please reach out if there is a need and we will simultaneously keep you in mind for opportunities we see that may arise.

We agree—as the demographics of our population shift in age and health options—there will be an increased demand for something other than single occupant vehicles. Planning for those options now, would be wise and likely a well-received. Thank you for thinking forward on this item.

Chapter 4: The 2040 Solution

As the funding for the endowment for the EMP is built, we will continue to follow closely the future expenditures for the voter-approved acquisition, restoration, and management of natural lands. We certainly appreciate recognition that the program—and water quality program—will remain funded to meet the promises to voters.

To maintain consistency with the EMP documents, the map on page 87 should reflect the new Preserve names, which were revealed in February 2018 after an extensive OCTA outreach effort.

Figure 4.6 (MPAH Improvements – North County) indicates additional capacity being added along Carbon Canyon Road in Brea. This would have significant impacts on existing mitigation lands within Chino Hills State Park, not to mention it is part of an approved Habitat Conservation Plan area. Additionally, the roadway up Valencia west of Olinda Landfill proposes a connection at Tonner Canyon and the 57 Freeway in Brea. It is unclear the purpose of this road and what it aims to serve. It doesn't decrease commutes, but instead impacts a functioning 31-mile long Wildlife Corridor and destroys ridgelines protected in a settlement agreement above Tonner Hills. Consistent with previous LRTP comments we've made on the MPAH improvement list—these two projects should be removed from consideration.

Figure 4.7 (MPAH Improvements – South County) indicates a new road being added between Santiago Canyon Road to Riverside County in county territory. This connector road through the forest impacts OC Parks lands, potentially OCTA mitigation lands, the Cleveland National Forest, and other conservation lands. This project should be removed from consideration.

Figures 4.12 & 4.13 (2040 Bikeway Additions – North & South County) indicates new Class 1 and 2 bike routes that are likely not appropriate given the constraints or protections associated with the lands they are on or are adjacent to.

- 1. Carbon Canyon Road Road constraints make this bike path infeasible on an already dangerous roadway.
- Soquel Canyon This bike lane appears to cut through OCTA's Eagle Ridge Preserve (protected by a state/federal Conservation Plan), Chino Hills State Park, a mitigation bank, and private property. There is no road in Soquel Canyon and it dead ends at the Aeroject facility in Chino Hills which is restricted to authorized visitors due to unexploded ordinance on site. This should be removed from the plan.
- 3. Live Oak Canyon Road Road constraints make this bike path undesirable on an already dangerous roadway. This should be removed from the plan.

We urge completion and continued improvement of the proposed 66-mile, OC BikeLoop, especially the largest missing link, the "La Habra 2025 Centennial RailTrail," through downtown La Habra along the Union Pacific Railroad.

We are thankful the Plan acknowledges the EMP as being one way OCTA can contribute to improving our quality of life, but it also has the co-benefit of reducing greenhouse gases, reducing vehicle miles travelled, reducing lane congestion and traffic delays, and protecting threatened and endangered species—among many others. Thank you for recognizing this combination of benefits.

Three ideas missing from the Plan include: first, the incorporation of charging stations for electric vehicles at OCTA facilities such as park and ride lots. Second, the creation of improved transit stops that provide for better user experiences (including but not limited to shade structures, trash bins, landscaping, etc.) LA Metro has excellent examples of place based features incorporated into their stops. Third, opportunities for "on the go" options for system users (bikes, mopeds or vehicles) similar to the "car to go" and bike share systems. This gives residents that don't own vehicles one more option for mobility.

One of the catch phrases from the original Measure M was to deliver on commitments promised to voters—a slogan "promises made, promises kept" was later issued for M2. OCTA's credibility with

voters, residents, and visitors is important to its success in the future. We support your continued commitment to the voter-approved transportation sales tax.

OCTA's leadership in working towards a sustainable, carbon-cutting 2040 is important. We believe components in the LRTP allow flexibility, nimble responses, and a focus on mobility (especially transit). We also strongly urge OCTA to incorporate our comments—especially as it relates to baseline available land for population density or population change. Ensuring accurate maps is critical to evaluating the suite of options available. We will continue to work with you to achieve transportation initiatives that increase and improve public transit options, promote walkable and bikeable communities, and protect and enhance our natural lands.

Thank you for your consideration of these comments.

Very truly yours,

Amigos de Bolsa Chica Cavity Conservation Initiative Friends of Harbors, Beaches and Parks Hills For Everyone La Habra Vital Community Task Force Laguna Greenbelt, Inc. League of Women Voters of Orange Coast

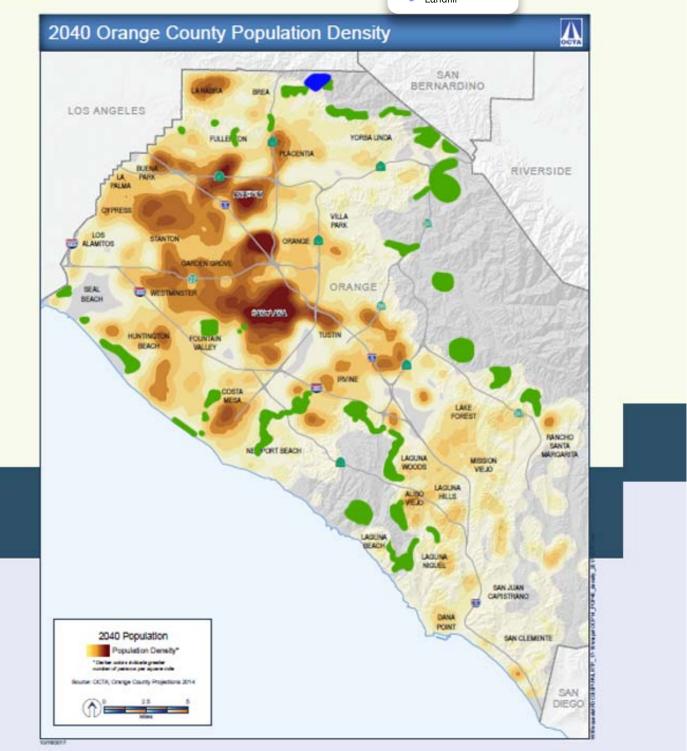
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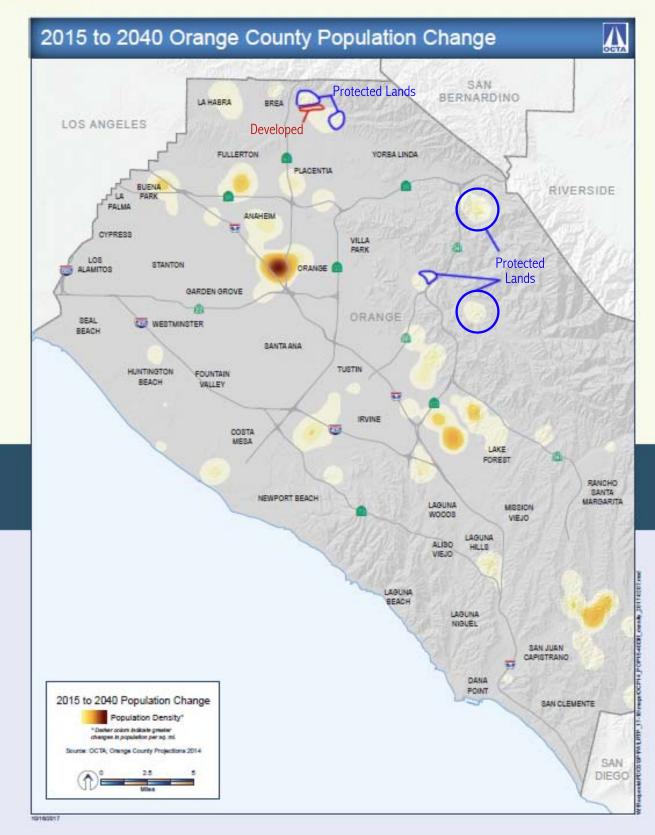
- 1. Revised Figure 2.1 Population Density
- 2. Revised Figure 2.2 Population Change

Naturalist For You Orange County Chapter of the California Native Plant Society Silverado-Modjeska Recreation and Park District Southern California Bluebird Club Women For Orange County

FIGURE 2.1

Protected LandsLandfill







City of Mission Viejo

Public Works Department

Edward Sachs Mayor

Greg Raths Mayor Pro Tem

Wendy Bucknum Council Member

Brian Goodell Council Member

Trish Kelley Council Member

September 27, 2018

The Honorable Lisa Bartlett, Chair Orange County Transportation Authority 550 South Main Street Orange, California 92868

Subject: Draft 2018 Long-Range Transportation Plan

Dear Chairwoman Bartlett,

Per the attached letter, dated August 2, 2018, the City of Mission Viejo previously submitted comments pertaining specifically to the LRTP's Short-Term Action Plan. In addition, the City respectfully submits the following comments regarding the subject document.

- The baseline does not appear to include projects already programmed/committed in the Federal Transportation Improvement Program (FTIP). Instead, these projects are included as part of the "Trend 2040" scenario, which tends to exaggerate the effectiveness of this LRTP. In past LRTPs, OCTA has included all of the FTIP's existing and programmed projects in the baseline.
- Similarly, demographic data should be derived from OCP-2018 rather than OCP-2014. In the past, OCTA has typically used the most updated data sets available and has required the same of local agencies. For consistency with the 2020 RTP, OCTA should utilize OCP-2018 updated data sets.
- The LRTP provides the 2040 baseline AM congestion maps for freeways and arterials, but it should also include baseline PM congestion maps, as well as "Trend 2040" AM/PM congestion maps to better illustrate the effectiveness of the LRTP.
- Given that M2 revenues are now expected to decline significantly relative to previous estimates and the very real possibility that SB1 may be repealed, how will projects be prioritized? If there are funding shortfalls, which projects will have to be eliminated and how will the elimination of those projects impact the effectiveness of the LRTP? How does the LRTP account for this scenario?
- The LRTP states that an increase in the number of personal vehicles has led to the decreased use of transit, yet it also states that transit trips are expected to increase by 6%. This seems inconsistent. How will an increase be achieved if the current trend is downward?

- Policy initiatives which have not yet been implemented should not be assumed in the analysis of transportation system performance. Such policy initiatives should be included only under the Conceptual Scenario.
- It is unclear whether the LRTP accounts for traffic on the toll roads. The toll roads carry a significant amount of traffic and, as in the 2014 LRTP, the impact of these roads should be reflected. In addition, the TCA currently has two major capital projects which will provide significant benefits. The SR241/91 Direct Connector should be included in the Short-Term Action Plan, and the SR241/I-5 effort in South Orange County should be moved from the unconstrained Conceptual Scenario of the LRTP to the constrained portion of the plan upon adoption of a preferred alignment by the TCA Foothill/Eastern Board of Directors.

Thank you for your consideration.

Sincerely,

MARK CHAGNON Director of Public Works

Attachment

 cc: Honorable Mark Murphy, Chair, Regional Planning and Highways OCTA Board of Directors
 Darrel Johnson, Chief Executive Officer, OCTA
 City of Mission Viejo City Council
 Dennis Wilberg, City Manager, City of Mission Viejo



City of Mission Viejo

Office of the City Manager

Edward Sachs Mayor

Greg Raths Mayor Pro Tem

Wendy Bucknum Council Member

Brian Goodell Council Member

Trish Kelley Council Member

August 2, 2018

The Honorable Lisa Bartlett, Chair Orange County Transportation Authority 550 S. Main Street Orange, CA 92868

Dear Chairwoman Bartlett:

I am writing to you to state my concern with the Long Range Transportation Plan (LRTP) Draft as proposed by staff.

The draft LRTP contains a short-term action plan, the most significant aspect of it being a "South Orange County Mobility" study. Ostensibly, this is a proposed update to the 2008 South Orange County Major Investment Study (MIS). The only major project in the 2008 MIS that has yet to be completed is the SR241 extension. As you know, the City of Mission Viejo has worked alongside you and other South Orange County cities, Caltrans and OCTA on the current, TCA-led planning process for the SR241. To have OCTA now begin a brand new South Orange County process not only devalues the work we all have done for the past two years together, but it is also a waste of taxpayer dollars and an unnecessary duplication of efforts.

On page five of the staff report, that references the inclusion of a study of "South Orange County Mobility", staff also mischaracterizes the sentiment in South Orange County surrounding the current effort. Yes, one South Orange County city is unhappy with the process, but the City of Mission Viejo supports this process led by TCA, we have worked diligently with TCA through stakeholder meetings, public forums and technical meetings. In fact, our Mayor and Public Works Director participated in seven meetings over the course of 2016 where they sat alongside not only Mayors, Public Works Directors and City Managers from across South Orange County, but also OCTA principals Darrel Johnson, Kia Mortazavi and Kurt Brotke. All of these OCTA staff members actively participated in the current process and worked with TCA at every step, making presentations and answering questions.

I reject the notion presented in the staff report that the current TCA planning effort has created "a level of unease among the surrounding communities and jurisdictions". The leadership and residents of Mission Viejo are eager to see the current TCA process move forward and call on OCTA leadership to do everything it can to encourage the completion of the current planning process.

23

August 2, 2018 The Honorable Lisa Bartlett, Chair Long Range Transportation Plan (LRTP) Page 2 of 2

Please ensure that any "South Orange County Mobility" study will not deter or delay the current planning process for the SR241. Mission Viejo's future mobility depends on greater North-South congestion relief seven days a week. We are eager to progress into the CEQA/NEPA process with TCA and Caltrans and look forward to an environmentally cleared, complete solution.

Sincerely,

DENNIS WILBERG City Manager

 C: Honorable Mark Murphy, Chair, Regional Planning and Highways OCTA Board of Directors
 Darrel Johnson, CEO, OCTA
 Jennifer Cervantez, City Manager, Rancho Santa Margarita
 City of Mission Viejo, City Council
 Mark Chagnon, Public Works Director, City of Mission Viejo

200 Civic Center • Mission Viejo, California 92691 http://www.cityofmissionviejo.org

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San Joaquin Hills Transportation Corridor Agency



Foothill/Eastern Transportation Corridor Agency

Chair: Ed Sachs Mission Viejo

Chair: Fred Minagar Laguna Niguel

September 27, 2018

Mr. Greg Nord, Section Manager Long-Range Planning & Corridor Studies Orange County Transportation Authority 550 S. Main Street Orange, CA 92863

Subject: Draft 2018 Long Range Transportation Plan

Dear Mr. Nord:

The Transportation Corridor Agencies (TCA) have reviewed the draft subject plan and provide the following comments for consideration as you prepare the final document. As you know, TCA is a public joint powers authority that is comprised of member agencies who represent cities throughout Orange County. TCA Board members have the responsibility to provide oversight and input into policies that govern our agencies. To date, TCA has constructed 51 miles of publicly operated toll facilities throughout Orange County that represent 20-percent of the county's highways. Upon the opening of each section of TCA's projects, they are deeded to the State of California and represent nearly \$4 billion of newly constructed infrastructure to assist with local and regional mobility.

The draft LRTP acknowledges the financial difficulties our county is facing with the decrease in anticipated revenues associated with OC Go (formerly known as Measure M2). To counter a continued decrease in local, state and federal funding, TCA supports the use of public-private partnerships to fund the improvements necessary to meet the county's current and future growth in housing and employment, as well as goods movement. TCA has successfully utilized this type of financing with its facilities and would like to continue its partnership with OCTA to implement the county's needed improvements to ensure seamless travel between the various facilities throughout the county, including the SR 241/91 Express Connector.

Given the large percentage of lane miles that The Toll Roads make up within the county and the critical role they provide for mobility, it is unclear if the draft document included these facilities as part of the analysis. Please explain if these facilities are included in the data presented and if so, how they were modeled. Furthermore, as part of TCA's FY19 Capital Improvement Plan, the highway improvements identified on page 82 for the SR 73, 133, 241 and 261 have been delayed. TCA is currently conducting a systemwide analysis to better inform our Agencies as to when these improvements will be needed. TCA will update OCTA once this analysis is complete and approved by our Board.

TheTollRoads.com

Mr. Nord September 27, 2018 Page 2 of 2

Additionally, within this same table identifying TCA CIP projects on page 82, the table is labeled as "Projects from External Agencies." TCA believes that OCTA is a transportation partner and any entity that works with OCTA, including TCA, Caltrans and any cities within Orange County should be viewed as such. Therefore, TCA suggests that this table be relabeled as "Projects from Partner Agencies."

The draft plan introduces various transportation improvement scenarios, including a discussion on the future use of The Toll Roads (page 127). Since the LRTP horizon year is 2040 and the toll road bonds will be paid off post-2040, it is premature and inappropriate for OCTA to include this type of Policy Scenario as part of the 2018 LRTP. Additionally, the future state of The Toll Roads is a decision that TCA will make in conjunction with Caltrans, the legal owner of SR 73, 133, 241 and 261. TCA requests that the final LRTP remove this discussion for the above stated reasons and re-run its analysis assuming The Toll Roads are a constant.

