

Appendix I

## **Ridership Technical Memorandum**

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## MEMORANDUM

**TO:** Stacy Cocke, Caltrain JPB

**FROM:** George Naylor, Santa Clara VTA

**DATE:** January 30, 2014

**SUBJECT:** Caltrain Peninsula Corridor Electrification Project – System Ridership Analysis

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*The system wide ridership forecasts prepared for the purposes of the Peninsula Corridor Electrification (PCEP) EIR does not imply that VTA endorses any subsequent findings made in the PCEP EIR, or in any other planning document, based on the ridership forecasts prepared by VTA staff.*

*Prototypical Caltrain schedules were assumed for the 2020 Project and the 2040 Project + Transbay Transit Center (TTC) scenarios. These schedules were assumed for the purposes of EIR analysis and do not represent a commitment of Caltrain service.*

### 1.0 Introduction

The Peninsula Corridor Joint Powers Board (JPB) is in the planning and environmental phase of analysis for the Caltrain Peninsula Corridor Electrification Project. As part of the analysis, detailed ridership forecasts are required in order to determine system and station-level impacts and to provide inputs for air quality impacts. Ridership forecasts to produce primarily system-level results were prepared using the VTA Model for a base year 2013 validation for existing conditions, and for year 2020 and 2040 forecast horizons. No Project, Project and Project plus the Transbay Transit Center (TTC) scenarios were modeled for the years 2020 and 2040. No Project conditions for the Caltrain Corridor for both 2020 and 2040 reflected operations the same as service levels provided in existing year 2013, with different service configurations for the 2020 Project and 2040 Project plus TTC scenarios.

This technical memorandum summarizes the methodology used to prepare the ridership to support the ridership forecasts, and describes the base year 2013 and forecast year 2020 and 2040 ridership results. A description is also provided of the inputs and assumptions used in the preparation of the base and forecast ridership. It should be noted that the ridership forecasts produced by the VTA Model presented in this memorandum will be subsequently refined using other methods that will allow more detailed station-level impacts to be analyzed, using a process known as the Fehr & Peers Direct Ridership Model

(DRM). The methodology used to develop and apply the DRM is summarized in a separate technical memorandum.

## **2.0 Model Background**

The travel demand model used to prepare the system wide ridership forecasts to support the Caltrain Peninsula Corridor Electrification Project is a version of the VTA Model developed for the San Mateo City/County Association of Governments in 2011. This version of the VTA Model was originally developed in 2009 by the Santa Clara Valley Transportation Authority to support the Grand Boulevard Initiative (GBI) Corridor Project and the San Mateo Countywide Transportation Plan (CTP) update. The VTA Model used in the CTP update was validated to year 2005 conditions and made use of the Association of Bay Area Governments (ABAG) Committed Regional Plans socioeconomic data forecasts (informally known as ABAG projections 2011) to develop forecast year 2035 projections.

### ***Model Enhancements***

For the Caltrain Electrification Project, the VTA Model was updated to reflect 2013 base year conditions, and the model was adjusted and validated to year 2013 Caltrain system ridership. Caltrain system ridership has been increasing significantly since 2005, and it was important that the model accurately reflect the current high level of ridership. The 2013 model networks were updated from the original base year 2005 for both transit and highway network changes, including a comprehensive update of both public and private shuttles serving the Caltrain corridor. Once the base year 2013 model was validated to observed travel patterns, the VTA Model was then used to prepare forecast year ridership and output for the project horizon years of 2020 and 2040, using updated socioeconomic data forecasts prepared by ABAG and updated background transportation improvements as defined in the recently adopted Plan Bay Area Regional Transportation Plan.

## **3.0 Model Inputs**

### ***ABAG Socioeconomic Data Projections***

The socioeconomic data sets used as inputs to prepare the ridership forecasts were based on the ABAG Sustainable Community Scenario (SCS) prepared in September 2012. These datasets were officially adopted in July 2013 by the Metropolitan Transportation Commission (MTC), and are used to establish regional model consistency for models used by the Congestion Management Agencies (CMAs), and were used to develop the regional travel demand forecasts for Plan Bay Area. MTC provided the socioeconomic data at the 1,454 Regional model Travel Analysis Zone (RTAZ) level for years 2010 to 2040 in 5 year increments. Project staff allocated the RTAZ level forecasts to the smaller TAZs used in the VTA Model. Data for the base year 2013 was developed by interpolating year 2010 and 2015 MTC RTAZ forecasts. Allocation factors from the previous set of VTA model socioeconomic data used in the San Mateo CTP were used to distribute growth from the RTAZ level to the VTA Model TAZs for the base year 2013 and forecast years 2020 and 2040. Table 1 shows households, population and jobs for the years 2013, 2020 and 2040 for the project corridor. Overall, the Caltrain service area is projected to experience significant growth in households, population and jobs, with fairly balanced levels of growth

spread out between the three Counties that comprise the service area. In the short term horizon from 2013 to 2020, jobs are increasing as a percentage of totals faster than either households or population. However, in the long-term horizon from 2013 to 2040, households and population increase as a percentage basis at a similar pace as jobs. Santa Clara County households, population and jobs grow at a slightly faster rate than San Francisco and San Mateo Counties on both a percentage and absolute basis.

**Table 1 Project Corridor Population and Jobs for 2013, 2020 and 2040<sup>1</sup>**

<b>San Francisco County</b>	<b>2013</b>	<b>2020</b>	<b>Percent Increase 2013 to 2020</b>	<b>2040</b>	<b>Percent Increase 2013 to 2040</b>
Households	355,600	379,100	6.6%	447,200	25.8%
Population	824,200	884,300	7.3%	1,076,300	30.6%
Jobs	598,000	671,600	12.3%	760,200	27.1%
<b>San Mateo County</b>	<b>2013</b>	<b>2020</b>	<b>Percent Increase 2013 to 2020</b>	<b>2040</b>	<b>Percent Increase 2013 to 2040</b>
Households	263,400	276,900	5.1%	316,900	20.3%
Population	730,800	772,000	5.6%	899,200	23.0%
Jobs	366,000	412,100	12.6%	462,900	26.5%
<b>Santa Clara County</b>	<b>2013</b>	<b>2020</b>	<b>Percent Increase 2013 to 2020</b>	<b>2040</b>	<b>Percent Increase 2013 to 2040</b>
Households	624,300	672,500	7.7%	819,600	31.3%
Population	1,828,700	1,959,900	7.2%	2,411,700	31.9%
Jobs	978,600	1,103,000	12.7%	1,263,800	29.1%
<b>Service Area Total</b>	<b>2013</b>	<b>2020</b>	<b>Percent Increase 2013 to 2020</b>	<b>2040</b>	<b>Percent Increase 2013 to 2040</b>
Households	1,243,300	1,328,500	6.9%	1,583,700	27.4%
Population	3,383,700	3,616,200	6.9%	4,387,200	29.7%
Jobs	1,942,600	2,186,700	12.6%	2,486,900	28.0%

<sup>1</sup> At the time of the project start, the available Draft ABAG Sustainable Community Strategies (Projections 2013) regional demographic forecasts were used to develop ridership forecasts. These projections were released by ABAG in September 2012. In late 2013, ABAG and MTC released updated final versions of the regional projections. These have been reviewed and while there are differences in the forecasts, primarily due to a correction of missing jobs at SFO and corrections to areas showing large decreases in jobs in the ABAG September 2012 version, overall system ridership is not expected to be significantly different. Therefore, the ridership forecasts presented in this report are expected to be reasonable for the purposes of the EIR evaluation of alternatives.

### ***Roadway and Transit Networks***

Roadway and transit networks for the base year 2013 were coded based on changes from the previous 2005 base year networks. These changes included transit schedule and service changes for Caltrain as well as for the background connecting transit systems of BART, MUNI, SamTrans and VTA. Most changes to the background transit systems were relatively minor, with the exception of SamTrans, as significant modifications to the service levels of 2005 were implemented to develop the new base year 2013, particularly for express bus service. The most significant change implemented by SamTrans between 2005 and the base year 2013 consisted of reducing and modifying express bus service throughout San Mateo County, resulting in the operation of only the SamTrans Express Route K, which provides service along the El Camino Real and US 101 corridor to and from San Francisco. Caltrain is served by a variety of shuttles that complete the first and last mile connections to rider origins and destinations. These shuttles are provided by both public and private operators. The existing year 2005 VTA Model contained all public Caltrain shuttles and many private shuttles operated at Mountain View Caltrain Station, however, there were found to be many private shuttles observed to be in operation but not coded in the base transit networks. Caltrain staff and consultant staff provided a list of private shuttles and these were coded into the model networks if the destination was obvious. A list of coded private shuttles added to the base year 2013 networks is provided in Table 2.

In addition, changes to roadway networks were coded to reflect changes from 2005 to 2013, including the recently opened auxiliary lanes on US 101 between Marsh Road and University Avenue, the full implementation of ramp metering along US 101 and the completion of carpool lanes in I-880 and the Route 237 Express Lanes in Santa Clara County. For the forecast years, the project list from Plan Bay Area was used to code in improvements for the forecast year 2020 and 2040. Year of opening for projects identified in Plan Bay Area were provided by MTC for each project. The year of opening was evaluated by the project team for major transit capital projects within the PCEP corridor to refine year 2020 and 2040 background transit network assumptions. The list of assumed background highway and transit projects by year of operation is shown in Table 3.

### ***Caltrain Schedules and Service Levels for Base Year 2013 and 2020 Project and 2040 Project + TTC Conditions***

For the base year 2013, existing Caltrain schedules were used to code in services used in the base year validation. Transit services are coded in the model networks to reflect AM peak period service levels, typically from 6 AM to 9 AM, and mid-day 2-hour service levels reflecting service from 11 AM to 1 PM. For the forecast year 2020 and 2040, the base year 2013 coded networks reflected the No Project conditions. Project alternative coding was based on schedules provided by Caltrain staff to reflect year 2020 PCEP with mixed-fleet operations of both diesel vehicles and electrified (EMU) vehicles and year 2040 to reflect a fully electrified (EMU) fleet between San Jose and San Francisco and extension of some service to the TTC. The schedules for year 2020 PCEP (mixed fleet) and 2040 Project + TTC (full EMU between SJ – SF & diesel shuttle between SJ - Gilroy) were used to code the transit networks are provided in Appendix A of this memorandum.

