

# Appendix A.3 Statewide Trends and Forecasts

## Highway Congestion Analysis

Table A.16, below, presents 5 years of mainline Annual Average Daily Traffic (AADT) volumes obtained from the Caltrans Freeway Performance Measurement System (PeMS) database for specific locations along I-5, I-10, and I-80. These freeways parallel existing BNSF and UPRR lines. The changes in AADT over the years demonstrate the traffic growth patterns. Many areas have been seen traffic increase over the last 5 years; the increases are not limited to metropolitan areas like Los Angeles and San Francisco Counties. Traffic volumes are also seen to be increasing in inland counties like Merced and Stanislaus Counties (along I-5), and Solano and Placer Counties (along I-80).

**Table A.16: AADT per Location on I-5, I-10 and I-80 from 2011 to 2015**

I-10 EB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
LA	Santa Monica	0.93	20th St	3	65114	68654	66078	64693	66063
San Bernardino	Ontario	52.06	4th St	4	96569	103836	101423	102218	101784
Riverside	Banning	99.27	San Geronio OC	4		58389	60779	61996	
	Coachella	152.7	Brown Arroyo	2		14120	13466		
I-10 WB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
LA	Santa Monica	0.48	14th St	3	66592	72211	71467	70945	72107
San Bernardino	Ontario	52.06	4th St	4	99574	100117	100611	101709	101541
Riverside	Coachella	152.7	Brown Arroyo	2		14545	14077	14175	

I-80 EB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
San Francisco	San Francisco	3.3	Bay Bridge S - Curve	5	96721	89851	93316	119657	129000
Alameda	Oakland	6.74	1400' E of Bay Bridge	6		94645	100845	120253	133699
Solano	Un-incorporated	51.44	E of Pleasant Valley OC	4	73032	66166	72154	81310	96992
Sacramento	Un-incorporated	98.1	WB Green Back Lane	4	76610	78094	78688	80909	83143
Placer	Un-incorporated	145.92	Alta Rd	2	12738	12884	13198	13682	14778

I-80 WB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
San Francisco	San Francisco	3.3	Bay Bridge	5	106917	116261	117334	127608	
Alameda	Oakland	6.74	1400' E of Bay Bridge	5		127469	146370	145419	146282
Solano	Un-incorporated	51.44	E of Pleasant Valley OC	4	82472	84761	67710	83239	96167
Sacramento	Un-incorporated	98	WB Elkhorn Blvd	4	69582	70238	70429	72109	72956
Placer	Un-incorporated	145.92	Alta Rd	2	12890	13123	13185	13473	14719

I-5 NB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
San Diego	San Diego	13.02	National Ave.	4	66695	72609	70703	72939	75413
	Oceanside	52.30	Oceanside Blvd	4	87945	93027	89034	90142	91600
Orange	Santa Ana	103.50	1 <sup>st</sup> St	5	137509	139825	138231	136079	136264
LA	LA	150.35	Sunland Blvd	4	81430	83703			79546
	Un-incorporated	194.62	Smokey Bear Rd	4			41611	37729	40216
Kern	Un-incorporated	258.95	N of SR 58 (Rest Area)	2			19791	18975	19761
Merced	Un-incorporated	390.10	S of Off Ramp to Vista Point Rd	2	18134	19455	21029		
Stanislaus	Un-incorporated	433.70	Sperry Ave	2	20504	22119	21901	22945	23666
San Joaquin	Stockton	478.96	Mosher Slough	3	40193	24973	41041	34450	
Sacramento	Sacramento	524.19	Del Paso Rd	3			48495	51739	54757

I-5 NB Mainline AADT									
County	City	Abs PM	Location	# of Lane	2011	2012	2013	2014	2015
San Diego	San Diego	13.02	S of 29th	4	65594	70198	68096	69591	72275
	Oceanside	52.27	Oceanside Blvd	4	86069	90579	86429	87497	88963
Orange	Santa Ana	103.09	4th St	5	141327	143675	141838	143360	143236
LA	LA	152.41	Penrose St	4	59263	57738			89045
Kern	Un-incorporated	258.88	N of SR 58 (Rest Area)	2			20753	20201	21001
Merced	Un-incorporated	391.1	S of On Ramp from Rte 165/Mercy	2	16445	17578	18048	16502	
Stanislaus	Un-incorporated	433.64	Sperry Ave	2	19329	20839	20569	21457	22628
San Joaquin	Stockton	478.57	N of Hammer Lane	3		42647	39806	39772	
Sacramento	Sacramento	524.29	EB Del Paso Rd	4	60808	61646	58015	58696	60727

Source: PeMs Website (pems.dot.ca.gov)

Note: Abs PM = Absolute Post Mile

This trend of increasing traffic volume is also seen in the amount of time segments of these freeways experience Level of Service (LOS) D or worse throughout the course of a typical day. Table A.17 shows the percentage during the AM (6 to 9 am) and PM peak (4 to 7 pm) hours that a freeway (within a specific county) is experiencing LOS D or worse. It can be seen that portions of the freeways at LOS D or worse are increasing over the 5-year period. This trend is observed in both metropolitan counties like Alameda (along I-80) and Los Angeles (along I-10), and in counties in the Central Valley like Merced and San Joaquin (along I-5).

