



# 2026 California High-Occupancy Vehicle Facilities Degradation Action Plan

## Prepared By

California Department of Transportation  
Division of Traffic Operations

## Submitted To

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# Section 1 Overview

The California Department of Transportation (Caltrans) has prepared the 2026 California High Occupancy Vehicle Facilities Degradation Action Plan. This document details the actions Caltrans will take to make significant progress towards bringing degraded high occupancy toll (HOT) facilities on California highways into compliance with the federal performance standard under Title 23 of the United States Code, Section 166 (23 U.S.C. § 166), through 2026. HOT facilities, also known as Express Lanes (EL), are defined as high occupancy vehicle (HOV) facilities that allow vehicles to pay a toll to access the HOV facility without meeting the facility's minimum occupancy requirement. The actions detailed in this document are intended to address HOT facility degradation identified in the 2024 California HOV Facilities Degradation Report.

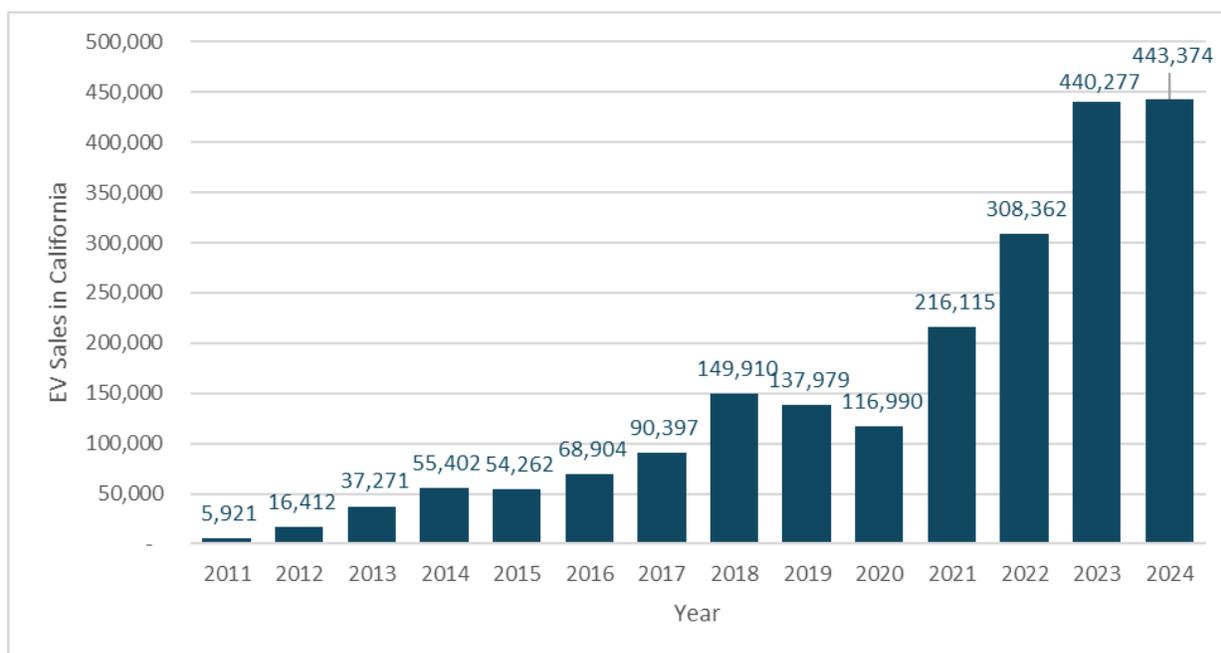
# Section 2 Statewide Plan to Address Degradation

## Topic 1 Clean Air Vehicle Access Expiration

Subsection (d) of 23 U.S.C. § 166 requires Caltrans to develop a remediation plan to address degradation for HOV facilities that permit toll-paying vehicles or clean air vehicles (CAVs) to utilize the HOV facility without meeting the minimum occupancy requirement. The federal authorization that permits CAVs to access HOV facilities expired on September 30, 2025, per Subsection (b) of 23 U.S.C. § 166. Due to the expiration of the CAV exemption, this 2026 California HOV Facilities Degradation Action Plan will only provide remediation plans for degraded HOT facilities.

The expiration of the federal CAV authorization also ends the California CAV Decal Program, codified in Section 5205.5 of the California Vehicle Code. The sunset date corresponds with the large increase in vehicles eligible for a CAV decal. Figure 1 shows the number of new zero-emission vehicles sold in California by year.

**Figure 1. Annual Electric Vehicle Sales in California**



Data Source: California Energy Commission ZEV Sales Data (October 2025).

The California Department of Motor Vehicles stopped accepting CAV decal applications on August 29, 2025. As of August 30, 2025, there were 506,607 active CAV decals enrolled in the California CAV Decal Program. Of these active CAV decals, Table 1 provides the

number of CAV decals by Caltrans district and the number of CAV decals per HOV lane-mile to show where CAV decals were most prevalent.

**Table 1. CAV Decals by District and HOV Lane-Mile**

District	Number of CAV Decals	HOV Lane-Miles	CAV Decals per HOV Lane-Mile
D1	520	0	-
D2	118	0	-
D3	21,945	142	154
D4	161,080	582	277
D5	5,136	16	315
D6	1,910	0	-
D7	137,739	601	231
D8	46,404	286	162
D9	50	0	-
D10	7,019	14	509
D11	37,882	144	262
D12	82,785	316	262
Total	503,588	2101	240

Note: 3,019 vehicles enrolled in the California CAV Decal Program were not assigned to a county.

With these vehicles no longer exempt from the minimum HOV requirements, the number of vehicles in HOV facilities is expected to decrease, significantly reducing HOV degradation statewide.

## Topic 2 Common Causes for Degradation

For each degraded HOT facility, Caltrans districts perform an investigation analyzing local traffic data and specific field conditions to identify the potential causes of degradation. The districts then implement projects in coordination with the Toll Operator to bring the HOT facility into compliance with the federal performance standard.

The analysis conducted by the districts identified some common causes for HOT facility degradation, which are listed below:

- Demand Exceeding Capacity - Heavy vehicle volumes on HOT lanes produce congestion and slow traffic conditions. The purpose of tolling is to control demand based on the toll. However, most HOT facilities have a maximum toll that can be charged, which limits the ability to fully control demand based on the price. In conditions where the maximum toll cannot prevent instances of demand

exceeding capacity, the facility will operate in HOV only mode, meaning that no toll-paying vehicles can access the facility. Additionally, some dynamic tolling algorithms respond to changes in traffic slowly to “smooth out” transient spikes in traffic and filter out noise in the data, which slows the responsiveness of how tolls respond to changes in demand. This lag in tolling can lead to instances of demand exceeding capacity until the appropriate toll is applied. The expiration of the CAV decal program also ends discounts to CAVs in HOT facilities, which may decrease the number of vehicles utilizing the HOT facility. Agencies responsible for establishing toll rates are responsible for updating their tolling practices to ensure that the facility operates in accordance with the federal performance standard. To ensure that the HOT facilities continue to offer time-savings incentives, Caltrans has traditionally set 1,650 vehicles per hour as the maximum capacity of HOT lanes.

- Friction Factor - The term “friction factor” refers to the slowing of vehicles in the HOT lane in response to the presence of slow vehicles in the adjacent general purpose (GP) lanes. The speed differential between the HOT lane and the GP lanes can cause travelers in the HOT lane to decelerate in anticipation of slow-moving vehicles suddenly merging into the HOT lane. It can also cause vehicles in the HOT lane to slow as they prepare to change lanes into the slow-moving adjacent traffic to access exit ramps on the right side of the freeway. Caltrans completed a study on the effects of Friction on HOV Degradation in July 2024. The results of this study show that frictional effects can be reduced where there is less expectation that vehicles will merge into the HOT lane, through the use of buffers or physical barriers, or where the shoulder width provides a comfortable area for drivers to recover. Due to space constraints, many HOT segments do not have the space to increase the buffer or shoulder width.
- Roadway Geometry - The geometry of the GP lanes or the HOT lanes can affect traffic by introducing a disruption in the smooth flow of vehicles. Lane drops and bottlenecks in the GP lanes can cause congestion, which increases friction for the HOT lane. Unless otherwise noted, the bottlenecks referred to in these action plans are located in the GP lanes. When a HOT facility ends at the edges of the HOT network or where there is a gap in the HOT network, vehicles must exit the HOT lane and merge into (potentially) slower general traffic. For vehicles traveling on more than one HOT facility, the lack of direct connectors between intersecting freeways also requires HOT vehicles to merge back into general-purpose traffic temporarily, potentially causing slowing and congestion in the HOT lanes.
- Violations - Violations occur when vehicles in the HOT lane do not meet the occupancy requirements and avoid paying the appropriate toll. When GP lanes are congested, there is a greater incentive to take advantage of the time savings the HOT facility may provide. As opposed to non-tolled HOV facilities, where a vehicle is considered a violator if it utilizes the HOV facility without meeting the minimum occupancy requirement, HOT facility violations can take place in the form of utilizing the HOT facility without the required FasTrak transponder, misrepresenting the vehicle occupancy on the FasTrak transponder, interfering with

license plate recognition technology, or weaving in and out of the HOT facility to avoid toll gantries. The California Highway Patrol (CHP) is responsible for enforcing the proper use of HOT facilities, but CHP's ability to identify certain types of violators is limited. Therefore, Caltrans, in partnership with CHP and the Toll Operators, is exploring different innovative solutions to deter violators, including testing Automated Vehicle Occupancy Detector (AVOD) systems, but challenges regarding visibility, tints, and varying car lengths have affected the accuracy of these systems and has prevented their use for enforcement.

### **Topic 3 Degradation Remediation Strategies**

A list of potential actions has been developed for districts to consider as they develop their action plans to address degradation. This list can be found in Table 1. This is not a comprehensive list of all potential actions that districts have identified to address HOT facility degradation. In addition to the strategies Caltrans implements to address degradation, other agency projects, specifically transit and rail expansion and improvement projects, have been identified to remediate degradation by lowering demand. Actions in Table 2 are listed in order of their potential ability to address degradation, as well as whether they can be implemented in the near-term or may require time to implement.

**Table 2. Statewide HOT Degradation Remediation Strategies**

<b>HOT Degradation Remediation Strategy</b>	<b>Type of Project</b>	<b>Purpose</b>	<b>Potential to Address Degradation</b>	<b>Time to Implementation</b>
Increase Occupancy Requirements	Operational	Operational Improvement	High	Near-Term
Addition of a second HOT lane.	Capital	Add Capacity	High	Mid- to Long-Term
Addition of HOT auxiliary (weave) lanes.	Capital	Operational Improvement	Medium to High	Mid- to Long-Term
Enhanced, dedicated, and targeted HOT enforcement including the establishment of enforcement zones.	Operational Capital	Enforcement	Medium to High	Near- to Mid-Term
Revise pricing strategy on HOT lanes to address degradation.	Operational	Operational Improvement	Medium to High	Near to Mid-Term
Implement access strategies, including access restrictions, increasing the length of access openings or modification/elimination of bottlenecks such as ingress/egress locations.	Operational Capital	Operational Improvement	Medium to High	Near- to Mid-Term
Implementation of Integrated Corridor Management, or other traffic management techniques such as speed harmonization and lane control signals to optimize system performance.	Operational Capital	Operational Improvement	Medium to High	Mid- to Long-Term
Close gaps in the HOT lane network.	Capital	Operational Improvement	Medium to High	Long-Term
Construction of direct HOT connectors.	Capital	Add Capacity	Medium to High	Long-Term
Improvement in Traffic Incident Management including the deployment or expansion of Freeway Service Patrol.	Operational	Operational Improvement	Low to Medium	Near- to Mid-Term

## Topic 4 Funding for Addressing Degradation

There is not a specific recurring funding source to address HOT degradation. Caltrans HOT degradation funding comes from the Operational Improvement (OI) program in the State Highway Operations and Protection Program (SHOPP). The funding specific to HOT degradation comes from the same pool of OI funding that supports a variety of operational improvements, including addressing HOV degradation, adding GP auxiliary lanes, intersection improvements, ramp improvements, Transportation Systems Management and Operations (TSMO), truck climbing lanes, and Traffic Management System upgrades.

Toll Operators are incentivized to invest in preventing degradation to increase revenue. Toll Operators set the tolls to provide significant time-savings for those vehicles occupying the facility while managing the vehicle volume to increase revenue. A successfully managed toll facility balances maximizing revenue via increasing throughput while providing a significant time-savings advantage to vehicles meeting the occupancy requirement or paying a toll. Therefore, Toll Operators are encouraged to use toll revenue to fund projects to increase throughput while addressing HOT facility degradation.

## Topic 5 Enforcement & CHP Coordination

The California Highway Patrol (CHP) is responsible for law enforcement on California highway facilities. Caltrans is committed to regular coordination with CHP at the headquarters and district level to address the rate of violations. Districts coordinate with and provide their regional CHP offices with annual reports that identify the number of violations on HOV facilities. The purpose of these annual reports is to inform CHP where additional enforcement may be needed. HOT lane operators typically have agreements established with CHP to provide additional enforcement on HOT facilities above what CHP normally provides, which is funded by toll revenues.

Caltrans and some HOT lane operators are evaluating AVOD systems to improve the accuracy of the violation rates to identify occupancy trends, improve enforcement, and reduce violations through continuous coordination with CHP. Notable ongoing AVOD system testing efforts are provided:

- Caltrans District 3 installed a roadside mounted AVOD system on I-80 in February 2025. Testing and data collection will continue through the end of 2025, and evaluation of the system's accuracy will follow.
- LA Metro, in partnership with Caltrans District 7, has been testing AVOD systems since 2019 on HOT facilities to detect vehicles misrepresenting their self-reported number of occupants. Pre-deployment testing is expected to wrap up in 2026.

In addition, some Toll Operators have begun to invoice for unpaid tolls by mail for vehicles that operate within the HOT facility without a FasTrak transponder. Future studies will determine if this practice is effective at reducing the violation rates on HOT facilities.

## Topic 6 Toll Operator Coordination

Caltrans Traffic Operations received a letter on September 29, 2023, regarding collaboration with the California Toll Operators Committee (CTOC) on the degradation of Express Lanes. CTOC is a collaborative organization composed of fourteen California toll facility operators/owners and Caltrans. The committee serves as the primary resource for interoperability, education, and advocacy among Express Lane facilities in operation throughout California. The existing Express Lane operators agreed to take the following actions to ensure that Express Lanes facilities meet the performance standard requirements of 23 U.S.C § 166:

1. Partner with Caltrans in reviewing locations on Express Lanes facilities where degradation was observed. If, after such review, it is mutually determined that the facility is degraded pursuant to 23 U.S.C § 166, the Express Lanes operator will agree to collaborate with Caltrans on solutions to identify actions to address the degradation for inclusion in the Action Plan, and work with Caltrans to support the implementation of such actions for which the Express Lanes operator is responsible.
2. Work with Caltrans to determine if the Express Lanes operators can provide speed and volume data to either supplement or replace the data that Caltrans uses to develop the Degradation Report.

Caltrans collaborates with toll operators to establish action plans for the maintenance of express lanes. Ongoing coordination, both at the headquarters and district levels, will persist to identify and address any degradation in the Express Lanes.

## Topic 7 Traffic Investigations

On February 15, 2022, Caltrans Headquarters issued TOPD 22-04, mandating that districts conduct a type "TH" traffic investigation for each degraded HOV facility listed in the annual California High Occupancy Vehicle (HOV) Facilities Degradation Report. Traffic investigations were initiated by Caltrans HQ in June 2022, after the completion of the 2021 HOV Facility Degradation Report. The traffic investigations from 2021 to 2023 have been concluded and the findings along with the analysis performed will be the basis to support the actions districts are taking to improve degradation. When available, recommendations will be incorporated.

From the 2024 California HOV Facilities Degradation Report, only degraded HOT facilities that have not previously been investigated require a TH Investigation. Therefore, only the I-405 HOT facility in Orange County currently has an open TH Investigation, which is addressed in this Action Plan.

## Section 3 District-Specific Action Plans

Districts 4, 7, 8, 11, and 12 have developed an action plan for each degraded HOT facility as identified in the 2024 California HOV Facilities Degradation Report. 2024 HOT facility degradation is provided in the Appendix. Caltrans classifies degradation into three (3) categories based on how frequently degradation, as defined in 23 U.S.C. § 166, occurs. 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.

The action plans may include general information related to district-wide studies or plans developed to address degradation. These include plans developed by the districts as well as those developed by regional partners.

Each HOT facility was analyzed for degradation. The peak period average speed was calculated for each detection station on the facility and a count was taken of the number of days the average speed went below 45 mph. This count was then divided by the number of days for which data was available from that detection station to determine the percentage of time the speed was below 45 mph. The average speed and this percentage data was then plotted. The districts review this data and the plots to identify the locations and causes of degradation, such as roadway geometrics, traffic and travel patterns on the route, or other freeway performance issues. If necessary, the districts may conduct additional operational analyses of the facilities if the cause is unclear. The outcomes of these reviews and analyses are reported in the "Analysis" section of each action plan.

The "Remediation Strategies" section describes the specific actions for the route based on the analysis. The actions are tied back to the causes identified in the "Analysis" section. These actions may include strategies for individual spots on the HOT facility, for portions of the HOT facility, for the entire HOT facility, or for the entire route. Information is provided regarding the scope and schedule of the proposed actions and expected outcomes.

### Topic 1 District 4 Degradation Action Plans

In 2024, District 4 had 15% of the HOT lane-miles degraded in the AM peak period. In the PM peak period, 22% of the HOT lane-miles were degraded within the district.

#### Action Plan for HOT Facilities on US-101

The United States (US) 101 HOT lane extends in the northbound (NB) direction from south of the Ellis Street interchange in Santa Clara (SCL) County to the Interstate (I) 380 interchange in San Mateo (SM) County. In the southbound (SB) direction, the HOT lane

extends from the I-380 interchange to south of State Route (SR) 237, into SCL County. This lane operates as a HOT 3+ toll free lane while vehicles with 2 occupants receive a 50% discounted toll rate. Single Occupancy vehicles can buy in at the full toll rate. In the SB direction there is a direct Managed Lane connector ramp from SB US-101 to SB SR-85 at the US-101/SR-85 interchange in the City of Mountain View. This HOT lane extends to the Central Expressway undercrossing where the Express Lane restriction ends and continues as a HOV lane. This lane operates as a HOT 3+ toll free lane while vehicles with 2 occupants receive a 50% discounted toll rate. Single occupancy vehicles can buy in at the full toll rate.

In 2023, NB US-101, between the Ellis Street interchange and the I-380 interchange, there was 0.4 lane-miles of degraded HOT lanes in the AM peak period. In 2024, this remained the same with 0.4 lane-miles of degraded HOT lanes within these same limits. In the PM peak period, there were 2.0 lane-miles of degraded HOT lanes in 2023. This increased slightly to 2.3 lane-miles of degraded HOT lanes in the 2024 PM peak period.

In 2023, SB US-101, between the I-380 interchange and south of SR-237, there were 2.5 lane-miles of degraded HOT lanes in the AM peak period. In 2024, this reduced to 0.2 lane-miles of degraded HOT lanes. In 2023 during the PM peak period there was 3.9 lane-miles of degraded HOT lanes. There was a decrease in degradation in the 2024 PM peak period with 3.3 lane-miles of degraded HOT lanes.

## **Analysis**

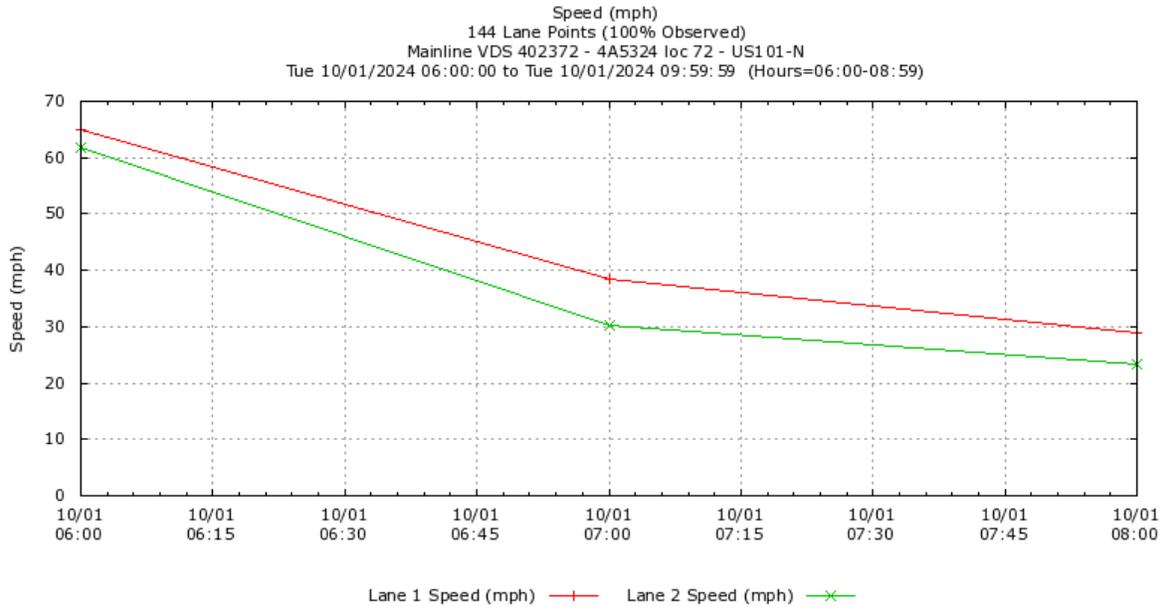
### NB US-101 South of Ellis Street to I-380:

On NB US-101 in the AM peak period within Santa Clara County, there is a recurrent bottleneck that develops between the San Antonio Road on-ramp and the Oregon Expressway/Embarcadero Road off-ramp. Congestion from this bottleneck extends upstream beyond the start of the HOT lane.

In the PM peak period there is a recurrent bottleneck that develops between the Oregon Expressway/Embarcadero Road on-ramp and the University Avenue off-ramp. Congestion from this bottleneck extends upstream to Ellis Street.

The primary factors resulting in reduced managed lane speeds are friction between the Express Lane and general-purpose lanes, within the area of congestion. In addition, the HOT lane is buffered between Moffett Boulevard and Old Middlefield Way. This buffer forces some HOT lane vehicles into the congested general-purpose lanes in order for them to access the Shoreline Boulevard and Old Middlefield Way off-ramps. Speeds in the HOT lane are reduced as these vehicles look for places to merge into the congested general-purpose lanes prior to the start of the buffer.

