

Comprehensive Multimodal Corridor Plan



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Corridor Definition and Existing Facilities

1. Corridor Definition and Existing Facilities

1.1 Corridor Definition

State Route 91 (SR-91) is a major east-west state freeway running along the Santa Ana River, and serving Orange and Riverside counties. The freeway covers a span of 59.05 miles through several major cities, including Anaheim, Fullerton, Orange, Placentia, Yorba Linda, Corona, and Riverside. The total number of lanes along the freeway (including general purpose lanes, High Occupancy Toll (HOT) lanes and High Occupancy Vehicle (HOV) lanes ranges from 14, 16, or 18 lanes. At its widest, there is one HOV lane running in either direction that can be used by vehicles holding three or more passengers. In Orange County, the 91 Express Lanes (operated by the Orange County Transportation Authority [OCTA]) spans approximately ten miles from the SR-91/State Route 55 (SR-55) junction to the Orange-Riverside County Line. In Riverside County, the 91 Express Lanes (operated by the Riverside County Transportation Commission [RCTC]) spans approximately eight miles from the Riverside-Orange County Line to Interstate 15 (I-15). This corridor is a critical commuter link between Orange County and the Inland Empire, serving about 259,000 private vehicles and 17,726 trucks per day.

This corridor plan focuses on the section of SR-91 between State Route 57 (SR-57) and the Orange-Riverside County Line, located entirely within Orange County. This segment includes the Orange County portion of the 91 Express Lanes as described above. The study area also includes a one-mile buffer in each direction, including the cities of Fullerton, Placentia, extending to SR-57, Orange, Yorba Linda and Anaheim. Figure 1 on the following page shows a map of the SR-91 corridor study area.





Figure 1: Project Study Area



The SR-91 corridor study area is located near some disadvantaged communities and low-income neighborhoods including Northeast Anaheim, Fullerton, Placentia, and Orange (Figure 2). It also provides access to several employment and commercial zones, as well as key regional attractions including:

- Disneyland
- Knott's Berry Farm
- California State University (CSU), Fullerton
- Anaheim Canyon Industrial Center
- Corona Municipal Airport
- University of California, Riverside

Figure 2 below shows the location of disadvantaged communities within the corridor study area.



Figure 2: Disadvantaged Communities



The SR-91 corridor is also served by several rail and bus routes, including the Metrolink Inland Empire – Orange County Line and the 91/Perris Valley Line, OCTA 794 Express Bus route. Several other local bus routes, extensive bicycle and pedestrian infrastructure, including the Santa Ana River Multi-use Trail are also in the vicinity of the study area. Together these services and facilities form a multimodal network that supports travel within and outside of the study area. This Corridor Plan aims to reinforce this multimodal infrastructure in order to increase the modal share of alternatives to single-occupancy vehicles and reduce the region's environmental footprint.

1.2 Historical Background

Previous law (Assembly Bill 680, Baker, July 10, 1989) authorized the California Department of Transportation (Caltrans) to enter into franchise agreements with private companies to construct and operate four demonstration toll road projects in California. This resulted in the development of the 91 Express Lanes facility in Orange County. The four-lane, 10-mile toll road runs along the median of SR-91 in northeast Orange County between the Orange/Riverside County line and SR-55. Since the 91 Express Lanes carried its first vehicle on December 27, 1995, the facility has saved users tens of millions of hours of commuting time.

While the 91 Express Lanes facility has improved travel time along the SR-91 corridor, provisions in the franchise agreement between Caltrans and the private franchisee, the California Private Transportation Company (CPTC), prohibited Caltrans and county transportation agencies from adding transportation capacity or operational improvements to the SR-91 corridor through the year 2030 between I-15) in Riverside County to the Orange/Los Angeles county line. As a result, public agencies were prohibited from adding new lanes, improving interchanges, or implementing other improvements that would decrease congestion on the SR-91 freeway.

Recognizing the need to eliminate the non-compete provision of the franchise agreement, Governor Gray Davis signed Assembly Bill 1010 (Lou Correa) (AB 1010) into law in September 2002, paving the way for much needed congestion relief for millions of annual commuters who use SR-91 to travel between Riverside and Orange Counties each day. The bill enabled OCTA to acquire the 91 Express Lanes franchise and eliminate non-compete clause that prohibited capacity-enhancing improvements from being made to SR-91 until 2030. Although the 91 Express Lanes operate within a 10-mile stretch of Orange County, between SR-55 and Orange/Riverside county lines the franchise technically allowed operation of toll lanes into Riverside County. The purchase agreement for the 91 Express Lanes was completed on January 3, 2003, placing the road in public ownership at a cost of \$207.5 million (2003 dollars). With the elimination of the non-compete provision through AB 1010 and the subsequent acquisition of the 91 Express Lanes OCTA, Orange County and Riverside County public officials and Caltrans Districts 8 and 12 have been coordinating improvement plans for SR-91.

In September 2008, Senate Bill 1316 (Lou Correa) (SB 1316) was signed into law as an update to the provisions of AB 1010. SB 1316 authorizes OCTA to transfer its rights and interests in the Riverside County portion of SR-91 toll lanes by assigning them to the Riverside County Transportation Commission (RCTC) and authorizes RCTC to operate express lanes until 2065. In Spring 2017, RCTC opened an extension of the 91 Express Lanes to traffic into Riverside County with completion of the initial phase of the SR-91 Corridor Improvement Project. There are now approximately 18 miles of Express Lanes between Orange and Riverside counties, with 10 miles in Orange County and the remaining 8 miles in Riverside County. SB 1316 also requires OCTA and RCTC, in consultation with Caltrans, to continue to issue an annual SR-91 Implementation Plan (Plan) and a proposed completion schedule for SR-91 improvements from SR-57 to I-15. The Plan prior to adoption of SB 1316 included a westerly project limit of SR-55. The Plan establishes a program of potential improvements to relieve congestion and improve operations in the SR-91 corridor.



91 Express Lanes Pricing Structure

The 91 Express Lanes use congestion management pricing to optimize traffic at free-flowing speeds. To accomplish this, hourly traffic volumes are continually monitored. Toll adjustments are triggered through increases and decreases in traffic demand and may move up or down, depending on traffic volumes and congestion levels. Rates are raised when hourly traffic is consistently too heavy and there is a potential for traffic congestion in the toll lanes. Times when traffic volumes consistently reach a trigger point where traffic flow can become unstable are known as "super peak" hours. Given the capacity constraints during these hours, pricing is used to manage demand. When traffic volume falls, tolls may also be adjusted downward to stimulate demand. Once an hourly toll is adjusted, it is frozen for six months. This approach balances traffic engineering with good public policy. Other (non-super peak) toll prices are adjusted annually by inflation. Signs at each entry point display toll rates for travel on the entire 18 miles or the individual Orange or Riverside county sections. The rate displayed at the time of entry is the price charged. Current toll rate schedules are available for easy reference and travel planning.

Three Ride Free encourages carpooling by allowing a group of three or more commuters per vehicle to travel the 91 Express Lanes for free except when traveling eastbound, Monday through Friday between the hours of 4:00 p.m. and 6:00 p.m. At these times, carpools of three or more can still save money by earning a 50 percent discount on the posted toll. To receive the carpool discount, motorists must have a valid FasTrak® account with a properly mounted transponder and enter the toll point in both the Orange County and Riverside County sections through the far left HOV3+ lane.

