



FINAL REPORT 2014 Transportation System Monitoring Report

September 24, 2015



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Table of Contents

Executive Summary	1
CMP Network	1
Data Collection and Congestion Analysis	1
Monitoring Results	2
1.0 Background	3
1.1 Purpose of the CMP and Biennial Monitoring	3
1.2 CMP Designated Network.....	3
1.3 Roadway System Level of Service.....	7
2.0 Methodology.....	8
2.1 Screening for Data Collection Periods	8
2.2 Data Collection	9
2.3 Data Analysis	9
3.0 Level of Service Results.....	12
3.1 Arterial Level of Service	12
3.2 Freeway Level of Service.....	18
3.3 Travel Time Reliability	28
4.0 Current Transit Operations in Marin County	30
4.1 Marin Transit	30
4.2 Golden Gate Transit	33
4.3 Ferry Services	35
4.4 Summary of Fixed Route Services and Boardings	35
4.5 Specialized Transit Services	37
5.0 Bicycle and Pedestrian Activity.....	38
5.1 Bicycle and Pedestrian Volumes.....	39
5.2 Historical Trends.....	46
6.0 Additional Roadway Characteristics.....	49
6.1 Passenger Vehicle Rider Distribution	49
6.2 Transit Rider Distribution.....	50
7.0 Next Steps	52
7.1 2014 CMP Conformance	52
7.2 Travel Time Reliability	52
7.3 CMP Update	52

List of Tables

Table 1: 2014 CMP Network Monitoring Results.....	2
Table 2: Arterial and Freeway Segments in CMP Network	4
Table 3: Frequency of CMP Monitoring	7
Table 4: Arterial Level of Service Thresholds	10
Table 5: Freeway Level of Service Thresholds.....	11
Table 6: Arterial LOS Summary – AM Peak Period.....	13
Table 7: Arterial LOS Summary – PM Peak Period.....	14
Table 8: Arterial Historical LOS Summary – PM Peak Period	16
Table 9: Freeway Mixed-Flow Lanes LOS Summary – AM Peak Period	19
Table 10: Freeway Mixed-Flow Lanes LOS Summary – PM Peak Period	20
Table 11: Freeway Historical LOS Summary – PM Peak Period.....	23
Table 12: Freeway HOV Lanes LOS Summary - AM Peak Period (SB Peak Direction)	24
Table 13: Freeway HOV Lanes LOS Summary - PM Peak Period (NB Peak Direction).....	24
Table 14: Marin Transit Routes - Peak Headways for Fixed-Route Service	31
Table 15: Regional Golden Gate Bus Transit Routes and Peak Headways.....	34
Table 16: Transit Ridership Trends in Marin County	36
Table 17: Marin Access Performance Statistics, FY 2011 to FY 2014.....	37
Table 18: Bicycle and Pedestrian Count Locations	38
Table 19: 2-Hour Bicycle and Pedestrian Count Volumes for Weekdays and Weekends.....	40
Table 20: Maximum Observed Peak Period Bicycle and Pedestrian Count Volumes for Weekdays.....	41
Table 21: Peak Period Bicycle and Pedestrian Volumes and Attributes: Child and Adult.....	45
Table 22: Weekday and Weekend Peak Hour Historical Bicycle Counts, 2007-2014.....	47
Table 23: Weekday and Weekend Peak Hour Pedestrian Historical Counts, 2007-2014	48

List of Figures

Figure 1: Marin County CMP Network	5
Figure 2: HOV Lanes in CMP Network.....	6
Figure 3: AM Peak Hour Level of Service.....	21
Figure 4: PM Peak Hour Level of Service	22
Figure 5: HOV Lanes – AM Peak Hour LOS	25
Figure 6: HOV Lanes – PM Peak Hour LOS	26
Figure 7: Congested Segments Peak Hour LOS	27

EXECUTIVE SUMMARY

The County of Marin maintains a Congestion Management Plan (CMP) through the Transportation Authority of Marin (TAM), the designated Congestion Management Agency (CMA), as required by the California Government Code 65089. TAM is also required to monitor the implementation of all elements of the CMP and prepare a monitoring report every other year. This report fulfils the biennial monitoring task as required by the State. *The CMP update allows TAM and its member agencies to continue to access federal and state funds.* This 2014 Transportation System Monitoring Report provides an insight into the performance of various arterial and freeway segments, throughout the County, and assists with key decisions on future investment of scarce transportation dollars.

Included in this report is extensive bicycle and pedestrian monitoring data. Though not required for the CMP process, TAM chooses to include this data to understand the multi-modal aspects on the CMP network due to the unique nature of Marin County.

CMP Network

The County established the CMP Network in 1991 that included all state highways and principal arterials in the County. In total, the 123-mile CMP network contains 91 miles of state highways and 32 miles of principal arterials. *The CMP adopted Level of Service (LOS) standard for Arterials is LOS D, and for Freeways, it is LOS E. In order for the arterial segments to meet this standard, they should be performing at a speed of 10 mph or more, and for freeway segments, it is 30 mph or more.* Additional details on the network and their recent performance are discussed in Chapter 3 of this 2014 Transportation Monitoring Report.

Data Collection and Congestion Analysis

The biennial monitoring task requires extensive data collection for all established arterials and freeway segments included in the network. With changing needs and technological advancements, the data collection methodology has evolved over the last two decades since the first CMP was adopted.

In order to collect accurate and useful data that is consistent with prior monitoring efforts, certain data collection methods were followed. The data was collected only on normal commute travel days (i.e. Tuesdays, Wednesday, and Thursdays), and non-school days and days with any special events or incidents were eliminated. Available commercial speed data and floating car surveys were utilized for the analysis. The data was analyzed separately for commercial speed data and floating car surveys to obtain average speeds for each segment and convert to LOS using Highway Capacity Manual (HCM) methodologies. Further discussion on data collection efforts is included in Chapter 2.

CMP Network



Monitoring Results

The 1991 CMP established level of service (LOS) standards for major arterials and freeway segments using travel time and average speed. For arterials, the established standard is LOS D, while for the freeways it is LOS E. Many sections with a LOS designation worse than the adopted standards in 1991 are grandfathered into the first adopted CMP. *CMP legislation exempts congested CMP roadway segments that did not meet the minimum LOS standards when the CMP network was formed (in 1991 and 1992) from deficiency identification and preparing a deficiency plan. These segments are referred as Grandfathered Segments.*

A total of 17 arterial segments and 10 freeway segments were monitored in this report during the AM and PM peak periods. Details of these monitoring results are provided in the **Table 1**.

Table 1: 2014 CMP Network Monitoring Results

Roadway Type	# of CMP Segments	AM Peak Hour		PM Peak Hour		LOS Standard
		LOS Standard Met	LOS Standard Not Met*	LOS Standard Met	LOS Standard Not Met*	
Arterials	17	16	1	15	3	D
Freeways	10	10	0	7	3	E
TOTAL	27	26	1	22	6	

Notes: * Includes Grandfathered segments.

In the 2014 Monitoring Cycle, seven of the 27 segments did not meet the established LOS standards. Four of the seven segments are arterials, and since all of these segments have been grandfathered, no follow up actions are required. The remaining three are freeway segments, all of which have been grandfathered, not requiring any follow up actions or corrective measures. Additional details for all arterial and freeway segments are provided in Chapter 3.

1.0 BACKGROUND

1.1 Purpose of the CMP and Biennial Monitoring

The legislative changes of 1990 required all urbanized counties within the State to establish a CMA, and develop and maintain a CMP. As required by the State regulations, TAM, the County-designated CMA, established the CMP roadway network in 1991 that included all state highways and principal arterial roadways within the County. California Government Code Section 65089(b)(1)(A) states that once a highway or roadway has been designated as part of the CMP system, it cannot be removed. Furthermore, Section 60589(b)(4) requires that the regional transportation system is part of the required land use program defined by State statute.

Biennial monitoring provides an opportunity to monitor established LOS standards for the arterial and freeway segments, and identify appropriate strategies to employ when a segment fails to meet the established LOS standards. While the CMP is very critical to Marin County's transportation vision, it also supports the broader transportation goals of the Regional Transportation Plan (RTP) developed by the Metropolitan Transportation Commission (MTC), the San Francisco Bay Area's regional transportation planning agency. The Marin CMP roadway system is consistent with the RTP, as well as the CMPs of adjoining Contra Costa, San Francisco, and Sonoma counties.

1.2 CMP Designated Network

The following State Highways and arterials are included in the Marin County CMP roadway network:

1. State Route (SR) 1 – from Sonoma County Line to US 101
2. SR 37 – from US 101 to Sonoma County line
3. US 101 – from Sonoma County Line to San Francisco County Line
4. SR 131 – from US 101 to Main St in Tiburon
5. Interstate I-580 – from US 101 to Contra Costa County Line
6. Novato Blvd/S Novato Blvd in Novato – from Sutro Ave/San Marin Dr to US 101
7. Bel Marin Keys Blvd – from US 101 southbound ramps to Commercial Blvd
8. Sir Francis Drake Blvd in unincorporated Marin County, Fairfax, San Anselmo, Ross, Kentfield, Larkspur – from SR 1 to I-580
9. Red Hill Ave/2nd St/3rd St in San Anselmo and San Rafael – from Sir Francis Drake Blvd to US 101
10. Bridgeway/Second St/Alexander Avenue in Sausalito – from US 101 to US 101

Table 2 provides details of the Marin CMP Roadway Network segments. In total, the 123-mile CMP designated roadway network contains 91 miles of state highways and 32 miles of principal arterial roadways. The CMP Network is illustrated in **Figure 1**.

The HOV lanes in the Marin CMP network are illustrated in **Figure 2**.

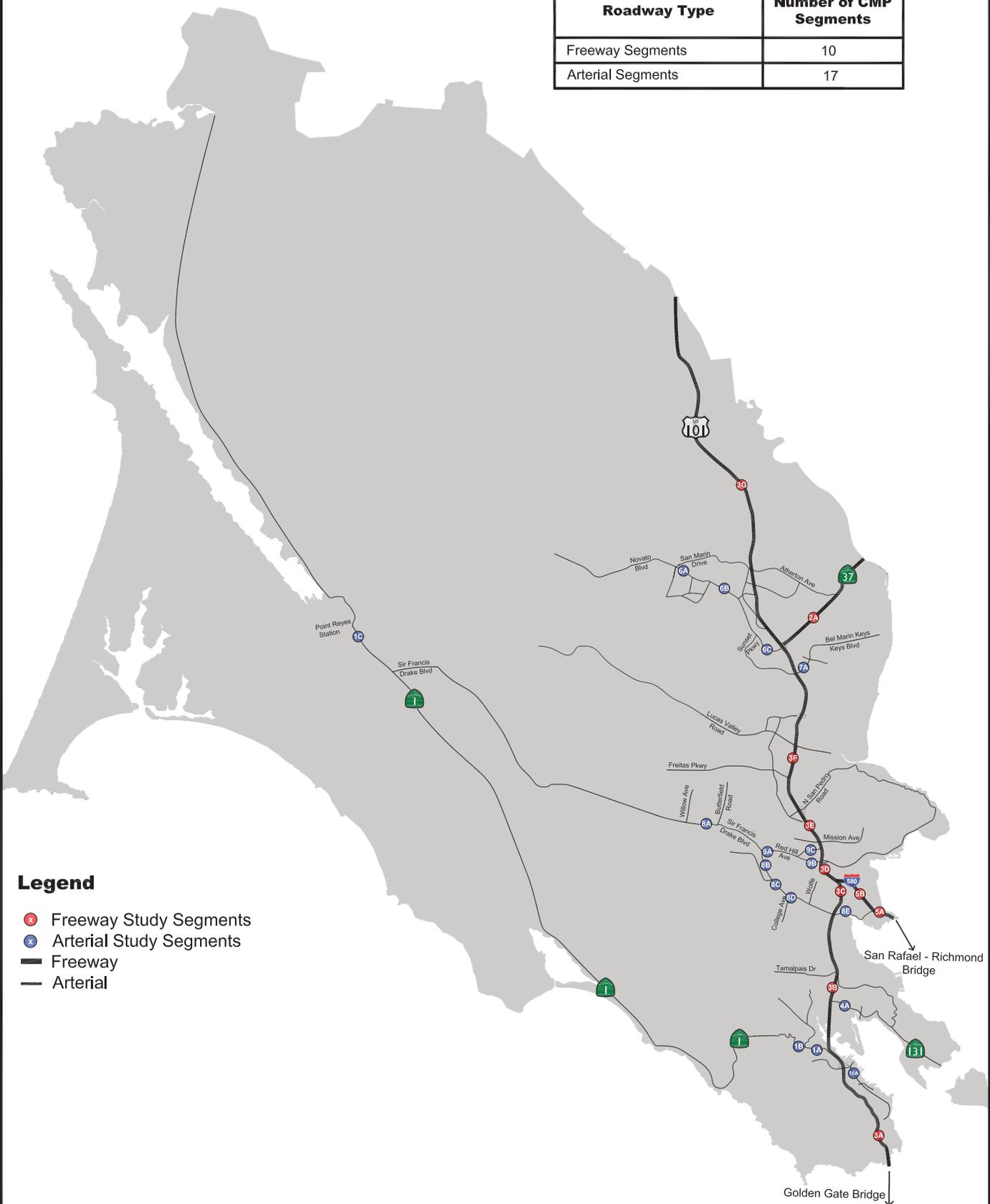
Table 2: Arterial and Freeway Segments in CMP Network

New #	Old #	Street	From	To	Roadway Type	Grand-fathered Status
1A	25	SR 1	US 101	Tennessee Valley Rd	Arterial	No
1B	19	SR 1	Northern Ave	Almonte Blvd	Arterial	Yes
1C	1	SR 1	Sir Francis Drake Blvd	Pt. Reyes Station	Arterial	No
2A	5	SR 37	US 101	Atherton Ave	Freeway	No
3A	21	US 101	Golden Gate Bridge	Spencer Ave	Freeway	No
3B	17	US 101 (SOV and HOV)	SR 131 (Tiburon Blvd)	Tamalpais Dr	Freeway	Yes
3C	13	US 101 (SOV and HOV)	Sir Francis Drake Blvd	I-580	Freeway	Yes
3D	11	US 101 (SOV and HOV)	I-580	Mission Ave	Freeway	Yes
3E	8	US 101 (SOV and HOV)	Mission Ave	N. San Pedro Rd	Freeway	Yes
3F	7	US 101 (SOV and HOV)	Freitas Pkwy	Lucas Valley Rd	Freeway	Yes
3G	2	US 101	North of Atherton	Sonoma Co. Line	Freeway	Yes
4A	18	SR 131 (Tiburon Blvd)	Redwood Hwy Frontage Rd	E. Strawberry Dr	Arterial	No
5A	15	I-580	Sir Francis Drake Blvd	Marin Co. Line	Freeway	No
5B	14	I-580	Bellam Blvd	Sir Francis Drake Blvd	Freeway	Yes
6A	3	Novato Blvd	San Marin Dr	Eucalyptus Ave	Arterial	No
6B	24	Novato Blvd	Wilson Ave	Diablo Ave	Arterial	No
6C	4	S. Novato Blvd	Sunset Pkwy	US 101	Arterial	No
7A	6	Bel Marin Keys	US 101	Commercial Blvd	Arterial	Yes
8A	22	Sir Francis Drake Blvd	Butterfield Rd	Willow Rd	Arterial	Yes
8B	9	Sir Francis Drake Blvd	San Anselmo Ave	Red Hill Ave	Arterial	Yes
8C	23	Sir Francis Drake Blvd	College Ave	Toussin Ave	Arterial	Yes
8D	12	Sir Francis Drake Blvd	College Ave	Wolfe Grade	Arterial	Yes
8E	16	Sir Francis Drake Blvd	US 101	Larkspur Landing Circle	Arterial	Yes
9A	10	Red Hill Ave	Sir Francis Drake Blvd	Second St	Arterial	No
9B	26	Second St	US 101	Marquard St	Arterial	No
9C	27	Third St	US 101	Marquard St	Arterial	No
10A	20	Bridgeway	Gate 5 Rd	Gate 6 Rd	Arterial	No

Notes: SOV = Single Occupancy Vehicle; HOV = High Occupancy Vehicle



Roadway Type	Number of CMP Segments
Freeway Segments	10
Arterial Segments	17



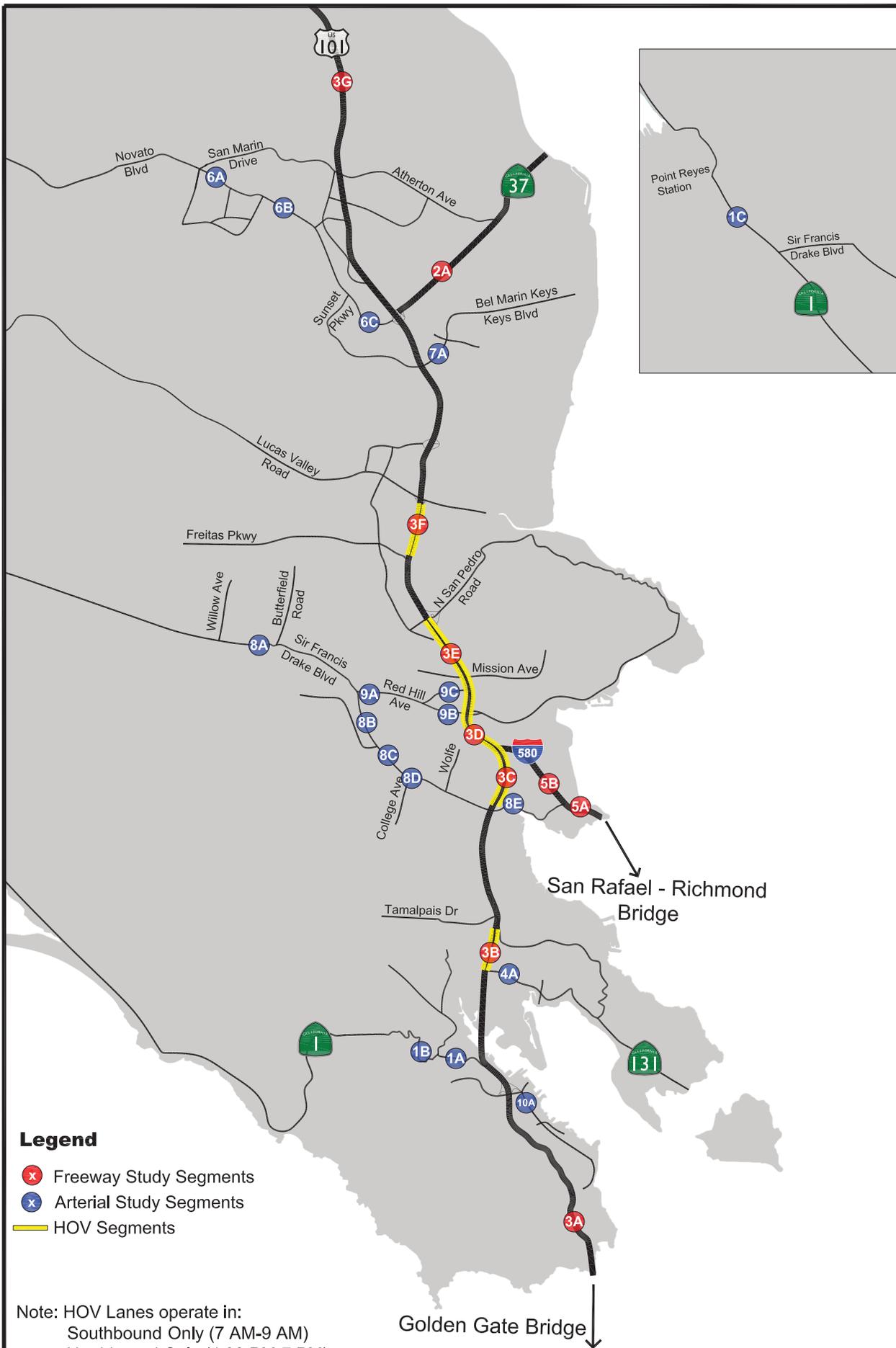
Legend

- ⊗ Freeway Study Segments
- ⊗ Arterial Study Segments
- Freeway
- Arterial



Figure 1
Marin County CMP Network





Legend

- Freeway Study Segments
- Arterial Study Segments
- HOV Segments

Note: HOV Lanes operate in:
Southbound Only (7 AM-9 AM)
Northbound Only (4:30 PM-7 PM)



Figure 2
HOV Lanes in CMP Network



1.3 Roadway System Level of Service

The 1991 CMP established the LOS standards for the arterials and freeway segments using travel times and averages speeds. *For the arterial segments, LOS D is the established standard while for the freeway segments, LOS E is the accepted standard. Certain segments were operating at lower levels of service when these standards were established. These segments have been “grandfathered” in, allowing them to operate at levels lower than the established standards without requiring corrective measures.*

The following **Table 3** shows frequency of monitoring based upon the results of the most recent data collection and analysis efforts:

Table 3: Frequency of CMP Monitoring

Roadway Type	LOS in Most Recent Monitoring Report	Frequency of Monitoring
Arterial Segments	LOS C or better (> 13 MPH)	4 years
	LOS D or worse (< 13 MPH)	2 years
Freeway Segments	LOS C or better (> 54 MPH)	4 years
	LOS D or worse (< 54 MPH)	2 years
Grandfathered Segments	N/A	2 years

Source: 2012 Transportation Monitoring Report

The 2014 monitoring included all arterial and freeway segments within the network, irrespective of their 2012 LOS designation. These efforts are in conformance with the established monitoring requirements.