**Table A.17: Percentage of Flow Worse Than or Equal to LOS D on I-5, I-10, and I-80 from 2011 to 2015**

I-80 EB Alameda County Segment Mainline Weekday – % Worse Than or Equal to LOS D					
Time	2011	2012	2013	2014	2015
6:00	0	0	0	0.31	0
7:00	0	0	0.55	1.89	4.32
8:00	0	1.09	5.11	3.4	8.36
16:00	43.79	58.61	76.21	66.54	78.52
17:00	44.18	65.3	79.53	69.02	78.09
18:00	38.21	61.91	77.99	66.55	79.66
I-80 WB Alameda County Segment Mainline Weekday – % Worse Than or Equal To LOS D					
Time	2011	2012	2013	2014	2015
6:00	23.29	25.19	24.57	23.33	38.93
7:00	42.62	40.88	42.62	42.66	52.53
8:00	40.7	35.31	32.71	34.21	36.14
16:00	6.12	13.86	22.15	19.58	27.08
17:00	10.03	15.44	27.85	22.49	30.93
18:00	7.47	11.19	10.65	9.82	12.1



<b>I-80 WB Sacramento County Segment Mainline Weekday – % Worse Than or Equal To LOS D</b>					
<b>Time</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
6:00	17.88	19.09	29.3	25.41	39.12
7:00	68.21	54.88	60.59	58.47	71.64
8:00	64.81	41.64	56.38	43.76	45.8
16:00	9.2	1.06	24.15	28.35	42.33
17:00	7.23	2.14	24.11	27.01	40.52
18:00	1.03	0.66	7.19	6.62	7.38
Note: no data available for EB					
<b>I-10 EB LA County Segment Mainline Weekday – % Worse Than or Equal To LOS D</b>					
<b>Time</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
6:00	0.58	23.29	5.87	1.97	1.49
7:00	39.49	55.2	38.78	39.62	42.36
8:00	49.37	64.19	50.73	50.41	54.02
16:00	83.45	82.32	84.1	83.93	86.27
17:00	84.46	85.94	87.15	86.34	89.18
18:00	83.29	83.22	81.32	83.98	87.58
Note: No data available for other counties					
<b>I-10 WB LA County Segment Mainline Weekday – % Worse Than or Equal To LOS D</b>					
<b>Time</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
6:00	71.11	66.24	76.06	82.05	82.85
7:00	74.25	84.53	86.41	88.92	87.18
8:00	67.74	79.73	80.34	83.68	85.83
16:00	31.55	48.44	39.06	34.1	40.86
17:00	44.42	57.44	55.12	51.1	57.71
18:00	40.38	42.51	42.64	41.3	45.38
Note: No data available for other counties					

I-5 NB Merced County Segment Mainline Weekday – % Worse Than or Equal To LOS D					
Time	2011	2012	2013	2014	2015
6:00	19.77	18.45	21.26	19.99	22.75
7:00	45.24	44.89	46.04	46.66	45.93
8:00	43.2	42.22	44.66	44.51	41.71
16:00	41.08	43.37	41.99	39.78	45.26
17:00	43.49	46.08	44.03	42.12	47.18
18:00	28.93	33.03	30.27	29.37	34.62
I-5 SB Merced County Segment Mainline Weekday – % Worse Than or Equal To LOS D					
Time	2011	2012	2013	2014	2015
6:00	23.08	27.4	34.29	31.19	33.36
7:00	45.09	43.39	49.22	43.06	46.53
8:00	40.97	39.62	43.62	37.75	41.92
16:00	48.15	43.14	48.35	43.11	45.96
17:00	50.61	46.88	51.35	44.68	47.88
18:00	32.88	28.2	34.32	28.05	29.71
I-5 NB San Joaquin County Segment Mainline Weekday – % Worse Than or Equal To LOS D					
Time	2011	2012	2013	2014	2015
6:00	0	0	0	0	0
7:00	0	0	0	0.41	3.65
8:00	0	0.52	0	0	0
16:00	6.21	5.43	10.37	7.61	13.21
17:00	6.91	9.78	11.04	3.79	11.08
18:00	0	1.19	0	0	0.31
Note: No data available for SB Source: PeMs Website (pems.dot.ca.gov)					

