

# District 04 Mobility Performance Report

2020 4th Quarter

**DEPARTMENT OF TRANSPORTATION**

February 12, 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

## District 04 Mobility Performance Report

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2020 4th 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 was seen starting Q2 2020. On October 13, 2020, Alameda and Santa Clara counties both moved from red to orange tier joining San Francisco county. Other Bay Area counties are in the red tier. On November 29, 2020, all Bay Area counties except for Marin moved from red to purple tier, the most restrictive tier. On December 8, 2020, Marin county moved into the state's purple tier, meaning coronavirus activity is widespread. SIP is still widely advised during this fourth quarter. There was a -11.6% decrease in VMT compared to the same quarter a year ago, with VMT dropping from 7.9 billion in Q4 2019 to 7.0 billion in Q4 2020. In the fourth quarter, we see a minor decrease of 0.5% (approximately 32 million) in VMT from the previous quarter's VMT of 7.0 billion.

The decrease in VMT caused by the Covid-19 pandemic had a greater effect on VHD. Compared to the same quarter the year before, there was a -73.9% decrease from 10.5 million to 2.7 million in the 35 mph total quarterly delay, and a -61.8% decrease from 20.5 million to 7.8 million VHD in the 60 mph total quarterly delay.

The average weekday delay in this quarter has decreased compared to the year before. Last year, during the same quarter, there was a delay of 141 thousand VHD at 35 mph, and 279 thousand VHD at 60 mph. Whereas this quarter, there was a delay of 38 thousand VHD at 35 mph, and 109 thousand VHD at 60 mph. Friday was the most congested day of the week versus Thursday the same quarter the year before. Thursday had the largest magnitude decrease of -64.8% since a year ago. Saturday had the largest magnitude decrease of -5.5% from last quarter. Tuesday had the largest magnitude increase of 13.5% from last quarter.

Looking at the Average VHD at 35 mph by hour of the day for weekdays, there was a significant decrease in the PM commute period congestion compared to last year. The largest magnitude change compared to the same quarter a year ago occurred at 5 PM with a decrease of -68.5%. Compared to last quarter, the largest magnitude decrease of -11.2% occurred at 6 AM, and the largest magnitude increase of 21.3% occurred at 5 PM. The PM commute period had increased compared to the previous quarter where the average VHD during the PM peak hour of 5 PM increased to 7,700 thousand VHD from 6,400 thousand VHD the quarter before. The

largest single hour decrease on Saturday compared to a year ago occurred at 5 pm of -82.7%, over last quarter occurred at 1 PM of -29.6%. The largest single hour increase on Saturday compared to a year ago occurred at 2 AM of 6.2%, over last quarter of 54.6% occurred at 5 PM. As for the Sunday/Holidays, the largest magnitude decrease over a year ago is -78.8% at 2 PM, over last quarter -44.7% at 1 PM. The largest magnitude increase occurred at 4 AM of 13.4%, over last quarter occurred at 5 PM of 50.4%.

Alameda County with 1,130,000 vehicle hours of total delay at 35 mph during the fourth quarter was the most congested county in the District. Contra Costa County with 410,000 vehicle hours of total delay at 35 mph was the second most congested county in the District. Santa Clara County experienced the largest magnitude decrease of -88.3% over one year ago. Sonoma County experienced the largest magnitude decrease of -43.4% over last quarter. Alameda County experienced the largest magnitude increase of 26% over the last quarter.

From the Top 10 Bottlenecks for the 4<sup>th</sup> Quarter, all top ten locations were from the PM period. The top three locations are as follows:

