District 04 Mobility Performance Report

2022 1st Quarter

DEPARTMENT OF TRANSPORTATION

April 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

2022 1st 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 7.6% increase in VMT compared to the same quarter a year ago, with VMT increasing from 6.2 billion in Q1 2021 to 6.7 billion in Q1 2022. In the first quarter, we see a decrease of 7.3% (530 million) in VMT from the previous quarter's VMT of 7.2 billion.

Annual increases are not only seen in VMT, but also in VHD. Compared to the same quarter the year before, there was a 48.5% increase from 2.4 million to 3.5 million in the 35 mph total quarterly delay, and a 31.9% increase from 6.9 million to 9.1 million VHD in the 60 mph total quarterly delay. Similar to VMT, a quarterly decrease was seen in VHD. Quarter 1, 2022 saw a 29.4% decrease in VHD at 35 mph and 24.6% decrease 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 35 thousand VHD at 35 mph, and 105 thousand VHD at 60 mph. Whereas this quarter, there was a delay of 49 thousand VHD at 35 mph which is a 39% increase, and 128 thousand VHD at 60 mph which is a 22% increase. Thursday was the most congested day of the week in Q1 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. Thursday had the largest magnitude increase of 40 thousand VHD at 60 mph which was a 36.2% increase from the same quarter last year. Monday had the smallest magnitude decrease of 13 thousand (-11.5%) VHD at 60 mph compared to last quarter. Wednesday had the largest magnitude decrease of 41 thousand VHD at 60 mph (25%).

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 286.4%. The largest magnitude weekday decrease over last quarter occurred at 8 AM with a decrease of -5.9%. For the PM hours, the largest magnitude increase of 26.9% occurred at 5 PM compared to the same quarter last year, and the largest magnitude decrease of -27.1% occurred at

5 PM compared to last quarter. The PM commute period has slightly decreased compared to the previous quarter. The average VHD during the PM peak hour of 5 PM had a 27.1% decrease to 9,100 thousand VHD from 12,500 thousand VHD compared to the quarter before. The largest single hour decrease on Saturday compared to a year ago occurred at 4 AM with a -42.5% change, over last quarter occurred at 6 PM of -54%. The largest single hour increase on Saturday compared to a year ago occurred at 5 PM of 93.1%, and over last quarter an increase of 145.5% occurred at 1 AM. As for the Sunday/Holidays, the largest magnitude decrease over a year ago is -14.9% at 7 PM, and over last quarter -63.4% at 5 PM. The largest magnitude increase over a year ago is 43.9% at 5 PM. The smallest magnitude decrease over last quarter occurred at 10 PM of -14.9%.

Similar to the same quarter last year and the previous quarter, Alameda County with 1,407,000 vehicle hours of total delay at 35 mph during the first quarter was the most congested county in the District. Contra Costa County with 623,000 vehicle hours of total delay at 35 mph was the second most congested county in the District. Santa Clara County with 621,000 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 42.3% compared to the same quarter last year, as well as the the largest magnitude decrease of 30.8%% compared to last quarter.

From the Top 10 Bottlenecks for the 1st Quarter, eight bottleneck locations occurred during the PM, and two 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 1 in Q4 2021): 102,417 vehicle hours of delay
- ALA I880 Northbound at Winton Avenue during PM period (Rank 2, previously ranked 3 in Q4 2021): 84,803 vehicle hours of delay
- ALA I80 Eastbound at University Avenue during PM period (Rank 3, previously ranked 2 in Q4 2021): 83,141 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 Q4 2021), CC I80 Eastbound at Pinole Valley Rd

decreased 38.3% from 165,900 to 102,400 VHD. Rank 2 (previously Rank 3 in Q4 2021), ALA I880 Northbound at Winton Avenue St decreased 16.8% from 101,900 to 84,800 VHD. Rank 3 (previously Rank 2 in Q4 2021), ALA I80 Eastbound at University Avenue decreased 40.4% from 139,500 to 83,100 VHD. Rank 4 (previously Rank 10 in Q4 2021), ALA I80 Westbound at Gilman St increased 33.3% from 51,900 to 69,200 VHD. Rank 5 (previously rank 4 in Q4 2021), CC SR4 Westbound at 5400' E of Willow Pass Rd decreased 32.5% from 96,000 to 64,800 VHD. Rank 6 (previously Rank 5 in Q4 2021), SCL US101 Southbound at Laurel Rd decreased 26.1% from 78,500 to 58,000 VHD. Rank 7 (previously Rank 6 in Q4 2021), ALA I80 Westbound at Powell St decreased 22.8% from 62,200 to 48,000 VHD. Rank 9 (previously Rank 8 in Q4 2021), ALA I580 Eastbound at Greenville Rd decreased 12.5% from 53,800 to 47,100 VHD.