**Table 2 Private Shuttle Services in the Base Year 2013 Transit Networks**

<b>SHUTTLE PROVIDERS at Mountain View Caltrain</b>	<b>ROUTE or BUSINESS SERVING</b>
Abbott Vascular Shuttle	Abbott Vascular
Bauers	Cisco
Corinthian	Netflix
Corinthian	Oracle
Kehillah School Shuttle	Kehillah School (Not coded)
Google	Google
Lux Bus America	Apple
Parking Company of America	Packard Foundation
SFO Hotel Shuttle	LinkedIn
SFO Airporter	Yahoo
Silicon Valley (Worldwide Ground Trans.)	Samsung
Space Systems Loral	Loral
The Girls Middle School Shuttle	The Girls Middle School (Not coded)
UCSC Vanpool	UCSC
Veoila	Microsoft
<b>SHUTTLE PROVIDERS at Palo Alto Caltrain</b>	<b>ROUTE or BUSINESS SERVING</b>
Parking Company of America	Nook
SFO Hotel Shuttle	Facebook
Stanford Marguerite	Stanford
<b>SHUTTLE PROVIDER at Redwood City Caltrain</b>	<b>ROUTE or BUSINESS SERVING</b>
Kaiser Hospital Shuttle	Kaiser
<b>SHUTTLE PROVIDER at San Carlos</b>	<b>ROUTE or BUSINESS SERVING</b>
SFO Airporter	Google
<b>SHUTTLE PROVIDERS AT MILLBRAE</b>	<b>ROUTE or BUSINESS SERVING</b>
Pure Luxury Transportation	Visa
Corinthian	Solar City, GoPro
SFO Airporter	Google, San Francisco
<b>SHUTTLE PROVIDERS AT SF 4<sup>th</sup>/KING</b>	<b>ROUTE or BUSINESS SERVING</b>
GAP	GAP Headquarters
UCSF	UCSF

**Table 3 List of Background Transit Projects for Forecast Year 2020 and 2040**

Item	Description	Jurisdiction	2020	2040	Related	Notes
1	Transbay Transit Center Phase 1	Multi-County	Y	Y		
2	Caltrain Service Improvements (6 peak trains, Electrification, CBOSS, PTC)	Multi-County	Y	Y		Peninsula Corridor Elec. EIR Project
3	Transbay Center/Caltrain DTX Phase 2	Multi-County	N	Y		
4	Union City Intermodal, Dumbarton Rail Corridor (DRC) Segment G Improvement	Alameda	Y	Y		Capitol Corridor to Union City (2020 opening year)
5	Commuter Rail service - Peninsula and East Bay (DRC service)	Alameda	N	Y		3 alts (TSM, shuttle & SF/SJ); assumed rail opt.
6	Southern Intermodal Terminal - MUNI T line to Caltrain Bayshore	San Francisco	N	Y	6, 9, 23	Bi-County Plan says 2020 - 2025 opening year
7	SF Congestion Pricing - CBD Cordon	San Francisco	Y	Y		Not transit, but influences EIR Project
8	Redwood City to SF Ferry Service	San Mateo	N	Y		Per RWC staff
9	Caltrain Bayshore Intermodal Terminal	San Mateo	Y	Y	6, 9, 23	Bi-County Plan says 2015-2020 opening year
10	SamTrans BRT - Palo Alto to Daly City	San Mateo	Y	Y	10, 11	
11	Infrastructure to support SamTrans Rapid Bus	San Mateo	Y	Y	10, 11	Should have infrastructure & rapid bus by 2020
12	Mineta San Jose APM Connector	Santa Clara	N	Y		
13	El Camino Real BRT	Santa Clara	Y	Y		2018 opening year
14	Stevens Creek BRT	Santa Clara	Y	Y		2018 opening year
15	BART Extension to Berryessa	Santa Clara	Y	Y		2018 opening year
16	BART Extension to Santa Clara (Phase 2)	Santa Clara	N	Y		2024 opening year
17	Tasman Express Long-T Alum Rock to MTV	Santa Clara	Y	Y		2018 opening year
18	Van Ness BRT "Center A" Scenario	San Francisco	Y	Y		
19	MUNI T Line Central Subway to Chinatown	San Francisco	Y	Y		2018 opening year
20	MUNI E Line	San Francisco	N	Y		Extend F line to Fort Mason
21	Ferry Service to Treasure Island	San Francisco	N	Y		Likely minimum impact to Caltrain EIR Project
22	Geary BRT	San Francisco	Y	Y		2020 opening year; DIER in 1 year

Item	Description	Jurisdiction	2020	2040	Related	Notes
23	Geneva-Harney BRT	San Francisco	Y	Y	6, 9, 23	Bi-County Plan assumes 2015-2020 opening year
24	Central Subway to North Beach	San Francisco	N	Y		
25	SMART Rail	Multi-County	Y	Y		2016 opening year
26	Oakland BRT (Telegraph BRT - AC Transit)	Alameda	Y	Y		2020 opening year

## **Pricing**

Pricing assumptions used in the base year 2013 and forecast years 2020 and 2040 for auto parking charges were consistent with parking costs used by MTC in Plan Bay Area. Auto parking costs are assumed to increase over time at a rate faster than inflation, and are estimated to increase according to increases in employment density at the destination end of the trip. Bridge tolls are also consistent with values used by MTC in Plan Bay Area, and are assumed to keep pace with inflation and therefore are not adjusted for the forecast years 2020 and 2040. Transit fares for the corridor operators were based on year 2013 fares and transfer fares. Caltrain fares reflected year 2013 zone-based fares. Transit fares are assumed to keep pace with inflation, and are therefore not adjusted for the forecast years 2020 and 2040. A daily parking charge of \$4 per day was applied to the Caltrain lots that implement a parking charge. The parking rate was increased to \$5 per day for the year 2020 and 2040 forecast horizons.

### **4.0 Base Year 2013 Model Validation**

Model validation is the process where the estimates of travel demand generated by the simulation models are compared to observed count data. Various model parameters are adjusted to achieve a close comparison to the counts within a certain error target. For this project, the goal of validation was for the model to be within 5 percent error of daily system ridership for Caltrain, and within 10 percent error for Caltrain stations summarized at the County-level, 15 percent error for all other transit operators in the corridor system wide park-and-ride demand to within 10 percent error. It should be noted that given that the VTA Model estimates travel demand for 13 Counties for a population of over 8 million, and it is unrealistic for the models to provide station-level error estimates of even less than 15 percent error unless significant time and resources are expended. Therefore, the strategy for model validation was to meet the validation goals at the system level, and then use a Direct Ridership Model (DRM) developed by Fehr and Peers Associates, Inc. to provide more detailed station-level results used in the station impact analysis. The methodology used to develop and apply the DRM is summarized in a separate technical memorandum.

Once the 2013 socioeconomic data, networks and pricing inputs were updated, the VTA model was implemented to reflect the new base year 2013 conditions. The VTA Model generates transit boardings by operator at the station and stop level of detail, and are also capable of estimating the mode of access and egress for transit boardings. The VTA Model was applied in an iterative manner with subsequent model runs devised to improve the validation results. During the course of validation, the models were systematically reviewed to ensure that the detailed network coding inputs were correct if station boardings were outside of an acceptable error range. A helpful piece of information used to refine the model validation were the results of the intercept surveys (June 2013) of riders that identified the mode of access used when boarding the station. Using this information, the network coding for the mode of access was modified to more accurately reflect the estimated mode of access at each station.

The following corrections were implemented to improve the validation results:

- Drive-access connectors to stations were added to San Francisco Caltrain stations at King/4<sup>th</sup> and 22<sup>nd</sup> Street to reflect the informal park-and-ride that occurs at these stations based on the intercept surveys,
- Reviewing coded frequencies and alignments of public bus feeder services to improve transit access shares,
- Private shuttles were added to improve boardings at specific stations (based on information shown in Table 2), and
- Comprehensive review of drive-access connectors to all stations supplemented with field observations of park-and-ride demand to verify model estimates.

The final results of the modeled daily boarding estimates for each Caltrain station are provided in Table 4. Overall, the model estimates system wide ridership to within 1.4 % error and between -0.4 % to 10.9 % error at the County level, close to meeting the validation goals. At the individual station level, the results have a much wider range of variation, with stations exhibiting a low boarding volume more problematic in matching than the high volume stations. Express train stations, which exhibit the most passenger volume, are within -3.9 % error.

Table 5 summarizes the park-and-ride demand predicted by the models compared to the observed park-and-ride demand counted at each station. As previously mentioned, considerable time and attention was paid to the park-and-ride estimates generated by the models supplemented by field reviews of the parking behavior at particularly problematic stations. In addition to the actual counted spaces occupied at each station, counts were supplemented with data from the intercept surveys as well as a determination by JPB staff as to adjacent parking spaces available off site. When this parking demand was accounted for in the observed spaces, the model estimated improved significantly, however, system wide, the model overestimates park-and-ride demand by over 50 percent of observed. This systematic overestimation will be accounted for and improved in the DRM station level estimates used to define station level impacts in the environmental analysis.

Table 6 shows a comparison of the daily boardings by each operator in the corridor. Overall transit boardings estimated by the models are within 1 percent of the observed boardings, however, there is significant variation between the operators. Caltrain and BART system estimates are closest to observed values, with MUNI Metro and bus showing slightly better results compared to both VTA and SamTrans. As with the Caltrain system comparisons, the model is much more accurate for larger corridor comparisons and becomes less accurate at more detailed levels. Tables 7 and 8 provide the boardings summarized by mode of access. The mode of access is the means by which the rider accesses the station. The VTA Model is capable of estimating mode of access for walk, park-and-ride, kiss-and-ride and transit. Table 7 shows the boardings split out by the mode of access to each station. Table 8 shows a comparison of the mode of access percentages estimated by the models to the observed percentages developed from the station intercept surveys. As with the previous model metrics, the model is much more accurate at the system level with significant variation for individual stations. It should be noted that a significant limitation of the VTA Model is that the models are not able to estimate bike mode of

access to transit. Few if any regional models are capable of estimating bike mode of access to transit (none in the Bay Area have this capability) and this is a market segment that has grown significantly for Caltrain, now reaching up to 14% of all boardings using bike access modes – higher than the transit access shares. Since there is an obvious mismatch with the mode of access comparisons between what the VTA Model is capable of providing and the observed market shares, it is difficult to assess the accuracy of the VTA Model for mode of access estimation, however, at a system level the model predicts shares of walk and drive access close to observed shares. The Fehr & Peers DRM includes bike mode of access.