- ALA I80 Eastbound at University Ave during PM period (Rank 1, previously Rank 1 in Q3 2020): 95,500 vehicle hours of delay
- ALA I880 Northbound at 1000' S of Jackson-SR-92 during PM period (Rank 2, previously unranked in Q3 2020): 60,900 vehicle hours of delay
- SOL SR12 Eastbound at Red Top Rd-Rte 4 during PM period (Rank 3, previously Rank 5 in Q3 2020): 58,600 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 1 in Q3 2020), I80 Eastbound at University Ave bottleneck, saw a 24% increase in total delay, increasing from 76,900 to 95,500 vehicle hours of delay. Rank 3 (previously Rank 5 in Q3 2020), SOL SR12 Eastbound at Red Top Rd-Rte 4 bottleneck, saw a 14% increase in total delay, increasing from 51,200 to 58,600 vehicle hours of delay. Rank 4 (previously Rank 2 in Q3 2020), ALA I580 Eastbound at 4000' E of Greenville Rd bottleneck, saw a -23% decrease in total delay, decreasing from 71,000 to 54,900 vehicle hours of delay. Rank 5 (previously Rank 3 in Q3 2020), SCL US101 Southbound at Burnett Ave

bottleneck, saw a -20% decrease in total delay, decreasing from 63,800 to 51,200 vehicle hours of delay. Rank 6 (previously Rank 10 in Q3 2020), CC I680 Northbound at Buskirk Ave bottleneck, saw a 28% increase in total delay, increasing from 36,800 to 47,100 vehicle hours of delay. Rank 7 (previously Rank 4 in Q3 2020), SON US101 Northbound at E Washington St bottleneck, saw a -24% decrease in total delay, decreasing from 61,200 to 46,500 vehicle hours of delay. Rank 8 (previously Rank 7 in Q3 2020), CC I80 Eastbound at Pinole Valley Rd bottleneck, saw a -5% decrease in total delay, decreasing from 43,800 to 41,600 vehicle hours of delay. Rank 10 (previously Rank 9 in Q3 2020), CC SR242 Northbound at Olivera St OC (Reitz Ct) bottleneck, saw a -2% decrease in total delay, decreasing from 38,700 to 38,000 vehicle hours of delay.

The remaining bottleneck locations are as follows:

- ALA I880 Northbound at 1000' S of Jackson-SR-92 during PM period (Rank 2):  
Was unranked last quarter.
- CC SR24 Eastbound at 500' W of El Nido Ranch Rd during PM period (Rank 9):  
Was Rank 19 last quarter.

While Shelter-in-place is still widely recommended due to COVID-19 and have gone into more restrictive tiers during the fourth quarter, the following counties ALA, CC, SF, and SM, had a total increase in vehicle hours of delay and vehicle miles of travel compared to last quarter. MRN, SOL, and SON had a total decrease in vehicle hours of delay and vehicle miles of travel compared to last quarter. The remaining counties, NAP, and SCL had no significant change in vehicle hours of delay and vehicle miles of travel compared to last quarter.

Even though local city and county leaders place restrictive COVID-19 tiers on business operations, the activity across our counties during this fourth quarter were seen to have increases in delays at most locations. On the Congestion by Route table, 29 out of the 48 Route Counties listed had increases in congestion from a quarter ago.

Regarding vehicle detector health, there was a -3% decrease in the number of good working detector and 4% increase in the number of bad detectors over last quarter that are no longer able to capture the congestion.

## Top Ten Bottlenecks for the 2020 4th 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	Alameda	I80-E	University Ave	PM	11.0	5.7	3.0	95,500	8,700	58	37.86489	-122.30302
2	Alameda	I880-N	1000' S of Jackson-SR-92	PM	26.5	16.28	3.8	60,900	6,800	58	37.63957	-122.08997
3	Solano	SR12-E	Red Top Rd-Rte 4	PM	38.6	2.41	4.2	58,600	10,000	53	38.20766	-122.15707
4	Alameda	I580-E	4000' E of Greenville Rd	PM	23.6	R7.55	3.1	54,900	6,800	55	37.72043	-121.68748
5	Santa Clara	US101-S	Burnett Ave	PM	368.1	R18.8	2.3	51,200	13,500	58	37.16338	-121.66442
6	Contra Costa	I680-N	Buskirk Ave	PM	48.3	16.8	3.2	47,100	5,300	55	37.93261	-122.06009
7	Sonoma	US101-N	E Washington St	PM	470.4	4.95	3.3	46,500	7,700	54	38.24848	-122.63064
8	Contra Costa	I80-E	Pinole Valley Rd	PM	21.9	8.59	2.7	41,600	5,600	58	37.99801	-122.28511
9	Contra Costa	SR24-E	500' W of El Nido Ranch Rd	PM	9.1	4.72	1.9	41,000	8,900	54	37.89095	-122.14866
10	Contra Costa	SR242-N	Olivera St oc (Reitz Ct)	PM	3.1	2.81	1.6	38,000	12,500	61	37.9981	-122.03823