Finally, we support OCTA's assessment that as part of the LRTP's short-term activities plan, solutions to South Orange County's mobility need to be identified. TCA, in partnership with Caltrans, the County of Orange, the South County cities and OCTA, have been exploring various mobility ideas with local community input for the past few years. The information developed to date can be utilized by OCTA to assist meeting this short-term objective. TCA looks forward to the joint collaboration of our agencies as transportation partners to solve the transportation needs of our county. Any effort undertaken by OCTA should not delay the current TCA/Caltrans project development activities.

TCA thanks you for considering these comments and looks forward to the final version of the 2018 LRTP. Should you have any questions regarding this letter, please feel free to contact me directly at <u>vmcfall@thetollroads.com</u> or via telephone at (949) 754-3475.

Sincerely,

Alchall

Valarie McFall Chief Environmental Planning Officer

CALIFORNIA COASTAL COMMISSION

South Coast District Office 200 Oceangate, Suite 1000 Long Beach, CA 90802-4302 (562) 590-5071



September 28, 2018

Greg Nord Orange County Transportation Authority 550 S. Main Street P.O. Box 14184 Orange, CA 92863-1584

RE: Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority Long Range Transportation Plan – Coastal Commission Staff Comments

Mr. Nord:

Coastal Commission staff appreciate the invitation to comment on the 2018 Draft Update to the Orange County Transportation Authority Long Range Transportation Plan (LRTP). We have reviewed the Draft LRTP and the background materials on the project webpage. One of the primary tenets of the Coastal Act is to protect and enhance public access to the coast, which requires a well-planned and interconnected public transportation system. The Framework section of the Draft LRTP indicates that the plan "contains a set of goals that considers financial constraints, shifting interest in modes of transportation, and environmental regulations." The Trend 2040 Improvement Plan section of the Draft LRTP identifies future highway, local streets, and transit projects that "deliver OCTA's commitments, improves system performance, expands transportation choices, supports sustainability, and aligns with stakeholder input."

This plan update provides an opportunity to prioritize projects and programs which enhance both the public transportation system and coastal resources. Projects that accomplish both goals (e.g. passenger rail service expansions within existing rail corridors, managed lanes within existing highways, public trails and bikeways) should be prioritized within the funded Trend 2040 project list. Goals and priorities that will guide project planning and implementation are identified in the Draft LRTP. However, please note that the Coastal Act and jurisdictions' Local Coastal Programs are the Coastal Commission's standard of review for projects in the Coastal Zone. Following are six topics where Coastal Commission staff encourage enhancements to Fast Forward 2040 to provide greater consistency with coastal policies:

1) Coastal Act Policies on Marine Resources and Environmentally Sensitive Habitat Area. The transportation corridors within Orange County bisect or are located directly adjacent to sensitive marine resources including coastal bluffs, coastal lagoons, and the Pacific Ocean. Impacts to these resources are restricted by Coastal Act policies. Except for certain specific instances, fill of a wetland or other coastal waters is prohibited (Section 30233), and the marine resources (Section 30230), water quality (Section 30231), and environmentally sensitive habitat areas (Section 3024) often associated with the coastal environment are also protected. Many of these coastal systems have already deteriorated due to historical transportation infrastructure development. Future transportation

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 2 of 8

improvements planned for the Coastal Zone should seek to ameliorate previous deterioration and enhance coastal resources.

Coastal Commission staff request that the Fast Forward 2040 document include specific reference to Coastal Act Chapter 3 policies requiring the preservation of coastal resources, including Coastal Act Section 30240 which states that development must be planned to protect environmentally sensitive habitat against significant disruption of habitat values. The LRTP should reference the preference for avoidance of impacts, rather than mitigation of impacts – specifically the Freeway Environmental Mitigation Program text on page 86 should be expanded. The map(s) on the following page should identify not only lands that are being acquired for mitigation but lands that are protected for habitat, recreation, and open space. The Coastal Zone boundary should be identified in that section or the previous section on cleanup and resource enhancement, along with the resource preservation policies of the Coastal Act.

The Coastal Commission has previously approved roadway expansion projects in sensitive coastal locations, but only where impacts to coastal resources were reduced to the minimum extent required in order to improve the public transportation system. For example, the Coastal Commission approved the San Diego North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program in June 2014, requiring impacts to coastal resources to be minimized, requiring mitigation for impacts to environmentally sensitive habitat at a ratio of 4:1, and requiring the provision of new rail trails and bike and pedestrian accessways in concert with expansion of roadways (primarily Interstate 5) and freight rail tracks. Improvements to Interstate 5 in the South Orange County Coastal Zone should be planned in the same manner in order to be consistent with the Coastal Act. The Additional Projects section of Trend 2040 describes a project to "add one HOV lane in each direction from Avenida Pico to San Diego County line;" this project should be expanded to include improvements to multi-modal options and environmental resources in the area where the highway impacts will occur.

Any potential SR 241 southern expansion/extension projects should either be clarified to identify an alignment outside of sensitive resource areas or removed from the LRTP. The project identified as "FTC South – SR-241/Oso Parkway to I-5 (San Diego) – TCA" on page 135 of the Plan is of particular concern, as the Coastal Commission in 2008 objected to a proposed SR 241 Foothill-South alignment, finding it inconsistent with the Coastal Act. On appeal, the U.S. Secretary of Commerce upheld the Commission's objection. On November 10, 2016, the Foothill/Eastern Transportation Corridor Agency entered into a binding and enforceable contractual settlement agreement with a group of environmental organizations and the People of California.

Recital I of the Settlement Agreement states, in relevant part: "TCA is considering a mobility improvement project to address concerns regarding congestion on the Interstate 5 freeway in South Orange County. Mobility improvements would be conducted in a manner that would extend SR 241 utilizing an alignment that minimizes environmental and cultural resource impacts, is economically feasible and practicable, and is consistent with applicable state and federal environmental and cultural resources laws. To achieve these objectives, TCA will only build or fund an alignment that is located outside of the Avoidance Area, as defined in this Agreement."

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 3 of 8

Coastal Commission staff note that Idea 8 (Extend La Pata to Cristianitos) and Idea 15 (Connect SR 241 to I-5 via Cristianitos Crossing), as displayed on the Get Moving Orange County website are not consistent with the Settlement Agreement because they would be located within the Avoidance Area. Therefore, the LRTP should more clearly identify an alignment for SR 241 that is consistent with the Coastal Act and the Settlement Agreement or remove reference to a southerly SR 241 expansion/extension.

2) California State Rail Plan. The Coastal Commission has previously approved transportation projects and programs that balance roadway expansion with provision of transportation alternatives including rail, bicycle corridors, and pedestrian access ways (e.g. the San Diego North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program). In its recent approval of the Santa Barbara 101 HOV Lane project, the Coastal Commission found that the roadway improvements were consistent with Coastal Act policies requiring maximum public access and a reduction in vehicle miles traveled (see Sections 30210 and 30253), based on the expectation that the region would contemporaneously be increasing passenger rail service and providing transportation alternatives.

The 2013 California State Rail Plan and the LOSSAN Corridorwide Strategic Implementation Plan (April 2012) reference a potential expansion of intrastate passenger rail service through implementation of a "Coast Daylight" train service, "proposed to initially operate with one daily round trip as an extension of the state-supported Pacific Surfliner service. Expansion of the Coast Daylight service to two daily round trips will be accomplished by adding a new overnight train between San Francisco and Los Angeles." One goal of the Coast Daylight is to "increase the use of intercity passenger rail service as part of a multi-modal strategy identified in regional and county goals and plans." The Draft 2018 California State Rail Plan website states: "Californians collectively take billions of trips to millions of destinations each year, and the state needs quality modal choices among cars, transit, air travel, and active transportation to efficiently move people and freight to their destinations."

The LRTP should be consistent with Coastal Act requirements and State and County commitments to minimize vehicle miles traveled and prioritize funding and implementation of expanded passenger rail and alternative transportation options. The 2013 California State Rail Plan (Chapter 8 - Passenger Rail Improvements) identified many rail improvements for priority implementation. Infrastructure improvements necessary to facilitate faster and more frequent passenger/commuter rail service between Orange County and Los Angeles/San Diego should be included in the Trend 2040 project list, and the Metrolink expansion (increase from 54 to 86 weekday trains) should be identified as a priority. The potential increase to 98 weekday trains referenced on reference on page 135 should be supported by an analysis projecting increased riders and reduced VMT.

Potential infrastructure improvements to the LOSSAN rail corridor should be referenced. The Orange County Rail Infrastructure Defense Against Climate Change Plan should be referenced in the planning documents/context section of the LRTP – potentially on page 108.

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 4 of 8

3. Plan for Sea Level Rise. Coastal Commission staff recommend incorporating sea level rise into the LRTP. Currently, the draft LRTP does not address sea level rise, associated coastal hazards, or their impacts on transportation infrastructure. Addressing these subjects is of critical importance for several reasons.

First, sea level rise will impact the viability and safety of transportation infrastructure along the shoreline, as well as the communities and coastal resources served by and surrounding that infrastructure. Because transportation infrastructure typically remains in place for many decades and influences development patterns that are similarly long-lasting, it is important to consider hazard conditions that could impact infrastructure over its anticipated functional life and plan accordingly. This information would likely impact the planning priorities, projects, and long term funding strategies outlined in the LRTP, particularly in relationship to infrastructure such as the Pacific Coast Highway and sections of railway that run along the coast. Without information on future hazard conditions, the OCTA may inadvertently make decisions that put its public investments or coastal resources at risk.

Additionally, ensuring that new coastal infrastructure is designed to adapt to the effects of sea level rise throughout its expected life is a principal concern of the Coastal Commission, as clarified through the Commission's Sea Level Rise Policy Guidance (2015) and through recent Commission actions on key infrastructure projects throughout California. As described in the Guidance, Coastal Act Section 30253 requires that new development minimize risks to life and property from hazards and assure stability and structural integrity without the use of a shoreline protective device. Thus, understanding the potential impacts of climate change and sea level rise is of critical importance in long-range planning efforts so that projects are not designed in a way that will put investments at risk from coastal hazards, and to ensure consistency with the Coastal Act.

The interaction between transportation infrastructure and rising sea levels can also impact resources such as public access, recreational areas, and other resources protected by the Coastal Act. In particular, beaches – which are an important component of Orange County's culture and tourism and recreational economies -- can be squeezed out when trapped between infrastructure and rising sea levels. A <u>2017 USGS study</u> showed that between about thirty to seventy percent of southern California beaches from Santa Barbara to San Diego may become completely eroded by 2100 under scenarios based on one to two meters of sea level rise meeting the armored footprint of existing beachfront development and/or sea cliffs.

The USGS research underscores the loss of sandy beaches that will occur in the future in response to armoring infrastructure along the edge of the rising sea. Transportation infrastructure on the Orange County shoreline coast often includes long stretches located along the first line or second line of development at the edge of the shoreline, including both the Pacific Coast Highway and railway infrastructure. Without long-term adaptation planning and preparation, rail and highway corridor owners are likely to request the placement of shoreline armoring on an emergency basis without consideration of long-term damage to coastal resources that will result. Thus, proactive planning that seeks ways to minimize impacts to coastal resources is critical for carrying out the mandate of the Coastal Act.

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In recognition of the importance of this subject, many state directives, guidance documents, and regional planning documents have called for sea level rise to be included in planning processes.

- <u>Safeguarding California</u> (2018), the state's climate adaptation strategy, recognizes that "Climate change impacts from sea-level rise to storm surge and coastal erosion are imminent threats to highways, roads, bridge supports, airports at or near sea level, seaports, and some transit system and rail lines" (page 118) and calls for vulnerability assessments and adaptation planning at various scales.
- The State Ocean Protection Council stated in its <u>2018 Sea Level Rise Guidance</u> document that "California has an immediate opportunity to make smart, informed, and risk-based decisions that prepare our coastal and inland communities for change while ingraining sustainability, longevity, and resiliency into our planning, permitting, investment, development, transportation, and recreational decision." The document provides guidance and guiding principles for sea level rise planning work.
- The <u>California Transportation Plan 2040</u> calls for sea level rise adaptation planning, notably stating that: "Planning agencies need to address climate change-related vulnerabilities and incorporate climate change resiliency into their long-range transportation documents. This is encouraged to reduce the likelihood, magnitude, duration, and cost of disruptions associated with extreme weather and other effects of changing climactic conditions to the transportation system" (page 28). It includes a Recommendation, "Expand State and regional resilience planning and cli mate change impact studies of SLR, storm events, and other climate change indicators that affect the future of communities, infrastructure, and ecosystems" (page 110).
- The <u>2018 California State Rail Plan</u> calls for similar planning efforts, noting that "Coastal rail corridors are commonly the first, or second, line of development adjacent to the sea, particularly in central and southern California. If reactive, emergency-based hard-armoring measures are constructed to protect corridors in place, beach loss may result. Thoughtful, long-term adaptation planning for sea-level rise is necessary to identify alternatives, including relocation of corridors where opportunities to do so exist, that would protect transportation corridors as well as California's popular beaches and other coastal resources (page 224). The Plan highlights the OCTA portion of San Diego Line at San Clemente as a railway at risk from sea level rise (page 226).
- Caltrans has highlighted the importance of planning for sea level rise in its <u>2017 Regional</u> <u>Transportation Plan Guidelines for Metropolitan Planning Organizations</u>.
- Regional and local transportation planning documents are incorporating climate change and sea level rise considerations into their actions. For example, the Metropolitan Planning Commission of the San Francisco Bay Area is taking steps to incorporate sea level rise into the 2020 update of its Regional Transportation Plan/Sustainable Communities Strategy.
- The Orange County Rail Infrastructure Defense Against Climate Change Plan, currently being developed by OCTA through an Adaptation Planning grant from Caltrans. The recommendations of that plan should guide future infrastructure investment decisions along the LOSSAN rail corridor.

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 6 of 8

Commission staff recommend that the OCTA conduct new or synthesize existing vulnerability assessment work to understand the potential future impacts to transportation infrastructure and coastal resources, and develop an adaptation strategy and identify projects to address those impacts to incorporate into the LRTP. Staff recommend that OCTA consult the following resources and coordinate with related planning processes:

- <u>State Sea Level Rise Guidance</u> (OPC 2018) This document provides information on amounts of sea level rise to analyze in different planning contexts, recommending that extreme SLR scenarios be used in long range transportation planning processes. ("The H++ scenario may also be relevant to communities considering regional or general plans, climate action plans, local hazard mitigation plans, regional transportation plans, and other planning efforts, due to the interrelated nature of critical infrastructure, homes, businesses, etc." page 24)
- <u>Sea Level Rise Policy Guidance</u> (CCC draft update 2018) This document provides step by step guidance for conducting sea level rise vulnerability assessments and adaptation planning, and includes links to sea level rise tools such as the <u>COSMOS 3.0 model</u>, example studies, and descriptions of potential adaptation strategies.
- Related planning processes
 - Caltrans District Climate Change Vulnerability Assessments Caltrans is conducting climate change vulnerability assessments in each district and the Draft District 7 (Los Angeles and Ventura Counties) report has been released. The District 12 (Orange County) vulnerability assessment is being drafted. Commission staff recommend consulting the reports and coordinating to the extent possible with the District 12 effort. Such coordination could not only provide the needed vulnerability and adaptation information, but will also ensure consistency and synergy between the regional transportation planning efforts.
 - Other local efforts to understand and plan for sea level rise in vulnerability assessments and LCP updates, which are summarized in the Coastal Commission's Vulnerability Synthesis Report and the <u>Orange County vulnerability snapshot</u>.
 - Ongoing planning processes that could impact transportation infrastructure adaptation over time, such as the Programmatic EIR for realignment of rail in San Clemente
- 4. Public Access and Recreation. A pillar of the Coastal Act is the protection and provision of public access to, and along, the coast. Coastal Act sections 30210 and 30212 require that maximum opportunities for public access and recreation be provided in new development projects, consistent with public safety, private property rights, and natural resource protection. Additionally, Section 30252 dictates that new development should maintain and enhance public access through such actions as facilitating transit service, providing non-automobile options, and providing adequate parking. Accordingly, the Long Range Transportation Plan should reference coastal access as a priority in future transportation projects and decisions. Future projects should be analyzed for their potential to would maximize access to the coast, including options for non-motorized, bicycle, and pedestrian routes. This analysis should facilitate access to beaches and coastal areas from the inland portions of the region, as well as options for enhancing connections to public transit, the California Coastal Trail, the Coastal Rail Trail, and other visitor-serving recreational opportunities.

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 7 of 8

Page 74 of the LRTP celebrates the OC Loop, which includes a segment of the Coastal Trail along the southern segment. That section of the plan should identify Caltrans and the Coastal Commission as partner agencies working to enhance active transportation and complete the Coastal Trail. The LRTP should identify a project to plan, fund, and develop Coastal Trail projects as a priority. The project/program described as OC Active would encompass these priorities, but it should be moved to the committed/funded Trend 2040 project list. Other LRTP projects identified within the Coastal Zone should be evaluated for potential overlap and connection with the Coastal Trail.

5. Concentration of Development. Section 30250 of the Coastal Act generally requires that new development within the Coastal Zone be located within, contiguous with, or in close proximity to existing developed areas, and Section 30253 requires new development to be sited in a manner that will minimize energy consumption and vehicle miles travelled. In this way, the Coastal Act encourages smart growth patterns that recognize a strong urban-rural boundary to ensure protection of coastal resources. Accordingly, the LRTP should prioritize transportation investments which encourage jobs and housing to be concentrated in developed areas.

