2020 California High Occupancy Vehicle Facilities Degradation Report

Prepared by

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Division of Traffic Operations
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1 Overview

As required by Title 23 of the United States Code, section 166 (23 U.S.C. § 166), the California Department of Transportation (Caltrans) has prepared the *2020 California High Occupancy Vehicle Facilities Degradation Report.* This is the annual report on the performance of high occupancy vehicle (HOV) facilities on State highways in California.

Caltrans and the Federal Highway Administration (FHWA) have agreed that a comprehensive degradation report and action plan will not be developed for 2020 due to the fact that the Coronavirus Disease 2019 (COVID-19) pandemic resulted in significant changes to traffic conditions which were out of the ordinary. This report includes the information on HOV degradation in 2019 that had been previously submitted to FHWA. It also includes information on several changes to the HOV lane network in California that occurred in 2020, updated information on Clean Air Vehicle (CAV) decals, and a brief overview of degradation in 2020. No action plan will be developed for facilities that were identified as degraded in 2020. Remediation strategies to bring degraded HOV lanes into compliance were provided in the *2019 California High Occupancy Vehicle Facilities Degradation Report and Action Plan.* In lieu of an action plan for facilities that were degraded in 2020, an update of the 2019 action plans will be provided to FHWA within 180 days of the submittal of this report, as required under 23 U.S.C. § 166.

2 High Occupancy Vehicle Facilities In California In 2020

In 2020, there were approximately 1,460 lane-miles of HOV lanes and about 374 lane-miles of high occupancy/toll (HOT) lanes on the State Highway System (SHS). HOV facilities are located in Caltrans District 3 (Sacramento County), District 4 (Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Solano, and Sonoma Counties), District 5 (Santa Barbara County), District 7 (Los Angeles and Ventura Counties), District 8 (San Bernardino and Riverside Counties), District 10 (San Joaquin County), District 11 (San Diego County), and District 12 (Orange County). The HOT facilities are located in Districts 4, 7, 8, 11, and 12. A complete list of all the HOV and HOT lanes on the SHS may be found in section 9 of this report in Table 5.

There were four significant changes to the State's HOV facilities in 2020.

- Approximately 43 lane-miles of HOV lanes on Interstate 880 in Alameda County were converted to HOT lanes in October 2020. The minimum occupancy requirements to access the lanes toll-free were increased from two to three. Discounts are offered to vehicles with two occupants and qualifying CAV. The new HOT lanes are located between the Santa Clara County line and the city of Oakland.

- Approximately eight lane-miles of a new HOT lane were opened on northbound I-680 in Alameda County in the city of Fremont in October 2020. The new HOT lane was only opened initially to vehicles with two or more occupants as well as qualifying CAV. This lane will eventually be opened to toll-paying vehicles in 2021.
- Approximately seven lane-miles of existing HOV lane on southbound I-680 in Contra Costa County were converted to HOT lanes in October 2020. An additional four lane-miles of new HOT lane was opened at the same time, closing a gap through the city of Walnut Creek. This facility connects with an existing HOT lane south of Walnut Creek, providing 23 miles of continuous HOT lane on southbound I-680 between the Benicia-Martinez Bridge and the Alameda County line. The newly converted and opened segments were opened only to vehicles with two or more occupants and qualifying CAV; toll-paying vehicles will be permitted in 2021.
- Approximately seven lane-miles of new HOV lanes were opened on I-10 in Los Angeles County, extending the existing HOV lanes that currently operate east of I-605. The new lanes are open to vehicles with three or more occupants during the morning and afternoon peak periods, vehicles with two or more occupants at all other times, and qualifying clean air vehicles. This extension opened in August 2020.

3 Exempt Vehicle Access on HOV Facilities in California

23 U.S.C. § 166 includes a provision for states to allow inherently low-emission vehicles (ILEVs), certain gasoline/electric plug-in hybrid vehicles, and toll-paying vehicles to use HOV facilities without meeting occupancy requirements. States that allow these exempted vehicles to access these facilities must monitor and report the performance of those facilities.

California allows certain ILEVs and plug-in hybrid electric vehicles displaying valid CAV decals to access HOV facilities without meeting occupancy requirements.[1] California also allows toll-paying vehicles not meeting occupancy requirements to access certain HOV facilities, known as HOT lanes.[2]

3.1 Clean Air Vehicle Access

California's CAV decal program was first established in 2004. It is managed by the Department of Motor Vehicles (DMV) in partnership with the California Air Resources Board (CARB). CARB establishes the official list of eligible vehicles based on specified emissions standards. The program was established by the California State Legislature to promote the purchase and lease of the cleanest models of vehicles and has been

[1] Refer to Vehicle Code sections 5205.5 and 21655.9
[2] Refer to Streets and Highways Code sections 149.1 and 149.4 through 149.10

amended over the years to allow more drivers to participate, incorporate vehicles with the newest technologies, and retire other vehicle technologies that had become commonplace. Each year, a different colored decal is issued to qualifying vehicles, with its own expiration dates and the decals cannot be renewed. In 2020, there were three different colored decals in use:

- Red decals are valid until January 1, 2022
- Vehicles that registered in 2019 received a purple decal that is valid through January 1, 2023
- Vehicles that registered in 2020 received an orange decal that is valid through January 1, 2024

At the beginning of 2019 there were 134,657 vehicles with a CAV decal. At the end of 2019, there were 252,354 vehicles with a decal. As of December 31, 2020, there were 317,515 vehicles with a decal. Most of these vehicles were registered in counties with a significant number of HOV facilities. Nearly 25 percent were in Los Angeles County. Orange and Santa Clara Counties were home to about 15 percent of the vehicles, and Alameda County had about 10 percent of these vehicles.

3.2 High Occupancy/Toll Lanes

There were nine HOT facilities in operation on the SHS as of the end of 2020. While these facilities are on State highways, the authority to collect the tolls has been granted to regional transportation agencies through legislation. These agencies are responsible for setting the tolls and establishing eligibility requirements, subject to other provisions in State and Federal law. All HOT facilities use congestion pricing, and all facilities except for the HOT lanes on SR-91 use dynamic pricing based on real-time traffic conditions. The HOT lanes on SR-91 are priced based on the time of day. HOVs traveling in the EB direction during the weekday afternoon peak period pay a discounted toll.

Vehicles with two or more occupants (HOV 2+) may travel toll-free on all HOT facilities in California, except for the facilities on SR-91, I-10, and I-880. On the SR-91 facility, vehicles with three or more occupants (HOV 3+) are eligible to travel toll-free (or at a discount, as noted above). The I-10 facility offers toll-free travel to HOV 3+ during peak periods and to HOV 2+ at all other times. The I-880 facility offers toll-free travel to HOV 3+ and discounted travel to HOV 2+.