91 Express Lanes Maintenance Agreement

OCTA and RCTC have an agreement during the terms of the franchise agreement with Caltrans to maintain the 91 Express Lanes. This includes repairing cracks, displaced barriers, and filling potholes on the 91 Express Lanes. The maintenance agreement between Caltrans and OCTA/RCTC ensures minimum disruption to traffic during peak traffic hours. In addition, the California Highway Patrol provides the enforcement on the 91 Express Lanes.

1.3 Existing Facilities

1.3.1 Facilities by Mode

1.3.1.1 Bus

Figure 3 on the following page displays the existing OCTA bus transit network from 2015.

OCTA runs Route 794, an intercounty express route, connecting South Coast Metro to Riverside and Corona via SR-91. The route operates with a 25-minute frequency during weekdays and does not provide service on weekends. Points of interest along the route include La Sierra Metrolink Station, South Coast Plaza, and Whittier Law School.

OCTA Route 38 travels along the La Palma Avenue high frequency corridor. This bus route runs from Lakewood to Anaheim Hills, connecting to key points of interest such as the Anaheim Hills Festival Shopping Center, Anaheim Canyon Station, Kaiser Hospital, and Knott's Berry Farm.

OCTA Route 57/57X operates along the State College Boulevard high frequency corridor. This bus route runs from Brea to Newport Beach, connecting to key points of interest such as CSU Fullerton, Honda Center, Angel Stadium, UCI Medical Center, The Outlets at Orange, and South Coast Plaza.



Aside from OCTA, Riverside Transit Authority (RTA) runs Route 200, a commuter express service, connecting San Bernardino to Anaheim via SR-91. The route operates at a 60-minute frequency during weekdays and a 90-minute frequency on weekends. Key points of interest along this route include San Bernardino Downtown Transit Center, La Sierra Metrolink Station, Village at Orange, and Disneyland.



Figure 3: 2015 OCTA Transit Network



Figure 4 shows the future bus transit network surrounding the SR-91 corridor as well as the high frequency areas. High frequency areas represent the areas where commuters are travelling to and from the most, resulting in a high amount of boardings and alightings. These areas include the Anaheim Canyon Metrolink Station, the future Placentia Metrolink Station, State College Boulevard, La Palma Avenue, Placentia Avenue, and Orangethorpe Avenue. Within the corridor, there are two existing high frequency bus service corridors: State College Boulevard and La Palma Avenue. These corridors represent the more heavily used transit paths in the SR-91 study corridor.



Figure 4: 2040 OCTA Transit Network



1.3.1.2 Rail

Figure 5 displays the existing rail transit network surrounding the corridor in 2015. Metrolink has two transit lines that run parallel to SR-91: the Inland Empire – Orange County Line, and the 91/Perris Valley Line. The Inland Empire – Orange County runs from Oceanside to Downtown San Bernardino. The 91/Perris Valley line runs from south Perris to L.A. Union Station. Together, these two lines serve two major transit centers along the SR-91 corridor.

Fullerton Transportation Center connects to Metrolink's Orange County and 91/Perris Valley lines as well as Amtrak's Pacific Surfliner. The station welcomes a total of 101 trains per day on weekdays and 75 trains per day on weekends. On average, Fullerton Transportation Center receives 1,641 weekday Metrolink boardings (2018) and 496 daily Amtrak Pacific Surfliner boardings (2017). In addition to its rail connections, the station provides connections to six OCTA bus routes.

Anaheim Canyon Station provides connections to Metrolink's Inland Empire – Orange County line. The station experiences a total of 16 trains per day on weekdays and four trains per day on weekends. On average, the station hosts 308 weekday Metrolink boardings (2018). In addition to its rail connections, the station provides connections to three OCTA bus routes as well as Anaheim Resort Transportation. This station is located along the La Palma Avenue high frequency corridor.



Figure 5: 2015 OCTA Rail Transit Network



1.3.1.3 Bikeways

Orange County has a variety of transportation amenities for bicycle riders, including off-street paved bike paths (Class I), on-road striped and signed bicycle lanes (Class II), and on-lane, shared-lane signed bike routes (Class III). In 2015, there were approximately 262 miles of existing Class I bikeways, 760 miles of Class II bikeways, and 101 miles of Class III bikeways throughout Orange County. Countywide, the majority of bikeways in the area were Class II and Class III; however, within the SR-91 corridor, the surrounding bikeways are mostly Class I and Class II bikeways.

Figure 6 shows the existing and proposed future bikeway network in the SR-91 corridor. The majority of the bikeways in the area continue to be Class I and II. Collectively, the 34 cities and the County have identified 888 combined miles of planned on-street and off-street bikeways that are set to be completed by 2040 in order to enhance mobility and improve quality of life within the corridor.

In addition to these proposed bikeways, OCTA is actively working on "completing the loop" through the OC Loop project. Since the 1950s, the OC Loop has been providing residents the opportunity to bike, walk, and access Orange County's most scenic locations. The OC Loop includes 66 miles of bicycle and pedestrian connections using five major trail corridors throughout Orange County. 80% of the OC Loop network is complete while 20% still needs to be developed. More specifically to the SR-91 corridor, the Santa Ana River Trail is complete and connects to the corridor near the SR-55/SR-91 interchange and runs parallel to the freeway moving eastward. This segment is a Class I bikeway and was completed in 2008. The El Cajon Trail corridor includes Class I, II, and II bikeways, and connects to the SR-91 corridor from the north. The segment on the El Cajon Trail immediately connecting to SR-91 is expected to be completed in 2020.



Figure 6: Existing and Proposed Bikeway Network along the SR-91 Corridor



1.3.1.4 Freeway/Arterials

Orange County includes ten major freeways and has a network of over 6,365 lane miles established throughout the county, with over 200 of which on the SR-91 alone. The SR-91 corridor includes connections to two major freeways one toll road in Orange County: SR-55, SR-57, and SR-241, respectively. As of 2015, SR-91, SR-55, and SR-57 have been experiencing high levels of congestion, particularly during morning commute hours (see Figure 7). As a result, OCTA has identified numerous projects that are meant to minimize congestion along these major freeways and reduce traffic delays. Since 2010, six projects, including the addition of five general purpose lanes, lane widening, and lane extensions, have been completed within the SR-91 corridor along SR-91 and SR-57. There are currently six planned capacity projects under development along SR-91, SR-55, and SR-57 that will further support traffic flows along the corridor and help reduce congestion. The projects are shown in section 4 of this document.



Figure 7: 2015 Freeway Network



In coordination with the County and its 34 cities, OCTA has developed and maintains the Master Plan of Arterial Highways (MPAH). The system of local arterial roads is comprised of over 6,365 lane miles, including six different classifications of local arterial roads. Figure 8 shows the improvements that are planned for OCTA's arterial highway network by 2040. The roads surrounding the SR-91 corridor are largely comprised of major and primary roads. The network within the corridor's vicinity is largely built out. By 2040, there are expected to be 6.8 miles of major arterial improvements, resulting in13.6 miles of primary arterial improvements, and 4 miles of secondary arterial improvements, resulting in13.6 miles of improvements. In an effort to keep congestion at a minimum, OCTA has established the Congestion Management Plan (CMP), in which OCTA measures 100 intersections on key roadways to examine performance measures during morning and evening peak commute hours. Approximately 13 of the 100 CMP intersections are located within the boundaries of the SR-91 corridor. OCTA's Long Range Transportation Plan states that half of the new roadway maintenance revenue will be allocated towards the maintenance of arterial roads.