**Figure 4.1 NB US-101 AM “Spot Time” Plot North of Ellis St.**

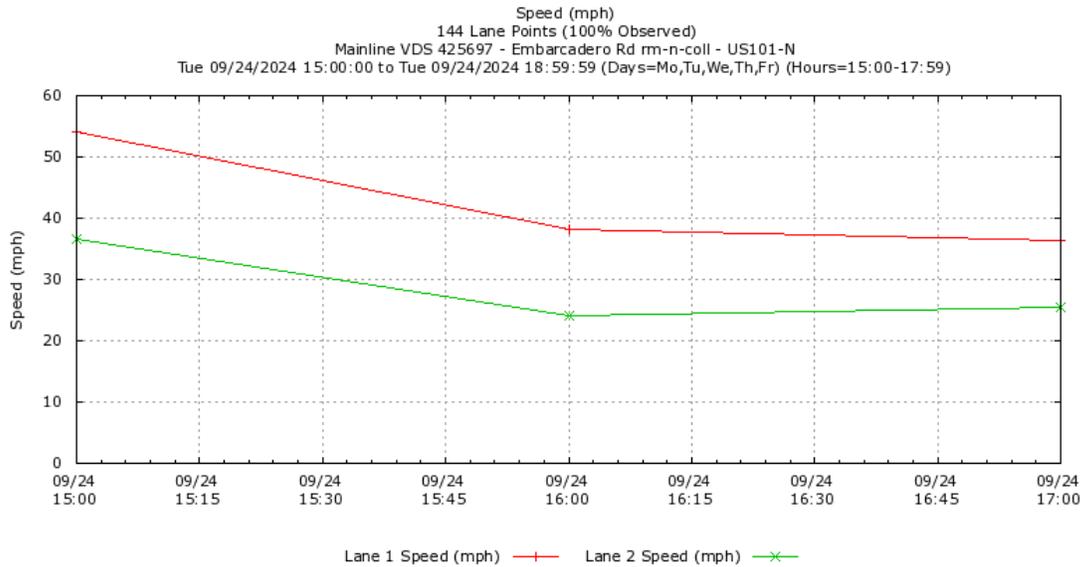


**Table 4.1. NB US-101 AM HOT and GP Lane Flow and Speed at North of Ellis St.**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
9/30/2024	6:00	964	75.4	1904	62.0
9/30/2024	7:00	1230	52.1	1563	42.0
9/30/2024	8:00	1329	49.5	1476	47.4
10/01/2024	6:00	991	65.0	1971	61.9
10/01/2024	7:00	1375	38.5	1502	30.2
10/01/2024	8:00	1348	28.8	1455	23.4
10/02/2024	6:00	1053	65.0	2007	62.7
10/02/2024	7:00	1406	44.9	1618	36.6
10/02/2024	8:00	1352	43.1	1483	36.4
10/03/2024	6:00	1039	76.6	1946	71.6
10/03/2024	7:00	1448	77.1	1661	71.8
10/03/2024	8:00	1416	74.3	1512	54.7
10/04/2024	6:00	970	64.2	1915	59.9
10/04/2024	7:00	1394	54.3	1801	51.7
10/04/2024	8:00	1245	47.8	1645	40.2

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Figure 4.2 NB US-101 PM “Spot Time” Plot Oregon Expwy/Embarcadero Rd I/C**



**Table 4.2 NB US-101 PM HOT and GP Lane Flow & Speed at Oregon Expwy/Embarcadero Rd I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
9/23/2024	15:00	1314	57.1	1733	42.9
9/23/2024	16:00	1336	50.4	1678	38.7
9/23/2024	17:00	1242	53.9	1683	43.9
9/24/2024	15:00	1418	54.2	1595	36.6
9/24/2024	16:00	1520	38.1	1491	24.2
9/24/2024	17:00	1546	36.4	1451	25.4
9/25/2024	15:00	1335	73.9	1684	68.7
9/25/2024	16:00	1598	68.9	1553	69.6
9/25/2024	17:00	1551	72.3	1504	68.3
9/26/2024	15:00	1390	77.2	1648	68.2
9/26/2024	16:00	1404	56.9	1349	50.3
9/26/2024	17:00	1319	31.3	1145	30.5
9/27/2024	15:00	1237	65.2	1786	61.0
9/27/2024	16:00	1346	63.3	1774	60.9
9/27/2024	17:00	1353	63.5	1760	60.0

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

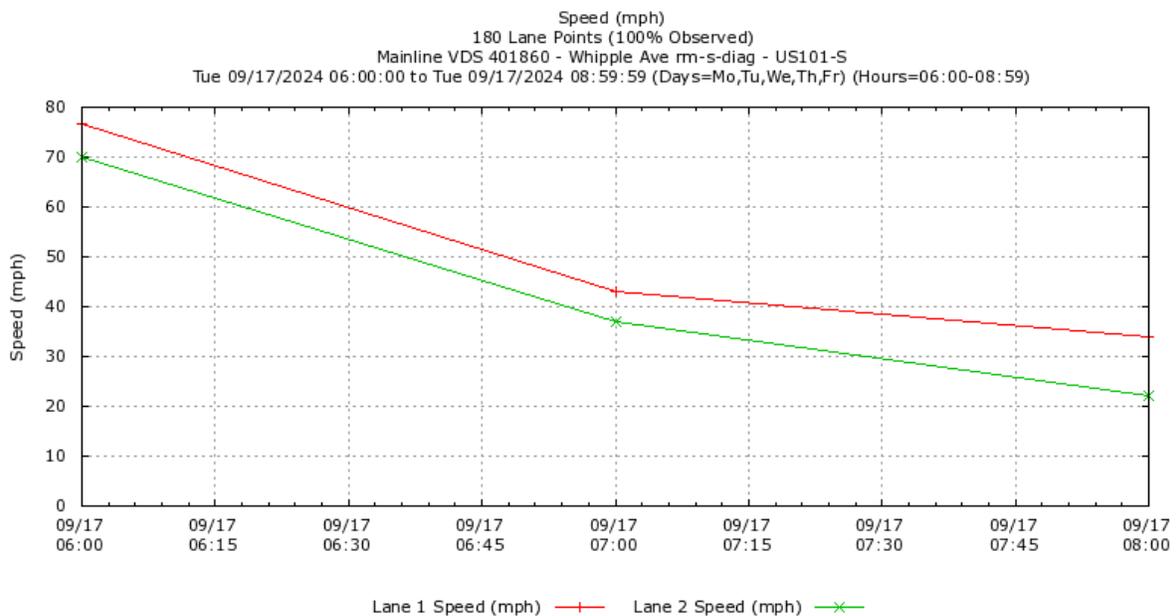
SB US-101 I-380 to South of SR-237:

On SB US-101 in the AM peak period there are bottlenecks between the University Avenue on-ramp and the Oregon Expressway/Embarcadero Road off-ramp that becomes a hidden bottleneck later in the peak period when the downstream bottleneck at the Rengstorff Avenue on-ramp causes a queue to extend back into this upstream bottleneck. This queue extends back to the Whipple Avenue interchange.

In the PM peak period, there is a bottleneck between the Oakland Road on-ramp and the Julian Street off-ramp in the City of San Jose. The queue from the bottleneck extends to the SR-85/US-101 interchange in the City of Mountain View. There is also an upstream bottleneck at the Rengstorff Avenue on-ramp with a queue extending upstream to the Oregon Expressway/Embarcadero Road interchange. In addition, there is a bottleneck between the Poplar Avenue on-ramp and the 3rd Street off-ramp and queue spillback onto SB US-101 from a bottleneck at the San Mateo/Hayward Bridge on eastbound (EB) SR-92. This queue combines with the queue from the bottleneck at Poplar Avenue and extends upstream on SB US-101 to beyond the Millbrae Avenue interchange.

The primary factors resulting in reduced managed lane speeds are friction between the HOT lane and general-purpose lanes, within the area of congestion.

**Figure 4.3 SB US-101 AM “Spot Time” Plot Whipple Avenue I/C**

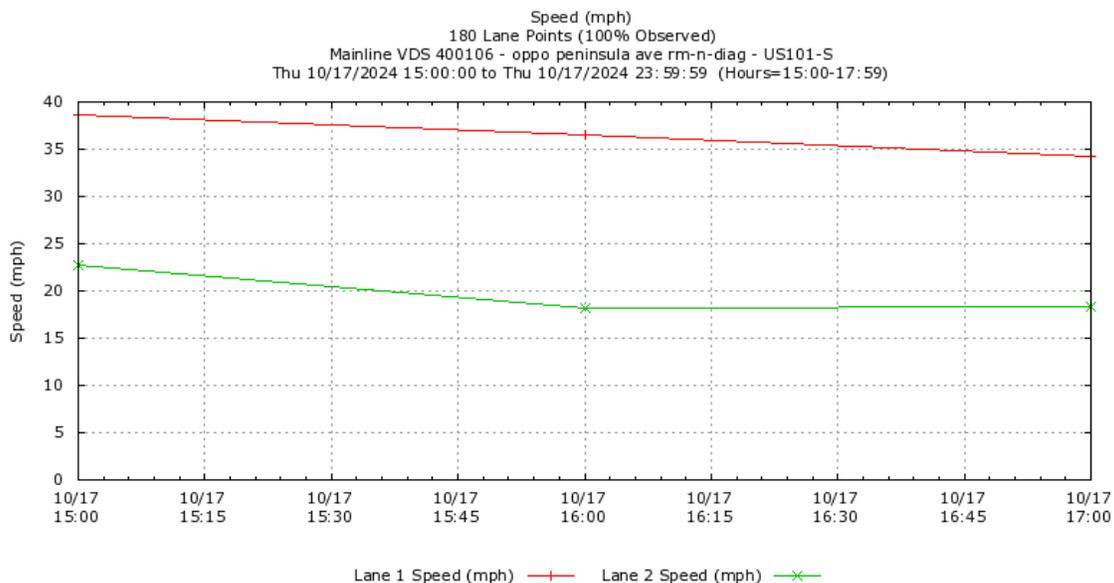


**Table 4.3 SB US-101 AM HOT and GP Lane Flow and Speed at Whipple Ave I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
09/16/2024	6:00	199	75.6	1156	71.5
09/16/2024	7:00	943	69.2	1805	52.9
09/16/2024	8:00	1094	62.2	1590	38.5
09/17/2024	6:00	260	76.6	1311	70.0
09/17/2024	7:00	1303	42.9	1795	37.1
09/17/2024	8:00	1529	33.8	1470	22.1
09/18/2024	6:00	316	76.1	1374	70.4
09/18/2024	7:00	1043	50.2	1780	46.7
09/18/2024	8:00	1211	49.5	1730	44.8
09/19/2024	6:00	282	76.7	1311	74.0
09/19/2024	7:00	1148	69.2	1828	65.8
09/19/2024	8:00	1365	69.2	1567	52.1
09/20/2024	6:00	213	76.6	1136	70.2
09/20/2024	7:00	747	78.5	1913	65.1
09/20/2024	8:00	749	74.7	1814	59.0

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Figure 4.4 SB US-101 PM “Spot Time” Plot Peninsula Ave. I/C**

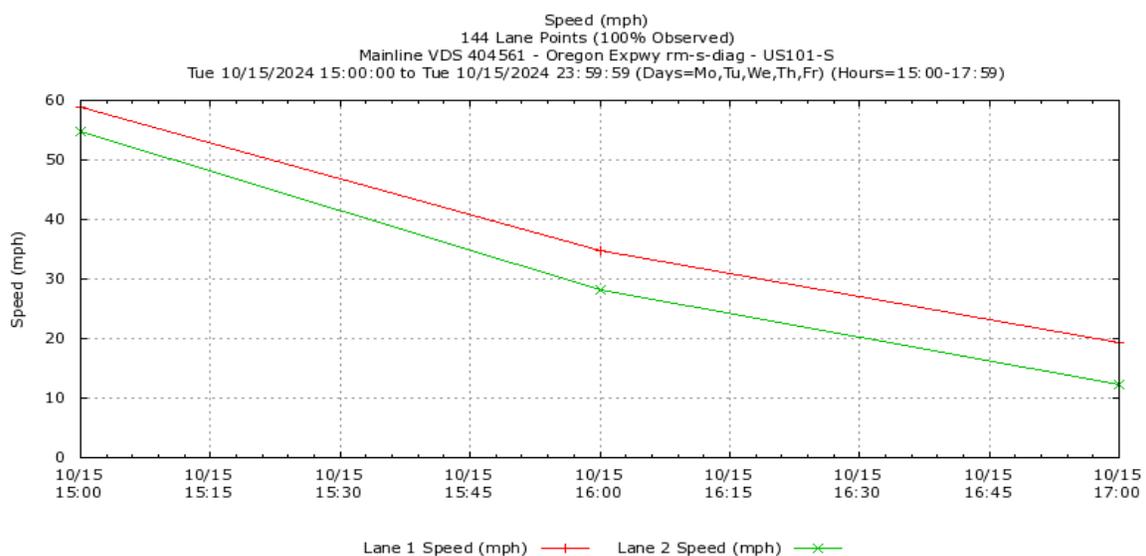


**Table 4.4 SB US-101 PM HOT and GP Lane Flow and Speed at Peninsula Ave I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
10/14/2024	15:00	1550	45.7	1616	29.5
10/14/2024	16:00	1481	46.7	1689	34.9
10/14/2024	17:00	1376	46.1	1571	28.0
10/15/2024	15:00	1506	46.9	1627	29.6
10/15/2024	16:00	1475	45.0	1522	26.8
10/15/2024	17:00	1529	42.8	1541	24.6
10/16/2024	15:00	1555	43.6	1596	29.7
10/16/2024	16:00	1564	39.6	1483	23.7
10/16/2024	17:00	1491	41.6	1523	23.4
10/17/2024	15:00	1552	38.6	1495	22.8
10/17/2024	16:00	1471	36.5	1355	18.2
10/17/2024	17:00	1451	34.2	1358	18.4
10/18/2024	15:00	1323	45.8	1607	36.4
10/18/2024	16:00	1415	43.0	1504	28.7
10/18/2024	17:00	1471	34.7	1448	21.0

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Figure 4.5 SB US-101 PM “Spot Time” Plot Oregon Expressway/Embarcadero Road I/C**

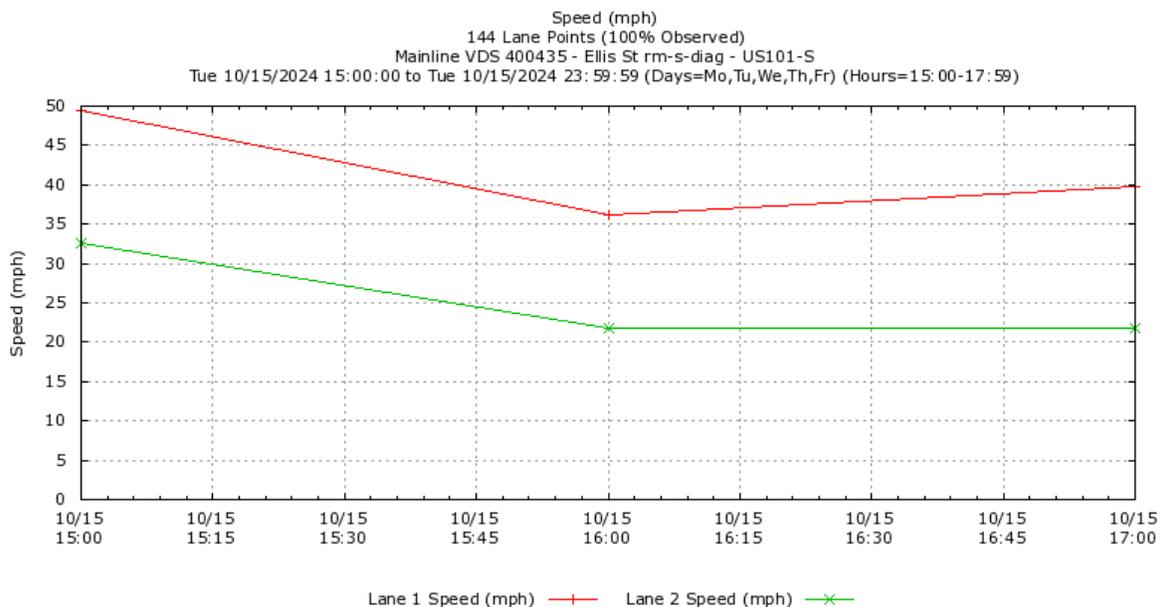


**Table 4.5 SB US-101 PM HOT and GP Lane Flow and Speed at Oregon Expwy/Embarcadero Rd I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
10/14/2024	15:00	1021	76.1	1656	73.1
10/14/2024	16:00	1077	80.7	1577	79.5
10/14/2024	17:00	1213	53.2	1281	34.9
10/15/2024	15:00	1173	58.8	1516	54.8
10/15/2024	16:00	1359	34.7	1344	28.1
10/15/2024	17:00	1320	19.3	1101	12.2
10/16/2024	15:00	1289	49.1	1452	33.4
10/16/2024	16:00	1394	24.2	1168	14.7
10/16/2024	17:00	1295	17.1	1155	13.6
10/17/2024	15:00	1093	58.3	1451	51.0
10/17/2024	16:00	1346	22.7	1220	16.8
10/17/2024	17:00	1346	17.3	1230	14.6
10/18/2024	15:00	1120	71.4	1620	54.5
10/18/2024	16:00	1353	38.7	1333	22.4
10/18/2024	17:00	1382	32.7	1260	18.4

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Figure 4.6 SB US-101 PM “Spot Time” Plot Ellis Street I/C**



**Table 4.6 SB US-101 PM HOT and GP Lane Flow and Speed at Ellis Street I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
10/14/2024	15:00	1004	63.6	1718	56.5
10/14/2024	16:00	1095	58.8	1837	54.5
10/14/2024	17:00	1090	58.9	1754	48.6
10/15/2024	15:00	1237	49.5	1624	32.6
10/15/2024	16:00	1508	36.2	1503	21.8
10/15/2024	17:00	1351	39.7	1465	21.7
10/16/2024	15:00	1238	48.1	1627	30.9
10/16/2024	16:00	1462	33.6	1484	20.0
10/16/2024	17:00	1383	33.4	1413	19.3
10/17/2024	15:00	1176	44.9	1490	35.2
10/17/2024	16:00	1422	41.8	1545	26.3
10/17/2024	17:00	1423	31.1	1428	19.9
10/18/2024	15:00	1319	51.4	1758	37.6
10/18/2024	16:00	1295	49.7	1764	38.5
10/18/2024	17:00	1245	51.4	1588	44.5

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

### **Remediation Strategies**

#### NB US-101 South of Ellis Street to I-380:

The Santa Clara Valley Transportation Authority (VTA) Silicon Valley Express Lanes Program deploys Express Lanes throughout Santa Clara County. Phase 3 of the Program implements Express Lanes on US-101 from the San Mateo County Line in Palo Alto to the US-101/SR-237 interchange including the US-101/SR-85 HOV Direct Connectors in Mountain View, and Phase 4 will implement Express Lanes on SR-85 from the SR-85/SR-87 interchange to US-101 through the US-101/SR-85 interchanges in south San Jose. Phase 5 will continue the conversion of the existing HOV lanes to Express Lanes on US-101 at the US-101/SR-237 interchange, conforming to the Phase 3 Express Lanes, and add a second Express Lane from Fair Oaks Avenue in Sunnyvale to the US-101/I-880 interchange in San Jose. Phase 6 would continue Express Lanes even further south on US-101 by converting the existing HOV lanes to Express Lane operations and by adding a second Express Lane in both directions from approximately the US-101/I-880 interchange to the US-101/SR 85 interchange in south San Jose. Construction start date for this phase in March 2026, opening to traffic in January 2029 as a dual HOT lane.

### SB US-101 I-380 to South of SR-237:

The Santa Clara Valley Transportation Authority (VTA), Silicon Valley Express Lanes Program deploys HOT lanes throughout Santa Clara County. Phase 3 of the Program implements HOT lanes on US-101 from the San Mateo County Line in Palo Alto to the US-101/SR-237 interchange including the US-101/SR-85 HOV Direct Connectors in Mountain View, and Phase 4 will implement HOT lanes on SR-85 from the SR-85/SR-87 interchange to US-101 through the US-101/SR-85 interchanges in south San Jose. Phase 5 will continue the conversion of the existing HOV lanes to HOT lanes on US-101 at the US-101/SR-237 interchange, conforming to the Phase 3 HOT lanes, and add a second HOT lane from Fair Oaks Avenue in Sunnyvale to the US-101/I-880 interchange in San Jose. Phase 6 would continue HOT lanes even further south on US-101 by converting the existing HOV lanes to HOT lane operations and by adding a second HOT lane in both directions from approximately the US-101/I-880 interchange to the US-101/SR-85 interchange in south San Jose. Construction starts for this phase in March 2026, opening to traffic in January 2029 as a dual HOT lane.

A project to modify the interchanges at Rengstorff Avenue and San Antonio Road will provide HOV lanes at all on-ramps. Estimated project cost is \$192M with construction to start at the end of 2028 and completed by 2030. This project should improve operations at these locations to address some of the issues that cause a bottleneck at the Rengstorff Avenue on-ramp.

There is a project being proposed to add managed lanes (operational strategy yet to be determined) on SR-92 between the San Mateo/Hayward Bridge and US-101. This project would also include direct connectors between the proposed SR-92 managed lanes and the US-101 HOT lanes. One of the alternatives is to make these direct connectors reversible with managed lanes in operation in the morning peak on westbound (WB) SR-92 with direct connections to the NB and SB US-101 HOT lanes. In the evening commute the operation of the Managed Lane would be reversed to an EB SR-92 managed lane with direct connectors from the NB and SB US-101. This SB US-101 direct connection to the EB SR-92 managed lane would allow HOT lane vehicles to stay in the number 1 lane to access the San Mateo/Hayward Bridge and they would no longer need to weave across congested traffic to reach the general-purpose lane connector to EB SR-92. This should improve the operations of the SB US-101 HOT lane in the PM peak period. This project is currently in Project Approval and Environmental Document (PA&ED) phase of the project. Cost of the project is approximately \$132M to \$150M with a construction completion date of 2031

### **Action Plan for HOT Facilities on SR-237**

The HOT Lane on SR-237 extends in the EB direction from Mathilda Avenue to I-880 and in the WB direction from I-880 to East Java Drive. This lane operates as a HOT 3+ toll free lane while vehicles with 2 occupants receive a 50% discounted toll rate. Single occupancy vehicles can buy in at the full toll rate.

In 2024, there was 1.4 degraded HOT lane-miles on EB SR-237 in the AM period, an increase of 0.5 miles from 2023. In 2024, there was 4.7 degraded HOT lane-miles in the PM periods, an increase of 1.9 miles from 2023.

In 2024, there were 2.2 slightly degraded HOT lane-miles on WB SR-237 in the AM period, and no degraded HOT lane-miles in the PM periods. This is a 1.0 mile increase in the AM period from 2023. There were no changes to degradation from 2023 to 2024 in the WB PM period.

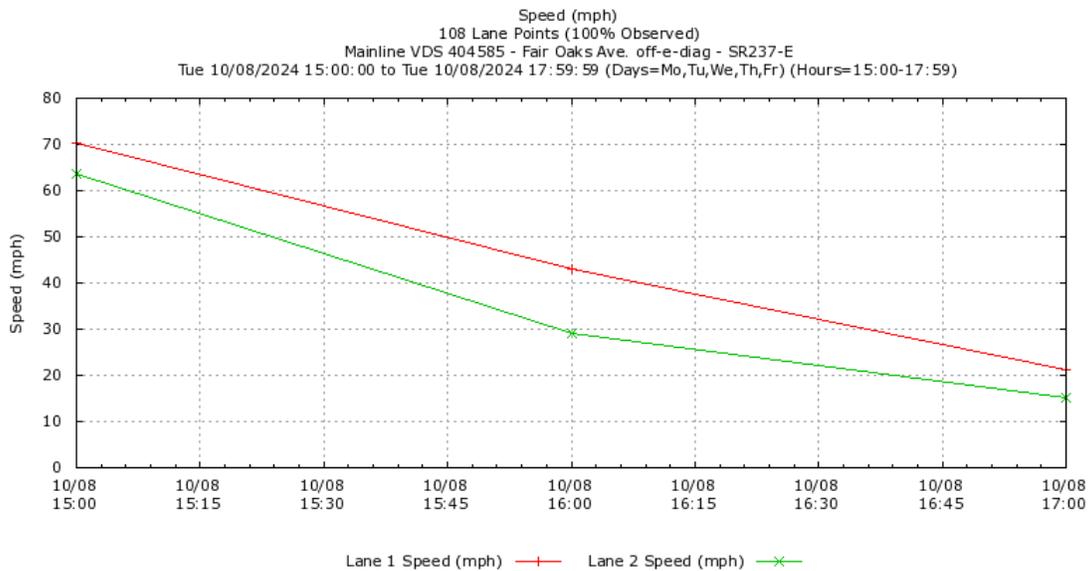
**Analysis**

EB SR-237 Mathilda Avenue to I-880:

There is no recurring bottleneck on EB SR-237 in the AM peak period. Occasional slowdown in the GP lanes at this spot location may be impacting the HOT lane speeds as vehicles exit the HOT lane to access the off-ramps downstream of Fair Oaks Avenue.

On EBSR-237 in the PM peak period, a bottleneck develops between the North First Street on-ramp and Zanker Road off-ramp. The queue from this bottleneck extends upstream to the North Mathilda Avenue interchange. This bottleneck causes recurrent congestion in the general-purpose lanes that reduces HOT lane performance and speed due to the friction factor between these lanes.