Decaled CAVs are charged a toll on five (5) HOT lanes in California. On the HOT lanes on I-10 and I-110, vehicles pay 85 percent of the posted toll. On SR-237 and I-880, decaled CAVs pay 50 percent of the posted toll. Zero-emission vehicles pay a discounted toll on the SR-91 facility when traveling in the EB direction during weekday afternoon peak periods but travel toll-free at all other times.

Whenever the average vehicle speed begins to fall below 45 mph on a segment of a HOT facility, it will operate in an "HOV Only" status, precluding toll-paying vehicles from

entering the lanes to help alleviate the congestion.[3] If ineligible vehicles enter the HOT lanes while they are operating in "HOV Only" mode, they are charged the maximum toll rate as well as additional fines.

All HOT facilities require all users to have a FasTrak electronic toll collection transponder except for the I-680 facility in Alameda and Santa Clara Counties and I-15 in San Diego County, which only require single occupant vehicles to have a transponder. On those facilities which require all vehicles to have a transponder, HOVs must have a FasTrak Flex transponder to travel toll-free; this transponder includes a switch that the driver can set prior to travel to indicate how many people are in the vehicle. (The HOT facility on SR-91 has separate "declaration lanes" for HOVs at the tolling points, and a FasTrak Flex transponder is not required for toll-free travel on this facility.) Requiring all users to carry a transponder is one of the main strategies for reducing violations on HOT facilities. A violation of the transponder requirement usually results in a toll evasion notice issued by the agency that has the legislative authority to collect the toll.

The California Highway Patrol (CHP) enforces the vehicle occupancy requirements. All HOT facilities use indicator signals at the tolling points to indicate whether a vehicle has a transponder, and on facilities that require a FasTrak Flex transponder for toll-free or discounted travel, these indicator signals also report the setting on the FasTrak Flex transponder. CHP uses the indicator lights and a visual check on the vehicle to determine if a violation has occurred.

4 Process For Determining Degradation

Subsection (d) of 23 U.S.C. § 166 states that an HOV facility is considered degraded if the average traffic speed during the morning or evening weekday peak hour period is less than 45 miles per hour (mph) for more than 10 percent of the time over a consecutive 180-day period. FHWA has not developed specific procedures or methodologies for states to follow when determining if the operational performance of an HOV facility is degraded. This is primarily because each state has different characteristics, and each agency responsible for operations has different resources to collect and analyze data. However, Caltrans has developed a comprehensive methodology to provide consistent and frequent data collection of HOV lane operations. This process is outlined in the following sections.

4.1 Performance Monitoring

Caltrans uses its Performance Measurement System (PeMS) to monitor and analyze the operational performance of State highways. PeMS serves as a central repository to collect, store, and analyze traffic data from vehicle detector stations and traffic census stations. Traffic data is collected automatically from sensors located on or adjacent to freeways throughout the State. Detector stations are usually located where there are

[3] This strategy is not used on the SR-91 HOT facility.

existing metering lights on freeway on-ramps (the sensors are used to control the ramp metering signals). In facilities with lower traffic volumes and less congestion, there may be fewer detector stations. Each detector station covers a set length of the freeway, with data available for each individual lane, including the HOV facilities located on those freeways. This data is collected every 30 seconds and transmitted to a centrally located database where it is reviewed for consistency and aggregated to 5-minute intervals. These 5-minute data sets can then be further aggregated into hourly time blocks. PeMS was used to collect the speed data for all HOV facilities except those facilities in District 11. Facilities in District 11 are analyzed using the Ramp Metering Information System since PeMS is not able to properly calculate speeds for the I-15 HOT facility, which has reversible lanes.

The HOT facility on SR-91 in Orange County is not included in this report. This facility was constructed as a set of toll lanes in the median of the freeway which HOVs could use for free or at a discounted rate. Therefore, they are not subject to the monitoring and reporting requirements of 23 U.S.C. § 166. The Riverside County portion of the SR-91 HOT facility was originally constructed as an HOV lane and is subject to the monitoring and reporting requirements and is included in this report.

4.2 Time Period for Analysis

Caltrans collects data for HOV facilities 24 hours a day, seven (7) days a week. However, since traffic volumes tend to be higher in the second half of each calendar year, Caltrans and FHWA have agreed that the annual degradation analysis will only cover the period from July 1 to December 31. Data was analyzed for every weekday during that period (including holidays that fell on weekdays). In both 2019 and 2020 there were 132 weekdays and 52 weekend days, including seven (7) holidays for this period.

The morning peak hour period is 6 a.m. to 9 a.m., and the afternoon peak hour period is 3 p.m. to 6 p.m. Most HOV facilities in California operate during both time blocks.

4.3 Data Collection

In 2019, data was collected on approximately 1,302 lane-miles of HOV facilities. This is about 73 percent of the 1,774 lane-miles of HOV facilities that were subject to monitoring and analysis as required by 23 U.S.C. § 166.[4] In 2020, data was collected on approximately 1,245 lane-miles of HOV facilities, which was approximately 69 percent of the 1,793 total lane-miles that were subject to monitoring and analysis in 2020 as

[4] The lane-miles monitored as required by Title 23 U.S.C. § 166 include 1,504 lane-miles of HOV lanes, and all but 41 lane-miles of the 312 lane-miles of HOT lanes (SR-91 in Orange County is excluded as noted in Section 4.1). Numbers do not add up exactly due to rounding.

required by 23 U.S.C. § 166.[5] Table 1 shows the number of HOV lane-miles in each Caltrans district and the number of lane-miles for which data was collected in 2019.

Reasons for a lack of data include defective sensors, incorrectly transmitted data, or no detection along that segment. Data that was imputed or estimated by PeMS was eliminated from the analysis. This ensures that only actual and not estimated data is used for the analysis. Any faulty or inaccurate data was also removed from the analysis. As part of its asset management efforts, Caltrans is continuously focusing on the health of the detector stations and has a process in place for replacing detector stations that have reached the end of their life cycle or are beyond repair.

Table 4-1 HOV Facility Detection by District in 2019 And 2020

District	2019		2020	
	Lane-Miles Operating	Lane- Miles Monitored	Lane-Miles Operating	Lane- Miles Monitored
3	117	101	117	101
4	507	319	518	286
5	3	3	3	3
7	551	368	561	343
8	227	171	227	172
10	14	12	14	4
11	119	114	119	119
12	236	215	235	210
TOTAL	1774	1302	1793	1238

4.4 Calculating Degradation

The vehicle miles traveled (VMT) and vehicle hours traveled (VHT) during the peak hour periods were calculated from the PeMS data for each detector station. The VMT and the VHT were then used to determine the average speed for each peak hour period for each day and the average speed for each peak hour period for the entire six (6) month period.