The California Air Resources Board (ARB) sets target for reduction of GHG emissions from passenger vehicles for the target years 2020 and 2035, consistent with SB 375. Executive Order B-30-15 sets a goal of reducing California's GHG emissions to 40 percent below 1990 levels by 2030 and the Executive Order S-3-05 sets a goal of reducing California's GHG emissions to 80 percent below 1990 levels by 2050. While the proposed LRTP includes more investment in transit and active transportation than any previous LRTP, it could do even more to prioritize and invest in public transit and active transportation projects to minimize vehicle miles traveled consistent with Coastal Act Section 30253. In general, Coastal Commission staff encourage a greater proportion of investment in transit, active transportation, and environmental enhancement projects (currently budgeted at approximately \$19B of the total \$42B in the funded Trend 2040 projects).

6. Visual Resources. Coastal Act Section 30251 states that the scenic and visual qualities of coastal areas should be considered and protected as a resource of public importance. Permitted development should be sited and designed to protect views to and along the ocean and scenic coastal areas. In order to preserve and enhance visual resources and scenic views of the coastal environment from Interstate 5 and scenic roadways adjacent to the coast, new bridge and highway projects should incorporate aesthetic see-through bridge rails at the lowest height necessary to guarantee safety, consistent with the bridge rails and barriers guidance previously developed by the Coastal Commission + Caltrans Road's Edge Subcommittee.

Additionally, special care should be taken to preserve visual resources and scenic views on State Scenic Highways, including but not limited to State Route 133 in Laguna Canyon and roadways in other scenic canyons and coastal segments.

Designing Tomorrow, 2018 Draft Update to Orange County Transportation Authority LRTP Coastal Commission Staff Comments Page 8 of 8

Thank you for the opportunity to comment on the 2018 Draft Update to the Orange County Transportation Authority Long Range Transportation Plan. Coastal Commission staff look forward to future collaboration on improvements to the transportation system in Orange County, and appreciate the commitments presented within the LRTP to preserve and enhance environmental resources and active transportation. If you have any questions or concerns, please do not hesitate to contact me in the Coastal Commission's Long Beach office.

Sincerely,

ZBR/MM_ Zach Rehm Senior Transportation Program Analyst

Cc: Karl Schwing, Deputy Director for Orange County, CCC Tami Grove, Statewide Development and Transportation Program Manager, CCC Carey Batha, Statewide Planning Analyst, CCC **DEPARTMENT OF TRANSPORTATION** DISTRICT 12 1750 EAST 4TH STREET, SUITE 100 SANTA ANA, CA 92705 PHONE (657) 328-6000 FAX (657) 328-6522 TTY 711 www.dot.ca.gov/d12



Making Conservation a California Way of Life.

September 28, 2018

Mr. Kia Mortazavi Executive Director, Planning Orange County Transportation Authority P.O. Box 14184 Orange, CA 92863-1584

Dear Mr. Mortazavi:

The California Department of Transportation (Caltrans) District 12 appreciates the opportunity to review and comment on the Orange County Transportation Authority (OCTA) draft 2018 Long-Range Transportation Plan (LRTP). OCTA has done a great job reaching out to the community and developing the plan.

The role of Caltrans District 12 in reviewing the LRTP is to represent Caltrans policies and priorities of providing a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. Caltrans seeks consistency of this plan with the Southern California Association of Governments' (SCAG) Regional Transportation Plan, California Transportation Plan, and other State and Federal mandates.

Based on our review of the draft LRTP, we have the following comments:

- Caltrans District 12 does not support raising HOV occupancy requirements to 3+ as a stand-alone strategy, but we do support the recommendations we made in our Orange County Managed Lanes Network Study. The objective of the study is to optimize system performance, maximize system productivity, enhance overall people throughput, provide additional travel choices and improve travel reliability. We are pleased that the draft LRTP has reflected Caltrans District 12 study recommendations.
- 2. Page 8: Revise the statement as follows, "transportation leaders have *worked with public agencies and the general public to develop* the plan." The plan was not developed by the transportation leaders alone, and public participation is a significant part of the success.
- 3. Page 15: As the owner and operator of the State Highway System (SHS), Caltrans has the authority to make operational changes, such as occupancy requirement adjustment or conversion to HOT lanes to manage demand and meet Federal and State requirements.

Mr. Mortazhavi September 28, 2018 Page 2

- 4. Page 16: Under Policy Scenario, transit trips were reduced. Please clarify and explain the reduction to avoid any potential misunderstanding about the importance of the transit program.
- 5. Page 17: Add "Orange County Managed Lanes Network Study recommendations" under "Other Projects."
- 6. Page 31: Add "Pavement" to the title of the chart to clearly demonstrate that the chart reflects the "*Pavement* Condition."
- 7. Page 35: Add "*Local Roads* Pavement Condition Index" to the chart title to differentiate this chart from the chart on page 31.
- 8. Page 42: Please explain why Class I bike lane miles have reduced from year 2009 to year 2013 throughout the county.
- 9. Page 64: Local OC Go sales tax revenue reduction results not only from the impact of the Great Recession but also from the rising of on-line shopping. However, the first sentence only stated the impact of the Great Recession.
- 10. Page 73: Include language pertaining to linking transit centers, Park and Ride lots and Direct Access Ramps with the expanded Managed Lanes network.
- Page 74: Add a sentence about the coordination and collaboration with Caltrans District 12 on Pacific Coast Highway Study, Beach Blvd Study and Orange County Managed Lanes Network Study.
- 12. Page 90: Change the phrase from "carpool lanes" to "*managed* lanes" in the first paragraph.
- 13. Page 91: Revise the project description for the 3rd project in the list to read: I-5 add one Managed Lane in each direction from SR 57 to SR 91/LA County line.
- 14. Page 106: Modify the fourth sentence in the first paragraph to read: "...Caltrans is exploring different alternatives, including developing a price-managed lane network in Orange County to address degradation."
- 15. Page 107: Update the map to extend the northern limit of Managed Lane on I-5 from SR 91 to the LA County line.
- 16. There is no consideration given to the municipal and regional airports in the LRTP, and they are part of the transportation system.
- 17. More consideration should be given to goods movement, especially green freight to enhance economy and intermodal connectivity.
- 18. Safety is always the Department's top priority. Safety-related initiatives should be discussed and included in the LRTP.

OCTA has done a commendable job providing comprehensive and integrated transportation solutions for the public. We encourage OCTA's continued commitment in planning and implementation of Managed Lanes, expansion of light rail, incentives for carpools on toll roads and express lanes, enhancements to the bike/pedestrian network and Park and Ride program.

Mr. Mortazhavi September 28, 2018 Page 3

Caltrans is committed to work with OCTA and all stakeholders to provide safe, efficient and sustainable transportation services to the public. If you have any questions, please contact me at (657) 328-6293.

Sincerely, Lan Zhou

Deputy District Director of Planning and Local Assistance Caltrans District 12

c: Gerardo De Santos, District Director (Acting)

Adnan Maiah, Deputy District Director of Capital Outlay Program and Single Focal Point Dina El-Tawansy, Deputy District Director of Traffic Operations and Maintenance Chris Flynn, Deputy District Director of Environmental Analysis **DEPARTMENT OF TRANSPORTATION** DISTRICT 12 1750 EAST 4TH STREET, SUITE 100 SANTA ANA, CA 92705 PHONE (657) 328-6000 FAX (657) 328-6522 TTY 711 www.dot.ca.gov/d12



Making Conservation a California Way of Life.

October 1, 2018

Mr. Gregory Nord Senior Transportation Analyst Orange County Transportation Authority P.O. Box 14184 Orange, CA 92863-1584

Dear Mr. Nord:

The California Department of Transportation (Caltrans) District 12 appreciates the opportunity to review and comment on the Orange County Transportation Authority (OCTA) Draft 2018 Long-Range Transportation Plan (LRTP). OCTA has done a great job reaching out to the community and developing the plan.

The role of Caltrans District 12 in reviewing regional transportation plans such as the LRTP is to represent Caltrans policies and priorities of providing a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. Caltrans seeks consistency of this plan with the Southern California Association of Governments' (SCAG) Regional Transportation Plan, California Transportation Plan, and other State and Federal mandates.

Based on our review of the Draft LRTP, we have the following comments:

- The Draft LRTP uses A.M. Peak average speed as a performance metric. We recommend using P.M. Peak Hour(s) which generally depict a higher congestion level. In addition, please specify if the "peak" is a period or a particular "hour".
- 2. Page 14. Can the approximately \$7 billion of projected funding also be used for freeway improvements? Provide additional detail on the distribution of the spare \$7 billion. Please clarify for the reader.
- 3. Page 14. Consider repeating transportation improvement projects and programs, (OC Flex, Vision Zero, ATP Programs) wherever applicable. Reiterating these project/programs will help reinforce their importance and familiarize the public and partners with our efforts.
- 4. Page 15. Consider rewriting the sentence below to: To meet these standards, initiatives are being considered by the Department that may require an increase in the number of passengers required to three or more.
- 5. Page 15. As owner and operator of the SHS, the Department has the authority to make operational changes such as occupancy requirements or conversion to HOT lanes to manage demand, and meet Federal and State requirements.

Mr. Nord October 1, 2018 Page 2

- 6. Page 16. The values for Trend 2040 Freeway A.M. average speed is inconsistent with the value provided on page 15.
- Page 24. There is a large exchange of trips between Orange County and Los Angeles County. Please include a link to a listing of potential/proposed project to improve transit and transportation options in the border regions.
- 8. Page 31. Consider creating a graphic that outlines the multiple benefits of SB 1.
- 9. Page 41. Consider conducting transit corridor studies in the near future to evaluate the usability of transit services in proximity to Freeways.
- 10. Page 41. As Orange County continues to experience an increase in population, the Metrolink commuter rail services demand will also potentially increase. Consider studying/developing a county maintenance facility for the Metrolink trains servicing Orange County.
- 11. Page 42. Consider adding discussion of the Department's Active Transportation Program as a funding source for local agencies.
- 12. Page 55. Please be consistent with the naming convention of the Baseline scenario. For example, switching from 2040 Baseline to Baseline 2040 to avoid potentially confusing the reader.
- 13. Page 56. Consider changing the last element in the legend of figure 2.6 from "More Congestion" to some quantifiable descriptor similar to the rest of the legend elements.
- 14. Page 71. Please add another bullet: Expansion current Managed Lane network.
- 15. Page 71. Consider addition of bullet: Support Managed Lane network growth and connectivity, including options that support choice.
- 16. Page 71. Please add bullet point: Include the Bicycle Corridor Improvement Program.
- 17. Page 71. Please include bullet: Potential expansion, additions and/or improvements to the Park and Ride system.
- 18. Page 71. Consider adding bullet: Support efforts to improve the travel time reliability of the existing Managed Lane network, and identify improved transit strategies utilizing the Managed Lane network.
- 19. Page 72. Consider adding following text to end of last sentence of first paragraph: "...to address HOV/Managed Lanes degradation, and improve travel time reliability and offer more choice.
- 20. Page 72. Consider potential for study on freight movement. Freeways such as I-5, SR 57 and SR 91 are major corridors for goods movement. Analysis on impacts of goods movement on performance would be beneficial.
- 21. Page 74. Consider referencing the State Rail Plan to stay consistent with statewide goals and regulations.
- 22. Page 76. In the first paragraph, consider including bicycle safety improvement programs and initiatives such as Vision Zero.
- 23. Page 84. Confirm construction of second HOV lane to I-5 between SR-55 and SR-57 is anticipated to begin in 2018. May have been moved out to early 2019 or beyond.
- 24. Page 85. Consider adding graphics for transit options that connect to the OC Streetcar.

Mr. Nord October 1, 2018 Page 3

- 25. Page 86. Fourth sentence first paragraph may be incomplete sentence.
- 26. Page 86. Consider including language pertaining to Complete Streets measures.
- 27. Page 141. Confirm correct project limits under Additional Projects I-5 Add one HOV lane in each direction from SR-57 to SR-91.

OCTA has done a commendable job providing comprehensive and integrated planning solutions for the public. We encourage OCTA's continued commitment in planning and implementation of managed lanes, expansion of light rail and incentives for carpools on toll roads and express lanes, enhancements to the bike network, and Park and Ride program.

Caltrans is committed to work with OCTA and all stakeholders to provide the safest, efficient and sustainable transportation services to the public. If you have any questions, please contact me at (657) 328-6164.

Sincerely,

Scott Shelley

Branch Chief of Regional Planning, Intergovernmental Review, and Transit **District 12 Division of Planning**

c: Marlon Regisford, Branch Chief of System Planning (Acting), & Policy & Technical Planning Charles Larwood, Manager Transportation Planning, OCTA

1		preservation of coastal resources, including Coastal Act Section 30240 which states that development must be planned to protect environmentally sensitive habitat against significant disruption of habitat values. The LRTP should reference the preference for avoidance of impacts, rather than mitigation of impacts – specifically the Freeway Environmental Mitigation Program text on page 86 should be expanded.	Response P. 94 - Added language: Additionally, all projects go through a public environmental analysis that identifies avoidance and minimization measures, potential impacts, and proposed mitigation measures that may include improvements to multi- modal options and that address policies related to environmental resources, including the Coastal Act Chapter 3, Section 30240.
2	Coastal Commission	section on cleanup and resource enhancement, along with the resource preservation policies of the Coastal Act.	Added map identifying Coastal Zone boundary and other protected lands in OC.
3	Coastal Commission	"add one HOV lane in each direction from Avenida Pico to San Diego County line;" this project should be expanded to include improvements to multi-modal options and environmental resources in the area where the highway impacts will occur.	See response to comment #1
4		The project identified as "FTC South – SR-241/Oso Parkway to I-5 (San Diego) – TCA" on page 135 of the Plan is of particular concern Any potential SR 241 southern expansion/extension projects should either be clarified to identify an alignment outside of sensitive resource areas or removed from the	P. 134 - Added language: One such project that was the subject of many public comments received throughout the development of this LRTP was the proposed extension of State Route 241, known as the Foothill Transportation Corridor (FTC) - South. The Transportation Corridor Agencies (TCA) are currently analyzing a number of alignment alternatives that avoid sensitive resource areas. Once TCA commits to a single alignment that successfully avoids sensitive resource areas, as well as gains support from responsible agencies and affected communities, OCTA would consider moving the project to the financially constrained (i.e. Trend 2040) scenario.
5	Coastal Commission	Infrastructure improvements necessary to facilitate faster and more frequent	P. 91 - Replaced "Support Metrolink Strategic Plan implementation" with "Support expansion of commuter and intercity rail services subject to financial constraints".
6	Coastal Commission	increased riders and reduced VMT.	Noted
7	Coastal Commission	The Orange County Rail Infrastructure Defense Against Climate Change Plan should be referenced in the planning documents/context section of the LRTP – potentially on page 108.	P. 137 - Added: Adaptation Planning - Study infrastructure needs and develop recommendations

8	Coastal Commission	Coastal Commission staff recommend incorporating sea level rise into the LRTP. Currently, the draft LRTP does not address sea level rise, associated coastal hazards, or their impacts on transportation infrastructure. Coastal Act Section 30253 requires that new development minimize risks to life and property from hazards and assure stability and structural integrity without the use of a shoreline protective deviceproactive planning that seeks ways to minimize impacts to coastal resources is critical for carrying out the mandate of the Coastal Act. Commission staff recommend that the OCTA conduct new or synthesize existing vulnerability assessment work to understand the potential future impacts to transportation infrastructure and coastal resources, and develop an adaptation strategy and identify projects to address those impacts to incorporate into the LRTP. State Sea Level Rise Guidance Sea Level Rise Policy Guidance Caltrans District Climate Change Vulnerability Assessments (D12 in development)	P.73 - Added language to "Support Sustainability" paragraph: "OCTA will support efforts to comply with requirements for reducing emissions, avoiding impacts to natural resources, and protecting and maintaining infrastructure. Through coordination with partner agencies, funding will be secured to address these requirements to the extent feasible, while avoiding financial impacts to existing and planned services and projects."	
9	Coastal Commission	Long Range Transportation Plan should reference coastal access as a priority in future transportation projects and decisions. The LRTP should identify a project to plan, fund, and develop Coastal Trail projects as a priority. The project/program described as OC Active would encompass these priorities, but it should be moved to the committed/funded Trend 2040 project list.	Trend 2040 includes a line item for all planned bikeways in Orange County. This can also be further addressed in the development of OC Active.	
10	Coastal Commission	5 5		
11	Coastal Commission	the LRTP should prioritize transportation investments which encourage jobs and housing to be concentrated in developed areas. Coastal Commission staff encourage a greater proportion of investment in transit, active transportation, and environmental enhancement projects (currently budgeted at approximately \$19B of the total \$42B in the funded Trend 2040 projects).	Noted - This is addressed on P. 110	
12	Coastal Commission	Coastal Act Section 30251 states that the scenic and visual qualities of coastal areas should be considered and protected as a resource of public importance. Permitted development should be sited and designed to protect views to and along the ocean and scenic coastal areas. In order to preserve and enhance visual resources and scenic views of the coastal environment from Interstate 5 and scenic roadways adjacent to the coast, new bridge and highway projects should incorporate aesthetic see-through bridge rails at the lowest height necessary to guarantee safety, consistent with the bridge rails and barriers guidance previously developed by the Coastal Commission + Caltrans Road's Edge Subcommittee. Additionally, special care should be taken to preserve visual resources and scenic views on State Scenic Highways, including but not limited to State Route 133 in Laguna Canyon and roadways in other scenic canyons and coastal segments.	Noted - will be considered at project level	