**Table 4 Base Year 2013 Caltrain Boardings – Model Validation Results**

Station	Modeled Boardings	Observed Boardings	Modeled - Observed Boardings	Percent Error from Observed
SF	10,307	10,760	-453	-4.2%
22 <sup>nd</sup>	1,439	1,303	136	10.4%
Bayshore	458	190	268	141.1%
SSF	782	373	409	109.8%
San Bruno	631	451	180	39.8%
Millbrae	2,316	3,259	-943	-28.9%
Broadway	0	0	0	NA
Burlingame	1,032	780	252	32.3%
San Mateo	1,870	1,570	300	19.1%
Hayward Park	508	334	174	52.0%
Hillsdale	2,617	2,278	339	14.9%
Belmont	613	508	105	20.7%
San Carlos	1,544	1,170	374	32.0%
Redwood City	2,882	2,588	294	11.4%
Atherton	0	0	0	NA
Menlo Park	1,707	1,571	136	8.7%
Palo Alto	5,727	5,613	114	2.0%
Cal Avenue	1,075	1,261	-186	-14.7%
San Antonio	583	643	-60	-9.3%
Mountain View	3,262	3,834	-572	-14.9%
Sunnyvale	1,710	2,272	-562	-24.7%
Lawrence	853	688	165	24.0%
Santa Clara	756	792	-36	-4.6%
College Park	51	118	-67	-57.0%
Diridon	3,583	3,523	60	1.7%
Tamien	692	783	-91	-11.6%
Capitol	89	39	50	128.1%
Blossom Hill	107	63	44	69.8%
Morgan Hill	92	129	-37	-28.8%
San Martin	78	45	33	72.9%
Gilroy	350	128	222	173.7%

Station	Modeled Boardings	Observed Boardings	Modeled - Observed Boardings	Percent Error from Observed
<b>All</b>	<b>47,715</b>	<b>47,066</b>	<b>649</b>	<b>1.4%</b>
SF County Stations	12,204	12,253	-49	-0.4%
SM County Stations	16,502	14,882	1,620	10.9%
SCL County Station	19,009	19,931	-922	-4.6%
Express Train Stations	35,551	37,001	-1,450	-3.9%

**Table 5 Base Year Validation 2013 Caltrain Estimated Park-and-Ride Space Demand**

Station	Existing Caltrain Lot Capacity	A	B	C	D	E	F
		Modeled Park and Ride Demand	Observed Park and Ride Utilization	Model - Observed Park and Ride Demand (A - B)	Possible Spaces in Adjacent Parking Lots	Implied On-Street Parking from Intercept Surveys	Parking Space Estimate Error (C - (D+E))
SF 4 <sup>th</sup> /King	0	543	0	543	0	75	468
22nd *	0	745	0	745	0	304	441
Bayshore	38	24	5	19	0	19	0
SSF	75	123	40	83	0	0	83
San Bruno	171	42	36	6	0	33	-27
Millbrae	175	517	133	384	0	23	361
Broadway	137	NA	NA	NA	NA	NA	NA
Burlingame	58	145	21	124	0	9	115
San Mateo	40	476	9	467	245	0	222
Hayward Park	213	77	5	72	0	3	69
Hillsdale	518	983	445	538	0	66	472
Belmont	375	167	79	88	0	2	86
San Carlos	212	352	72	280	0	61	219
Redwood City	557	465	259	206	0	31	175
Atherton	0	NA	NA	NA	NA	NA	NA
Menlo Park	155	275	53	222	0	32	190
Palo Alto	389	366	383	-17	0	22	-39
Cal Avenue	185	191	65	126	0	8	118
San Antonio	199	109	65	44	65	12	-33
Mountain View	340	605	325	280	0	114	166
Sunnyvale	439	670	491	179	0	171	8
Lawrence	122	69	93	-24	0	32	-56
Santa Clara	289	130	319	-189	0	20	-209
College Park	0	NA	NA	NA	NA	NA	NA

Station	Existing Caltrain Lot Capacity	A	B	C	D	E	F
		Modeled Park and Ride Demand	Observed Park and Ride Utilization	Model - Observed Park and Ride Demand (A - B)	Possible Spaces in Adjacent Parking Lots	Implied On-Street Parking from Intercept Surveys	Parking Space Estimate Error (C - (D+E))
Diridon	581	747	593	154	100	116	-62
Tamien	275	379	275	104	0	54	50
Capitol	379	44	52	-8	0	0	-8
Blossom Hill	425	57	57	0	0	0	0
Morgan Hill	486	55	148	-93	0	0	-93
San Martin	167	30	69	-39	0	0	-39
Gilroy	471	60	196	-136	0	0	-136
<b>All</b>	<b>7,471</b>	<b>8,449</b>	<b>4,288</b>	<b>4,161</b>	<b>410</b>	<b>1,207</b>	<b>2,544</b>
SF County Stations	38	1,312	5	1,307	0	398	909
SM County Stations	2,686	3,623	1,152	2,471	245	260	1,966
SCL County Station	4,747	3,513	3,131	382	165	549	-332
Express Train Stations	3,154	5,918	2,682	3,236	100	954	2,182
* No Formal PNR Lot at SF 4 <sup>th</sup> /King and 22nd Street Station PNR Spaces from Caltrain JPB and VTA 2012/2013							

**Table 6 Base Year Validation 2013 Model Estimated Daily Boardings by Transit Operator in the Project Corridor**

<b>Operator</b>	<b>Estimated</b>	<b>Observed</b>	<b>Estimated/Observed</b>
Caltrain	47,700	47,100	1.01
BART	367,900	366,600	1.00
SamTrans Local Bus	50,500	39,800	1.27
SamTrans Express Bus	1,000	1,300	0.77
VTA Light Rail	40,700	34,600	1.18
VTA Bus	124,900	103,100	1.21
MUNI Metro	158,600	173,500	0.91
MUNI Bus	513,600	531,700	0.97
<b>Subtotal</b>	<b>1,304,900</b>	<b>1,297,700</b>	<b>1.01</b>
Shuttles (Caltrain + Private)	11,400	8,448 <sup>2</sup>	

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<sup>2</sup> Only includes public shuttle ridership for FY2013.

**Table 7 Base Year 2013 Caltrain Boardings by Mode of Access by Station**

STATION	Walk	PNR	KNR	Transit	All	Walk	PNR	KNR	Transit	All
	Ons	Ons	Ons	Ons	Ons	Share	Share	Share	Share	Share
SF	832	1,195	131	4,143	6,301	13%	19%	2%	66%	100%
22nd	256	1,639	314	396	2,605	10%	63%	12%	15%	100%
Bayshore	0	53	9	677	739	0%	7%	1%	92%	100%
SSF	561	271	61	51	944	59%	29%	6%	5%	100%
San Bruno	842	92	21	89	1,044	81%	9%	2%	9%	100%
Millbrae	399	1,137	221	716	2,473	16%	46%	9%	29%	100%
Broadway	8	0	0	-8	0	0%	0%	0%	0%	0%
Burlingame	889	319	61	66	1,335	67%	24%	5%	5%	100%
San Mateo	1,354	1,048	210	134	2,746	49%	38%	8%	5%	100%
Hayward Park	213	170	31	0	414	51%	41%	7%	0%	100%
Hillsdale	853	2,163	424	473	3,913	22%	55%	11%	12%	100%
Belmont	355	367	72	90	884	40%	42%	8%	10%	100%
San Carlos	295	774	144	718	1,931	15%	40%	7%	37%	100%
Redwood City	796	1,024	195	1,582	3,597	22%	28%	5%	44%	100%
Atherton	0	0	0	0	0	0%	0%	0%	0%	0%
Menlo Park	303	606	112	1,732	2,753	11%	22%	4%	63%	100%
Palo Alto	727	806	136	267	1,936	38%	42%	7%	14%	100%
Cal Avenue	232	421	84	35	772	30%	55%	11%	5%	100%
San Antonio	495	240	46	56	837	59%	29%	5%	7%	100%
Mountain View	531	1,331	271	246	2,379	22%	56%	11%	10%	100%
Sunnyvale	414	1,475	295	329	2,513	16%	59%	12%	13%	100%
Lawrence	343	152	29	1	525	65%	29%	6%	0%	100%
Santa Clara	89	285	53	271	698	13%	41%	8%	39%	100%
College Park	3	0	0	0	3	100%	0%	0%	0%	100%
Diridon	167	1,643	311	1,771	3,892	4%	42%	8%	46%	100%
Tamien	115	833	158	47	1,153	10%	72%	14%	4%	100%
Capitol	59	96	18	1	174	34%	55%	10%	0%	100%
Blossom Hill	46	125	19	0	190	24%	66%	10%	0%	100%
Morgan Hill	24	122	20	6	172	14%	71%	12%	3%	100%
San Martin	7	67	12	4	90	8%	74%	13%	5%	100%
Gilroy	49	133	27	492	701	7%	19%	4%	70%	100%
<b>All</b>	<b>11,257</b>	<b>18,587</b>	<b>3,485</b>	<b>14,386</b>	<b>47,715</b>	<b>24%</b>	<b>39%</b>	<b>7%</b>	<b>30%</b>	<b>100%</b>
SF County Stations	1,088	2,887	454	5,216	9,645	11%	30%	5%	54%	100%
SM County Stations	6,868	7,971	1,552	5,643	22,034	31%	36%	7%	26%	100%
SCL County Station	3,301	7,729	1,479	3,527	16,036	21%	48%	9%	22%	100%
Express Train Stations	5,278	13,019	2,410	11,655	32,362	16%	40%	7%	36%	100%

Table 8

Base Year 2013 Daily Station Boardings by Mode of Access Compared to Observed\*

STATION	Model Estimate				Observed from Intercept Survey					
	Walk Share	Auto Share	Transit Share	All Share	Walk Share	Auto Share	Transit Share	Bike Share	Other Share	All Share
SF	13%	21%	66%	100%	19%	17%	39%	24%	1%	100%
22 <sup>nd</sup>	10%	75%	15%	100%	23%	44%	15%	18%	1%	100%
Bayshore	0%	8%	92%	100%	20%	35%	33%	13%	0%	100%
SSF	59%	35%	5%	100%	37%	53%	0%	10%	0%	100%
San Bruno	81%	11%	9%	100%	28%	63%	0%	6%	3%	100%
Millbrae	16%	55%	29%	100%	12%	34%	47%	6%	0%	100%
Broadway	0%	0%	0%	0%	NA	NA	NA	NA	NA	NA
Burlingame	67%	28%	5%	100%	61%	19%	1%	15%	3%	100%
San Mateo	49%	46%	5%	100%	43%	36%	6%	14%	1%	100%
Hayward Park	51%	49%	0%	100%	67%	17%	0%	17%	0%	100%
Hillsdale	22%	66%	12%	100%	20%	57%	6%	16%	0%	100%
Belmont	40%	50%	10%	100%	38%	48%	0%	14%	0%	100%
San Carlos	15%	48%	37%	100%	33%	55%	2%	10%	0%	100%
Redwood City	22%	34%	44%	100%	32%	43%	6%	19%	0%	100%
Atherton	0%	0%	0%	0%	NA	NA	NA	NA	NA	NA
Menlo Park	11%	26%	63%	100%	35%	28%	15%	21%	1%	100%
Palo Alto	38%	49%	14%	100%	20%	35%	22%	23%	0%	100%
Cal Avenue	30%	65%	5%	100%	49%	22%	2%	27%	0%	100%
San Antonio	59%	34%	7%	100%	66%	15%	0%	19%	0%	100%
Mountain View	22%	67%	10%	100%	24%	56%	12%	9%	0%	100%
Sunnyvale	16%	70%	13%	100%	27%	53%	9%	11%	0%	100%
Lawrence	65%	34%	0%	100%	29%	62%	0%	9%	0%	100%
Santa Clara	13%	48%	39%	100%	18%	48%	22%	11%	0%	100%
College Park	100%	0%	0%	100%	NA	NA	NA	NA	NA	NA
Diridon	4%	50%	46%	100%	8%	58%	24%	10%	0%	100%
Tamien	10%	86%	4%	100%	8%	86%	5%	0%	0%	100%
<b>ALL</b>	<b>24%</b>	<b>46%</b>	<b>30%</b>	<b>100%</b>	<b>25%</b>	<b>50%</b>	<b>11%</b>	<b>14%</b>	<b>0%</b>	<b>100%</b>
<b>*Compared to passenger intercept survey completed in June 2013.</b>										