Measure	Graph	Percentage Change									
Vehicle Miles of Travel (VMT)	<p>Miles (Billions)</p> <table border="1"> <tr><th>Year</th><th>Q4</th></tr> <tr><td>2019</td><td>7.9</td></tr> <tr><td>2020</td><td>7</td></tr> </table>	Year	Q4	2019	7.9	2020	7	Over one year ago	Over last quarter		
		Year	Q4								
		2019	7.9								
2020	7										
-11.6%	-0.5%										
↓	↓										
Total Vehicle Hours of Delay (VHD) at 35 mph	<p>Hours (Millions)</p> <table border="1"> <tr><th>Year</th><th>Q4</th></tr> <tr><td>2019</td><td>10.5</td></tr> <tr><td>2020</td><td>2.6</td></tr> <tr><td>2020</td><td>2.7</td></tr> </table>	Year	Q4	2019	10.5	2020	2.6	2020	2.7	Over one year ago	Over last quarter
		Year	Q4								
		2019	10.5								
2020	2.6										
2020	2.7										
-73.9%	4.6%										
↓	↑										
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 35 mph	<p>Hours (Thousands)</p> <table border="1"> <tr><th>Year</th><th>Q4</th></tr> <tr><td>2019</td><td>141</td></tr> <tr><td>2020</td><td>34</td></tr> <tr><td>2020</td><td>38</td></tr> </table>	Year	Q4	2019	141	2020	34	2020	38	Over one year ago	Over last quarter
		Year	Q4								
		2019	141								
2020	34										
2020	38										
-73.2%	11.4%										
↓	↑										
Total Vehicle Hours of Delay (VHD) at 60 mph	<p>Hours (Millions)</p> <table border="1"> <tr><th>Year</th><th>Q4</th></tr> <tr><td>2019</td><td>20.5</td></tr> <tr><td>2020</td><td>7.6</td></tr> <tr><td>2020</td><td>7.8</td></tr> </table>	Year	Q4	2019	20.5	2020	7.6	2020	7.8	Over one year ago	Over last quarter
		Year	Q4								
		2019	20.5								
2020	7.6										
2020	7.8										
-61.8%	3.5%										
↓	↑										
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 60 mph	<p>Hours (Thousands)</p> <table border="1"> <tr><th>Year</th><th>Q4</th></tr> <tr><td>2019</td><td>279</td></tr> <tr><td>2020</td><td>101</td></tr> <tr><td>2020</td><td>109</td></tr> </table>	Year	Q4	2019	279	2020	101	2020	109	Over one year ago	Over last quarter
		Year	Q4								
		2019	279								
2020	101										
2020	109										
-60.8%	7.9%										
↓	↑										