**Figure 4.7 EB SR-237 PM “Spot Time” Plot Fair Oaks Avenue I/C**



**Table 4.7 EB SR-237 PM HOT and GP Lane Flow and Speed at Fair Oaks Avenue I/C**

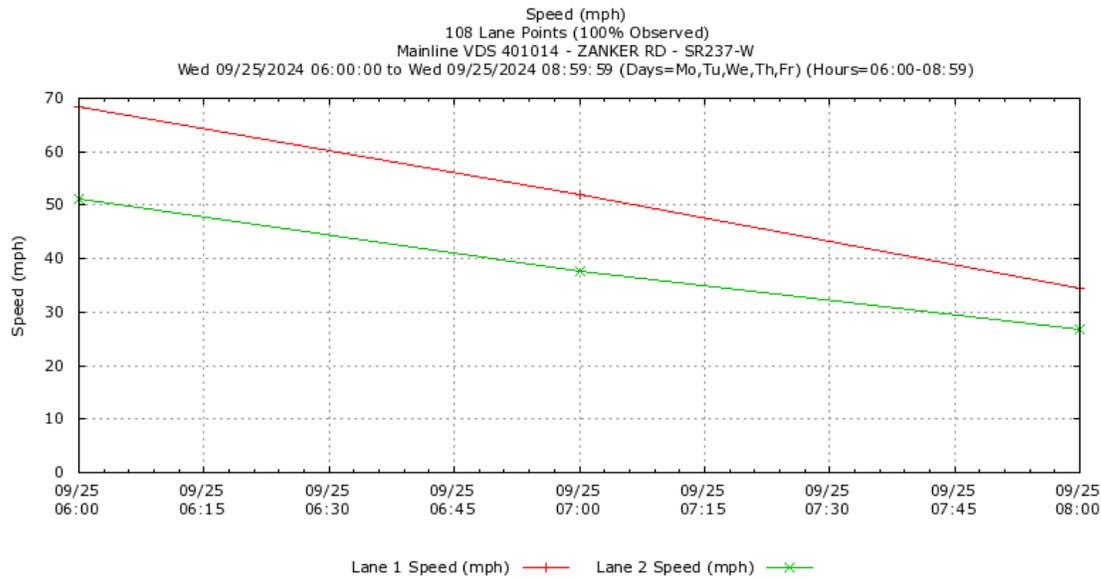
Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
9/23/2024	15:00	582	68.2	1314	62.4
9/23/2024	16:00	815	66.0	1384	61.4
9/23/2024	17:00	987	54.4	1259	43.0
9/24/2024	15:00	721	71.4	1463	65.4
9/24/2024	16:00	891	63.4	1424	62.9
9/24/2024	17:00	1086	31.2	1193	28.7
9/25/2024	15:00	757	71.3	1412	67.5
9/25/2024	16:00	1095	33.1	1139	30.6
9/25/2024	17:00	1158	40.2	1139	30.6
9/26/2024	15:00	763	72.5	1478	70.1
9/26/2024	16:00	1111	46.5	1201	40.2
9/26/2024	17:00	1045	75.1	1290	63.0
9/27/2024	15:00	715	71.6	1507	66.9
9/27/2024	16:00	861	71.2	1478	66.2
9/27/2024	17:00	1182	42.7	1182	24.4

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

WB SR-237 I-880 to East Java Drive:

On WB SR-237 in the AM peak period, a bottleneck develops between I-880 interchange and the Zanker Road interchange. The queue from this bottleneck extends back into the I-880 interchange. In addition, there is queue spillback from congestion on NB US-101 onto WB SR-237 extending back to the Lawrence Expressway interchange. The recurrent congestion in the general-purpose lanes reduces the performance and speed of the HOT lane due to the friction factor between these lanes.

**Figure 4.8 WB SR-237 AM “Spot Time” Plot Zanker Road I/C**



**Table 4.8 WB SR-237 AM HOT and GP Lane Flow and Speed at Zanker Road I/C**

Date	Hour	HOT Flow	HOT Speed	GP Flow	GP Speed
9/23/2024	6:00	763	69.4	1930	59.2
9/23/2024	7:00	1327	60.2	1849	43.0
9/23/2024	8:00	1450	52.3	1720	32.6
9/24/2024	6:00	950	67.0	1964	54.2
9/24/2024	7:00	1521	51.2	1868	36.9
9/24/2024	8:00	1584	31.3	1542	23.9
9/25/2024	6:00	927	68.4	1927	51.3
9/25/2024	7:00	1553	52.0	1852	37.6
9/25/2024	8:00	1629	34.6	1646	26.7
9/26/2024	6:00	869	69.4	1928	64.0
9/26/2024	7:00	1391	66.0	1879	63.7
9/26/2024	8:00	1529	64.1	1513	65.4
9/27/2024	6:00	703	71.8	1849	58.1
9/27/2024	7:00	1098	57.6	1793	46.2
9/27/2024	8:00	1061	52.7	1746	38.0

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

## **Remediation Strategies**

In February 2024, a project to add an auxiliary lane in the WB direction by widening the freeway between North 1st Street and Zanker Road was completed. The auxiliary lane improves the traffic operations and alleviates peak hour traffic delay and congestion.

A project to add auxiliary lanes to SR-237 in both directions between Middlefield Road and SR 85 is in the PA&ED stage. A HOV direct connector may be added to the project if funding is available. Estimated project cost is \$55M with construction to start in mid-2026 and completed by early 2028.

A road widening project between I-880 and Milpitas Blvd is at the PA&ED stage. The project will improve general-purpose speeds within the limits and enhance access to the HOV lanes at the McCarthy Blvd interchange. Estimated project cost is \$280M with construction to start in 2029 and completed by 2030.

## **Action Plan for HOT Facilities on I-680**

HOT lanes operate in Santa Clara and Alameda Counties between SR-237/Calaveras Boulevard and SR-84. HOT lanes operate in Contra Costa County between Alcosta Boulevard and Marina Vista Avenue.

In 2024, NB I-680 between South Gimmer Boulevard to SR-84 had 4.2 lane-miles of degraded HOT lanes during the PM peak period.

In 2024, SB I-680 between SR-84 and SR-237 (Calaveras Boulevard) had 0.5 lane-miles of degraded HOT lanes during the PM peak period.

In 2023, NB I-680 between Alcosta Boulevard and Livorna Road had 3.1 lane-miles of degraded HOT lane during the PM peak period. In 2024, there was an increase to 4.5 lane-miles of degraded HOT lanes within this segment in the PM peak period.

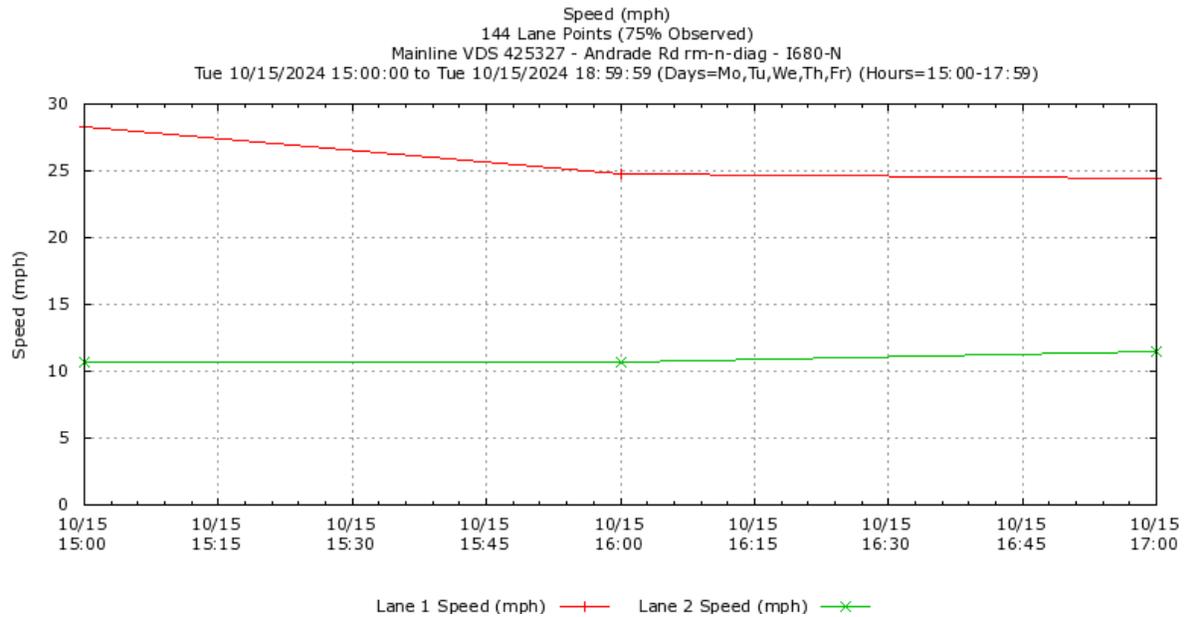
In 2023, SB I-680 between Marina Vista Avenue and Alcosta Boulevard had 0.5 lane-miles of degraded HOT lanes during the AM peak period. In 2024, there was an increase to 2.1 lane-miles of degraded HOT lanes within this segment in the AM peak period.

## **Analysis**

### NB I-680 South Grimmer Boulevard to SR-84:

A recurrent NB PM peak period bottleneck typically develops north of the SR-84 interchange, downstream of the end of the HOT lane, with queues extending nearly the entire length of the facility at the height of peak period. The primary factors resulting in reduced managed lane speeds are friction between the HOT lane and general-purpose lanes, within the area of congestion, and weaving at the end of the HOV lane, within the bottleneck section at the end of the facility. See the graph and table below for HOT and general-purpose speeds and flows in the degraded section at Andrade Road.

**Figure 4.9 NB I-680 PM “Spot Time” Plot at Andrade Road**



**Table 4.9 NB I-680 PM HOT and GP Lane Flow and Speed at Andrade Road**

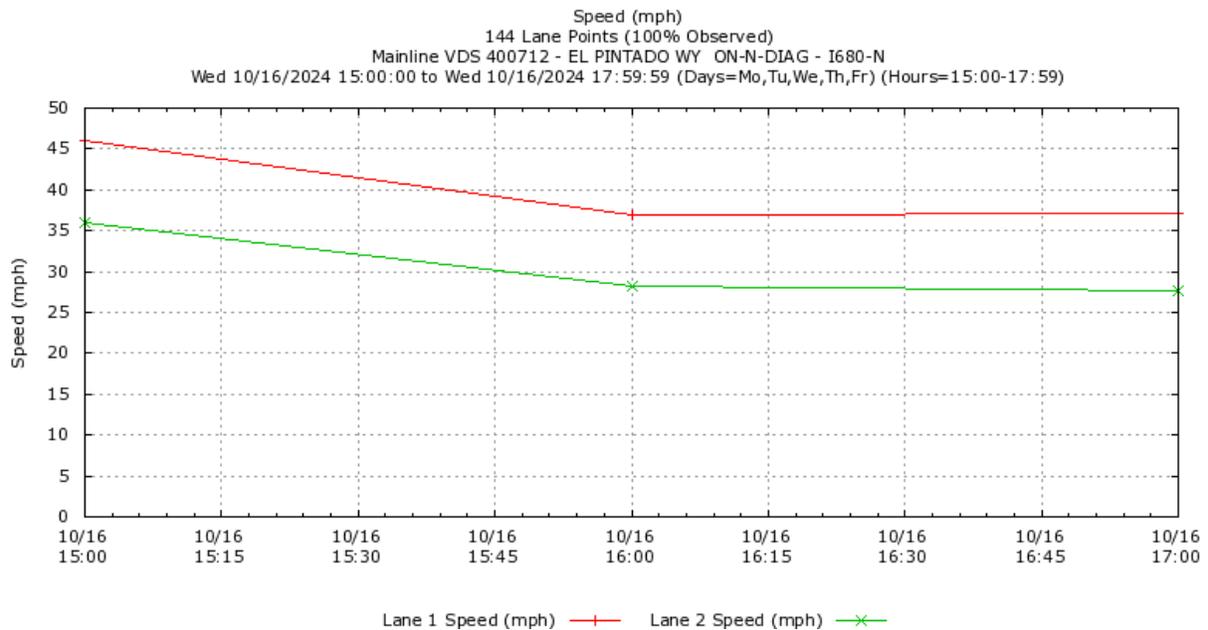
Date	Hour	HOT Flow	HOT Speed	Avg GP Flow	Avg GP Speed
10/14/2024	15:00	1439	26.2	1100	11.3
10/14/2024	16:00	1487	28.9	1032	9.7
10/14/2024	17:00	1525	31.1	1185	12.4
10/15/2024	15:00	1475	28.3	1089	10.7
10/15/2024	16:00	1454	24.8	1137	10.7
10/15/2024	17:00	1465	24.4	1183	11.5
10/16/2024	15:00	1469	26.0	1093	10.0
10/16/2024	16:00	1419	21.7	1048	9.6
10/16/2024	17:00	1444	28.0	1078	9.7
10/17/2024	15:00	1256	19.4	958	9.9
10/17/2024	16:00	1454	24.7	1041	9.1
10/17/2024	17:00	1470	19.7	1155	10.8
10/18/2024	15:00	1366	18.8	1096	10.2
10/18/2024	16:00	1391	22.3	1084	10.2
10/18/2024	17:00	1464	23.4	1168	11.8

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

NB I-680 South of Alcosta Boulevard On-Ramp to Livorna Road On-Ramp:

A recurrent bottleneck develops downstream of the end of the HOT lane restriction between the Lawrence Way on-ramp and the Treat Boulevard off-ramp during the PM peak period. Queues and slow speeds approaching this bottleneck regularly extend south nearly 10 miles to south of Sycamore Valley Road interchange. Friction between traffic in the continuous access HOT lane and traffic in the slower moving general-purpose lanes results in reduced HOT lane speeds and performance. A second contributing factor to degradation is the in-queue weaving that takes place between the HOT lane traffic and the general-purpose lane traffic near the northern end of the HOT lane at Livorna Road interchange further exacerbates operational inefficiencies, leading to increased delay and reduced travel time reliability.

**Figure 4.10 NB I-680 PM “Spot Time” Plot at El Pintado Way Interchange**



**Table 4.10 NB I-680 PM HOT and GP Flow and Speed at El Pintado Way Interchange**

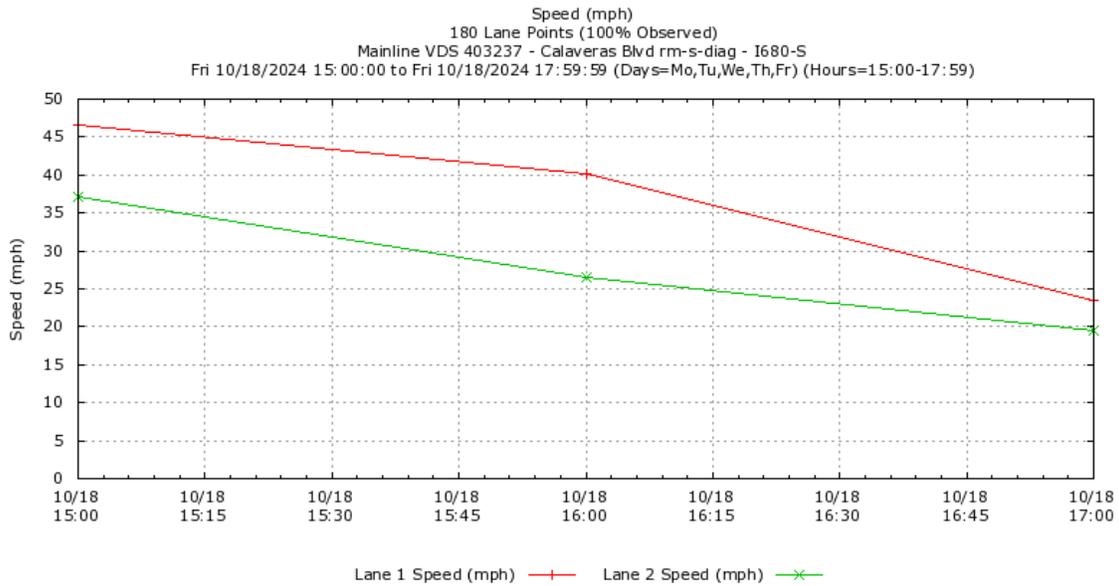
<b>Date</b>	<b>Hour</b>	<b>HOT Flow</b>	<b>HOT Speed</b>	<b>Avg GP Flow</b>	<b>Avg GP Speed</b>
10/14/2024	15:00	1349	55.2	1679	36.9
10/14/2024	16:00	1167	59.9	1682	41.3
10/14/2024	17:00	995	67.9	1658	56.0
10/15/2024	15:00	1224	50.4	1671	39.5
10/15/2024	16:00	1317	44.5	1492	34.2
10/15/2024	17:00	959	61.6	1797	56.9
10/16/2024	15:00	1439	46.0	1649	36.0
10/16/2024	16:00	1391	36.9	1441	28.2
10/16/2024	17:00	1358	37.1	1514	27.7
10/17/2024	15:00	1458	44.5	1663	35.8
10/17/2024	16:00	1425	39.9	1434	29.5
10/17/2024	17:00	1252	41.2	1399	26.3
10/18/2024	15:00	1537	36.0	1618	33.5
10/18/2024	16:00	1476	30.1	1493	27.2
10/18/2024	17:00	1452	28.6	1439	25.6

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

SB I-680 Route 84 to Santa Clara County Line:

A recurrent bottleneck develops downstream between the Berryessa Road on-ramp and the McKee Road off-ramp. The queue from this bottleneck extends upstream to the Jacklin Road interchange. This impacts the southern end of the HOT lane as the HOT lane restriction ends into a queued general-purpose lane.

**Figure 4.11 SB I-680 PM “Spot Time” Plot at SR-237 (Calaveras Blvd) I/C**



**Table 4.11 SB I-680 PM HOT and GP Flow and Speed at SR-237 (Calaveras Blvd) I/C**

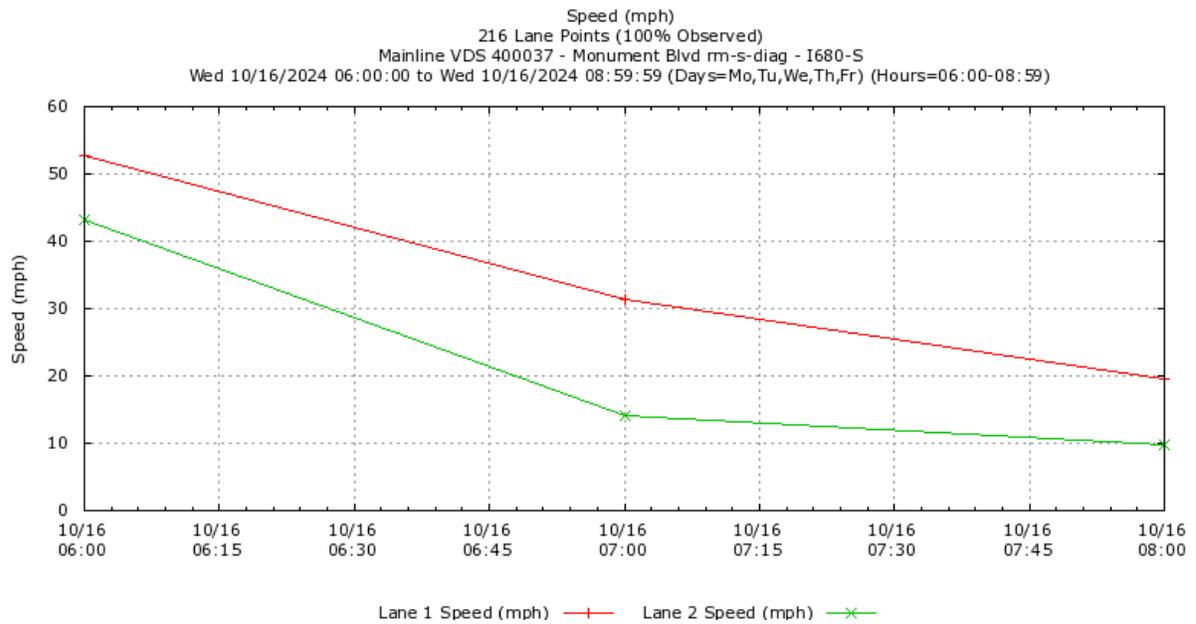
Date	Hour	HOT Flow	HOT Speed	Avg GP Flow	Avg GP Speed
10/14/2024	15:00	591	71.9	1784	64.3
10/14/2024	16:00	854	52.3	1582	27.8
10/14/2024	17:00	593	74.9	1656	46.6
10/15/2024	15:00	619	75.5	1796	68.1
10/15/2024	16:00	781	58.9	1678	43.9
10/15/2024	17:00	975	40.3	1890	22.8
10/16/2024	15:00	610	72.1	1738	66.1
10/16/2024	16:00	852	48.3	1541	32.6
10/16/2024	17:00	910	18.9	1889	17.3
10/17/2024	15:00	684	71.4	1834	61.7
10/17/2024	16:00	844	56.9	1743	31.2
10/17/2024	17:00	1113	26.9	2289	16.1
10/18/2024	15:00	986	46.5	1956	37.2
10/18/2024	16:00	1015	40.1	1943	26.6
10/18/2024	17:00	1110	23.4	2180	19.6

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

SB I-680 South of Marina Vista to North of Alcosta Boulevard On-Ramp:

In the SB direction, a recurrent AM peak period bottleneck develops between the Main Street on-ramp and the SR-24 off-ramp. Queues approaching this bottleneck extend north about 5 miles to Willow Pass Road interchange and extend back onto SR-242 to the Concord Avenue interchange. In addition, HOT lane degradation occurs north of Livorna Road interchange near the start of the HOT lane buffer striping due to the friction between the congested general-purpose lanes and the continuous access HOT lane.

**Figure 4.12 SB I-680 AM “Spot Time” Plot at Monument Boulevard I/C**

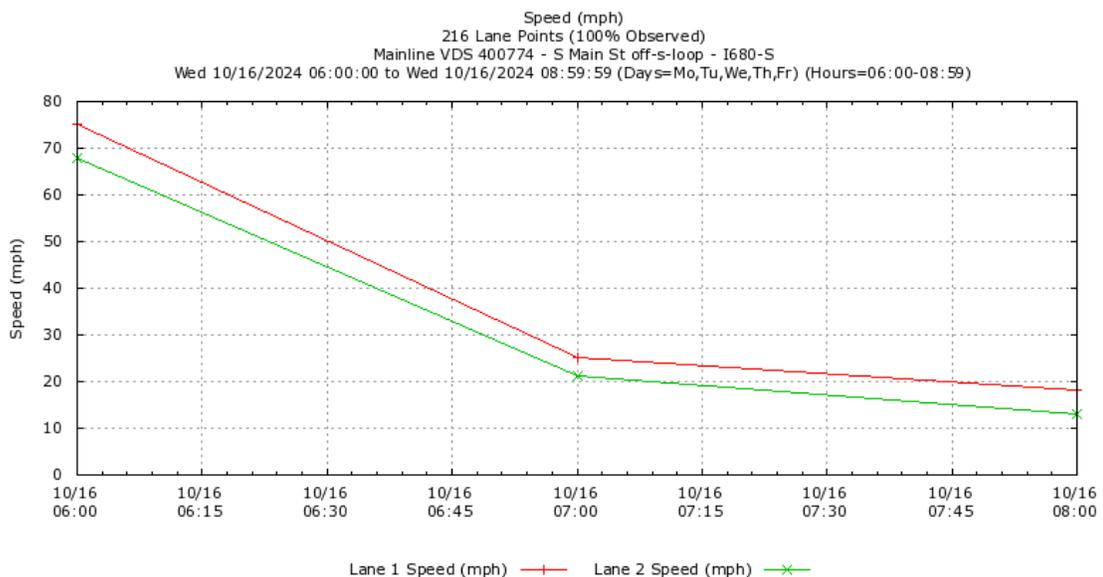


**Table 4.12 SB I-680 AM HOT and GP Flow and Speed at Monument Blvd Interchange**

Date	Hour	HOT Flow	HOT Speed	Avg GP Flow	Avg GP Speed
10/14/2024	6:00	1004	57.9	1557	37.2
10/14/2024	7:00	1180	55.1	1550	32.1
10/14/2024	8:00	885	52.9	1333	26.9
10/15/2024	6:00	1224	53.0	1652	37.6
10/15/2024	7:00	1373	38.0	1076	12.9
10/15/2024	8:00	1330	26.7	953	9.3
10/16/2024	6:00	1183	52.7	1719	43.2
10/16/2024	7:00	1281	31.4	1036	14.0
10/16/2024	8:00	1237	19.6	978	9.8
10/17/2024	6:00	1224	55.0	1710	40.7
10/17/2024	7:00	1450	40.6	1280	18.1
10/17/2024	8:00	1272	39.5	1201	14.4
10/18/2024	6:00	662	75.5	1758	67.9
10/18/2024	7:00	984	75.7	1711	63.8
10/18/2024	8:00	625	77.2	1543	65.9

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Figure 4.13 SB I-680 AM “Spot Time” Plot at South Main Street I/C**



**Table 4.13 SB I-680 AM HOT and GP Lane Flow and Speed at South Main Street Interchange**

Date	Hour	HOT Flow	HOT Speed	Avg GP Flow	Avg GP Speed
10/14/2024	6:00	847	76.3	1639	66.5
10/14/2024	7:00	1056	61.3	1643	59.8
10/14/2024	8:00	795	62.1	1513	64.2
10/15/2024	6:00	1005	61.6	1676	66.0
10/15/2024	7:00	1101	59.2	1614	62.0
10/15/2024	8:00	1119	59.9	1473	63.3
10/16/2024	6:00	890	75.3	1643	67.8
10/16/2024	7:00	1216	25.1	1172	21.1
10/16/2024	8:00	1222	18.1	1035	12.9
10/17/2024	6:00	958	65.4	1658	66.3
10/17/2024	7:00	1205	54.1	1509	37.2
10/17/2024	8:00	986	61.2	1464	55.8
10/18/2024	6:00	600	75.4	1542	68.3
10/18/2024	7:00	836	74.1	1550	63.8
10/18/2024	8:00	686	75.4	1525	67.0

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

### **Remediation Strategies**

#### NB I-680 South Grimmer Boulevard to SR-84:

Tolling of the HOT lane resumed in March 2023 after previously operating as an HOV lane. Longer term, a section of HOT lane between SR-84 and Alcosta Boulevard is scheduled to complete construction in December 2026 at a cost of \$239M that would close the gap in the Express Lanes between Alameda and Contra Costa County. This project would increase bottleneck capacity and reduce GP lane congestion as well as friction between the general-purpose lanes and managed lane approaching it. In the meantime, it is recommended that Alameda CTC increase pricing of the HOT lane to better manage demand for the facility.