## **5.0 Year 2020 and 2040 Forecast Results**

With the completion of the base year 2013 model validation, the model inputs were updated to reflect year 2020 and year 2040 conditions and the model results were summarized, similar to the outputs generated for the base year 2013. As described in previous sections, the socioeconomic data, background networks and pricing inputs were updated to reflect year 2020 and 2040 conditions, and the No Project, Project and Project + TTC scenarios were coded and executed in the models. The results of the model forecasts for the No Project and Project alternatives, relative to the base year 2013 conditions, are presented in Tables 9 through Table 16. The typical outputs of daily station boardings, park-and-ride demand and mode of access shares are shown in Tables 9 through 15.

Table 16 summarizes the proportion of boardings made during the peak and off-peak periods, and is an estimate of unconstrained passenger demand. This information will be used to determine if there is adequate train capacity to meet the projected demand. Capacity constraints will be applied, if needed, in subsequent model post-processing as part of the impact analysis.

The VTA Model is also capable of producing estimates for auto vehicle demand in addition to transit demand. A critical input needed for the environmental analysis is an estimate of the vehicle-miles-traveled (VMT) segmented by operating speed. Vehicle-miles-traveled are basically the amount of vehicles traveling over the roadway networks. The VTA Model is capable of providing VMT stratified by time of day and by speed. For air quality analysis, the VMT is required to be separated out by 5 mph increments, referred to as a speed bin. The results of the VMT for the entire VTA Model region, by speed bin and by time of day are provided in Table 17.

**Table 9 Caltrain Boardings by Station by Alternative, 2013, 2020 and 2040**

Station	2013 Observed	2013 Model	2020 Model No Project	2020 Model Project	2040 Model No Project	2040 Model Project + TTC
Transbay Terminal	N/A	N/A	N/A	N/A	N/A	8,527
SF	10,760	10,307	12,347	13,692	15,891	14,529
22nd	1,303	1,439	2,108	2,479	3,089	3,525
Bayshore	190	458	816	1,186	1,610	2,455
SSF	373	782	1,038	1,378	1,688	1,949
San Bruno	451	631	674	693	1,104	1,311
Millbrae	3,259	2,316	2,882	3,775	4,790	6,643
Broadway	0	0	0	558	0	619
Burlingame	780	1,032	1,129	1,010	1,536	1,650
San Mateo	1,570	1,870	2,052	2,230	2,844	3,579
Hayward Park	334	508	647	980	1,269	1,212
Hillsdale	2,278	2,617	3,036	3,695	4,407	6,430
Belmont	508	613	623	868	912	1,190
San Carlos	1,170	1,544	1,823	1,909	2,486	2,495
Redwood City	2,588	2,882	3,226	3,454	5,627	6,124
Atherton	0	0	0	444	0	570
Menlo Park	1,571	1,707	1,750	1,685	2,374	2,329
Palo Alto	5,613	5,727	6,630	8,280	10,319	14,219
Cal Avenue	1,261	1,075	1,192	1,164	1,722	1,283
San Antonio	643	583	674	782	1,080	1,268
Mountain View	3,834	3,262	3,849	5,253	5,879	8,841
Sunnyvale	2,272	1,710	2,030	2,456	2,641	3,481
Lawrence	688	853	1,102	1,370	1,639	2,005
Santa Clara	792	756	828	986	902	885
College Park	118	51	67	138	71	0
Diridon	3,523	3,583	4,368	5,765	6,905	10,994
Tamien	783	692	1,003	1,641	1,104	1,477
Capitol	39	89	101	109	127	91
Blossom Hill	63	107	147	165	225	189
Morgan Hill	129	92	175	200	304	310
San Martin	45	78	136	163	197	215
Gilroy	128	350	595	644	1,075	1,032
<b>All</b>	<b>47,066</b>	<b>47,715</b>	<b>57,047</b>	<b>69,151</b>	<b>83,815</b>	<b>111,427</b>

SF County Stations	12,253	12,204	15,270	17,357	20,590	29,035
SM County Stations	14,882	16,502	18,879	22,679	29,036	36,101
SCL County Station	19,931	19,009	22,898	29,115	34,189	46,291
Express Train Stations	37,001	35,551	42,227	50,533	61,921	77,116

Note: Caltrain Station Boardings do not include Caltrain to Caltrain Transfer Boardings

**Table 10 Caltrain Daily Park-and-Ride Space Demand by Station by Scenario, 2013, 2020 and 2040**

Station	Existing Caltrain Lot Capacity	A	B	C	E	G	I
		Observed PNR Spaces Occupied	2013 Modeled PNR Spaces	2020 No Project Modeled PNR Spaces	2020 Project Modeled PNR Spaces	2040 No Project Modeled PNR Spaces	2040 Project + TTC Modeled PNR Spaces
SF	0	0	543	836	776	1,231	1,075
22nd *	0	0	745	1,126	1,055	1,620	1,410
Bayshore	38	5	24	83	90	105	149
SSF	75	40	123	162	167	232	222
San Bruno	171	36	42	54	43	75	49
Millbrae	175	133	517	660	639	949	1,644
Broadway	137	0	0	0	4	0	3
Burlingame	58	21	145	173	170	211	224
San Mateo	40	9	476	554	470	702	761
Hayward Park	213	5	77	83	235	135	172
Hillsdale	518	445	983	1,189	1,057	1,567	1,610
Belmont	375	79	167	197	207	260	262
San Carlos	212	72	352	416	409	521	528
Redwood City	557	259	465	533	549	722	755
Atherton	0	0	0	0	286	0	42
Menlo Park	155	53	275	333	363	455	465
Palo Alto	389	383	366	385	330	510	498
Cal Avenue	185	65	191	233	211	307	282
San Antonio	199	65	109	131	140	191	217
Mountain View	340	325	605	760	741	1,078	1,027
Sunnyvale	439	491	670	867	913	917	985
Lawrence	122	93	69	94	114	85	118
Santa Clara	289	319	130	162	166	93	84
College Park	0	0	0	0	0	0	0
Diridon	581	593	747	880	845	880	912
Tamien	275	275	379	432	588	403	367

Station	Existing Caltrain Lot Capacity	A	B	C	E	G	I
		Observed PNR Spaces Occupied	2013 Modeled PNR Spaces	2020 No Project Modeled PNR Spaces	2020 Project Modeled PNR Spaces	2040 No Project Modeled PNR Spaces	2040 Project + TTC Modeled PNR Spaces
Capitol	379	52	44	58	65	18	1
Blossom Hill	425	57	57	69	75	94	80
Morgan Hill	486	148	55	106	114	184	175
San Martin	167	69	30	53	57	83	80
Gilroy	471	196	60	107	110	179	165
<b>All</b>	<b>7,471</b>	<b>4,288</b>	<b>8,449</b>	<b>10,736</b>	<b>10,989</b>	<b>13,807</b>	<b>14,362</b>
SF County Stations	38	5	1,312	2,045	1,921	2,956	2,634
SM County Stations	2,686	1,152	3,623	4,354	4,599	5,829	6,737
SCL County Station	4,747	3,131	3,513	4,337	4,469	5,022	4,991
Express Train Stations	3,154	2,682	5,918	7,569	7,268	9,929	10,381
* No Formal PNR Lot at 22nd Street Station and SF PNR Spaces from Caltrain JPB and VTA 2012/2013							

**Table 11 2020 No Project Station Boardings by Mode of Access**

	Walk	PNR	KNR	Transit	All	Walk	PNR	KNR	Transit	All
STATION	Ons	Ons	Ons	Ons	Ons	Share	Share	Share	Share	Share
SF	1,384	1,840	212	4,266	7,702	18%	24%	3%	55%	100%
22 <sup>nd</sup>	354	2,478	480	529	3,841	9%	65%	12%	14%	100%
Bayshore	4	182	39	1,215	1,440	0%	13%	3%	84%	100%
SSF	740	357	81	63	1,241	60%	29%	7%	5%	100%
San Bruno	842	119	27	84	1,072	79%	11%	3%	8%	100%
Millbrae	512	1,452	288	753	3,005	17%	48%	10%	25%	100%
Broadway	0	0	0	0	0	0%	0%	0%	0%	0%
Burlingame	952	380	74	68	1,474	65%	26%	5%	5%	100%
San Mateo	1,479	1,218	248	132	3,077	48%	40%	8%	4%	100%
Hayward Park	238	183	36	0	457	52%	40%	8%	0%	100%
Hillsdale	949	2,615	519	437	4,520	21%	58%	11%	10%	100%
Belmont	261	434	85	86	866	30%	50%	10%	10%	100%
San Carlos	283	915	172	937	2,307	12%	40%	7%	41%	100%
Redwood City	834	1,172	229	1,713	3,948	21%	30%	6%	43%	100%
Atherton	0	0	0	0	0	0%	0%	0%	0%	0%
Menlo Park	273	733	137	1,678	2,821	10%	26%	5%	59%	100%
Palo Alto	441	846	160	244	1,691	26%	50%	9%	14%	100%
Cal Avenue	267	513	104	28	912	29%	56%	11%	3%	100%
San Antonio	604	288	56	54	1,002	60%	29%	6%	5%	100%
Mountain View	624	1,671	344	323	2,962	21%	56%	12%	11%	100%
Sunnyvale	493	1,907	389	297	3,086	16%	62%	13%	10%	100%
Lawrence	515	206	42	3	766	67%	27%	5%	0%	100%
Santa Clara	124	356	71	216	767	16%	46%	9%	28%	100%
College Park	4	0	0	0	4	100%	0%	0%	0%	100%
Diridon	246	1,936	399	2,068	4,649	5%	42%	9%	44%	100%
Tamien	114	950	190	60	1,314	9%	72%	14%	5%	100%
Capitol	42	128	26	1	197	21%	65%	13%	1%	100%
Blossom Hill	66	151	26	0	243	27%	62%	11%	0%	100%
Morgan Hill	46	233	41	11	331	14%	70%	12%	3%	100%
San Martin	12	117	22	10	161	7%	73%	14%	6%	100%
Gilroy	100	235	49	806	1,190	8%	20%	4%	68%	100%
<b>All</b>	<b>12,803</b>	<b>23,615</b>	<b>4,546</b>	<b>16,083</b>	<b>57,047</b>	<b>22%</b>	<b>41%</b>	<b>8%</b>	<b>28%</b>	<b>100%</b>
SF County Stations	1,742	4,500	731	6,010	12,983	13%	35%	6%	46%	100%
SM County Stations	7,363	9,578	1,896	5,952	24,789	30%	39%	8%	24%	100%
SCL County Station	3,698	9,537	1,919	4,121	19,275	19%	49%	10%	21%	100%
Express Train Stations	6,110	16,650	3,157	12,308	38,225	16%	44%	8%	32%	100%