## Freight Demand and Growth

### Methodology

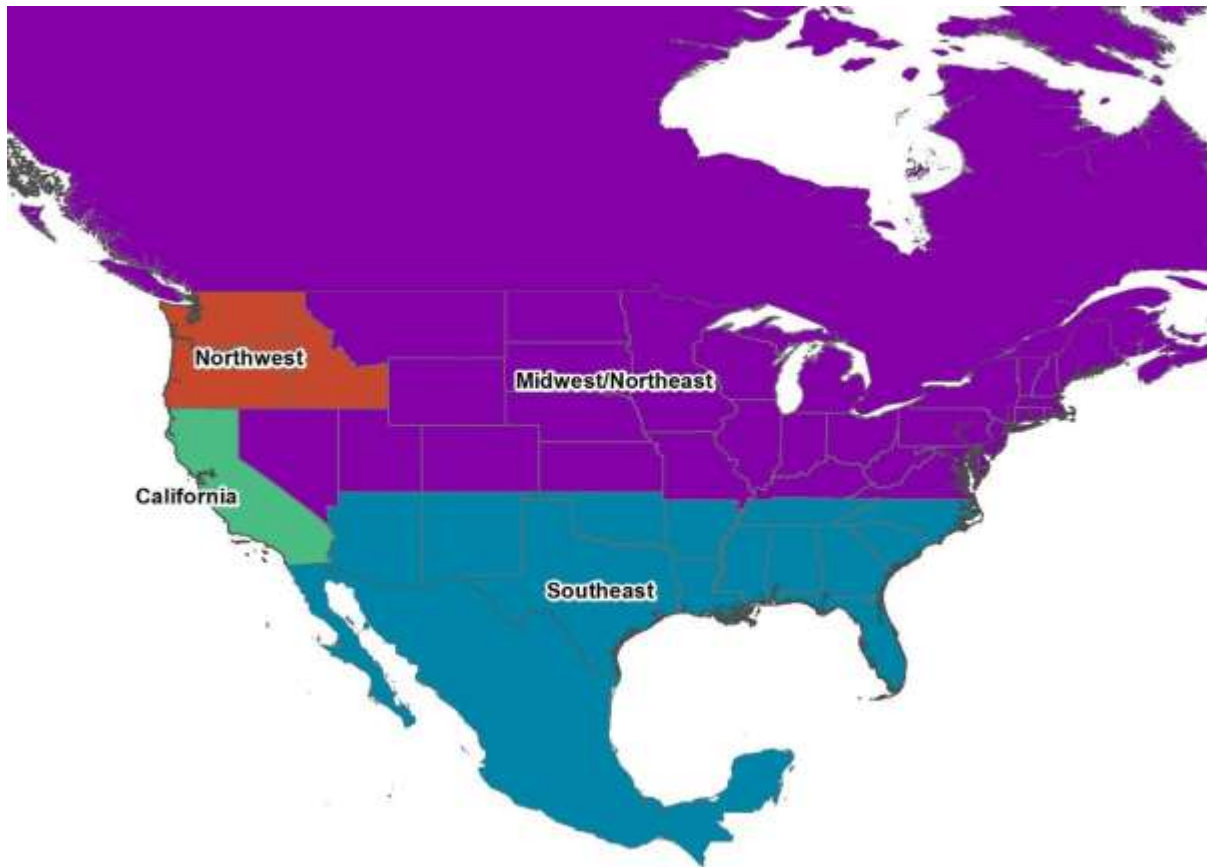
In estimating train volumes, the 2018 Rail Plan builds on the analysis conducted for the 2013 Rail Plan. For this Plan, the basic methodology for deriving base year (2013) and future year (2040)

train volumes entailed adjusting train volumes from the 2013 Rail Plan to reflect expected changes in commodity flows using more recent data. The 2013 Plan conducted a network assignment of 2007 and 2040 rail tonnage flows to estimate daily average freight train volumes. The 2013 Rail Plan also validated the 2007 train volume estimates against freight train counts using available Class I (BNSF and UPRR) train count data for selected rail segments. Train volumes in Southern California were also compared to train volumes as estimated using the San Pedro Bay Ports' QuickTrip – Train Builder model. In using the 2013 Rail Plan train volume analysis as a foundation, the 2018 analysis yielded consistent results in an efficient manner.

For the 2018 Rail Plan, train volume estimation proceeded as follows:

- First, rail commodity flows were aggregated by service type (i.e., intermodal or carload) into a geographical set of rail segments. Using the origins and destinations of the current plan's rail commodity flows, traffic was assigned to rail segments using the 2013 Rail Plan's network assignment.
- Next, the ratios of the 2018 plan's base year tonnages (2013) to the previous plan's base year tonnages (2007) were calculated. Those ratios were then applied to the 2007 train volumes to estimate the 2013 train volumes.
- The estimation of future year train volumes for the current plan proceeded similarly. The ratios of the current plans forecast year tonnages (2040) to the previous plan's base year tonnages (2007) were calculated. Those ratios were then applied to the 2007 train volumes to estimate the 2018 Rail Plan's forecast year train volumes.
- The resulting train count data were incorporated into the capacity analysis that was conducted as part of the Service Development Plan, the results of which are provided in Section A.2.2.7.

## Freight Flow



**Exhibit A.5: Freight Flow Direction Categorization**