

District 04 Mobility Performance Report

2021 2nd Quarter

DEPARTMENT OF TRANSPORTATION

August 9, 2021
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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2021 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

Statewide Shelter-In-Place (SIP) took effect on March 19, 2020, the last few weeks of Q1 2020. The full effect of the COVID-19 Pandemic on traffic wasn't seen until Q2 2020. A full year and three months has passed since SIP took effect. To combat the pandemic, vaccinations are being administered to all eligible individuals based on state guidelines. On June 15th, 2021, California State Governor Gavin Newsom announced the reopening of California, though we may not see the reopening impact until the next quarter. There was a 38.6% increase in VMT compared to the same quarter a year ago, with VMT increasing from 5.2 billion in Q2 2020 to 7.2 billion in Q2 2021. In the second quarter, we see an increase of 15.8% (983 million) in VMT from the previous quarter's VMT of 6.2 billion.

Increases is not only seen in VMT, but also VHD. Compared to the same quarter the year before, there was a 215.7% increase from 1.3 million to 4.2 million in the 35 mph total quarterly delay, and a 165.4% increase from 4 million to 10.6 million VHD in the 60 mph total quarterly delay.

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 19 thousand VHD at 35 mph, and 60 thousand VHD at 60 mph. Whereas this quarter, there was a delay of 57 thousand VHD at 35 mph, and 147 thousand VHD at 60 mph. Friday was the most congested day of the week in Q2 similarly to the same quarter a year ago and the previous quarter. Friday had the largest magnitude increase of 113 thousand which was a 162.6% increase from the same quarter last year. Thursday had the largest magnitude increase of 46 thousand (42%) 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 a increase of 445%. The largest magnitude weekday decrease over last quarter occurred at 5 AM with a decrease of -5.9%. For the PM hours, the largest magnitude increase of 230.2% occurred at 5 PM compared to the same quarter last year, and the largest magnitude increase of 49.8% occurred at 4 PM compared to last quarter. The PM commute period had increased compared to the previous

quarter where the average VHD during the PM peak hour of 4 PM increased to 11,500 thousand VHD from 7,700 thousand VHD the quarter before. The largest single hour decrease on Saturday compared to a year ago occurred at 4 AM of -13.7%, over last quarter occurred at 2 AM of -33.9%. The largest single hour increase on Saturday compared to a year ago occurred at 12 PM of 394%, and over last quarter an increase of 158.8% occurred at 2 PM. As for the Sunday/Holidays, the largest magnitude decrease over a year ago is -0.2% at 8 AM, and over last quarter -38.9% at 8 AM. The largest magnitude increase over a year ago is 362.8% at 5PM, over last quarter occurred at 1 PM of 194.5%.

Although California is fully opened now, the Governor did not declare the full reopening until Jun 15th, so the full effect of the reopening was not seen in this quarterly report. All nine counties have shown an increase in vehicle hours of delay compared to last quarter and the year before.

Alameda County with 1,760,000 vehicle hours of total delay at 35 mph during the second quarter was the most congested county in the District. Santa Clara County with 713,000 vehicle hours of total delay at 35 mph was the second most congested county in the District. Contra Costa County with 676,000 vehicle hours of total delay at 35 mph was the third most congested county in the District. Alameda County experienced the largest magnitude increase of 351.2% over compared to the same quarter last year, and the largest magnitude increase of 77.9% compared to last quarter.

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

- CC I80 Eastbound at Pinole Valley Rd during PM period (Rank 1, previously ranked 7 in Q1 2021): 131,900 vehicle hours of delay
- ALA I80 Eastbound at Gilman St during PM period (Rank 2, previously ranked 1 in Q1 2021): 119,100 vehicle hours of delay
- SCL US101 Southbound at Burnett Ave during PM period (Rank 3, previously ranked 3 in Q1 2021): 117,200 vehicle hours of delay

This quarter, there are eight locations that have resurfaced from last quarter's top 10 bottleneck list. Rank 1 (previously Rank 7 in Q1 2021), ALA I80 Eastbound at Pinole Valley Rd increased 210% from 42,600 to 131,900 VHD. Rank 2 (previously Rank 1 in Q1 2021), ALA I80 Eastbound at Gilman St increased 34% from 88,700 to 119,100 VHD. Rank 3 (previously Rank 3 in Q1 2021), SCL US101 Southbound at Burnett Ave increased 111% from 55,600 to 117,200 VHD. Rank 4 (previously Rank 4 in Q1 2021), SON US101 Northbound at E Washington St increased 103% from 53,300 to 108,100 VHD. Rank 5 (previously Rank 2 in Q1 2021), ALA I580 Eastbound at 4000' E of Greenville Rd increased 29% from 63,000 to 81,100 VHD. Rank 6 (previously Rank 8 in Q1 2021), CC I680 Northbound at Buskirk Ave increased 66% from 39,800 to 66,100 VHD. Rank 7 (previously Rank 10 in Q1 2021), ALA SR24 Eastbound at Broadway increased 72% from 36,800 to 63,400 VHD. Rank 8 (previously Rank 5 in Q1 2021), SOL SR12 Eastbound at Red Top Rd-Rte 4 increased 31% from 48,200 to 63,000 VHD.