Figure 8: 2040 Master Plan of Arterial Highways Improvements



1.3.1.5 HOV/Park-and-Ride

The Orange County 91 Express Lanes are a 10-mile, four-lane express toll-lane facility in the median of SR-91. The Orange County portion of the express lanes run from the SR-55 interchange near Anaheim to the Riverside County line. As a result of their ongoing collaboration, OCTA and RCTC develop an annual Implementation Plan that outlines all completed, current, and future corridor improvement projects for SR-91 between SR-57 and I-15. The freeway improvement projects listed in this current plan are listed as part of the 2019 State Route 91 Implementation Plan.

There is one park-and-ride lot located along SR-91 and two other lots along SR-57 and I-5 that are just outside the corridor area (Figure 9). The Lincoln East/West Park-and-Ride, operated by Caltrans, is located near the SR-55/SR-91 interchange within the SR-91 corridor. The lot has a total of 242 parking spaces available and has connections to six OCTA bus routes. The Fullerton Park-and-Ride lot, operated by OCTA, is located near the I-5/ SR-91 interchange. The lot has a total of 791 parking spaces available and has connections to seven OCTA bus routes as well as one LA Metro bus route. The Brea (Lambert) Park-and-Ride is located in close proximity to the corridor, along SR-57. The lot has 68 parking spaces and provides connections to one OCTA express bus route.



Figure 9: Park-and-Ride Facilities in Orange County (Source: Caltrans District 12 Park and Ride Brochure)



1.3.2 Goods Movement

SR-91 is a key corridor for trucking in the Southern California region. According to Caltrans 2018 Average Annual Daily Truck Traffic, about 17,000 trucks travel along this section of SR-91 in both directions, which amounts to 7% of total traffic volumes. By 2040, that number is expected to increase to 32,000 trucks per day (Figure 10).



Figure 10: Daily Bidirectional Truck Travel in Orange County (2012 and 2040) (Source: SCAG)

1.3.3 Asset Conditions

Figure 11 on the following page shows the Pavement Condition Index (PCI) scores for Orange County cities in 2018. In 2018, pavement conditions along SR-91 were not considered a risk. The road networks in Anaheim and Yorba Linda were reported to being in good condition, receiving a PCI score between 71 and 100. The road networks in Fullerton and Placentia received a rating of being "at lower risk," with PCI scores ranging from 61 to 70. While still in good condition, it is recommended to apply treatments that will address the structural adequacy of the pavement. As of 2018, Orange County roads were ranked as being in the best condition out of all California counties.





Figure 11: Pavement Condition Index (PCI) for Orange County cities (2018)



1.3.3.1 Transit Assets

The OCTA Transit Asset Management (TAM) Plan accounts for 70% of the agency's capital asset inventory, while the other 30% is made up of freeway related assets and land assets. The TAM focuses on the 70% of assets that are used to provide public transit services in order to ensure that the vehicles, facilities, stations, and systems involved remain in a state of good repair.

As of 2018, OCTA's assets include:

- Rolling Stock: 778 revenue vehicles, including 40' and 60' buses as well as cutaway buses
- Equipment: 156 non-revenue vehicles, operations equipment, and information technology (IT) systems
- Facilities: five Maintenance and Operations Bases, six multimodal transportation centers, and one parkand-ride lot

The revenue vehicles make up the largest share of the agency's transit asset holdings at 69%, while its facilities are the second largest share of its assets at 24%. The remaining 7% of its assets are allocated to systems including fare collection and IT systems.

To assess its current stock, OCTA conducted a Condition Assessment to determine the condition of its assets. OCTA modeled its non-facility asset conditions using the Federal Transit Administration's (FTA) Transit Economics Requirements Model (TERM-Lite) system (Table 1) and conducted thorough onsite facility and station condition assessments. As of December 2017, 49% of OCTA's non-facility assets were deemed adequate, meaning that the stock included some moderately defective or deteriorated components. 30% of its assets were deemed to be in excellent condition, while 7% of its assets were deemed to be good, meaning there were only some slightly defective or deteriorated components. The remaining 13% of its stock was deemed marginal or worn, meaning that it was in need of replacement. OCTA's onsite condition assessment showed that all 52 of its facilities were ranked at a score of 3 (adequate) or above. In accordance with the FTA's Weighted Average Condition method, OCTA's 52 facilities are considered to be in a state of good repair.

Category	Sub-Category	Value (\$Millions/2017)	Average Condition	Excellent	Good	Adequate	Marginal	Worn
Facilities	Maintenance Equipment	\$22.5	3.8	6%	9%	10%	49%	27%
	Communications	\$21.9	4.0	5%	77%	3%	10%	5%
Systems	ITS	\$1.0	3.4	52%	0%	0%	0%	48%
	Revenue Collection	\$17.6	2.9	0%	0%	5%	95%	0%
Vehicles	Non-Revenue Vehicles	\$5.9	2.7	5%	4%	23%	39%	29%
	Revenue Vehicles	\$366.3	3.9	35%	4%	57%	4%	0%
Total (Estimate Conditions Assets)		\$435.1		30%	7%	49%	11%	2%

Table 1: Conditions of OCTA's Non-Facility Assets (2017)



During fiscal year 2018, OCTA measured the amount of its rolling stock and equipment that had exceeded its respective useful life benchmark (ULB). 3.3% of the agency's rolling stock had exceeded its ULB, in line with OCTA's goal to have no more that 10% past its ULB. 4.5% of the agency's equipment had exceeded its ULB, in line with OCTA's goal to have no more than 17% past its ULB. As for its facilities, 100% of its facilities scored at a 3 or above, also meeting the agency's target.

As a part of its 20-year plan, OCTA plans to expand its assets to improve its rolling stock and facilities. Its rolling stock will expand by acquiring an additional six 40' compressed natural gas (CNG) vehicles and 53 paratransit vehicles. To improve its facilities, OCTA plans to acquire video surveillance systems for five of its bases and a hydrogen fueling station for its Santa Ana bus base.

1.3.4 Safety

From 2014 to 2018, there were a total of 3,424 collisions along the entire Orange County portion of SR-91. Figure 12 displays a heat map of where collisions occurred along the freeway from 2014 to 2018. 87.2% of collisions were automobile accidents, while the remaining percentage of collisions consisted of motorcycle (11.2%), pedestrian (1%), and bicycle (0.6%) accidents. As a result of these collisions, there were a total of 4,932 injuries and 33 fatalities along the corridor over a five-year period. This resulted in a rate of 4.46 collisions per every 100 million vehicle miles traveled (MVMT) along the corridor. Additionally, these statistics resulted in a rate of 0.24 severe injuries per 100 MVMT and 0.04 fatalities per 100 MVMT along SR-91 from 2014 to 2018.



Figure 12: Collisions along SR-91 (2014-2018)

69% of collisions were reported to result in minor injuries, with victims only having complaints of pains. The majority of these collisions occurred Monday through Saturday, during evening peak hours (3 PM to 5:59 PM). With regards to pedestrian collisions, the majority of them occurred later in the day. There were lower collision densities for pedestrian collisions, but there were five fatal incidents within the corridor boundaries. The area with the highest collision density involving pedestrians within the corridor is the SR-57/SR-91 interchange. The rest of the corridor does not have any other areas with significant collision density involving pedestrians. There was a higher concentration of collisions involving cyclst in the area, but there were fewer fatal bicycle incidents compared to pedestrian incidents within the corridor boundaries. The areas with the largest concentration of collision densities involving cyclists occur where SR-91 and CA-90 meet as well as the eastern end of the corridor.