The remaining bottleneck locations are as follows:

- SCL I280 Southbound at Bird Ave during PM period (Rank 8): Was ranked 12 last quarter.
- CC SR4 Eastbound at Kinne Blvd during PM period (Rank 10): Was ranked 14 last quarter.

The activity across our counties during this first quarter were seen to have decreases in delays at most of the locations. On the Congestion by Route table, 5 out of the 47 Route Counties listed have increases in congestion compared to a quarter ago, 2 remained unchanged, and 40 show a decrease.

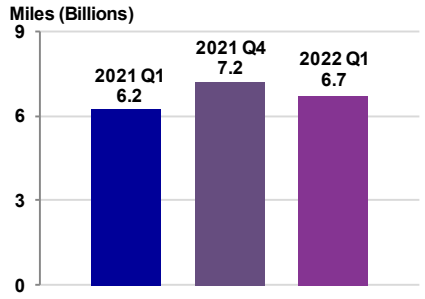
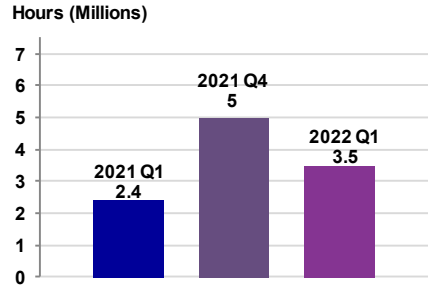
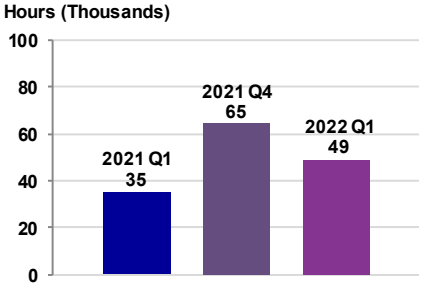
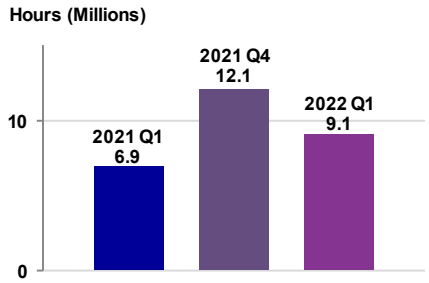
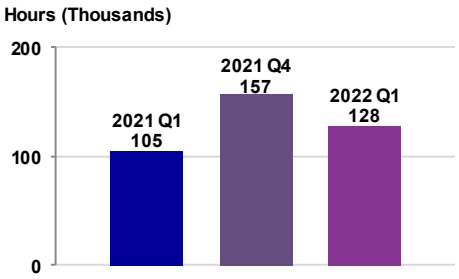
Regarding vehicle detector health, there was a 0% decrease in the number of good working detector and 2% increase in the number of bad detectors over last quarter that are no longer able to capture the congestion.

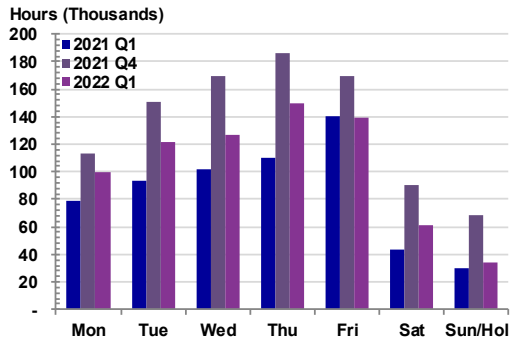
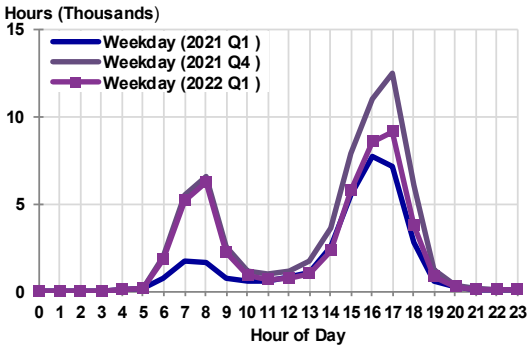
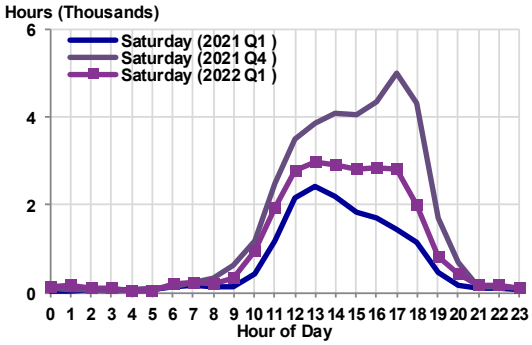
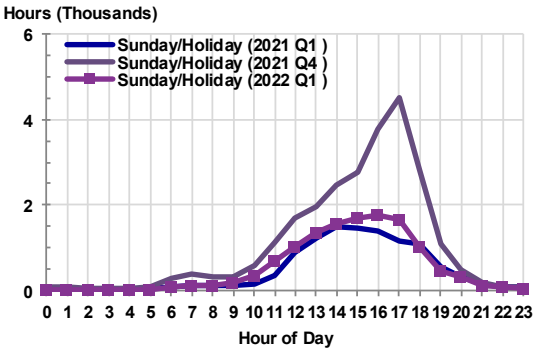
An issue with the PeMS assigned length per VDS affected 55 out of 108 VDSs on NB 101 between postmile 0.21 to 21.23 in Sonoma County prior to 6/24/2021 (2021 Qtr 2). The affected VDSs had an average PeMS assigned length of 2.52 miles versus 0.40 miles for the Average Calculated VDS length for the same section. The adjustments to VMT and VHD were only made to correct the Sonoma 101 freeway totals, Sonoma County totals, and District total.