#### NB & SB I-680: South of Alcosta Boulevard On-Ramp Marina Vista Avenue:

Innovate 680 is a comprehensive initiative plan sponsored by the Contra Costa Transportation Authority that includes completion of the NB HOT lane network as well as other NB improvements including part time transit lanes, shared mobility hubs and a corridor adaptive ramp meeting project between the Bollinger Canyon Road and

Ygnacio Valley Road interchanges. The HOT lanes completion and adaptive ramp metering projects are currently in the PA&ED phases with estimate costs of \$389 million and \$25 million, respectively. The Corridor Adaptive Ramp Metering System (CARM) has received an additional grant since then and expanded CARM implementation further north. The current estimate is \$84.8M (including operation and maintenance (O&M) cost). The NB HOT lane completion is still in PA&ED, but CARM has started the Planning, Specifications, and Estimates (PS&E) phase. In terms of schedule, construction for CARM is expected to be completed in 2028 and the NB HOT lane completion is expected in 2029. Smart mobility hubs project is in the earlier stages of planning. A concept plan was completed in January 2023, and implementation and phasing plans are still to be developed.

### **Action Plan for HOT Facilities on I-880**

HOT lanes on NB I-880 in Alameda County operation from south of SR-262 (Mission Boulevard to south of the Hacienda Avenue overcrossing. On SB I-880, the HOT lanes operate between Hegenberger Road in Alameda County to the SR-237 interchange in Santa Clara County.

In 2024, NB I-880 had 0.4 lane-miles of degraded HOT lanes in the AM peak period. In 2023, NB I-880 had 5.3 lane-miles of degraded HOT lanes in the PM peak. In 2024, this decreased to 4.2 lane-miles of degraded HOT lanes.

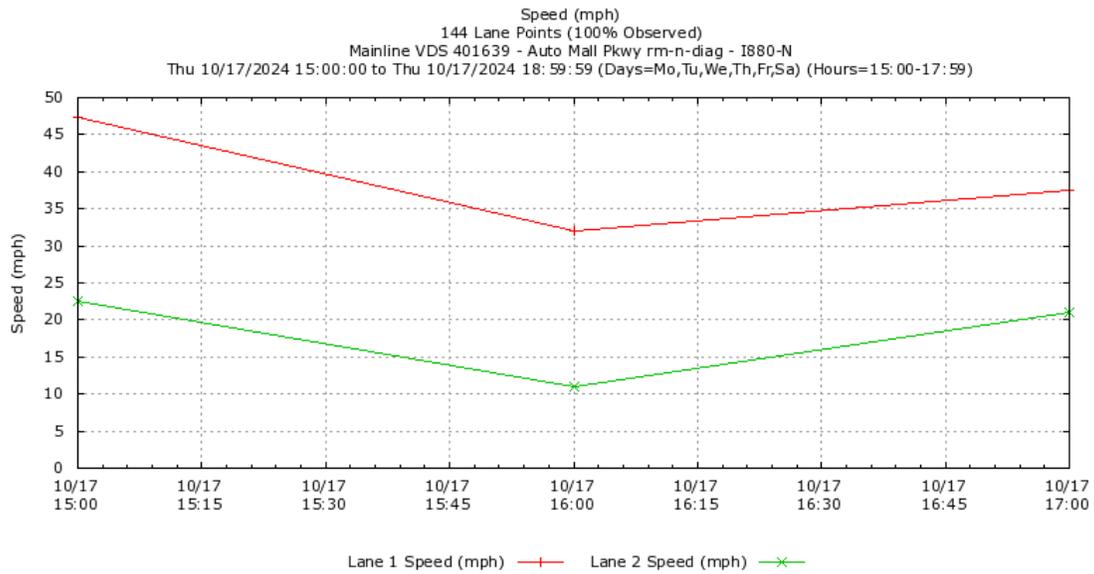
In 2023, SB I-880 in the AM peak period had 6.6 degraded HOT lane-miles. In 2024 this increased to 7.2 degraded HOT lane-miles. In the 2023 PM peak period, SB I-880 had 0.2 degraded HOT lane-miles. There was no change in degraded HOT lane-miles in the 2024 PM peak period.

### **Analysis**

#### NB I-880 South of SR-262 (Mission Boulevard) to South of the Hacienda Avenue OC:

Several bottlenecks develop along NB I-880 in Alameda County during the PM peak period, with primary controlling bottlenecks developing between the Auto Mall Parkway on-ramp and the Stevenson Boulevard off-ramp, in the southern portion of the Express Lane corridor, and between the Winton Avenue on-ramp and the A Street off-ramp in the northern part of the corridor. Queues approaching the southerly bottleneck typically extend south through the Dixon Landing Road interchange in Santa Clara County. Express Lane degradation within this freeway section occurs for about 1.5 miles in both the open access and buffered sections and is generally due to friction between general-purpose lane and HOT lane traffic. See the graph and table below comparing general-purpose and HOT lane speeds and flows at Auto Mall Parkway.

**Figure 4.14 NB I-880 PM “Spot Time” Plot at Auto Mall Parkway I/C**



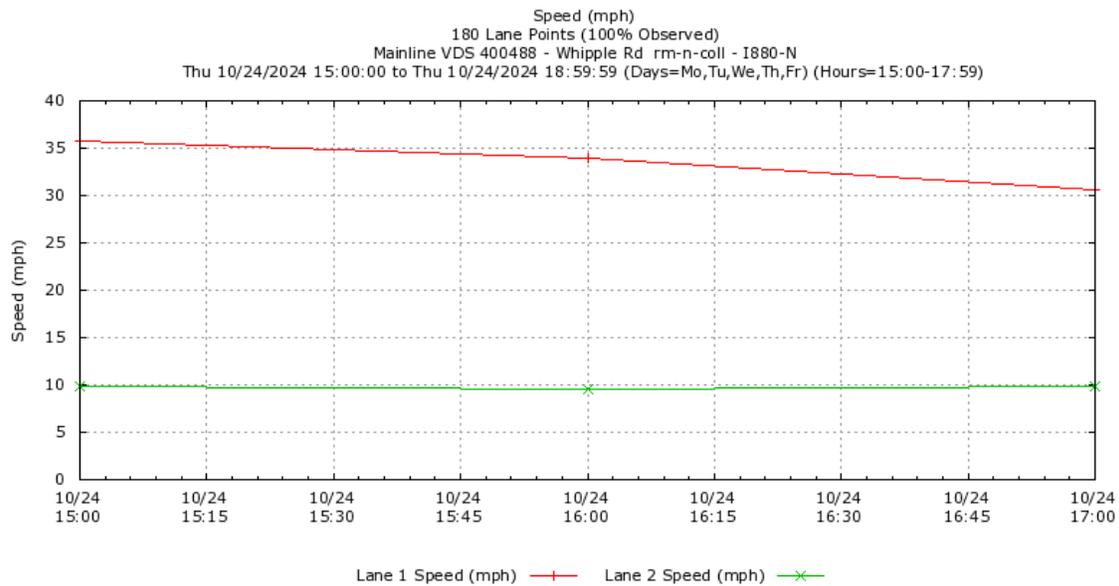
**Table 4.14 NB I-880 PM HOT and GP Lane Flow and Speed at Auto Mall Parkway I/C**

Date	Time	HOT Flow	HOT Speed	GP Flow	GP Speed
10/14/2024	15:00	1032	59.1	1381	28.9
10/14/2024	16:00	1117	55.8	1362	24.3
10/14/2024	17:00	1159	55.2	1295	20.2
10/15/2024	15:00	1269	51.8	1328	20.3
10/15/2024	16:00	1375	48.7	1308	18.5
10/15/2024	17:00	1345	46.5	1249	17.2
10/16/2024	15:00	1243	52.2	1377	23.4
10/16/2024	16:00	1326	31.0	1314	20.7
10/16/2024	17:00	1392	29.0	1280	19.0
10/17/2024	15:00	1172	47.3	1192	20.7
10/17/2024	16:00	1237	32.0	856	9.5
10/17/2024	17:00	1416	32.5	1265	18.2
10/18/2024	15:00	1315	49.7	1325	20.9
10/18/2024	16:00	1126	34.9	1327	22.5
10/18/2024	17:00	1163	33.1	1254	20.5

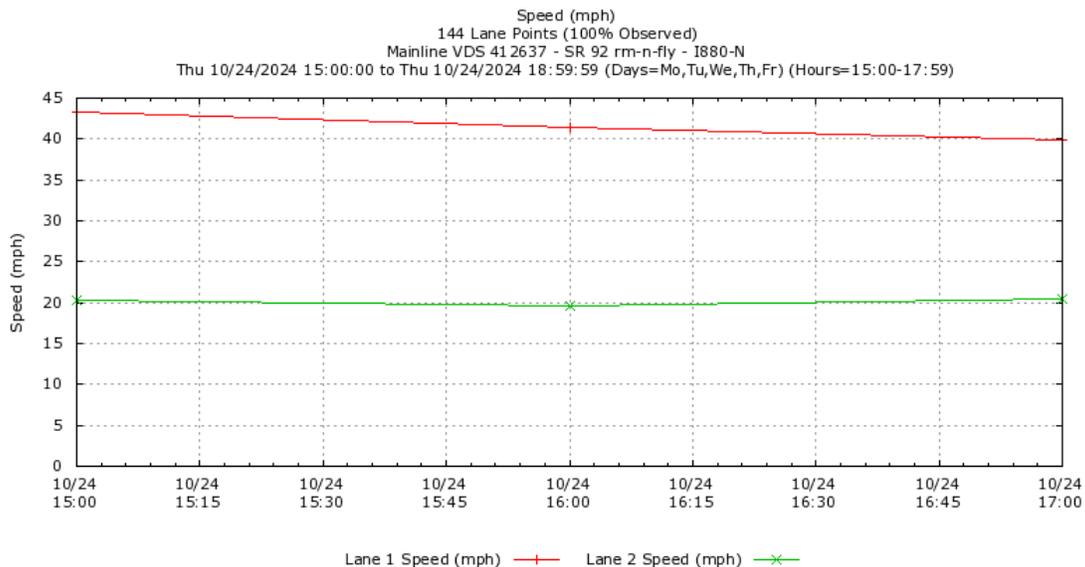
Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

Queues approaching the northerly bottleneck typically extend upstream about 9.5 miles through the Thornton Avenue interchange. Friction between Express Lane and general-purpose lane vehicles results in degraded Express Lane operations in the open access portions of the facility between the Thornton and Whipple Road interchanges. Additional Express Lane degradation develops near the end of the Express Lane south of SR-238, where general-purpose lane vehicles merge into the left freeway lane. See graphs below for a comparison of express lane and left general purpose lane speeds at the Whipple and SR-92 interchanges.

**Figure 4.15 NB I-880 PM “Spot Time” Plot at Whipple Road I/C**



**Figure 4.16 NB I-880 PM “Spot Time” Plot at SR 92 I/C**



High Express Lane demands, approaching the capacity the Express Lane facility, also contribute to the low Express Lane speeds. See the tables below for Express Lane and general-purpose lane volumes and speeds in the areas of the Whipple Avenue and SR-92 interchanges.

**Table 4.15 NB I-880 PM HOT and GP Lane Flow and Speed at Whipple Road I/C**

Date	Time	HOT Flow	HOT Speed	GP Flow	GP Speed
10/21/2024	15:00	1306	37.2	838	15.6
10/21/2024	16:00	1330	35.5	830	13.5
10/21/2024	17:00	1253	40.1	763	9.3
10/22/2024	15:00	1341	37.8	763	8.8
10/22/2024	16:00	1361	34.8	791	8.9
10/22/2024	17:00	1240	33.3	765	10.1
10/23/2024	15:00	1274	73.4	760	60.2
10/23/2024	16:00	1312	60.1	767	51.4
10/23/2024	17:00	1323	70.4	813	61.2
10/24/2024	15:00	1353	35.7	737	8.8
10/24/2024	16:00	1319	34.0	702	7.7
10/24/2024	17:00	1296	30.6	740	8.2
10/25/2024	15:00	1321	31.6	763	9.0
10/25/2024	16:00	1304	32.9	761	9.0
10/25/2024	17:00	1232	29.3	693	8.3

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

**Table 4.16 NB I-880 PM HOT and GP Lane Flow and Speed at SR 92 I/C**

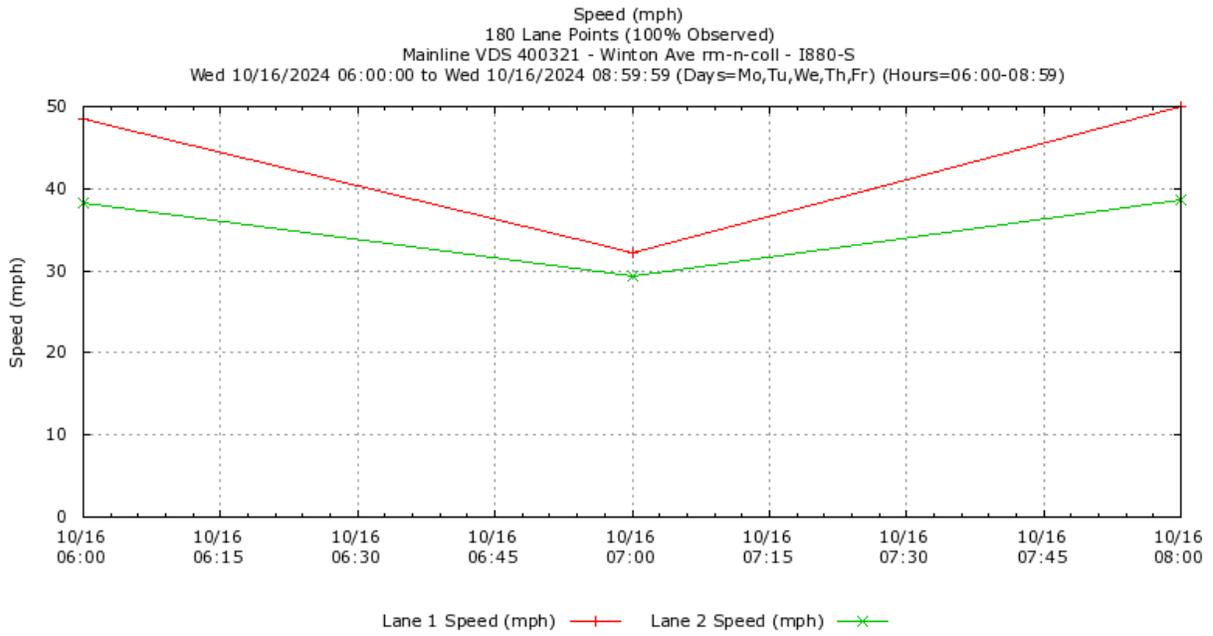
Date	Time	HOT Flow	HOT Speed	GP Flow	GP Speed
10/21/2024	15:00	1241	49.4	1282	24.7
10/21/2024	16:00	1271	48.3	1271	25.7
10/21/2024	17:00	1248	47.4	1203	21.7
10/22/2024	15:00	1322	46.6	1206	22.0
10/22/2024	16:00	1030	46.6	986	27.5
10/22/2024	17:00	990	45.1	937	26.9
10/23/2024	15:00	1241	47.7	1199	25.3
10/23/2024	16:00	1333	50.7	1310	35.4
10/23/2024	17:00	1342	41.6	1168	22.2
10/24/2024	15:00	1319	43.3	1192	21.9
10/24/2024	16:00	1377	41.4	1162	21.2
10/24/2024	17:00	1374	39.9	1199	21.9
10/25/2024	15:00	1330	44.0	1219	23.4
10/25/2024	16:00	1374	41.4	1225	23.0
10/25/2024	17:00	1354	41.1	1197	22.5

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

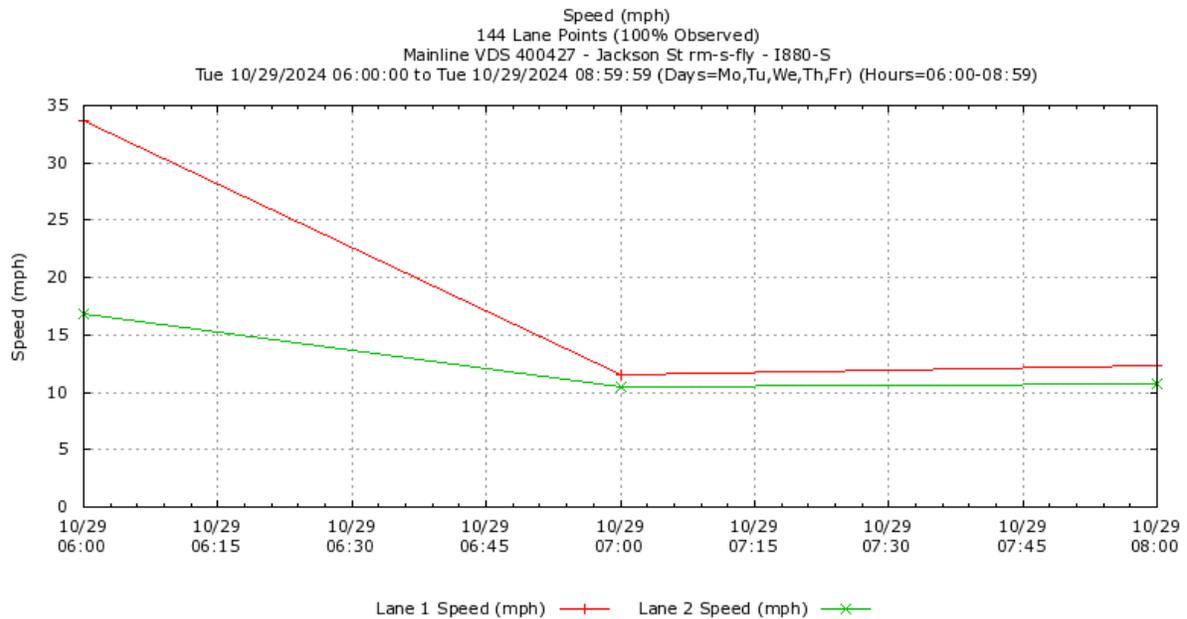
#### SB I-880 Hegenberger Road to SR 237:

Multiple bottlenecks develop on SB I-880 in Alameda County during the AM peak period; however, two primary bottlenecks generally control traffic operations for the majority of the peak. A northern bottleneck between the A Street on-ramp and the Winton Avenue off-ramp and a southern bottleneck between the Stevenson Boulevard on-ramp and the Auto Mall Parkway off-ramp. Queues associated with the northern bottleneck typically extend north for about 2 miles to the SR- 238 interchange and queues from the southern bottleneck extend north of the SR- 92 interchange, a distance of about 3 miles. Friction between HOT lane and general-purpose lane vehicles as well as high HOT lane demand results in degraded HOT lane operations in both the buffered and open access portions of the facility from the SR- 238 interchange to south of the Alvarado-Niles Road interchange and from the Decoto Road interchange to the Stevenson Boulevard interchange. See the tables below graphs and tables for HOT lane and general-purpose lane volumes and speeds in the areas of the Winton Avenue and Jackson Street interchanges.

**Figure 4.17 SB I-880 AM “Spot Time” Plot at Winton Avenue I/C**



**Figure 4.18 SB I-880 AM “Spot Time” Plot at Jackson Street I/C**



**Table 4.17 SB I-880 AM HOT and GP Lane Flow and Speed at Winton Avenue I/C**

<b>Date</b>	<b>Time</b>	<b>HOT Flow</b>	<b>HOT Speed</b>	<b>GP Flow</b>	<b>GP Speed</b>
10/14/2024	6:00	1292	62.9	1542	47.9
10/14/2024	7:00	1136	57.6	1443	41.9
10/14/2024	8:00	1056	61.2	1413	50.2
10/15/2024	6:00	1501	48.9	1487	37.2
10/15/2024	7:00	1365	31.2	1353	27.9
10/15/2024	8:00	1376	54.8	1460	37.6
10/16/2024	6:00	1554	48.4	1513	33.9
10/16/2024	7:00	1307	32.2	1232	24.3
10/16/2024	8:00	1332	50.0	1372	31.1
10/17/2024	6:00	1593	51.1	1512	35.4
10/17/2024	7:00	1454	42.2	1441	30.5
10/17/2024	8:00	1222	58.2	1423	39.4
10/18/2024	6:00	1303	63.6	1534	50.7
10/18/2024	7:00	1189	60.3	1438	46.2
10/18/2024	8:00	1059	65.5	1394	52.8

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

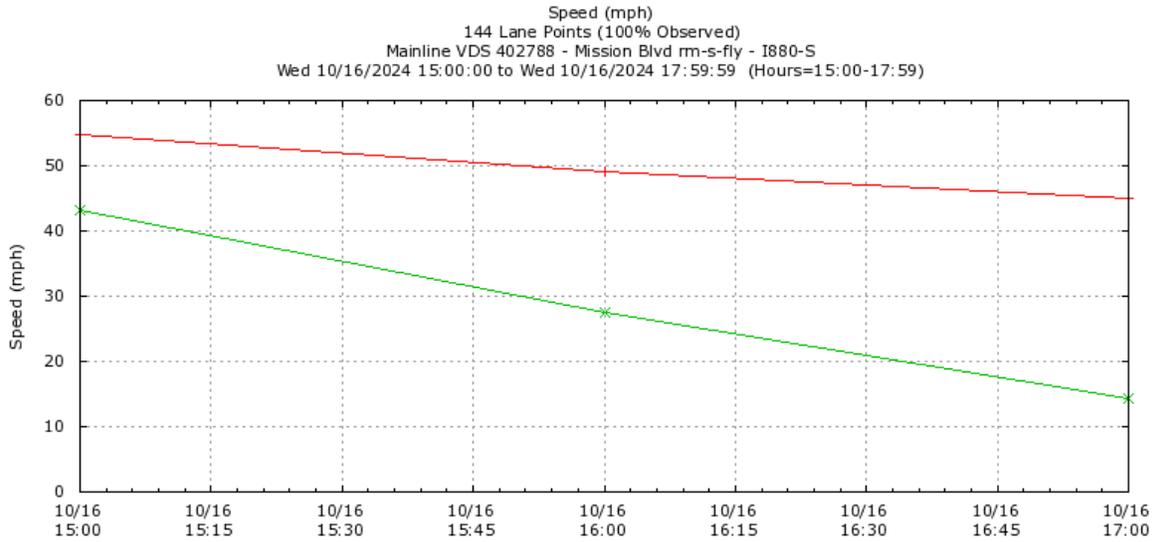
**Table 4.18 SB I-880 AM HOT and GP Lane Flow and Speed at Jackson Street I/C**

<b>Date</b>	<b>Time</b>	<b>HOT Flow</b>	<b>HOT Speed</b>	<b>Avg GP Flow</b>	<b>Avg GP Speed</b>
10/28/2024	6:00	1293	57.4	1491	48.8
10/28/2024	7:00	1155	21.0	1156	15.6
10/28/2024	8:00	925	71.0	1308	61.4
10/29/2024	6:00	1407	33.7	1298	16.8
10/29/2024	7:00	1013	11.6	1030	10.5
10/29/2024	8:00	1022	12.3	1055	10.8
10/30/2024	6:00	1349	38.9	1384	23.5
10/30/2024	7:00	1154	18.7	1186	20.6
10/30/2024	8:00	1007	56.1	1252	56.8
10/31/2024	6:00	1318	46.8	1436	38.2
10/31/2024	7:00	1108	25.6	1182	19.9
10/31/2024	8:00	852	70.8	1241	62.1
11/01/2024	6:00	1104	75.0	1552	60.9
11/01/2024	7:00	1082	63.3	1307	43.9
11/01/2024	8:00	808	73.1	1386	64.4

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

During the PM peak, SB I-880 experiences intermittent congestion at various locations along most of the corridor, including the area of HOT lane degradation north near the Mission Boulevard interchange. Friction between HOT lane and general-purpose lane vehicles result in occasional degraded HOT lane operations at this location. The graph and table below show express and general-purpose lane speeds and volumes at the Mission interchange

**Figure 4.19 SB I-880 PM “Spot Time” Plot at Mission Boulevard I/C**



**Table 4.19 SB I-880 PM HOT and GP Lane Flow and Speed at Mission Boulevard I/C**

Date	Time	HOT Flow	HOT Speed	GP Flow	GP Speed
10/14/2024	15:00	1003	63.5	1494	54.0
10/14/2024	16:00	1048	62.9	1573	59.8
10/14/2024	17:00	1127	58.2	1436	41.6
10/15/2024	15:00	1311	53.9	1520	39.6
10/15/2024	16:00	1330	49.6	1358	26.9
10/15/2024	17:00	1371	43.4	1168	14.9
10/16/2024	15:00	1309	54.8	1542	43.1
10/16/2024	16:00	1370	49.2	1392	27.5
10/16/2024	17:00	1348	45.0	1137	14.3
10/17/2024	15:00	1307	53.9	1445	39.0
10/17/2024	16:00	1252	30.3	975	14.0
10/17/2024	17:00	1337	43.5	1083	12.0
10/18/2024	15:00	1298	53.1	1496	38.0
10/18/2024	16:00	1030	63.1	1477	58.2
10/18/2024	17:00	1106	60.3	1495	47.5

Note: Speeds below 35 mph would be locations in congestion and corresponding volumes would be constrained volumes, demand exceeds capacity.