- The average peak hour period speed for each day was determined by dividing the total VMT for the peak hour period by the total VHT for the peak hour period (miles traveled / hours traveled = mph).[6]

[5] The lane-miles monitored as required by Title 23 U.S.C. § 166 include 1,461 lane-miles of HOV lanes, and all but 41 lane-miles of the 374 lane-miles of HOT lanes (SR-91 in Orange County is excluded as noted in Section 4.1). Numbers do not add up exactly due to rounding.
[6] For facilities in District 11, the average speed for the morning and afternoon three-hour time blocks was provided directly from RMIS.

- The average peak hour period speed for the entire six (6) month period was determined by taking the total VMT and the total VHT for the peak hour period for the entire six (6) months and then dividing that VMT by that VHT. [7]

For all stations for which data was collected, a count was taken of the number of weekdays where the average speed at the detector station was less than 45 mph. The total number of weekdays with data was also counted for each sensor. The number of weekdays where the speed was less than 45 mph was then divided by the number of weekdays for which data was available. If this value exceeded ten percent, that portion of the HOV facility covered by that detector station was deemed degraded (each detector station covers a predetermined length of the facility, as previously noted in Section 4.1). The lane-miles for each detector station with data were added up to determine the total number of lane-miles with data available as well as the total number of lane-miles that were degraded. Graphs were then developed for each HOV facility showing the average weekday speed at these detector stations for each peak hour period as well as the percentage of time where the average speed at the detector stations was less than 45 mph.

4.5 Degradation Frequency

While the federal standard distinguishes HOV facilities' performance as degraded or not degraded, Caltrans further classifies degradation into three (3) categories based on how frequently it occurs to identify potential causes and formulate remediation strategies. The criteria for each category of degradation status are as follows:

- Slightly Degraded—degradation occurs from 10 to 49 percent of the time
- Very Degraded—degradation occurs from 50 to 74 percent of the time
- Extremely Degraded—degradation occurs 75 percent or more of the time.

5 2019 Statewide Degradation Summary

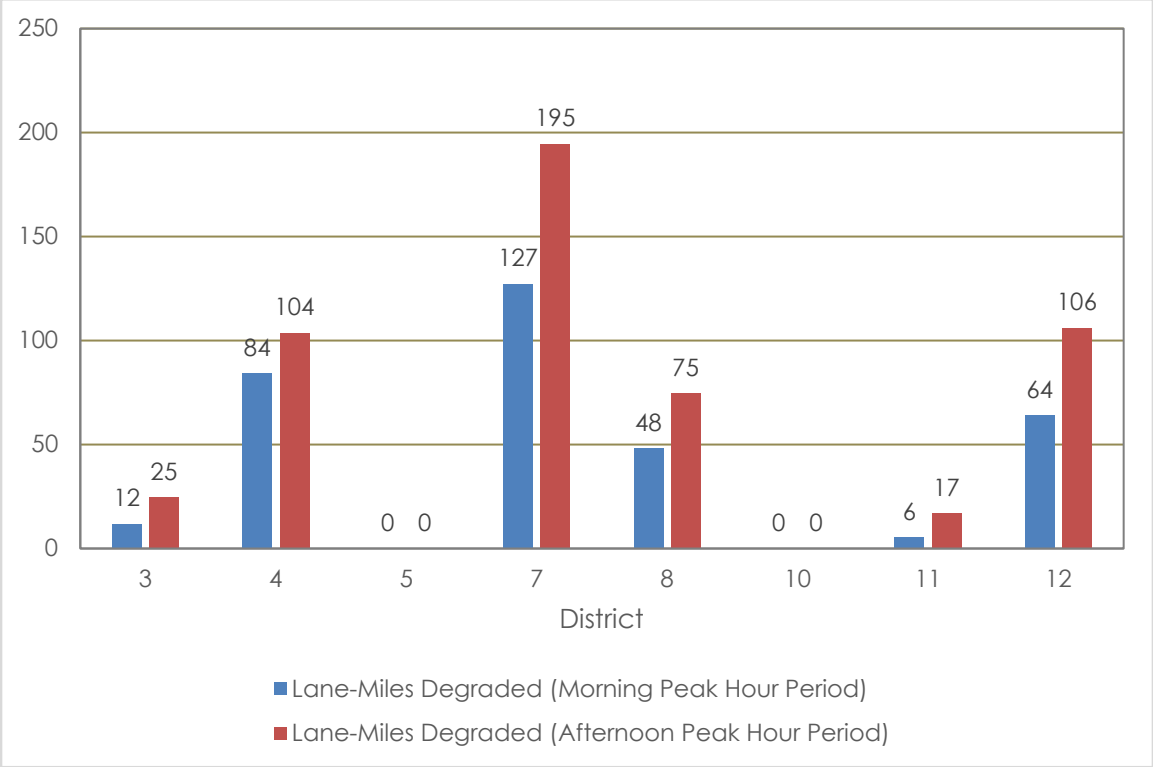
Table 2 summarizes the statewide HOV facilities degradation monitoring in 2019. Of the 1,302 lane-miles monitored in the morning peak hour period, approximately 26 percent (342 lane-miles) were degraded. Of the 1,302 lane-miles monitored in the afternoon peak hour period, approximately 40 percent (521 lane-miles) were degraded. Figure 1 shows the lane-miles of degraded HOV facilities by district. Districts 7 and 4 had the most degraded lane miles. Districts 5 and 10 experienced no degradation. Approximately 42 percent of the HOV facilities that operated in both peak hour periods experienced degradation in both peak hour periods.

[7] For facilities in District 11, the average peak hour period speed for the six (6) month period was calculated by determining the average of the daily speeds provided by RMIS.

Table 5-1 2019 Statewide HOV Degradation Summary

Morning Peak Hour Period		Afternoon Peak Hour Period	
Lane-Miles Degraded	Lane-Miles Not Degraded	Lane-Miles Degraded	Lane-Miles Not Degraded
342	960	521	781

Figure 1 2019 Statewide Degradation Summary by District



Figures 2 and 3 show statewide degradation categorized by frequency. Degradation occurred more frequently in the afternoon peak hour period, with approximately 46 percent of the degraded facilities in that period experiencing extreme levels of degradation.