The remaining bottleneck locations are as follows:

- CC SR4 Westbound at 2500' W of Bailey Rd during AM period (Rank 9): Was ranked 21 last quarter.
- ALA I80 Westbound at Powell St during PM period (Rank 10): Was ranked 16 last quarter.

The activity across our counties during this second quarter were seen to have increases in delays at most locations. On the Congestion by Route table, 32 out of the 50 Route Counties listed had increases in congestion compared to a quarter ago.

Regarding vehicle detector health, there was a -0.3% decrease in the number of good working detector and 3% increase in the number of bad detectors over last quarter that are no longer able to capture the congestion.

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 from 4/1/2021 to 6/24/2021. 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.

Top Ten Bottlenecks for the 2021 2nd Quarter:

Rank	County	Fwy	Approximate Location	Shift	Abs PM	CA PM	Avg Extent (miles)	Total Delay (veh-hrs)	Total Duration (mins)	# of active days	Latitude	Longitude
1	Contra Costa	I80-E	Pinole Valley Rd	PM	21.9	8.59	4.8	131,900	9,800	60	37.99801	-122.28511
2	Alameda	I80-E	Gilman St	PM	12.0	6.64	3.9	119,100	6,000	64	37.87816	-122.30721
3	Santa Clara	US101-S	Burnett Ave	PM	368.1	R18.8	4.2	117,200	13,700	64	37.16338	-121.66442
4	Sonoma	US101-N	E Washington St	PM	472.5	4.95	5.9	108,100	11,000	63	38.23555	-122.61894
5	Alameda	I580-E	4000' E of Greenville Rd	PM	23.6	R7.55	3.9	81,100	6,900	61	37.72043	-121.68748
6	Contra Costa	I680-N	Buskirk Ave	PM	48.3	16.8	3.5	66,100	6,000	63	37.93261	-122.06009
7	Alameda	SR24-E	Broadway	PM	3.8	5.63	3.1	63,400	12,600	64	37.85316	-122.22165
8	Solano	SR12-E	Red Top Rd Rte 4	PM	38.6	2.41	3.7	63,000	12,800	64	38.20766	-122.15707
9	Contra Costa	SR4-W	2500' W of Bailey Rd	AM	19.1	19.39	2.5	62,200	8,700	63	38.02093	-121.95461
10	Alameda	I80-W	Powell St	PM	9.2	3.9	2.1	57,700	13,100	64	37.83967	-122.29700

Measure	Graph	Percentage Change									
Vehicle Miles of Travel (VMT)	Miles (Billions) <table><tr><th>Period</th><th>VMT (Billions)</th></tr><tr><td>2020 Q2</td><td>5.2</td></tr><tr><td>2021 Q1</td><td>6.2</td></tr><tr><td>2021 Q2</td><td>7.2</td></tr></table>	Period	VMT (Billions)	2020 Q2	5.2	2021 Q1	6.2	2021 Q2	7.2	Over one year ago	Over last quarter
		Period	VMT (Billions)								
		2020 Q2	5.2								
		2021 Q1	6.2								
2021 Q2	7.2										
38.6%	15.8%										
↑	↑										
Total Vehicle Hours of Delay (VHD) at 35 mph	Hours (Millions) <table><tr><th>Period</th><th>VHD (Millions)</th></tr><tr><td>2020 Q2</td><td>1.3</td></tr><tr><td>2021 Q1</td><td>2.4</td></tr><tr><td>2021 Q2</td><td>4.2</td></tr></table>	Period	VHD (Millions)	2020 Q2	1.3	2021 Q1	2.4	2021 Q2	4.2	Over one year ago	Over last quarter
		Period	VHD (Millions)								
		2020 Q2	1.3								
		2021 Q1	2.4								
2021 Q2	4.2										
215.7%	76.7%										
↑	↑										
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 35 mph	Hours (Thousands) <table><tr><th>Period</th><th>VHD (Thousands)</th></tr><tr><td>2020 Q2</td><td>19</td></tr><tr><td>2021 Q1</td><td>35</td></tr><tr><td>2021 Q2</td><td>57</td></tr></table>	Period	VHD (Thousands)	2020 Q2	19	2021 Q1	35	2021 Q2	57	Over one year ago	Over last quarter
		Period	VHD (Thousands)								
		2020 Q2	19								
		2021 Q1	35								
2021 Q2	57										
198.3%	61.6%										
↑	↑										
Total Vehicle Hours of Delay (VHD) at 60 mph	Hours (Millions) <table><tr><th>Period</th><th>VHD (Millions)</th></tr><tr><td>2020 Q2</td><td>4</td></tr><tr><td>2021 Q1</td><td>6.9</td></tr><tr><td>2021 Q2</td><td>10.6</td></tr></table>	Period	VHD (Millions)	2020 Q2	4	2021 Q1	6.9	2021 Q2	10.6	Over one year ago	Over last quarter
		Period	VHD (Millions)								
		2020 Q2	4								
		2021 Q1	6.9								
2021 Q2	10.6										
165.4%	53.6%										
↑	↑										
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 60 mph	Hours (Thousands) <table><tr><th>Period</th><th>VHD (Thousands)</th></tr><tr><td>2020 Q2</td><td>60</td></tr><tr><td>2021 Q1</td><td>105</td></tr><tr><td>2021 Q2</td><td>147</td></tr></table>	Period	VHD (Thousands)	2020 Q2	60	2021 Q1	105	2021 Q2	147	Over one year ago	Over last quarter
		Period	VHD (Thousands)								
		2020 Q2	60								
		2021 Q1	105								
2021 Q2	147										
145.9%	40.1%										
↑	↑										