## **Remediation Strategies**

### NB I-880 Santa Clara County line to South of SR-238:

In the short term, it is recommended that Caltrans should also work with CHP to provide additional enforcement and discourage violators from using the lane and exacerbating the degradation of the facility in both peaks. Additionally, Caltrans District 4 is working with MTC/BAIFA to alter tolling rates to better manage demand for the facility.

### SB I-880 Hegenberger Road to SR-237:

In the short term, degradation during both peak periods could be addressed by Caltrans District 4 working with CHP to provide additional enforcement to discourage violators from using the lane and exacerbating the degradation of the facility. Additionally, the district is working with MTC/BAIFA to alter tolling rates to better manage demand for the facility.

Southbound PM degradation near the Mission Boulevard interchange should continue to be monitored, as PM peak period degradation has not developed at this location in the past and only occurred on 12 of the 100 monitored days.

## **Topic 2 District 7 Degradation Action Plans**

### **District-Wide Overview of Express Lanes**

The Metro ExpressLanes network in District 7 spans 75 lane-miles on two routes: Interstate 10 (I-10) and Interstate 110 (I-110). These lanes, generically referred to as high-occupancy toll (HOT) lanes and branded as “ExpressLanes” in Los Angeles, allow for toll-free travel to vehicles meeting minimum occupancy requirements and offer access to non-High Occupancy Vehicle (non-HOV) for a price. The occupancy policy for toll-free travel on I-10 is HOV3+ during peak periods, defined as weekdays 5–9 AM and 4–7 PM, and HOV2+ during all other times. The occupancy policy for toll-free travel on I-110 is HOV2+ at all times. As with other managed lanes in District 7, the ExpressLanes are buffer-separated and barrier-separated with ingress/egress opportunities approximately 1–2 miles apart. Unlike other managed lanes, though, tolls are used in the ExpressLanes to manage demand and optimize use of available lane capacity while avoiding congested conditions, with current rates varying from \$0.10/mile to \$3.00/mile based on real-time conditions measured every five minutes. These rates became effective on June 16, 2025. Drivers with valid Clean Air Vehicle (CAV) decals issued by the state used to receive a 15% discount off the posted tolls, and transit buses travel toll-free as part of the non-revenue vehicle program. The CAV decal discount program ended on September 30, 2025. Vehicles that meet minimum occupancy requirements can continue to travel toll-free on the ExpressLanes. Toll revenues are used to fund additional transit services and other transportation corridor improvements including roadway improvements, active transportation infrastructure, system connectivity projects, and other transit projects. The ExpressLanes program remains highly popular among corridor travelers, with 90% of those

surveyed in 2018 reporting that they were satisfied with the time savings relative to the toll paid (n=81,748, Metro Board Report 2018-0560).

## **District-Wide Analysis of All Managed Lanes**

### ***Applicable to Managed Lanes in District 7 in General***

While some causes of speed degradation in the Express Lanes are specific to I-10 or I-110, many are common to both, and most are also generally common to other managed lanes as well (i.e., HOV lanes). The lists below expand on all of these categories.

- High occupancy violation was observed on HOV/HOT lanes district wide. Caltrans estimated that the average occupancy mis-representation rate in managed lanes is 39% as of 2024. The widespread misuse of ExpressLanes by vehicles failing to meet occupancy requirements resulted in volume increases beyond what the lane was designed for and is one of the primary causes of performance degradation. Approximately 75% to 86% of vehicles in the I-10 and I-110 ExpressLanes were single-occupant vehicles, many of which accessed the lanes through the Clean Air Vehicle (CAV) decal program which ended on September 30, 2025, or through incorrect transponder settings. Occupancy misrepresentation remains a persistent problem, with 25% to 30% of users inaccurately reporting the number of occupants to falsely qualify for occupancy status and evade tolls.
- The Metro Board Report dated Aug 29, 2025, estimated that there were more than 41,000 qualifying vehicles registered in the CAV decal program, representing approximately 5% of all program users. These vehicles received legally mandated toll discounts for ExpressLanes, putting additional pressure on the dynamic pricing system until the decal program ended on September 30, 2025.
- Recurrent congestion on general-purpose (GP) lanes at geometrically constrained locations, particularly at freeway interchanges, generates "friction" between GP and Express lanes, which also contributes to the degradation of ExpressLane performance.

District-wide issues with data coverage and quality are prevalent. District 7's PeMS data indicates that less than 20% of the detection sensors are "healthy" overall. The Degradation and Action Plan Reports rely on PeMS data, which may not accurately reflect the extent of degradation. The district has several projects at various stages of development to upgrade PeMS system and improve data quality over time. Caltrans is exploring new technologies and additional data sources for express lanes, such as those from the toll operator, LA Metro.

### ***Applicable Specifically to ExpressLanes in District 7***

- **Illegal crossing of double-white longitudinal pavement markings** — Tolls in the ExpressLanes are charged at discrete toll collection points along the corridor. Some non-HOV travelers evade toll payment by illegally crossing the double-white

line pavement markings to exit the lanes upstream of these toll collection points and/or to enter the lanes downstream of them.

- **Dynamic pricing algorithm temporal smoothing** — To smooth out stochastic fluctuations that would otherwise create disruptive and counterproductive swings in pricing from one calculation interval to the next, the hundreds of traffic data points used to calculate the toll rates by location and time of day every five minutes are subject to a degree of spatial and temporal smoothing to stabilize prices. A side effect of this data smoothing is that any underlying signal in demand takes longer to become measurable and detectable, which increases the response time for the algorithm

## Action Plan for HOT Facilities on I-10

### Analysis

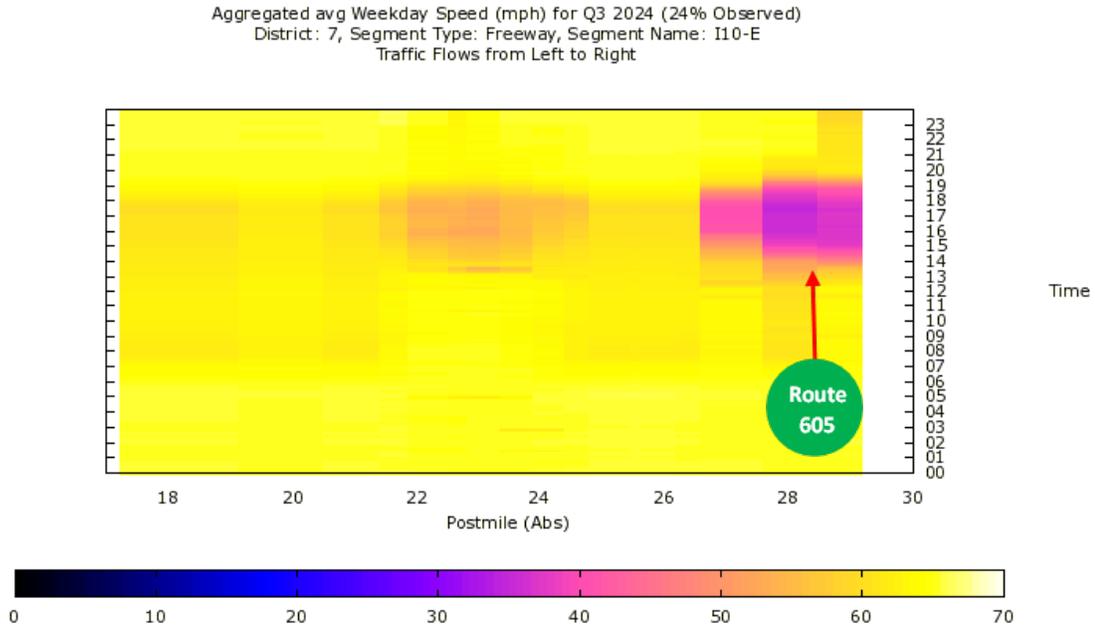
The managed lane facilities along I-10 are divided into two segments. From Alameda Street in Downtown Los Angeles to Interstate 605 (I-605), the lanes operate as ExpressLanes; from I-605 to the San Bernardino County Line, they remain standard HOV lanes. This action plan addresses only the ExpressLanes segment (Alameda Street to I-605). Due to insufficient data in 2024, the analysis relies on data from the LA Metro toll operator, limited PeMS data, and findings from previous reports.

During the PM peak period in the eastbound direction, recurrent congestion occurs between Baldwin Ave. and Durfee Ave. (Abs PM 26.5–29.017), near the I-605 interchange (Figure 1). This congestion impacts all lanes and significantly degrades the performance of the eastbound ExpressLanes. Since the I-10 ExpressLanes currently end at I-605, eastbound traffic attempting to exit the ExpressLanes during peak hours struggles to merge into the congested general-purpose lanes. This produces queue spillback into the terminating portion of the eastbound ExpressLanes due to the existing roadway geometry.

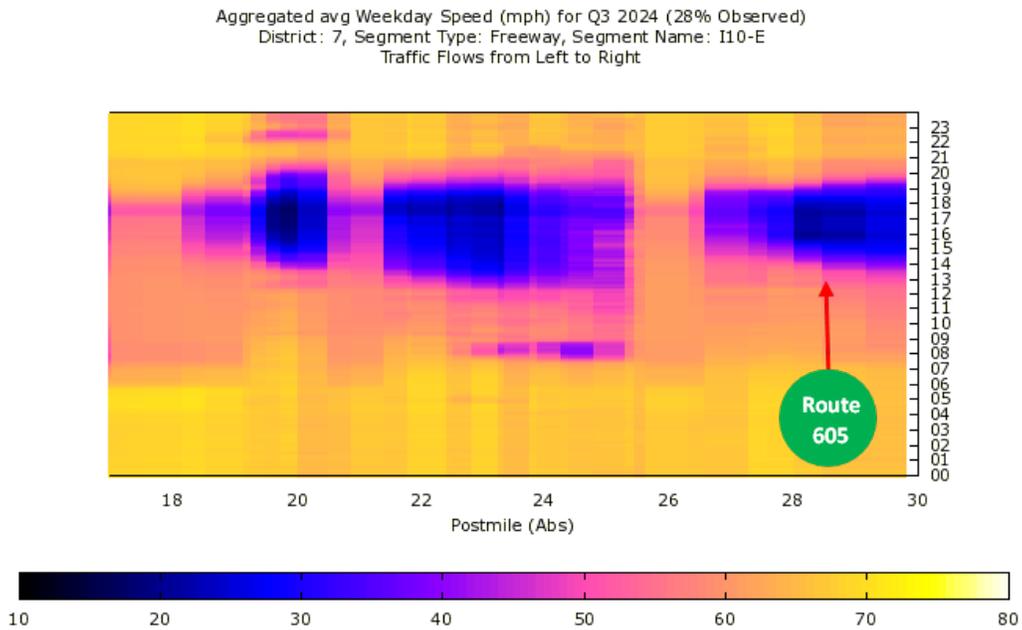
During the AM peak period in the westbound direction, the ExpressLanes are highly degraded at Durfee Ave. (Abs PM 29.017), near the I-605 interchange. They also experience slight degradation at Garvey Ave. (Abs PM 20.255) due to a lane drop from two lanes to one, and near the Interstate 710 (I-710) Interchange.

Figures 1 and 2 provide plots of eastbound ExpressLane and GP lane speeds during the third quarter of 2024. Figures 3 and 4 provide plots of westbound ExpressLane and GP lane speeds during the same quarter.

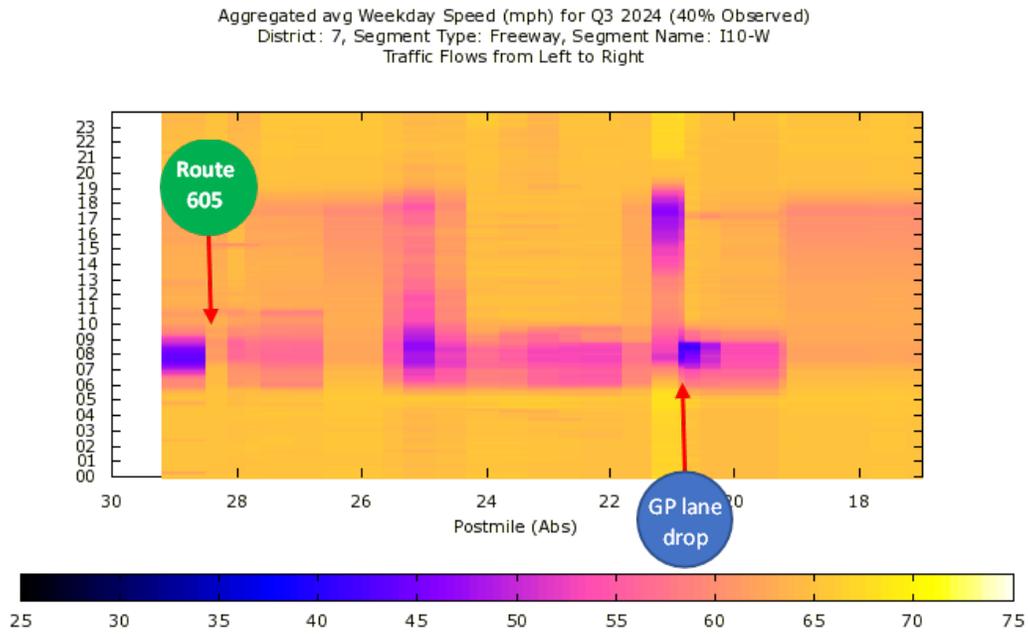
**Figure 7.1 Average EL Speed – EB I-10 (Alameda St. to I-605), Q3 2024**



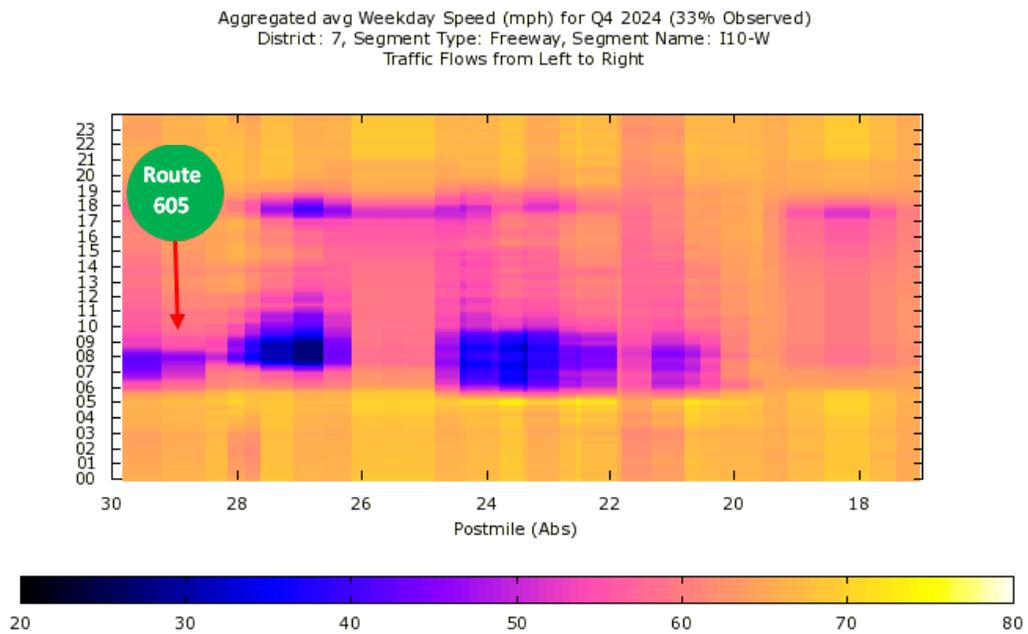
**Figure 7.2 Average GP Lane Speed – EB I-10 (Alameda St. to I-605), Q3 2024**



**Figure 7.3 Average EL Speed – WB I-10 (I-605 to Alameda St.), Q3 2024**



**Figure 7.4 Average GP Lane Speed – WB I-10 (I-605 to Alameda St.), Q3 2024**



## Action Plan for HOT Facilities on I-110

### Analysis

There was insufficient data to determine if the I-110 ExpressLanes were degraded in 2022 and 2023. For 2024, the analysis incorporates data from the LA Metro toll operator along with limited PeMS data. While the HOV facility on I-110 experienced degradation since 2013, it was likely degraded in 2024.

The north terminus is extremely degraded during the morning peak hours due to the conversion of the I-110 HOV lane into HOT lanes, which increased the vehicle volume at the northbound terminus at Adams Boulevard. The location was not upgraded to sustain the increase in traffic volumes. Adams Boulevard will continue to be a bottleneck because the release of vehicles depends on traffic signals.

### Remediation Strategies for I-10 and I-110 HOT Facilities

LA Metro and Caltrans have partnered to implement the following strategies to address degradation and improve facility performance on the HOT facilities on I-10 and I-110 in Los Angeles:

- **Channelizers to deter illegal entry and exit.** On the recommendation of California Highway Patrol (CHP), LA Metro and Caltrans are coordinating to install channelizers in the buffer between the managed lanes and the general-purpose lanes, to improve safety and reduce delays associated with traffic incidents caused by illegal ingress and egress maneuvers. LA Metro has identified funding for this project and is now procuring a contractor to perform the services, with an expected completion by December 2026. This work will be handled by Metro through our Caltrans-Metro O&M Agreement (07-5092). The encroachment permit number is 725-6MC-0868.
- **Improved pricing algorithm coverage, responsiveness, sensitivity, and versatility.** LA Metro is expanding the in-lane traffic detection system to improve the scale and resolution of data used to calculate real-time toll rates for the ExpressLanes. These new data sources will better equip the toll system to rapidly and effectively respond to high demand and congestion in the lanes wherever and whenever it occurs, resulting in smoother traffic flow and more reliable travel times for corridor users. Work is ongoing with additional detectors being brought online every month. LA Metro is also preparing an improved dynamic pricing algorithm that is designed to be significantly more responsive to congestion and speed degradation, allowing the system to more accurately anticipate the onset of congestion and to take preventive measures before the saturation point is reached. This will facilitate the preservation of free-flow traffic speeds in the ExpressLanes, minimizing degradation and offering better experiences for all corridor users. Furthermore, LA Metro and Caltrans anticipate increased price sensitivity and enhanced ability of the toll system to manage congestion on the

corridor after the clean air vehicle decal program ended statewide on September 30, 2025, which will also mark the end of the toll discount program available to decal holders. CAVs no longer receive discounts in the ExpressLanes, therefore demand will likely be reduced in the ExpressLanes. LA Metro continues to implement additional toll rate increases periodically as warranted based on trends in traffic demand on the corridor, to facilitate ongoing effective management of congestion as demand continues to rise. This helps ensure that the pricing algorithm has sufficient flexibility to set prices at levels sufficient to effectively control demand and keep the lanes flowing freely.

- **Focused enforcement by CHP.** LA Metro continues to contribute millions of dollars annually toward targeted enforcement services from CHP on the ExpressLanes corridors, to reduce instances of occupancy misrepresentation, illegal buffer crossings, and other driver behaviors that contribute to congestion. These dedicated enforcement activities are a proven effective strategy for lowering occupancy mis-representation rates in the ExpressLanes.

Additionally, LA Metro is improving occupancy enforcement tools for CHP. LA Metro continues to invest in advanced transponder switch setting indicators at each toll collection point on the corridor, to facilitate CHP enforcement by displaying the real-time occupancy switch setting of each vehicle's transponder on an easy-to-read double-sided overhead numeric display. In meetings and conversations with our CHP partners that patrol the ExpressLanes per LA Metro's inter-agency agreement with them, they have repeatedly indicated that these numeric displays are easier for them to use than the traditional flashing beacons that toll agencies have historically used.

- **Automated occupancy verification for HOVs.** LA Metro pioneered the installation of a new AVOD System on the ExpressLanes in 2019 and has been performing system tuning and refinements in recent months to bring the system into a state of readiness for production use. This camera-based roadside system should deter occupancy mis-representation — a leading cause of toll evasion violations on the corridor and contributor to increased congestion in the managed lanes on the corridor. Once active, the system will automatically identify vehicles that are found to have mis-represented themselves as HOVs without having the minimum required number of occupants and will send notices of toll evasion violations by mail to the registered owners of those vehicles. LA Metro expects to complete the pre-deployment testing phase of the AVOD System project in 2026.
- **Recalibration of occupancy requirements.** Consistent with actions previously identified in earlier degradation action plans for this corridor, LA Metro and Caltrans are exploring options for increasing the minimum occupancy requirements for toll-free travel as required in Caltrans' Traffic Operations Policy Directive 20-02. These changes are anticipated to enable more effective management of demand on the corridor by making drivers more price sensitive to the tolls. Prior to implementing any updates to the occupancy requirements for

toll-free travel, LA Metro will coordinate its recommendations with Caltrans and will present them to the LA Metro Board.

- **Off-system strategies to reduce corridor demand.** LA Metro has allocated over \$120 million in net toll revenues for active transportation, transit, and arterial improvements along the corridors. This also includes transit subsidies and funding to Caltrans for other transportation corridor improvement projects. Collectively, these off-system strategies help encourage mode shift away from private auto travel on the freeway by making other alternatives like transit and active transportation more attractive. These investments are anticipated to decrease travel demand on the existing ExpressLanes, translating into improved travel speeds and reduced degradation on the corridor. Disbursements of funds for these projects are ongoing. These projects include Foothill Extension (2025), Eastside Transit Corridor (2037), J-Line Electrification (2025), and Key DTLA Stations (2027).

## Topic 3 District 8 Degradation Action Plans

### District-Wide Actions Related to HOT Lane Degradation

The Riverside County Transportation Commission (RCTC) and the San Bernardino County Transportation Authority (SBCTA) in cooperation with Caltrans and Federal Highway Administration (FHWA) worked together to construct HOT lanes along the I-10, I-15, and SR-91 freeway corridors as part of an overall long-term strategy of integrated initiatives to improve mobility, manage congestion, address current and future travel demand, and increase vehicular and person throughput in Riverside and San Bernardino Counties.

RCTC manages and operates the HOT Lanes on SR-91 and I-15 in Riverside County. SBCTA manages and operates the HOT lanes on I-10 in San Bernardino County.

Caltrans District 08, owner and operation of State Highway System (SHS), commits:

- Caltrans has an agreement with RCTC to provide support for maintenance of HOT lanes.
- The Caltrans TMC is committed to real-time traffic monitoring, incident response, construction and maintenance zone, and emergency operations on GP lane. This commitment reduces friction factors at ingress and egress of HOT lanes that improves mobility within HOT lanes.

