

District 04 Mobility Performance Report

2022 2nd Quarter

DEPARTMENT OF TRANSPORTATION

July 30, 2022

District 4-Office of Highway Operations

ABBREVIATIONS

Abs	Absolute
Avg	Average
CA	California
CO	County
MPR	Mobility Performance Report
PeMS	Performance Measurement System
PM	Postmile
Q	Quarter

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2022 2nd Quarter

EXECUTIVE SUMMARY

Overview

Caltrans District 4 is comprised of nine counties that border the San Francisco Bay: Alameda (ALA), Contra Costa (CC), Marin (MRN), Napa (NAP), San Francisco (SF), San Mateo (SM), Santa Clara (SCL), Solano (SOL), and Sonoma (SON) Counties. Although these are urban counties, they do contain a large amount of sparsely populated land.

The Mobility Performance quarterly analysis compares information from over a year ago and over last quarter in the following performance measures:

- Vehicle Miles of Travel (VMT)
- Vehicle Hours of Delay (VHD)
- Lost Lane Miles (equivalent lost productivity)
- Detector Health

This information is based on data collected every day of the quarter, twenty–four hours a day, by automated vehicle detector stations deployed on urban-area freeways where congestion is regularly experienced. The MPR presents congestion information at two-speed thresholds: delay from vehicles traveling below 35 miles per hour (mph), and delay from vehicles traveling below 60 mph. The delay at the 35 mph threshold represents severe congestion while delay at 60 mph represents all congestion, both light and heavy. These thresholds are set by Caltrans and are based upon engineering experience and District input.

FINDINGS

A full two years has passed since Statewide Shelter-In-Place (SIP) took effect on March 19, 2020. To combat the pandemic, vaccinations and booster were being administered to all eligible individuals based on state guidelines. On June 15th, 2021, California State Governor Gavin Newsom announced the reopening of California. There was a 3.7% increase in VMT compared to the same quarter a year ago, with VMT increasing from 7.2 billion in Q2 2021 to 7.5 billion in Q2 2022. In the second quarter, we see an increase of 11.5% (773 million) in VMT from the previous quarter's VMT of 6.7 billion.

Annual increases are not only seen in VMT, but also in VHD. Compared to the same quarter the year before, there was a 6.2% increase from 4.2 million to 4.4 million in the 35 mph total quarterly delay, and a 5.1% increase from 10.6 million to 11.2 million VHD in the 60 mph total quarterly delay. Similar to VMT, a quarterly increase was seen in VHD. Quarter 1, 2022 saw a 26.3% increase in VHD at 35 mph and 22.4% increase for VHD at 60 mph.

The average weekday delay in this quarter has increased compared to the year before. Last year, during the same quarter, there was a delay of 57 thousand VHD at 35 mph, and 147 thousand VHD at 60 mph. Whereas this quarter, there was a delay of 60 thousand VHD at 35 mph which is a 4.3% increase, and 151 thousand VHD at 60 mph which is a 2.7% increase. Thursday was the most congested day of the week in Q2 which is similar to the previous quarter, but dissimilar to the same quarter last year where Friday was the most congested day of the week. Tuesday had the largest magnitude increase of 21 thousand VHD at 60 mph which was a 15.6% increase from the same quarter last year. Wednesday had the largest magnitude increase of 35 thousand (27.7%) VHD at 60 mph compared to last quarter. No weekdays had a decrease compared to last quarter

Looking at the Average VHD at 35 mph by hour of the day for weekdays, there was a significant increase in the AM commute period congestion compared to last year. The largest magnitude change compared to the same quarter a year ago occurred at 8 AM with an increase of 104.1%. The largest magnitude weekday decrease over last quarter occurred at 7 AM with a decrease of -0.6%. For the PM hours, the largest magnitude increase of 8% occurred at 6 PM compared to the same quarter last year, and the largest magnitude increase of 19.9% occurred at

4 PM compared to last quarter. The weekday peak hour average delay of 10,740 VHD for this quarter occurs at 5pm which is the same as last quarter and a year ago. Since last quarter peak hour VHD of 9,104 VHD, there was an 18% increase and was about the same as a year ago VHD of 10,688 VHD. The largest single hour decrease on Saturday compared to a year ago occurred at 2 PM with a -39.0% change, and the largest decrease over last quarter occurred at 6 PM of -17.6%. The largest single hour increase on Saturday compared to a year ago occurred at midnight of 26.2%, and over last quarter an increase of 23.6% occurred at 12 PM. As for the Sunday/Holidays, the largest magnitude decrease over a year ago is -26.8% at 2 PM, and over last quarter -28% at 9 AM. The largest magnitude increase over a year ago is 112.8% at 3 AM. The largest magnitude increase over last quarter occurred at 12 PM of 132%.