Figure 2 2019 Statewide Degradation by Frequency (Morning Peak Hour Period)

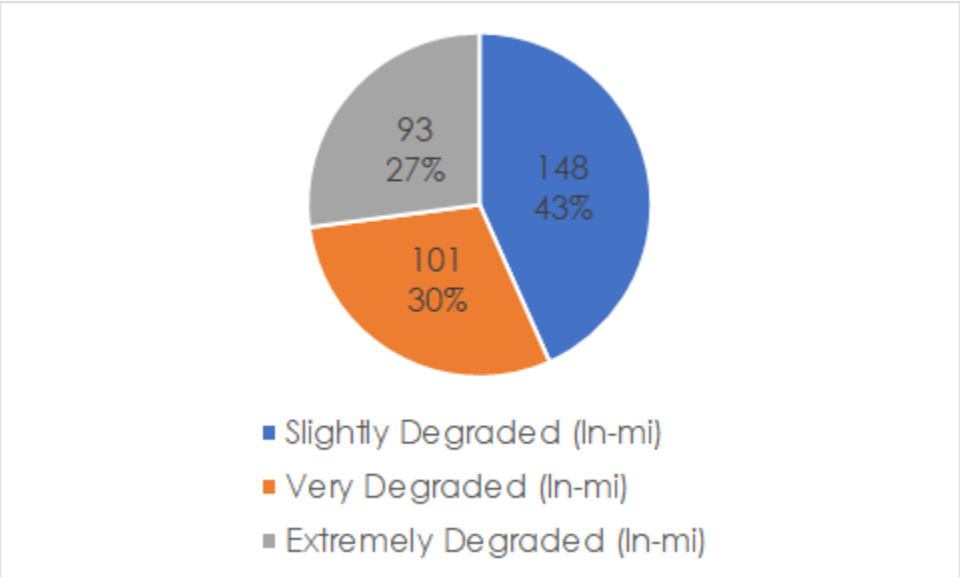
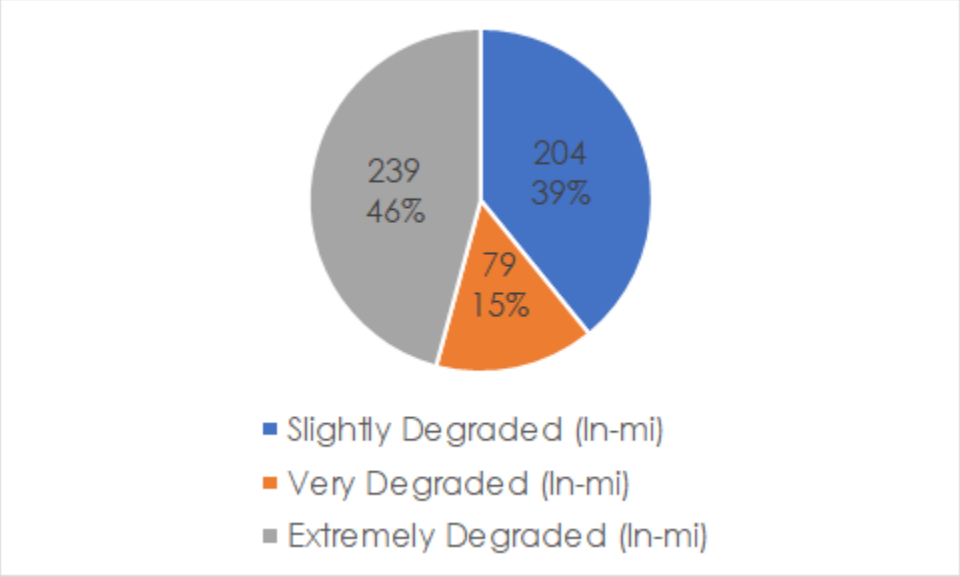


Figure 3 2019 Statewide Degradation by Frequency (Afternoon Peak Hour Period)



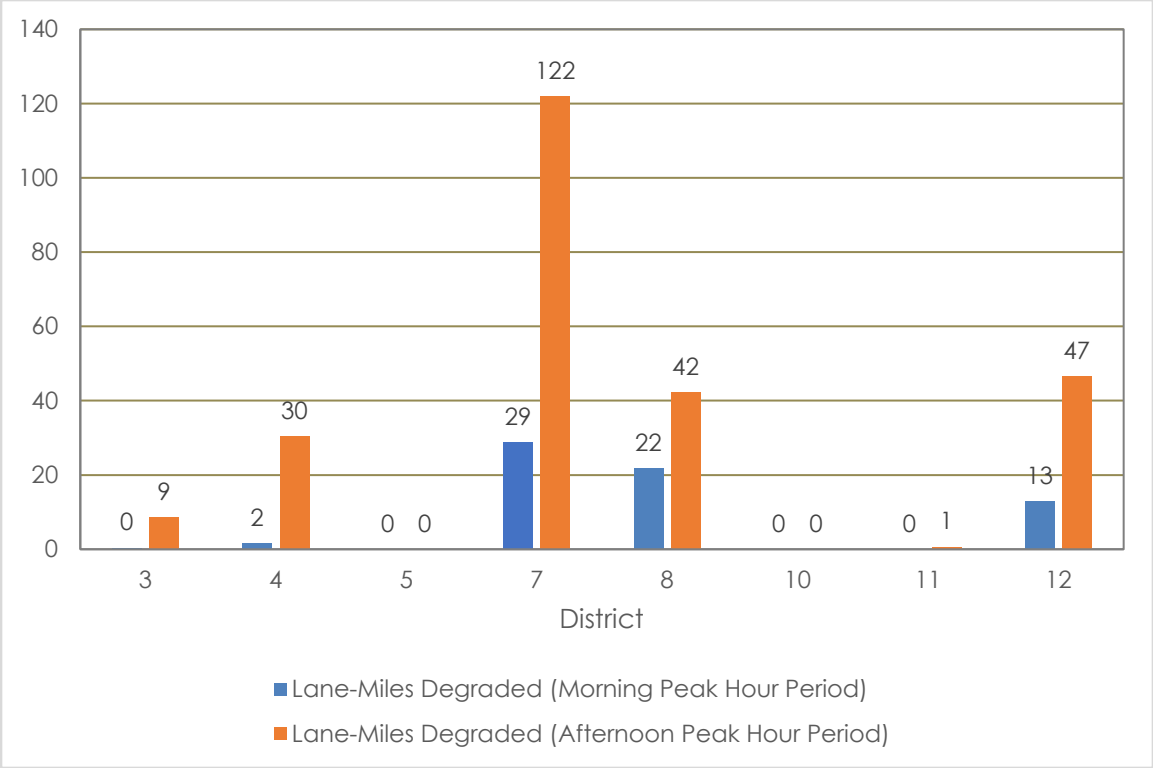
The results of the degradation analysis for each district's HOV facilities were previously provided in the *2019 California High Occupancy Vehicle Facilities Degradation Report and Action Plan*.

6 2020 Statewide Degradation Summary

A general analysis of degradation was performed for 2020, focusing only on where and when degradation was observed. There was no analysis of degradation frequency. Figure 4 shows the lane-miles of degraded HOV facilities by district. District 7 (Los

Angeles area), District 8 (Inland Empire) and District 12 (Orange County) had the most degradation. HOV facilities in Districts 5 and 10 were not degraded.