### Action Plan for HOT Facilities on I-15

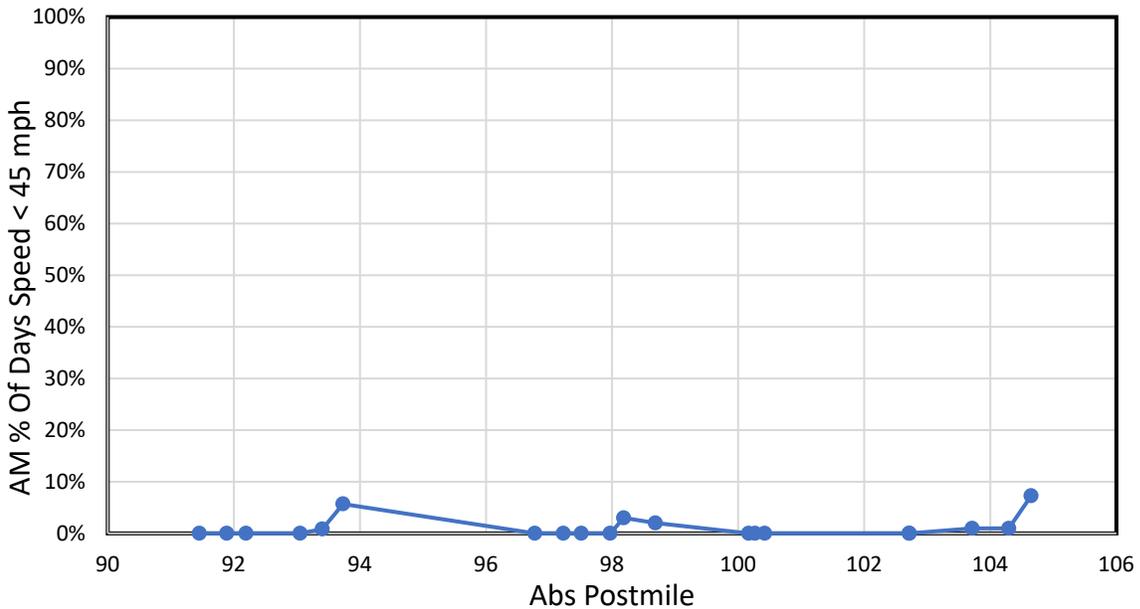
#### Analysis

##### NB I-15 (AM & PM)

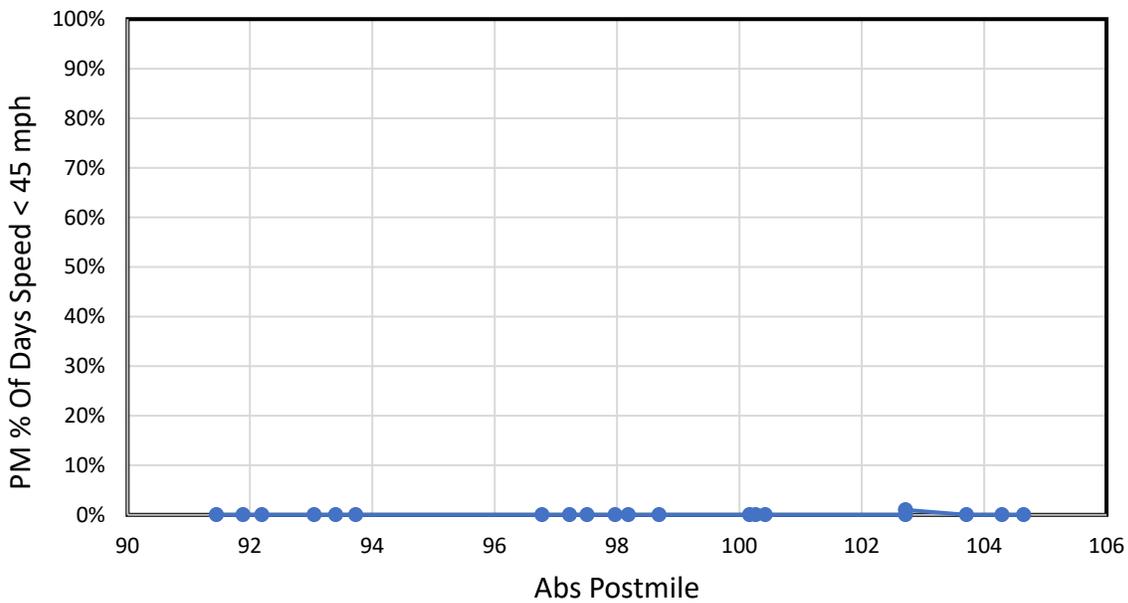
Northbound I-15 HOT Lane starts from Cajalco Rd to 15/60 Interchange.

Northbound AM & PM were not degraded during the period from July 1, 2024, to December 31, 2024. Figures 8.1 and 8.2 provide a comprehensive visual presentation of degradation on each route on both directions from postmile to postmile.

**Figure 8.1 NB I-15 AM HOT Percentage of Days Below 45 MPH**



**Figure 8.2 NB I-15 PM HOT Percentage of Days Below 45 MPH**



SB I-15 (AM & PM)

Southbound I-15 HOT Lane starts from 15/60 Interchange to Ontario Ave.

Please refer to Figures 8.3 and 8.4.

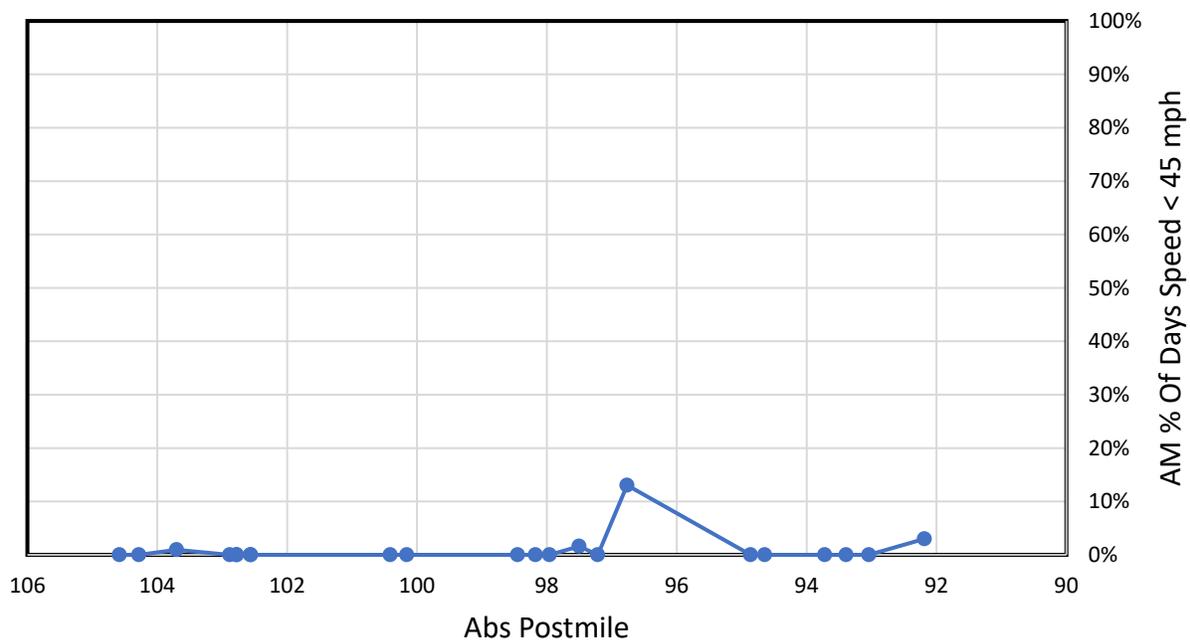
AM Traffic: Slightly degraded at 100 FT S/O Corona Ave UC (Abs PM 96.766 at 13%). The slightly degraded segment stretched 0.922 mile.

RCTC claims that Caltrans sensor 828334 (Abs PM 96.766 at 13%) is inaccurate. Caltrans did field verification that this sensor was working properly.

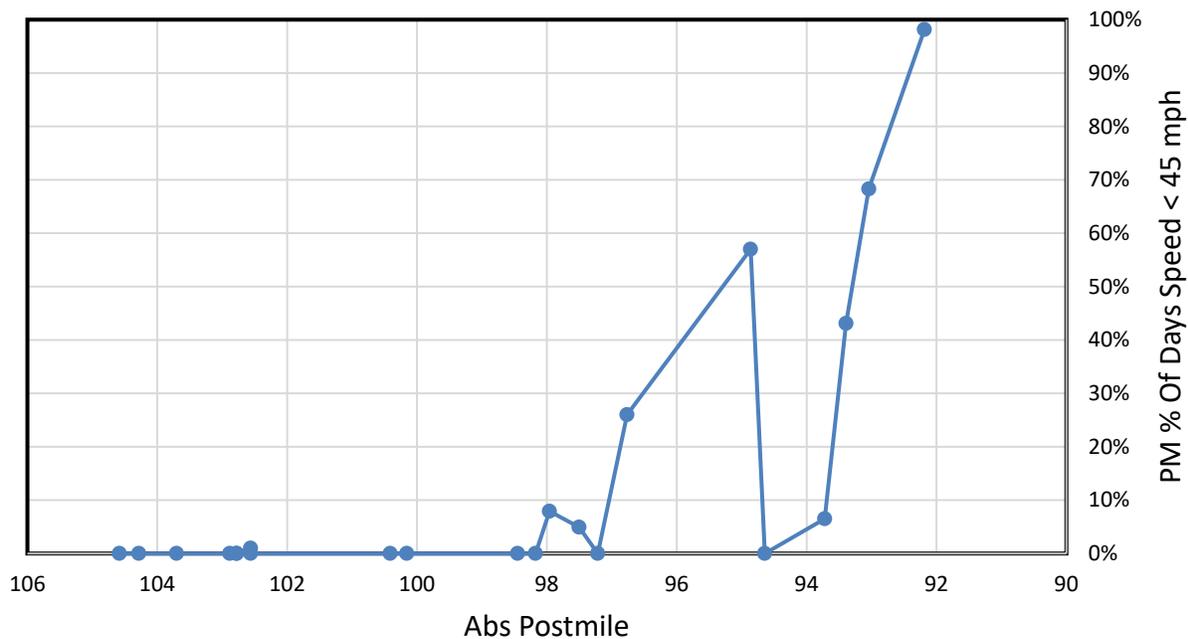
PM Traffic: Slightly degraded at 100 FT S/O Corona Ave UC (Abs PM 96.766 at 26%) and Ontario Ave (Abs PM 93.393 at 43%); very degraded at Magnolia Ave (Abs PM 94.863 at 57%) and Ontario Ave (Abs PM 93.042 at 68%); and extremely degraded at the end of Express Lane (Abs PM 92.185 at 98%). The slightly, very, and extremely degraded segments extend 1.602, 2.504, and 2.641 miles, respectively.

Response from RCTC: Sensor data TTMS 3S and 2S and Caltrans sensor data 828273 and 828279 are in the southern terminus of the Express Lanes, where the Express Lanes merge into the general-purpose lanes. There is congestion in the general-purpose lanes during the PM peak periods which causes a delay for vehicles merging from the Express Lanes to the general-purpose lanes.

**Figure 8.3 SB I-15 AM HOT Percentage of Days Below 45 MPH**



**Figure 8.4 SB I-15 PM HOT Percentage of Days Below 45 MPH**



**Remediation Strategies**

NB I-15:

Project EA 08-0F543: Construct direct HOT lane connectors within 15-91 JCT between SR-91 (west leg) to I-15 (north leg) and I-15 (south leg). Construction began in April 2020 and is scheduled to be completed in April 2027. After the completion of this project, mobility should be improved through the interchange.

SB I-15:

SBCTA & RCTC are sponsoring projects to widen and extend the I-15 Express Lanes further north and south which should resolve this degradation on the I-15 corridor:

Project EA 08-0R801: Sponsored by SBCTA, add one to two Express Lane in each direction between Cantu-Galleano Ranch Road and Foothill Blvd. After the completion of this project, mobility should be improved. Construction began in November 2024 and is scheduled to be completed in December 2027.

Project EA 08-0J082: Sponsored by RCTC for the southern extension of the Express Lanes. The project is scheduled to begin construction in April 2027 and scheduled to be completed in December 2030.

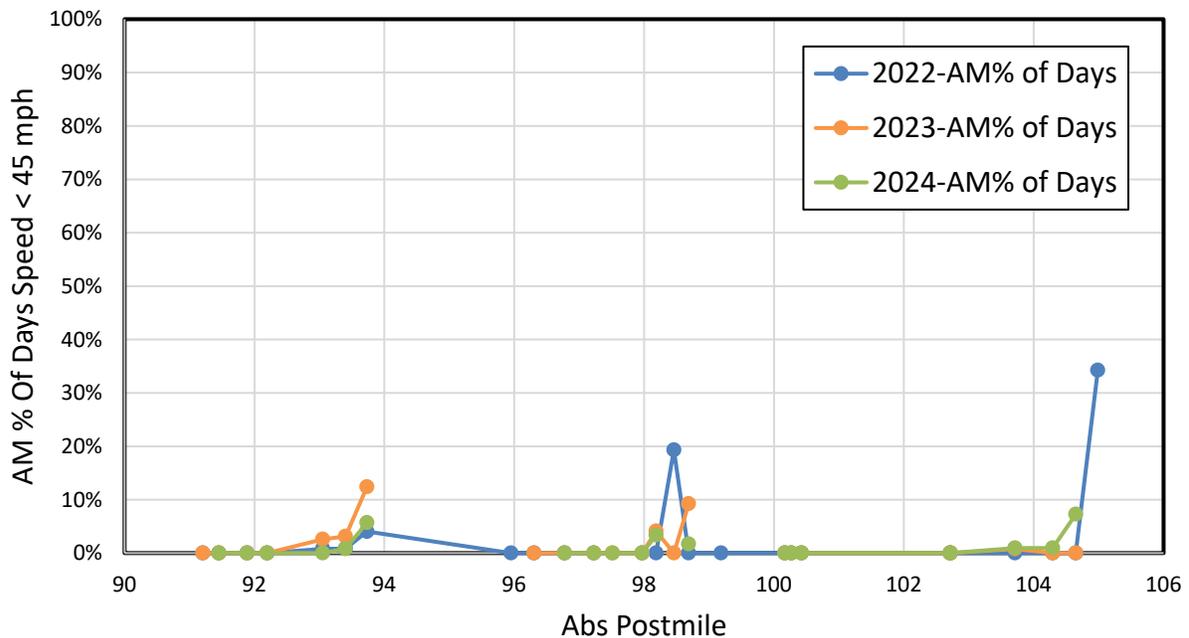
Caltrans has initiated project EA 08-1N690 on SB I-15, which is an interim project to extend the SB 4<sup>th</sup> GP lane to remove the existing lane drop adjacent to the HOT lane terminus.

Extending the 4<sup>th</sup> GP lane reduces friction factor at the end of HOT lane, which should reduce degradation within the HOT lane. This project was completed in February 2025.

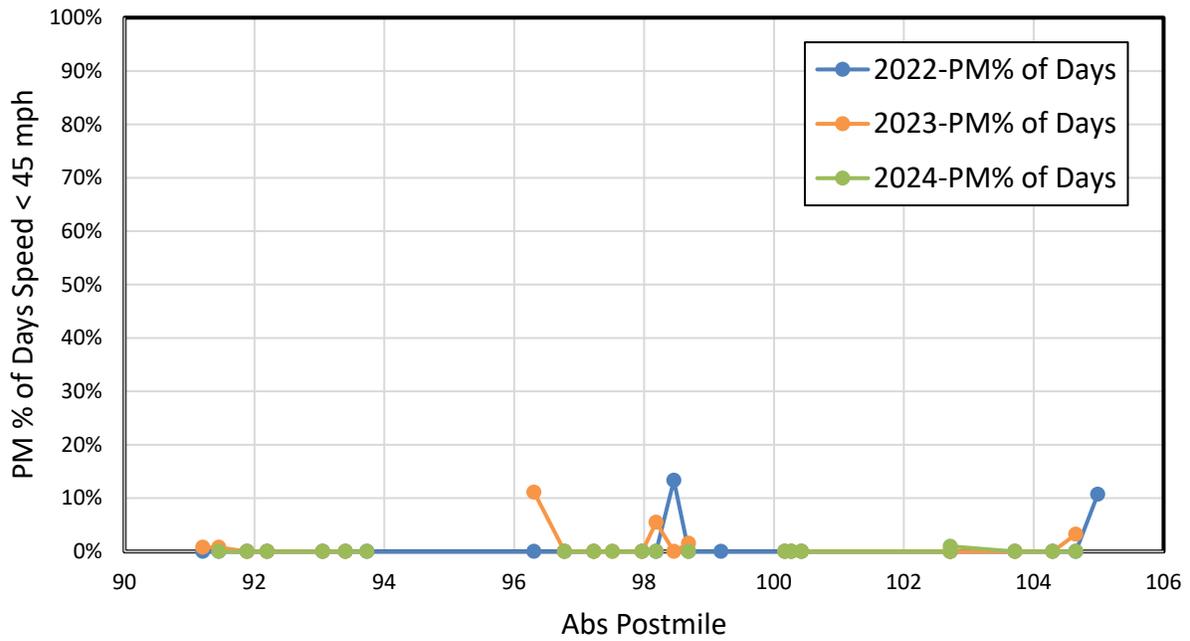
**Combined Degradation Charts I-15 HOT: 2022 & 2023 & 2024.**

The figures below present multi-year comparison of degradation for both directions by postmile. In 2022, FHWA accepted multi-year comparison strategies when single year strategies were not enough to achieve the desired reduction of degradation. FHWA accepted the initiative to reduce degradation by a minimum of 25% with yearly strategies. These graphs provide a comprehensive visual presentation of degradation for both directions for the extent of the facility to compare year-to-year degradation. Please refer to Figures 8.5, 8.6, 8.7, and 8.8.

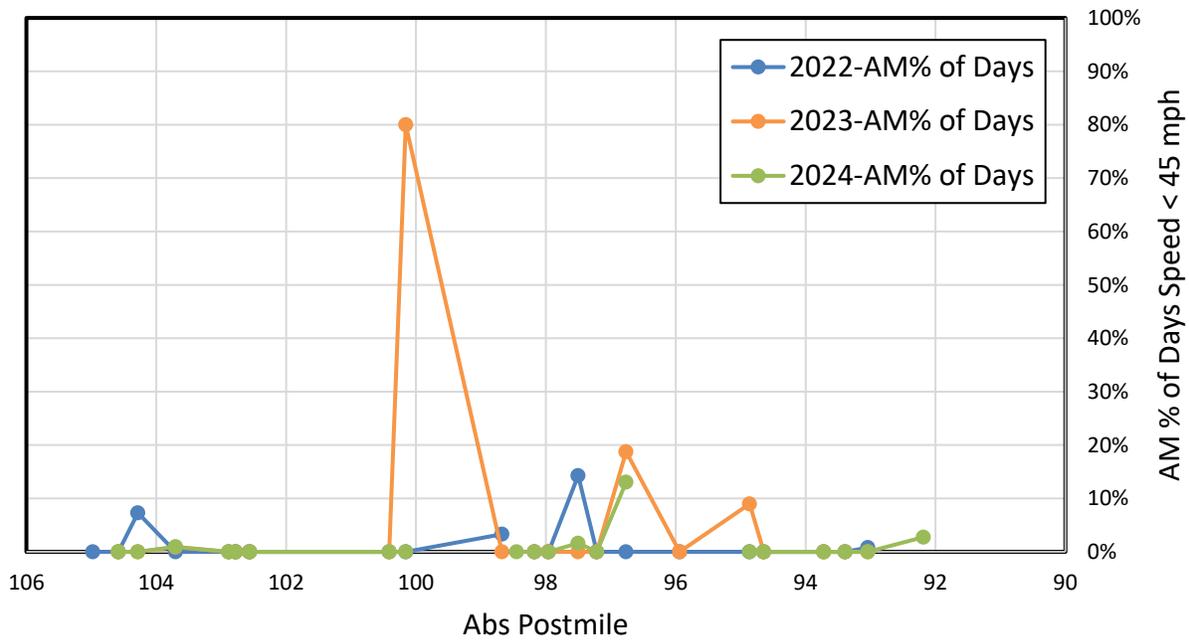
**Figure 8.5 NB I-15 AM Degradation Comparison by Year: 2022, 2023 & 2024**



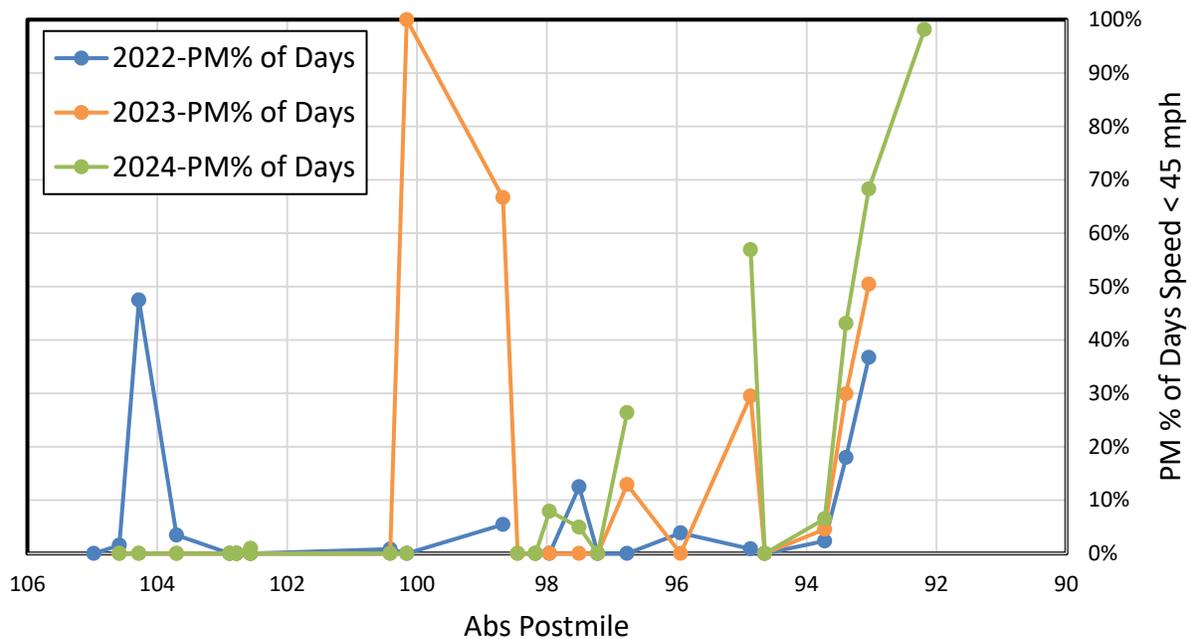
**Figure 8.6 NB I-15 PM Degradation Comparison by Year: 2022, 2023 & 2024**



**Figure 8.7 SB I-15 AM Degradation Comparison by Year: 2022, 2023 & 2024**



**Figure 8.8 SB I-15 PM Degradation Comparison by Year: 2022, 2023 & 2024**



## Action Plan for HOT Facilities on SR-91

### Analysis

#### EB SR-91 (AM & PM):

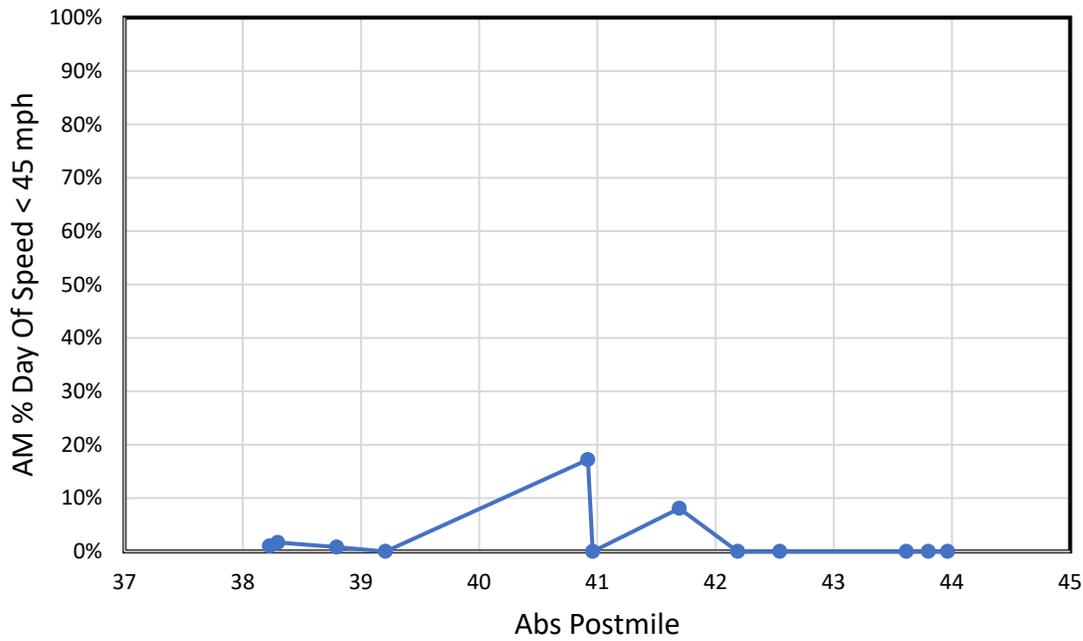
Please refer to Figures 8.9 and 8.10, which provide a comprehensive visual presentation of degradation for the extent of the facility.

AM Traffic: Slightly degraded at Serfas Club UC (Abs PM 40.92 at 17%). The slightly degraded segment stretched 1.188 miles.