2.0 METHODOLOGY

This section discusses the methodology utilized for measuring LOS on major arterials and freeways. The process begins with screening days within the monitoring period to ensure that only those expected to result in normal commuter traffic conditions are retained. Days that could produce lighter or heavier than usual traffic conditions, such as public holidays or special event days, were identified for later removal.

Using either commercial speed data or floating car surveys, the required data was collected for 27 segments within Marin County, including 17 arterial segments and 10 freeway segments, 5 with HOV lanes. The data was analyzed separately for commercial speed data and floating car surveys to obtain average speeds and then converted to LOS using HCM methodologies.

2.1 Screening for Data Collection Periods

To assure proper data collection on normal traffic days, each day and time were carefully reviewed, and any questionable days/times were eliminated from the data collection schedule. Travel time data was collected using a combination of commercial speed data and in-field floating car surveys, and therefore monitoring days for both sources were reviewed and identified separately.

For the preliminary analysis, all potential factors that may affect the monitoring process were carefully examined. This included identifying school holidays across the county and any events that occurred during the monitoring period. These additional factors have potential to affect the data quality for the current monitoring and removing them ensures the LOS results are representative of normal traffic conditions experienced by a daily commuter.

2.1.1 Base Monitoring Times

Commercial speed data collection and floating car surveys for LOS monitoring were conducted in October and November 2014 when schools were in session. Weekday data was collected on Tuesdays, Wednesdays, and Thursdays for the nominated morning and evening peak periods. The morning peak period was from 7:00 AM to 9:00 AM and the evening peak period was from 4:30 PM to 6:30 PM.

2.1.2 Public Holidays, Special Events and Weather Conditions

During the data collection days and times, no public holidays, special events or weather conditions were observed that could have impacted the usefulness of the collected data. The data was collected on days and hours representative of normal traffic conditions.

2.1.3 Construction/Maintenance and Traffic Incidents

Significant construction impacts were not present during the monitoring period, resulting in no data being disqualified from the process.

Incidents have potential to impact normal daily traffic conditions so data for incidents was reviewed. Using Freeway Performance Monitoring System (PeMS) operated by Caltrans, incident data during the monitoring period was collected. Upon review, no data was excluded from the monitoring period due to incidents on the CMP segments.

2.2 Data Collection

Travel time, traffic volumes, bicycle, and pedestrian volumes were collected during the monitoring period on Tuesdays, Wednesdays, and Thursdays. This section describes the types of data and their collection methods.

2.2.1 Travel Time Data

This is the first time that both commercial speed data and floating car surveys to measure average speed and LOS have been utilized in the Monitoring Report.

Commercial Speed Data (INRIX)

In 2013, MTC contracted with INRIX to obtain region-wide commercial speed data, and has made the data available for planning and monitoring purposes. This LOS Monitoring Study used the commercial speed data from INRIX, Inc through MTC's contract. INRIX "aggregates traffic data from GPS-enabled vehicles and mobile devices, traditional road sensors and hundreds of other sources."

Traffic data is reported by INRIX using discrete roadway links termed as Traffic Message Channels (TMCs). Each TMC link is associated with a unique ID represented by a nine-digit code, where each individual number in the TMC code describes a portion of the geography including country, direction of travel, and roadway segment. INRIX data contains speeds aggregated at multiple time intervals for each TMC code in the network. For the current monitoring period, data at five-minute granularity was accessed for the selected monitoring times across all identified CMP segments in Marin County. Data from INRIX was then compared with floating car survey data to verify quality and help justify use.

Floating Car Surveys

Floating car surveys were conducted for all 27 roadway segments identified for study. The surveys were completed using GPS technology to determine the travel time between the start and end of each CMP segment. Two surveys, minimum, were completed on the arterials and non-US 101 freeway segments. Where INRIX data was deemed appropriate for use, the floating car data was not referenced.

2.2.2 Bicycle and Pedestrian Counts

Bicycle and pedestrian counts were collected at 23 locations, five of which are new compared to 2012. At most of the locations, the data was collected for 14 hours during the weekdays and two hours during the weekends. Additional details on this effort are included in Chapter 5.

2.2.3 Vehicle Screen Line Counts

Vehicle counts were collected for the 27 monitoring locations during the AM and PM peak periods on a typical weekday. Data collection took place in October, November, and December of 2014 when schools were in session. Weekend, midday peak period counts were conducted at five locations and vehicle occupancy was recorded at seven locations. Further discussion of this data is included in Chapter 6.

2.3 Data Analysis

The methodology for determining LOS from raw commercial speed and floating car survey data includes two steps. The first step requires converting the raw speed data into average peak period speeds on every CMP segment. The methodology differs between the two data sources for the conversion process. The second step consists of converting the average speeds to LOS using a specific method dependent on the type of roadway facility.

2.3.1 Average Speed – Commercial Speed Data (INRIX)

Once collected from the INRIX database, the commercial speed data points were associated with the appropriate CMP segment based on the date and time of the floating car surveys. Once reduced, the data was averaged on each segment to determine the average speed for all selected data points. *Three grades (10, 20, or 30) are associated with INRIX data, with a grade of 10 representing low quality, historical speed data, 30 representing high-quality probe data, and 20 representing a mixture of the two.* The collected datasets were graded and then compared with floating car survey data to verify quality and help justify use. Only grade 30 INRIX data was used in analysis over floating car survey data where manual collection results misrepresented normal traffic conditions

2.3.2 Average Speed – Floating Car Survey Data

Once floating car survey data was collected using GPS units, it was processed to present average speed and travel time on each segment. It was then tabulated into spreadsheets to calculate the average speed using the travel time and length for each CMP segment.

2.3.3 Level of Service Standards

Determination of average speed allowed for LOS assignment on each CMP segment based on the methodology documented in Highway Capacity Manual 2010 (HCM 2010), published by Transportation Research Board. This study uses LOS speed standards as shown in **Tables 4** and **Table 5**.

Arterials

LOS for arterial facilities is dependent on the average speed of traffic on the segment. **Table 4** shows LOS designation assigned to various ranges of vehicle speeds on arterials. Each CMP arterial segment was given a level of service grade, for example, the Novato Blvd northbound (NB) segment between San Marin Dr and Eucalyptus Ave operates with an average speed of 29 mph during the AM peak, which is LOS A based on the adopted standards.

Table 4: Arterial Level of Service Thresholds

Speed	Level of Service (LOS)
25 mph	A
20 mph	B
13 mph	C
10 mph	D
7 mph	E
< 7 mph	F

Source: Highway Capacity Manual

Freeways

The LOS assignments for freeway segments are different from arterials primarily due to higher capacity and higher speeds. **Table 5** shows LOS designations for freeway segments based on average vehicle travel speeds. Based on the average speed of the freeway in the morning and evening peaks and using the HCM standards as shown in the table below, LOS was estimated for each CMP segment during each time period. For example, the US 101 NB segment between Atherton and the Sonoma County Line has an average speed of 66 mph during the AM peak, which is LOS A based on the adopted standards.

Table 5: Freeway Level of Service Thresholds

Speed	Level of Service (LOS)
60 mph	A
57 mph	B
54 mph	C
46 mph	D
30 mph	E
< 30 mph	F

Source: Highway Capacity Manual

3.0 LEVEL OF SERVICE RESULTS

This chapter discusses the 2014 monitoring LOS results for arterial and freeway segments on the CMP roadway network based on the data collected for the project during 2014.

3.1 Arterial Level of Service

There are 17 major arterial segments identified in the Marin County CMP network. The LOS standard to meet the CMP requirements is LOS D for major arterials.

3.1.1 Existing Level of Service

In the AM peak period, all arterials met the CMP LOS standards, except one segment. The Segment #8E, Sir Francis Drake Blvd from Larkspur Landing Circle to US 101 in the eastbound direction resulted in LOS E. This segment is grandfathered, and therefore, no action is required. The LOS results for arterial segments in the AM peak period are shown in the **Table 6**.

In the PM peak period, all arterials, except three segments, met the CMP LOS standards. The three segments along Sir Francis Drake Blvd result in LOS E or F. The first is Segment #8A, Sir Francis Drake Blvd from Butterfield Rd to Willow Rd in the eastbound direction, the second is Segment #8C, Sir Francis Drake Blvd in the westbound direction from College Ave to Toussin Ave, and the third is Segment #8E, Sir Francis Drake Blvd from US 101 to Larkspur Landing Circle. These segments are grandfathered, and therefore, no actions are required. The LOS results for arterial segments in the PM peak period are shown in the **Table 7**. The comparison of LOS results, in the peak direction during the AM and PM peak hours, from 2012 and 2014 monitoring cycles are shown after the tables.

3.1.2 Historical Level of Service

The **Table 8** and chart in the following pages show the historical LOS results from 2008 – 2014 for arterials in the Marin CMP network in the peak direction of travel during the PM peak period. Historical data is not presented for the AM peak period for this time period, but is instead presented in the charts for 2012 – 2014 Arterial LOS comparisons.

Table 6: Arterial LOS Summary – AM Peak Period

ID #	New #	Study Segment	From	To	Length (miles)	Northbound/Eastbound			Southbound/Westbound			LOS Standard	Action
						Average Time (min:sec)	Average Speed	LOS	Average Time (min:sec)	Average Speed	LOS		
25	1A	SR 1	US 101	Tennessee Valley	0.40	0:59	22	B	0:55	27	A	D	None
19	1B	SR 1	Northern	Almonte Blvd	0.80	3:29	18	C	2:07	24	B	D	None
1	1C	SR 1	Sir Francis Drake Blvd	Pt. Reyes Station	2.20	3:32	37	A	3:28	38	A	D	None
18	4A	SR 131 (Tiburon Blvd)	Redwood Hwy Frontage Rd	E. Strawberry Dr	0.50	1:11	27	A	1:00	31	A	D	None
3	6A	Novato Blvd	San Marin Dr	Eucalyptus Ave	0.42	0:55	29	A	0:58	27	A	D	None
24	6B	Novato Blvd	Wilson Ave	Diablo Ave	1.14	2:42	25	A	3:00	23	B	D	None
4	6C	S. Novato Blvd	Sunset Pkwy	US 101	1.07	1:54	34	A	4:15	20	B	D	None
6	7A	Bel Marin Keys	US 101	Commercial Blvd	0.20	0:43	21	B	0:50	13	C	D	None
22	8A	Sir Francis Drake Blvd	Butterfield Rd	Willow Rd	0.26	0:32	29	A	0:50	18	C	D	None
9	8B	Sir Francis Drake Blvd	San Anselmo Ave	Red Hill Ave	1.12	4:53	14	C	2:31	26	A	D	None
23	8C	Sir Francis Drake Blvd	College Ave	Toussin Ave	0.28	1:14	15	C	0:34	28	A	D	None
12	8D	Sir Francis Drake Blvd	College Ave	Wolfe Grade	0.61	2:55	14	C	1:02	34	A	D	None
16	8E	Sir Francis Drake Blvd	US 101	Larkspur Landing	0.46	1:21	21	B	3:35	8	E	D	None*
10	9A	Red Hill Ave	Sir Francis Drake Blvd	Second St	1.13	2:26	29	A	3:51	20	B	D	None
26	9B	Second St	US 101	Marquard St	1.13	4:14	16	C	One-Way Street			D	None
27	9C	Third St	US 101	Marquard St	1.11	One-Way Street			3:10	21	B	D	None
20	10A	Bridgeway	Gate 5 Rd	Gate 6 Rd	0.17	0:22	25	A	0:31	25	A	D	None

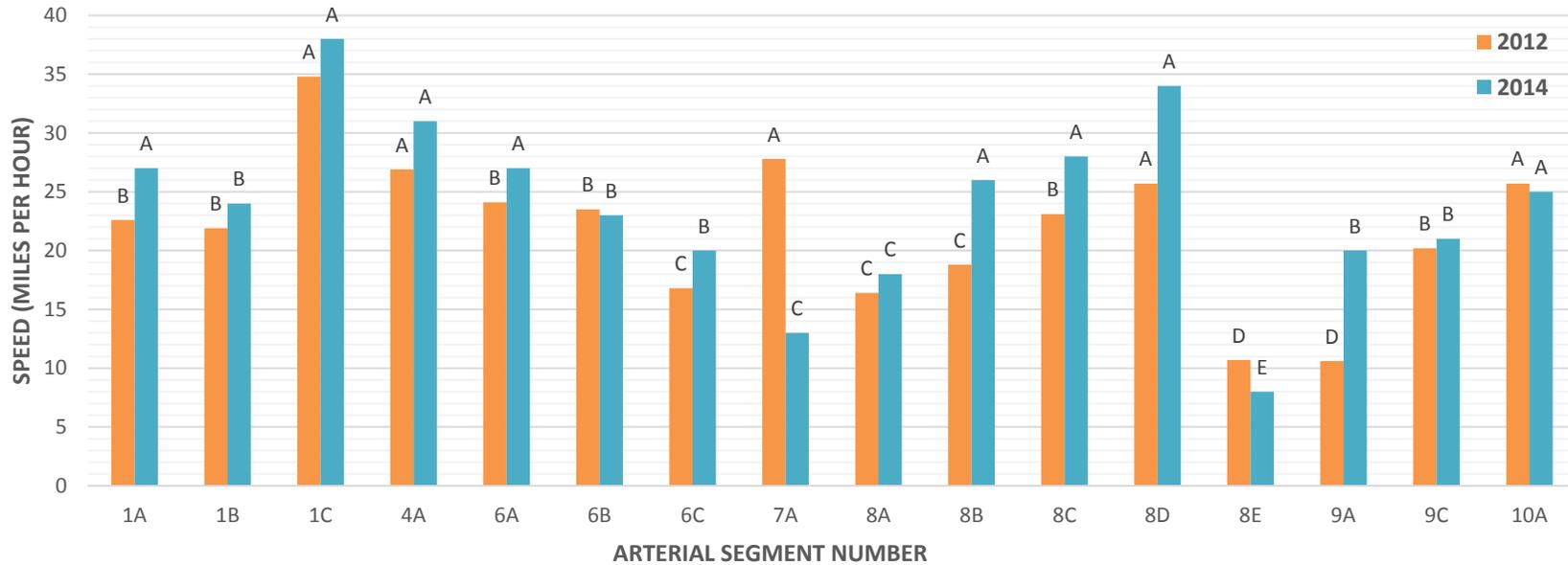
Notes: *Grandfathered Segment (No actions required)

Table 7: Arterial LOS Summary – PM Peak Period

ID #	New #	Study Segment	From	To	Length (miles)	Northbound/Eastbound			Southbound/Westbound			LOS Standard	Action
						Average Time (min:sec)	Average Speed	LOS	Average Time (min:sec)	Average Speed	LOS		
25	1A	SR 1	US 101	Tennessee Valley	0.40	0:52	25	A	1:43	14	C	D	None
19	1B	SR 1	Northern	Almonte Blvd	0.80	1:56	26	A	1:38	30	A	D	None
1	1C	SR 1	Sir Francis Drake Blvd	Pt. Reyes Station	2.20	3:26	38	A	3:21	39	A	D	None
18	4A	SR 131 (Tiburon Blvd)	Redwood Hwy Frontage Rd	E. Strawberry Dr	0.50	1:09	28	A	0:57	31	A	D	None
3	6A	Novato Blvd	San Marin Dr	Eucalyptus Ave	0.42	1:04	24	B	0:45	34	A	D	None
24	6B	Novato Blvd	Wilson Ave	Diablo Ave	1.14	2:34	23	B	2:54	21	B	D	None
4	6C	S. Novato Blvd	Sunset Pkwy	US 101	1.07	2:01	32	A	1:47	36	A	D	None
6	7A	Bel Marin Keys	US 101	Commercial Blvd	0.20	0:28	27	A	0:23	28	A	D	None
22	8A	Sir Francis Drake Blvd	Butterfield Rd	Willow Rd	0.26	0:50	19	C	1:56	8	E	D	None*
9	8B	Sir Francis Drake Blvd	San Anselmo Ave	Red Hill Ave	1.12	3:34	19	C	3:29	19	C	D	None
23	8C	Sir Francis Drake Blvd	College Ave	Toussin Ave	0.28	1:59	9	E	0:41	23	B	D	None*
12	8D	Sir Francis Drake Blvd	College Ave	Wolfe Grade	0.61	1:42	21	B	1:16	29	A	D	None
16	8E	Sir Francis Drake Blvd	US 101	Larkspur Landing	0.46	5:16	5	F	2:27	11	D	D	None*
10	9A	Red Hill Ave	Sir Francis Drake Blvd	Second St	1.13	2:36	26	A	4:04	19	C	D	None
26	9B	Second St	US 101	Marquard St	1.13	3:14	21	B	One-Way Street			D	None
27	9C	Third St	US 101	Marquard St	1.11	One-Way Street			3:20	20	B	D	None
20	10A	Bridgeway	Gate 5 Rd	Gate 6 Rd	0.17	0:25	23	B	0:38	20	B	D	None