**Table 12 2020 Project Station Boardings by Mode of Access**

	Walk	PNR	KNR	Transit	All	Walk	PNR	KNR	Transit	All
STATION	Ons	Ons	Ons	Ons	Ons	Share	Share	Share	Share	Share
SF	1,378	1,707	196	6,349	9,630	14%	18%	2%	66%	100%
22nd	397	2,321	451	1,041	4,210	9%	55%	11%	25%	100%
Bayshore	4	197	41	1,819	2,061	0%	10%	2%	88%	100%
SSF	984	367	82	148	1,581	62%	23%	5%	9%	100%
San Bruno	842	95	22	107	1,066	79%	9%	2%	10%	100%
Millbrae	567	1,406	278	1,888	4,139	14%	34%	7%	46%	100%
Broadway	574	8	1	164	747	77%	1%	0%	22%	100%
Burlingame	850	375	72	66	1,363	62%	28%	5%	5%	100%
San Mateo	1,731	1,034	208	322	3,295	53%	31%	6%	10%	100%
Hayward Park	329	516	103	0	948	35%	54%	11%	0%	100%
Hillsdale	1,206	2,325	460	1,075	5,066	24%	46%	9%	21%	100%
Belmont	459	456	90	293	1,298	35%	35%	7%	23%	100%
San Carlos	445	899	168	292	1,804	25%	50%	9%	16%	100%
Redwood City	1,427	1,208	237	399	3,271	44%	37%	7%	12%	100%
Atherton	45	629	128	46	848	5%	74%	15%	5%	100%
Menlo Park	661	799	148	684	2,292	29%	35%	6%	30%	100%
Palo Alto	569	727	138	1,197	2,631	22%	28%	5%	45%	100%
Cal Avenue	273	465	94	135	967	28%	48%	10%	14%	100%
San Antonio	655	307	60	140	1,162	56%	26%	5%	12%	100%
Mountain View	699	1,630	335	838	3,502	20%	47%	10%	24%	100%
Sunnyvale	645	2,009	403	671	3,728	17%	54%	11%	18%	100%
Lawrence	584	251	51	1	887	66%	28%	6%	0%	100%
Santa Clara	111	366	74	576	1,127	10%	32%	7%	51%	100%
College Park	30	0	0	0	30	100%	0%	0%	0%	100%
Diridon	271	1,859	378	4,092	6,600	4%	28%	6%	62%	100%
Tamien	28	1,294	262	976	2,560	1%	51%	10%	38%	100%
Capitol	40	142	29	1	212	19%	67%	14%	0%	100%
Blossom Hill	69	164	28	0	261	26%	63%	11%	0%	100%
Morgan Hill	51	250	44	36	381	13%	66%	12%	9%	100%
San Martin	13	126	23	35	197	7%	64%	12%	18%	100%
Gilroy	103	243	51	891	1,288	8%	19%	4%	69%	100%
<b>All</b>	<b>16,040</b>	<b>24,175</b>	<b>4,655</b>	<b>24,280</b>	<b>69,150</b>	<b>23%</b>	<b>35%</b>	<b>7%</b>	<b>35%</b>	<b>100%</b>
SF County Stations	1,779	4,225	688	9,209	15,901	11%	27%	4%	58%	100%
SM County Stations	10,120	10,117	1,997	5,483	27,717	37%	37%	7%	20%	100%
SCL County Station	4,141	9,833	1,970	9,588	25,532	16%	39%	8%	38%	100%
Express Train Stations	7,820	15,991	3,024	18,234	45,069	17%	35%	7%	40%	100%

**Table 13 2040 No Project Station Boardings by Mode of Access**

	Walk	PNR	KNR	Transit	All	Walk	PNR	KNR	Transit	All
STATION	Ons	Ons	Ons	Ons	Ons	Share	Share	Share	Share	Share
SF	2,056	2,709	345	5,661	10,771	19%	25%	3%	53%	100%
22nd	602	3,565	704	626	5,497	11%	65%	13%	11%	100%
Bayshore	7	231	51	2,577	2,866	0%	8%	2%	90%	100%
SSF	1,256	511	119	98	1,984	63%	26%	6%	5%	100%
San Bruno	1,456	166	39	120	1,781	82%	9%	2%	7%	100%
Millbrae	896	2,087	422	1,303	4,708	19%	44%	9%	28%	100%
Broadway	0	0	0	0	0	0%	0%	0%	0%	0%
Burlingame	1,300	464	93	89	1,946	67%	24%	5%	5%	100%
San Mateo	2,046	1,544	322	164	4,076	50%	38%	8%	4%	100%
Hayward Park	355	296	61	1	713	50%	41%	9%	0%	100%
Hillsdale	1,670	3,447	696	547	6,360	26%	54%	11%	9%	100%
Belmont	399	572	116	117	1,204	33%	48%	10%	10%	100%
San Carlos	551	1,147	219	1,114	3,031	18%	38%	7%	37%	100%
Redwood City	2,459	1,589	317	2,911	7,276	34%	22%	4%	40%	100%
Atherton	0	0	0	0	0	0%	0%	0%	0%	0%
Menlo Park	458	1,002	189	1,934	3,583	13%	28%	5%	54%	100%
Palo Alto	628	1,122	215	319	2,284	27%	49%	9%	14%	100%
Cal Avenue	302	612	124	44	1,082	28%	57%	11%	4%	100%
San Antonio	971	420	83	65	1,539	63%	27%	5%	4%	100%
Mountain View	821	2,372	495	448	4,136	20%	57%	12%	11%	100%
Sunnyvale	849	2,017	412	372	3,650	23%	55%	11%	10%	100%
Lawrence	996	187	38	1	1,222	82%	15%	3%	0%	100%
Santa Clara	242	204	41	312	799	30%	26%	5%	39%	100%
College Park	10	0	0	0	10	100%	0%	0%	0%	100%
Diridon	515	1,936	404	5,494	8,349	6%	23%	5%	66%	100%
Tamien	176	887	179	79	1,321	13%	67%	14%	6%	100%
Capitol	196	40	8	0	244	80%	16%	3%	0%	100%
Blossom Hill	153	207	36	0	396	39%	52%	9%	0%	100%
Morgan Hill	86	404	75	21	586	15%	69%	13%	4%	100%
San Martin	18	182	35	16	251	7%	73%	14%	6%	100%
Gilroy	202	394	84	1,469	2,149	9%	18%	4%	68%	100%
<b>All</b>	<b>21,676</b>	<b>30,314</b>	<b>5,922</b>	<b>25,903</b>	<b>83,815</b>	<b>26%</b>	<b>36%</b>	<b>7%</b>	<b>31%</b>	<b>100%</b>
SF County Stations	2,665	6,505	1,100	8,865	19,135	14%	34%	6%	46%	100%
SM County Stations	12,846	12,825	2,593	8,398	36,662	35%	35%	7%	23%	100%
SCL County Station	6,165	10,984	2,229	8,640	28,018	22%	39%	8%	31%	100%
Express Train Stations	10,954	21,846	4,199	19,615	56,614	19%	39%	7%	35%	100%

**Table 14 2040 Project + TTC Station Boardings by Mode of Access**

	Walk	PNR	KNR	Transit	All	Walk	PNR	KNR	Transit	All
STATION	Ons	Ons	Ons	Ons	Ons	Share	Share	Share	Share	Share
Transbay Terminal	886	0	0	2,148	3,034	29%	0%	0%	71%	100%
SF	2,001	2,354	305	7,470	12,130	16%	19%	3%	62%	100%
22nd	1,024	3,099	607	1,274	6,004	17%	52%	10%	21%	100%
Bayshore	7	286	64	4,084	4,441	0%	6%	1%	92%	100%
SSF	1,814	486	112	143	2,555	71%	19%	4%	6%	100%
San Bruno	1,725	107	25	213	2,070	83%	5%	1%	10%	100%
Millbrae	1,345	3,591	730	3,540	9,206	15%	39%	8%	38%	100%
Broadway	596	7	1	149	753	0%	0%	0%	0%	0%
Burlingame	1,368	530	104	75	2,077	66%	26%	5%	4%	100%
San Mateo	2,487	1,685	348	430	4,950	50%	34%	7%	9%	100%
Hayward Park	444	378	78	1	901	49%	42%	9%	0%	100%
Hillsdale	2,331	3,538	712	2,137	8,718	27%	41%	8%	25%	100%
Belmont	649	578	116	251	1,594	41%	36%	7%	16%	100%
San Carlos	625	1,159	221	325	2,330	27%	50%	9%	14%	100%
Redwood City	3,748	1,666	334	1,144	6,892	54%	24%	5%	17%	100%
Atherton	53	801	168	69	1,091	0%	0%	0%	0%	0%
Menlo Park	879	1,027	195	778	2,879	31%	36%	7%	27%	100%
Palo Alto	935	1,098	210	1,798	4,041	23%	27%	5%	44%	100%
Cal Avenue	306	621	126	45	1,098	28%	57%	11%	4%	100%
San Antonio	1,076	466	93	160	1,795	60%	26%	5%	9%	100%
Mountain View	956	2,275	472	745	4,448	21%	51%	11%	17%	100%
Sunnyvale	1,106	2,194	439	1,128	4,867	23%	45%	9%	23%	100%
Lawrence	1,115	264	55	4	1,438	78%	18%	4%	0%	100%
Santa Clara	205	185	38	524	952	22%	19%	4%	55%	100%
College Park	0	0	0	0	0	0	0	0	0	0
Diridon	512	2,009	415	13,012	15,948	3%	13%	3%	82%	100%
Tamien	198	811	162	641	1,812	11%	45%	9%	35%	100%
Capitol	166	1	0	0	167	99%	1%	0%	0%	100%
Blossom Hill	92	176	31	0	299	31%	59%	10%	0%	100%
Morgan Hill	80	387	72	60	599	13%	65%	12%	10%	100%
San Martin	16	175	34	50	275	6%	64%	12%	18%	100%
Gilroy	180	364	78	1,442	2,064	9%	18%	4%	70%	100%
<b>All</b>	<b>28,925</b>	<b>32,318</b>	<b>6,345</b>	<b>43,839</b>	<b>111,427</b>	<b>26%</b>	<b>29%</b>	<b>6%</b>	<b>39%</b>	<b>100%</b>
SF County Stations	3,918	5,739	976	14,976	25,609	15%	22%	4%	58%	100%
SM County Stations	18,064	15,553	3,144	9,255	46,016	39%	34%	7%	20%	100%
SCL County Station	6,943	11,026	2,225	19,608	39,802	17%	28%	6%	49%	100%
Express Train Stations	14,837	22,851	4,419	33,025	75,132	20%	30%	6%	44%	100%