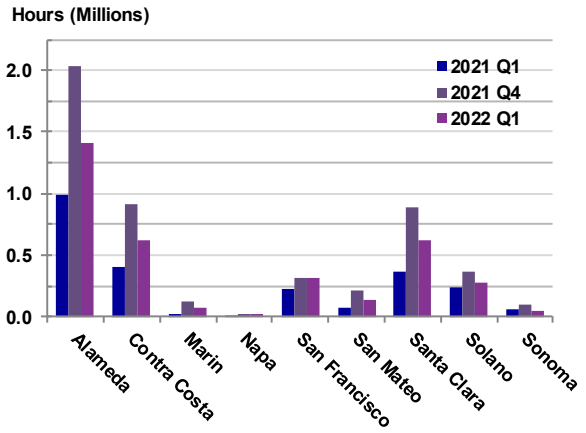
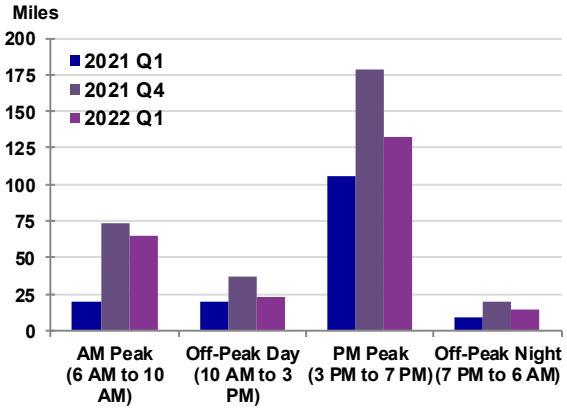
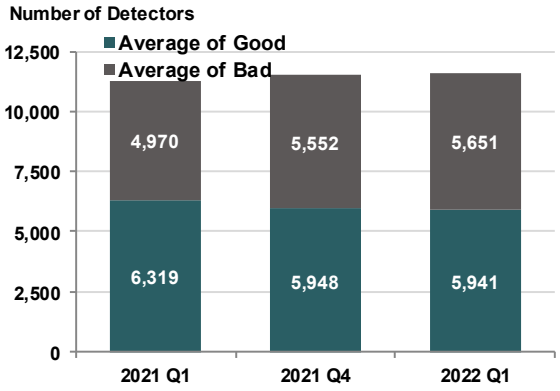
The error was resolved and adjustments are no longer needed for data starting 2021 Qtr 3 and onward.

Top Ten Bottlenecks for the 2022 1st 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	5.3	102,417	8436	54	37.99801	-122.28511
2	Alameda	I880-N	Winton Ave	PM	28.0	17.82	5.7	84,803	3276	59	37.65927	-122.10306
3	Alameda	I80-E	University Ave	PM	11.0	5.7	2.7	83,141	6906	57	37.86489	-122.30302
4	Alameda	I80-W	Gilman St	AM	11.9	6.6	3.2	69,226	7698	60	37.87741	-122.30724
5	Contra Costa	SR4-W	5400' E of Willow Pass Rd	AM	17.8	17.85	2.8	64,848	6348	60	38.02145	-121.98179
6	Santa Clara	US101-S	Laurel Rd	PM	366.5	17.16	5.2	58,008	9036	57	37.14532	-121.64531
7	Alameda	I80-W	Powell St	PM	9.2	3.9	1.9	47,996	12072	61	37.83967	-122.297
8	Santa Clara	I280-S	Bird Ave	PM	2.9	R2.85	2.2	47,935	8538	57	37.32236	-121.8978
9	Alameda	I580-E	Greenville Rd	PM	23.6	R7.55	2.7	47,067	6378	49	37.72043	-121.68748
10	Contra Costa	SR4-E	Kinne Blvd	PM	15.8	R16.1	1.7	42,341	10914	61	38.01135	-122.01057