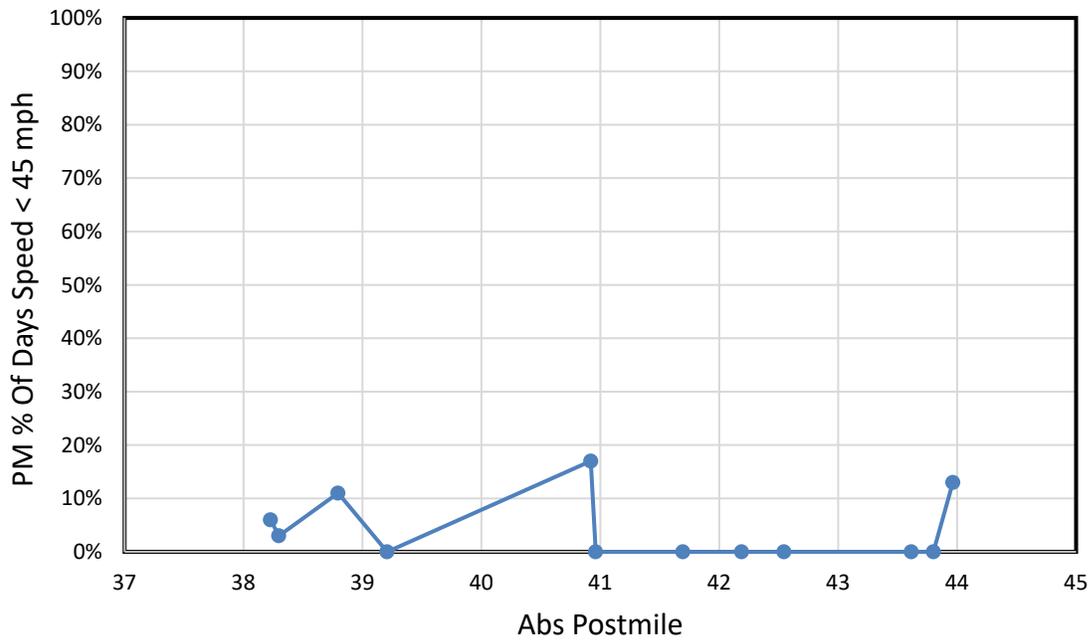
PM Traffic: Slightly degraded at three locations: SR-71 (Abs PM 38.795 at 11%), Serfas Club (Abs PM 40.920 at 17%), and Main EB Connector (Abs PM 43.964 at 13%). These slightly degraded segments stretched a total of 2.394 miles.

RCTC claims that Caltrans sensors 826711 (Abs PM 40.92 at 17%), 801429 (Abs PM 38.795 at 11%), 826711 (Abs PM 40.920 at 17%), and 82664 (Abs PM 43.964 at 13%) are inaccurate. Caltrans did initial field verification that these sensors were working properly.

**Figure 8.9 EB SR-91 AM HOT Percentage of Days Below 45 MPH**



**Figure 8.10 EB SR-91 PM HOT Percentage of Days Below 45 MPH**



**Westbound traffic (AM & PM):**

Please refer to Figures 8.11 and 8.12, which provide a comprehensive visual presentation of degradation for the extent of the facility.

AM Traffic: Extremely degraded at the facility entrance (Abs PM 43.877 at 75%); then very degraded at Main St (Abs PM 43.701 at 71%); and slightly degraded the rest of corridor. The slightly, very, and extreme degraded segments stretched total of 5.607, 0.952, and 0.348 miles, respectively.

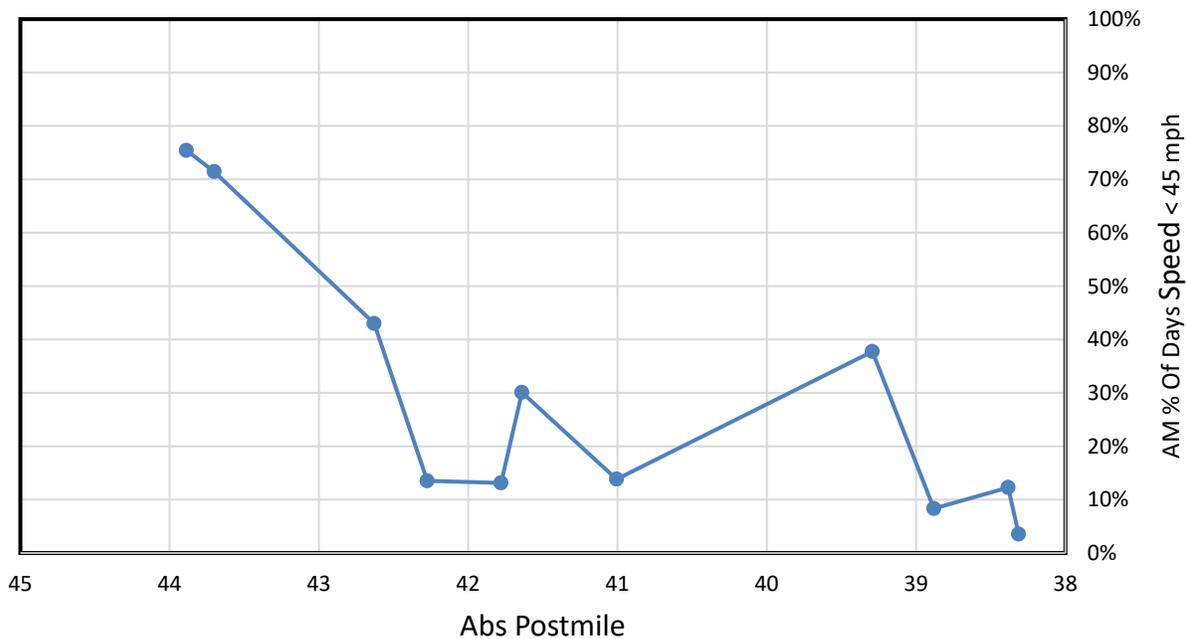
Response from RCTC: WB AM – Caltrans Sensors 826821, 826679, 826691, 826815, 826756, 826699, and 826720 have the following challenges:

This location is the entrance of the Express Lanes. RCTC has observed congestion in the general-purpose lanes leading up to the entrance of the SR-91 Express Lanes which results in motorists having slow speeds as they accelerate out of congestion into free-flowing conditions. This location is a merge of three directions into a two-lane facility. The volume of vehicles merging has caused a slowdown in vehicles transitioning into the Express Lanes.

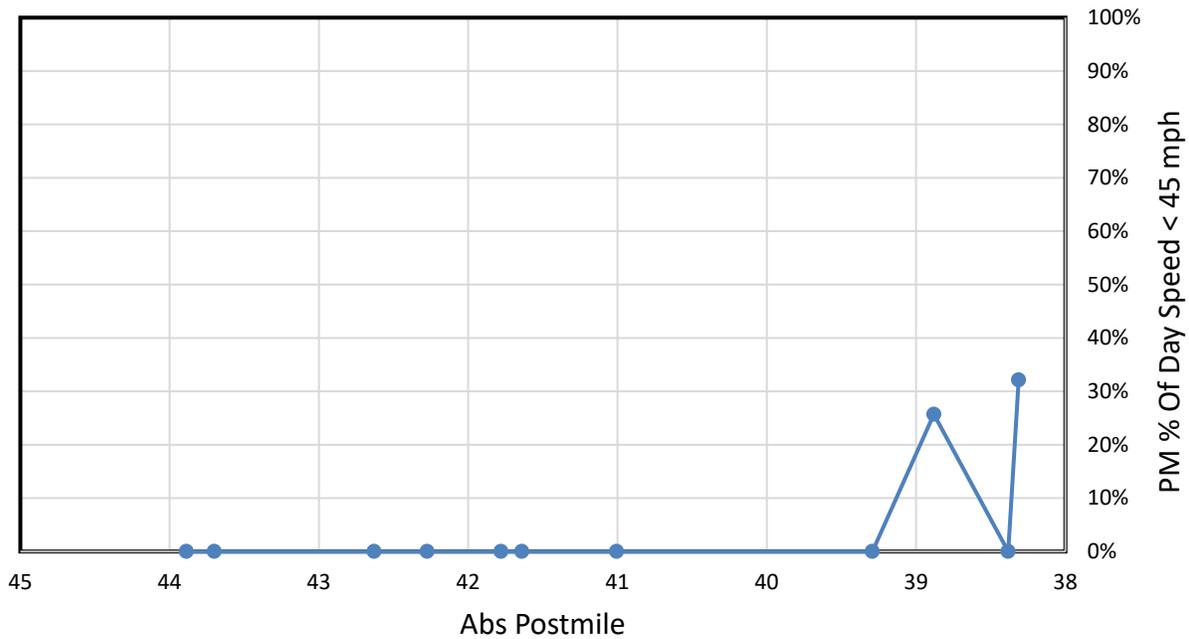
PM Traffic: Slightly degraded at two locations, SR-71 (Abs PM 38.881 at 26%) & Green River (Abs PM 38.313 at 32%).

RCTC claims that Caltrans sensors 826788 (Abs PM 38.881 at 26%) and 826727 (Abs PM 38.313 at 32%) are inaccurate. Caltrans did initial field verification that these sensors were working properly.

**Figure 8.11 WB SR-91 AM HOT Percentage of Days Below 45 MPH**



**Figure 8.12 WB SR-91 PM HOT Percentage of Days Below 45 MPH**



**Remediation Strategies**

Project EA 08-0F543 (RIV PM 6.600-8.100) constructed an Express Lanes North Direct Connector to improve mobility along the connector. The cost estimate is \$180 million. Construction began in April 2020 and will be completed in April 2027.

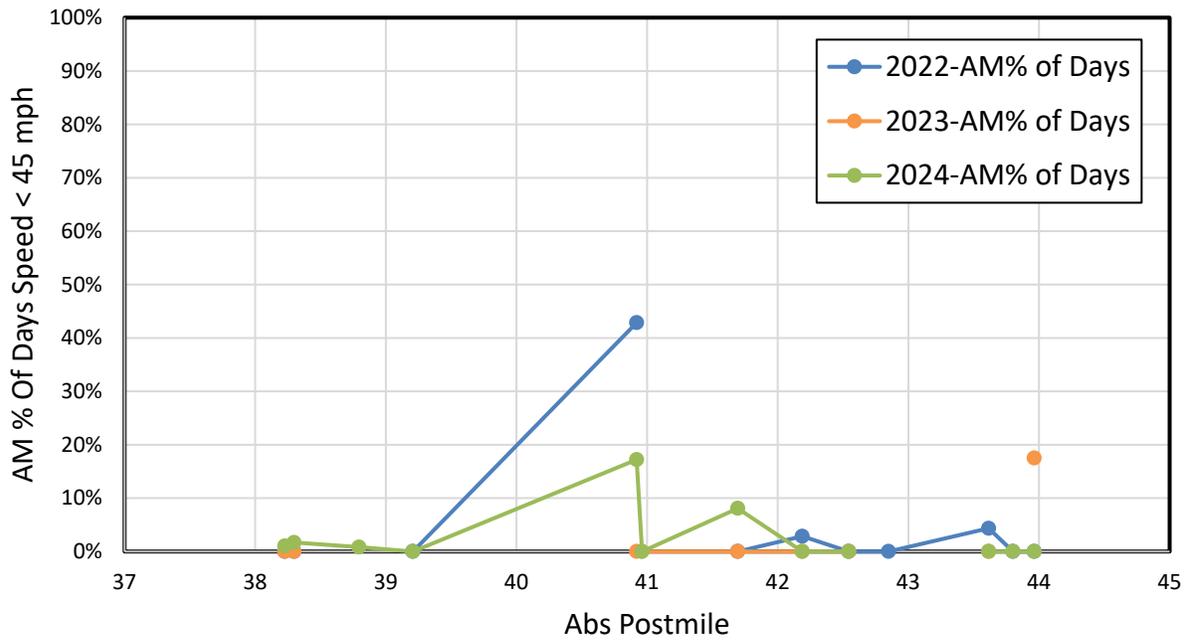
Project EA 08-0F541 (RIV. PM R0.9-R2.6) constructed an EB SR-91 to NB SR-71 Connector, Collector Distributor System, and Auxiliary Lane to reduce friction factor at ingress/egress locations. Construction began in January 2023 and is expected to be completed in August 2028. The construction of the project was completed this year, and it was already opened to traffic.

RCTC is in the preliminary study phases for improvements west of the SR-91 Express Lanes entrance to add a third lane to the Express Lanes to expand capacity.

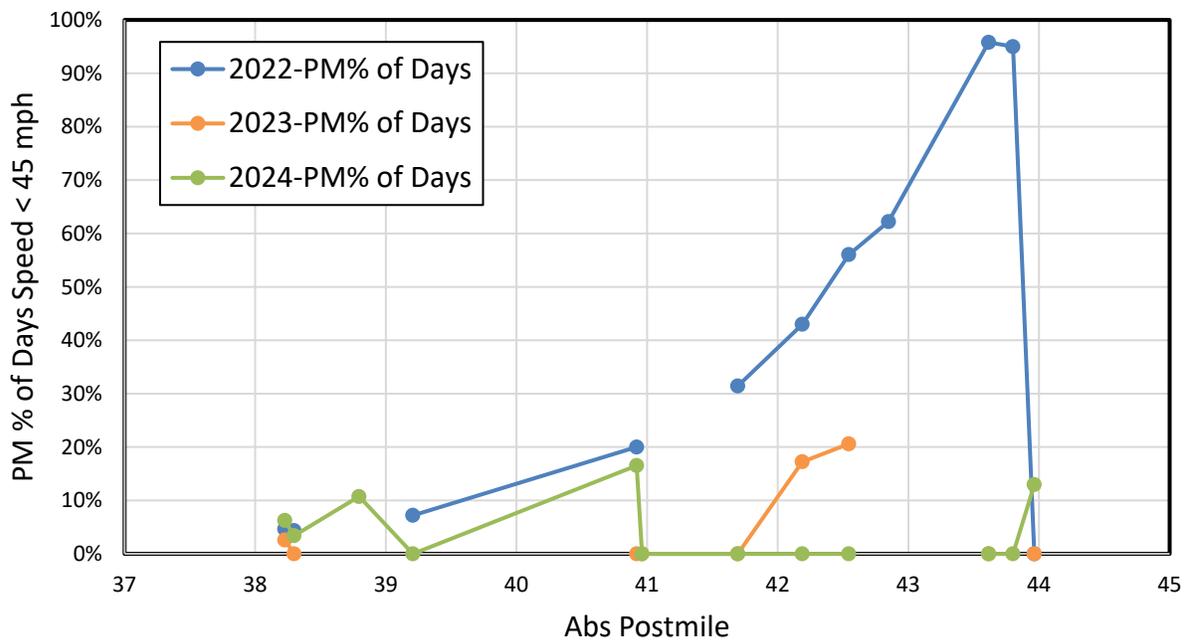
**Combined Degradation Charts SR 91 HOT: 2022 & 2023 & 2024.**

Figures 8.13, 8.14, 8.15, and 8.16 present multi-year comparison of degradation for both directions for the extent of the facility to compare year to year degradation.

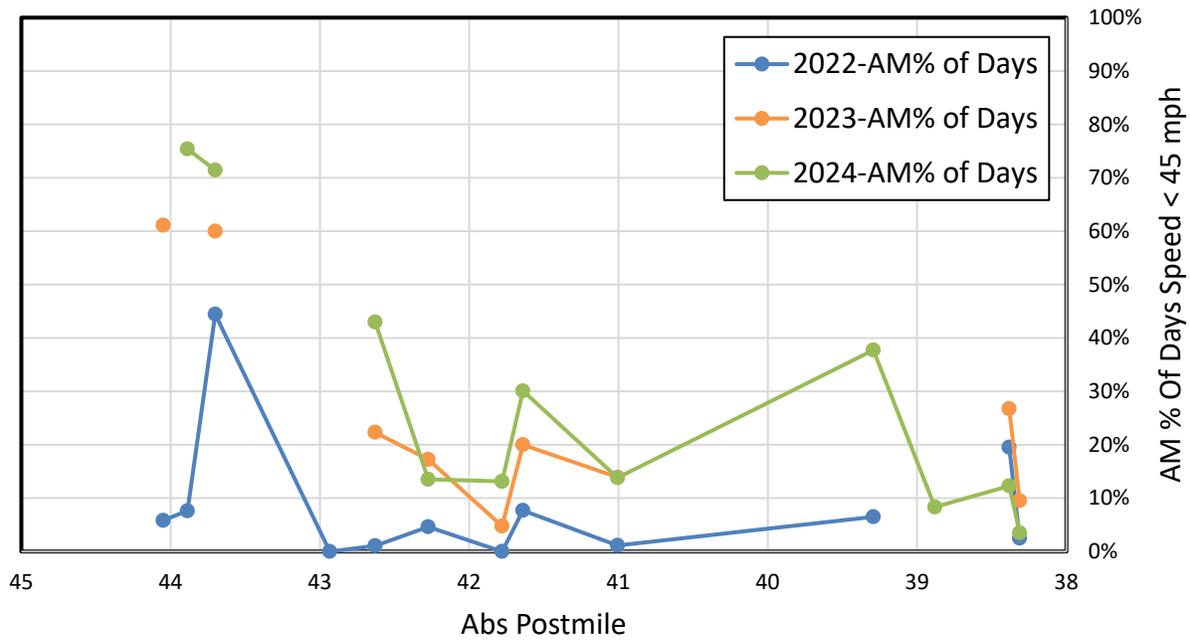
**Figure 8.13 EB SR-91 AM Degradation Comparison by Year: 2022, 2023 & 2024**



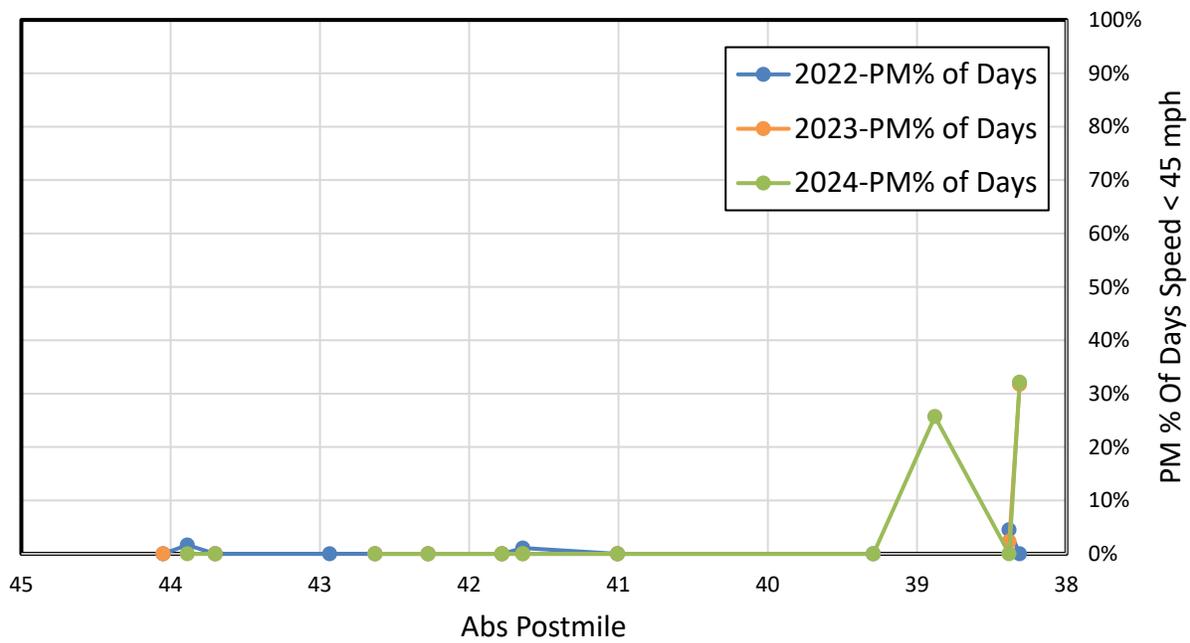
**Figure 8.14 EB SR-91 PM Degradation Comparison by Year: 2022, 2023 & 2024**



**Figure 8.15 WB SR-91 AM Degradation Comparison by Year: 2022, 2023 & 2024**



**Figure 8.16 WB SR-91 PM Degradation Comparison by Year: 2022, 2023 & 2024**



## Topic 4 District 11 Degradation Action Plan

### Action Plan for HOT Facilities on I-15

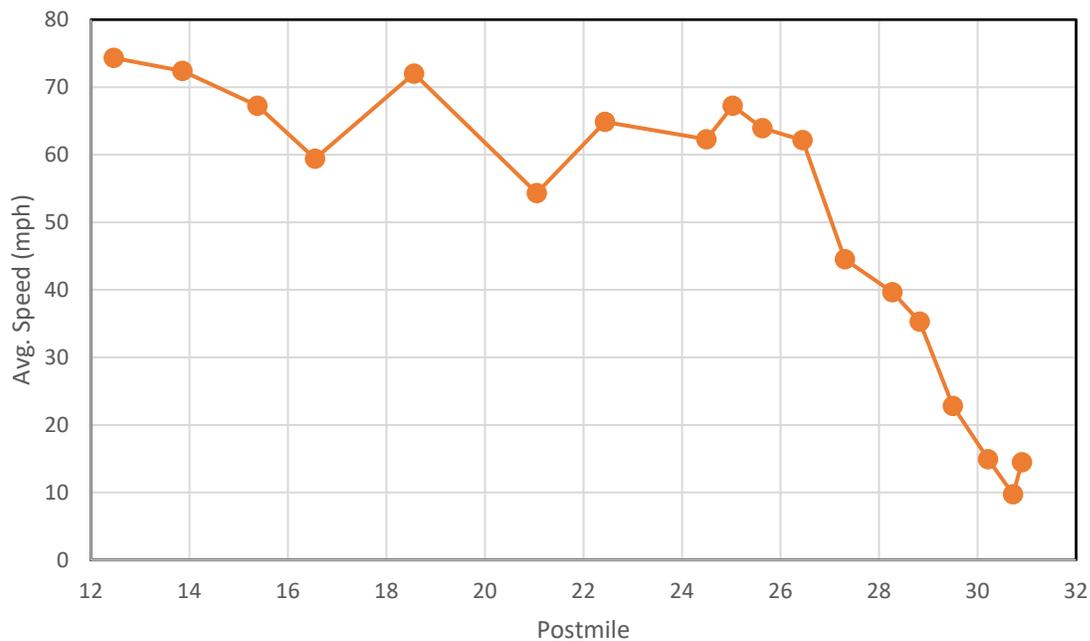
#### **Analysis**

I-15 is the primary inland north-south transportation connector serving interregional travelers between Riverside County and downtown San Diego. It is also part of a major interregional goods movement corridor connecting Mexico with Riverside and San Bernardino Counties, and Las Vegas, Nevada. The San Diego Association of Governments (SANDAG) operates 20 miles of HOT lanes on I-15 between State Route 163 in San Diego and State Route 78 in Escondido.

A key feature for this HOT facility is that a 16-mile segment is barrier-separated from the general purpose (GP) lanes and has a movable median barrier that can create three southbound lanes during the congested morning commute and returned to the original configuration of two northbound lanes and two southbound lanes for the afternoon commute.

Degradation was only observed at the north end of the HOT lanes in the northbound direction during the afternoon peak period. This 4-mile segment, north of Via Rancho Parkway to the Hale Avenue Direct Access Ramp (DAR), is not barrier-separated from the GP lanes and experiences slight to extreme degradation. This degradation is caused by several factors, including motorists weaving in the HOT lanes deciding to exit at the Hale DAR, users continuing through to merge into heavy GP traffic and the friction between the GP lanes and HOT lanes, all contributing to a significant reduction of speed on the HOT lanes. Specifically, degradation observed at the north end of the HOT lanes during the afternoon peak period is due to the unique circumstances of weaving HOT users deciding to exit at the DAR to signalized intersection at Hale Avenue (Post Mile 30.854) or continue through to merge into heavy peak-hour GP traffic at that terminus.

Figure 11.1 reflects the reduction of speed for the northbound traffic during the afternoon peak period on the last section (approximately 5 miles) of the HOT lanes.

**Figure 11.1 NB I-15 PM HOT Facility Average Speed**

### **Remediation Strategies**

The HOT Lane degradation at the north terminus of the facility is expected to be addressed following the construction completion of the I-15/SR-78 Managed-Lanes Connector project. This project is a collaborative effort between Caltrans, SANDAG, and the City of San Marcos to build new direct connector ramps between the existing I-15 Managed Lanes and three miles of newly proposed Managed Lanes on SR-78. By extending the existing Managed Lanes on I-15 and adding new direct connectors, the project would help improve connectivity and travel times, reduce operational conflicts and enhance the overall quality of life for residents and visitors in North San Diego County.

This new Managed-Lane interchange project at I-15 and SR-78 is in the early design phase (EA 11-2T240) and is expected to start construction in 2029-2030. This project, along with the new sign and striping package, is expected to alleviate weaving issues in the HOT lanes, reduce congestion in the main lanes during peak hours and decrease the friction between the GP and the HOT lanes.

Collaboration between Caltrans and SANDAG (Toll Operator) has been a priority for this 2025 report. All the information collected for this route and proposed remediation strategies were shared and reviewed by our counterparts at SANDAG.

## Topic 5 District 12 Degradation Action Plan

### District-Wide Actions Related to Degradation

Orange County has been experiencing significant growth in both housing and population. In response to this growth, Caltrans District 12 has been proactive in ensuring that our transportation systems remain safe and efficient.

To this end, Caltrans District 12 have collaborated with local agencies to plan and develop a network of HOT lanes. HOT lanes are designed to enhance mobility options for commuters, encouraging the use of alternative transportation methods. By providing this new option, Caltrans District 12 aims to alleviate congestion and improve the overall commuting experience for everyone in the district. Furthermore, HOT lanes also reduce travel time for commuters from Los Angeles and Inland Empire areas.

HOT lane benefits were mentioned in the *OC Managed Lanes Feasibility Study – January 2017* and the *OC Managed Lanes Network Study – September 2016*.