**Table 15 Model Estimated Daily Boardings by Transit Operator in the Project Corridor 2013, 2020 and 2040**

<b>Operator</b>	<b>2013 Observed</b>	<b>2013 Estimated</b>	<b>2020 No Project</b>	<b>2020 Project</b>	<b>2040 No Project</b>	<b>2040 Project + TTC</b>
Caltrain	47,100	47,700	57,400	69,900	83,900	111,100
BART	366,600	367,900	459,500	459,100	678,900	676,900
SamTrans Bus (Local and BRT)	39,800	53,600	73,400	75,800	103,200	100,000
SamTrans ECR BRT	-	-	17,000	15,500	24,000	21,300
SamTrans Express	1,300	1,000	1,000	800	1,200	900
VTA Light Rail	34,600	40,700	70,600	70,700	129,300	129,900
VTA Bus (Local and BRT)	103,100	127,800	165,600	167,100	246,100	247,100
VTA BRT	-	-	42,500	42,500	56,200	55,100
Muni Metro	173,500	158,600	203,800	205,200	252,200	250,100
Muni Bus	531,700	513,600	592,600	595,500	736,600	740,200
Shuttles (Caltrain + Private)	NA	11,400	12,200	16,600	20,700	27,000
<b>Total</b>	<b>1,297,700</b>	<b>1,310,900</b>	<b>1,683,400</b>	<b>1,718,700</b>	<b>2,311,600</b>	<b>2,332,600</b>
<b>Note: Caltrain Boardings Include Caltrain to Caltrain Transfer Boardings</b>						

**Table 16 Caltrain Boardings by Time of Day by Alternative**

	<b>2013 Estimated</b>	<b>2013 Proportions</b>	<b>2020 No Project</b>	<b>2020 NP Proportions</b>	<b>2020 Project</b>	<b>2020 PRJ Proportions</b>	<b>2040 No Project</b>	<b>2040 NP Proportions</b>	<b>2040 Project</b>	<b>2040 PRJ + TTC Proportions</b>
Peak Period Boardings	39,345	82.4%	48,337	84.7%	58,221	84.1%	70,251	83.7%	90,544	81.3%
Off-peak Period Boardings	8,391	17.6%	8,762	15.3%	10,981	15.9%	13,645	16.3%	20,883	18.7%
Total	47,736	100.0%	57,099	100.0%	69,202	100.0%	83,896	100.0%	111,427	100.0%

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**Table 17 Peak Period, Off-peak Period and Daily Vehicle-Miles-Traveled by Speed Category by Alternative – VTA Model Region**

Speed MPH	2013			2020 No Project			2020 Project			2040 No Project			2040 Project		
	Peak	Off-peak	All	Peak	Off-peak	All	Peak	Off-peak	All	Peak	Off-peak	All	Peak	Off-peak	All
0-5	190,671	89,384	280,055	290,652	126,355	417,007	290,343	127,643	417,986	541,976	175,134	717,110	506,061	164,621	670,682
6-10	382,852	124,294	507,146	453,203	162,454	615,657	447,943	159,998	607,941	1,033,383	262,459	1,295,842	1,020,153	266,605	1,286,758
11-15	3,087,226	2,237,801	5,325,027	3,446,848	2,340,487	5,787,335	3,422,314	2,332,629	5,754,943	5,443,828	2,882,205	8,326,033	5,309,743	2,891,594	8,201,337
16 - 20	6,586,370	3,924,875	10,511,245	7,334,128	4,305,013	11,639,141	7,370,379	4,314,999	11,685,378	9,744,821	5,153,194	14,898,015	9,710,101	5,137,248	14,847,349
21 - 25	16,157,378	11,154,093	27,311,471	18,763,276	12,528,218	31,291,494	18,672,062	12,518,015	31,190,077	24,701,582	15,450,678	40,152,260	24,512,621	15,469,060	39,981,681
26 - 30	10,434,768	5,728,636	16,163,404	12,332,864	6,527,407	18,860,271	12,242,763	6,553,220	18,795,983	15,993,111	8,447,271	24,440,382	15,882,250	8,411,206	24,293,456
31 - 35	10,762,878	5,826,604	16,589,482	11,920,293	6,585,090	18,505,383	11,952,140	6,561,677	18,513,817	15,110,891	8,968,511	24,079,402	15,170,349	8,874,262	24,044,611
36 - 40	6,422,393	2,493,128	8,915,521	7,601,472	2,814,788	10,416,260	7,268,562	2,805,834	10,074,396	9,683,585	4,885,291	14,568,876	9,601,331	4,967,060	14,568,391
41 - 45	6,692,199	3,564,049	10,256,248	6,871,534	3,703,536	10,575,070	7,129,645	3,701,378	10,831,023	8,023,415	6,531,889	14,555,304	8,170,960	6,431,840	14,602,800
46 - 50	5,910,380	1,654,108	7,564,488	7,504,758	2,679,200	10,183,958	7,523,590	2,638,960	10,162,550	6,453,363	4,568,746	11,022,109	6,390,532	4,602,229	10,992,761
51 - 55	7,726,469	4,387,446	12,113,915	7,045,631	5,228,239	12,273,870	7,078,548	5,217,939	12,296,487	5,773,347	5,747,303	11,520,650	5,974,309	5,929,516	11,903,825
56 - 60	8,784,362	15,728,021	24,512,383	8,473,759	16,383,044	24,856,803	8,417,395	16,470,611	24,888,006	7,417,026	16,895,276	24,312,302	7,041,663	16,729,488	23,771,151
61 - 65	13,123,958	25,488,526	38,612,484	12,666,378	27,287,476	39,953,854	12,701,507	27,221,428	39,922,935	10,756,195	25,878,337	36,634,532	10,869,149	25,869,959	36,739,108
<b>All</b>	<b>96,261,904</b>	<b>82,400,965</b>	<b>178,662,869</b>	<b>104,704,796</b>	<b>90,671,307</b>	<b>195,376,103</b>	<b>104,517,191</b>	<b>90,624,331</b>	<b>195,141,522</b>	<b>120,676,523</b>	<b>105,846,294</b>	<b>226,522,817</b>	<b>120,159,222</b>	<b>105,744,688</b>	<b>225,903,910</b>
Note: Peak travel is defined as travel occurring between 5 AM to 9 AM and 3 PM to 7 PM Off-peak travel is defined as travel occurring between 9 AM to 3 PM and from 7 PM to 5 AM															

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**Appendix A**

**Year 2020 Project 2040 Project + TTC Schedules**

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**Table A.1.1 2020 Project (PCEP) – Diesel and EMU Mixed Fleet Service AM Peak Period**  
**Diesel trains are the “Baby Bullet” trains, in orange highlight**