Figure 4 2020 Statewide Degradation Summary by District



6.1 Impacts of Covid-19 Pandemic on Degradation

On March 4, 2020, California Governor Gavin Newsom declared a statewide state of emergency due to concerns about the rapid spread of the COVID-19. Over the following weeks, several actions were taken throughout California to contain the spread of COVID-19, culminating in a statewide order issued on March 19, 2020, that directed all Californians to stay home except to go to an essential job or to shop for essential needs. The order was modified on May 4, 2020 to implement a process for a staged reopening of business and public spaces. On August 28, 2020, the State modified it further with the release of a new process to permit gradual reopening of certain businesses and activities. Under that process counties were assigned tiers that were updated weekly and determined by the county's case rate and test positivity rate. Local jurisdictions could have more restrictive local orders than the assigned tier. Counties were grouped into five regions based on geographical location. Over the next several months, counties moved up and down in their assigned tiers based on the rate of infections. On December 3, 2020, further restrictions were implemented in regions with low hospital bed capacity under a Regional Stay Home Order. The Regional Stay Home Order was in effect in all parts of the state except northern California as of December 31, 2020.

The United States Census Bureau collected information on national and state telework trends and travel patterns for the period of August 19, 2020 through October 26, 2020. At the beginning of this period, approximately 11 million households in California (of approximately 30 million recorded in California) reported that at least one adult in the household substituted telework for some or all their in-person work because of the pandemic. Nearly two-thirds (approximately 20 million) of households (of approximately 30 million recorded in California) reported taking fewer trips than normal because of the COVID-19 pandemic, while approximately one-third of households reported taking fewer trips by bus, rail, or ride-share service. None of these statistics had changed by the end of this period.

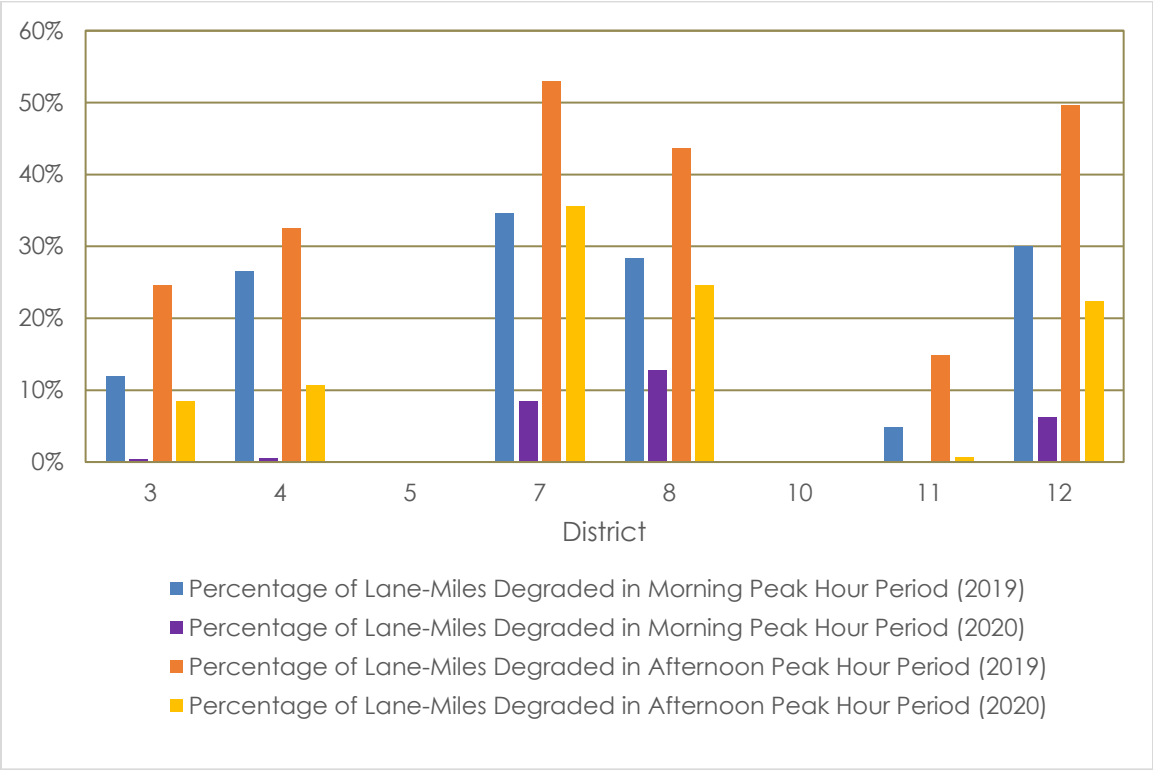
The stay at home orders had a marked effect on traffic congestion on California's highways. Overall, the traffic volumes on the SHS during the morning and afternoon peak periods from March 2020 through December 2020 were 10 to 50 percent less compared to that same period in 2019. VMT on the SHS during this period was down about 10 to 50 percent from the same time in 2019, while average speeds went up as much as 15 percent. The State's HOV lanes were not exempted from the impacts of the pandemic. Table 4 compares the percentage of facilities degraded in 2020 compared to 2019. There was an approximately 50 to 80 percent drop in degradation in 2020.

Figure 5 2019 and 2020 Statewide HOV Degradation Comparison

2019		2020	
Percentage of HOV Lane-Miles Degraded in Morning Peak Hour Period	**Percentage of HOV Lane-Miles Degraded in Afternoon Peak Hour Period**	**Percentage of HOV Lane-Miles Degraded in Morning Peak Hour Period**	**Percentage of HOV Lane-Miles Degraded in Afternoon Peak Hour Period**
26	40	5	20

Figure 5 provides a side-by-side comparison of degradation in each district in the morning and afternoon peak hour periods in 2019 and 2020.

Figure 6 Percentage of Degradation in Districts in 2019 and 2020



Listed below are some general observations from the 2020 degradation analysis:

- Degradation was more prevalent in the afternoon peak hour period, versus the morning peak hour period, as noted in Table 4.
- Degradation was almost non-existent in the morning peak hour period in Districts 3 and 4, with a 97 and 98 percent reduction, respectively, compared to 2019.
- Degradation was not observed in the morning peak hour period in District 11 and was almost non-existent in the afternoon peak hour period.
- Districts 7, 8, and 12 had the highest amounts of degradation. All three districts experienced degradation in the morning and afternoon peak hour periods. The levels of degradation in the morning were about 55 to 79 percent less than the levels seen in 2019 and levels of degradation in the morning decreased by 34 to 54 percent.

The United States Census Bureau data offers some possible insights into the differences in degradation levels across the State. At the beginning of the reporting period approximately 52.5 percent of households in the San Francisco Bay Area had at least one adult who had substituted some or all their typical in-person work with telework because of the pandemic. This had jumped to 56.6 percent at the end of the reporting period. In the Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area, approximately 43.4 percent of households had someone teleworking at the start of the

reporting period, and this decreased to 40. 2 percent by the end of the reporting period. The Inland Empire (Riverside and San Bernardino Counties) held the national record for the lowest number of households where someone was teleworking, with 27.6 percent at the start of the reporting period and 28.1 percent at the end of the reporting period. Many residents in the Inland Empire work in Los Angeles and Orange Counties.