Changing Conditions 2015-2040

91

COMPREHENSIVE MULTIMODAL CORRIDOR PLAN: STATE ROUTE 91

2. Changing Conditions 2015-2040

2.1 Demographics/Land Use

2.1.1 Population and Housing

Orange County is one of the densest, most populous counties in California. In 2015, Orange County had a population of 3.1 million residents. In 2016, Orange County's population made up 8% of the state's population. Population and housing in Orange County is most dense within the central and northern parts of the county. Figure 13 shows the population density in Orange County in 2015. Along the SR-91 corridor, the area with the highest population density is Northeast Anaheim, especially near the SR-91/SR-57 interchange. This area is also home to a concentration of low-income and disadvantaged communities. Moving east along the corridor, the population becomes less dense and there are lower concentrations of low-income or disadvantaged communities.



Figure 13: 2015 SR-91 Corridor Population Density



By 2040, Orange County's population is expected to increase to over 3.4 million residents. To meet the increased demand for housing, it is projected that 122,700 housing units will be built, equating to an 11% increase. Figure 14 shows the population changes in Orange County from 2015 to 2040. The pockets of population and housing growth are expected to occur within the northern, central, and southern parts of the county. As a result of future development of a stadium district surrounding Angel Stadium, this area is expected to have the largest change in population density, followed by the eastern- and western-most areas of the corridor.



Figure 14: 2015 to 2040 Population Concentration Changes





Figure 15: 2040 Population Density

2.1.2 Employment

Orange County is home to a booming workforce that provides employment to a large amount of county residents as well as individuals from surrounding counties. In 2015, the number of people employed in Orange County increased to 1.62 million compared to 1.39 million in 2010. Figure 16 on the following page shows the concentration of employment centers along the SR-91 corridor.

By 2040, the number of individuals employed in Orange County is expected to increase to nearly 1.9 million. Figure 17 shows the changes to the concentration of employment centers in the corridor from 2015 to 2040. Employment is expected to increase in the areas surrounding Angel Stadium and Northeastern Anaheim.





Figure 16: 2015 SR-91 Employment Density





Figure 17: 2015-2040 Employment Concentration Changes





Figure 18: 2040 Employment Density



Goals, Objectives and Statutory Requirements

COMPREHENSIVE MULTIMODAL CORRIDOR PLAN: STATE ROUTE 91

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3. Goals, Objectives and Statutory Requirements

3.1 Goals and Objectives

The goals and objectives of this corridor plan align with the ones set forward by OCTA in its Long-Range Transportation Plan (LRTP). For each of the four goals stated by the agency, corridor-specific objectives can be identified to support a consistent yet adapted approach to optimize corridor performance and maintain the local character of surrounding communities.

3.1.1 Deliver on Commitments

OCTA is resolved to fulfill its commitment made to Orange County communities and actively implement the various mobility projects, system sustainability and environment enhancements detailed in Measure M, a half cent tax measure approved in 1990 and renewed in 2006.

To support project implementation, OCTA has adopted over the years three delivery plans, looking at optimizing funding and bringing improvements to residents and commuters as quickly as possible. The latest plan, the Next 10 Delivery Plan, was adopted in 2016. The plan was updated in November 2019, validating delivery projections based on new available information, adding new projects and revising revenue assumptions and timelines. In particular, it increased revenues as a result of excess 91 Express Lanes revenue. These augmented funds will be specifically assigned to projects related to the 91 corridor and will free up funding for additional projects. These add to an exhaustive list of multimodal projects, several of which located within the SR-91 corridor.

Corridor-specific objectives:

- 1a. Support the timely delivery of projects within the SR-91 corridor.
- 1b. Allocate excess revenues from SR-91 Express Lanes to projects that will increase multimodal options and reduce congestion along the corridor.
- 1c. Take advantage of federal and state funding opportunities to support the timely delivery of corridor improvements.

3.1.2 Improve System Performance

The second goal stated in OCTA's LRTP is to improve system performance. For the SR-91 corridor, this goal entails not only improving the efficiency of the freeway, but also taking advantage of available resources and new technologies to provide tangible alternatives to single-occupancy vehicles. This corridor plan identifies a portfolio of projects which will improve connectivity between modes and between corridor cities, as well as specifically address design elements that are currently affecting the flow of vehicles along the corridor.

System performance also entails monitoring and the development of region-specific performance metrics to provide dynamic strategies to local mobility issues. This plan will provide a set of performance metrics that will guide future operations and systems decisions as OCTA and its partners continue to design and implement improvements for the area.



Corridor-specific objectives:

- 2a. Implement projects to achieve lane balance and reduce congestion, delay, and weaving.
- 2b. Implement a data-oriented approach to assess and mitigate congestion as well as measure ongoing performance.

3.1.3 Expand System Choices

Emerging trends in workforce and technology are re-shaping transportation needs and patterns. In this constantly evolving environment, offering a variety of mobility choices is as critical as ever. OCTA is working on improving transit services along the SR-91 corridor, but also improving conditions for walking, biking and for commuters who use a combination of all these different modes. OCTA is also committed to taking advantage of technology and new shared services to respond to increased needs in flexibility and multimodality.

Expanding choices also means upgrading infrastructure design to reduce the number of incidents as well as "filling the gaps" within the existing transportation infrastructures, to create seamless and safe routes for riders. The projects proposed in this plan will aim to strengthen connections from one mode to another, but also to fill gaps within existing networks for each individual mode of transportation.

Corridor-specific objectives:

- 3a. Support existing transit routes via first-last mile connections and station improvements.
- 3b. Expand flexible services, on-demand transit and mode share options to provide more adapted options to riders.
- 3c. Improve safety for all modes.
- 3d. Prioritize projects that will fill gaps within the existing network and strengthen connections between modes.

3.1.4 Support Sustainability

OCTA plans to leverage the SR-91 CMCP to provide more sustainable options to the riders traveling along the corridor. The improvements made to existing infrastructures will help make carpooling, bicycling and using public transit more competitive than single-occupancy vehicles, and will contribute to a reduction in greenhouse gas emissions and fine particle emissions. Supporting a holistic and comprehensive transportation grid will also contribute to the economic vitality of the region and to the creation of a cohesive social network.



Corridor-specific objectives:

- 4a. Support alternatives to single-occupancy vehicles.
- 4b. Improve air quality through reduction in GHG and fine particles emissions.
- 4c. Encourage healthy living and social connection through improved multimodal infrastructures.

3.2 Statutory Requirements

These corridor-specific goals and objectives also align with federal, state and regional plans and show direct compliance and consistency with the below plans. Other municipal climate adaptation plans and local circulation elements were reviewed for general consistency, but the most direct connection to the immediate below documents are displayed in the table.