<b>Northbound</b>	<b>101</b>	<b>103</b>	<b>301</b>	<b>105</b>	<b>107</b>	<b>303</b>	<b>109</b>	<b>111</b>	<b>305</b>	<b>113</b>	<b>115</b>	<b>307</b>	<b>117</b>	<b>119</b>	<b>309</b>	<b>121</b>	<b>123</b>	<b>311</b>	<b>125</b>	<b>127</b>
Tamien		5:02a		6:02a			6:31a			7:02a			7:31a			8:02a			8:31a	
San Jose Diridon	4:30a	5:07a	6:00a	6:07a	6:12a	6:29a	6:36a	6:42a	7:00a	7:07a	7:12a	7:29a	7:36a	7:42a	8:00a	8:07a	8:12a	8:29a	8:36a	8:42a
College Park														7:44a						
Santa Clara	4:34a	5:11a			6:16a			6:46a			7:16a			7:47a			8:16a			8:46a
Lawrence	4:39a	5:16a		6:14a			6:43a			7:14a			7:43a			8:14a			8:43a	
Sunnyvale	4:42a	5:19a		6:17a	6:22a	6:39a	6:46a	6:52a		7:17a	7:22a	7:39a	7:46a	7:53a		8:17a	8:22a	8:39a	8:46a	8:52a
Mountain View	4:45a	5:22a	6:13a	6:20a	6:25a		6:49a	6:55a	7:13a	7:20a	7:25a		7:49a	7:56a	8:13a	8:20a	8:25a		8:49a	8:55a
San Antonio	4:48a	5:25a			6:28a			6:58a			7:28a			7:59a			8:28a			8:58a
California Avenue	4:52a	5:29a			6:32a			7:02a			7:32a			8:03a			8:32a			9:02a
Palo Alto	4:55a	5:32a	6:20a	6:27a	6:35a	6:49a	6:56a	7:05a	7:20a	7:27a	7:35a	7:49a	7:56a	8:06a	8:20a	8:27a	8:35a	8:49a	8:56a	9:05a
Menlo Park	4:57a	5:34a		6:29a	6:37a		6:58a	7:07a		7:29a	7:37a		7:58a	8:08a		8:29a	8:37a		8:58a	9:07a
Atherton	4:59a	5:36a		6:31a						7:31a						8:31a				
Redwood City	5:03a	5:40a		6:35a	6:41a	6:56a	7:02a	7:11a		7:35a	7:41a	7:56a	8:02a	8:12a		8:35a	8:41a	8:56a	9:02a	9:11a
San Carlos	5:06a	5:43a			6:44a			7:14a			7:44a			8:15a			8:44a			9:14a
Belmont	5:08a	5:45a			6:46a			7:16a			7:46a			8:17a			8:46a			9:16a
Hillsdale	5:11a	5:48a	6:31a	6:40a	6:49a		7:07a	7:19a	7:31a	7:40a	7:49a		8:07a	8:20a	8:31a	8:40a	8:49a		9:07a	9:19a
Hayward Park	5:13a	5:50a		6:42a			7:09a			7:42a			8:09a			8:42a			9:09a	
San Mateo	5:15a	5:52a		6:44a	6:53a	7:06a	7:11a	7:23a		7:44a	7:53a	8:06a	8:11a	8:24a		8:44a	8:53a	9:06a	9:11a	9:23a
Burlingame	5:17a	5:54a		6:46a			7:13a			7:46a			8:13a			8:46a			9:13a	
Broadway	5:21a	5:58a					7:17a						8:17a						9:17a	
Millbrae	5:23a	6:00a	6:39a	6:50a	6:58a	7:12a	7:19a	7:28a	7:39a	7:50a	7:58a	8:12a	8:19a	8:29a	8:39a	8:50a	8:58a	9:12a	9:19a	9:28a
San Bruno	5:26a	6:03a			7:01a			7:31a			8:01a			8:32a			9:01a			9:31a
So. San Francisco	5:29a	6:06a		6:54a	7:04a		7:23a	7:34a		7:54a	8:04a		8:23a	8:35a		8:54a	9:04a		9:23a	9:34a
Bayshore	5:34a	6:11a		6:59a			7:28a			7:59a			8:28a			8:59a			9:28a	
22nd Street	5:38a	6:15a		7:03a			7:32a			8:03a			8:32a			9:03a			9:32a	
4th & King	5:48a	6:25a	6:59a	7:15a	7:21a	7:31a	7:43a	7:51a	7:59a	8:15a	8:21a	8:31a	8:43a	8:52a	8:59a	9:15a	9:21a	9:31a	9:43a	9:51a
<b>Southbound</b>	<b>100</b>	<b>102</b>	<b>300</b>	<b>104</b>	<b>106</b>	<b>302</b>	<b>108</b>	<b>110</b>	<b>304</b>	<b>112</b>	<b>114</b>	<b>306</b>	<b>116</b>	<b>118</b>	<b>308</b>	<b>120</b>	<b>122</b>	<b>310</b>	<b>124</b>	<b>126</b>
4th & King	4:55a	5:25a	6:00a	6:07a	6:14a	6:30a	6:37a	6:46a	7:00a	7:07a	7:14a	7:30a	7:37a	7:46a	8:00a	8:07a	8:14a	8:30a	8:37a	8:46a
22nd Street	5:00a	5:30a	6:05a	6:12a	6:19a	6:35a	6:42a	6:51a	7:05a	7:12a	7:19a	7:35a	7:42a	7:51a	8:05a	8:12a	8:19a	8:35a	8:42a	8:51a
Bayshore	5:04a	5:34a			6:23a			6:55a			7:23a			7:55a			8:23a			8:55a
South SF	5:09a	5:39a			6:28a			7:00a			7:28a			8:00a			8:28a			9:00a
San Bruno	5:11a	5:41a		6:21a			6:51a			7:21a			7:51a			8:21a			8:51a	
Millbrae	5:14a	5:44a	6:18a	6:24a	6:33a	6:48a	6:54a	7:05a	7:18a	7:24a	7:33a	7:48a	7:54a	8:05a	8:18a	8:24a	8:33a	8:48a	8:54a	9:05a
Broadway	5:17a	5:47a					6:57a						7:57a						8:57a	
Burlingame	5:18a	5:48a		6:26a			6:58a			7:26a			7:58a			8:26a			8:58a	
San Mateo	5:21a	5:51a		6:29a	6:37a		7:01a	7:09a		7:29a	7:37a		8:01a	8:09a		8:29a	8:37a		9:01a	9:09a
Hayward Park	5:24a	5:54a			6:40a			7:12a			7:40a			8:12a			8:40a			9:12a
Hillsdale	5:26a	5:56a		6:32a	6:42a	6:57a	7:04a	7:14a		7:32a	7:42a	7:57a	8:04a	8:14a		8:32a	8:42a	8:57a	9:04a	9:14a
Belmont	5:28a	5:58a		6:34a			7:06a			7:34a			8:06a			8:34a			9:06a	
San Carlos	5:31a	6:01a		6:37a	6:46a		7:09a	7:18a		7:37a	7:46a		8:09a	8:18a		8:37a	8:46a		9:09a	9:18a
Redwood City	5:34a	6:04a	6:32a	6:40a	6:49a		7:12a	7:21a	7:32a	7:40a	7:49a		8:12a	8:21a	8:32a	8:40a	8:49a		9:12a	9:21a
Atherton	5:37a	6:07a					7:24a							8:24a						9:24a

<b>Southbound-Continued</b>	<b>100</b>	<b>102</b>	<b>300</b>	<b>104</b>	<b>106</b>	<b>302</b>	<b>108</b>	<b>110</b>	<b>304</b>	<b>112</b>	<b>114</b>	<b>306</b>	<b>116</b>	<b>118</b>	<b>308</b>	<b>120</b>	<b>122</b>	<b>310</b>	<b>124</b>	<b>126</b>
Menlo Park	5:40a	6:10a	6:38a	6:44a	6:53a		7:16a	7:27a	7:38a	7:44a	7:53a		8:16a	8:27a	8:38a	8:44a	8:53a		9:16a	9:27a
Palo Alto	5:42a	6:12a		6:46a	6:55a	7:09a	7:18a	7:29a		7:46a	7:55a	8:09a	8:18a	8:29a		8:46a	8:55a	9:09a	9:18a	9:29a
California Ave.	5:45a	6:15a		6:49a			7:21a			7:49a			8:21a			8:49a			9:21a	
San Antonio	5:48a	6:18a		6:52a			7:24a			7:52a			8:24a			8:52a			9:24a	
Mountain View	5:51a	6:21a	6:47a	6:55a	7:02a	7:17a	7:27a	7:36a	7:47a	7:55a	8:02a	8:17a	8:27a	8:36a	8:47a	8:55a	9:02a	9:17a	9:27a	9:36a
Sunnyvale	5:55a	6:25a			7:06a			7:40a			8:06a			8:40a			9:06a			9:40a
Lawrence	5:58a	6:28a			7:09a			7:43a			8:09a			8:43a			9:09a			9:43a
Santa Clara	6:02a	6:32a			7:13a			7:47a			8:13a			8:47a			9:13a			9:47a
College Park								7:49a												
San Jose Diridon	6:12a	6:44a	7:02a	7:12a	7:23a	7:32a	7:46a	7:55a	8:02a	8:12a	8:23a	8:32a	8:46a	8:55a	9:02a	9:12a	9:23a	9:32a	9:46a	9:55a
Tamien	6:16a	6:48a			7:27a			7:59a			8:27a			8:59a			9:27a			9:59a

**Table A.1.2 2020 Project (PCEP) – – Diesel and EMU Mixed Fleet Service Mid-day Period**

<b>Northbound</b>	<b>129</b>	<b>131</b>	<b>133</b>	<b>135</b>	<b>137</b>	<b>139</b>	<b>141</b>	<b>143</b>	<b>145</b>	<b>147</b>	<b>149</b>	<b>151</b>	<b>153</b>	<b>155</b>
Tamien	8:56a	9:28a		10:28a		11:28a		12:28p		1:28p		2:28p		3:28p
San Jose Diridon	9:01a	9:33a	10:01a	10:33a	11:01a	11:33a	12:01p	12:33p	1:01p	1:33p	2:01p	2:33p	3:01p	3:33p
College Park													3:03p	
Santa Clara	9:05a	9:37a	10:05a	10:37a	11:05a	11:37a	12:05p	12:37p	1:05p	1:37p	2:05p	2:37p	3:06p	3:37p
Lawrence	9:10a	9:42a	10:10a	10:42a	11:10a	11:42a	12:10p	12:42p	1:10p	1:42p	2:10p	2:42p	3:11p	3:42p
Sunnyvale	9:13a	9:45a	10:13a	10:45a	11:13a	11:45a	12:13p	12:45p	1:13p	1:45p	2:13p	2:45p	3:14p	3:45p
Mountain View	9:16a	9:48a	10:16a	10:48a	11:16a	11:48a	12:16p	12:48p	1:16p	1:48p	2:16p	2:48p	3:17p	3:48p
San Antonio	9:19a	9:51a	10:19a	10:51a	11:19a	11:51a	12:19p	12:51p	1:19p	1:51p	2:19p	2:51p	3:20p	3:51p
California Avenue	9:23a	9:55a	10:23a	10:55a	11:23a	11:55a	12:23p	12:55p	1:23p	1:55p	2:23p	2:55p	3:24p	3:55p
Palo Alto	9:26a	9:58a	10:26a	10:58a	11:26a	11:58a	12:26p	12:58p	1:26p	1:58p	2:26p	2:58p	3:27p	3:58p
Menlo Park	9:28a	10:00a	10:28a	11:00a	11:28a	12:00p	12:28p	1:00p	1:28p	2:00p	2:28p	3:00p	3:29p	4:00p
Atherton	9:30a	10:02a	10:30a	11:02a	11:30a	12:02p	12:30p	1:02p	1:30p	2:02p	2:30p	3:02p	3:31p	4:02p
Redwood City	9:34a	10:06a	10:34a	11:06a	11:34a	12:06p	12:34p	1:06p	1:34p	2:06p	2:34p	3:06p	3:35p	4:06p
San Carlos	9:37a	10:09a	10:37a	11:09a	11:37a	12:09p	12:37p	1:09p	1:37p	2:09p	2:37p	3:09p	3:38p	4:09p
Belmont	9:39a	10:11a	10:39a	11:11a	11:39a	12:11p	12:39p	1:11p	1:39p	2:11p	2:39p	3:11p	3:40p	4:11p
Hillsdale	9:42a	10:14a	10:42a	11:14a	11:42a	12:14p	12:42p	1:14p	1:42p	2:14p	2:42p	3:14p	3:43p	4:14p
Hayward Park	9:44a	10:16a	10:44a	11:16a	11:44a	12:16p	12:44p	1:16p	1:44p	2:16p	2:44p	3:16p	3:45p	4:16p
San Mateo	9:46a	10:18a	10:46a	11:18a	11:46a	12:18p	12:46p	1:18p	1:46p	2:18p	2:46p	3:18p	3:47p	4:18p
Burlingame	9:48a	10:20a	10:48a	11:20a	11:48a	12:20p	12:48p	1:20p	1:48p	2:20p	2:48p	3:20p	3:49p	4:20p
Broadway	9:52a	10:24a	10:52a	11:24a	11:52a	12:24p	12:52p	1:24p	1:52p	2:24p	2:52p	3:24p	3:53p	4:24p
Millbrae	9:54a	10:26a	10:54a	11:26a	11:54a	12:26p	12:54p	1:26p	1:54p	2:26p	2:54p	3:26p	3:55p	4:26p
San Bruno	9:57a	10:29a	10:57a	11:29a	11:57a	12:29p	12:57p	1:29p	1:57p	2:29p	2:57p	3:29p	3:58p	4:29p
So. San Francisco	10:00a	10:32a	11:00a	11:32a	12:00p	12:32p	1:00p	1:32p	2:00p	2:32p	3:00p	3:32p	4:01p	4:32p
Bayshore	10:05a	10:37a	11:05a	11:37a	12:05p	12:37p	1:05p	1:37p	2:05p	2:37p	3:05p	3:37p	4:06p	4:37p
22nd Street	10:09a	10:41a	11:09a	11:41a	12:09p	12:41p	1:09p	1:41p	2:09p	2:41p	3:09p	3:41p	4:10p	4:41p
4th & King	10:19a	10:51a	11:19a	11:51a	12:19p	12:51p	1:19p	1:51p	2:19p	2:51p	3:19p	3:51p	4:20p	4:51p