Certain routes that appear in these annual degradation reports year after year also made the list of degraded facilities in 2020. These include:

- SR-99
- I-5 in Orange County
- I-10
- SR-55
- I-80 in Alameda and Contra Costa Counties
- I-105
- I-210
- I-215
- I-405 in Los Angeles County

7 Conclusion

Caltrans will provide FHWA with updates to the degradation action plans that were developed in 2019. In developing these updates Caltrans staff will conduct more analysis on the causes of degradation with the goal of identifying strategies that will more directly address those causes. More information will be provided on topics such as CAV usage rates and violation rates. It should be noted that some of the operational changes that were highlighted in section 2 of this report are expected to have addressed degradation of those facilities and will be reflected in the action plan updates. While the COVID-19 pandemic was expected to result in less degradation for 2020, it did not eliminate degradation and those HOV facilities that have the most significant performance issues were highlighted.

Caltrans acknowledges that a more strategic and programmatic approach to the action plans is going to be necessary to address degradation more directly and effectively. Caltrans is currently looking at ways to provide more dedicated funding to addressing performance issues on the SHS, including degradation.

8 HOV Facility Information

Table 8-1 List of HOV Facilities on the State Highway System in 2020

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	3	50	EB	SAC	R5.371	ED	5.834	11.005	34.632	Watt Ave to Cameron Park Dr	23.6
HOV	3	50	WB	ED	6.459	ED	R6.366	35.347	12.000	Cameron Park Dr to Watt Ave	23.2
HOV	3	51	NB	SAC	0.000	SAC	0.717	0.000	0.717	SR-99/US-50 to N Street	0.7
HOV	3	51	SB	SAC	1.467	SAC	0.000	1.467	0.000	B Street to SR-99/US-50	1.4
HOV	3	80	EB	SAC	M0.767	PLA	4.718	84.691	106.237	West El Camino Ave to SR-65	21.5
HOV	3	80	WB	PLA	4.880	SAC	M1.012	106.399	84.936	SR-65 to West El Camino Ave	21.5
HOV	3	99	NB	SAC	11.969	SAC	R24.351	286.475	298.857	Elk Grove Blvd to US-50/SR-51	12.4
HOV	3	99	SB	SAC	R24.351	SAC	12.191	298.857	286.697	US-50/SR-51 to Elk Grove Blvd	12.2
HOV	4	4	EB	CC	R15.177	CC	R28.480	14.984	28.263	Port Chicago Hwy to Hillcrest Ave	13.3
HOV	4	4	WB	CC	R28.722	CC	R16.382	28.505	16.189	Hillcrest Ave to Port Chicago Hwy	12.3
HOV	4	80	EB	ALA	2.579	CC	13.171	7.908	7.908	I-880 to Cummings Skyway	18.6
HOV	4	80	EB	SOL	0.504	SOL	0.673	27.995	28.164	Carquinez Bridge Toll Plaza	0.3
HOV	4	80	EB	SOL	R11.485	SOL	19.594	38.976	47.096	Red Top Road to Air Base Pkwy	8.1
HOV	4	80	WB	SOL	20.051	SOL	12.456	47.553	40.048	Air Base Pkwy to I-680	7.5
HOV	4	80	WB	SOL	0.838	ALA	4.003	28.329	9.332	SR-29 to Powell Street	18.9
HOV	4	80	WB	ALA	4.117	ALA	2.614	9.446	7.943	Powell St to end of HOV Slip Ramp	1.5
HOV	4	80	WB	ALA	2.998	ALA	1.784	8.327	7.113	San Francisco-Oakland Bay Bridge Toll Plaza	3.1

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	4	84	WB	ALA	R5.926	ALA	R3.012	35.986	33.072	I-880 to Dumbarton Bridge Toll Plaza	2.9
HOV	4	85	NB	SCL	0.215	SCL	R23.737	0.215	23.913	US-101 (South San Jose) to US-101 (Mountain View)	25.4
HOV	4	85	SB	SCL	R23.626	SCL	0.236	23.881	0.236	US-101 (Mountain View) to US-101 (South San Jose)	25.3
HOV	4	87	NB	SCL	0.453	SCL	9.154	0.453	9.154	SR-85 to US-101	9.7
HOV	4	87	SB	SCL	8.827	SCL	0.423	8.827	0.423	US-101 to SR-85	9.2
HOV	4	92	WB	ALA	R5.655	ALA	R2.528	25.182	22.055	Hesperian Blvd to San Mateo Bridge Toll Plaza	3.3
HOV	4	101	NB	SCL	R17.889	SM	6.908	367.16	409.095	Cochrane Rd to Whipple Ave	44.4
HOV	4	101	NB	MRN	3.902	MRN	R22.573	444.929	463.6	Richardson Bay Bridge to North of Atherton Ave	18.7
HOV	4	101	NB	MRN	27.218	SON	3.739	468.047	472.195	from 0.4 miles south of the Marin/Sonoma County line to SR-116	4.1
HOV	4	101	NB	SON	7.192	SON	28.579	475.648	497.028	Old Redwood Hwy to Windsor River Rd	21.4
HOV	4	101	SB	SON	29.29	SON	7.992	497.739	476.448	Windsor River Rd. to Old Redwood Hwy (Petaluma Blvd.)	21.3
HOV	4	101	SB	SON	3.681	MRN	27.468	472.137	468.297	SR-116 to 0.2 miles south of the Sonoma/Marin County line	3.8
HOV	4	101	SB	MRN	R20.88	MRN	4.704	461.907	445.731	De Long Ave to Richardson Bay Bridge	16.2
HOV	4	101	SB	SM	6.908	SCL	R18.734	409.095	368.005	Whipple Ave to Cochrane Rd	46.6
HOV	4	160	NB	CC	0.640	CC	0.728	1.979	2.067	Antioch Bridge Toll Plaza	0.1