Notes: *Grandfathered Segment (No actions required)

AM Peak Period - 2012 and 2014 LOS Results Comparison in Southbound/Westbound Direction



PM Peak Period - 2012 and 2014 LOS Results Comparison in Northbound/Eastbound Direction

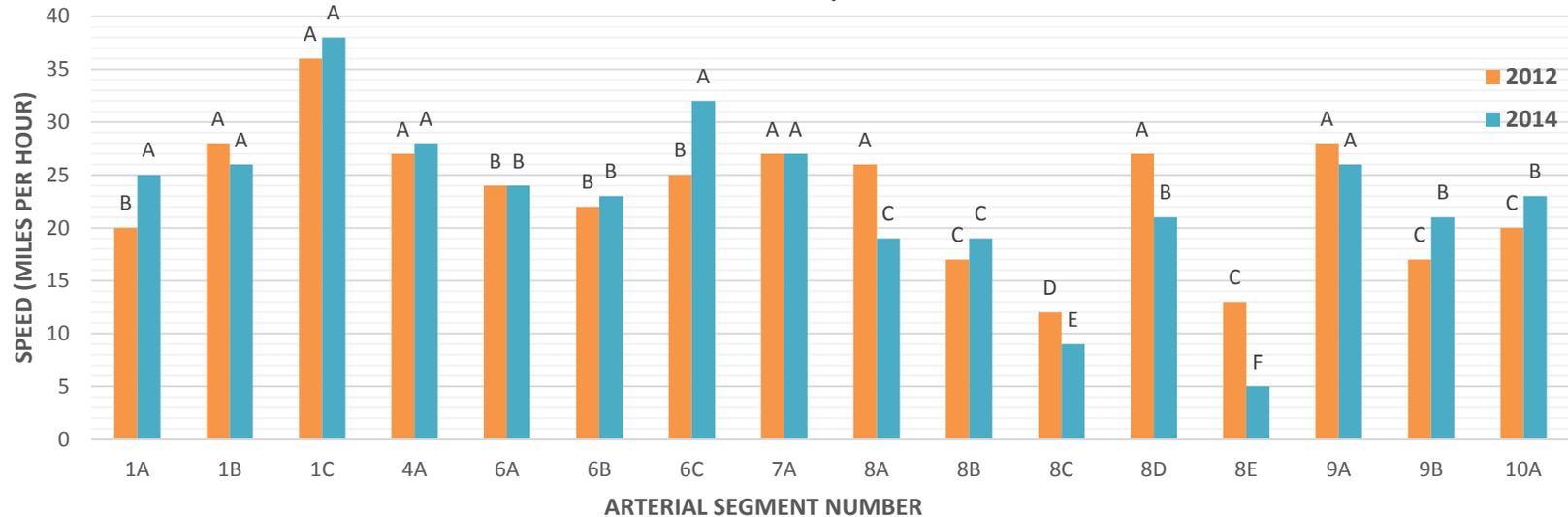
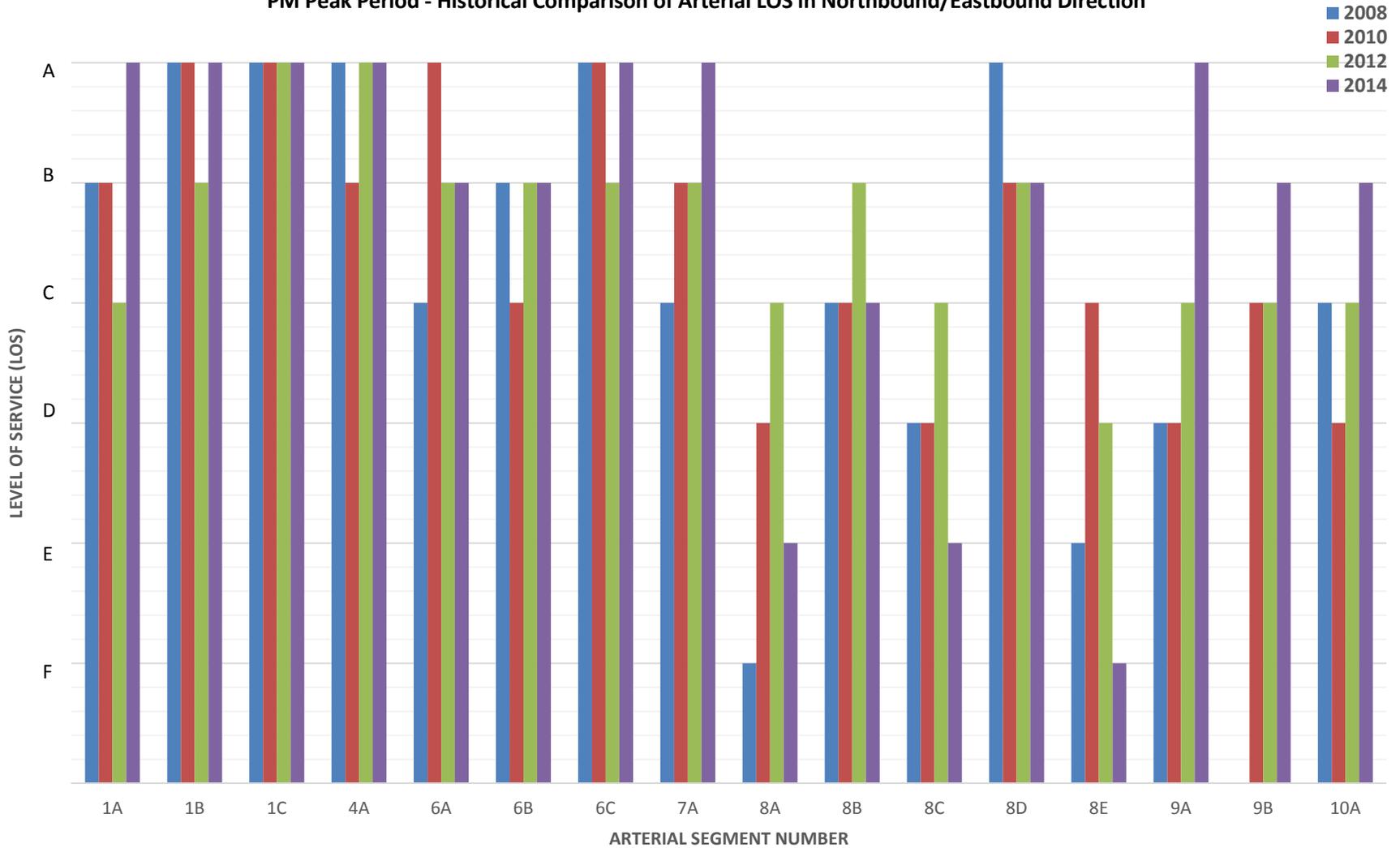


Table 8: Arterial Historical LOS Summary – PM Peak Period

ID #	New #	Study Segment	From	To	2006	2008	2010	2012	2014	LOS Standard
25	1A	SR 1	US 101	Tennessee Valley	N/A	B	B	C	C	D
19	1B	SR 1	Northern	Almonte Blvd	B	A	A	B	A	D
1	1C	SR 1	Sir Francis Drake Blvd	Pt. Reyes Station	A	A	A	A	A	D
18	4A	SR 131 (Tiburon Blvd)	Redwood Hwy Frontage	E. Strawberry Dr	A	A	B	A	A	D
3	6A	Novato Blvd	San Marin Dr	Eucalyptus Ave	B	C	A	B	B	D
24	6B	Novato Blvd	Wilson Ave	Diablo Ave	C	B	C	B	B	D
4	6C	S. Novato Blvd	Sunset Pkwy	US 101	A	A	A	B	A	D
6	7A	Bel Marin Keys	US 101	Commercial Blvd	B	C	B	B	A	D
22	8A	Sir Francis Drake Blvd	Butterfield Rd	Willow Rd	D	F	D	C	E	D
9	8B	Sir Francis Drake Blvd	San Anselmo Ave	Red Hill Ave	C	C	C	B	C	D
23	8C	Sir Francis Drake Blvd	College Ave	Toussin Ave	C	D	D	C	E	D
12	8D	Sir Francis Drake Blvd	College Ave	Wolfe Grade	C	A	B	B	B	D
16	8E	Sir Francis Drake Blvd	US 101	Larkspur Landing	F	E	C	D	F	D
10	9A	Red Hill Ave	Sir Francis Drake Blvd	Second St	B	D	D	C	C	D
26	9B	Second St	US 101	Marquard St	N/A	N/A	C	C	B	D
27	9C	Third St	US 101	Marquard St	N/A	N/A	C	C	B	D
20	10A	Bridgeway	Gate 5 Rd	Gate 6 Rd	B	C	D	C	B	D

PM Peak Period - Historical Comparison of Arterial LOS in Northbound/Eastbound Direction



3.2 Freeway Level of Service

There are 10 Freeway segments identified in the Marin County CMP network. The LOS standard to meet the CMP requirements is LOS E for Freeways and Expressways.

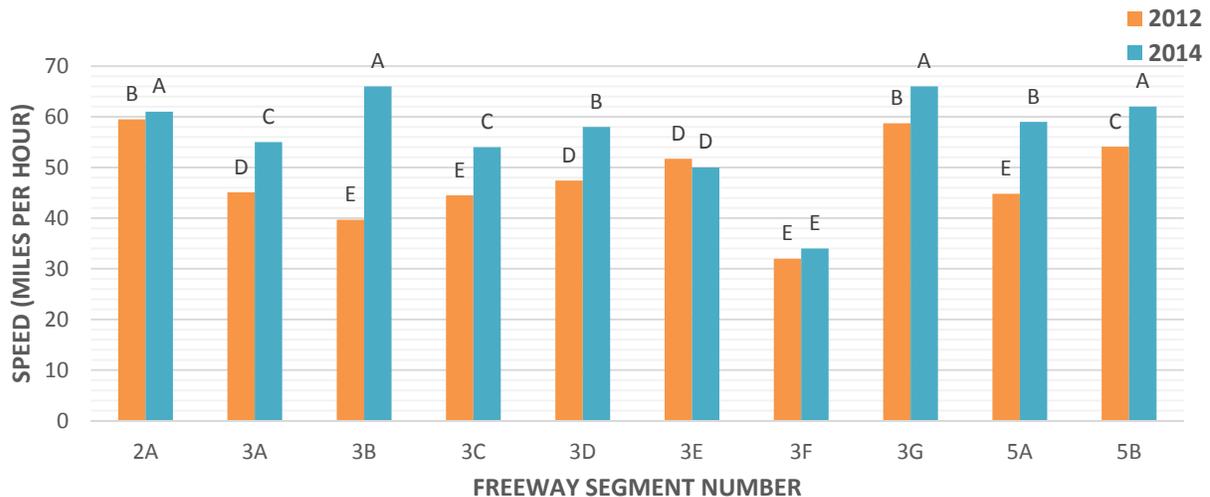
3.2.1 Freeway Mixed Flow Lanes

All of the 10 freeway segments were monitored during the AM and PM peak hours. All locations met the CMP LOS standards during the AM peak hour, performing at LOS E or better. The LOS results for the AM peak are shown in **Table 9**.

In the PM peak, however, there are three segments with an LOS of 'F.' Two of the segments are along US 101 in the NB direction, and one is along I-580 in the EB direction. These segments are grandfathered, and therefore, no action is required. The LOS results for the PM peak are shown in **Table 10**.

The comparison of LOS results, in the AM and PM peak hour in the peak direction, from 2012 and 2014 monitoring cycles is shown below:

2012 and 2014 Freeway LOS Results Comparison (AM Peak Period)



2012 and 2014 Freeway LOS Results Comparison (PM Peak Period)

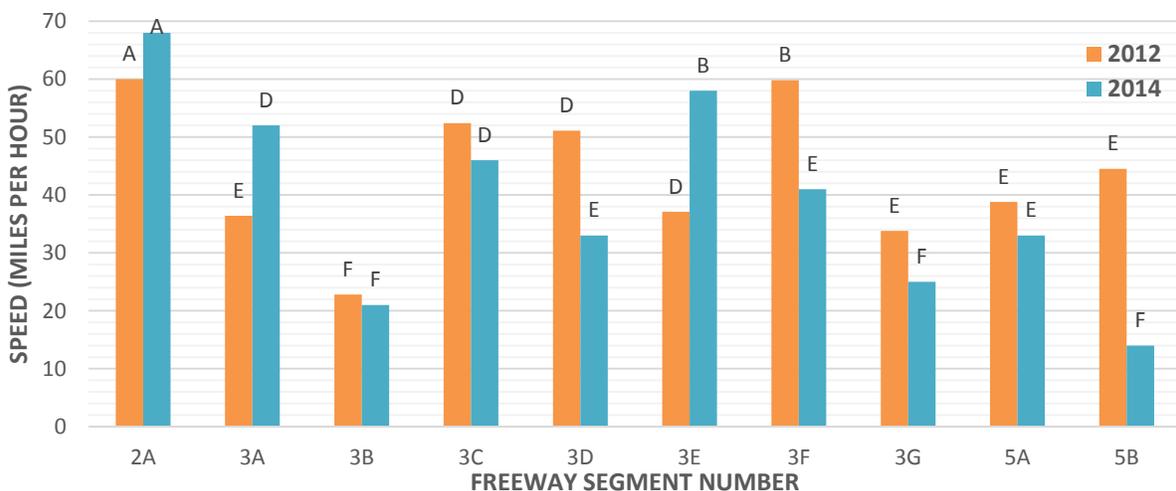


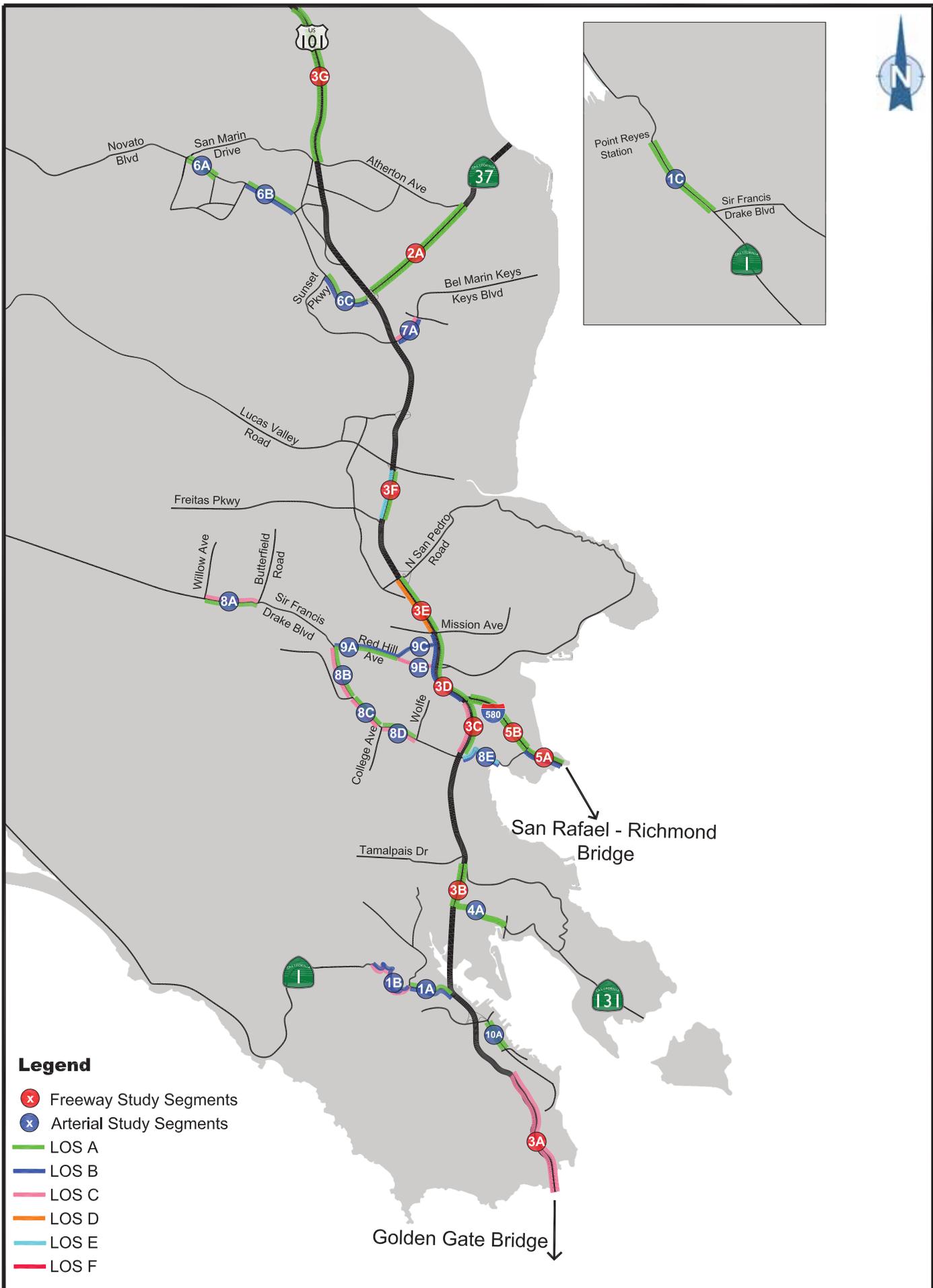
Table 9: Freeway Mixed-Flow Lanes LOS Summary – AM Peak Period