13	Caltrans D12	Page 8: Revise the statement as follows, "transportation leaders have worked with public agencies and the general public to develop Designing Tomorrow"	P. 08 - incorporated suggested language.	
14	Caltrans D12	Page 15: Caltrans has the authority to make operational changes to manage demand and meet Federal and State requirements.	P. 15 - Modified language: "To meet these standards, the California Department of Transportation (Caltrans) is considering to exercise its authority to make operational changes that would increase the number of passengers"	
15	Caltrans D12	Page 16: Please clarify why under the Policy scenario transit trips are reduced to avoid any potential misunderstanding about the importance of the transit program.	P. 16 - Modified language: "This is primarily due to the assumption that autonomous vehicles will be accessible to many individuals who cannot operate vehicles today, as well as the introduction of zero-occupant trips, which together increase vehicle miles traveled and congestion while reducing transit ridership."	
16	Caltrans D12	Page 17: Add "Orange County Managed Lanes Network Study	P. 137 already identifies "Managed Lane Studies" to "Identify operational enhancements to the HOV network and criteria for potential expansion of priced managed lanes."	
17	Caltrans D12	Page 31: Add "Pavement" to the title of the chart to clearly demonstrate that the chart reflects the Pavement Condition.	P. 31 - Added suggested language	
18	Caltrans D12	Page 35: Add " <i>Local Roads</i> Pavement Condition Index" to the chart title to differentiate this chart from the chart on page 31.	P. 35 - Added suggested language	
19	Caltrans D12	Page 42: Please explain why Class I bike lane miles have reduced from year 2009 to year 2013 throughout the county.	Chart modified	
20	Caltrans D12	Page 64: Local OC Go sales tax revenue reduction results not only from the impact of the Great Recession, but also from the rising of on-line shopping.	P. 64 already notes on-line shopping as a factor	
21	Caltrans D12	Page 73: Include language pertaining to linking transit centers, park-and-ride lots, and direct access ramps with the expanded Managed Lanes Network	P. 73 - Modified language: "a shuttle that takes passengers from a rail station to within walking distance of their work; improving links between managed lanes and park-and-ride lots; or the use of on-demand"	
22	Caltrans D12	Page 74: Add a sentence about the coordination and collaboration with Caltrans D12 on PCH study, Beach, and OC Managed Lanes Network Study.	P. 74 - Added suggested references	
23	Caltrans D12	Page 90: Change the phrase from "carpool lanes" to " <i>managed</i> lanes" in the first paragraph	P. 90 - Added suggested language	
24	Caltrans D12	Page 91: Revise the project description for the 3rd project in the list to read: I-5 add one Managed Lane in each direction from SR 57 to SR 91/LA County line	Historically, this project has terminated at SR 91. OCTA is willing to revisit the limits once Caltrans refines and evaluates alternatives through the ongoing PSR.	
25	Caltrans D12	Page 106: Modify the fourth sentence in the first paragraph to read: "Caltrans is exploring alternatives, including developing a price-managed lane network in Orange County, and OCTA is planning"	P. 106 - Modified sentence	
26	Caltrans D12	Page 107: Update the map to extend the northern limit of Managed Lanes on I- 5 from SR 91 to the LA County Line.	P. 107 - Modified map	
27	Caltrans D12	There is no consideration given to the municipal and regional airports in the LRTP, and they are part of the transportation system.	Noted	
28	Caltrans D12	More consideration should be given to goods movement, especially green freight to enhance economy and intermodal connectivity.	Noted	

29	Caltrans D12	Safety is always the Department's top priority. Safety-related initiatives should be discussed and included in the LRTP.	Noted	
30	Caltrans D12	Recommend using PM peak	Added PM performance maps and table to Appendix	
31	Caltrans D12	Clarify if peak is period or hour	P. 08 - Added note to table: AM peak refers to the period between 6AM and 9AM	
32	Caltrans D12	P. 14 - can the \$7 billion be used for freeway improvements?	They do go toward freeway improvements, which are listed on p. 11 under "Additional Projects"	
33	Caltrans D12	P. 14 - Reiterate projects/programs to reinforce their importance	Noted	
34	Caltrans D12	P. 15 - "To meet these standards, initiatives are being considered by the state that may require an increase in the number of persons required to three or more."	P. 15 - Modified sentence	
35	Caltrans D12	P. 16 - Freeways - AM peak average speed is inconsistent with previous table.	P. 16 - corrected/updated table	
36	Caltrans D12	P. 24 - Please list proposed projects to improve inter county travel between OC and LA	The purpose of this discussion is to highlight 2015 travel conditions.	
37	Caltrans D12	P. 31 - Consider including a graphic highlighting SB1 benefits	SB1 is discussed in further detail on p. 65.	
38	Caltrans D12	P. 41 - Consider transit studies to evaluate the benefit of transit in proximity to freeways	Transit studies are included in the project list and short-term action plan	
39	Caltrans D12	P. 41 - Consider studying/developing a Metrolink maintenance facility in OC	Project list includes: Support expansion of commuter and intercity rail services subject to financial constraints	
40	Caltrans D12	P. 42 - Consider discussing ATP as a funding source for local agencies	The purpose of this discussion is to document 2015 travel conditions	
41	Caltrans D12	P. 55 - Keep scenario names consistent (Baseline 2040 v. 2040 Baseline v. 2040 No Build)	Updated references to 2040 No Build	
42	Caltrans D12	P. 57 - Consider quantifying "more congestion"	Not feasible within time restraints to finalize LRTP.	
43	Caltrans D12	P. 71 - add bullet for "Expand Managed Lane Network"		
44	Caltrans D12	P. 71 - Add bullet for "Support managed lane network growth and connectivity, including options that support choice"	It is not appropriate to modify the goals and objectives at this	
45	Caltrans D12	P. 71 - add bullet for "Include the Bicycle Corridor Improvement Program"	time, as they were developed with stakeholder input and presented to the OCTA Board of Directors early in the LRTP	
46	Caltrans D12	P. 71 - add bullet for "Potential expansion, additions and/or improvements to the Park-&-Ride system"	process to help guide the development of the LRTP.	
47	Caltrans D12	P. 71 - add bullet for "Support efforts to improve the travel time reliability of the existing managed lane network, and identify improved transit strategies utilizing the managed lane network"		
48	Caltrans D12	P. 72 - Consider add to the end of the first paragraph "to address degradation of managed lane performance, improve travel time reliability, and offer more choices to the public."	P. 72 - Added suggested language	
49	Caltrans D12	P. 72 - Consider potential for study on freight movement.	Additional freight considerations are noted in the Conceptual Project List and Short-Term Action Plan	
50	Caltrans D12	P. 74 - Consider referencing the State Rail Plan	Modified project list: "Support expansion of commuter and intercity rail services subject to financial constraints"	
51	Caltrans D12	P. 76 - In first paragraph, consider including bicycle safety improvement programs and initiatives such as Vision Zero	The Short-Term Action Plan includes an element addressing active transportation, including safety education.	
52	Caltrans D12	P. 84 - Confirm construction of second HOV lane on I-5 between 55 and 57 is anticipated to begin in 2018	Confirmed.	

53	Caltrans D12	P. 85 - Consider graphic showing transit connections to OC Streetcar	Not feasible to develop within time constraints. P. 100 include a map that provides some additional detail.	
54	Caltrans D12	P. 86 - Fourth sentence first paragraph may be incomplete	Reference not clear	
55	Caltrans D12	P. 86 - Consider including language pertaining to Complete Streets	Not appropriate within the Environmental Mitigation Program discussion	
56	Caltrans D12	P. 141 - Confirm correct project limits under additional projects, I-5 add one HOV lane each direction from 57 to 91	Confirmed.	
57	Conservation Groups	Perhaps additional incentives, carpool lots, outreach to businesses, or technological options (like a "ride share" app) may be promoted by OCTA.	P. 119 Added: "Transportatation demand management strategies, such as the rideshare options described above, will continue to be studied and tested by OCTA as indicated in the Short-Term Action Plan in Chapter 6."	
58	Conservation Groups	some of the lands showing an increase in population density are actually already protected as parklandthese figures (2.1 and 2.2) should be updated for the final LRTP and should include the removal of the protected lands from these maps to set an accurate baseline condition and accurately portray where projected growth can actually occur. (See <i>Attachments 1 and 2</i>).	P. 50 - Added: "These maps illustrate general zones where development is likely to occur, but they do not represent specific development plans."	
59	Conservation Groups	Many of the projects being approved at the local and regional level include housing types in the multi-million-dollar category—far from what workers driving into Orange County likely can afford. Acknowledgement of this "on the ground" reality would be an added benefit to the Plan.	Noted - Local jurisdictions are beginning the Regional Housing Needs Assessment in coordination with SCAG. This effort will help to identify and plan for needed housing stock throughout the Southern California region. The results will be reflected in the next iteration of the LRTP.	
60	Conservation Groups	As projects move forward—especially those NOT captured by the EMP we ask that a comprehensive mitigation approach be implemented.	Noted	
61	Conservation Groups	To maintain consistency with the EMP documents, the map on page 87 should reflect the new Preserve names	P. 87 - map updated	
62	Conservation Groups	additional capacity being added along Carbon Canyon Road in Brea. This would have significant impacts on existing mitigation lands within Chino Hills State Park, not to mention it is part of an approved Habitat Conservation Plan area. Additionally, the roadway up Valencia west of Olinda Landfill proposes a connection at Tonner Canyon and the 57 Freeway in Brea. It is unclear the purpose of this road and what it aims to serve. It doesn't decrease commutes, but instead impacts a functioning 31-mile long Wildlife Corridor and destroys ridgelines protected in a settlement agreement above Tonner Hills. Consistent with previous LRTP comments we've made on the MPAH improvement list—these two projects should be removed from consideration.	Noted - OCTA does not unilaterally make changes to the MPAH. Typically, the local jurisdictions will initiate amendment as needed, which go through a formal review process.	
63	Conservation Groups	new road being added between Santiago Canyon Road to Riverside County in county territory. This connector road through the forest impacts OC Parks lands, potentially OCTA mitigation lands, the Cleveland National Forest, and other conservation lands. This project should be removed from consideration.	Noted - OCTA does not unilaterally make changes to the MPAH. Typically, the local jurisdictions will initiate amendments as needed, which go through a formal review process.	

64	Conservation Groups	2. Soquel Canyon – This blke lane appears to cut through OCTA's Eagle Ridge	Noted - Similar to roadways, bikeways are implemented by local jurisdictions. As projects develop, impacts and safety will be assessed by the lead agencies.
65	Conservation Groups	(The EMP) also has the co-benefit of reducing greenhouse gases, reducing vehicle miles travelled, reducing lane congestion and traffic delays, and protecting threatened and endangered species—among many others.	P. 86 - Added references to co-benefits
66	Conservation Groups	 Three ideas missing from the Plan include: The incorporation of charging stations for electric vehicles at OCTA facilities such as park and ride lots. The creation of improved transit stops that provide for better user experiences (including but not limited to shade structures, trash bins, landscaping, etc.) LA Metro has excellent examples of place based features incorporated into their stops. Opportunities for "on the go" options for system users (bikes, mopeds or user incorporate to the go" and bike share systems. This gives residente 	 P. 111 Modified last sentence: "and/or partnerships with cities or private sector to implement publicly accessible" P. 81 identifies the OC Go Safe Transit Stop program (Project W), which provides funding for passenger amenities at the 100 busiest transit stops in Orange County and technology enhancements, such as real-time transit information. P. 118 has a "Ridesharing" discussion that discusses shared mobility products.
	City of Laguna Beach	Advance the Laguna Canyon Road - El Toro to Canyon Acres Drive project from the concept list to the project list.	P. 135 - Added asterix to the Laguna Canyon project in the Conceptual Project List stating "Contingent on voter approval of a local sales tax supporting the Laguna Canyon Road project, OCTA will include it in Orange County's financially constrained submittal for the 2020 RTP/SCS"
68	City of San Clemente	Supports the draft 2018 LRTP	Noted
		Baseline does not include FTIP	Noted - The Baseline approach is consistent with CEQA process and it is intended to simplify analysis of demographic growth on the transportation system.
70	City of Mission Viejo	Recommend use of OCP-2018	P. 137 - Added: Traffic Model Update - Update Orange County Traffic Analysis Model to incorporate latest socioeconomic data.
71	City of Mission Viejo	Recommend including Baseline and Trend 2040 PM congestion maps, in addition to AM.	Added PM performance maps and table to Appendix

72	City of Mission Viejo	Mission Viejo Mission Viejo Mi	
73	 73 City of Mission Viejo How is transit ridership projected to increase if the current trend is downward? 		The OC Bus 360 program is currently helping to reverse the decline in ridership. Also, by 2040 a projected 1.7 million additional daily person trips will occur, and Trend 2040 adds 400,000 hours of revenue service, so it is reasonable to assume that more transit trips would occur in 2040 as compared to 2015.
74		Policy initiatives which have not been implemented should not be assumed in the analysis of transportation system performance, except in the Conceptual scenario.	Innovation and Policy scenarios were developed in response to input received through development of the draft 2018 LRTP; they are not part of the financially constrained Trend 2040 plan; and, they are intended for discussion of issues deserving forethought. P. 116 - Modified language: In response to public input and recent trends, two scenarios have been developed to spark a
75	City of Mission Viejo	discussion and explore a san P. 27 - Added language: Whi for in analyses within this L P	
76	City of Mission Viejo	241/91 ELC should be included in the Short-term action plan	The 241/91 ELC is included in the Trend 2040 project list. The Short-Term Action Plan is primarily intended for planning studies that will identify additional needs and potential projects for the next LRTP (2022).
77	City of Mission Viejo	FTC-South should be included in Trend 2040 upon adoption of a preferred alignment by the TCA.	P. 134 - Added language - One such project that was the subject of many public comments received throughout the development of this LRTP was the proposed extension of State Route 241, known as the Foothill Transportation Corridor (FTC) - South. The Transportation Corridor Agencies (TCA) are currently analyzing a number of alignment alternatives that avoid sensitive resource areas. Once TCA commits to a single alignment that successfully avoids sensitive resource areas, as well as gains support from responsible agencies and affected communities, OCTA would consider moving the project to the financially constrained (i.e. Trend 2040) scenario.
78	City of Mission Viejo	The South Orange County Mobility Study should not deter or delay the current planning process for FTC-South.	Noted

79	TCA	It is unclear whether the LRTP accounts for traffic on the toll roads.	 P. 27 - Added language: Orange County's network also includes the Toll Roads, which consist of state routes 73, 241, 133, and 261. These facilities were originally planned as freeways, but were financed through toll revenue bonds and developer impact fees. Until the bonds are paid and the toll roads are turned over to the state, vehicles are charged a fee that adjusts based on time of day. Toll Road maintenance and enforcement is the responsibility of Caltrans and the California Highway Patrol, respectively, while the Transportation Corridor Agencies (TCA) are responsible for operating the toll collection system. While the Toll Roads are accounted for in analyses within this LRTP, congestion on these facilities was not reported because it is assumed that TCA would adjust tolls to maintain congestion-free facilities.
80	ТСА	Widening projects on 73, 133, 241, and 261 have been delayed, and are currently undergoing analysis to determine when they will be needed	Noted - Until these projects are removed from the FTIP and other related planning documents, the LRTP will continue to assume that they will be implemented by 2040
81	ТСА	Suggest relabeling "Projects from External Agencies" to "Projects from Partner Agencies"	Made suggested modification
82	TCA	bonds being paid off, and the analysis should be re-run assuming the Toll Roads are a constant.	The language addressing the toll roads recognizes that the transfer to Caltrans would "likely occur after 2040". Additionally, the Innovation and Policy scenarios were developed in response to input received through development of the draft 2018 LRTP; they are not part of the financially constrained Trend 2040 plan; and, they are intended for discussion of issues deserving forethought.
83	ТСА	The South Orange County Mobility Study should not deter or delay the current planning process for FTC-South.	Noted