Measure	Graph	Percentage Change	
Average Vehicle Hours of Delay by Day of Week at 60 mph		Largest Magnitude Decrease over one year ago	Largest Magnitude Decrease over last quarter
		—	—
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
		Friday 162.6% ↑	Thursday 42% ↑
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Weekdays		Largest Magnitude Weekday Decrease over one year ago	Largest Magnitude Weekday Decrease over last quarter
		—	5 AM -5.9% ↓
		Largest Magnitude Weekday Increase over one year ago	Largest Magnitude Weekday Increase over last quarter
		5 PM 230.2% ↑	4 PM 49.8% ↑
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Saturdays		Largest Magnitude Saturday Decrease over one year ago	Largest Magnitude Saturday Decrease over last quarter
		4 AM -13.7% ↓	2 AM -33.9% ↓
		Largest Magnitude Saturday Increase over one year ago	Largest Magnitude Saturday Increase over last quarter
		12 PM 394% ↑	2 PM 158.8% ↑
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Sundays/Holidays		Largest Magnitude Sun./Holiday Decrease over one year ago	Largest Magnitude Sun./Holiday Decrease over last quarter
		8 AM -0.2% ↓	8 AM -38.9% ↓
		Largest Magnitude Sun./Holiday Increase over one year ago	Largest Magnitude Sun./Holiday Increase over last quarter
		5 PM 362.8% ↑	1 PM 194.5% ↑

Measure	Graph	Percentage Change	
Total Vehicle Hours of Delay (VHD) by County at 35 mph	Hours (Millions) ■ 2020 Q2 ■ 2021 Q1 ■ 2021 Q2	Largest Magnitude Decrease over one year ago	Largest Magnitude Decrease over last quarter
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
		Alameda 351.2% ↑	Alameda 77.9% ↑
Average Non-Holiday Weekday Equivalent Lost Lane Mile Hours at 35 mph	Miles ■ 2020 Q2 ■ 2021 Q1 ■ 2021 Q2 AM Peak (6 AM to 10 AM) Off-Peak Day (10 AM to 3 PM) PM Peak (3 PM to 7 PM) Off-Peak Night (7 PM to 6 AM)	Largest Magnitude Decrease over one year ago	Largest Magnitude Decrease over last quarter
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
		PM Peak 242.2% ↑	PM Peak 48.8% ↑
Average Number of Good and Bad Detectors	Number of Detectors ■ Average of Good ■ Average of Bad 2020 Q2: Good 6,778, Bad 4,413 2021 Q1: Good 6,319, Bad 4,970 2021 Q2: Good 6,298, Bad 5,106	Change in Good over one year ago	Change in Good over last quarter
		-7% ↓	-0.3% ↓
		Change in Bad over one year ago	Change in Bad over last quarter
		16% ↑	3% ↑