GOAL	PLAN	DESCRIPTION			
1 DELIVER ON COMMITMENT					
Take advantage of federal and state funding opportunities to support the timely delivery of corridor improvements.	California Transportation Plan 2040	• Seek sustainable and flexible funding to maintain and improve the system			
2 DIMPROVE SYSTEM PERFORMANC	2 DIMPROVE SYSTEM PERFORMANCE				
	SCAG Transportation System Congestion Management	 Collect data/monitor system performance. Analyze congestion problems and needs 			
Implement a data-oriented approach to mitigate congestion as well as measure	Caltrans Interregional Transportation Strategic Plan	 Invest strategically to optimize system performance 			
ongoing performance	Caltrans Smart Mobility Framework	Management of the circulation network			
	SCAG Regional Transportation Plan	Improving highway and arterial capacityManaging demands on the transportation system			



GOAL	PLAN	DESCRIPTION			
3 DELIVER ON COMMITMENT	3 DELIVER ON COMMITMENT				
	California Transportation Plan 2040	Provide viable and equitable multimodal choices including active transportation			
Support existing transit routes via first-last mile connections and station improvements	Toward an Active California: California State Bicycle and Pedestrian Plan	 Integrate bicycle and pedestrian needs in planning and design of multimodal transportation systems and services 			
	SCAG Regional Transportation Plan	 Promoting walking, biking and other forms of active transportation Focusing new growth around transit 			
	SCAG Transportation System Congestion Management Plan	Develop multimodal performance measures			
Expand flexible services, on-demand transit and mode share options to provide more adapted options to riders	Caltrans Interregional Transportation Strategic Plan	Optimize multimodal connectivity throughout the interregional transportation system			
	SCAG Regional Transportation Plan	Giving people more transportation choices			
	Caltrans Interregional Transportation Strategic Plan	 Develop and operate a safe interregional transportation system for all travelers 			
	California Transportation Plan 2040	Improve public safety and security			
Increase safety for all modes	Toward and Active California: California State Bicycle and Pedestrian Plan	 Address safety of vulnerable users in roadway design and operations Invest in the quality, completeness, timeliness, and availability of data on bicycle and pedestrian collisions Focus state and local enforcement of safety laws on highest risk behaviors by all road users 			
	Caltrans Smart Mobility Framework	Convenient and safe multimodal travel			
Prioritize projects that will fill gaps within the existing network and strenghthen connections between modes	California Transportation Plan 2040	Manage and operate an efficient multimodal system			



GOAL	PLAN	DESCRIPTION
4 SUPPORT SUSTAINABILITY		
	California Transportation Plan 2040	 Practice environmental stewardship Integrate environmental considerations in all stages of planning and implementation
Support alternatives to single-occupancy vehicles	California's 2017 Climate Change Scoping Plan	 Increase the number, safety, connectivity, and attractiveness of biking and walking facilities to increase use. Promote shared-use mobility, such as bike sharing, car sharing, and ride sharing services to bridge the "first mile, last mile" gap between commuters' transit stops and their destinations
	Caltrans Interregional Transportation Strategic Plan	Reduce GHG emissions
	California Transportation Plan 2040	 Adapt the transportation systems to reduce impacts from climate change Reduce greenhouse gas emissions and other air pollutants
Improve air quality through reduction in GHG and fine particles emissions	California's 2017 Climate Change Scoping Plan	 Reduce fossil fuel use Achieve sector-wide, publicly-owned utility and load-serving entity specific GHG reduction planning target set by the State through Integrated Resource Planning Maximize air-quality co-benefits.
	SCAG Regional Transportation Plan	 Improve air quality and reducing greenhouse gases
Support economic sustainability through	California Transportation Plan 2040	 Support transportation choices to enhance economic activity Integrate multimodal transportation and land use development
performance.	California's 2017 Climate Change Scoping Plan	Support a resilient low carbon economy and strong job force
	SCAG Regional Transportation Plan	 Support commerce, economic growth, and opportunity

Table 2: Alignment of Plan's goals and objectives with regional and state plans



Corridor Vision

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4.1 Strategies

4.1.1 Active Strategies

OCTA recently completed several active transportation projects in the corridor area. The 2019 SR-91 Implementation plan includes improvements to two transit station along the corridor, the Anaheim Canyon Metrolink Rail Station and the Placentia Metrolink Rail station. Both projects will improve pedestrian access and comfort when using the station, encouraging increased use of public transit and multi-modal trips. OCTA also completed several bike improvement projects including improvements to the Santa Ana trail as well as completing segments such as the El Cajon Trail, effectively closing gaps in the network as part of the OC Loop vision.

This plan will focus essentially on supporting existing active transportation infrastructure and multi-modal connection through the development of transit projects and facilities that are comfortable for pedestrians and cyclists. OCTA will also continue to listen to the community regarding safety concerns related to active transportation infrastructure and identify the best approach to addressing these issues through events such as Go Human demonstration projects such as the one that took place in 2017 for the El Cajon trail.

4.1.2 Transit Strategies

Transit strategies for this plan are to improve the attractiveness of transit through increased efficiency of services. The two new BRT lines presented in this plan will focus on swiftly connecting key destinations within the area such as the Brea Mall, Cal State Fullerton, Downtown Santa Ana, and Anaheim Canyon Station.

The Transit Strategies also include new micro-transit services that will increase accessibility to transit services within the corridor area and OCTA's service area at large. The Anaheim Canyon/Yorba Linda area will be one of several of OCTA's new flex zones where micro-transit will be offered, bringing riders to and from multimodal stations and other key destinations in the area. This will support riders who live and work in areas with traditionally low ridership and where traditional transit routes have been struggling.

4.1.3 Roadway Strategies

The Roadway Strategies are based on the guidelines provided in the Master Plan for Arterial Highways, a plan that is overseen by OCTA and is implemented in collaboration with all the cities throughout Orange County. The MPAH provides a thorough classification of all arterials and specific directives on how to maintain the arterial assets and the region's circulation system.

4.1.4 Freeway Strategies

The Freeway Strategies laid out in this plan are consistent with the strategies detailed as part of this unique coordination process that has taken place around the SR-91 corridor. The main objectives are to reduce congestion through capacity enhancements as well as improvement projects that will support carpooling and improve efficiency. The projects specifically listed in this plan will reduce weaving and reduce merging between ramps, protecting assets as well as increasing fluidity and safety along the corridor.

The freeway strategies will also focus on reducing congestion along this major corridor, supporting economic activities of residents and travelers that ride on it on a regular basis.



4.1.5 Transportation Demand Management (TDM) and Intelligent Transportation Sytems (ITS) Strategies

The TDM and ITS strategies for this plan align with the ones defined in Caltrans Smart Mobility Framework. They aim to improve accessibility and efficiency of transit through technologies such as real-time customer information. It also includes the allocation of space at stations for ride sharing, bike sharing and other first and last mile strategies.

4.2 Project List

Together, OCTA and RCTC have completed eight recent improvement projects along the SR-91 corridor, including three lane addition projects, an overcrossing project, three Metrolink service and station parking improvement projects, and the initial phase of the 91 Corridor Improvement Project. There are currently 11 anticipated projects underway and an additional six projects in concept that impact Orange County. There are three additional projects within Riverside County. The two agencies are hoping that the improvements along this corridor encourage individuals to consider additional modes of travel aside from single-rider vehicles to improve regional mobility

The following table shows the Orange County, bi-county, and Riverside County projects listed in the 2019 SR-91 Implementation Plan. The Riverside County projects are included to demonstrate the comprehensive and coordinated planning efforts taking place which benefit the 91 corridor from SR-57 to I-15.