#	Category	Comment	Response
	Environment/ Safety		
		generations. They are to reduce the adverse effects of climate change, and to preserve what little is left in Southern California of the natural environment. About 23% of greenhouse gas (GHG) emissions in the U.S. are due to ground transportation, and much more must be done to reduce GHG emissions. It's good to see that the subject is reasonably well addressed. The other area is to preserve the natural environment (I'm tempted to write "our natural environment", but it's not ours). The Long Range Transportation Plan mentions the Freeway Environmental Mitigation Program, but you can't take land from neighborhoods and mitigate it by buying land somewhere else. You can't take away a family's backyard and then say that you bought the homeowner some other piece of land with the same area but 20 miles away. That's not mitigation. We must preserve the small amount of open land that we have left in Orange County that is close to neighborhoods. We can do this by improving the throughput of our current infrastructure. We must provide more public transportation imaginable. There's a wave of new technology that will render the private car obsolete, and we'll be happy that we don't have to waste endless hours mindlessly keeping the vehicle between two sets of white striped lines on the freeway. We should, and must, embrace technology, but this report, while briefly outlining some of the available or soon to be available technologies, then manages to come up with every possible reason why these technologies should not be adopted. Chapter 1, Orange County Today, mentions that in 2015, 2,000 traffic signals were synchronized representing 540 miles of roads. Chapter 4, The 2040 Solution, Figure 4.8,	travelers. Every OCTA project goes through an environmental review process consistent with state and federal requirements. Additionally, state and federal design standards are followed to ensure the safety of travelers. Both environment and safety are further addressed by partner agencies such as the Southern California Association of Governments (SCAG) the California Department of Transportation. It should be noted that SCAG (the federally designated metropolitan planning agency for Orange, Los Angeles, San Bernardino, Riverside, Ventura, and Imperial Counties) is beginning development of the 2020 Regional Transportation Plan and Sustainable Communities Strategy
2	Safety	Orange County's Long Range Transportation Plan must implement California's SB 32 statutory commitment to reduce greenhouse gas (GHG) emissions 40% below 1990 levels by 2030 and additional governor's executive order B-55-18 to achieve carbon neutrality by 2045. But what should be the foundation of the LRTP is given only passing reference in a graphic and no discussion on page 69. Transportation is the greatest emission sector in California at 41% (most recent data, from 2016), and if emissions from oil production and refining are included it represents fully half of California's GHG emissions. The LRTP needs to document Orange County's share of the state's GHG emissions and how OC proposes to reduce them. Two main actions to reduce Transportation GHG emissions from light and heavy vehicles are to drive less / reduce vehicle miles traveled (VMT) and to electrify vehicles. But the LRTP is primarily a list of highway expansion projects that will increase VMT. A key action to reduce VMT is to promote infill development, and to expand zero-emissions transit, biking, scooting, and walking to serve it, especially in jobs-rich and housing-poor areas like Orange County where the housing shortage and its resulting unaffordability (page 22) forces so many people to commute long distances like from San Bernardino and Riverside Counties (page 24). Although OCTA has limited influence over cities' land use decisions (page 110), it can certainly work closely with cities during planning of proposed higher-speed transit corridors. Incentive programs to encourage employees to use transit if reasonably available or to carpool (Transportation Demand Management) are also an easy and near-term tool to reduce VMT and traffic congestion. They're briefly cited on page 128 but given no elaboration as to how they could be expanded. Finally, OC's transit connections to its stations along major boulevard corridors should include both improved bus performance and electrification, but electrification is not mentioned in the LRTP.	(RTP/SCS), where state and federal goals for emissions and safety will be addressed for the Southern California region.

3 Environment/	Safety should be one of the main goals of the LRTP, and should be listed on pg. 71. The LRTP needs a whole section on
Safety	safety, complete with statistics on accidents (car, truck, car-truck, bicycle, pedestrian fatalities, train-auto, train-pedestrians,
	etc.) and descriptions of measures to reduce accidents. There is no mention of accidents at all in the whole LRTP document,
	except for discussion of how autonomous vehicles might reduce accidents and fatalities (pg. 120). However, this is mere
	speculation, and not yet proven. On pg. 19, active transportation safety is mentioned, but only in the context to "seek
	opportunities to enhance public outreach and education related to active transportation safety", and not in the context of
	physical infrastructure design and construction. The Active Transportation discussion sections on pgs. 42-44, 125 and 129 do
	not explicitly mention pedestrian safety, through do mention the need for improved pedestrian and bicycle infrastructure.
	OCTA needs to follow the example of Los Angeles with its Vision Zero goal of not traffic deaths or serious injuries by 2025:
	http://visionzero.lacity.org/ Emissions: Challenging Emission Standards, pg. 69 and pg. 111: Statewide and South Coast Air
	Basin emissions regulations and policies are discussed in the LRTP, including goals of reducing emissions and petroleum
	uses. However, in the entire LRTP document there is no mention of the current amount of transportation-related emissions in
	Orange County, by transportation mode source or type of emissions. This needs to be quantified with the latest data, along
	with the county's share of emissions within the South Coast Air Basin and the state of California. Transportation-related
	emissions are very important metric. How the LRTP will reduce these county-specific transportation emissions, along with
	predictions of future emissions reduction scenarios and strategies, needs to be addressed in detail. Challenging Emission
	Standards, pg. 69- there is commendable mention of "required improved coordination of land use and transportation projects
	and established [emission] reduction targets for 2020 and 2035 that must be addressed in Regional Transportation Plans" and
	"slowing the growth in the overall number of miles traveled by passenger vehicles, transitioning transit fleets to cleaner
	technologies, and promoting zero emission technologies". Cost of Fuel: Chapter 2- "Orange County in 2040" and Chapter 3-
	"Challenges and Goals" make no mention of likely future increased cost of fuel due to global price/availability, and how
	increased prices for gasoline or diesel would influence future driving behavior, or transportation mode preferences. Fossil
	fuels are a finite and scare resource which will inevitably increase in price over the next few decades. If history is any guide,
	sudden global oil price shocks (1973 and 1979) or significant price increases (2002-2009) will happen again in the future.
	"Shifting or Changing the Costs of Driving", pg. 126 - there is no mention of possible future carbon taxes, which would
	increase the cost of hydrocarbon fuels such as petroleum, diesel or natural gas. Policy scenario assumption of "Cost of
	Driving", pg. 129 - by 2040 "The analysis assumes that implementation of pricing strategies will result in a 20 percent
	decrease in overall vehicle trips, which is roughly equivalent to a 17 percent decrease in vehicle miles traveled." With
	aggressive carbon taxation or dramatic increases in global hydrocarbon fuel prices, combined with dense multi-use
	development around transit hubs, there could be a decrease of overall vehicle trips much greater than 20 percent.

4 Environment/ Safety	The grade separation projects also provide tremendous safety benefits by completely separating the railroad tracks from automobile and pedestrian traffic. OCTA, working with LOSSAN and California High Speed Rail Authority, must do whatever possible to expedite the grade separation projects planned along the LOSSAN corridor, and between Fullerton Junction and Anaheim in particular. Rail Electrification: Electrified rail is the most energy-efficient way to move people and freight, while reducing highway congestion and emissions. It is faster, cleaner, quieter and more efficient overall than any other form of public transportation. Electric rail transit, whether in the form of heavy rail, elevated rail, subway, light rail or streetcar, needs to be a planning priority for OCTA. There is a great need to reduce emissions from the high number of diesel-powered trains passing through Orange County. These trains should be converted to run on electricity instead of diesel, in order to reduce the air pollution. Used successfully all over the world, electric locomotives produce zero emissions, are quieter, and have better acceleration that diesel locomotives. All-electric high speed rail passenger trains are already planned to serve Orange County, with the inauguration of the California High Speed Rail speed Ra	
Toll Roads/ Express Lanes		
5 Toll Roads/	Long range transportation plans need to focus on what's best for the affected communities. Destroying homes and lives just	The 2018 LRTP recognizes the many
Express Lanes 6 Toll Roads/	so someone can get to the beach 5 minutes faster doesn't make sense.	travel needs of Orange County residents and that there is not a single project or
Express Lanes	VMT and GHG failures and will be savaged in the public for promoting any "managed lanes" for the severe, economically discriminatory TAX that it is. Leadership looks like courage to finally hold TCA accountable for 241 and 73 performance failures and making a TCA "180" degree turn NOW. Time for MULTI-MODAL, ACTIVE TRANSPORTATION, and NEW TECHNOLOGY NOT more TCA and TAXED USE managed lanes.	single strategy that will address all the needs. This is why the 2018 LRTP includes a diverse set of multi-modal investments, as well as a conceptual project list and a Short-Term Action Plar that recognize further study and outreacl are needed prior to advancing the southern extension of State Route 241 o conversion of carpool lanes to tolled
7 Toll Roads/ Express Lanes	We are 20 years BEHIND on transportation technology and VMT and GHG and economic / social access to transportation no more freeway/toll road and first act must be to immediately make 73 the free road it was promised / sold to be years ago. 241 extension and imposing managed lanes on free freeways would be criminal mismanagement. No new plans until these are corrected.	express lanes.
8 Toll Roads/ Express Lanes	No toll roads or managed lanes. They are not needed anymore. All roads should be free. TCA should pay down the bonds and cease to exist - old technology has outlived its usefulness. Now they are justifying their corrupt existence by stealing from hard-working taxpayers.	
9 Toll Roads/ Express Lanes	Abolish TCA now!	

10	Toll Roads/	Please, no toll road over San Clemente and no managed lanes through San Clemente on the 5 freeway. The new expansion
10	Express Lanes	is fantastic and traffic jams are a thing of the past! La Pata is a very fast and direct arterial road. We do not need more
	Express Lanes	freeways or managed lanes in South Orange County.
11	Toll Roads/	We do not need the TCA, any toll roads, or managed lanes in San Clemente. Please don't disrupt and destroy a wonderful
	Express Lanes	beach town. No need!
10	Toll Roads/	Hello, I am opposed to any fee-for-use HOV lanes in Southern Orange County. I frequently drive on the 91 and AVOID these
12		
	Express Lanes	lanes as they rarely move quicker than the non-toll lanes - and I am in the HOV lane often with an EV.
13	Toll Roads/ Express Lanes	We are living in fast paced and everchanging world with an aging, technologically savy generation that has significantly impacted transportation demands and thus infrastructure needs. We do NOT need more roads, nor do we need more tolls, specifically not from an overreaching JPA such as the TCA who has failed the residents of Orange County for over 30 years. We understand that mobility is a significant issue, but we cannot continue to apply antiquated "solutions" to the problems associated with transportation. Instead, we must do better, get creative, and keep pace with the technological advances that will help traffic relief outside of building more and more roads. More roads does not equate to less traffic! As for tolls and toll roads or HOT lanes, these will NOT solve traffic problems — just look at ridership projections vs actual ridership! The TCA continues to fail to deliver what they originally promised and the residents of Orange County continue to be fed lies and false promises from a corrupt agency whose ultimate agenda is to make money, not ever make these revenue streams free! Enough is enough, not one more inch.
14	Toll Roads/	We need better public transportation for the future STOP PUIL DINC STUDIO TO U. POADSIUL They are NOT the answer
	Express Lanes	We need better public transportation for the future. STOP BUILDING STUPID TOLL ROADS!!!! They are NOT the answer, now or ever. There are many better ways to transport people around. We cannot keep building expensive roads, especially when we can't afford it. Keep San Clemente beautiful, and keep the ugly, unnecessary toll roads OUT of San Clemente! Thank you.
15	Toll Roads/	Good evening - I am wondering why the TCA is stepping on the OCTA's toes - what is South OC to do? The Tack has been
	Express Lanes	studying traffic during the summer and on weekends while our freeway was under construction and La Pata not finished - the data they spent heavily on is useless and not accurate due to construction. We would like to see the remaining arterials built out - we would like things widened as needed - NO ONE WANTS A TOLL ROAD - no one wants toll lanes on the 5 freeway - the TCA's JPA Agreement is clear they can only build parallel to the 5 freeway - so I am not sure why money is being wasted on economic discrimination for Orange County. It would be great to have the car pools lanes not car pool during non rush hours times and free things up - it would be great to have more direct service train connections from North OC to South OC without the train switch in Laguna Niguel. The TCA owes 6.4 BILLION DOLLARS - tax payers have already bailed them out to the tune of 1.1 Billion Dollars. They collected 10 million in fees for people not using their transponders enough last year - 19 million in penalties in 2017 and 307 Million in the silent secret Development Fee Tax that the Board of Directors has not reviewed as the JPA agreement requires annually - instead is automagically increased. Orange County is not the TCA's piggy bank - they have no business talking about REGIONAL - that is your job. In addition making us pay for the TCA via these fees for 30 years it was to be for local area benefit - clear as day in the original agreement. They are trying to segment CEQA Again that is how dense this agency is. Please stop the madness and put your foot down. This is an agency run amok - this is the short list of grievances as it is late. Thank you for the time and care in Orange County.
16	Toll Roads/	Toll lanes are not the answer, they unfairly charge Riverside county residents more. We can't afford to pay over \$25.00 one
	Express Lanes	way to work, then over \$25.00 to go home.
17	Toll Roads/	Long Range: 1st - Abolish TCA. Then, either reduce toll-fares to an affordable rate for everyone 24-7, on every TCA TL, and
	Express Lanes	or, best yet; while abolishing the needless TCA, "Free" OC's 51-miles of toll roads, as was originally promised, turning them
		into freeways, which was what OC wanted in the first place. Freeing the toll roads, and abolishing TCA would be the single
		most important improvement to OC mobility EVER
18	Toll Roads/	Please, NO MORE TOLL ROADS. We NEED MORE mass transit options. Those millions and possible billions of dollars could
	Express Lanes	help our earth and our children's childrenThink like the SF BAY area - Trains, Bart, Most of us do not want to drive and if
		we had other options we would take them. By 2050 individual cars will not be the same - imagine the freedom of efficient,
		economic and earth-wise transportation.
19	Toll Roads/	Abolish TCA NOW!!!!
-	Express Lanes	

20	Toll Roads/ Express Lanes	I believe that this effort by the TCA to run their toll road through the center of our city, a project that will destroy all that we, who have invested our money, hearts and efforts love, is a travesty. NO CITY should be victimized and desecrated, so that a group can justify their continued existence. This effort is a betrayal to every citizen of our city, a community RICH in heritage, topographical beauty, surfing culture, entertainment and a wonderful haven for families. Any efforts to aid traffic flow, should not cause the kind of harm to any one place that this project is proposing. It is an outrage.			
21	Toll Roads/ Express Lanes	We do not need another toll road in South County - Arterial Roads need to be expanded to existing toll road. Car pool lanes should not have in and out areas should be continuous broken lines. Car pool should be two for single use need to charge. No trucks in any lanes except the two to far right No trucks in carpool lanes. Slow cars in Car Pool lanes sited for slowness. Better merging from entrances to road and better exits also. Continue lights at entrances. DISCONTINUE TO THE OC TRANSIT AUTHORITY - Use money for road improvements. Establish light rail to San Diego and LA More business offer carpool vans - shuttles for all games and events (free or very low fee.			
22	Toll Roads/ Express Lanes	I believe additional toll roads are a waste of resources and will not contribute to lessen congestion in Orange County. Transit and rail options will be more effective.			
23	Toll Roads/ Express Lanes	Promote legislation to 1. protect South Orange County from being destroyed by the Transportation Corridor Agency (TCA); 2. ensure the following: that there will be no toll road constructed within 1,500 feet of schools, that the powers of eminent domain be stripped from the TCA, that the TCA cannot build through already-mitigated land, already mitigated land can not be remitigated (This is clear violation of property rights. Mitigation land that OC developers paid handsomely for protect quality of life and aesthetics and cannot be re-mitigated. This would set a terrible precedent for Orange County.			
24	Toll Roads/ Express Lanes	mitigated (This is clear violation of property rights. Mitigation land that OC developers paid handsomely for protect quality of			

25	Toll Roads/	My wife and I use the current free carpool lanes mostly to medical appointments and see our grandchildren. It would be a		
20	Express Lanes hardship if 3+ became the norm or if we had to pay what our taxes already pay for. Please, no more toll lanes or to			
		Use the taxes we already voted for Thank you		
26	Toll Roads/	DO NOT build ANY Toll Roads through South Orange County!		
20	Express Lanes			
27	Toll Roads/	No toll road thru san clemente is acceptable. It is a beautiful town that would be destroyed by routing a freeway anywhere		
	Express Lanes	within city limits.		
28	Toll Roads/	We need to use technology and any transportation improvements that Do Not Require The Use Of Eminent Domain. *"Abolish		
	Express Lanes	The TCA" If It's All About Mobility Free The 73 Please help stop The TCA From Destroying South Orange County		
29	Toll Roads/ Express Lanes	Hello OCTA Personnel, My wife and I lived in Newport Beach for over 25 year before moving to San Clemente in 2008. When the TCA began building the 73 tool road we both thought it was a good idea, but after decades of mismanagement and reckless disregard for dutifully paying down the project's bonds the tolls are still in place and rising. Fast forward to 2018 and this inept organization now wants to build another toll road connecting the 241 to the 5. The impact on the affected communities and the loss of homes and businesses this project would cause is not acceptable and much more research, public input and studying by non-TCA affiliated groups needs to take place before any plan is agreed upon. The TCA's track record and dubious use of lobbyists to promote/support the "need" for this project provide zero confidence any benefits claimed will ever be achieved. However, the unprecedented damage to communities, the quality of life and the environment will most certainly occur. The TCA has one mandate: to continue to exist so they can continue to extract vast amounts of developer fees and tolls. They need to be disbanded and the existing toll roads taken over by "reputable" organizations with solid track records like CaITrans and/or the OCTA. Our grassroots group has contacted the TCA numerous times pointing ou the obvious errors and omissions in their work/efforts. These go unanswered or worse yet they just go right on disseminating misleading and often false information to press forward with their mandate to keep in existence. They pay themselves lavishly and spend money on lobbyists to keep the gravy train going. Enough is enough !! When the only tool you have is a toll road every project needs one !		
30	Toll Roads/ Express Lanes	Please do not allow the TCA eminent domain to build toll lanes. We do not need our want toll lanes in San Clemente. Thank you for your support.		
31	Toll Roads/ Express Lanes	I believe we can have a sound long term plan without destroying the city of San Clemente by putting a toll road through it. I know other northern cities like Mission Viejo and Laguna Niguel would not like to see a toll road put right through their cities. Make improvements with what we have. I know that taking the 73 onto the 91 at peak hours is a nightmare with a back up tha actually takes longer than just sitting in the traffic on the 91. The same thing will happen with a toll road down south.		
32	Toll Roads/	I am very disturbed by the comments and information that I am reading on the Toll Roads even from the Toll Roads. It is clear		
purposefully obscuring the facts and trying to build something that is not needed. If there is nothing to buil Roads' employees jobs go away so it is a conflict of interest for any of them to be involved in any of the st		that certain politicians are in the pocket of the Toll Roads and that this entity is attempting to justify its existence by purposefully obscuring the facts and trying to build something that is not needed. If there is nothing to build, all of the Toll Roads' employees jobs go away so it is a conflict of interest for any of them to be involved in any of the studies on whether another Toll Road is necessary.		
33	Toll Roads/ Express Lanes	No tolls on existing taxpayer's freeways. We have already built and own them!!!! No 3+ passengers for HOV lanes. It's unrealistic.		
31	Toll Roads/	I strongly oppose any new Toll Road through established residential areas in south Orange County.		
54	Express Lanes	n suongiy oppose any new roll road ullough established residential areas in south Orange Coully.		
35	Toll Roads/ Express Lanes	Another toll road and expanded lanes is not the answer to solving traffic congestion. Ride sharing and making the current toll road that was not supposed to still be tolled at this point would ease traffic in Orange County. Do not destroy schools, parks, and homes for unnecessary tolls and expanded lanes, particularly in San Clemente!		
36	Toll Roads/ Express Lanes	Hello, I am opposed to any fee-for-use HOV lanes in Southern Orange County. I frequently drive on the 91 and AVOID these lanes as they rarely move quicker than the non-toll lanes - and I am in the HOV lane often with an EV.		
	Toll Roads/	I am writing to express my opposition to the proposed toll road through the City of San Clemente.		