Congestion by Route											
Route	County	Vehicle Hours of Delay at 35 mph			Difference 2021 Q2-2020 Q2		Difference 2021 Q2-2021 Q1		Rank		
		2020 Q2	2021 Q1	2021 Q2	Absolute	Percentage	Absolute	Percentage	2020 Q2	2021 Q1	2021 Q2
I580	Alameda	200,316	365,797	576,029	375,713	188%	210,233	57%	1	1	1
I880	Alameda	75,039	248,643	463,612	388,573	518%	214,970	86%	5	3	2
I80	Alameda	65,524	257,098	455,642	390,117	595%	198,544	77%	6	2	3
US101	Santa Clara	113,649	225,944	428,502	314,853	277%	202,558	90%	4	4	4
I80	Contra Costa	29,876	110,411	195,630	165,754	555%	85,219	77%	15	7	5
I80	Solano	51,950	163,934	187,759	135,809	261%	23,825	15%	9	5	6
SR4	Contra Costa	60,522	86,480	164,832	104,310	172%	78,353	91%	7	8	7
I680	Contra Costa	24,979	75,707	128,300	103,321	414%	52,593	69%	17	10	8
SR12	Solano	43,825	75,944	114,566	70,741	161%	38,622	51%	10	9	9
US101	Sonoma	38,702	58,586	113,024	74,323	192%	54,438	93%	11	12	10
SR92	Alameda	10,592	61,739	89,651	79,059	746%	27,912	45%	26	11	11
US101	Marin	14,124	13,608	86,580	72,456	513%	72,972	536%	22	25	12
SR24	Contra Costa	117,444	57,488	78,466	(38,979)	-33%	20,978	36%	3	13	13
SR24	Alameda	15,361	33,120	77,884	62,523	407%	44,765	135%	21	17	14
SR17	Santa Clara	8,554	23,720	72,965	64,411	753%	49,245	208%	28	19	15
US101	San Mateo	37,765	47,689	69,324	31,559	84%	21,635	45%	12	15	16
SR242	Contra Costa	31,163	47,523	67,314	36,152	116%	19,791	42%	13	16	17
SR238	Alameda	9,526	19,179	60,869	51,344	539%	41,691	217%	27	23	18
I280	Santa Clara	3,959	29,785	55,607	51,648	1305%	25,822	87%	33	18	19
SR85	Santa Clara	55,491	22,004	50,274	(5,216)	-9%	28,271	128%	8	21	20
I580	Contra Costa	5,973	17,680	41,805	35,831	600%	24,124	136%	29	24	21
I680	Alameda	17,050	13,469	40,028	22,978	135%	26,559	197%	20	26	22
I680	Santa Clara	11,265	22,481	28,131	16,867	150%	5,650	25%	25	20	23
I880	Santa Clara	4,246	9,169	27,252	23,006	542%	18,084	197%	30	32	24
SR92	San Mateo	13,031	12,662	19,764	6,733	52%	7,102	56%	24	27	25
SR87	Santa Clara	2,413	9,268	19,212	16,799	696%	9,944	107%	36	31	26
SR237	Santa Clara	3,363	10,902	17,431	14,068	418%	6,528	60%	34	29	27
SR12	San Francisco	-	-	16,823	16,823		16,823				28
SR12	Napa	2,068	9,523	16,823	14,755	714%	7,301	77%	38	30	28
I580	Marin	2,401	6,261	12,157	9,756	406%	5,896	94%	37	33	30
I680	Solano	1,036	1,780	10,596	9,560	923%	8,816	495%	40	38	31
SR37	Sonoma	4,025	2,995	10,296	6,271	156%	7,301	244%	31	35	32
SR25	Santa Clara	1,761	2,774	7,882	6,121	348%	5,108	184%	39	37	33
SR152	Santa Clara	19,190	2,865	6,429	(12,762)	-67%	3,564	124%	19	36	34
I280	San Mateo	3,976	12,348	3,273	(703)	-18%	(9,075)	-73%	32	28	35
I980	Alameda	2,878	141	2,529	(348)	-12%	2,389	1700%	35	41	36
SR37	Solano	30,969	298	405	(30,564)	-99%	107	36%	14	40	37
I780	Solano	1	383	231	229	17631%	(153)	-40%	46	39	38
SR156	Santa Clara	34	1	128	94	275%	127	11545%	43	45	39
I80	San Francisco	27,169	52,654	86	(27,083)	-100%	(52,567)	-100%	16	14	40
I80	Napa	50	65	86	36	71%	21	32%	42	42	40
SR13	Alameda	18	17	18	-	0%	1	8%	44	43	42
I880S	Alameda	12	11	12	-	0%	1	8%	45	44	43
SR37	Marin	103	0	0	(103)	-100%	0	300%	41	46	44
I280	San Francisco	20,229	3,978	-	(20,229)	-100%	(3,978)	-100%	18	34	
SR1	San Francisco	13,185	20,375	-	(13,185)	-100%	(20,375)	-100%	23	22	
SR160	Contra Costa	-	-	-	-		-				
SR29	San Francisco	-	-	-	-		-				
SR29	Napa	-	-	-	-		-				
US101	San Francisco	139,433	146,038	-	(139,433)	-100%	(146,038)	-100%	2	6	
TOTALS		1,194,807	2,236,499	3,818,231	2,623,424	219.6%	1,581,732	70.7%			