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOT	4	237	EB	SCL	R3.343	SCL	9.164	3.400	9.216	Mathilda Avenue to I-880	7.2
HOT	4	237	WB	SCL	9.192	SCL	R4.023	9.244	4.08	I-880 to Lawrence Expwy	6.2
HOV	4	280	NB	SCL	L4.716	SCL	14.019	4.716	15.401	Leland Ave to Magdalena Ave	10.7
HOV	4	280	SB	SCL	13.803	SCL	L4.600	15.185	4.600	Magdalena Ave. to Leland Ave	10.6
HOT	4	580	EB	ALA	18.913	ALA	R8.762	35.097	24.969	Hacienda Rd to Greenville Rd	17.1
HOT	4	580	WB	ALA	R8.654	ALA	20.572	69.928	70.003	Greenville Rd to I-680	11.9
HOV	4	580	WB	CC	6.072	CC	6.147	24.809	36.756	Richmond San Rafael Bridge Toll Plaza	0.1
HOT	4	680	NB	ALA	M3.4	ALA	R10.92	13.335	20.98	South Grimmer Blvd to SR-84	7.6
HOT	4	680	NB	ALA	R21.323	CC	R11.484	30.861	42.876	Alcosta Blvd to Livorna Road	12.0
HOV	4	680	NB	CC	R18.819	CC	23.144	50.32	54.844	SR-242 to south of Marina Vista	4.5
HOV	4	680	NB	CC	24.262	CC	24.788	55.962	56.488	Benicia-Martinez Toll Plaza	0.7
HOT	4	680	SB	CC	23.678	CC	R0.463	55.378	31.88	South of Marina Vista to Alcosta Blvd	23.5
HOT	4	680	SB	ALA	R11.022	SCL	M7.387	21.082	7.387	SR-84 to SR-237	13.6
HOV	4	880	NB	SCL	4.664	SCL	10.502	4.664	10.502	Old Bayshore Hwy to Dixon Landing Rd	5.8
HOT	4	880	NB	ALA	R0.969	ALA	19.149	11.471	29.376	Dixon Landing Rd to SR-238	17.9
HOV	4	880	NB	ALA	R34.527R	ALA	R35.797R	44.754	46.024	West Grand Ave to I-80	1.3
HOT	4	880	SB	ALA	25.314	ALA	0.000	35.541	10.502	Hegenberger Rd to Dixon Landing Road	25.0
HOV	4	880	SB	SCL	10.502	SCL	4.181	10.502	4.181	Dixon Landing Rd to US-101	6.3
HOV	4	880S	NB	ALA	0.000R	ALA	1.223R	0.000	1.223	16th St to SFOBB Toll Plaza	1.6
HOV	5	101	NB	SB	R0.000	SB	1.275	83.063	84.198	Ventura County Line to Ballard Avenue	1.1

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	5	101	SB	SB	2.059	SB	R0.000	84.982	83.063	Ballard Avenue to Ventura County Line	1.9
HOV	7	5	NB	LA	32.329	LA	R45.226	148.747	161.421	Hollywood Way to SR-14	12.7
HOV	7	5	SB	LA	R45.184	LA	32.181	161.379	148.599	SR-14 to Hollywood Way	12.8
HOT	7	10S	EB	LA	16.968	LA	27.96	0.000	10.992	Alameda St to Baldwin Ave	16.6
HOT	7	10	EB	LA	27.963	LA	30.995	26.463	29.495	Baldwin Ave to I-605	5.3
HOV	7	10	EB	LA	30.995	LA	36.537	29.495	35.037	I-605 to Azusa Ave	5.5
HOV	7	10	EB	LA	42.413	LA	48.265	40.913	46.765	SR-57 to San Bernardino County Line	5.9
HOV	7	10	WB	LA	48.265	LA	42.887	46.765	41.387	San Bernardino County Line to SR-57	5.4
HOV	7	10	WB	LA	36.537	LA	31.296	35.037	29.796	Azusa Ave to I-605	5.2
HOT	7	10	WB	LA	30.335	LA	27.784	28.835	26.284	Garvey Ave to Temple City Blvd	4.4
HOT	7	10S	WB	LA	27.778	LA	16.968	10.810	0.000	Temple City Blvd to Alameda St	16.9
HOV	7	14	NB	LA	R24.998	LA	R60.076	0.210	35.239	I-5 to 0.3 miles north of Palmdale Blvd	35.8
HOV	7	14	SB	LA	R60.685	LA	R24.998	35.848	0.210	Avenue P-8 to I-5	36.4
HOV	7	57	NB	LA	R0.000	LA	R4.518R	11.817	16.335	Orange County Line to SR-60	5.4
HOV	7	57	SB	LA	R4.518L	LA	R0.000	16.420	11.817	SR-60 to Orange County Line	5.5
HOV	7	60	EB	LA	11.797	LA	R30.456	11.938	30.597	I-605 to San Bernardino County Line	18.7
HOV	7	60	WB	LA	R30.456	LA	13.820	30.597	13.961	San Bernardino County Line to 0.4 miles west of 7th Ave	16.6
HOV	7	91	EB	LA	R6.559	LA	R20.741	0.557	14.739	I-110 to Orange County Line	14.2

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	7	91	WB	LA	R20.741	LA	R8.532	14.739	2.53	Orange County Line to Central Avenue	12.2
HOV	7	101	NB	VEN	R39.892	VEN	R43.622	79.440	83.063	0.1 mile north of Mobil Pier Rd to Santa Barbara County Line	3.6
HOV	7	101	SB	VEN	R43.622	VEN	R40.197	83.063	79.745	Santa Barbara County Line to 0.4 mile north of Mobil Pier Rd	3.3
HOV	7	105	EB	LA	R1.817	LA	R18.144	1.817	18.144	I-405 to Studebaker Rd	16.3
HOV	7	105	WB	LA	R18.144	LA	R2.414	18.144	2.414	Studebaker Rd to I-405	15.7
HOT	7	110	NB	LA	10.57	LA	20.235	9.756	19.421	Harbor Gateway Transit Center to Adams Blvd	19.7
HOT	7	110	SB	LA	20.249	LA	10.57	19.435	9.756	Flower St/28th St to Harbor Gateway Transit Center	19.0
HOV	7	118	EB	LA	R0.116	LA	R10.513	31.842	42.239	0.1 mile east of Ventura County Line to I-5	10.4
HOV	7	118	WB	LA	R10.817	VEN	R32.105	42.543	31.231	I-5 to 0.3 miles west of Rocky Peak Road	11.3
HOV	7	134	EB	LA	0.226	LA	R5.255R	0.226	5.255	US-101/SR-170 to I-5	5.0
HOV	7	134	EB	LA	R5.667	LA	R13.341	5.667	13.341	I-5 to I-210	7.7
HOV	7	134	WB	LA	R13.341	LA	R6.143	13.341	6.143	I-210 to I-5	7.2
HOV	7	134	WB	LA	4.891	LA	0.721	4.891	0.721	I-5 to 0.1 mile west of Cahuenga Blvd	4.2
HOV	7	170	NB	LA	R14.500	LA	R20.192	0.000	5.692	US-101/SR-134 to I-5	6.6
HOV	7	170	SB	LA	R20.184	LA	R14.500	5.684	0.000	I-5 to US-101/SR-134	6.6
HOV	7	210	EB	LA	R25.238	LA	R52.150	25.218	52.439	SR-134 to San Bernardino County Line	26.9