Similar to the same quarter last year and the previous quarter, Alameda County with 1,834,000 vehicle hours of total delay at 35 mph during the second quarter was the most congested county in the District. Santa Clara County with 905,000 vehicle hours of total delay at 35 mph was the second most congested county in the District. Contra Costa County with 695,000 vehicle hours of total delay at 35 mph was the third most congested county in the District. Santa Clara County experienced the largest magnitude increase of 26.7% compared to the same quarter last year, while San Francisco experienced the largest magnitude decrease of -27.7% compared to last quarter.

From the Top 10 Bottlenecks for the 2nd Quarter, eight bottleneck locations occurred during the PM, and two bottleneck location occurred in the AM period. The top three locations are as follows:

- ALA I880 Northbound at Winton Ave during PM period (Rank 1, previously ranked 2 in Q1 2022): 122,706 vehicle hours of delay
- CC I80 Eastbound at Pinole Valley Rd during PM period (Rank 2, previously ranked 1 in Q1 2022): 116,713 vehicle hours of delay
- ALA I80 Eastbound at Gilman St during PM period (Rank 3, previously ranked 4 in Q1 2022): 103,980 vehicle hours of delay

This quarter, all ten locations have resurfaced from last quarter's top 10 bottleneck list, although some have different names due the beginning location shifting slightly. Rank 1 (previously Rank 2 in Q1 2022), ALA I880 Northbound PM at Winton Avenue increased 45% from 84,803 to 122,706 VHD. Rank 2 (previously Rank 1 in Q1 2022), CC I80 Eastbound PM at Pinole Valley Rd increased 14% from 102,417 to 116,713 VHD. Rank 3 (previously Rank 3 in Q1 2022), ALA I80 Eastbound PM at Gilman St (previously University Ave) increased 25.1% from 83,141 to 103,981 VHD. Rank 4 (previously rank 5 in Q1 2022), CC SR 4 Westbound AM at 5400' E of Willow Pass Rd increased 58.1% from 64,848 to 102,546 VHD. Rank 5 (previously Rank 4 in Q1 2022), ALA I80 Westbound AM at Gilman St increased 21.4% from 69,226 to 84,009 VHD. Rank 6 (previously Rank 7 in Q1 2022), ALA I80 Westbound PM at Powel St. increased 62.7% from 47,996 to 78,088 VHD. Rank 7 (previously Rank 6 in Q1 2022), SCL US101 Southbound PM 1.78 mi S of Coyote Creek Golf Dr (Previously Laurel Rd). increased 0.4% from 58,008 to 58,237 VHD. Rank 8 (previously Rank 9 in Q1 2022), ALA I580 Eastbound PM, 2600' West of Carol Rd OC (Previously Greenville Rd), increased 14.0% from 47067 to 53667 VHD. Rank 9 (previously Rank 8 in Q1 2022), SCL I280 Southbound PM at Bird Ave. increased 3.6% from 47,935 to 49,658 VHD. Rank 10 (previously Rank 10 in Q1 2022), CC SR4 Eastbound PM at Port Chicago Hwy (previously Kinne Blvd.) increased 16.4% from 42,341 to 49,293 VHD.

A plurality of locations across district 4 had an increase in activity compared to a year ago. On the Congestion by Route table, 23 out of the 47 Route Counties listed have increases in congestion compared to a year ago, 23 increased, 2 remained unchanged, and 21 show a decrease. Compared to last quarter, most locations have increased. On the Congestion by Route table, 39 out of the 49 Route Counties listed have increased.

Regarding vehicle detector health, there was a 3% increase in the number of good working detectors, which are functional, and 3% decrease in the number of bad detectors, which are no longer able to measure congestion, over last quarter.