ID #	New #	Study Segment	From	To	Length (miles)	Northbound/Eastbound			Southbound/Westbound			LOS Standard	Action
						Average Time (min:sec)	Average Speed	LOS	Average Time (min:sec)	Average Speed	LOS		
5	2A	SR 37	US 101	Atherton Ave	2.60	2:36	60	A	2:33	61	A	E	None
21	3A	US 101	Golden Gate Bridge	Spencer Ave	1.50	1:41	54	C	1:37	55	C	E	None
17	3B	US 101	SR 131 (Tiburon Blvd)	Tamalpais Dr	1.70	1:34	65	A	1:32	66	A	E	None
13	3C	US 101	Sir Francis Drake Blvd	I-580	1.32	1:13	65	A	1:28	54	C	E	None
11	3D	US 101	I-580	Mission Ave	1.22	1:11	62	A	1:16	58	B	E	None
8	3E	US 101	Mission Ave	N. San Pedro Rd	1.59	1:34	61	A	1:55	50	D	E	None
7	3F	US 101	Freitas Pkwy	Lucas Valley Rd	1.01	0:55	67	A	1:48	34	E	E	None
2	3G	US 101	North of Atherton	Sonoma Co. Line	5.96	5:26	66	A	5:26	66	A	E	None
15	5A	I-580	Marin Co. Line	Sir Francis Drake Blvd	0.70	0:42	60	A	0:43	59	B	E	None
14	5B	I-580	Bellam Blvd	Sir Francis Drake Blvd	1.23	1:11	63	A	1:12	62	A	E	None

Table 10: Freeway Mixed-Flow Lanes LOS Summary – PM Peak Period

ID #	New #	Study Segment	From	To	Length (miles)	Northbound/Eastbound			Southbound/Westbound			LOS Standard	Action
						Average Time (min:sec)	Average Speed	LOS	Average Time (min:sec)	Average Speed	LOS		
5	2A	SR 37	US 101	Atherton Ave	2.60	2:18	68	A	2:21	67	A	E	None
21	3A	US 101	Golden Gate Bridge	Spencer Ave	1.50	1:44	52	D	1:36	57	B	E	None
17	3B	US 101	SR 131 (Tiburon Blvd)	Tamalpais Dr	1.70	4:50	21	F	1:32	67	A	E	None*
13	3C	US 101	Sir Francis Drake Blvd	I-580	1.32	1:42	46	D	1:16	63	A	E	None
11	3D	US 101	I-580	Mission Ave	1.22	2:11	33	E	1:14	59	B	E	None
8	3E	US 101	Mission Ave	N. San Pedro Rd	1.59	1:40	58	B	1:33	62	A	E	None
7	3F	US 101	Freitas Pkwy	Lucas Valley Rd	1.01	1:28	41	E	0:57	64	A	E	None
2	3G	US 101	North of Atherton	Sonoma Co. Line	5.96	14:32	25	F	5:20	67	A	E	None*
15	5A	I-580	Marin Co. Line	Sir Francis Drake Blvd	3.3	6:00	33	E	3:24	58	B	E	None
14	5B	I-580	Bellam Blvd	Sir Francis Drake Blvd	1.23	5:19	14	F	1:16	59	B	E	None*

Notes: *Grandfathered Segments (No action required)



Legend

- x Freeway Study Segments
- x Arterial Study Segments
- LOS A
- LOS B
- LOS C
- LOS D
- LOS E
- LOS F

Figure 3
AM Peak Hour Level of Service

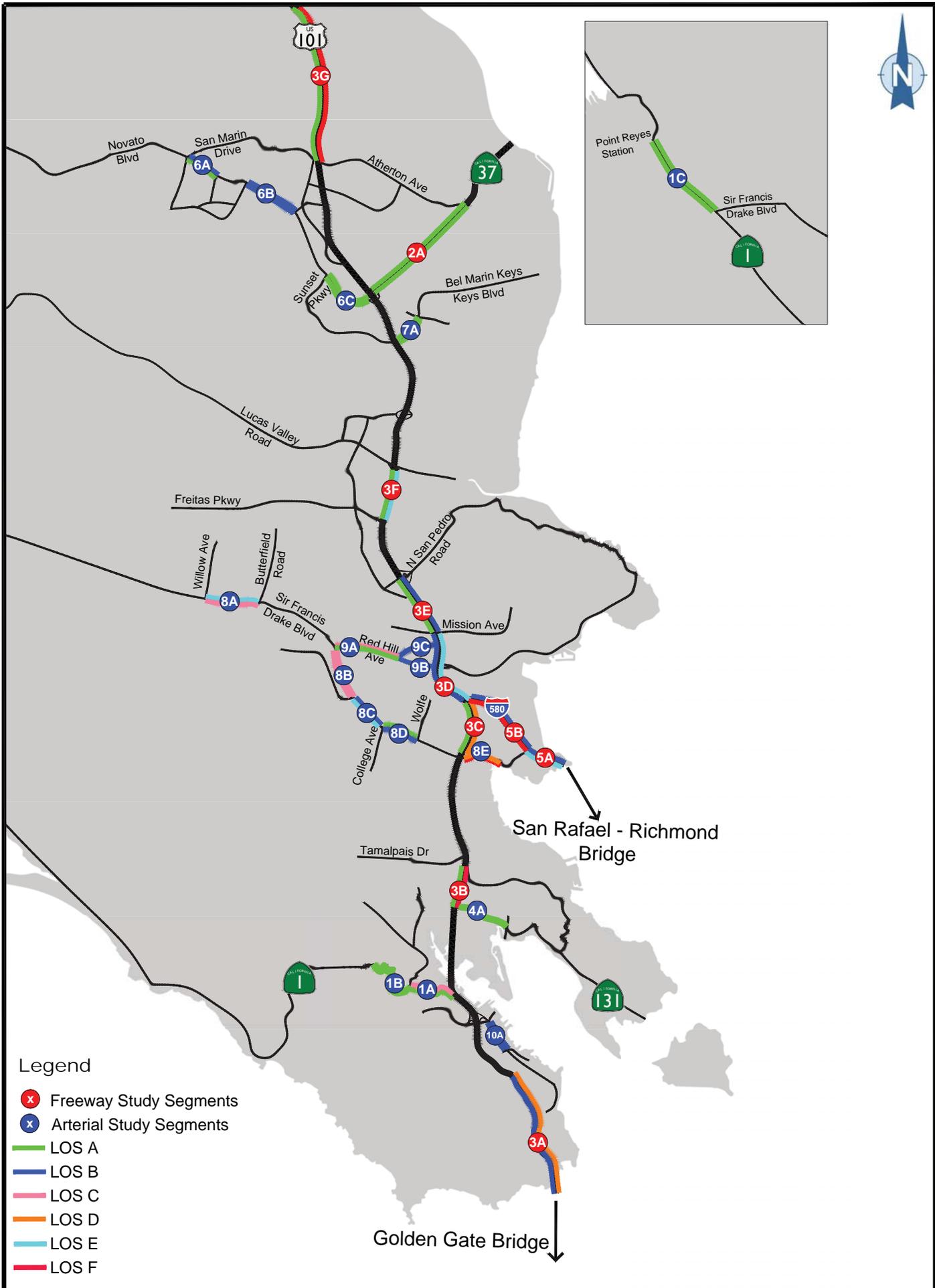


Figure 4
PM Peak Hour Level of Service

3.2.2 Historical Level of Service – Freeways Mixed-Flow

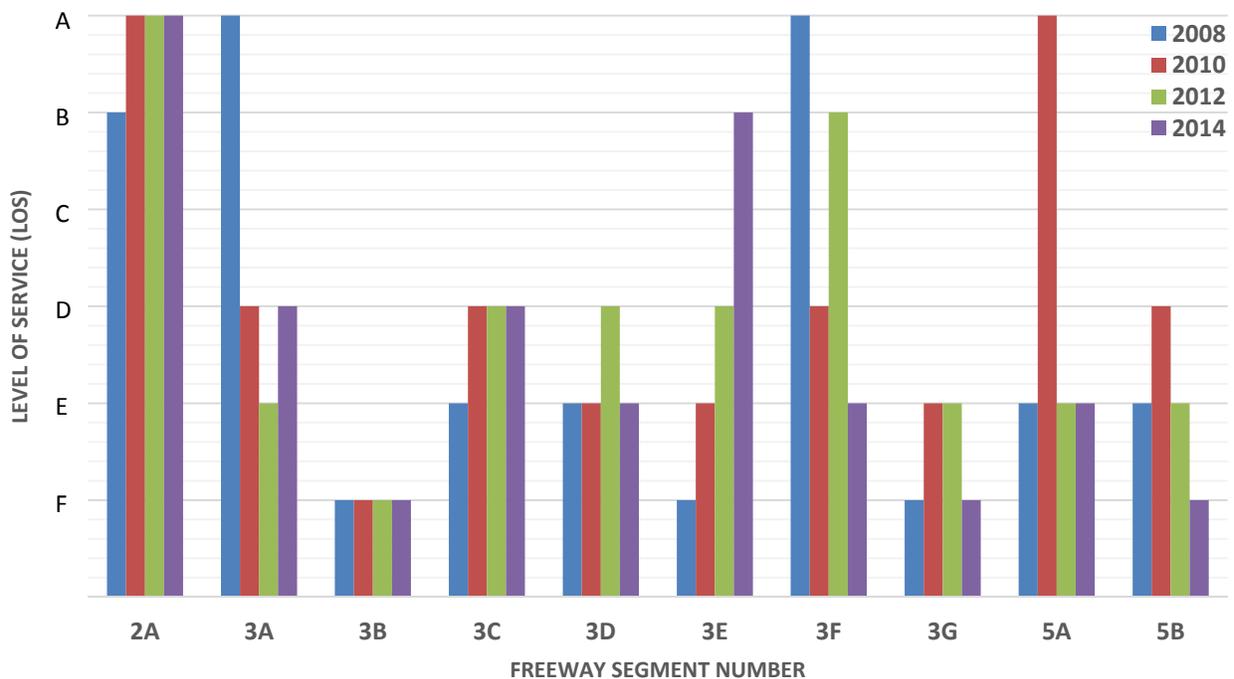
The chart and **Table 11** below present the historical LOS results for the PM peak period for mixed-flow lanes on freeways. Historical data is not presented for the AM peak period for this time period, but is instead presented in the above charts for 2012 – 2014. Across the years, many segments experience fluctuations in level of service. The fluctuations in the trends can be attributed to several factors, such as changes in traffic patterns, traffic volumes, unemployment, economy, etc.

Table 11: Freeway Historical LOS Summary – PM Peak Period

ID #	New #	Study Segment	From	To	2006	2008	2010	2012	2014	LOS Standard
5	2A	SR 37	US 101	Atherton Ave	A	B	A	A	A	E
21	3A	US 101	Golden Gate Bridge	Spencer Ave	A	A	D	E	D	E
17	3B	US 101	SR 131 (Tiburon Blvd)	Tamalpais Dr	F	F	F	F	F	E
13	3C	US 101	Sir Francis Drake Blvd	I-580	F	E	D	D	D	E
11	3D	US 101	I-580	Mission Ave	F	E	E	D	E	E
8	3E	US 101	Mission Ave	N. San Pedro Rd	C	F	E	D	B	E
7	3F	US 101	Freitas Pkwy	Lucas Valley Rd	A	A	D	B	E	E
2	3G	US 101	North of Atherton	Sonoma Co. Line	E	F	E	E	F	E
15	5A	I-580	Marin Co. Line	Sir Francis Drake Blvd	F	E	A	E	E	E
14	5B	I-580	Bellam Blvd	Sir Francis Drake Blvd	E	E	D	E	F	E

Source: 2012 Transportation Monitoring Report

Historical Comparison of Freeway Mixed-Flow LOS Northbound (Peak Direction) in PM Peak Period



3.2.3 Freeway HOV Lanes

Five freeway segments in the CMP network have HOV lanes and all are located on US 101. The LOS standard to meet the CMP requirements is LOS E for Freeways and Expressways. The LOS results for the Freeway HOV segments in both AM and PM peak periods are within the CMP LOS standards, except for Segment #3B during the PM peak period. This segment is grandfathered, and does not need any action.

The LOS results for the AM and PM peaks are shown in **Table 12** and **Table 13** respectively. All but one segment performed at LOS D or better in the AM and PM peak periods. The US 101 HOV lane enforcement in the NB direction is between the hours of 4:30 - 7:00 PM, Monday through Friday; and in the SB direction is between the hours of 6:30 - 8:30 AM, Monday through Friday.

Table 12: Freeway HOV Lanes LOS Summary - AM Peak Period (SB Peak Direction)

ID #	New #	Study Segment	From	To	Southbound				Action
					Direction	Average Time (min:sec)	Average Speed	2014 LOS	
17	3B	US 101	SR 131 (Tiburon Blvd)	Tamalpais Dr	SB	1:32	65	A	None
13	3C	US 101	Sir Francis Drake Blvd	I-580	SB	1:18	60	A	None
11	3D	US 101	I-580	Mission Ave	SB	1:14	61	A	None
8	3E	US 101	Mission Ave	N. San Pedro Rd	SB	1:31	63	A	None
7	3F	US 101	Freitas Pkwy	Lucas Valley Rd	SB	1:11	51	D	None

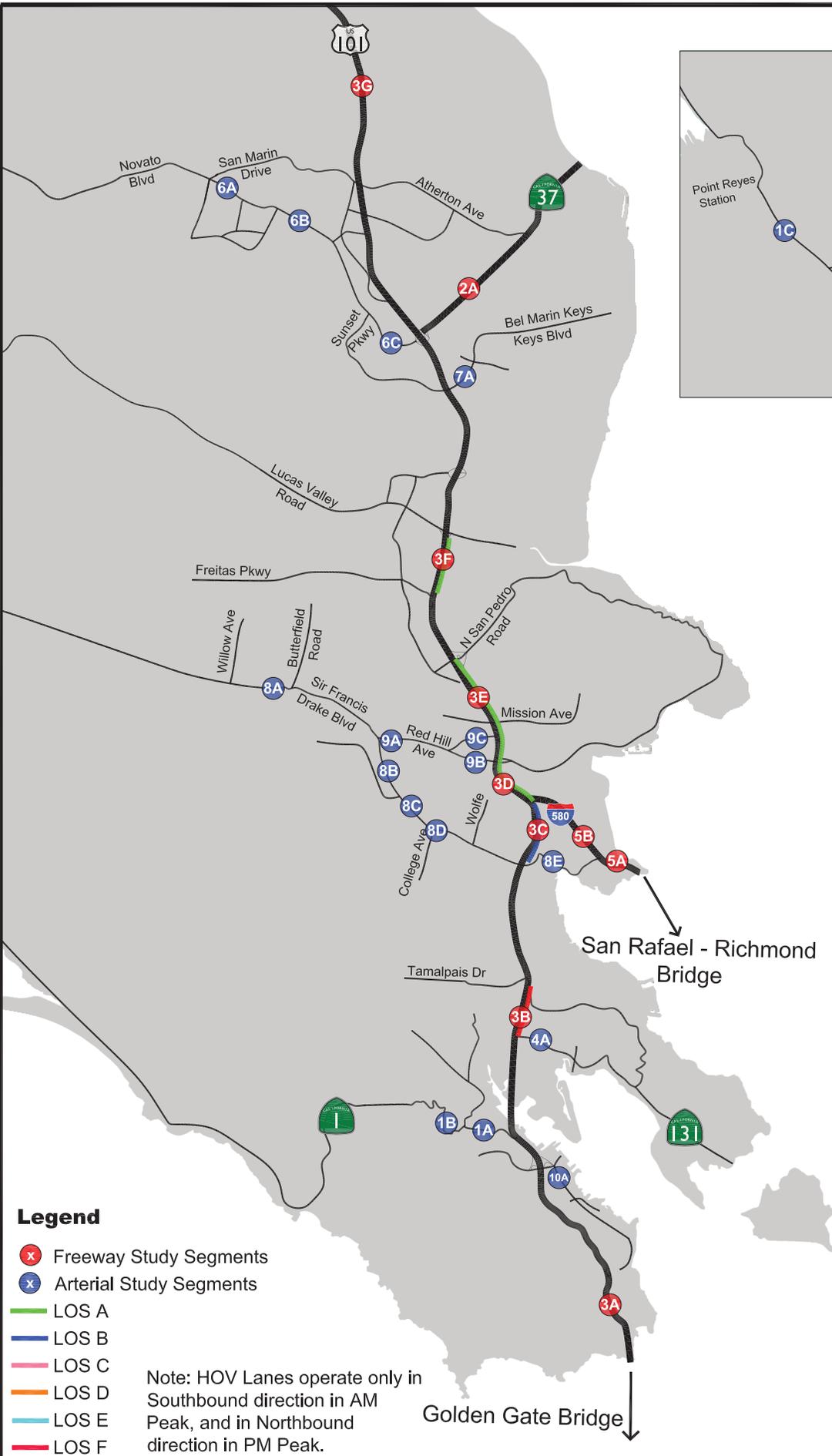
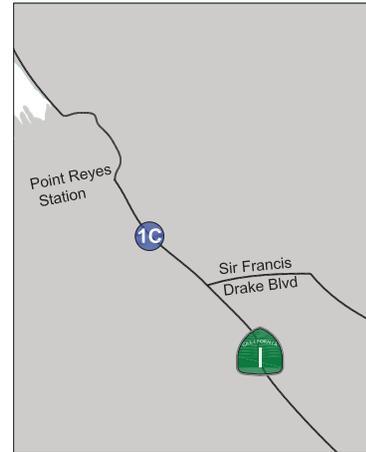
Notes: No HOV lanes in Northbound direction in the AM

Table 13: Freeway HOV Lanes LOS Summary - PM Peak Period (NB Peak Direction)

ID #	New #	Study Segment	From	To	Northbound				Action
					Direction	Average Time (min:sec)	Average Speed	2014 LOS	
17	3B	US 101	SR 131 (Tiburon Blvd)	Tamalpais Dr	NB	6:45	15	F	None ¹
13	3C	US 101	Sir Francis Drake Blvd	I-580	NB	1:21	57	B	None
11	3D	US 101	I-580	Mission Ave	NB	1:10	61	A	None
8	3E	US 101	Mission Ave	N. San Pedro Rd	NB	1:34	60	A	None
7	3F	US 101	Freitas Pkwy	Lucas Valley Rd	NB	0:55	67	A	None

Notes: No HOV lanes in Northbound direction in the AM

¹Grandfathered Segment (No Action Required)