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	7	210	WB	LA	R52.150	LA	R25.238	52.439	25.218	San Bernardino County Line to SR-134	27.2
HOV	7	405	NB	LA	0.000	LA	48.593	23.948	72.365	Orange County Line to I-5	48.6
HOV	7	405	SB	LA	47.855	LA	0.000	71.627	23.948	I-5 to Orange County Line	47.9
HOV	7	605	NB	LA	R0.000	LA	R19.838	2.052	21.890	Orange County Line to I-10	19.8
HOV	7	605	SB	LA	20.712	LA	R0.000	22.764	2.052	I-10 to Orange County Line	20.7
HOV	8	10	EB	SBD	0.000	SBD	8.267	46.765	55.032	Los Angeles County Line to Haven Ave	8.3
HOV	8	10	WB	SBD	8.518	SBD	0.000	55.283	46.765	Haven Ave to Los Angeles County Line	8.5
HOV	8	60	EB	SBD	R0.000	RIV	12.684	30.597	52.964	Los Angeles County Line to West Jct I-215	22.4
HOV	8	60	EB	RIV	R12.064	RIV	19.634	53.278	60.541	East Jct I-215 to Redlands Blvd	7.3
HOV	8	60	WB	RIV	20.134	RIV	R11.750	61.041	52.964	Redlands Blvd to East Jct I-215	8.1
HOV	8	60	WB	RIV	12.426	SBD	R0.000	52.706	30.597	West Jct I-215 To Los Angeles County Line	22.2
HOV	8	71	NB	SBD	R8.447	SBD	R1.138	13.397	6.088	Riverside County Line to Los Angeles County Line	7.3
HOV	8	71	SB	SBD	R0.337	SBD	R7.416	5.303	12.366	Los Angeles County Line to north of Butterfield Ranch Rd	7.1
HOT	8	91	EB	RIV	R0.000	RIV	7.514	37.232	44.858	Orange County Line to I-15	16.5
HOV	8	91	EB	RIV	8.370	RIV	21.789	45.714	59.133	1 mile east of I-15 to I-215	13.4
HOV	8	91	WB	RIV	22.068	RIV	8.096	59.412	45.44	I-215 to 0.7 mi e/of I-15	14.0
HOT	8	91	WB	RIV	7.230	RIV	R0.00	44.574	37.232	I-15 to Orange County Line	16.4
HOV	8	210	EB	SBD	0.000	SBD	21.289	52.439	73.728	Los Angeles County Line to I-215	21.3
HOV	8	210	WB	SBD	21.479	SBD	0.000	73.918	52.439	I-215 to SBD/LA County Line	21.5

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	8	215	NB	RIV	38.782	RIV	R42.954R	30.449	34.928	South Jct SR-60 to North Jct SR-60/SR-91	4.5
HOV	8	215	NB	RIV	R43.614R	SBD	10.033	35.588	47.275	North Jct SR-60/SR-91 to SR-210	11.7
HOV	8	215	SB	SBD	9.948	RIV	43.679	47.190	35.588	SR-210 to North Jct SR-60/SR-91	11.6
HOV	8	215	SB	RIV	42.797	RIV	R38.404	34.771	30.071	North Jct SR-60/SR-91 to South Jct SR-60	4.7
HOV	10	5	NB	SJ	25.284	SJ	31.936	470.561	477.213	Charter Way to Hammer Ln	6.7
HOV	10	5	SB	SJ	32.471	SJ	25.319	477.748	470.596	Hammer Ln to Charter Way	7.4
HOV	11	5	NB	SD	R0.09	SD	R0.12	n/a	n/a	San Ysidro Port of Entry Lanes # 9 - 12	0.1
HOV	11	5	NB	SD	R31.188	SD	R38.283	30.864	37.959	I-805 to Manchester Avenue	7.1
HOV	11	5	SB	SD	R37.433	SD	R30.345	37.109	30.021	Lomas Santa Fe Dr to 0.8 mi N/of I-805	7.1
HOT	11	15S	NB	SD	11.890	SD	30.856	0.000	18.966	SR-163 to SR-78	39.7
HOT	11	15S	SB	SD	30.856	SD	11.89	18.966	0.00	SR-78 to SR-163	39.0
HOV	11	805	NB	SD	5.958	SD	12.95	5.809	12.801	Telegraph Canyon Rd to Market Street	8.4
HOV	11	805	NB	SD	23.755	SD	28.874	23.606	28.725	SR-52 to I-5	5.1
HOV	11	805	SB	SD	28.654	SD	24.483	28.505	24.334	I-5 to SR-52	4.2
HOV	11	805	SB	SD	13.329	SD	5.354	13.18	5.205	SR-94 to Telegraph Canyon Rd	3.1
HOV	12	5	NB	ORA	3.150	ORA	43.335	75.193	115.371	Ave Pico to Beach Blvd	42.1
HOV	12	5	SB	ORA	44.302	ORA	3.254	116.338	75.297	Artesia Blvd to Ave Pico	43.3
HOV	12	22	EB	ORA	R0.660	ORA	R11.723	2.117	13.284	I-405 to Grand Ave	11.5
HOV	12	22	WB	ORA	R12.384	ORA	R0.660	13.945	2.117	0.8 mi w/of SR-55 to I-405	12.3
HOV	12	55	NB	ORA	R5.592	ORA	16.275	5.422	16.087	I-405 to 0.7 mi s/of Lincoln Ave	10.7

Facility Type	District	Route	Direction	Begin County	Begin Postmile	End County	End Postmile	Begin Statewide Postmile	End Statewide Postmile	Limits	Facility length (Lane-Miles)
HOV	12	55	SB	ORA	16.559	ORA	R6.254	16.371	6.084	0.4 mi s/of Lincoln Ave to I-405	10.3
HOV	12	57	NB	ORA	10.984L	ORA	R22.551	0.335	11.817	I-5 to Los Angeles County Line	11.8
HOV	12	57	SB	ORA	R22.551	ORA	10.917L	11.817	0.268	Los Angeles County Line to I-5	11.8
HOV	12	91	EB	ORA	R0.000	ORA	8.15	14.739	26.523	Los Angeles County Line to Tustin Avenue	11.8
HOT	12	91	EB	ORA	8.657	ORA	R18.905	27.030	37.232	Santa Ana River to Riverside County Line	20.5
HOT	12	91	WB	ORA	R18.905	ORA	8.551	37.232	26.924	Riverside County Line to Santa Ana River	20.7
HOV	12	91	WB	ORA	8.123	ORA	R0.000	26.496	14.739	Tustin Ave to Los Angeles County Line	11.8
HOV	12	405	NB	ORA	0.609	ORA	24.178	0.379	23.948	I-5 to Los Angeles County Line	26.6
HOV	12	405	SB	ORA	24.178	ORA	0.609	23.948	0.379	Los Angeles County Line to I-5	26.4
HOV	12	605	NB	ORA	R0.187	ORA	R1.643	0.596	2.052	I-405 to Los Angeles County Line	2.4
HOV	12	605	SB	ORA	R1.643	ORA	R0.209	2.052	0.618	Los Angeles County Line to I-405	2.5