20	Toll Roads/	I am strangly appaged to any avtengion of the 241 gouth tell read through Can Clamenta. The Tell Deads, as a whole are	
	Express Lanes	Lanes poor business propositions. Even the 73, which serves a real need, has been a money-sink for years and has required massive debt refinancing. A 241 extension would be far less profitable and therefore a major burden on the public, whi would ultimately bear the cost of its failure. Additionally, I see no need at all for bulldozing properties in San Clemente of building freeway interchanges next to schools in order to accommodate the questionable need for this particular roadw encourage OCTA to consider other reasonable and appropriate traffic mitigation measures and not proceed with any extensions of the 241 South.	
	Toll Roads/ Express Lanes	Hi, We do not want or need any more toll roads in Orange county. They are a waste of money and use up our valuable land Please help us stop any toll roads the TCA is planning.	
-	Toll Roads/ Express Lanes	I am thoroughly against a toll road coming through San Clemente and adding traffic to our town. Our town is already fragmented by the freeway and air and noise pollution is already a problem here. Cramming a new multi level freeway down Pico is absurd. Instead, improved on-ramp metering would help immensely, especially at the Beach cities and las Ramblas north bound on ramps. Traffic is now fine through San clemente and jams at the curve toward San Juan. Usually due to massive amounts of cars merging. Not always metered (Not just at rush hour) San Juan is adding 400 new homes at La Novia/Calle Rd. Cars will all dump on to the North bound 5. Bad land use/ traffic planning. Is that roundabout really going to handle that traffic? Better local traffic solutions will help freeway function. Ortega east bound and Rancho Viejo Rd. at morning rush hour could be improved by converting to a left and left:/straight lane and changing light to all side movement. Straight and turn traffic at the same time. Traffic backs up dangerously there because there is not enough left turn lane (I am a Landscape Architect) Thank you.	
41	Toll Roads/ Express Lanes	NO TOLL ROAD IN SAN CLEMENTE. Thanks :)	
	Toll Roads/ Express Lanes	OCTA - Please do not allow the TCA eminent domain to build toll lanes. We do not need our want toll lanes in San Clemente. Thank you for your support.	
43	Toll Roads/ Express Lanes	Hello. I received this call to be on the Town hall and I wanted to thank you very much for this, it was very, very interesting and I loved the live conference and it was very informative. And I also hope that you can forward my view to the TCA. I'm in south county, San Clemente, 34 years now, and I want to express that I am for the toll road. We desperately need the toll road through San Clemente, I am against widening the freeway anymore, they are wide enough, and we don't need them any wider. Because it was just miserable listening to all the construction for the past four years, but now that it's winding down, it's getting much better. But I wanted to tell you, thank you very much for this conference, it was awesome, I loved it! I've often wanted to attend some of your meetings and also the TCA's meeting, but they're never in a convenient spot for us here in South County. I think you're all doing an amazing job! I've been raised in Orange County, Costa Mesa area since I was 6 years old, and I'm now 61 and it has changed tremendously. And it's wonderful how everything is turning out. I've worked in two local building departments so I've seen the construction of the residential and commercial with our the roads. So we do need to concentrate on the roads. Please forward to the TCA that many of us, in San Clemente, are for the toll roads. We do want it. The ones that don't want it are the people that have newly moved here. But the ones that have been here forever know what we go through on a daily basis. And now, currently, on the weekends its dead-stopped through San Clemente both ways, and worse in the summer. And it's only going to get worse. But I do want to thank you allo on't hear those blaring horns and I've noticed it, well, at the beach. But it's just awesome, I think you guys are all doing a great job and I really love this live-forum town hall conference call. It was my first, and I just love it. I wish there'd be more. Thank you very much, thanks for all your hard work, you're doing an amazing job fo	
	Toll Roads/ Express Lanes	Changing the fast lane to three per car will not help there would be less cars using it. Putting a time on it might help and letting it be open to all the rest of the time would make traffic flow faster	
	Toll Roads/ Express Lanes	I think that building an additional freeway into San Clemente would be really useful considering I go to San Clemente quite frequently.	
46	Toll Roads/ Express Lanes	I believe expanding the freeway will be a helpful future investment for communities and save drivers money.	

47	Toll Roads/ Express Lanes	I have family in South County and Oceanside and I think that expansion of the freeways down there would be a good use of resources, making transportation more efficient.	
	Toll Roads/ Express Lanes	As a member of Millennial's for Social Economic Justice, transportation planning is both critical for our families and future economic opportunities. Growing up in Irvine and attending college at UCSD, I am accustomed to the traffic conditions in South County. I appreciate OCTA's effort on improving the I-5, but we need more. Connecting the 241 to the I-5 is the type of project that signifies boldness. leadership, and empathy for our younger generation. I urge you to move forward with the project and connect the 241 with the I-5 to provide an alternate route of transportation.	
49	Toll Roads/ Express Lanes	I think that we need to improve the freeways because people need places to get that they need to get to. I think we need to invest in the freeways. One example is the freeway to San Clemente. We need to expand the San Clemente freeway. You can do it.	
50	Toll Roads/ Express Lanes	I was wondering if you guys had ever considered time management of the freeway. Perhaps it could be trucks on at specific times, maybe not during rush hours. Maybe later in the evening. Or if you set a time incentive in the express or toll lanes, where if someone didn't get on the freeway at six o'clock, from work but decided that they could hold off 'till six forty-five, perhaps they could get on the toll-road for free. So maybe some type of monetary incentive. I just know coming on the freeway going in and out of traffic, people now use the lanes, the express lanes or the toll lanes to get around traffic. And they dart in and then they dart back out, after they've gone past a few of the slower cars. So anyways, that is my suggestion. Thank you.	
	Toll Roads/ Express Lanes	Changing the fast lane to three per car will not help there would be lest cars using it. Putting a time on it might help and letting it be open to all the rest of the time would make traffic flow faster	
	General		
	General	The City of Orange would like to thank OCTA for the opportunity review the LRTP. While the city has no comments on the proposed plan, the city is excited to work with OCTA on future specific projects shown in the LRTP that affect the City of Orange.	Thank you for your comments.
53	General	I support the OCTA efforts to improve transportation in South OC.	
-	General	I'm 73. I'll be dead by 2040. Please please please please do something NOW so I don't have to drive in our horrible OC traffic for the rest of my life.	
55	General	In dealing with Metro (LA), Parking seem to be the big issue. mainly at boarding sight.	
56	General	Thank you!	
57	General	I am interested in expanded transportation services for seniors.	
58	General	I am concerned about the increased traffic noise and pollution on Bake Parkway. There are about 3 blocks of homes that back up to this parkway and it has become unbearable. No one even uses their backyards because of the noise. Also fuel particulates are carcinogens. The homeowners that are impacted would like to see something done to mitigate this problem such as a 12 ft wall with some sort of soundproofing. Please consider this when making your long range plans. I notice that this has been done in other locations in our city where traffic noise exceeded decibels allowed. This is the case on Bake parkway. Thank you for your kind consideration.	
59	General	Providing affordable, eco friendly, public transportation needs to be the focus of the project. We need to embrace talented people with experience and vision to attain these goals. Cost effective and attainable need to be the part of the formula of the project.	
	Highways		
60	Highways	The improvements proposed for the 91 corridor are great to read about, but this absolutely cannot wait until 2040. I support moving these projects to the top priority.	The 2018 LRTP prioritizes implementation of projects and programs consistent with
61	Highways	Yes, I have two suggestions for better traffic management. Maybe stricter driving law if a person has too many driving violations maybe their driver's license can be suspended and therefore it would lead to less car congestion. I've seen a lot of driving violations within the last, I would say four years, and no regard for straight law. Also, maybe if the bus fair can be lowered. I did ride the bus and I took a look at my finances and found that the bus transportation and car transportation turn out to level out each other, and to be the same. So maybe if the fair could be a little bit lowered, that would motivate some people to not use their own car. Maybe.	the Next 10 Plan. This includes the OC Go Freeway Program and coordinating with Orange County's 34 cities and the County of Orange on implementation of the Master Plan of Arterial Highways. Additional projects from completed and

62	Highways	Yes, we desperately not much was talked about North Orange County, and we desperately need Connor Canyon Road opened up that meets the 57 freeway. There's too much congestion on our side streets, only having Lambert, Imperial to get on the 57 freeway. Also, there's so many people going to Carbon Canyon that it also backs up on Lambert. There needs to be some other transportation modes to get them through the Canyon; ridesharing or something else because it's a nightmare, and more houses are being built, and have been built and it's not getting any easier. Thank you.	publicly vetted studies can also be considered for the Trend 2040 scenario if they align with the LRTP goals and can be afforded within forecasted revenues. Specific design options for each project will be considered through the project
63	Highways	Good afternoon, I am not sure if this is the appropriate place to present perspectives and ideas, but wanted to give it a try. I am a chief appraiser at a real estate appraisal management company and have spent many a day on the freeways over the years. I have become very interested in infrastructure projects over the years, to include freeway projects. So I wanted to be able to provide an opinion on a few of the projects identified in the LRTP, and one that is not. So below are a few of my thoughts. I am not sure if they will assist, but I do believe that they represent valid concerns. 1. I am a bit concerned about the I5 - 405 to 55 project. There are two options remaining, 2A and 2B. I am a strong supporter of 2A. The main reason why is based on the I5 approach to the 55 Frwy. In 2A, the full approach would have 7 GP lanes, 4 GP lanes (and 1 CP lane) for I5 North, and 3 GP lanes for N and S 55 Frwy. The 2B option maintains the current 6 GP lanes, which is woefully inadequate and doesn't correct the current issue of merging NB on ramps from Red Hill Ave and Newport Ave. To me, it would be totally misguided to spend millions of dollars on Option 2B, and not correct the bottleneck that currently exists because of insufficient Aux/GP lanes from Red Hill Ave to the 55 merge. I strongly support Option 2A and believe it is the best way to move forward by providing the best future capacity for OC drivers. I do not want to have freeways that are similar to those in LA County, with inadequate shoulders and lane widths. 2. With regard to the EI Toro Rd Interchange project. There are multiple options that have been provided as options for this project. The only concern that I have for this project involves those that maintain the NB EI Toro Rd to the NB I5 Frwy loop ramp. Currently, that loop ramp does not create an Aux/GP lane, but merges directly into an existing GP lane. Today the number of NB GP lanes to the South of this location is less than what will be when the additional lanes are added for Project C, the I5 pr	development process, which includes public review opportunities. Additionally, studies of system needs, regional coordination opportunities, and considerations of system management options will be conducted, as indicated in the Short-Term Action Plan.
64	Highways	That should allow for the NB EI Toro to NB I5 Frwy loop on ramp to "create"/"use" the 6th GP lane that is currently created by the current SB EI Toro Rd to NB I5 on ramp. The full plans for each of the options have not been released, so my concerns for this project may already be addressed in the plans yet to be released. It is just not apparent in what has been released so far. 3. The draft LRTP mentions "Freeway Chokepoints", and I wanted to present an opinion on a current freeway chokepoint near South County. With the recently completed addition of the freeway project that added 1 HOV lane from Avenida Pico to Coast Hwy provided necessary relief to drivers in that section of the County. However, it has provided insight into a specific chokepoint on the I5 NB from Camino de Estrella to Camino Capistrano. This area of the NB I5 slows down, especially on weekends and rush hour periods. This is due in most part to having 2 on ramps, at Camino Las Ramblas and at Stonehill Dr, without adequate Aux/GP lanes. To cure this chokepoint, additional lane(s) should be added. The best solution would be to add a GP/Aux lane from the Stonehill Dr on ramp to the Ortega Hwy off ramp. The traffic always opens at/near the Camino Capistrano off ramp. A second option may be to have the partial Aux lane that currently exists at the Stonehill Dr on ramp extended all the way to the Camino Capistrano off ramp. I do not believe that would provide a perspective on that section of the SI 5 Frwy. Most likely you are already aware of this slow point on the freeway. Thank you so much for allowing me to provide these comments/perspectives. I apologize if this is the wrong forum for this small presentation. Please notify me if this is forwarded to the proper departments.	
	Land Use Planning		
	Land Use Planning	Stop developers from Building thousands of high-rise condominiums with no consideration for transportation. Typical example Irvine, Chino Hills	The 2018 LRTP highlights that there are currently about 650,000 daily work
66	Land Use Planning	The best transportation plan is a good land use plan that encourages, and provides data to support, the zoning to build dense housing and commercial development around transit. OCTA can also find ways to encourage new housing to be constructed on land that it currently owns.	commutes into Orange County, and that this is expected to increase by about 25 percent by 2040. The LRTP tries to

67 Land Use Planning This growth results in more travel demand, and congestion will worsen without improvements. However, there are limited opportunities to expand roadways and highways without acquiring new right-of-way. Other factors, such as the cost of owning, support Orange County's economy, but parking, and maintaining a vehicle, and the availability of transit options and the competitiveness of transit travel time compared to driving, also affect how people choose to travel." The lack of enough local housing assumed by the LTRP is not inevitable, because the county and city governments can encourage and zone for the construction of large amounts of new housing near and around transit hubs. Sprawl is not inevitable, and there is a need to reduce vehicle miles travelled (VMT), especially for single occupant vehicle trips. Simply put, there needs to be more housing built closer to jobs and transit in Orange County. The Regional Housing Needs Assessment numbers for Orange County need to be stated and discussed as part this discussion in the LRTP, along with state and local policies for increasing housing production such as density bonus law, accessory dwelling units, affordability incentives, etc. The taxpayer cost to subsidize the construction affordable housing close to jobs and transit within Orange County would be less than adding more freeway lanes, especially when factoring in the pollution, fuel use, congestion and wasted time caused by long commutes. High Cost of Housing, pg. 110- "A lack of accessible and affordable housing forces many individuals who are employed in Orange County to live in surrounding counties. While Trend 2040 proposes a multi-modal investment strategy that maintains 2015 conditions despite growing travel OCTA facilities that may improve demand – thereby improving job accessibility compared to the 2040 No Build scenario – more can be done. One strategy included in Trend 2040 is the use of priced-managed lanes to improve travel conditions for intercounty trips, especially if coordinated with neighboring counties and ridesharing programs. Realistically, however, local land use decisions likely create the best opportunities to reduce projected inter-county travel growth, and OCTA has limited influence over these decisions. It is possible that locating employment and housing closer to Metrolink stations and transit hubs, and developing higher- density and more affordable housing within the county, will help moderate if not eliminate this long-standing Orange County issue." OCTA can promote local land use more favorable to transit by performing studies and modelling of development future scenarios of higher densities around transit hubs, showing the impacts to transit ridership and traffic of these different scenarios. The best transportation plan is a good land use plan that encourages, and provides data to support, the zoning to build dense housing and commercial development around transit. OCTA can also find ways to encourage new housing to be constructed on land that it currently owns. There are many examples of transit agencies around the country who offer their land for reduced prices or leasing as part of for affordable housing development next to transit stops.

accommodate this travel demand to also recognizes that additional housing within Orange County could help to reduce the number of work commutes from surrounding areas. OCTA is coordinating with local land use agencies to explore opportunities and strategies that help to reduce vehicle miles traveled. These ongoing coordination efforts are captured in the Short-Term Action Plan. as well as OCTA's own studies to evaluate development opportunities at transportation/land use connectivity. Additionally, OCTA will participate in the development of the Southern California Association of Government's 2020 Regional Transportation Plan/Sustainable Communities Strategy that will identify regional strategies for reducing vehicle miles traveled.