Legend

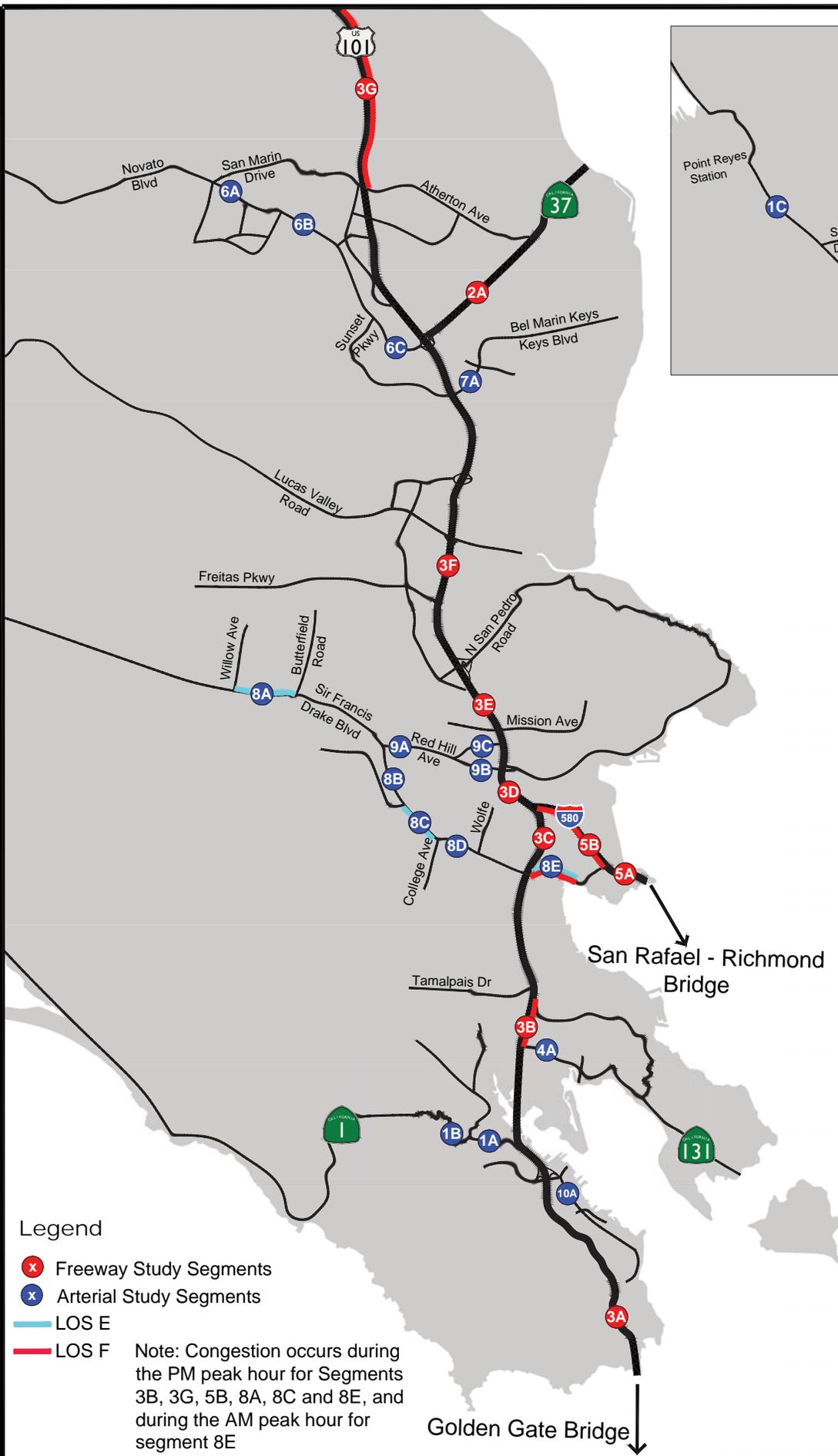
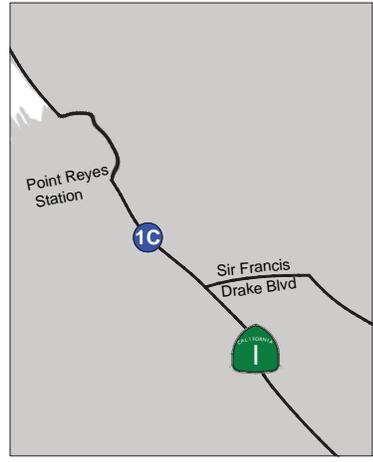
- Freeway Study Segments
- Arterial Study Segments
- LOS A
- LOS B
- LOS C
- LOS D
- LOS E
- LOS F

Note: HOV Lanes operate only in Southbound direction in AM Peak, and in Northbound direction in PM Peak.



Figure 6
HOV Lanes - PM Peak Hour LOS





Legend

- x Freeway Study Segments
 - x Arterial Study Segments
 - LOS E
 - LOS F
- Note: Congestion occurs during the PM peak hour for Segments 3B, 3G, 5B, 8A, 8C and 8E, and during the AM peak hour for segment 8E



Figure 7
Congested Segments Peak Hour LOS



3.3 Travel Time Reliability

Travel time reliability is the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day. Travel time reliability is significant to many transportation users. Drivers value reliability as it allows them to make better use of their time. Many transportation planners and decision makers have started to consider travel time reliability as a performance measure throughout the United States.

Travel time reliability measures are relatively new, but a few have proven effective. Most measures compare high-delay days to those with an average delay. The most effective methods of measuring travel time reliability are 90th or 95th percentile travel times, buffer index, and planning time index, explained in the following sections.

3.3.1 90th or 95th Percentile Travel Times

This method, the *90th or 95th percentile travel times*, is perhaps the simplest method to measure travel time reliability. It estimates how bad delay will be on specific routes during the heaviest traffic days. The one or two bad days each month mark the 95th or 90th percentile, respectively. Users familiar with a route (such as commuters) can see how bad traffic is during those few bad days and plan their trips accordingly. This measure is reported in minutes.

3.3.2 Buffer Index

The *buffer index* represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival.

For example, a buffer index of 40 percent means that for a trip that usually takes 20 minutes a traveler should budget an additional 8 minutes to ensure on-time arrival. The additional 8 minutes is called the buffer time. Therefore, the traveler should allow 28 minutes for the trip in order to ensure on-time arrival 95 percent of the time.

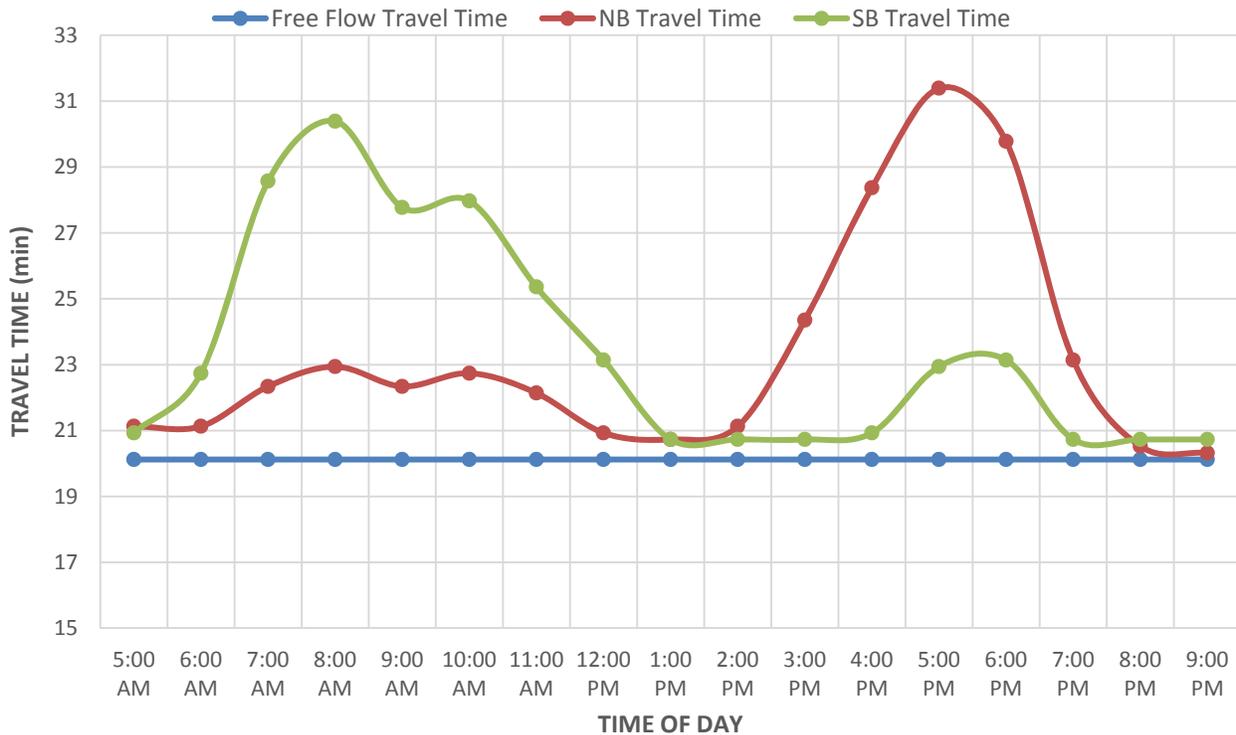
3.3.3 Planning Time Index

The *planning time index* represents how much total time a traveler should allow to ensure on-time arrival. While the buffer index shows the *additional* travel time that is necessary, the planning time index shows the *total* travel time that is necessary.

For example, a planning time index of 1.60 means that for a trip that takes 15 minutes in light traffic a traveler should budget a total of 24 minutes to ensure on-time arrival 95 percent of the time.

The graphs below illustrate comparison of the travel time under free flow conditions (assumes speed of 65 miles per hour) and planning travel time based on planning time index data collected by TJKM from PeMS along US 101 between the north and south County lines in Marin County.

US 101 – Marin County Travel Time Comparison



As illustrated in the graphs above, travel times along US 101 in the NB and SB directions between the County lines vary between approximately 19 - 32 minutes and 19 - 30 minutes respectively depending on the time of the day. In the NB direction, the travel time increases during the AM and PM peak periods of 6:00 - 11:00 AM and 2:00 - 8:00 PM respectively. The planning travel time in the NB direction during the PM peak hour can be as high as approximately 32 minutes (approximately 13 minutes more than the free flow travel time). The SB planning travel time during the AM peak hour can be as high as approximately 30 minutes (approximately 11 minutes more than the free flow travel time).

In addition to the above, TAM can also include factors such as seasonal variation, weather, and incidents to calculate the travel time along US 101 and I-580 within Marin County. Based on studies conducted within the United States, weather generally increases travel time by approximately 10 percent.

4.0 CURRENT TRANSIT OPERATIONS IN MARIN COUNTY

The transit network within Marin County is comprised of a variety of services. These include:

- ▶ General public transit bus service for both inter- and intra-county trips
- ▶ General public ferry service, serving trips between Marin County and San Francisco
- ▶ Specialized transit services aimed at serving the needs of the senior and disabled population in the County, including dial-a-ride, paratransit, and wheelchair accessible taxis
- ▶ Privately operated services, providing targeting service between specific locations, such as the service between Marin County and San Francisco International Airport

The Sonoma-Marina Area Rail Transit (SMART) service will likely be added as a CMP transit service. As of March 2015, construction has begun on the service's Initial Operating Segment (IOS) between the cities of Santa Rosa in Sonoma County and San Rafael in Marin County. The IOS is expected to be completed in late 2015 or early 2016.

The following sections provide a brief description of the transit services provided for inter- and intra-county transit travel. In addition, bus route information, headways, and overall transit ridership are summarized in each section.

4.1 Marin Transit

Marin Transit is the agency responsible for local transit service within Marin County. Marin Transit has responsibility for local transit services and contracts with other operators for three types of fixed route services within the county: large bus fixed route, shuttle, and rural service. Contracted providers include Golden Gate Transit, MV Transportation, and Marin Airporter. Marin Transit also contracts with Whistlestop Wheels to provide paratransit and dial-a-ride services within Marin County.

Table 14 summarizes the regularly scheduled Marin Transit services. Marin Transit also operates the Marin Access Mobility Management Center, which is a one-call, transportation information and referral service, focused on meeting the mobility needs of Marin's older adults, disabled persons, and low-income residents.

Transit service provided within Marin County by Marin Transit via contractors includes:

- ▶ *Local Service.* Nine routes operate entirely within Marin County on weekdays, with limited weekend service, contracted through Golden Gate Transit. An additional ten routes are operated as school-focused service on school days only, as detailed below. Since the 2013 CMP, Marin Transit has ceased operations on Route 28.
- ▶ *School Service.* 11 routes provide limited service on school days in Marin County, as well as select trips on Routes 17 and 23. All routes have operated continuously since the 2013 CMP, with the addition of Route 145 serving Terra Linda High School.
- ▶ *Recreational Services.* A seasonal shuttle service, Route 66, operates between Muir Woods and Mill Valley. A supplemental route (66F) provides intermediate service via Marin City. Shuttle schedules are adapted to weekend and seasonal recreational travel demand. Marin Transit contracts with Golden Gate Transit to operate Route 66 in partnership with the National Park Service between May and October.
- ▶ *West Marin Stagecoach.* Marin Transit contracts with MV Transportation to operate the West Marin Stagecoach with three shuttle service routes (Routes 61, 65 and 68) in West Marin. The Stagecoach provides weekday and weekend service to area residents. Route 65 is an additional service since the last CMP.

- ▶ **Community Shuttle Service.** Marin Transit contracts with Marin Airporter to operate six shuttle bus routes providing limited service: Strawberry/Tiburon (Route 219); Santa Venetia/San Rafael (Route 233); Hamilton Theater/San Marin Dr in Novato (Route 251); Indian Valley Campus/San Rafael (Route 257); and San Rafael/Novato (Route 259). Since the previous CMP update, Route 222 (Marin City/College of Marin) ceased operation and Route 228 San Rafael/Fairfax began operation. Marin Airporter also provides airport shuttle service between Marin County and San Francisco Airport as its primary business, separate from Marin Transit operations.
- ▶ **Marin Access.** Marin Access provides transit services and information for the community’s older adults, persons with disabilities, and low-income residents. This Marin Transit program contracts with Whistlestop Wheels to provide the following services: Paratransit, Catch-A-Ride, and Volunteer Driver.
- ▶ **Novato Dial-a-Ride.** Marin Transit contracts with Whistlestop Wheels to provide a dial-a-ride shuttle bus service that provides curb-to-curb pick-up and drop-off service available to all residents in the Novato service area.

Table 14: Marin Transit Routes - Peak Headways for Fixed-Route Service

As of March 2015			As of August 2013		
Route #	Route Type: Description	Approx. Headways (minutes)	Route #	Route Type: Description	Approx. Headways (minutes)
17	Local: San Rafael to Sausalito	30-60	17	Local: San Rafael to Sausalito	30
22	Local: San Rafael to Marin City	20-60	22	Local: San Rafael to Marin City	30
23	Local: Shoreline Parkway to White Hill Middle School (Fairfax)	60	23	Local: San Rafael to White Hill MS	60
29	Local: San Rafael to Manor (Fairfax)	30-60	29	Local: San Rafael to Manor (Fairfax)	30-60
35	Local: San Rafael to Canal Area	4-30	35	Local: San Rafael to Canal Area	5-30
36	Local: San Rafael to Marin City	30	36	Local: San Rafael to Marin City	26-30
45	Local: San Rafael to Kaiser Hospital North Gate	30-60	45	Local: San Rafael Kaiser Hospital North Gate	28-60
49	Local: San Rafael to Novato (Golden Gate Pl & Railroad Av)	60	49	Local: San Rafael to Novato (Redwood Blvd & Olive Ave)	60
61	West Marin Stagecoach: Donahue & Terners (Marin City) to Bolinas Downtown	170	61	West Marin Stagecoach: Donahue & Terners (Marin City) to Bolinas	160-205 (off-peak)
65*	West Marin Stagecoach: Dillon Beach to Eastside Transit Center	WED 2 runs EB 1 run WB	-	-	-
66	Muir Woods Shuttle: Pohono Street Park & Ride Lot (Mill Valley) to Muir Woods	20-30 (Weekends)	66/66F	Muir Woods Shuttle: Sausalito to Muir Woods	66: 10-20 (Weekend) 66F: 25-65 (Weekend)
68	West Marin Stagecoach: Inverness to San Rafael	60-120	68	West Marin Stagecoach: Inverness to San Rafael	75-185 (off-peak)
71	Local: Novato to Marin City	30	71	Local: Novato to Marin City	26-34

As of March 2015			As of August 2013		
Route #	Route Type: Description	Approx. Headways (minutes)	Route #	Route Type: Description	Approx. Headways (minutes)
113	School: Paradise Cay to Redwood HS	1 run (AM), 2 runs (PM)	113	School: Paradise Cay to Redwood HS	2 runs (AM) 4 runs (PM)
115	School: Sausalito Ferry to St. Hilary School	2 runs (AM) 2 runs (PM)	115	School: Sausalito Ferry to St. Hilary School	1 runs (AM) 1 runs (PM)
117	School: East Corte Madera to Hall MS	2 runs (AM) 4 runs (PM)	117	School: East Corte Madera to Hall MS	2 runs (AM) 2 runs (PM)
119	School: Tiburon to Redwood HS	2 runs (AM) 2 runs (PM)	119	School: Tiburon to Redwood HS	2 runs (AM) 4 runs (PM)
125	School: San Rafael to Lagunitas	2 run (AM) 2 runs (PM)	125	School: San Anselmo Hub/Drake HS to Lagunitas	1 runs (PM)
126	School: San Rafael to San Domenico School	1 run (AM)	126	School: San Rafael to San Domenico School	2 runs (AM)
127	School: Sleepy Hollow to White Hill School	3-4 runs (AM) 3 runs (PM)	127	School: Sleepy Hollow to White Hill School	4 runs (AM) 2 runs (PM)
139	School: Terra Linda HS to Lucas Valley	1 run (AM) 1-2 runs (PM)	139	School: Terra Linda HS to Lucas Valley	1 runs (AM) 1 runs (PM)
145*	School: Terra Linda HS to San Rafael	1-2 runs (PM)	-	-	-
151	School: Hamilton (Novato) to San Marin HS	2 runs (AM) 2-3 runs (PM)	151	School: Hamilton (Novato) to San Marin HS	2 runs (AM) 2 runs (PM)
154	School: Olive Ave & Olive Ct. to San Marin HS/Sinaloa MS	1 run (AM) 2 runs (PM)	154	School: Olive Ave & Olive Ct. to San Marin HS/Sinaloa MS	1 runs (AM) 1 runs (PM)
219	Shuttle: Strawberry to Tiburon	30	219	Shuttle: Strawberry to Tiburon	23-32
222	-	-	222	Shuttle: Marin City to General Hospital/College of Marin	60
228*	Shuttle: San Rafael to Manor (Fairfax)	60	-	-	-
233	Shuttle: Santa Venetia to San Rafael	60	233	Shuttle: Santa Venetia to San Rafael	60
251	Shuttle: Hamilton Theater to San Carlos & San Marin (Novato)	60	251	Shuttle: Hamilton Theater to San Carlos & San Marin (Novato)	60
257	Shuttle: Indian Valley Campus to San Rafael	60	257	Shuttle: Indian Valley Campus to San Rafael	60
259	Shuttle: San Rafael to Redwood & Olive (Novato)	60	259	Shuttle: San Rafael to Redwood & Olive (Novato)	60

Notes: *New Route

Sources: Marin Transit website (2015); Marin CMP Update (2013).

4.2 Golden Gate Transit

Golden Gate Transit operates transit services between Marin County and the Sonoma, San Francisco, and Contra Costa Counties. Golden Gate Transit is one of three operating divisions of the Golden Gate Bridge, Highway and Transportation District. **Table 15** lists the service routes with a comparison to the most recent CMP update in August 2013.