Orange County Projects	Cost (\$M)
SR-91 Improvements between SR-57 and SR-55	460
Anaheim Canyon Metrolink Station Improvements	27.9
Placentia Metrolink Rail Station	34.8
Fairmont Boulevard Improvements	76.8
Bi-County Projects	Cost (\$M)
Express Bus Service Improvements	6
SR-91 Corridor Operations Project	38
Sixth GP Lane Addition (SR-241 to SR-71)	TBD
SR-241/SR-91 Express Connector	181
Riverside Projects	Cost (\$M)
15/91 Express Lanes Connector	220
SR-71/SR-91 Interchange Improvements	117
SR-91 Improvements East of I-15	TBD

Table 3: Projects from the SR-91 2019 Implementation Plan

The projects presented in the following pages are part of OCTA's strategies to reduce congestion along SR-91 and offer efficient multi-modal pptions to residents living along the corridor and commuters traveling on it regularly. They include projects to be implemented on the corridor itself as well as projects on streets and arterials within the corridor's area of influence. The projects are divided based on the time horizon they are planned for.



4.2.1 Short-Term Projects (to be completed by 2025)

PROJECT MODE	DESCRIPTION	COST	TIMELINE
Freeway	SR-241/SR-91 Express Connector The project entails construction of an Express Connector and widening of the south side of SR-91 for realignment of eastbound lanes up to the Coal Canyon Crossing.	\$181 million	Final Engineering is anticipated to be completed in 2021. Project is expected to be completed concurrent with new eastbound capacity projects.
Freeway	SR-57 to SR-55 Improvement The proposed improvement includes widening the mainline in the eastbound direction of SR-91 and make modifications to interchanges, ramps and intersections. The improvements will reduce weaving and merging between ramps, improve capacity and reduce congestion.	\$460 million	Construction is scheduled for 2023-2025.
Freeway SR-91 Corridor Operations Project SR-91 Corridor Operations Project Freeway This project aims to improve operations along the corridor through the construction of an additional westbound lane between Green River Road and SR-241. SR-91 Corridor Operations Project		\$38 million	Construction is planned for completion in 2021/2022 pending funding availability.
Transit	Express Bus Service Improvements The project includes a new Express Bus service to connect residents to pockets of employment previously not connected to the transit system.	Annual Capital Cost: \$1.2 million Annual Operating Cost: \$4.9 million	Fully implemented as of FY19
Transit	Anaheim Canyon Metrolink Station Improve- ments The project includes improvements to transform the station into a multimodal facility, including double-tracking, addition of a new platform and extension of an existing one, pedestrian amenities, parking upgrades, etc.	\$27.9 million	Construction is scheduled to be completed in 2021.
Transit	Placentia Metrolink Rail Station This new station will provide service between Perris and Los Angeles via Riverside and Orange counties. It includes the construction of two platforms, a parking lot, a pick-up and drop-off area, and OCTA bus access.	\$34.8 million	Construction is scheduled to be completed in 2021.

Table 4: Short-Term Projects along the SR-91 Corridor



4.2.2 Medium-Term Projects (to be completed in 6-10 years)

PROJECT MODE DESCRIPTION		COST	TIMELINE
Transit	La Palma / Lincoln Corridor OCTA plans to implement Rapid Bus service on La Palma and Lincoln between Hawaiian Gardens and Anaheim Canyon Station. This service will be similar to the current OCTA Bravo! routes which have limited stop service and unique branding.	Capital Cost (2018 dollars): \$49 million Annual Operating Cost (2018 dollars): \$8.3 million	FY 25-26
Transit	State College / Bristol Corridor OCTA plans to implement a Bus Rapid Transit or Rapid Bus project on the on Bristol and State College between the Brea Mall and Downtown Santa Ana. The final mode, alignment, and stops will be determined through a corridor study which will be included in the FY20-21 OCTA budget. This study should be completed by 2022.	Capital Cost (2018 dollars): \$1 billion dollars Annual Operating Cost (2018 dollars): \$7.3 million	FY 29-30
Express Bus Service Improvements The project includes a new Express Bus service to connect residents to pockets of employment previously not connected to the transit system.		Annual Capital Cost: \$1.2 million Annual Operating Cost: \$4.9 million	TBD
Microtransit	Anaheim Canyon / Yorba Linda OC Flex Zone OCTA is currently exploring expanding OC Flex micro-transit service to new areas, including the Anaheim Canyon and Yorba Linda areas. This popular service could provide a first/last mile connection which could benefit the Anaheim Canyon Metrolink Station. Final boundaries would be determined based on factors such as ridership potential, key destinations, and transit connections.	Capital Cost (2018 dollars): \$150,000 Annual Operating Cost (2018 dollars): \$700,000	TBD

Table 5: Medium-Term Projects along the SR-91 Corridor





Figure 19: La Palma/Lincoln Project



Figure 20: State College/Bristol Project



4.2.3 Long-Term Projects (to be completed in 15 years or more)

PROJECT MODE	DESCRIPTION	COST	TIMELINE
Freeway	Fairmont Boulevard Improvements The project includes the construction of a new SR-91 interchange at Fairmont Boulevard as well as a pedestrian/bicycle connection for direct Santa Ana River trail Access.	\$76.8 million	Project completion anticipated for 2035.
Freeway	SR-91 Sixth General Purpose Lane Addition The project will provide an additional lane in the eastbound direction on SR-91 from SR-241 to SR-71.	TBD	TBD
Active Transportation	OC Loop (Segment H) - El Cajon Bikeway The project consists of constructing 1.2 miles of Class I, II, III and IV bikeways from Yorba Linda Recreational Trail to Santa Ana River Trail.	\$4.1 million	TBD
Active Transportation	Santa Ana River Parkway Extension The project consists of constructing a riding and hiking trail along Santa Ana River from Gypsum Canyon to the Orange/ Riverside/San Bernardo county line	\$20.1 million	TBD

Table 6: Long-Term Projects along the SR-91 Corridor



4.2.4 Arterial Projects

This plan also includes a list of arterials that are scheduled to be upgraded by 2040 to achieve the standards defined in the Master Plan of Arterial Highways (MPAH). This plan aims to coordinate efforts in order to plan, develop and maintain the circulation system throughout Orange County. OCTA facilitates coordination between cities and ensure the consistency of the plan across the region. The MPAH overall provides a classification for each type of arterials, as well as specific directives for their upgrade and maintenance based on each classification's characteristics.

The arterials listed below will be upgraded following MPAH's guidelines by 2040:

- Crowther
- Esperanza
- Fairmont
- Frontera
- Gypsum Canyon
- Jefferson
- Kraemer
- Lincoln
- Nohl Ranch
- Orange Olive

- Orangethorpe
- Rio Vista
- Riverdale
- Royal Oak
- Santa Ana Canyon
- Santiago
- State College
- Tustin
- Weir Canyon



4.3 Vision Benefits

The projects listed in this plan have been integrated in OCTA's OCTAM model to assess the long-term impacts on mobility conditions in the county in the long-term. The sections below details the projections of various metrics and compare it to a scenario where none of the improvements would have been made.

While there is always some uncertainties associated to modeling and projections, these numbers should be looked at with additional caution in light of the covid-19 pandemic. It is still unclear how the 2020 pandemic and stay-at-home measures will affect long-term transportation patterns, particularly with regards to transit ridership. Additional model runs will be performed in the following year to assess such impacts.