68	Land Use Planning	In the Challenging Emissions Standards (pg. 69), new statewide standards designed to reduce vehicle miles travelled are described as an obstacle to progress." Senate Bill 743 (SB 743), for which rulemaking is still in development, changes how transportation impacts are measured, removing focus on individual vehicle delay. The new rules are expedited to have a significant impact on land use and transportation planning. Thanks to early action and acceleration of the OC Go Freeway Program, there are only a few remaining freeway projects that could be hindered, but future long range plan scenarios beyond OC Go projects will most likely be impacted." Perhaps it is a good thing that some future freeway projects will be impacted and hindered under SB 743, because non-freeway alternatives need to be encouraged. The OC Transit Vision document (pg. 8-8) provides a different, more far-sighted perspective on SB 743: "Another, more recent effort by the state to promote TOD through changes to CEQA processes is Senate Bill 743, which will soon require transportation impacts to be analyzed using vehicle miles traveled rather than vehicular level of service. This change will benefit developments in walkable, transit-oriented locations generating fewer impacts, and will encourage use of transportation demand management strategies." The OC Transit Vision's chapter 8 on Transit-Supportive Dasign and Policies, lays out an excellent use for transit-oriented development in Orange County, defining transit-supportive land use on pg. 8-7 as: Transit-Supportive Land Use When considering the relationship between transit, buildings, and neighborhoods, it is useful to think in terms of the "6 Ds". Each of these is essential to building transit-friendly environments: Destinations: Land uses should be grouped together to form busy destinations, and destinations should be in locations that are easily accessible to transit. Distance: Origins and destinations should be roleatively close to genter and connected by low-deensity. A mixture of land
		residential, in blocks that were previously only commercial or industrial use. The stations of Irvine and Anaheim are both examples of train stations surrounded by existing commercial and industrial development, with residential buildings a relatively long walk from the station.

69 Land Use Planning, Met	Infill development around such stations could become catalysts to renew employment opportunities in previously exclusively commercial and industrial neighborhoods, reinforcing economic development. A uniquely Orange County urbanism will embrace the fact that the county is poly-centric, with a network of dense cores of distinct cities, linked together by transit corridors. Designing in a Changing World, pg. 16- "policies that enhance land use diversity and connectivity with active transportation facilities and transit services" needs to be clearly described by the LRTP. Orange County Planning Activities, pgs. 18 and 137 - "Sustainable Transportation Strategies- Coordination with partner agencies on implementation of sustainability strategies." "Joint Development Studies- Evaluate opportunities for joint developments at OCTA transit terminals to improve transit facilities and connectivity with employment/housing." A big part of this would be coordinating with city governments on encouraging dense development and zoning around transit. Regional Passenger Rail / LOSSAN & Metrolink Additional Service and Capacity: Metrolink rail transit, pgs. 40-41: On Metrolink's three lines that run through Orange County, rail ridership has increased from 3.8 million 2006 to nearly 4.6 million in 2015, a drop of 31% (pgs. 36-37). Metrolink rail is thus a shining example of mass transit that works in Orange County. On the Amtrak Surfliner, which passes through Orange County, total annual ridership has increased to nearly 3 million per year, up from 2.6 million in 2010. To increase ridership, the Southern California Regional Rail Authority (Metrolink) must start offering more frequent service, including "reverse" direction as traditional rush hour service to and from Downtown Los Angeles. There also needs to be "off-peak" trains added during mid-day and late nights. More frequent service will also result in better utilization of Metrolink's rolling stock. OCTA needs to encourage Metrolink to look for ways to greatly increase the	
Commuter Rail		
70 Commuter Rail	I am interested in more Metrolink hours and expansion of service.	OCTA is the Managing Agency for the Los
71 Commuter Rail	I ride the Metrolink daily from Tustin to Downtown LA and back. While there is a wide range of options for traveling downtown in the morning, there are very few trains in the evening - the last Metrolink leaves at 6:40, and later Amtrak trains do not stop at Tustin. A Metrolink train leaving downtown in the 7:00 or 8:00 PM hour would greatly expand the versatility of the commuter rail as many businesses operate on 10-7 core hours. I would also like to see an expansion of service to and from Los Angeles on weekends, especially a late train (11:00 PM?) to make it easier for Orange County residents to attend events in the city.	Angeles - San Diego - San Luis Obispo (LOSSAN) Rail Corridor Agency, a joint- powers authority that is responsible for administrative and oversight of Pacific Surfliner service along the 351-mile coastal rail corridor. As the managing
72 Commuter Rail	Local cities collect data when they implement permit parking zones. This data can be used to start up city based shuttles to local shopping entertainment, and grocery stores. This allows funding from four services; OCTA, local city, businesses and commuters. From Corona to the other side of the mountain have a highway just for motorcycle. This might be the perfect compromise to build a highway and stay below environmental impact. For Metrolink service, increase service mean that return shuttles from LA will leave later then 4pm. Having a return train so early defeats the purpose of Metrolink.	agency, OCTA coordinates with the Southern California Regional Rail Authority (Metrolink), the San Diego's COASTER commuter rail service, Amtrak, and freight rail agencies. OCTA is also part of the Metrolink joint-powers
73 Commuter Rail	My question has to do with the Metrolink and Coaster train. I had heard in the last few years, I can't nail down exactly but it's been a while, that there was going to be a coordination of the schedules between Metrolink and the Coaster in Oceanside so that you can take one train to Oceanside and get on the next without having to wait for several hours to do. I go down to San Diego frequently and I have found that has not happened in any way, shape, or form, and there is no way you can go down there and back coordinating the two trains. The only other option is Amtrak, but from Irvine to San Diego and back its 54 dollars round-trip and that's a bit expensive. So what I end up having to do is I drive down to Oceanside and take the Coaster down and can't even take Metrolink.	authority, which administers Metrolink commuter rail operations within Orange, Los Angeles, Riverside, San Bernardino, and Ventura Counties. Through coordination with the LOSSAN Rail Corridor Agency and Metrolink, OCTA is supporting efforts to enhance commuter

74 Commuter Rail	I just want to echo the other callers who said thank you so much for doing this, this is really an amazing opportunity to hear what was going on. I have two questions, I'm so happy to hear that Metrolink is going to be expanding by 60% and I was wondering what the timetable was and I'm interested in more evening trains returning from Los Angeles to San Clemente. It's very hard to work in LA during the week, and make a 6:40, and when I work during the weekend, I can't make a 4:40 and it forces me to drive. And I hate that, so I'm looking for ways to take the train more, and I'm curious when the evening trains might be added. And because I live in San Clemente, I'm wondering if it could stop at the pier just a little bit more often than on the weekends. I walk past the pier to get to North Station, so what would be a little bit more than a quarter of a mile for me becomes like a mile and three quarters, something like that. So I'm wondering if you could add more stops there. But again I want to thank you so much for doing this.	and intercity rail services, as indicated in the 2018 LRTP Trend 2040 project list. Additionally, the LRTP's Short-Term Action Plan identifies OCTA's continued coordination activities with local jurisdictions to improve connectivity between rail stations and surrounding destinations, which may include land use planning and/or connecting first/last mile services.
75 Commuter Rail	Transit Use: Pg. 15: The transportation system performance summary metrics show only 165,000 to 174,000 transit trips daily in 2040, compared to 149,000 in the base year of 2015. At present, only 2% of daily commutes in Orange County are by public transportation. The LRTP assumes this percentage will barely increase, if at all, by the year 2040. OCTA must explore all was to increase the amount of transit idership, and push forward the projects described in the OC Transit Vision. With transit- oriented development around rail stations and major bus corridors, the amount of transit use could be an order of magnitude greater. The most effective, and economically valuable, bus and passenger rail systems have significant concentrations of jobs, housing, retail, public services and amenities clustered around the stations and corridors they travel. The neighborhoods around these stations must also be walkable. Pedestrian-friendly neighborhood amenities around the train station would include new pedestrian-only walkways, to minimize interaction of pedestrians and automobiles. Other West Coast metropolitan areas with a far greater percentage of transit use than Orange County offer an interesting comparison. The Seattle metropolitan area has a population similar to Orange County (slightly more than 3 million), but has over 700,000 weekday transit trips compared to less than 150,000 for Orange County. The Vancouver metropolitan area, which has a smaller population of 2.5 million yet has embrace strong TOD policies over the past several decades, has nearly over 1.2 million, or roughly half that of Orange County. However, TriMet's average weekday ridership of over 300,000 is double that of OCTA. Housing and Transit Oriented Development (TOD): Employment, pg. 24-* Most Orange County residents both live and work within the county (58 percent). However, about 657,000 people live elsewhere and commute into Orange County to work, compared with about 490,000 residents who commute to work outside of Orange County. T	

76 Commuter Rail	These include faster service (up to 125 miles per hour on Orange County lines), more frequent service (starting with 30- minute local and hourly express service between Los Angeles and San Diego, with stops in Santa Ana and Laguna Niguel/Mission Viejo, by 2022), electrification (as far south as Laguna Niguel/Mission Viejo), and greater multimodal integration The California High Speed Rail Authority plans to extend high-speed rail service from San Francisco to the Anaheim Regional Transportation Intermodal Center (ARTIC) by 2029, with a possible station in Fullerton. A blended approach calls for high-speed trains to share the LOSSAN corridor with Amtrak and Metrolink. Toward that end, interim improvements include grade-separation of seven crossings in Orange County, benefiting all three operators. Consistent with the Metrolink and state plans, the LOSSAN corridor would be electrified north of Anaheim The OCTA Nonmotorized Metrolink Accessibility Strategy recommended a range of pedestrian and bicycle access improvements within Metrolink station areas. It also recommended countywide/systemwide access enhancements including a consolidated bike locker program. Currently, all of the above plans remain largely unfunded. As the local managing agency for the LOSSAN Rail Corridor Agency (and owner of more than 40 miles of the Orange County railroad), OCTA has an important role to play in advocating for funding. The agency can also move forward to partner with cities on projects including access improvements and grade separations. Laguna Niguel to San Juan Capistrano Passing Siding Project, pg. 143: It is commendable that OCTA, in coordination with Metrolink and the cities of Laguna Niguel and San Juan Capistrano, is adding 1.8 miles of new passing siding railroad track between the Laguna Niguel/Mission Viejo Metrolink Station and Trabuco Creek in San Juan Capistrano. The passing siding track will run adjacent to the existing track, connecting to it at each end, which will allow trains traveling in opposite directio
77 Commuter Rail	The line could be also electrified with overhead catenary infrastructure powering all-electric locomotives. Interstate 5 Corridor BRT: Interstate 5 Corridor, pg. 143 – Freeway BRT between Fullerton Park-and-Ride and Mission Viejo/Laguna Niguel Metrolink Station Why not just invest in LOSSAN upgrades to improve Metrolink and Amtrak service along this corridor, instead of the expense of adding BRT lanes to the I-5 freeway? More frequent train service along this existing rail corridor would add more passenger capacity than BRT. 2028 Olympics: Regional Planning Activities, pg. 19 and 138- "Coordinate with Metro on preparations for the 2028 Olympics" An important consideration for mass transit and commuter rail in Orange County is the 2028 Olympics. Anaheim, Fullerton and several other locations in county hosted events during the 1984 Olympics, and should do so again for the 2028 games. The region's transportation infrastructure needs to be built up to global standards to handle the large numbers of visitors from around the world. Metrolink upgrades including electrification, as well as new transit lines in Orange County, need to be completed before the 2028 Olympics. Goods Movement: Despite the large volumes of freight is moved within and through Orange County, there is very little mention of goods movement in the LRTP draft. The brief mention in Regional Planning Activities, Trade Corridors/Goods Movement (pg. 137) seems to pass this responsibility to other regional agencies: "Coordinate primarily through SCAG and Metro to plan for projected growth in regional goods movement." Critical east-west routes in Orange County. Similarly, a significant fraction of U.S.Awand the BNSF Southern Transcon main line between LA and Chicago). In fact, a significant fraction of the nation's trade with Asia is carried by trucks and trains along this east-west corridor through northern Orange County. Similarly, a significant fraction of U.SMexico trade moves through the county on Interstate 5. Efficient goods movement is of course

78 Commuter Rail	A focus of the state of California's investments in passenger rail is to improve upon the 'LOSSAN' corridor between San Luis Obispo and San Diego via Los Angeles. LOSSAN is used by both the Metrolink commuter rail and Amtrak's Surfliner, which is the second-busiest Amtrak route in the country after the Northeast Corridor between Washington, D.C. and Boston. CalTrans and BNSF have been working on the state-funded \$160 million, 17-mile triple-tracking project between Soto Junction (near Downtown LA) and Fullerton since the late 1990s. Presently the corridor is triple-tracked the entire 25 miles between LA and Fullerton, with the exception of the Rosecrans-Marquardt road crossing in Santa Fe Springs (LA County) which still has two tracks. This crossing will be upgraded to three or more tracks once a grade separation project is finished in 2022. While the Rosecrans-Marquardt grade separation project is in LA County, it is vital for improved rail service in Orange County. The tracks between LA and Fullerton are owned by BNSF and shared by passenger (= 50 trains per day) and freight (= 60 trains a day). The Southern California Optimized Rail Expansion (SCORE) program includes construction of a fourth track between Los Angeles and Fullerton, and a third track between Fullerton and San Bernardino by 2028. OCTA needs to support SCORE program in any way possible. Part of the SCORE program is the Fullerton Junction Interlocking Project, which did not get SB1 funding in this first round. With a total project cost. \$130,000,000. Caltrans applied for \$75,000,000. BNSF Railway Company would carry out the work. OCTA needs to support, and perhaps help fund, the Fullerton Junction Interlocking Project. OCTA needs to do whatever it can to help fund and expedite the rail infrastructure and service improvements described in the OC Transit Vision, pgs. 6-10 to 6-12: A number of entities are planning improvements to the LOSSAN corridor and the remaining Metrolink corridors in Orange County Highlights of these efforts include the	
Multi-Modal		
79 Multi-Modal	Suggestions: 1. Look into replacing stop signs and some signals with roundabouts. (There are several pros and cons to this.) Teaching people how to properly use these is a tough issue. 2. Work with the developers and school district to locate schools closer to their students. Try to bring back walking or bike riding to school and reduce traffic. 3. Improve mass transit in the area. Look into adding more buses (or vans) that run early morning until late night. Maybe an Uber-like van service can get people around town with less traffic. 4. Look into making Bake into a short freeway connecting the 5 to the 241.	The 2018 LRTP Short-Term Action Plan identifies a number of activities to improve multimodal options for Orange County travelers, including development of the OC Active plan, study of transportation demand management opportunities, as
80 Multi-Modal	I would like to see more public transportation options, ride sharing incentives, and more people required in carpool lanes (3). I would like to see less single driver exemptions in the carpool lane and less pay-to-ride options, like toll lanes or roads. I believe incentives would be much more effective and entice more drivers to use them than paid options.	well as vanpool and park-and-ride services. Additionally, OCTA will continue coordinating with local jurisdictions on roadway improvements.
81 Multi-Modal	We definitely need to push harder towards bike share programs and ride share programs.	
Transit		
82 Transit	Earlier start times on the 60 going westbound to connect with the 57 northbound on 17th and Bristol more school trippers. Thankful for the at drivers on the 60 and 57 making early morning into work on time.	The 2018 LRTP identifies an "evolving transit market" as one of the key
83 Transit	You guys need to have another LRTP info meeting in SOUTH ORANGE COUNTY. We will NOT drive all of the way to Orange. Please schedule one in Laguna Niguel or Mission Viejo to cover south county. 2 words for you: LIGHT RAIL. We need a light rail system that integrates all south Orange County communities because I-5 is never going to be able to handle the load.	transportation challenges facing Orange County. To address declines in transit ridership experienced over the past several years, OCTA is implementing the

84	Transit	quality transit between Brea Mall and Downtown Santa Ana 17th/Westminster & Bristol Corridor – High-quality transit between the Goldenwest Transportation Center and the University of California, Irvine Main Corridor- High-quality transit between Anaheim Regional Transportation Intermodal Center and the South Coast Plaza Park-and-Ride Extension of LA Metro Light Rail Lines to Orange County: Short-Term regional planning activities mentioned the following possible future rail transit connections with LA Metro light rail system, pg. 138: "Continue dialogue with Metro and appropriate agencies to identify impacts to, and opportunities for, connectivity with Orange County's transportation network." Extension of LA Metro Light Rail, West Santa Ana Branch/Pacific Electric Right-of- Way- LA Metro Rail is planning to extend the existing Gold light rail line into Artesia via the abandoned Pacific Electric West Santa Ana branch right-of-way, which continues all the way to Santa Ana. This light rail line should be further expanded into Orange County, to connect to the OC Streetcar in Garden Grove as well as the Harbor Boulevard rapid transit line. This project would be an excellent inter-jurisdictional cooperation with a wide regional benefit, and act as a compliment to Metrolink service between Los Angeles and Orange counties. Extension of LA Metro Light Rail, LA Metro 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." This line should continue east from Whitter to La Habra and Brea , utilizing the historic Pacific Electric right-of-way now owned by Union Pacific. A connection south from La Habra to west Fullerton is also possible, along the existing railroad right-of-way. The map of OC Loop bikeway on pg. 74 shows the Union Pacific track through La Habra and Brea being converted into a bike path. The bike	transit resources in areas that have the
85	Transit	I didn't see any mention of bringing back the CenterLine Project, which the city of Irvine killed off 15-years ago. How about reintroducing it again?	
86	Transit	I was wondering if the OC Streetcar can be extended to the LA County Line for a cross-platform transfer to West Santa Ana LRT branch being constructed by LA Metro	
87	Transit	Hi, I just wanted to thank you for every single project and plan that you guys have in place to get around Orange County better, I love that. I'm a native Orange County resident, I've been here all my life and I don't want to move. But I was noticing, however, that in other cities, and I know that we're not built in an L-shape, everyone else has a loop, but I know that you have inherited this car-driven environment and I know you're doing the best you can. But I just want to know, all these band-aids that we're putting on; are we ever going to build something like an "L" like in Chicago? I know I live in La Habra where no one's going to come service me, ever. But I know if I can get to Fullerton Transportation Center, that I can get on an "L" anytime and I can just go and go and go. Just have it be above ground, have it be all around Orange County were you just ride in this big-ol' "L" until you get to where you're going. That would be neat. Okay, thank you!	
	Transit	1. Bus service to LAX from Irvine transportation Center along with long term parking 2. Metro link service from LA to South Orange County later in the evening. I could use it after seeing a show downtown LA.	
89	Transit	How will this defeat the environment? We should expand trains and more availability for trains and buses. Expand the use of bikes!	