Measure	Graph	Percentage Change	
<p>Average Vehicle Hours of Delay by Day of Week at 60 mph</p>		<p>Largest Magnitude Decrease over one year ago</p>	<p>Largest Magnitude Decrease over last quarter</p>
		<p>Thursday -64.8% ↓</p>	<p>Saturday -5.5% ↓</p>
		<p>Largest Magnitude Increase over one year ago</p>	<p>Largest Magnitude Increase over last quarter</p>
		<p>-</p>	<p>Tuesday 13.5% ↑</p>
<p>Average Vehicle Hours of Delay by Hour of Day at 35 mph, Weekdays</p>		<p>Largest Magnitude Weekday Decrease over one year ago</p>	<p>Largest Magnitude Weekday Decrease over last quarter</p>
		<p>5 PM -68.5% ↓</p>	<p>6 AM -11.2% ↓</p>
		<p>Largest Magnitude Weekday Increase over one year ago</p>	<p>Largest Magnitude Weekday Increase over last quarter</p>
		<p>-</p>	<p>5 PM 21.3% ↑</p>
<p>Average Vehicle Hours of Delay by Hour of Day at 35 mph, Saturdays</p>		<p>Largest Magnitude Saturday Decrease over one year ago</p>	<p>Largest Magnitude Saturday Decrease over last quarter</p>
		<p>5 PM -82.7% ↓</p>	<p>1 PM -29.6% ↓</p>
		<p>Largest Magnitude Saturday Increase over one year ago</p>	<p>Largest Magnitude Saturday Increase over last quarter</p>
		<p>2 AM 6.2% ↑</p>	<p>5 PM 54.6% ↑</p>
<p>Average Vehicle Hours of Delay by Hour of Day at 35 mph, Sundays/Holidays</p>		<p>Largest Magnitude Sun./Holiday Decrease over one year ago</p>	<p>Largest Magnitude Sun./Holiday Decrease over last quarter</p>
		<p>2 PM -78.8% ↓</p>	<p>1 PM -44.7% ↓</p>
		<p>Largest Magnitude Sun./Holiday Increase over one year ago</p>	<p>Largest Magnitude Sun./Holiday Increase over last quarter</p>
		<p>4 AM 13.4% ↑</p>	<p>5 PM 50.4% ↑</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
		Santa Clara -88.3%	Sonoma -43.4%
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
			Alameda 26%
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
		PM Peak -59.6%	
		Largest Magnitude Increase over one year ago	Largest Magnitude Increase over last quarter
			PM Peak 21.4%
Average Number of Good and Bad Detectors		Change in Good over one year ago	Change in Good over last quarter
		-11%	-3%
		Change in Bad over one year ago	Change in Bad over last quarter
	22%	4%	