4.3.1 Mode Share

Along the SR-91 corridor, there are three prominent modes of transit service: OCTA local bus routes, OCTA express bus routes, and Metrolink commuter rail. OCTA intends on improving transit services in the corridor by increasing transit service, improving frequencies, and improving transit facilities to make riding transit more accessible and enticing for commuters in the area. The following sections breaks down current and projected future ridership on bus and rail services in the corridor.

4.3.1.1 Bus Ridership

The table below lists the total daily boardings for the bus routes that cross through or travel along the SR-91 corridor. There are a total of nine OCTA bus routes that pass through the SR-91 corridor. In 2015, there were a total of 39,359.3 boardings on these nine routes. Without any transportation investments or improvements, the number of boardings is expected to increase to 45,595.9 boardings. If OCTA's Build 2040 scenario is put into action, the number of boardings along these nine routes is expected to total 38,191 boardings.

ROUTE	2015 BOARDINGS	2040 NO BUILD BOARDINGS	2040 BUILD BOARDINGS
129	689	1138	1095
153	135	217	139
213	233	310	137
30	2,714	3,185	6,196
38	7,587	8,354	6,989
42	8,075	9,070	8,279
57	15,268	17,953	10,687
59	4,551	5,278	4,618
794	109	92	52
TOTAL	39,359	45,596	38,191



4.3.1.2 Rail Ridership

The table on the following page displays the total boardings on the three Metrolink lines that run through the SR-91 corridor. Collectively, the three lines had a total 12,481 boardings in 2015. According to OCTA's 2040 No Build scenario, ridership is expected to increase on all three lines, especially on the Orange County line. This increase in ridership is projected to result in a total of 18,861 boardings in 2040. Based on the 2040 Build scenario, ridership is also expected to increase compared to 2015 boardings, resulting in a total of 17,752 boardings. Though the Build scenario does not result in as much ridership on the three Metrolink lines as the No Build



scenario, the Build scenario implements new transit options that is expected to bring additional ridership to the corridor. Two of these new transit additions are expected to travel along the La Palma Avenue and State College Boulevard high frequency corridors.

ROUTE	2015 BOARDINGS	2040 NO BUILD BOARDINGS	2040 BUILD BOARDINGS
Perris/91	1,645	2,172	2,049
Inland Empire/Or- ange County	2,977	3,355	4,317
Orange County	7,859	13,334	11,386
TOTAL	12,481	18,861	17,752

Table 8: Rail Ridership Projections 2015-2040

4.3.2 Volumes

In 2017, the SR-91 corridor, from State College Blvd. to the Orange/Riverside County line, had an annual average daily traffic (AADT) of 250,000 vehicles per day. This AADT accounts for all types of vehicles moving throughout the corridor. As previously mentioned, SR-91 is a key truck corridor in Orange County. In 2018, the AADT for trucks alone, from State College Boulevard to La Sierra Avenue in Riverside, was 16,820.

4.3.3 VMT/capita

The SR-91 corridor is one of the most heavily traveled corridors throughout Orange County. In 2015, the freeway experienced 6.1 million daily vehicle miles traveled (VMT), making up 8% of all daily VMT in the county. As a result of increasing population and employment in the county, daily VMT is expected to increase to 6.5 million by 2040 if no investments or changes are made to the existing transportation network. By following the 2040 Build scenario investing in the region's transportation network could lead to 6.7 million daily VMT.

4.3.4 Congested Vehicle Hours Traveled

In 2015, the corridor experienced a total of 147,332 congested VHT, making up 7% of all daily congested Vehicle Hours Traveled (VHT) in Orange County. Without any changes being made to the existing transportation network, daily congested VHT is expected to increase to 159,345. By following the Build 2040 scenario outlined by OCTA, daily congested VHT is expected to increase to 160,094 compared to 2015.

4.3.5 Speed (freeway and arterial)

In 2015, the average speed of vehicles on Orange County freeways during peak hours was 39.6 mph while the average speed on arterial roads during peak hours was 26.2 mph. Given the expected increase in population and employment in the county, if no projects get completed to help mitigate vehicle congestion due to these increases, average speeds could decrease to 37.8 mph and 25.1 mph, respectively. Based on OCTA's 2040 Build scenario, by prioritizing and completing transportation improvement projects, average speeds on freeways could increase to 40.8 mph while speeds on arterial roads could increase to 26.6 mph, thus reducing vehicle congestion and reducing the amount of time spent in traffic for Orange County commuters.



4.3.6 Average Vehicle Occupancy

In 2015, there were a total of 13.9 million private vehicle trips in Orange County. Of those trips, 6.2 million trips included two or more passengers. These trips accounted for 45% of daily private vehicle trips. Of those shared rides, 3.4 million rides involved two passengers, while 2.9 million trips involved three or more passengers. During off peak hours, the number of shared rides slightly increased to 47% of trips, compared to 43% during peak hours.

Based off the 2040 No Build scenario, there are expected to be 15.5 million trips in one day. In this scenario, 45% of daily trips are expected to be shared rides, similar to 2015. Of the 6.9 million shared rides, 3.7 million trips are expected to involve two passengers, while 3.1 million trips are expected to involve three or more passengers. During off peak hours, the amount of shared rides is expected to increase slightly up to 46%, while shared trips during peak hours are expected to decrease to 43%, equal to the percentage of shared peak hour trips in 2015.

According to the 2040 Build scenario, OCTA predicts 15.6 million private vehicle trips in the county.45% of daily trips are expected to be shared rides. Of the 7 million shared rides, 3.7 million trips are expected to involve two passengers, while 3.2 million trips are expected to involve three or more passengers. During off peak hours, the number of shared rides is expected to increase to 46%, while shared trips during peak hours are expected to decrease to 43%. This scenario bears the same results as the 2040 No Build scenario.

4.3.7 Emissions

Orange County is located within the South Coast Air Basin, which has some of the worst air pollution in the United States. Transportation considered to be a major contributor to worsening air conditions. Senate Bill 32 (SB 32) requires the state of California to reduce greenhouse gas (GHG) emissions to 40% below 1990 levels by the year 2030. To reach this goal, GHG emissions within the South Coast Air Basin would have to reduce by 80%.

In 2015, the total amount of emissions within Orange County reached a total of 38,053 tons. About 84% of transportation-related emissions were the result of light/medium-duty vehicles travelling throughout the county, 15% were the result of heavy-duty trucks, and 1% were the result of other vehicles. CO2 emissions made up 99% of total pollutants released in the area. The table on the following page shows 2015 emissions levels for Orange County.





User Selected : All Vehicles | Annual | Process:All | Technology:All

Table 9: 2015 Emissions in Orange County

OCTA's 2040 No Build scenario projects that without any transportation improvements, GHG emissions would decrease to 25,653 tons. These results show a 32.5% decrease from the amount of GHG emissions released in 2015. 73% of the 2040 No Build emissions are predicted to be from light/medium duty vehicles, 25% of emissions are predicted to be from heavy-duty trucks, and 2% are expected to be from other vehicles.



User Selected : All Vehicles | Annual | Process:All | Technology:All

 Table 10: 2040 No Build Emission Projections for Orange County



The 2040 Build scenario projects that GHG emissions would decrease to 25,844 tons. These results show a 32.1% decrease from the amount of GHG emissions released in 2015. 72% of the 2040 Build emissions are expected to be from light/medium-duty vehicles, 26% of emissions are expected to be from heavy-duty trucks, and 2% are expected to be from other vehicles.