Additional bus service provided directly by Golden Gate Transit connects Marin County to other parts of the region. Inter-county bus routes that operate partly inside Marin County include the following services:

- ▶ *Transbay Basic Service.* Basic service routes operate all day, seven days a week, providing wheelchair accessible trunk-line service between the Transbay Terminal and Civic Center in San Francisco or Richmond BART, and various suburban centers within Marin and Sonoma Counties. They provide the “backbone” service within Marin County and between Marin and neighboring counties. The routes are 10, 40/42, 42, 70/71, and 101/101X. Since the previous CMP update, Route 80 ceased operation.
- ▶ *Transbay Commute Service.* This service provides 17 routes that operate on non-holiday weekdays. Most services connect residential neighborhoods within Marin County to the San Francisco Financial District and Civic Center employment centers during the AM and PM commute periods. Other service connects Sonoma County with Marin County and San Francisco. Commute service is generally operated in the peak direction during commute hours only, and is not run at all during the midday and off-peak periods.

Table 15: Regional Golden Gate Bus Transit Routes and Peak Headways

As of March 2015			As of August 2013		
Route #	Route Type: Description	Approx. Headways (minutes)	Route #	Route Type: Description	Approx. Headways (minutes)
2	Commute: SF to Marin Headlands	30	2	Commute: SF to Marin Headlands	15-36
4	Commute: Mill Valley to SF	5-15	4	Commute: Mill Valley to SF	5-15
8	Commute: Tiburon to SF	2 runs (AM) 1 run (PM)	8	Commute: Tiburon to SF	2 runs (AM) 1 run (PM)
10	Basic: Strawberry to SF	30-60	10	Basic: Strawberry to SF	29-57
18	Commute: College of Marin to SF	22-30	18	Commute: College of Marin to SF	14-33
24	Commute: Manor (Fairfax) to SF	8-30	24	Commute: Manor (Fairfax) to SF	5-25
25*	Shuttle: Larkspur Ferry to Manor (Fairfax)	30	-	-	-
27	Commute: San Anselmo to SF	15-60	27	Commute: Sleepy Hollow to SF	5-33
37*	Shuttle-Larkspur Ferry to Smith Ranch Road	30	-	-	-
38	Commute: Terra Linda to SF	30	38	Commute: Terra Linda to SF	24-32
40/42	Basic: San Rafael to Del Norte BART weekday	30-60	40/42	Basic: San Rafael to Del Norte BART weekday	19-43
42	Basic: San Rafael to Del Norte BART Weekend	60	42	Basic: San Rafael to Del Norte BART Weekend	60
44	Commute: Marinwood to SF	2 runs (AM) 2 runs (PM)	44	Commute: Marinwood to SF	60
54	Commute: San Marin to SF	9-30	54	Commute: San Marin to SF	10-33
56	Commute: Novato to SF	30	56	Commute: Novato to SF	18-33
58	Commute: SF to Novato	30	58	Commute: SF to Novato	25-33
70/71	Basic: Novato to SF	4-30	70/71	Basic: Novato to SF	4-30
72	Commute: Santa Rosa to SF	10-30	72/72X	Commute: Santa Rosa to SF	6-30
74	Commute: Santa Rosa to SF	30	74	Commute: Cotati to SF	27-63
76	Commute: East Petaluma to SF	25-30	76	Commute: East Petaluma to SF	27-31
92	Commute: Marin City to SF	30-60	92	Commute: Marin City to SF	60
93	Commute: GG Toll Plaza to SF Civic Center	10-30	93	Commute: GG Toll Plaza to SF Civic Center	10-30
97	Commute: Larkspur Ferry to SF	1 run (AM)	97	Commute: Larkspur Ferry to SF	2 runs (AM)
101/101x	Basic: Santa Rosa to SF	60	101/101X	Basic: Santa Rosa to SF	34-60

Notes: *New route

Sources: Golden Gate Transit Website (2015); Marin CMP Update (2013).

4.3 Ferry Services

Three organizations provide Ferry service in Marin County:

- ▶ *Golden Gate Ferry Service.* The Golden Gate Bridge, Highway and Transportation District operates ferry services from Larkspur and Sausalito to San Francisco via conventional and high-speed ferries. The Larkspur Ferry provides more service to San Francisco, with headways between 30 and 55 minutes during the weekday commute periods. The Sausalito Ferry provides less frequent service to San Francisco and longer headways between 50 and 90 minutes during the weekday commute periods. Both ferries transport people to the San Francisco Ferry Building. The San Francisco Giants Game Ferry (National League Baseball) is an additional ferry service that operates on game days. This ferry runs until 30 minutes after the final out of the ballgame and runs about 60 minutes from Larkspur to AT&T Park.
- ▶ *Blue and Gold Fleet.* The Blue and Gold Fleet operates both commuter and recreational ferry service from Tiburon and Sausalito to Fisherman’s Wharf in San Francisco. Blue and Gold also provides recreational service between Angel Island and San Francisco, Oakland, and Vallejo.
- ▶ *Angel Island Tiburon Ferry.* The Angel Island Tiburon Ferry operates recreational service between Angel Island and Downtown Tiburon. Service varies throughout the year; headways are 1-2 hours on weekdays and 1-3 hours on weekends; on weekends from April through October, headways are one hour and from November through March are 1-2 hours. No weekday service is offered from November through February except by reservation, and Wednesday-Friday service is offered in the month of March.

4.4 Summary of Fixed Route Services and Boardings

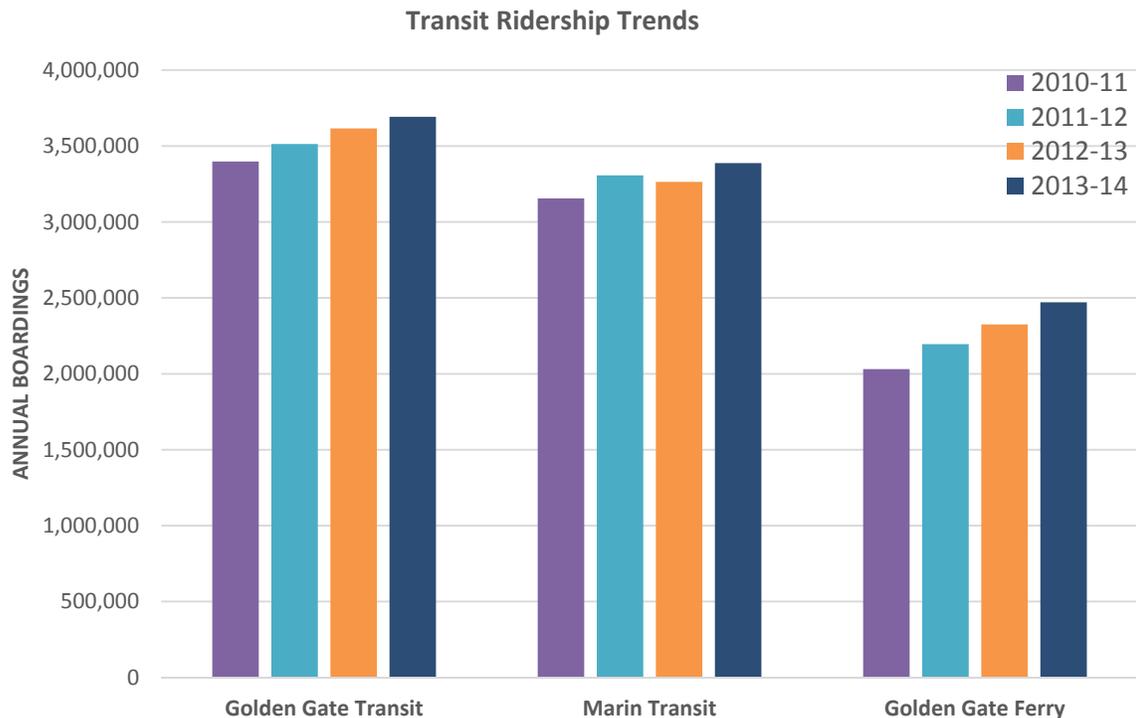
The transit routes managed by Marin Transit are routinely monitored for performance. The recent dedication of additional resources has led to an expansion of local transit service, which in turn has increased local boardings. These trends are illustrated in **Table 16** and Transit Ridership Trends Chart, which show ridership trends for Marin Transit Fixed Route Service, Golden Gate Transit Bus and Ferry Operations.

- ▶ As the table shows, demand for the Golden Gate Transit basic and commuter bus services to and from San Francisco have increased slightly in the last year by approximately 2%.
- ▶ Golden Gate Ferry Service has experienced increase in ridership during the last two fiscal years, approximately 6% increase from 2012-13 to 2013-14.
- ▶ Marin Transit Fixed Route Service showed an increase of 5% in ridership from 2012-13 to 2013-14 with an increase of 8% in revenue hours.
- ▶ Marin Access Services have an increase in ridership of approximately 10% with a 4% reduction in revenue hours in fiscal year 2014.

Table 16: Transit Ridership Trends in Marin County

Fiscal Year	Annual Revenue Hours	Annual Boardings
Golden Gate Basic and Commuter Service¹:		
2010-11	333,000	3,398,098
2011-12	325,000	3,513,639
2012-13	341,000	3,615,851
2013-14	321,000	3,692,851
Golden Gate Ferry Service¹:		
2010-11	14,000	2,031,219
2011-12	13,000	2,195,414
2012-13	13,000	2,324,874
2013-14	14,000	2,470,583
Marin Transit Fixed Route Service²:		
2010-11	117,011	3,154,571
2011-12	136,951	3,307,179
2012-13	136,227	3,263,903
2013-14	147,111	3,387,925

Sources: 1. Comprehensive Annual Financial Report FY 2013-14. Golden Gate Bridge Highway and Transportation District.
2. System Performance Summary for FY 2010-11, FY 2011-12, FY 2012-13, FY 2013-14, Marin Transit.
(<http://www.marintransit.org/monitoringreports.html>)



4.5 Specialized Transit Services

Marin Access. Marin Transit contracts with Whistlestop Wheels to provide local paratransit services that are available during the same hours and days of the week as comparable local and inter-county fixed-route, non-commute bus services. The service is a door-to-door ridesharing program that has approximately 40 lift-equipped vehicles available for use. Approximately 158,187 annual passenger trips are provided on Marin Access Paratransit service.

Inter-county paratransit service is provided seven days a week, under an agreement between Golden Gate Transit and Marin Transit. The inter-county service area includes Sonoma, San Francisco, and Contra Costa County in addition to Marin County. Statistics for this service are included in **Table 17**. The demand for paratransit service has grown in recent years as more Marin County residents have become eligible for the service and medical providers and residents become more aware of paratransit service.

Table 17: Marin Access Performance Statistics, FY 2011 to FY 2014

Fiscal Year	Annual Revenue Hours	Annual Passenger Trips
2010-11	53,127	116,970
2011-12 ¹	49,012	119,666
2012-13 ²	59,589	143,417
2013-14	57,389	158,187

Notes: ¹ Volunteer Driver Program added in FY 2011-12

² Catch-A-Ride Program added in FY 2012-13

Source: System Performance Summary for FY 2010-11, FY 2011-12, FY 2012-13, FY 2013-14, Marin Transit. (<http://www.marintransit.org/monitoringreports.html>)

Volunteer Driver. Marin Transit manages two Volunteer Driver programs for seniors who have difficulty using fixed route or paratransit services: 1) the Safe Transport and Reimbursement (STAR) Program operated by Whistlestop Wheels in Eastern Marin, and 2) the TripTrans West Marin Volunteer Driver Program operated by West Marin Senior Services in Western Marin. Both programs provide drivers with mileage reimbursements for their services. During the 2014 fiscal year, the volunteer driver program served 15,381 unlinked passengers during weekday service.

Catch-a-Ride. Marin Transit manages the Catch-A-Ride program, which allows eligible Marin County residents to receive a discounted ride in taxis and other licensed vehicles throughout Marin County. To be considered eligible for the program, participants must be a resident of Marin County and at least 80 years of age, at least 60 years of age and unable to drive, or be eligible for paratransit under the Americans with Disabilities Act. The program pays a discounted rate of the fare based on the mileage of the trip, rather than the meter rate. Fiscal year 2012-13 was the first full year of the program with 12,979 trips. Marin Catch-A-Ride is funded by Marin’s voter approved vehicle registration fee, Measure B.

5.0 BICYCLE AND PEDESTRIAN ACTIVITY

Bicycle and pedestrian activity was monitored at various locations in Marin County that were previously studied in the 2012 Transportation System Monitoring Report. Count locations for 2014 showing overlap from 2012 are presented in **Table 18**. The bicycle and pedestrian monitoring report is not required for the CMP and is therefore presented for informational purposes only. Bicycle and pedestrian volumes were collected at 23 locations. Most locations include a 14-hour count from 6:00 AM to 8:00 PM on weekdays and a two-hour weekend, midday peak period from 12:00 PM to 2:00 PM. Weekday AM peak (7:00-9:00 AM) and PM peak (2:00-6:00 PM) volumes were collected at four locations in lieu of 14-hour counts. The survey was categorized into two attributes: Adults and Youth. The total bicycle and pedestrian volumes were then compared to the historical data from previous years. **The Location ID #s listed below are to be used as a reference to Tables 19 – 23.**

Table 18: Bicycle and Pedestrian Count Locations

ID #	2014 TAM # in RFP	Bicycle & Pedestrian Count Location
1	7	Tiburon Blvd at Main St., Tiburon
2 ¹	N/A	N/A
3 ¹	N/A	N/A
4	5	Bridgeway at Princess, Sausalito
5		San Anselmo Ave. at Tunstead, San Anselmo
6		Broadway at Bolinas Rd., Fairfax
7 ¹	N/A	N/A
8		Magnolia at Ward, Larkspur
9	3	Mill Valley-Sausalito Path at E. Blithedale, Mill Valley
10	4	Mill Valley-Sausalito Path at McGlashan Path, Tam Valley
11	6	Tiburon Path at Blackies Pasture, Tiburon
12		Larkspur-Corte Madera Path at Baltimore Wye
13		Corte Madera Creek Path at Bon Air Road, Greenbrae
14 ¹	N/A	N/A
15		Camino Alto at E. Blithedale Ave, Mill Valley
16		Pacheco Hill Path at Alameda del Prado
17	1	Ranchitos Road at Puerto Suello Hill Summit, San Rafael
18		Doherty Dr. at Hall Middle School, Larkspur
19 ¹	N/A	N/A
20	2	Cal Park Tunnel Path at Andersen Drive, San Rafael
21		S. Novato Blvd. at Rowland, Novato
22		Bellam Blvd at Andersen, San Rafael
23		Nicasio Valley Rd near Nicasio School, Nicasio
24 ²		Enfrente Bike Path at S. Novato Blvd, Novato
25 ²	8	Tiburon Blvd at S. Knoll, Strawberry
26 ²	9	E. Blithedale Ave at Tower, Mill Valley
27 ²	10	Pedestrian Path at US 101 SB On-Ramp and Tiburon Blvd
28 ²	11	Pedestrian Path at US 101 NB On-Ramp and Tiburon Blvd

Notes: ¹ Location NOT counted in 2014

² New count location for 2014

5.1 Bicycle and Pedestrian Volumes

Bicycle and pedestrian activity was monitored and 2-hour peak period data is displayed in **Table 19**. Volumes are reported for the two-hour periods specified in the 2012 Monitoring Report (weekday 7:00-9:00 AM, weekday 4:00-6:00 PM, and weekend 12:00-2:00 PM) to retain consistency between monitoring years. It should be noted that conducting 14-hour counts showed an offset in the peak periods from those of vehicular traffic and is discussed later in this section.

During the weekday monitoring, bicycle and pedestrian activity peaked during the PM hour. The total number of bicyclists observed at the 23 count locations was 1,221 and total number of pedestrians was 1,789. During the weekend monitoring, bicycle and pedestrian activity increased substantially from what was observed during the weekdays with a total of 4,477 bicyclists and 5,137 pedestrians.

The Bridgeway and Princess St count location in Sausalito, CA experienced the highest volumes of bicyclists of all 23 locations monitored. This location experienced 181 bicyclists in the AM peak period and 234 bicyclists in the PM peak period. During the weekend midday peak period, Bridgeway and Princess St location had the highest number of 1,231 bicyclists.

During the AM peak period, the Tiburon Blvd and Main St location in Tiburon, CA experienced the highest number of 174 pedestrians. During the PM peak period, Bridgeway and Princess St experienced the highest at 586 pedestrians. During the weekend midday peak period, Bridgeway and Princess St experienced 2,513 pedestrians.

The lowest bicycle and pedestrian activity was found at multiple locations during the monitoring periods. Bicycle volumes of zero were observed during the specified peak periods at the following locations:

- ▶ Location 27: Pedestrian Path at US 101 SB On-Ramp and Tiburon Blvd
 - Weekday PM Peak Period (4:00-6:00 PM)
 - Weekend midday Peak Period (12:00-2:00 PM)
- ▶ Location 28: Pedestrian Path at US 101 SB On-Ramp and Tiburon Blvd
 - Weekday PM Peak Period (4:00-6:00 PM)

Pedestrian volumes of zero were observed during the specified peak periods at the following locations:

- ▶ Location 23: Nicasio Valley Road near Nicasio School
 - Weekday AM Peak Period (7:00-9:00 AM)
 - Weekend midday Peak Period (12:00-2:00 PM)

During the AM peak period, the lowest bicycle volume of one was found at Pedestrian Path at US 101 SB On-Ramp and Tiburon Blvd and during the PM peak period the lowest pedestrian volume of two was found at Cal Park Tunnel Path at Andersen Dr.

Table 19: 2-Hour Bicycle and Pedestrian Count Volumes for Weekdays and Weekends

ID*	Weekday AM Peak (7-9 AM)			Weekday PM Peak (4-6 PM)			Weekend Midday Peak (12-2 PM)			Weekday 14-Hour Total (6 AM-8 PM)		
	Peds	Bikes	Total	Peds	Bikes	Total	Peds	Bikes	Total	Peds	Bikes	Total
1	<u>174</u>	51	225	219	58	277	845	287	1,132	1,589	461	2,050
4	101	<u>181</u>	282	<u>586</u>	<u>234</u>	820	<u>2,513</u>	<u>1,231</u>	3,744	<u>2,893</u>	<u>1,501</u>	4,394
5	106	57	163	178	52	230	425	204	629	1,847	568	2,415
6	81	61	142	122	100	222	363	392	755	1,038	611	1,649
8	73	48	121	154	40	194	266	123	389	888	268	1,156
9	49	84	133	57	114	171	68	464	532	385	674	1,059
10	70	156	226	78	160	238	57	707	764	496	1,007	1,503
11	104	51	155	79	58	137	275	315	590	969	495	1,464
12	89	50	139	89	69	158	122	120	242	575	419	994
13	62	62	124	68	56	124	47	63	110	426	328	754
15	12	20	32	14	26	40	18	74	92	137	160	297
16	23	27	50	21	28	49	7	42	49	134	143	277
17	13	36	49	15	37	52	11	71	82	78	210	288
18	13	38	51	22	24	46	28	30	58	599	210	809
20	6	41	47	2	36	38	2	55	57	47	334	381
21	23	17	40	23	12	35	13	31	44	226	97	323
22	29	28	57	13	29	42	17	17	34	117	131	248
23	0	4	4	4	7	11	0	82	82	10	57	67
24	2	24	26	6	18	24	5	19	24	61	95	156
25	18	27	45	7	23	30	20	41	61	81	142	223
26	18	29	47	22	40	62	24	108	132	151	191	342
27	16	1	17	3	0	3	4	0	4	-	-	-
28	3	2	5	7	0	7	7	1	8	-	-	-
Total	1,085	1,095	2,180	1,789	1,221	3,010	5,137	4,477	9,614	12,747	8,102	20,849

Notes: *Location ID details are listed in Table 18 (Data was collected at limited segments which are listed above.)