Measure	Graph	Percentage Change	
		Over one year ago	Over last quarter
Vehicle Miles of Travel (VMT)		7.6%	-7.3%
Total Vehicle Hours of Delay (VHD) at 35 mph		48.5%	-29.4%
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 35 mph		39.3%	-24.6%
Total Vehicle Hours of Delay (VHD) at 60 mph		31.9%	-24.6%
Average Non-Holiday Weekday Vehicle Hours of Delay (VHD) at 60 mph		22.1%	-18.3%

Measure	Graph	Percentage Change	
Average Vehicle Hours of Delay by Day of Week at 60 mph		Largest Magnitude Decrease over one year ago Friday -0.9%	Largest Magnitude Decrease over last quarter Wednesday -24.5%
		Largest Magnitude Increase over one year ago Thursday 36.2%	Largest Magnitude Increase over last quarter –
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Weekdays		Largest Magnitude Weekday Decrease over one year ago 2 PM -9.1%	Largest Magnitude Weekday Decrease over last quarter 5 PM -27.1%
		Largest Magnitude Weekday Increase over one year ago 8 AM 286.4%	Largest Magnitude Weekday Increase over last quarter –
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Saturdays		Largest Magnitude Saturday Decrease over one year ago 4 AM -42.5%	Largest Magnitude Saturday Decrease over last quarter 6 PM -54%
		Largest Magnitude Saturday Increase over one year ago 5 PM 93.1%	Largest Magnitude Saturday Increase over last quarter 1 AM 145.4%
Average Vehicle Hours of Delay by Hour of Day at 35 mph, Sundays/ Holidays		Largest Magnitude Sun./Holiday Decrease over one year ago 7 PM -14.9%	Largest Magnitude Sun./Holiday Decrease over last quarter 5 PM -63.4%
		Largest Magnitude Sun./Holiday Increase over one year ago 5 PM 43.9%	Largest Magnitude Sun./Holiday Increase over last quarter –

Measure	Graph	Percentage Change	
Total Vehicle Hours of Delay (VHD) by County at 35 mph		Largest Magnitude Decrease over one year ago Sonoma -23.9%	Largest Magnitude Decrease over last quarter Alameda -30.8%
		Largest Magnitude Increase over one year ago Alameda 42.3%	Largest Magnitude Increase over last quarter Napa 10.8%
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 -26.1%
		Largest Magnitude Increase over one year ago AM Peak 235.6%	Largest Magnitude Increase over last quarter –
Average Number of Good and Bad Detectors		Change in Good over one year ago -6%	Change in Good over last quarter 0%
		Change in Bad over one year ago 14%	Change in Bad over last quarter 2%