An issue with the PeMS assigned length per VDS affected 55 out of 108 VDSs on NB 101 between postmile 0.21 to 21.23 in Sonoma County prior to 6/24/2021 (2021 Qtr 2). The affected VDSs had an average PeMS assigned length of 2.52 miles versus 0.40 miles for the

Average Calculated VDS length for the same section. The adjustments to VMT and VHD were only made to correct the Sonoma 101 freeway totals, Sonoma County totals, and District total. The error was resolved and adjustments are no longer needed for data starting 2021 Qtr 3 and onward.

Top Ten Bottlenecks for the 2022 2nd Quarter:

Rank	County	Fwy	Approximate Location	Shift	Absolute Postmile	Begin CA PM	Avg Extent (miles)	Total Delay (veh-hrs)	Total Duration (mins)	# of active days	Latitude	Longitude
1	Alameda	I880-N	Winton Ave	PM	28.0	17.8	5.8	122,706	9,325	76	37.65927	-122.10306
2	Contra Costa	I80-E	Pinole Valley Rd	PM	21.9	8.6	4.9	116,713	11,005	66	37.99801	-122.28511
3	Alameda	I80-E	Gilman St	PM	12.0	6.6	3.0	103,981	11,495	85	37.87816	-122.30721
4	Contra Costa	SR4-W	5400' E of Willow Pass Rd	AM	17.5	R16.2	2.1	102,546	7,365	60	38.02145	-121.98179
5	Alameda	I80-W	Gilman St	AM	11.9	6.6	3.4	84,009	9,355	66	37.87741	-122.30724
6	Alameda	I80-W	Powell St	PM	9.2	3.9	1.8	78,088	18,430	91	37.83967	-122.29700
7	Santa Clara	US101-S	1.78 mi S of Coyote Creek Golf Dr.	PM	368.8	R19.5	3.0	58,237	10,145	64	37.17155	-121.67191
8	Alameda	I580-E	2600' W of Carol Rd OC	PM	22.5	R6.5	4.2	53,667	7,930	65	37.71821	-121.66935
9	Santa Clara	I280-S	Bird Ave	PM	2.9	R2.9	2.2	49,658	9,245	66	37.32236	-121.89780
10	Contra Costa	SR4-E	Port Chicago Hwy	PM	15.5	R15.72	3.0	49,293	14,585	67	38.01030	-122.01744

Measure	Graph	Percentage Change							
Vehicle Miles of Travel (VMT)	<p>Miles (Billions)</p> <table border="1"> <tr><th>Year</th><th>Q2</th></tr> <tr><td>2021</td><td>7.2</td></tr> <tr><td>2022</td><td>7.5</td></tr> </table>	Year	Q2	2021	7.2	2022	7.5	Over one year ago	Over last quarter
		Year	Q2						
		2021	7.2						
2022	7.5								
3.7%	11.5%								
Total Vehicle Hours of Delay (VHD) at 35 mph	<p>Hours (Millions)</p> <table border="1"> <tr><th>Year</th><th>Q2</th></tr> <tr><td>2021</td><td>4.2</td></tr> <tr><td>2022</td><td>4.4</td></tr> </table>	Year	Q2	2021	4.2	2022	4.4	Over one year ago	Over last quarter
		Year	Q2						
		2021	4.2						
2022	4.4								
6.2%	26.3%								
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 35 mph	<p>Hours (Thousands)</p> <table border="1"> <tr><th>Year</th><th>Q2</th></tr> <tr><td>2021</td><td>57</td></tr> <tr><td>2022</td><td>60</td></tr> </table>	Year	Q2	2021	57	2022	60	Over one year ago	Over last quarter
		Year	Q2						
		2021	57						
2022	60								
4.3%	20.9%								
Total Vehicle Hours of Delay (VHD) at 60 mph	<p>Hours (Millions)</p> <table border="1"> <tr><th>Year</th><th>Q2</th></tr> <tr><td>2021</td><td>10.6</td></tr> <tr><td>2022</td><td>11.2</td></tr> </table>	Year	Q2	2021	10.6	2022	11.2	Over one year ago	Over last quarter
		Year	Q2						
		2021	10.6						
2022	11.2								
5.1%	22.4%								
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 60 mph	<p>Hours (Thousands)</p> <table border="1"> <tr><th>Year</th><th>Q2</th></tr> <tr><td>2021</td><td>147</td></tr> <tr><td>2022</td><td>151</td></tr> </table>	Year	Q2	2021	147	2022	151	Over one year ago	Over last quarter
		Year	Q2						
		2021	147						
2022	151								
2.7%	18%								