Underline references maximum volumes, and *Italics* reference minimum volumes

The 2-Hour Peak period listed coincides with vehicular peak period.

“-“Locations are new from previous cycles and monitored from 7-9 AM and 2-6 PM only.

Bicycle and pedestrian volumes are presented in the above table for the AM and PM peak periods generally associated with vehicle commuter traffic. *Peak periods for non-auto modes do not necessarily mirror those for vehicles due to the increased travel time associated with the slower progression.* For this monitoring cycle, 14-hour counts were conducted and the data shows that bicycle and pedestrian peak periods tend to be outside the standard 7:00-9:00 AM and 4:00-6:00 PM weekday peak periods.

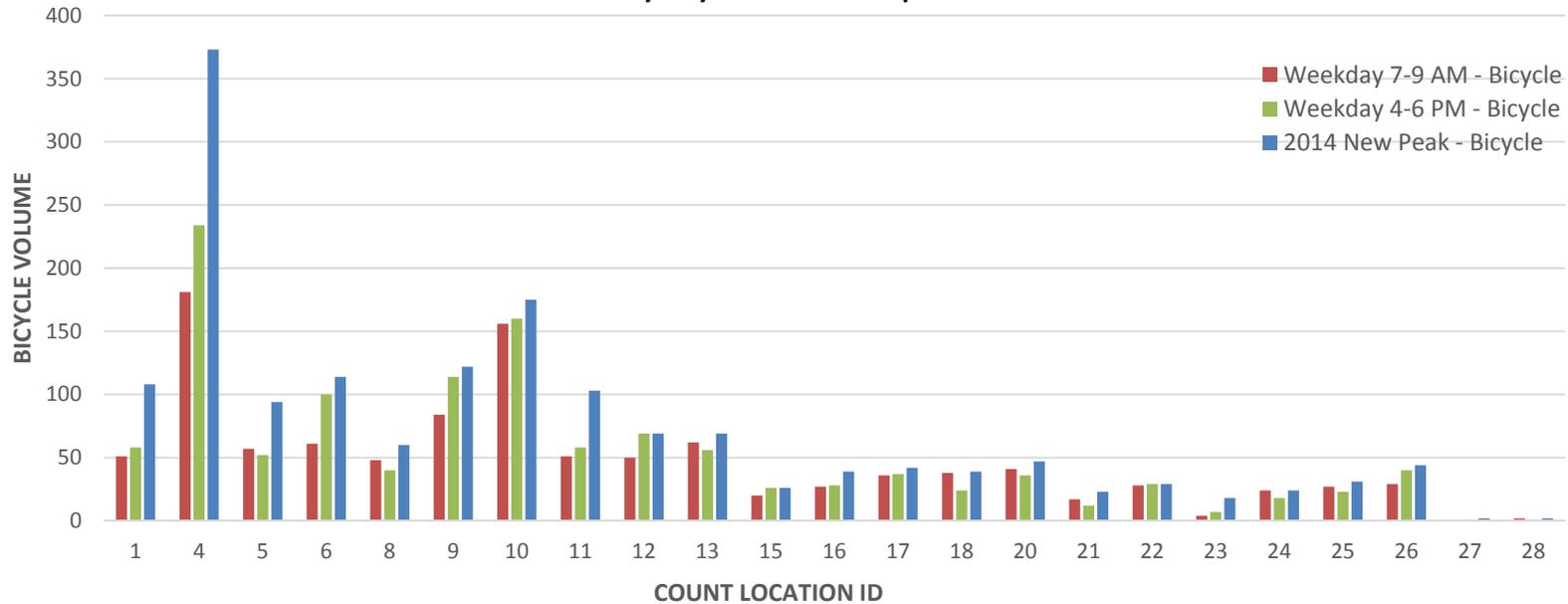
Table 20 summarizes the highest volume observed 2-hour peak periods at each location for weekdays and the following charts display the differences between bicycle and pedestrian volumes during standard and observed peak periods.

Table 20: Maximum Observed Peak Period Bicycle and Pedestrian Count Volumes for Weekdays

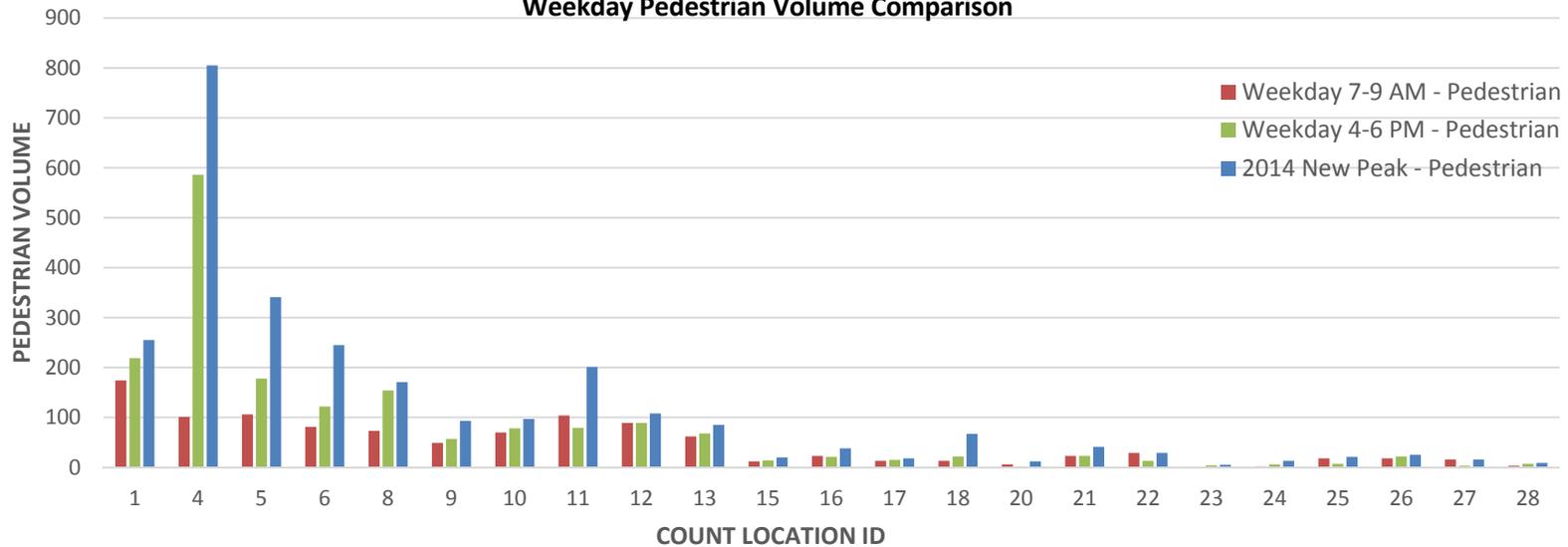
ID*	Pedestrian		Bicycle		Combined	
	Peak Period	Count	Peak Period	Count	Peak Period	Count
1	11:15 AM-1:15 PM	255	12:45-2:45 PM	108	11:30 AM-1:30 PM	339
4	12:00-2:00 PM	805	12:15-2:15 PM	373	12:00-2:00 PM	1171
5	2:45-4:45 PM	341	10:30 AM-12:45 PM	94	3:00-5:00 PM	379
6	6:00-8:00 PM	245	2:30-4:30 PM	114	5:45-7:45 PM	303
8	3:45-5:45 PM	171	10:15 AM-12:15 PM	60	3:45-5:45 PM	210
9	8:15-10:15 AM	93	4:45-6:45 PM	122	4:30-6:45 PM	185
10	10:45 AM-12:45 PM	97	3:30-5:30 PM	175	3:30-5:30 PM	258
11	8:45-11:15 AM	201	2:15-4:45 PM	103	9:15-11:15 AM	248
12	8:45-10:45 AM	108	4:00-6:00 PM	69	4:00-6:00 PM	158
13	9:00-11:00 AM	85	4:30-6:30 PM	69	4:30-6:30 PM	135
15	9:15-11:15 AM	20	4:00-6:15 PM	26	4:15-6:15 PM	41
16	4:30-6:30 PM	38	4:30-6:30 PM	39	4:30-6:30 PM	77
17	5:00-7:00 PM	18	3:45-5:45 PM	42	3:45-5:45 PM	58
18	3:15-5:15 PM	67	7:15-9:30 AM	39	2:30-4:30 PM	87
20	6:00-8:00 PM	12	5:15-7:15 PM	47	5:15-7:15 PM	56
21	12:30-2:30 PM	41	7:30-9:45 AM	23	12:30-2:30 PM	61
22	7:00-9:00 AM	29	4:00-6:15 PM	29	7:00-9:00 AM	57
23	4:30-7:00 PM	5	11:00-1:15 PM	18	11:15 AM-1:15 PM	19
24	8:45-12:15 PM	13	7:00-9:00 AM	24	7:30-10:15 AM	28
25	8:00-10:00 AM	21	3:30-5:30 PM	31	6:45-8:45 AM	48
26	4:30-7:30 PM	25	3:45-5:45 PM	44	3:45-5:45 PM	65
27	7:00-9:00 AM	16	2:00-4:45 PM	2	7:00-9:00 AM	17
28	2:45-5:00 PM	9	6:45-10:15 AM	2	8:45-10:45 AM 2:45-5:00 PM	9

Notes: * Location ID details are listed in Table 18 (Data was collected at limited segments which are listed above.)

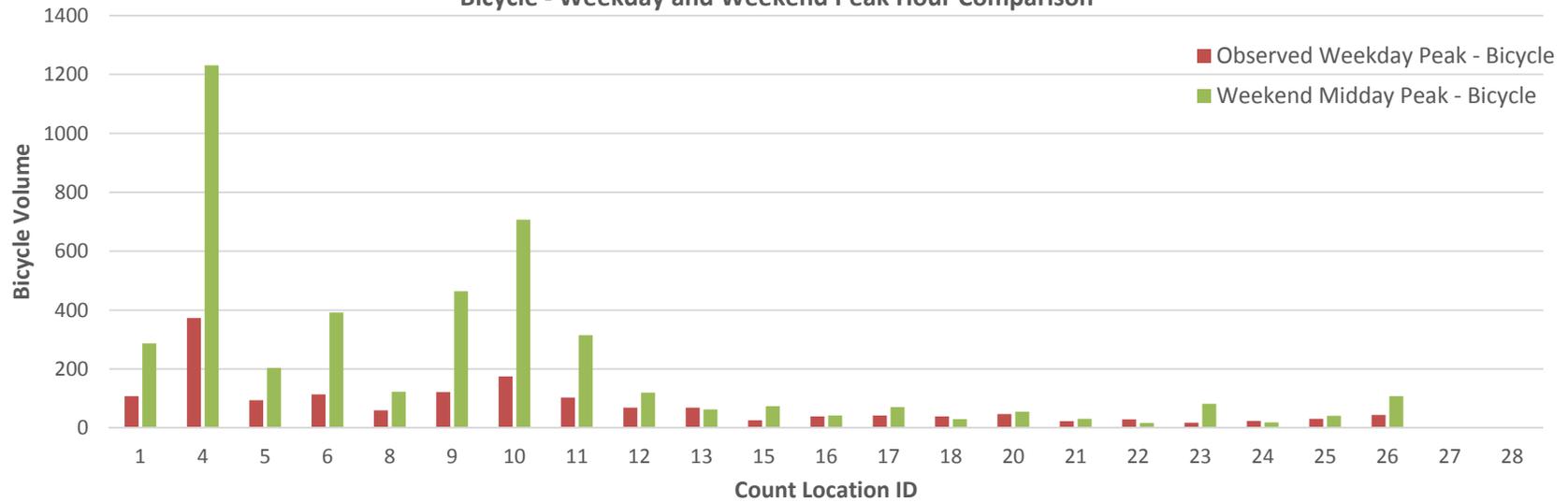
Weekday Bicycle Volume Comparison



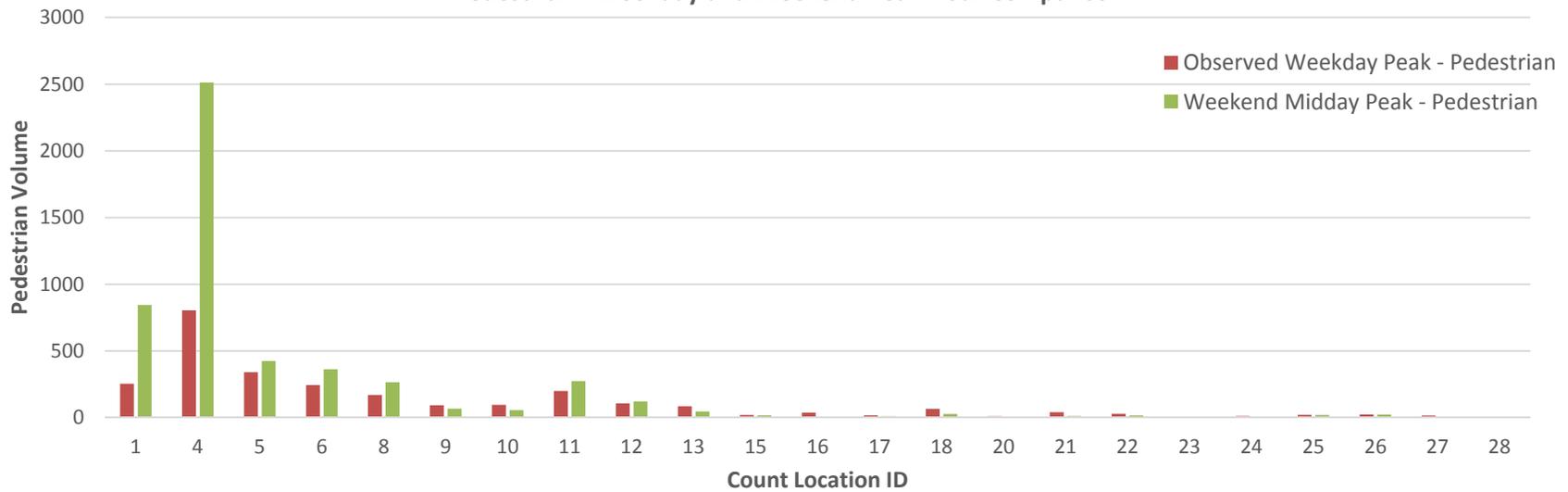
Weekday Pedestrian Volume Comparison



Bicycle - Weekday and Weekend Peak Hour Comparison



Pedestrian - Weekday and Weekend Peak Hour Comparison



As shown in the first two comparison charts above, four locations for bicycles have peak period volumes equal to those observed during the standard AM or PM peak periods in **Table 19**. This occurs at locations 12, 15, 22, and 24. For pedestrians, only two locations have peak period volumes equal to those found during the standard AM or PM peak periods at locations 22 and 27. In general, the highest 2-hour peak period observed within a consecutive 14-hours is noticeably higher than that of the 7:00-9:00 AM and 4:00-6:00 PM peak periods.

For the observed peak periods, the maximum number of bicyclists and pedestrians were 373 and 805 respectively at Location 4, Bridgeway and Princess St. These volumes are 40% and 60% higher than the 4:00 - 6:00 PM peak period bicycle and pedestrian volumes, respectively. These results show that when observing bicycle and pedestrian trends, the peak periods applied to vehicular traffic may not be entirely representative. It is recommended that more extensive data collection and analysis should be employed to better understand year-to-year trends on bicycle and pedestrian facilities.

Additional bicycle and pedestrian volume attribute trends at each count location are displayed in **Table 21**. The adult to youth ratio for bicyclists was approximately 85:15 and approximately 80:20 for pedestrians for all locations combined. Attribute data collected in the 2012 Monitoring Report, such as gender or helmet use, was not considered for this cycle.

The second set of comparison charts display differences between the maximum observed 2-hour peak periods and weekend midday peak for bicycles and pedestrians. Weekend counts generally show much higher volumes than those found during weekdays. This trend shows that many users on the weekend are recreational users and do not necessarily commute during the weekdays via bicycling or walking.

Table 21: Peak Period Bicycle and Pedestrian Volumes and Attributes: Child and Adult

ID*	Location, City	Pedestrians			Bicyclists		
		Child	Adult	Total	Child	Adult	Total
1	Tiburon Blvd at Main St, Tiburon	253	1238	1491	72	396	468
4	Bridgeway at Princess St, Sausalito	194	3200	3394	48	1646	1694
5	San Anselmo Ave at Tunstead, San Anselmo	239	709	948	124	313	437
6	Broadway at Bolinas Rd, Fairfax	28	566	594	48	553	601
8	Magnolia at Ward, Larkspur	83	493	576	13	211	224
9	Mill Valley-Sausalito Path at E. Blithedale, Mill Valley	34	174	208	94	662	756
10	Mill Valley-Sausalito Path at McFlashan Path, Tam Valley	11	205	216	78	1023	1101
11	Tiburon Path at Blackies Pasture, Tiburon	138	458	596	127	424	551
12	Larkspur-Corte Madera Path at Baltimore Wye	61	300	361	122	239	361
13	Corte Madera Creek Path at Bon Air Road, Greenbrae	18	177	195	53	181	234
15	Camino Alto at E. Blithedale Ave, Mill Valley	37	44	81	92	120	212
16	Pacheco Hill Path at Alameda del Prado	2	51	53	3	97	100
17	Ranchitos Rd at Puerto Suello Hill Summit, San Rafael	8	39	47	6	144	150
18	Doherty Dr at Hall Middle School, Larkspur	82	63	145	52	92	144
20	Cal Park Tunnel Path at andersen Dr, San Rafael	4	10	14	86	132	218
21	S. Novato Blvd at Rowland, Novato	20	59	79	7	60	67
22	Bellam Blvd at Andersen, San Rafael	2	59	61	3	74	77
23	Nicasio Valley Rd near Nicasio School, Nicasio	4	4	8	1	93	94
24	Enfrente Bike Path at S. Novato Blvd, Novato	7	13	20	3	61	64
25	Tiburon Blvd at S. Knoll, Strawberry	6	45	51	14	91	105
26	E. Blithedale Ave at Tower, Mill Valley	24	64	88	16	177	193
27	Pedestrian Path at US 101 SB On-Ramp and Tiburon Blvd	7	23	30	2	1	3
28	Pedestrian Path at US 101 NB On-Ramp and Tiburon Blvd	5	17	22	0	3	3

Notes: * Location ID details are listed in Table 18 (Data was collected at limited segments which are listed above.)
The totals listed are the total of weekday and weekend peak periods.