Congestion by Route											
		Vehicle Hours of Delay at 35 mph			Difference 2022 Q1-2021 Q1		Difference 2022 Q1-2021 Q4		Rank		
Route	County	2021 Q1	2021 Q4	2022 Q1	Absolute	Percentage	Absolute	Percentage	2021 Q1	2021 Q4	2022 Q1
I880	Alameda	248,643	729,488	447,646	199,004	80.0%	-281,842	-38.6%	3	1	1
I80	Alameda	257,098	480,428	340,048	82,951	32.3%	-140,380	-29.2%	2	2	2
I580	Alameda	365,797	480,419	337,456	-28,341	-7.7%	-142,963	-29.8%	1	3	3
US101	Santa Clara	225,944	416,170	269,162	43,218	19.1%	-147,009	-35.3%	4	4	4
US101	San Francisco	146,038	169,781	203,930	57,892	39.6%	34,149	20.1%	6	8	5
I80	Contra Costa	110,411	264,680	184,101	73,690	66.7%	-80,579	-30.4%	7	5	6
SR4	Contra Costa	86,480	161,740	151,599	65,120	75.3%	-10,141	-6.3%	8	9	7
SR37	Solano	298	116,516	115,840	115,542	38772.6%	-676	-0.6%	40	12	8
I680	Contra Costa	75,707	188,850	100,213	24,505	32.4%	-88,637	-46.9%	10	6	9
SR92	Alameda	61,739	90,852	94,461	32,722	53.0%	3,609	4.0%	11	16	10
SR85	Santa Clara	22,004	104,662	92,892	70,888	322.2%	-11,770	-11.2%	21	14	11
US101	San Mateo	47,689	136,058	92,339	44,650	93.6%	-43,719	-32.1%	15	10	12
I80	Solano	163,934	180,023	87,060	-76,874	-46.9%	-92,963	-51.6%	5	7	13
I280	Santa Clara	29,785	119,549	82,637	52,851	177.4%	-36,912	-30.9%	18	11	14
SR12	Solano	75,944	64,353	73,764	-2,180	-2.9%	9,411	14.6%	9	23	15
I80	San Francisco	52,654	80,681	67,855	15,202	28.9%	-12,826	-15.9%	14	20	16
SR242	Contra Costa	47,523	84,458	67,422	19,899	41.9%	-17,036	-20.2%	16	19	17
SR24	Contra Costa	57,488	113,565	65,425	7,938	13.8%	-48,140	-42.4%	13	13	18
SR84	Alameda	0	61,943	58,798	58,798		-3,144	-5.1%		24	19
I580	Contra Costa	17,680	100,780	54,350	36,670	207.4%	-46,430	-46.1%	24	15	20
US101	Marin	13,608	90,032	52,522	38,914	286.0%	-37,510	-41.7%	25	18	21
I680	Alameda	13,469	72,898	49,717	36,248	269.1%	-23,182	-31.8%	26	22	22
SR238	Alameda	19,179	73,599	47,690	28,512	148.7%	-25,909	-35.2%	23	21	23
I680	Santa Clara	22,481	52,435	44,221	21,740	96.7%	-8,213	-15.7%	20	27	24
US101	Sonoma	58,586	90,124	41,174	-17,412	-29.7%	-48,950	-54.3%	12	17	25
I880	Santa Clara	9,169	56,910	39,251	30,082	328.1%	-17,660	-31.0%	32	25	26
SR237	Santa Clara	10,902	42,560	32,023	21,120	193.7%	-10,537	-24.8%	29	29	27
I280	San Mateo	12,348	38,317	30,798	18,450	149.4%	-7,519	-19.6%	28	32	28
SR1	San Francisco	20,375	56,564	29,030	8,655	42.5%	-27,534	-48.7%	22	26	29
SR87	Santa Clara	9,268	38,293	28,845	19,577	211.2%	-9,447	-24.7%	31	33	30
SR24	Alameda	33,120	47,119	28,337	-4,783	-14.4%	-18,783	-39.9%	17	28	31
SR17	Santa Clara	23,720	32,252	21,624	-2,096	-8.8%	-10,628	-33.0%	19	34	32
I580	Marin	6,261	38,639	20,401	14,140	225.8%	-18,238	-47.2%	33	31	33
SR12	Napa	9,523	16,789	18,633	9,110	95.7%	1,844	11.0%	30	36	34
SR92	San Mateo	12,662	39,269	15,221	2,559	20.2%	-24,048	-61.2%	27	30	35
I280	San Francisco	3,978	16,605	12,202	8,224	206.7%	-4,403	-26.5%	34	37	36
SR152	Santa Clara	2,865	22,216	6,976	4,111	143.5%	-15,241	-68.6%	36	35	37
SR37	Sonoma	2,995	8,014	5,711	2,716	90.7%	-2,303	-28.7%	35	39	38
I680	Solano	1,780	8,261	3,957	2,177	122.3%	-4,304	-52.1%	38	38	39
SR25	Santa Clara	2,774	4,295	3,839	1,065	38.4%	-456	-10.6%	37	40	40
I980	Alameda	141	81	3,030	2,889	2056.3%	2,949	3658.8%	41	45	41
I80	Napa	65	142	124	59	90.1%	-17	-12.2%	42	42	42
SR37	Marin	0	235	116	116	115800.0%	-119	-50.6%	46	41	43
SR13	Alameda	17	18	18	1	8.3%	0	0.0%	43	46	44
I880S	Alameda	11	12	12	1	8.3%	0	0.0%	44	47	45
SR156	Santa Clara	1	108	5	4	372.7%	-103	-95.2%	45	44	46
I780	Solano	383	113	4	-379	-99.0%	-109	-96.4%	39	43	47
SR160	Contra Costa	0	0	0	0		0				
SR29	Napa	0	0	0	0		0				
TOTALS		**2,382,537**	**4,990,894**	**3,522,478**	**1,139,941**	**47.8%**	**-1,468,416**	**-29.4%**			