Measure	Graph	Percentage Change	
Average Vehicle Hours of Delay by Day of Week at 60 mph		<p>Largest Magnitude Decrease over one year ago</p> <p>Friday -15.1% ↓</p> <p>Largest Magnitude Increase over one year ago</p> <p>Tuesday 15.6% ↑</p>	<p>Largest Magnitude Decrease over last quarter</p> <p>-</p> <p>Largest Magnitude Increase over last quarter</p> <p>Wednesday 27.7% ↑</p>
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Weekdays		<p>Largest Magnitude Weekday Decrease over one year ago</p> <p>3 PM -16.7% ↓</p> <p>Largest Magnitude Weekday Increase over one year ago</p> <p>8 AM 104.1% ↑</p>	<p>Largest Magnitude Weekday Decrease over last quarter</p> <p>7 AM -0.6% ↓</p> <p>Largest Magnitude Weekday Increase over last quarter</p> <p>4 PM 19.9% ↑</p>
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Saturdays		<p>Largest Magnitude Saturday Decrease over one year ago</p> <p>2 PM -39% ↓</p> <p>Largest Magnitude Saturday Increase over one year ago</p> <p>12 AM 26.2% ↑</p>	<p>Largest Magnitude Saturday Decrease over last quarter</p> <p>6 PM -17.6% ↓</p> <p>Largest Magnitude Saturday Increase over last quarter</p> <p>12 PM 23.6% ↑</p>
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Sundays/Holidays		<p>Largest Magnitude Sun./Holiday Decrease over one year ago</p> <p>2 PM -26.8% ↓</p> <p>Largest Magnitude Sun./Holiday Increase over one year ago</p> <p>3 AM 112.8% ↑</p>	<p>Largest Magnitude Sun./Holiday Decrease over last quarter</p> <p>9 AM -28.1% ↓</p> <p>Largest Magnitude Sun./Holiday Increase over last quarter</p> <p>12 PM 132% ↑</p>

Measure	Graph	Percentage Change	
Total Vehicle Hours of Delay (VHD) by County at 35 mph		Largest Magnitude Decrease over one year ago	Largest Magnitude Decrease over last quarter
		San Francisco -27.7% ↓	San Francisco -9.7% ↓
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
		Santa Clara 26.8% ↑	Alameda 30.3% ↑
Average Non-Holiday Weekday Equivalent Lost Lane Mile Hours at 35 mph		Largest Magnitude Decrease over one year ago	Largest Magnitude Decrease over last quarter
		Off-Peak Day -24.1% ↓	-
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
		AM Peak 93.2% ↑	PM Peak 21.6% ↑
Average Number of Good and Bad Detectors		Change in Good over one year ago	Change in Good over last quarter
		-3% ↓	3% ↑
		Change in Bad over one year ago	Change in Bad over last quarter
		7% ↑	-3% ↓