5.2 Historical Trends

5.2.1 Historical Bicycle Volume Trends

The bicycle data collected for this monitoring period was compared with the previous cycles' data to determine historical trends. It should be noted that these counts are for the peak hour, the one hour experiencing the highest volume of bicyclists throughout the day, and not the 2-hour peak period. As shown in the **Table 22**, the average weekday bicycle volume is 41 bicyclists per location in 2014. This is 31% lower than the historical average (2007-2013), and is the lowest average for a monitoring cycle since 2007. However, for the weekends, the average bicycle volume is 144 per location in 2014. This is 18% more than the historical average from 2007-2013.

5.2.2 Historical Pedestrian Volume Trends

Weekday and weekend pedestrian peak hour count data is shown in **Table 23**. The pedestrian data collected for this monitoring period was compared with the previous cycles' data to determine historical trends. It should be noted that these counts are for the peak hour, the one hour experiencing the highest volume of pedestrians throughout the day, and not the 2-hour peak period. The average weekday pedestrian volume is 64 pedestrians per location in 2014. This is 37% lower than the historical average (2007-2013), and is the lowest average for a monitoring cycle since 2007. However, for the weekends, the average bicycle volume is 165 per location in 2014. This is 13% more than the historical average from 2007-2013.

The noticeable downward trends of bicycle and pedestrian activity during the weekdays can be partially based on the peak period. Bicycle and pedestrian activity do not necessarily follow the same trend because of the extended travel time required by using a non-auto mode. With longer travel times associated with bicycling, walking, or using transit services, the peak periods for these various modes have been found outside the standard bounds used to define vehicle peak period traffic.

Table 22: Weekday and Weekend Peak Hour Historical Bicycle Counts, 2007-2014

ID #	Location, City	Bicycle Counts - Weekday Peak Hour										Bicycle Counts - Weekend Peak Hour									
		2007	2008	2009	2010	2011	2012	2013	2007-2013 Average	2014	Percent Change*	2007	2008	2009	2010	2011	2012	2013	2007-2013 Average	2014	Percent Change*
1	Tiburon Blvd at Main St, Tiburon	64	54	84	40	76	53	67	63	45	-28%	154	147	64	213	185	127	103	142	150	6%
4	Bridgeway at Princess St, Sausalito	129	184	121	127	40	207	314	160	132	-18%	91	467	502	460	476	283	573	407	746	83%
5	San Anselmo Ave at Tunstead, San Anselmo	41	40	69	62	100	46	60	60	36	-40%	102	34	128	119	166	233	124	129	134	4%
6	Broadway at Bolinas Rd, Fairfax	61	67	80	58	303	55	61	98	50	-49%	167	82	239	128	238	302	164	189	233	24%
8	Magnolia at Ward, Larkspur	25	33	45	25	26	16	31	29	28	-2%	76	102	104	113	125	188	239	135	87	-36%
9	Mill Valley-Sausalito Path at E. Blithedale, Mill Valley	84	98	93	81	99	122	64	92	69	-25%	111	302	300	243	279	355	241	262	252	-4%
10	Mill Valley-Sausalito Path at McFlashan Path, Tam Valley	101	156	116	166	114	153	112	131	93	-29%	266	339	397	344	386	308	367	344	360	5%
11	Tiburon Path at Blackies Pasture, Tiburon	77	58	93	93	86	36	41	69	58	-16%	80	139	153	251	255	114	106	157	190	21%
12	Larkspur-Corte Madera Path at Baltimore Wye	28	44	41	36	68	31	43	42	35	-16%	57	57	69	66	77	47	79	65	69	7%
13	Corte Madera Creek Path at Bon Air Road, Greenbrae	27	38	35	61	N/A	24	32	36	35	-3%	35	26	49	66	N/A	40	45	44	35	-20%
15	Camino Alto at E. Blithedale, Mill Valley	36	33	18	93	20	12	8	31	14	-55%	38	131	42	20	21	82	43	54	50	-7%
16	Pacheco Hill Path at Alameda del Prado	6	11	4	28	27	3	17	14	21	53%	5	13	30	22	32	32	24	23	22	-3%
17	Ranchitos Rd at Puerto Suello Hill Summit, San Rafael	22	11	15	65	101	29	17	37	23	-38%	67	4	11	11	38	59	17	30	47	59%
18	Doherty Dr at Hall Middle School, Larkspur	28	26	40	78	86	N/A	115	62	15	-76%	19	31	12	9	37	N/A	21	22	18	-16%
20	Cal Park Tunnel Path at Andersen Dr, San Rafael	37	39	35	30	76	33	40	41	20	-52%	23	23	14	95	77	47	57	48	29	-40%
21	S. Novato Blvd at Rowland, Novato	18	N/A	12	76	12	5	15	23	10	-57%	13	N/A	10	11	15	20	16	14	21	48%
22	Bellam at Andersen, San Rafael	21	N/A	25	26	29	66	24	32	17	-47%	8	N/A	16	22	49	30	10	23	11	-51%
Average		47	59	54	67	79	56	62	60	41	-31%	77	126	126	129	154	142	131	123	144	18%

Notes: *Percent change shown is between 2014 counts and the 2007-2013 averages.
N/A indicates data not available

Table 23: Weekday and Weekend Peak Hour Pedestrian Historical Counts, 2007-2014

ID #	Location, City	Pedestrian Counts - Weekday Peak Hour										Pedestrian Counts - Weekend Peak Hour									
		2007	2008	2009	2010	2011	2012	2013	2007-2013 Average	2014	Percent Change*	2007	2008	2009	2010	2011	2012	2013	2007-2013 Average	2014	Percent Change*
1	Tiburon Blvd at Main St, Tiburon	269	134	226	161	82	234	228	191	130	-32%	564	187	238	200	394	332	159	296	427	44%
4	Bridgeway at Princess St, Sausalito	348	514	394	520	506	696	638	517	376	-27%	303	1388	1782	1676	1055	890	1316	1201	1381	15%
5	San Anselmo Ave at Tunstead, San Anselmo	122	66	140	129	181	228	186	150	107	-29%	222	60	194	258	394	307	202	234	234	0%
6	Broadway at Bolinas Rd, Fairfax	74	178	121	166	252	187	131	158	69	-56%	125	276	124	121	205	204	209	181	197	9%
8	Magnolia at Ward, Larkspur	84	105	123	119	125	97	159	116	81	-30%	102	114	133	48	195	170	128	127	165	30%
9	Mill Valley-Sausalito Path at E. Blithedale, Mill Valley	38	41	26	42	86	78	44	51	35	-31%	19	39	28	29	33	31	63	35	34	-2%
10	Mill Valley-Sausalito Path at McFlashan Path, Tam Valley	20	54	40	15	33	106	46	45	44	-2%	48	40	55	52	53	76	65	56	43	-23%
11	Tiburon Path at Blackies Pasture, Tiburon	84	164	78	115	117	92	72	103	79	-23%	75	97	145	166	267	148	212	159	153	-4%
12	Larkspur-Corte Madera Path at Baltimore Wye	64	42	51	60	51	31	56	51	55	8%	33	44	59	33	52	29	41	42	64	54%
13	Corte Madera Creek Path at Bon Air Road, Greenbrae	35	48	35	46	N/A	44	37	41	36	-12%	26	37	47	25	N/A	42	23	33	28	-16%
15	Camino Alto at E. Blithedale, Mill Valley	35	13	15	67	112	10	20	39	11	-72%	15	12	6	9	8	22	10	12	15	28%
16	Pacheco Hill Path at Alameda del Prado	7	15	7	20	29	22	2	15	18	24%	11	8	11	14	12	16	7	11	5	-56%
17	Ranchitos Rd at Puerto Suello Hill Summit, San Rafael	14	1	4	11	78	8	6	17	9	-48%	20	1	4	5	11	0	13	8	6	-22%
18	Doherty Dr at Hall Middle School, Larkspur	38	46	161	44	387	N/A	118	132	15	-89%	30	26	13	8	30	N/A	22	22	21	-2%
20	Cal Park Tunnel Path at Andersen Dr, San Rafael	11	19	31	26	23	0	10	17	1	-94%	21	24	10	71	32	3	5	24	2	-92%
21	S. Novato Blvd at Rowland, Novato	39	N/A	9	82	29	16	41	36	16	-56%	13	N/A	6	7	8	25	9	11	11	0%
22	Bellam at Andersen, San Rafael	39	N/A	9	14	30	154	11	43	11	-74%	20	N/A	34	31	31	30	5	25	11	-56%
Average		78	96	86	96	133	125	106	101	64	-37%	97	157	170	162	174	145	146	146	165	13%

Notes: *Percent change shown is between 2014 counts and the 2007-2013 average.
N/A indicates data not available

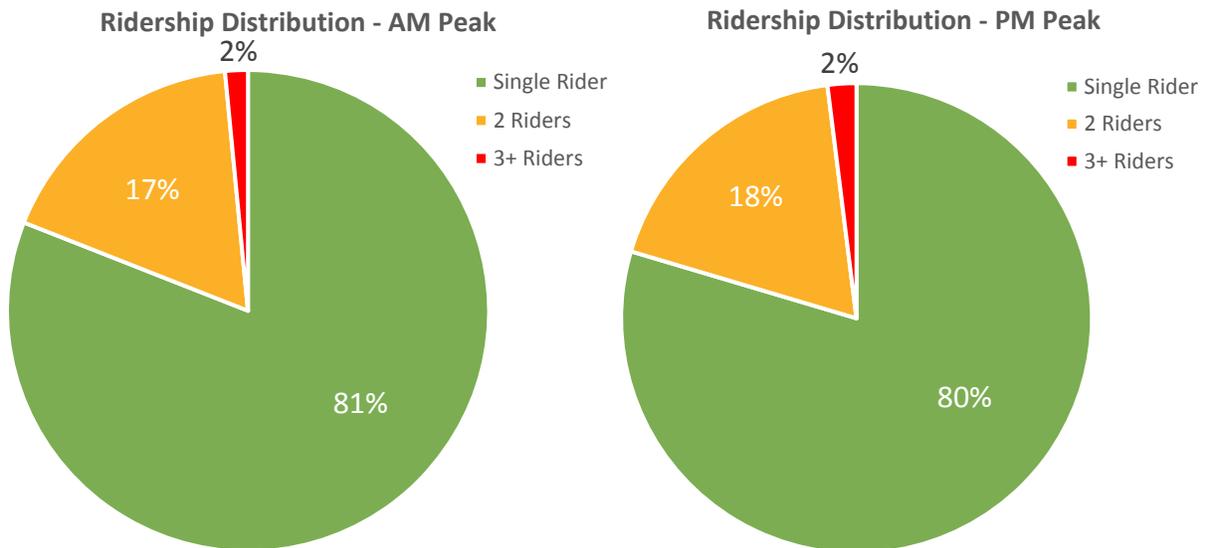
6.0 ADDITIONAL ROADWAY CHARACTERISTICS

The following chapter discusses the distributions of ridership on CMP roadways and Marin County transit providers. As mentioned earlier, vehicle occupancy counts were conducted at the following seven locations within the CMP network:

1. Segment #1A – SR 1 from US 101 to Tennessee Valley Road
2. Segment #1B – SR 1 from Northern Avenue to Almonte Boulevard
3. Segment #3A – US 101 from Golden Gate Bridge to Spencer Avenue
4. Segment #3B – US 101 from SR 131 (Tiburon Boulevard) to Tamalpais Drive
5. Segment #3F – US 101 from Freitas Parkway to Lucas Valley Road
6. Segment #3G – US 101 from Atherton Avenue to Sonoma County Line
7. Segment #5A – I-580 from Sir Francis Drake Boulevard to Marin County Line

6.1 Passenger Vehicle Rider Distribution

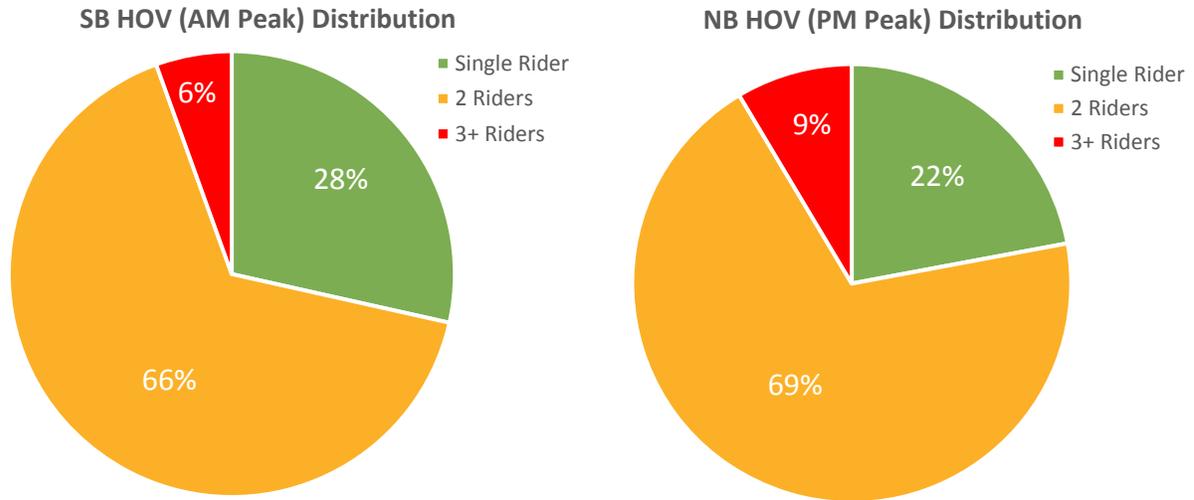
From vehicle occupancy counts at the above locations, a percent distribution was generated to depict the portion of drivers who have single; double; or three or more person ridership. The charts below display the percent of vehicles observed on all occupancy segments with these characteristics.



As seen above, there is an approximate 80:20 distribution between single and HOV ridership respectively across all seven monitored segments regardless of the presence of HOV/Express Lanes. The data provides an insight that a large portion of travelers along these segments drive alone and a push for carpooling could benefit the CMP network.

In addition to a global view of the ridership distribution, HOV-specific occupancy counts were conducted on the two occupancy segments with HOV lanes available, Segment #3B and Segment #3F. From the collected data, a distribution of HOV (double; or three or more person) and single ridership was determined to show

how many travelers use the HOV lane and have only one occupant. The following charts show this trend for the HOV operating direction during each peak period.

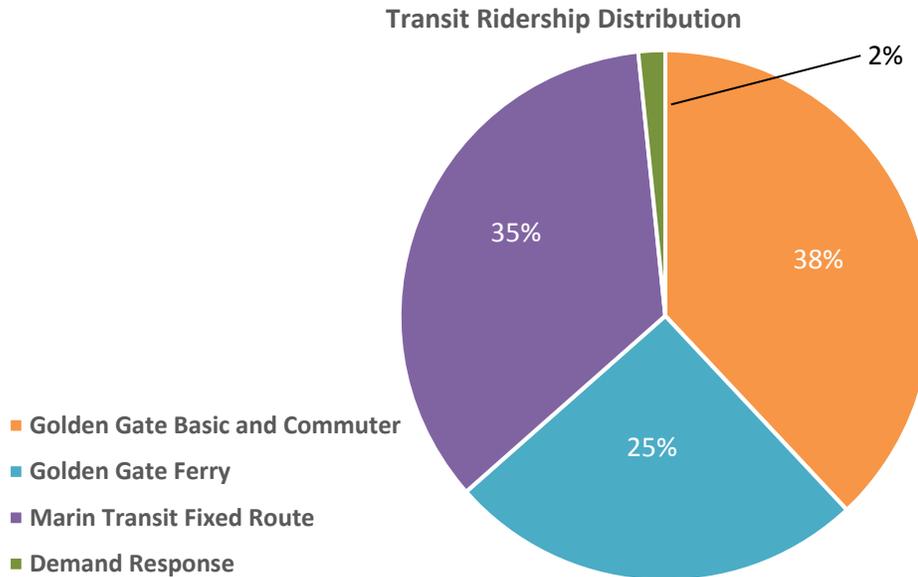


As the charts show, over 20% of HOV lane users are single occupancy vehicles during both peak periods. This trend is comprised of three types of users, motorcyclists, those who drive Clean Air Vehicles legally utilizing the lane without a passenger, and those who use the lane illegally.

6.2 Transit Rider Distribution

This section discusses the ridership distribution amongst all transit operations within Marin County and the following chart displays the use percentage of each transit mode. The following lists the services included in the analysis for Fiscal Year 2013-2014:

1. Golden Gate Basic and Commuter Service
2. Golden Gate Ferry Service
3. Marin Transit Sponsored Local Service
4. Marin Transit Shuttles and West Marin Routes (including Novato Dial-a-Ride)
5. Marin Access Paratransit Service



The above chart shows that there is a large (63% total) ridership using Golden Gate Transit Services. Of this, 38% use the Basic and Commuter Services and the remaining 25% take the Ferry. This distribution helps display that when looking at improving transit services within Marin County, Golden Gate Transit Services would benefit most. The distribution also illustrates that 35% of transit users are on the Marin Transit Fixed Route Services. This knowledge allows TAM to determine where to allocate their limited funding for transit improvements in the near future.

The remaining 2% of ridership is comprised of the Marin Access Services. Though these services do not provide a majority of rides within the system, they provide essential movement of Marin residents and should not be ignored when considering improvements.

7.0 NEXT STEPS

7.1 2014 CMP Conformance

As discussed earlier, four arterial segments and three freeway segments were found to be in non-compliance of the adopted LOS standards. Since all of these seven segments have been grandfathered in, no actions or corrective measures are required.

7.2 Travel Time Reliability

MAP 21, the federal transportation bill, places increased emphasis on travel time reliability. Since travel time reliability is extremely important to the users, and since it plays a key role in a user's mode choice, TJKM recommends that TAM consider requiring travel time reliability data for future CMP monitoring efforts.

7.3 CMP Update

The next step in the CMP process is to complete the 2015 CMP Update. TJKM will work with TAM staff on a work plan and schedule to complete the 2015 Update as per CMP guidelines.



Pleasanton

4305 Hacienda Drive
Suite 550

Pleasanton, CA 94588

T: 925.463.0611

F: 925.463.3690

WWW.TJKM.COM