User Selected : All Vehicles | Annual | Process:All | Technology:All

Table 11: 2040 Build Emission Projections for Orange County



Staekholder Involvement

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COMPREHENSIVE MULTIMODAL CORRIDOR PLAN: STATE ROUTE 91

5. Stakeholder Involvement

Recognizing the extent of previous stakeholder outreach by OCTA is an important consideration in scoping the efforts for the Comprehensive Multimodal Corridor Plan. OCTA has conducted various kinds of outreach, including through committee meetings, independent project outreach, and various surveys. Groups such as the Project Development Team (PDT), the Regional Planning and Highways Committee, Special State Route 91 Advisory Committee, and the OCTA Board of Directors provide valuable insight from various organizations, including OCTA, Riverside County Transportation Commission (RCTC), the Transportation Corridor Agencies (TCA), California Department of Transportation (Caltrans), San Bernardino County Transportation Authority (SBCTA), City of Anaheim, and City of Yorba Linda. This broad range of public sector input, from state to local government, facilitates coordination across various regions and ensures that interests and values are aligned and accounted for. In addition, private sector organizations are known to attend these meetings, providing valuable industry input and feedback. On the other hand, OCTA has also conducted extensive public outreach studies as part of the OC Active Report, Transit Master Plan, Long Range Transportation Plan and the Transit Survey scope of work. These previous outreach studies include website/online surveys, social media campaigns, community meetings, stakeholder interviews, and focus groups, providing a thorough understanding of regional needs and desires.

The PDT for the SR-91 Westbound Widening Project Approval/Environmental Documentation project conducts some of the most diverse monthly meetings, covering a broad range of topics. Topics include project development, engineering considerations, environmental concerns, and administrative processes. These discussions have provided valuable input to the Comprehensive Multimodal Corridor Plan. Key areas of concerns noted through discussion include:

- OCTA and RCTC noted that changes on the SR-91 will impact operational issues, traffic dynamics, project readiness, and funding.
- The City of Anaheim is prioritizing bike infrastructure in order to compensate for delays on the Fairmount Boulevard Improvement project.
- OCTA cut low ridership routes to improve the productivity of Express Bus Service
- SR91 to SR55 connector improvement projects could provide considerable environmental and safety benefits.
- OCTA staff discussed traffic modeling changes, the implementation of TransModeler could provide greenhouse gas emission and delay data.
- The public identified congestion hot spots near the county line that should be considered for relief strategies.

The Regional Planning and Highways Committee and the Special State Route 91 Advisory Committee include OCTA and RCTC members, with Caltrans members as acting advisors. Both committees host open meetings, providing members of the public the opportunity to respond to meeting discussions and provide recommendations to the OCTA Board of Directors. These discussions have provided valuable input to the Comprehensive Multimodal Corridor Plan. Main input received by participants include:

- Traditional methods being used to measure success of improvements and projects are not always accurate. Heat maps only measure areas targeted in the study, and do not capture impacts downstream. Downstream impacts are important considerations, especially at the "mixing bowl" at the county line, where increased traffic congestion has been noted by the public.
- Drivers are using arterials to avoid congestion on the SR91, which should be an important consideration for future projects like dynamic pricing on express lanes, which could increase congestion on general purpose lanes.



- Long-term uncoordinated construction could cause disruptions and construction fatigue to affected communities.
- Increasing capacity is key, whether that be increased roadway infrastructure, or improved multi-modal service.

While the outreach methods implemented above reflect industry perspective, OCTA's outreach on the OC Active Report, Transit Master Plan, Long Range Transportation Plan, and Transit Survey reflect wider audiences, including the general public, business entities, diverse community leaders, transit and rideshare users, students, environmental communities, and many others. The OC Active Report prioritized engaging underrepresented community members that may have difficulty attending or participating in open house evets. To better engage these communities, OC Active Report attended the Chalk and Walk Event, the Walk to School Day, the Cruise with a Cop event, and 76 other well established community members under the age of 18. Main concerns expressed by participants include desires for:

- better crosswalks, separated bikeways, lighting, vegetation, and shading.
- multimodal safety between bikes, pedestrians, and motorists.
- facilitated intermodal connections.
- the use of technology as a method to provide service to underserved areas, first last-mile connections, and reduce operational costs.
- affordable, efficient, accessible, convenient, and reliable transit.
- faster and more frequent transit that competes with driving time.
- longer hours of operation, more frequent service during off-peak hours, and increased multi-modal options, addressing a generational shift in needs for both millennial and senior citizens.
- longer hours of operation and more frequent service during off-peak hours, a generational change addressing millennial needs.
- more increased high-capacity or rapid transit modes along the busiest corridors.
- increased service to non-commute hubs, including special events, parks, downtown areas, schools and retail centers.
- congestion relief on highways and local streets.



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Monitoring and Evaluation

COMPREHENSIVE MULTIMODAL CORRIDOR PLAN: STATE ROUTE 91

MAY 1, 2020

6

6. Monitoring and Evaluation

The table below shows the performance measures that have been selected from various sources to show how the SR-91 corridor is performing relative to the goals of the OCTA Long Range Transportation Plan. The performance measures are color-coded by source as per the key immediately below.

KEY

2018 Central County Corridor Plan

OCTA Long-Range Transportation Plan

NACTO Urban Street Design Guide

90 Express Lane Annual Report

PLAN GOALS	PERFORMANCE MEASURES
4 DELIVER ON COMITTMENTS	Measure M projects funded within LRTP
 4 DELIVER ON COMITTMENTS 2 IMPROVE SYSTEM PERFORMANCE 	 Measure M projects funded within LRTP To be modeled (Existing) MPAH ADT Freeway AADT Truck % of Freeway ADT Peak Hour Freeway LOS To be modeled (No Build (Change vs. Existing)) Total vehicle hours of delay Total vehicle hours of delay Average total minutes of delay Average time spent in corridor Average daily speeds To be modeled (Build (Change vs. No Build)) Daily person hours of delay Daily vehicle jours of delay Peak Hour Freeway LOS Daily vehicle jours of delay Daily vehicle jours of delay Daily VMT (in HOV and GP lanes, if possible) Others Daily vehicle passenger minutes traveled per capita Daily vehicle passenger minutes of delay per capita Daily delay as a percent of travel time Average AM peak speeds by facility type Households/employment within half mile of HQTC or Metrolink station
	 Households/employment within a quarter mile of bikeways Average work peak trip travel time in minutes



PERFURMANGE MEASURES
To be modeled (Existing) • Metrolink AWB (countywide) • Metrolink % of system-wide boardings (countywide) • OC annual bus passengers served (countywide) To be modeled (No Build (Change vs. Existing) • Daily carpool trips Safety • Collision rates by severity and mode • Fatality rates • Injury rates
Others Miles of high quality transit corridors Revenue vehicle hours for on-street transit Number of Orange County commuter trains HOV/HOT lane miles Miles of bike lanes by class Trips by mode Existing conditions of microtransit (qualitative)
To be modeled (Existing) Population Median household income Household income distribution (%) Number of jobs Major employment sectors (%) To be modeled (No Build (Change vs. Existing)) Population Housing Jobs/Employment Others Local pavement conditions Acres of land conserved by mitigation projects Tons of trash removed from water VMT from "higher-emission" speed classes Number of jobs added from proposed investments Percent of state facilities in distress (funding shortfall with/without SB1) Toll revenues from SR-91 Express Lanes

Table 12: Performance Measures