Congestion by Route											
Route	County	Vehicle Hours of Delay at 35 mph			Difference 2020 Q4-2019 Q4		Difference 2020 Q4-2020 Q3		Rank		
		2019 Q4	2020 Q3	2020 Q4	Absolute	Percentage	Absolute	Percentage	2019 Q4	2020 Q3	2020 Q4
I580	Alameda	917040.3	335949.9	399388.9	-517651.4	-56%	63,439	19%	1	2	1
I880	Alameda	807477.7	203109.3	305063.3	-502414.4	-62%	101,954	50%	3	6	2
I80	Alameda	694502	213213.1	271651.8	-422850.2	-61%	58,439	27%	4	4	3
US101	Sonoma	533258.4	411558.3	233433	-299825.4	-56%	(178,125)	-43%	6	1	4
US101	Santa Clara	914742.6	256667	221125.4	-693617.2	-76%	(35,542)	-14%	2	3	5
I80	Solano	314385.8	210891.5	180778.5	-133607.3	-42%	(30,113)	-14%	13	5	6
US101	San Francisco	359928	111785.8	148154.1	-211773.9	-59%	36,368	33%	10	7	7
I80	Contra Costa	357230.2	97074.6	108801.2	-248429	-70%	11,727	12%	11	8	8
SR4	Contra Costa	262255.4	84615.7	95254.2	-167001.2	-64%	10,639	13%	16	9	9
SR12	Solano	65637.9	61599.7	72100.6	6462.7	10%	10,501	17%	32	12	10
I680	Contra Costa	355498.8	61251.8	71288.5	-284210.3	-80%	10,037	16%	12	13	11
US101	San Mateo	462573.9	69407.7	70033.1	-392540.8	-85%	625	1%	8	10	12
SR24	Contra Costa	294270.4	49658.5	65449.3	-228821.1	-78%	15,791	32%	14	14	13
SR92	Alameda	195658.5	32910.8	63393.6	-132264.9	-68%	30,483	93%	19	18	14
SR242	Contra Costa	80321.6	49362.6	48935.8	-31385.8	-39%	(427)	-1%	30	15	15
I680	Alameda	137070.3	69113.5	45691.1	-91379.2	-67%	(23,422)	-34%	22	11	16
I80	San Francisco	150117.5	34304.7	38414.1	-111703.4	-74%	4,109	12%	21	16	17
SR85	Santa Clara	651403.8	29257.4	35339	-616064.8	-95%	6,082	21%	5	20	18
SR17	Santa Clara	78141.4	29737.4	28640.2	-49501.2	-63%	(1,097)	-4%	31	19	19
SR24	Alameda	84122	33891.2	27123.7	-56998.3	-68%	(6,768)	-20%	29	17	20
I280	Santa Clara	494711.4	10200.9	24356.2	-470355.2	-95%	14,155	139%	7	27	21
I680	Santa Clara	172420.5	5540.6	19272.1	-153148.4	-89%	13,732	248%	20	33	22
I580	Contra Costa	55281.3	22140.6	18431.8	-36849.5	-67%	(3,709)	-17%	33	21	23
SR238	Alameda	129597.3	19857.4	17947.9	-111649.4	-86%	(1,910)	-10%	26	22	24
SR92	San Mateo	260671.3	12522.7	15601.4	-245069.9	-94%	3,079	25%	17	26	25
I680	Solano	19619.6	7995.3	12588.5	-7031.1	-36%	4,593	57%	37	29	26
US101	Marin	111276.3	14253.6	11887.7	-99388.6	-89%	(2,366)	-17%	27	25	27
SR1	San Francisco	132171.6	14589.5	11873.2	-120298.4	-91%	(2,716)	-19%	24	24	28
SR12	Napa	29231.9	7408.8	10717.3	-18514.6	-63%	3,309	45%	36	30	29
I280	San Mateo	271671.4	2599.7	10637	-261034.4	-96%	8,037	309%	15	38	30
SR87	Santa Clara	136858.3	4612.4	7829.9	-129028.4	-94%	3,218	70%	23	35	31
SR237	Santa Clara	361923.7	3932.6	7432	-354491.7	-98%	3,499	89%	9	36	32
I580	Marin	6939.4	17048.6	7401.2	461.8	7%	(9,647)	-57%	41	23	33
I880	Santa Clara	215034.8	8544.4	6696.5	-208338.3	-97%	(1,848)	-22%	18	28	34
I280	San Francisco	98848.7	3862.3	5049.8	-93798.9	-95%	1,188	31%	28	37	35
SR152	Santa Clara	43681.8	5621.5	4529.4	-39152.4	-90%	(1,092)	-19%	35	32	36
SR25	Santa Clara	7990	5003.1	4009.7	-3980.3	-50%	(993)	-20%	40	34	37
SR37	Sonoma	53807.6	7266.4	3560.9	-50246.7	-93%	(3,706)	-51%	34	31	38
I980	Alameda	12498	338.5	2436.5	-10061.5	-81%	2,098	620%	38	42	39
I80	Napa	294.6	67.2	490.6	196	67%	423	630%	43	43	40
SR37	Solano	130238.7	1106.8	361.8	-129876.9	-100%	(745)	-67%	25	39	41
I780	Solano	1658.8	968.6	146.8	-1512	-91%	(822)	-85%	42	40	42
SR37	Marin	11472.1	566	79.1	-11393	-99%	(487)	-86%	39	41	43
SR29	Napa	62.5	18.7	41.5	-21	-34%	23	122%	44	45	44
SR13	Alameda	18.2	18.2	19.6	1.4	8%	1	8%	45	46	45
SR156	Santa Clara	12.5	42.3	18.1	5.6	45%	(24)	-57%	47	44	46
I880S	Alameda	11.7	11.7	12.6	0.9	8%	1	8%	48	47	47
SR160	Contra Costa	15	0	0	-15	-100%	-	-	46		
<b>TOTALS</b>		<b>10,473,656</b>	<b>2,621,499</b>	<b>2,733,489</b>	<b>-7,740,167</b>	<b>-73.9%</b>	<b>111,990</b>	<b>4.3%</b>			