Caltrans District 12 and Orange County Transportation Authority (OCTA) planned and built approximately 55 lane-miles HOT lanes on I-405 to reduce the most congested corridor in District 12. Two Express Lanes in each direction were opened to public in December 2023 to mitigate the HOV degradation on I-405. Under the Tolling Facility Agreement between Caltrans and OCTA on March 2017, the I-405 HOT lanes are now under OCTA's operation.

### Action Plan for HOT Facilities on I-405

#### Analysis

I-405 HOT lanes cover 14 centerline miles from SR-73 (PM ORA 10.4 or ABS 10.17) to I-605 (PM ORA 24 or ABS 23.77) with two lanes in each direction. At the I-605 connector (PM ORA 23.99 or ABS 23.76), SR-22 connector (PM ORA 20.95 or ABS 20.72), and SR-73 connectors (PM ORA 9.52 or ABS 9.29), there are entrances and exits from connectors and from the HOT lanes to I-405. There are two at-grade access locations on the northbound and southbound I-405 at Magnolia Street/Warner Street (PM ORA 14.74 or ABS 14.51) and Bolsa Avenue/Goldenwest Street. (PM ORA 17.456 or ABS 17.226). In order to reduce friction between HOT and GP lanes, a buffer and channelizers have been installed to provide a separation between the higher speed in the HOT lanes and the slower speed in the GP lanes during the peak periods.

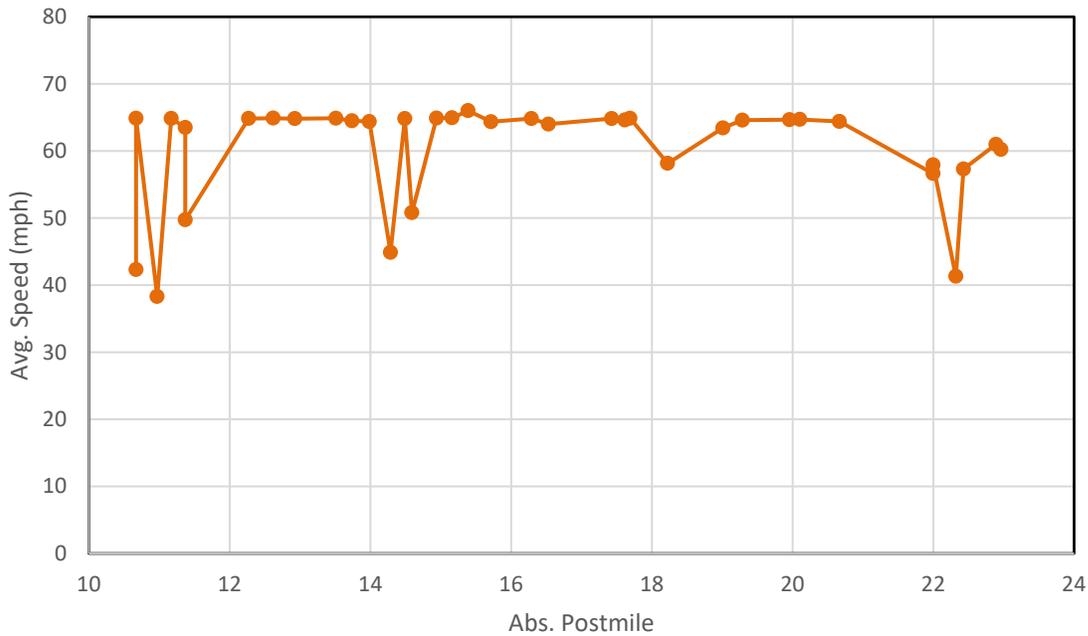
According to the speed data that was collected from July` 2024 to November 2024, recurrent degradation points were observed at the same locations during AM and PM periods in both directions. These locations were identified before the ingress and egress points. The slowdown is caused by vehicles yielding to others when entering and exiting the HOT lanes. At the end of the HOT lanes, vehicles in the HOT lanes slow down to merge onto the GP lanes. If the GP lanes on the mainline are congested or operating at

reduced speeds, it makes it more difficult for vehicles from the HOT lane to merge onto the GP lane, which further contributes to degradation.

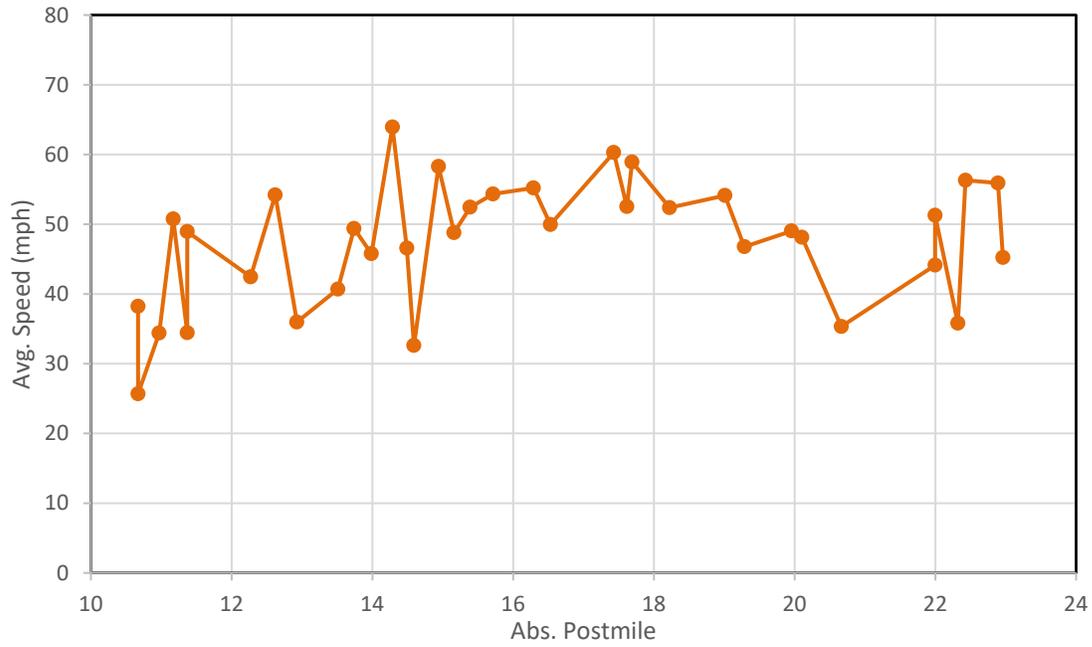
With those reasons explained above, degradation in the HOT lanes was only observed at the ingress and egress locations where vehicles are required to slow down for exiting or entering HOT lanes. Outside of these locations, no degradation was observed.

The Average Speed maps below indicate the locations where speeds were reduced during AM and PM peak periods.

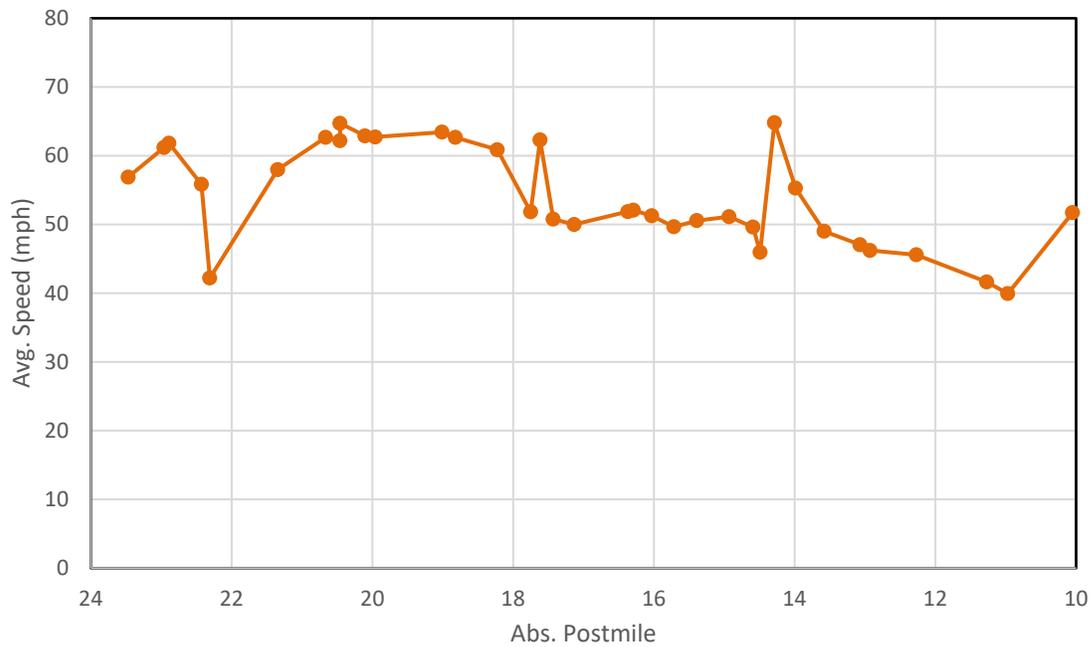
**Figure 12.1 NB I-405 AM HOT Facility Average Speed**



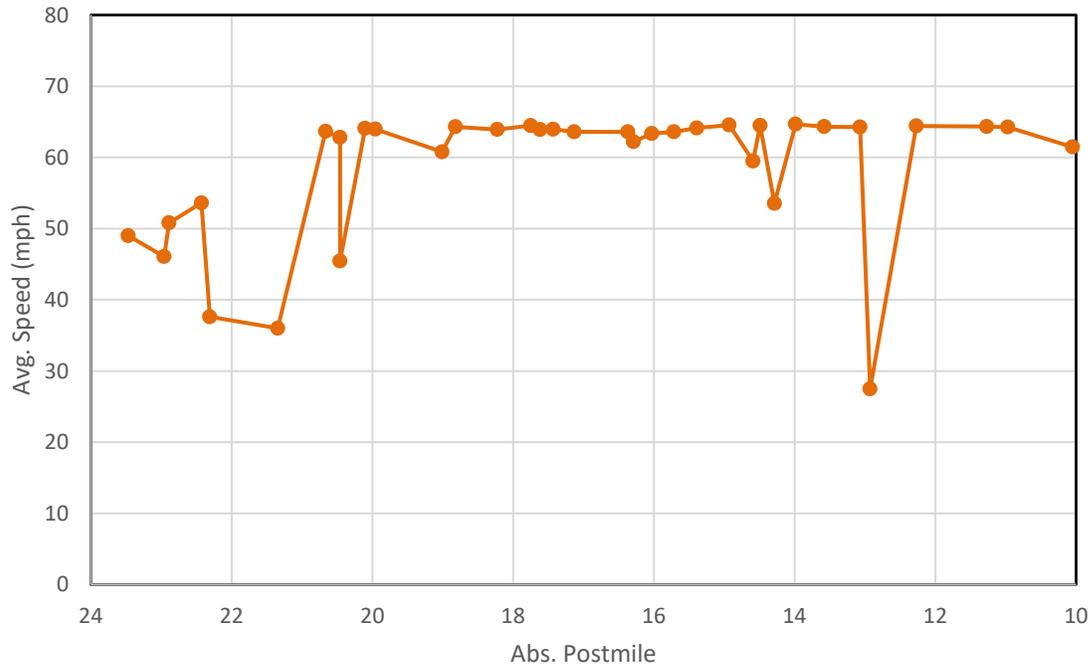
**Figure 12.2 NB I-405 PM HOT Facility Average Speed**



**Figure 12.3 SB I-405 AM HOT Facility Average Speed**



**Figure 12.4 SB I-405 PM HOT Facility Average Speed**



**Remediation Strategies**

There is no remediation at this time with OCTA's concurrence. Caltrans District 12 and OCTA will actively monitor the HOT lanes performance to resolve the degradation if it occurs during peak hours.

# Section 4 Appendix

**Table A. Summary of 2024 Degradation on HOV Facilities with PeMS Data**

District	Route	Facility Type	Direction	Limits	Facility Length (Lane-Miles)	Time Period	Lane Miles Monitored	Not Degraded	Slightly Degraded	Very Degraded	Extremely Degraded
04	85	HOT	NB	S/O Moffett Blvd to US-101	1.20	AM	0.60	0.60	0	0	0
04	85	HOT	NB	S/O Moffett Blvd to US-101	1.20	PM	0.60	0.60	0	0	0
04	85	HOT	SB	US-101 (Mountain View) to Central Expwy	1.85	AM	1.20	1.20	0	0	0
04	85	HOT	SB	US-101 (Mountain View) to Central Expwy	1.85	PM	1.12	1.12	0	0	0
04	101	HOT	NB	S/O Ellis St to I-380	29.10	AM	10.76	10.35	0.40	0	0
04	101	HOT	NB	S/O Ellis St to I-380	29.10	PM	9.15	6.80	1.13	1.21	0
04	101	HOT	SB	I-380 to S/O SR-237 (Calaveras Blvd)	30.25	AM	10.62	10.39	0.23	0	0
04	101	HOT	SB	I-380 to S/O SR-237 (Calaveras Blvd)	30.25	PM	10.38	7.13	1.80	1.07	0.37
04	237	HOT	EB	Mathilda Avenue to I-880	7.32	AM	5.35	4.40	0	0.95	0
04	237	HOT	EB	Mathilda Avenue to I-880	7.32	PM	5.82	1.06	2.64	2.11	0
04	237	HOT	WB	I-880 to E Java Dr	6.09	AM	4.28	2.04	2.24	0	0
04	237	HOT	WB	I-880 to E Java Dr	6.09	PM	4.28	4.28	0	0	0
04	580	HOT	EB	Hacienda Rd to Greenville Rd	17.05	AM	6.88	6.88	0	0	0
04	580	HOT	EB	Hacienda Rd to Greenville Rd	17.05	PM	5.52	5.52	0	0	0
04	580	HOT	WB	Greenville Rd to I-680	11.95	AM	8.07	8.07	0	0	0
04	580	HOT	WB	Greenville Rd to I-680	11.95	PM	8.07	8.07	0	0	0
04	680	HOT	NB	Alcosta Blvd to Livorna Rd	12.02	AM	10.60	10.60	0	0	0
04	680	HOT	NB	Alcosta Blvd to Livorna Rd	12.02	PM	10.60	6.14	4.46	0	0
04	680	HOT	SB	Marina Vista to Alcosta Blvd	23.50	AM	15.21	13.10	1.33	0.78	0
04	680	HOT	SB	Marina Vista to Alcosta Blvd	23.50	PM	14.33	14.33	0	0	0
04	880	HOT	NB	S/O SR-262 to S/O SR-238	17.89	AM	8.94	8.94	0	0	0
04	880	HOT	NB	S/O SR-262 to S/O SR-238	17.89	PM	6.54	2.35	1.62	0.37	2.20
04	880	HOT	SB	Hegenberger Rd to SR-237	27.08	AM	16.54	9.34	6.14	1.06	0
04	880	HOT	SB	Hegenberger Rd to SR-237	27.08	PM	16.55	16.55	0	0	0

District	Route	Facility Type	Direction	Limits	Facility Length (Lane-Miles)	Time Period	Lane Miles Monitored	Not Degraded	Slightly Degraded	Very Degraded	Extremely Degraded				
07	10	HOT	EB	Baldwin Ave to I-605	22.30	AM	Insufficient Data. See toll operator data in Table B.								
07	10	HOT	EB	Baldwin Ave to I-605	22.30	PM									
07	10	HOT	WB	Garvey Ave to Temple City Blvd	22.63	AM									
07	10	HOT	WB	Garvey Ave to Temple City Blvd	22.63	PM									
07	110	HOT	NB	Harbor Gateway Transit Center to Adams Blvd	19.67	AM						Insufficient Data. See toll operator data Table B.			
07	110	HOT	NB	Harbor Gateway Transit Center to Adams Blvd	19.67	PM									
07	110	HOT	SB	Flower St/28th St to Harbor Gateway Center	18.98	AM									
07	110	HOT	SB	Flower St/28th St to Harbor Gateway Center	18.98	PM									
08	15	HOT	NB	Cajalco Road to SR-60	29.20	AM	15.58	15.58	0	0	0				
08	15	HOT	NB	Cajalco Road to SR-60	29.20	PM	15.58	15.58	0	0	0				
08	15	HOT	SB	SR-60 to Cajalco Road	29.20	AM	18.63	17.70	0.92	0	0				
08	15	HOT	SB	SR-60 to Cajalco Road	29.20	PM	18.63	11.88	1.60	2.50	2.64				
08	91	HOT	EB	Orange County Line to I-15	16.52	AM	9.83	8.76	1.19	0	0				
08	91	HOT	EB	Orange County Line to I-15	16.52	PM	9.83	7.55	2.40	0	0				
08	91	HOT	WB	I-15 to Orange County Line	16.43	AM	9.52	2.61	5.61	0.95	0.35				
08	91	HOT	WB	I-15 to Orange County Line	16.43	PM	9.52	6.91	2.61	0	0				
11	15s	HOT	NB	SR-163 to SR-78	39.68	AM	30.94	30.94	0	0	0				
11	15s	HOT	NB	SR-163 to SR-78	39.68	PM	30.94	18.07	6.64	2.75	3.48				
11	15s	HOT	SB	SR-78 to SR-163	39.03	AM	38.79	38.79	0	0	0				
11	15s	HOT	SB	SR-78 to SR-163	39.03	PM	38.79	38.79	0	0	0				
12	405	HOT	NB	SR-73 to I-605	27.60	AM	22.76	21.32	1.00	0	0.43				
12	405	HOT	NB	SR-73 to I-605	27.60	PM	22.76	13.54	5.75	2.39	1.08				
12	405	HOT	SB	I-605 to SR-73	27.60	AM	24.88	11.40	12.39	1.08	0				
12	405	HOT	SB	I-605 to SR-73	27.60	PM	24.88	20.04	2.11	2.73	0				

**Table B. Summary of 2024 Degradation on HOT Facilities with Toll Operator Data**

District	Route	Facility Type	Direction	Toll Operator	Limits	Facility Length (Lane-Miles)	Time Period	Lane Miles Monitored	Not Degraded	Slightly Degraded	Very Degraded	Extremely Degraded
4	85	HOT	NB	SC VTA	S/O Moffett Blvd. to US-101	1.20	AM	1.20	1.20	0	0	0
4	85	HOT	NB	SC VTA	S/O Moffett Blvd. to US-101	1.20	PM	1.20	1.20	0	0	0
4	85	HOT	SB	SC VTA	US-101 (Mountain View) to Central Expwy	1.85	AM	1.85	1.85	0	0	0
4	85	HOT	SB	SC VTA	US-101 (Mountain View) to Central Expwy.	1.85	PM	1.85	1.85	0	0	0
4	101	HOT	NB	SC VTA	S/O Ellis St to San Mateo County Line	8.07	AM	8.07	8.07	0	0	0
4	101	HOT	NB	SC VTA	S/O Ellis St to San Mateo County Line	8.07	PM	8.07	6.66	0.22	1.19	0
4	101	HOT	SB	SC VTA	San Mateo County Line to S/O Ellis St	8.28	AM	8.28	8.28	0	0	0
4	101	HOT	SB	SC VTA	San Mateo County Line to S/O Ellis St	8.28	PM	8.28	6.51	1.60	0.17	0
4	101	HOT	EB	SMCEL JPA	Santa Clara County Line to I-380	20.70	AM	19.86	19.86	0	0	0
4	101	HOT	EB	SMCEL JPA	Santa Clara County Line to I-380	20.70	PM	19.86	16.02	2.85	1.00	0
4	101	HOT	WB	SMCEL JPA	I-380 to Santa Clara County Line	20.70	AM	17.94	15.44	2.50	0	0
4	101	HOT	WB	SMCEL JPA	I-380 to Santa Clara County Line	20.70	PM	17.94	15.10	2.83	0	0
4	237	HOT	EB	SC VTA	Mathilda Avenue to I-880	7.32	AM	6.75	6.75	0	0	0
4	237	HOT	EB	SC VTA	Mathilda Avenue to I-880	7.32	PM	6.75	2.27	1.36	3.12	0
4	237	HOT	WB	SC VTA	I-880 to E Java Dr	6.09	AM	6.00	4.51	1.49	0	0
4	237	HOT	WB	SC VTA	I-880 to E. Java Dr	6.09	PM	6.00	6.00	0	0	0
4	580	HOT	EB	Ala. CTC	Hacienda Rd to Greenville Rd	17.05	AM	16.71	16.71	0	0	0
4	580	HOT	EB	Ala. CTC	Hacienda Rd to Greenville Rd	17.05	PM	16.71	13.15	2.08	0	1.48
4	580	HOT	WB	Ala. CTC	Greenville Rd to I-680	11.95	AM	10.86	10.86	0	0	0
4	580	HOT	WB	Ala. CTC	Greenville Rd to I-680	11.95	PM	10.86	10.86	0	0	0
4	680	HOT	NB	MTC	Hacienda Rd to Greenville Rd	12.02	AM	11.00	11.00	0	0	0
4	680	HOT	NB	MTC	Hacienda Rd to Greenville Rd	12.02	PM	11.00	7.38	3.62	0	0
4	680	HOT	SB	MTC	Greenville Rd to I-680	23.50	AM	23.48	20.90	2.58	0	0
4	680	HOT	SB	MTC	Greenville Rd to I-680	23.50	PM	23.48	23.48	0	0	0
4	880	HOT	NB	MTC	S/O SR-262 to S/O SR-238	17.89	AM	17.89	17.89	0	0	0
4	880	HOT	NB	MTC	S/O SR-262 to S/O SR-238	17.89	PM	17.89	5.58	4.34	3.28	4.70
4	880	HOT	SB	MTC	Hegenberger Rd to SR-237	27.08	AM	25.54	16.80	7.79	0.95	0.00

District	Route	Facility Type	Direction	Toll Operator	Limits	Facility Length (Lane-Miles)	Time Period	Lane Miles Monitored	Not Degraded	Slightly Degraded	Very Degraded	Extremely Degraded
4	880	HOT	SB	MTC	Hegenberger Rd to SR-237	27.08	PM	25.54	25.54	0	0	0
7	10	HOT	EB	LA Metro	Baldwin Ave to I-605	22.30	AM	21.59	21.59	0	0	0
7	10	HOT	EB	LA Metro	Baldwin Ave to I-605	22.30	PM	21.59	14.70	6.89	0	0
7	10	HOT	WB	LA Metro	Garvey Ave to Temple City Blvd	22.63	AM	19.80	19.09	0.71	0	0
7	10	HOT	WB	LA Metro	Garvey Ave to Temple City Blvd	22.63	PM	19.80	19.80	0	0	0
7	110	HOT	NB	LA Metro	Harbor Gateway Center to Adams Blvd	19.67	AM	16.19	9.46	0	6.73	0
7	110	HOT	NB	LA Metro	Harbor Gateway Center to Adams Blvd	19.67	PM	16.19	16.19	0	0	0
7	110	HOT	SB	LA Metro	Flower St/28th St to Harbor Gateway Center	18.98	AM	18.06	18.06	0	0	0
7	110	HOT	SB	LA Metro	Flower St/28th St to Harbor Gateway Center	18.98	PM	18.06	18.06	0	0	0
8	15	HOT	NB	RCTC	Cajalco Road to SR-60	29.20	AM	26.26	24.26	2.01	0	0
8	15	HOT	NB	RCTC	Cajalco Road to SR-60	29.20	PM	26.66	26.66	0	0	0
8	15	HOT	SB	RCTC	SR-60to Cajalco Road	29.20	AM	24.59	24.59	0	0	0
8	15	HOT	SB	RCTC	SR-60 to Cajalco Road	29.20	PM	24.59	21.99	1.11	0	1.49
8	91	HOT	EB	RCTC	Orange County Line to I-15	16.52	AM	15.63	15.63	0	0	0
8	91	HOT	EB	RCTC	Orange County Line to I-15	16.52	PM	15.63	15.63	0	0	0
8	91	HOT	WB	RCTC	I-15 to Orange County Line	16.43	AM	9.88	4.16	4.12	1.60	0
8	91	HOT	WB	RCTC	I-15 to Orange County Line	16.43	PM	9.88	9.88	0	0	0
11	15s	HOT	NB	SANDAG	SR-163 to SR-78	19.84	AM	17.80	17.80	0	0	0
11	15s	HOT	NB	SANDAG	SR-163 to SR-78	19.84	PM	17.80	15.62	2.18	0	0
11	15s	HOT	SB	SANDAG	SR-78 to SR-163	19.52	AM	17.79	11.48	3.17	0	3.14
11	15s	HOT	SB	SANDAG	SR-78 to SR-163	19.52	PM	17.79	14.65	0	0	3.14
12	405	HOT	NB	OCTA	SR-73 to I-605	27.60	AM	23.04	23.04	0	0	0
12	405	HOT	NB	OCTA	SR-73 to I-605	27.60	PM	23.04	19.42	3.63	0	0
12	405	HOT	SB	OCTA	I-605 to SR-73	27.60	AM	21.71	21.71	0	0	0
12	405	HOT	SB	OCTA	I-605 to SR-73	27.60	PM	21.71	21.71	0	0	0