90	Transit	The 2018 California State Rail Plan calls for substantial electrification of much of the state's passenger rail network. Orange County Light Rail and Rapid Transit Projects: The below projects listed on pg. 143 are also described also as Transit Opportunity Corridor Lines in the OC Transit Vision (pgs. 5-12 to 5-15): Harbor Boulevard Corridor Rail Transit Line- North Harbor Corridor – High-quality transit between Cal State Fullerton and the Santa Ana Regional Transportation Center South Harbor Corridor – High-quality transit between 17th/Westminster and Hoag Hospital Newport Beach A rapid transit line along the Harbor Boulevard corridor is long overdue for Orange County. One of our most important transportation arteries, improved transit service would benefit communities and businesses by promoting economic development and new housing around the line's stations. It is disappointing that OCTA recently decided not to proceed with rail rapid transit options for the Harbor
		Boulevard Corridor. This project needs to be revived. The Rapid Streetcar option was recommended by the final draft of OCTA's Central Harbor Boulevard Transit Corridor Study (December 2017). While this would be a vast improvement over existing bus service, OCTA needs to study an elevated rail rapid transit option for the Harbor Boulevard corridor. Elevated rail transit is far faster than rail vehicles at street level, and avoids traffic impacts entirely, greatly improving on-time performance. In order to be competitive with driving, rail transit must be fast and not have to wait for auto traffic to pass at intersections. Successful examples in North America of elevated rapid transit include Miami's Metrorail and Vancouver's SkyTrain. A subway option should also be studied, as future tunneling technologies could help bring down costs of underground rail line construction. The Harbor corridor rail transit line should eventually continue south to the South Coast Plaza and John Wayne Airport, more or less route of the OC CenterLine concept that was proposed in the late 1990s. Fullerton and Anaheim will be served by California High Speed Rail service, making these two cities a natural feeder for a rapid transit line originating at the Fullerton Transportation Center. Many tourists could take the Metrolink, Amtrak, or California High Speed Rail train to Fullerton or Anaheim, and then take the rail transit to Disneyland. Anaheim Regional Connector- This proposal, connecting from Anaheim Regional Transportation Intermodal Center (ARTIC) to the Anaheim Resort along Katella, needs to be revived. This line should be integrate a light rail line or rapid elevated /subway line should be studied for the Anaheim Regional Connector- This proposed light rail project between Downtown Fullerton and California State University-Fullerton needs to be revived, and integrated into Harbor Boulevard Light Rail if possible.
91	Transit	Hi, I'm requesting more [information] about services for disabled people. I'm in a wheelchair and I ride the buses, as well as I am an Access customer. And as the bus services that are contracted here in Irvine where I live, that is, the amount of no-go areas for Access in this area type of bus services. I know you carefully mandated too and your hands are tied as to where Access can go, but my question is, what are your plans for more service for disabled people in light of all the contracts of the bus services? Because I participated years ago when you shut down a few lines and at the time you had said you were able to [give away a lot so disabled people can?].
92	Transit	I missed, I had a doctor appointment at, 2:00 OCTA got me there. Then at 7pm, music chorus, OCTA got me there. Since I am disabled, I have a need, my need is transportation. My input: a. cross routes, just not often enough b. you greet us at the front door. 1- My concern is to exit is appropriate at the same door. Stop let us off before you board anymore. Exception to the rule: wheel chair. Which ever door has the lift. This is my biggest concern. 2- no phone calls. 2- no smoking at the bench. This "experience" matters I do recall 1) too many people without seats, 2)noise level outrageous. I have seen these things change for the better. My last thought respect for the one in control after all he is our transportation.
93	Transit	Hi there. A couple of things 1) there are too many homeless and transients blocking the seats at the Fullerton Transportation Center Terminal! They have their bags all over the seats, and many of us have to either stand or find seats too far away! I don't want to be bothered, so please FINALLY do something about this OK? 2) We have to wait too long for the 143 La Habra going North, (1 hour and 15 minutes) sometimes! Can't they divert one of the 43 North Court Buses all the way to two (2) lights past IMPERIAL where they turn West? That would cut at least 1/2 an hour off our waiting period, and those 43 Buses often have nobody on them anyway!
94	Transit	I would like bus service to LAX from Orange County. I know you had one from Irvine Transportation Center which I used but now it has been discontinued.
95	Transit	Don't see a plan for Electric Buses in the plan. We need to get off LNG and CNG ASAP to cut CO2. Also need smaller corridor buses off major roads.

96	Transit	SoCalGas recommends that the draft LRTP include mention of near-zero natural gas buses in addition to zero-emission electric buses as solutions for helping reduce greenhouse gas emissions from the transportation sector. SoCalGas collaborated with Cummings-Westport to develop a 0.2 g NOx/bhp-hr natural gas engine that is commercially available and currently being deployed. This engine substantially reduces emissions from operation compared to regular diesel engines and should be included for mention in the draft LRTP. Thank you.	
97	Transit	Having more routes	
98	Transit	Improve & Expand Bus Service Within the O.C. & Into L.A. County, & Plan to Expand the Proposed Street Car into Cerritos (L.A. County) when Metro is Building the Santa Ana Line.	
99	Transit	There is no bus service to the anticipated new center being built on Commerce Centre Dr. near Bake Parkway. It will house a "Performing Arts Center", "Sr. Center", and "Police Department". How are the residents supposed to get there?	
100	Transit	How is OCTA going to insert some socioeconomic equity in its transit system? As in, promoting more frequent bus service in communities of color like Santa Ana? As well as providing dedicated bike lane infrastructure in communities that use them for communities rather than for recreation.	
	Technology		
101	Technology	Would you support a mileage-based fee to help manage growth in trips and congestion? " First they say it could lead to an increase in the number of car trips, then make the assumption that it does, and then require a response based on an assumption that is not necessarily true. It appears that OCTA makes the assumption that autonomous vehicles will have the same number of passengers per vehicle as at present. It is more likely that there will be ride-sharing using autonomous publicly-available minibuses, with no set routes, picking up and dropping off passengers on demand. In this case there will be fewer vehicles on the road. The minibuses might be operated by a public entity (e.g., OCTA) or a private enterprise.	improvements to a countywide network of synchronized signals. Signal synchronization is a proven technology that has realized significant benefits to travel speeds and delay reductions within

102	Technology	Your website discusses signal synchronization as if it's new technology. It was used at least 50 years ago in the UK on the A4 between London Heathrow and Central London. Its usage may be much older than that. Artificial Intelligence (AI) is in development, with much of the work being done at Carnegie-Mellon University, and tested in Pittsburgh. They have also been tested in Milton Keynes in the UK. Eventually, signals controlled by AI over a larger region (e.g. a city), will allow platoons of vehicles to travel without interruption through the city. This will provide a large increase in surface street capacity. A significant percentage of traffic on limited-access roads is actually local traffic, and this will no longer need to use freeways or toll roads. There are many other technologies that will increase road capacity, such as adaptive cruise control (ACC), which will be on every car sold in the U.S. within the next few years. Concentrate on increasing capacity, not on building new roads. In particular, don't more toll roads or managed toll lanes.
103	Technology	The online OCTA Survey defines it as "Match the green light time for a series of intersections to enable the maximum number of vehicles to pass through and reduce stops and delays". Provided that most of the traffic flow is in one direction over a given period (morning or afternoon rush hour, for example), the OCTA Survey definition is not the best approach, because it encourages cars to drive as fast as possible before the signals turn red. Along a given stretch of road the signals should be sequenced so that a car driving below the speed limit will pass though green lights for the longest distance possible. When the traffic flow changes direction at a different time of day, then the signals are automatically re-sequenced accordingly. The Intercounty Commuting Patterns map on page 24 shows a clear imbalance between OC and San Bernardino County, Riverside County and San Diego County, suggesting that there is dominant flow in one direction in the morning, and the opposite direction in the afternoon. Signal sequencing was done on many roads in the UK into and out of London sixty years ago. OCTA appears to be just getting around to a very simple, and not very efficient or safe, form of synchronization. Chapter 5, Designing in a Changing World, provides a brief summary of the application of new technology, but the authors seem to go out of their way to imply that technology will increase traffic rather than reduce it. For example, on page 121 the authors state "Also, if autonomous vehicles are incorporated into TNC (transportation network companies, such Uber and Lyft) and goods movement fleets, the removal of labor expenses would reduce the cost of providing services. Similarly, reduced labor costs with autonomous buses and heavy trucks could allow for increases in service levels." The implication here is that there will be more vehicles on the road. But if TNCs include ride-sharing, and more people ride buses, that would mean fewer vehicles overall on the road. But the authors don't want to take the logic that fa
104	Technology	OCTA should also encourage the deployment of electric trucks. The OC Goods Movement Study recommendations is mentioned on pg. 135, but when was this study last updated? Recommendations from this study should be provided in the LRTP. Short-haul freight rail between San Pedro Bay and the Inland Empire, currently under study by the Ports of Los Angeles and Long Beach, would reduce truck traffic on Interstate 91. To reduce air pollution alongside freight rail tracks and rail yards, electrification of freight rail must also be studied. Electric Vehicles: It is commendable that OCTA will support electric vehicle charging infrastructure at Metrolink stations and OCTA facilities (pg. 111). However, OCTA needs to find ways to support charging stations at many other locations both public and private. Zero-emissions vehicles are briefly mentioned in the New Technologies section on pg. 117, but given the same amount of space as very far-fetched ideas such as Hyperloops and flying cars. Zero-emissions, presumably electric, buses are mentioned only very briefly on pgs. 69, 111 and 117. There should much more discussion of electric buses, including a discussion of different types and electric bus deployments at other transit agencies worldwide. The City of Anaheim already is planning to purchase electric buses, and OCTA as a whole should do the same.
105	Technology	It seems to me that far too little attention is given to "Emerging Technology", specifically Autonomous Vehicles and Connected Vehicles. Rather than spending billions on adding freeway lanes, the same capacity increases could be potentially realized at a small fraction of the cost by - for example - dedicating a lane to Connected Vehicles that would travel at greater speeds with minimal separation (potentially even in narrower lanes). 2 - 3 times as many vehicles could be accommodated in the same space as typical vehicles. The cost savings would be enormous, and the technology is not too far off (and hopefully regulations are not far behind).

106	Technology	I took the OCTA survey a few days ago. It appears that from this survey the public can learn more about OCTA's interests than OCTA might learn about the public's interests. The first thing to learn is that OCTA's application of new technology and ideas is firmly set in the 1960s. In "Section 2 Improvements", we are asked to rank eight items, only two of which involve technology that wasn't available sixty years ago. "Signal synchronization" was being done in the UK around 1962. As one example, it was used on the A4 road from London Heathrow into Central London. Using progressive synchronization during morning rush hour, you could drive from Heathrow towards the center of London and the traffic lights would be green all the way (https://en.wikipedia.org/wiki/Traffic_light_control_and_coordination). Waves of cars would sweep into London provided that they all kept at a speed of about 50 mph. Progressive synchronization was reversed in the afternoon. The Improvements section defines signals synchronization as "Match the green light time for a series of intersections to enable the maximum number of vehicles to pass through and reduce stops and delays". That is not the best way to do it, because it encourages drivers to speed to get through as many green lights as possible before they all turn red. In the same section there is an option "Expand technology use", defined as "Implement technological advancements to improve traffic", but there is no mention of what those technologies might be, whereas another option "Adding tolled express lanes" is specific. As a reference point, the draft Long Range Transportation Plan (LRTP) makes only one mention of adaptive cruise control (ACC) and that is in the Autonomous Vehicles section (page 120). Is it considered by OCTA in traffic planning and capacity requirements? There's no mention that it is considered, even though it can increase freeway capacity by over 60%. How about the application of artificial intelligence (AI) to traffic signals? OCTA makes no mention of any applic
107	Technology	We must change the way we think about transportation. The fact is with the growth we have experienced and will continue to experience we will never 'build' our way to less traffic. We have too many people driving too many cars. This will not change no matter how many lanes or toll roads or HOV lanes are build. We must change our expectations about traffic congestion and our behaviors that support driving rather than other means of transportation (seems every new bank / fast food restaurant / coffee house/ drug store etc. are built with a drive through. A school with 600 kids has 600 cars dropping them off and picking them up. A high school with 1000 students has 800 cars driving to and from schooletc.). We can not build our way to 'good' traffic. We need to be smart. We need to use technology to help with flow patterns, speeds, lane controls.
108	Technology	Long Range transportation planning needs to consider SMART technology and stop spending taxpayer money on any concept of managed lanes.

109	Technology	The probability of zero-passenger trips being of significant distance is small. With a reasonable geographic density of autonomous vehicles, the zero-passenger distance for the vehicle to drive to pick up a passenger will be short, and after it has dropped the passengers off there will be a similarly short distance to pick up the next customer. In the same chapter, another example of trying to find reasons why not to adopt new technology is "Also, while autonomous vehicles may open new mobility options for populations that could not previously use automobiles, such as seniors or the disabled, the resulting impact could be more vehicles on the road and therefore increased congestion." The scenario of streets getting clogged with newly-mobile disabled people seems somewhat farfetched. Closer to reality is that at present a carer has to drive over to the home of the disabled person to pick them up, take them to wherever they want to go, bring them home again. That means less traffic on the roads. The desire to minimize the benefits of new technology is also exemplified in the section on telecommuting: "Telecommuting (in other words, working remotely) is gaining popularity nationally, and the same is true in Orange County. In fact, six percent of Orange County workers over age 16 report that they telecommuting are not clear-cut. On one hand, telecommuting has the potential to remove cars from Orange County roadways during peak travel times, thereby decreasing congestion. On the other hand, people who do not drive to an office during rush hour may still run errands or make other additional trips. Also, the ability to telecommuting will continue to grow in Orange County and elsewhere." The expression "on one hand" and "on the other hand" should imply equality of value, but sometimes it's used to promote something that is simply not true ("On one hand, scientists say the world is spherical, but on the other hand, many people say the world is flat").
110	Technology	The benefits of telecommuting in reducing rush hour traffic are overwhelming, but the authors claim "the benefits of telecommuting are not clear cut". The words "artificial intelligence" (AI) don't appear anywhere in Chapter 5 (nor in the rest of the LRTP), which is a bit odd, seeing that AI will be behind most of the improvements in transportation, from traffic signal control to ride sharing. A slightly more advanced form of signal control is to use cameras or other detectors to determine the approach of vehicles from a much further distance as compared with what is done at present, which is only about 5 vehicle lengths. Relatively simple AI in the signal controller figures out how to sequence the signals so that traffic doesn't have to stop, or at least the stoppage time is minimized. On a more advanced system of synchronization, AI will determine vehicle location and speed over a geographic region (possibly a city) so that waves of cars will be controlled remotely with each wave passing through an intersection without having to stop. This would be similar to two columns of dancers intersecting at right-angles with both columns moving at a constant speed, each dancer representing a wave (maybe 5 - 50 cars). Thus AI will be performing a real-time choreography of waves of cars. The origin and destination of each vehicle will be known to the AI system, so that when cars turn at an intersection, they may leave one wave, and join another. This involves very little infrastructure, because the roads and signals are already in place. The authors of the report seem aware of the benefits of new technology, but are doing their best to minimize it rather than embrace it. They should spend a bit more time in Silicon Valley (or Silicon Beach) and see where technology is taking us.





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2018 LONG-RANGE TRANSPORTATION PLAN



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