Congestion by Route											
Route	County	Vehicle Hours of Delay at 35 mph			Difference 2022 Q2-2021 Q2		Difference 2022 Q2-2022 Q1		Rank		
		2021 Q2	2022 Q1	2022 Q2	Absolute	Percentage	Absolute	Percentage	2021 Q2	2022 Q1	2022 Q2
I880	Alameda	463,612	447,646	555,432	91,820	20%	107,786	24%	2	1	1
I580	Alameda	576,029	337,456	513,778	-62,251	-11%	176,322	52%	1	3	2
US101	Santa Clara	428,502	269,162	433,103	4,601	1%	163,941	61%	4	4	3
I80	Alameda	455,642	340,048	432,454	-23,187	-5%	92,406	27%	3	2	4
I80	Contra Costa	195,630	184,101	188,372	-7,258	-4%	4,271	2%	6	6	5
I80	Solano	187,759	87,060	165,215	-22,545	-12%	78,155	90%	7	13	6
US101	San Mateo	69,324	92,339	159,041	89,717	129%	66,702	72%	18	12	7
SR4	Contra Costa	164,832	151,599	157,987	-6,845	-4%	6,388	4%	8	7	8
US101	San Francisco	256,981	203,930	142,344	-114,638	-45%	-61,586	-30%	5	5	9
SR37	Solano	405	115,840	132,086	131,681	32522%	16,246	14%	40	8	10
I680	Contra Costa	128,300	100,213	120,982	-7,318	-6%	20,770	21%	9	9	11
SR85	Santa Clara	50,274	92,892	120,075	69,801	139%	27,183	29%	23	11	12
SR92	Alameda	89,651	94,461	102,915	13,263	15%	8,454	9%	12	10	13
I280	Santa Clara	55,607	82,637	97,473	41,866	75%	14,836	18%	21	14	14
I580	Contra Costa	41,805	54,350	82,685	40,881	98%	28,335	52%	24	20	15
SR24	Contra Costa	78,466	65,425	78,970	505	1%	13,545	21%	14	18	16
SR238	Alameda	60,869	47,690	75,131	14,261	23%	27,441	58%	20	23	17
US101	Marin	86,580	52,522	73,278	-13,302	-15%	20,756	40%	13	21	18
I80	San Francisco	75,434	67,855	69,491	-5,944	-8%	1,635	2%	16	16	19
SR84	Alameda	0	58,798	68,793	68,793		9,994	17%		19	20
SR242	Contra Costa	67,314	67,422	66,457	-857	-1%	-965	-1%	19	17	21
I880	Santa Clara	27,252	39,251	62,812	35,560	130%	23,562	60%	27	26	22
SR237	Santa Clara	17,431	32,023	60,839	43,408	249%	28,816	90%	30	27	23
SR1	San Francisco	55,057	29,030	53,881	-1,176	-2%	24,851	86%	22	29	24
I680	Alameda	40,028	49,717	51,711	11,683	29%	1,994	4%	25	22	25
SR17	Santa Clara	72,965	21,624	49,900	-23,066	-32%	28,276	131%	17	32	26
US101	Sonoma	113,024	41,174	48,426	-64,599	-57%	7,252	18%	11	25	27
SR12	Solano	114,566	73,764	47,320	-67,246	-59%	-26,444	-36%	10	15	28
SR87	Santa Clara	19,212	28,845	35,953	16,742	87%	7,108	25%	29	30	29
SR24	Alameda	77,884	28,337	34,755	-43,129	-55%	6,418	23%	15	31	30
I280	San Mateo	3,273	30,798	31,919	28,646	875%	1,121	4%	38	28	31
I680	Santa Clara	28,131	44,221	28,468	337	1%	-15,753	-36%	26	24	32
SR92	San Mateo	19,764	15,221	24,204	4,440	22%	8,983	59%	28	35	33
I580	Marin	12,157	20,401	22,444	10,287	85%	2,043	10%	32	33	34
I280	San Francisco	3,472	12,202	17,014	13,543	390%	4,812	39%	37	36	35
SR12	Napa	16,823	18,633	14,549	-2,274	-14%	-4,084	-22%	31	34	36
SR152	Santa Clara	6,429	6,976	10,146	3,717	58%	3,170	45%	36	37	37
SR37	Sonoma	10,296	5,711	7,696	-2,600	-25%	1,985	35%	34	38	38
SR25	Santa Clara	7,882	3,839	5,947	-1,935	-25%	2,108	55%	35	40	39
I680	Solano	10,596	3,957	5,286	-5,310	-50%	1,329	34%	33	39	40
I980	Alameda	2,529	3,030	2,187	-343	-14%	-843	-28%	39	41	41
I780	Solano	231	4	482	252	109%	478	11950%	41	47	42
I80	Napa	86	124	303	217	252%	179	144%	43	42	43
SR37	Marin	0	116	236	235	58850%	120	103%	46	43	44
SR156	Santa Clara	128	5	52	-76	-59%	47	900%	42	46	45
SR13	Alameda	18	18	18	0	0%	0	0%	44	44	46
I880S	Alameda	12	12	12	0	0%	0	0%	45	45	47
SR29	Napa	0	0	1	1		1				48
SR160	Contra Costa	0	0	0	0		0				
TOTALS		4,192,265	3,522,478	4,452,621	260,355	6.2%	930,143	26.4%			