<b>Southbound</b>	<b>128</b>	<b>130</b>	<b>132</b>	<b>134</b>	<b>136</b>	<b>138</b>	<b>140</b>	<b>142</b>	<b>144</b>	<b>146</b>	<b>148</b>	<b>150</b>	<b>152</b>	<b>154</b>
4th & King	8:59a	9:29a	9:59a	10:29a	10:59a	11:29a	11:59p	12:29p	12:59p	1:29p	1:59p	2:29p	2:59p	3:29p
22nd Street	9:04a	9:34a	10:04a	10:34a	11:04a	11:34a	12:04a	12:34p	1:04p	1:34p	2:04p	2:34p	3:04p	3:34p
Bayshore	9:08a	9:38a	10:08a	10:38a	11:08a	11:38a	12:08a	12:38p	1:08p	1:38p	2:08p	2:38p	3:08p	3:38p
South SF	9:13a	9:43a	10:13a	10:43a	11:13a	11:43a	12:13a	12:43p	1:13p	1:43p	2:13p	2:43p	3:13p	3:43p
San Bruno	9:15a	9:45a	10:15a	10:45a	11:15a	11:45a	12:15a	12:45p	1:15p	1:45p	2:15p	2:45p	3:15p	3:45p
Millbrae	9:18a	9:48a	10:18a	10:48a	11:18a	11:48a	12:18a	12:48p	1:18p	1:48p	2:18p	2:48p	3:18p	3:48p
Broadway	9:21a	9:51a	10:21a	10:51a	11:21a	11:51a	12:21a	12:51p	1:21p	1:51p	2:21p	2:51p	3:21p	3:51p
Burlingame	9:22a	9:52a	10:22a	10:52a	11:22a	11:52a	12:22a	12:52p	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p
San Mateo	9:25a	9:55a	10:25a	10:55a	11:25a	11:55a	12:25a	12:55p	1:25p	1:55p	2:25p	2:55p	3:25p	3:55p
Hayward Park	9:28a	9:58a	10:28a	10:58a	11:28a	11:58a	12:28a	12:58p	1:28p	1:58p	2:28p	2:58p	3:28p	3:58p
Hillsdale	9:30a	10:00a	10:30a	11:00a	11:30a	12:00p	12:30a	1:00p	1:30p	2:00p	2:30p	3:00p	3:30p	4:00p
Belmont	9:32a	10:02a	10:32a	11:02a	11:32a	12:02p	12:32a	1:02p	1:32p	2:02p	2:32p	3:02p	3:32p	4:02p
San Carlos	9:35a	10:05a	10:35a	11:05a	11:35a	12:05p	12:35a	1:05p	1:35p	2:05p	2:35p	3:05p	3:35p	4:05p
Redwood City	9:38a	10:08a	10:38a	11:08a	11:38a	12:08p	12:38a	1:08p	1:38p	2:08p	2:38p	3:08p	3:38p	4:08p
Atherton	9:41a	10:11a	10:41a	11:11a	11:41a	12:11p	12:41a	1:11p	1:41p	2:11p	2:41p	3:11p	3:41p	4:11p
Menlo Park	9:44a	10:14a	10:44a	11:14a	11:44a	12:14p	12:44a	1:14p	1:44p	2:14p	2:44p	3:14p	3:44p	4:14p
Palo Alto	9:46a	10:16a	10:46a	11:16a	11:46a	12:16p	12:46a	1:16p	1:46p	2:16p	2:46p	3:16p	3:46p	4:16p
California Ave.	9:49a	10:19a	10:49a	11:19a	11:49a	12:19p	12:49a	1:19p	1:49p	2:19p	2:49p	3:19p	3:49p	4:19p
San Antonio	9:52a	10:22a	10:52a	11:22a	11:52a	12:22p	12:52a	1:22p	1:52p	2:22p	2:52p	3:22p	3:52p	4:22p
Mountain View	9:55a	10:25a	10:55a	11:25a	11:55a	12:25p	12:55a	1:25p	1:55p	2:25p	2:55p	3:25p	3:55p	4:25p
Sunnyvale	9:59a	10:29a	10:59a	11:29a	11:59a	12:29p	12:59a	1:29p	1:59p	2:29p	2:59p	3:29p	3:59p	4:29p
Lawrence	10:02a	10:32a	11:02a	11:32a	12:02p	12:32p	1:02a	1:32p	2:02p	2:32p	3:02p	3:32p	4:02p	4:32p
Santa Clara	10:06a	10:36a	11:06a	11:36a	12:06p	12:36p	1:06a	1:36p	2:06p	2:36p	3:06p	3:36p	4:06p	4:36p
College Park														4:38p
San Jose Diridon	10:16a	10:48a	11:16a	11:48a	12:16p	12:48p	1:16a	1:48p	2:16p	2:48p	3:16p	3:48p	4:16p	4:44p
Tamien		10:52a		11:52a		12:52p		1:52p		2:52p	3:20p		4:20p	

**Table A.1.3 2020 Project Electrification – – Diesel and EMU Mixed Fleet Service PM Peak Period**  
**Diesel trains are the “Baby Bullet” trains, in orange highlight**

<b>Northbound</b>	<b>313</b>	<b>157</b>	<b>159</b>	<b>315</b>	<b>161</b>	<b>163</b>	<b>317</b>	<b>165</b>	<b>167</b>	<b>319</b>	<b>169</b>	<b>171</b>	<b>321</b>	<b>173</b>	<b>175</b>	<b>323</b>	<b>177</b>	<b>179</b>
Tamien		4:02p			4:32p			5:02p			5:32p			6:02p			6:32p	
San Jose Diridon	4:00p	4:07p	4:12p	4:30p	4:37p	4:42p	5:00p	5:07p	5:12p	5:30p	5:37p	5:42p	6:00p	6:07p	6:12p	6:30p	6:37p	6:42p
College Park																		
Santa Clara			4:16p			4:46p			5:16p			5:46p			6:16p			6:46p
Lawrence			4:21p			4:51p			5:21p			5:51p			6:21p			6:51p
Sunnyvale			4:24p			4:54p			5:24p			5:54p			6:24p			6:54p
Mountain View	4:13p	4:18p	4:27p	4:43p	4:48p	4:57p	5:13p	5:18p	5:27p	5:43p	5:48p	5:57p	6:13p	6:18p	6:27p	6:43p	6:48p	6:57p
San Antonio		4:21p			4:51p			5:21p			5:51p			6:21p			6:51p	
California Avenue		4:25p			4:55p			5:25p			5:55p			6:25p			6:55p	
Palo Alto		4:28p	4:34p	4:50p	4:58p	5:04p		5:28p	5:34p	5:50p	5:58p	6:04p		6:28p	6:34p	6:50p	6:58p	7:04p
Menlo Park	4:21p	4:30p	4:36p		5:00p	5:06p	5:21p	5:30p	5:36p		6:00p	6:06p	6:21p	6:30p	6:36p		7:00p	7:06p
Atherton			4:38p						5:38p						6:38p			
Redwood City	4:27p	4:34p	4:42p		5:04p	5:10p	5:27p	5:34p	5:42p		6:04p	6:10p	6:27p	6:34p	6:42p		7:04p	7:10p
San Carlos		4:37p	4:45p		5:07p	5:13p		5:37p	5:45p		6:07p	6:13p		6:37p	6:45p		7:07p	7:13p
Belmont		4:39p			5:09p			5:39p			6:09p			6:39p			7:09p	
Hillsdale		4:42p	4:49p	5:01p	5:12p	5:17p		5:42p	5:49p	6:01p	6:12p	6:17p		6:42p	6:49p	7:01p	7:12p	7:17p
Hayward Park			4:51p			5:19p			5:51p			6:19p			6:51p			7:19p
San Mateo		4:46p	4:53p		5:16p	5:21p		5:46p	5:53p		6:16p	6:21p		6:46p	6:53p		7:16p	7:21p
Burlingame		4:48p			5:18p			5:48p			6:18p			6:48p			7:18p	
Broadway		4:52p						5:52p						6:52p				
Millbrae	4:40p	4:54p	4:58p	5:09p	5:22p	5:26p	5:40p	5:54p	5:58p	6:09p	6:22p	6:26p	6:40p	6:54p	6:58p	7:09p	7:22p	7:26p
San Bruno			5:01p			5:29p			6:01p			6:29p		7:01p			7:29p	
So. San Francisco			5:04p			5:32p			6:04p			6:32p		7:04p			7:32p	
Bayshore		5:03p			5:31p			6:03p			6:31p			7:03p			7:31p	
22nd Street	4:53p	5:07p	5:13p	5:23p	5:35p	5:41p	5:53p	6:07p	6:13p	6:23p	6:35p	6:41p	6:53p	7:07p	7:13p	7:23p	7:35p	7:41p
4th & King	5:01p	5:14p	5:22p	5:30p	5:44p	5:50p	6:01p	6:14p	6:22p	6:30p	6:44p	6:50p	7:01p	7:14p	7:22p	7:30p	7:44p	7:50p

<b>Southbound</b>	<b>312</b>	<b>156</b>	<b>158</b>	<b>314</b>	<b>160</b>	<b>162</b>	<b>316</b>	<b>164</b>	<b>166</b>	<b>318</b>	<b>168</b>	<b>170</b>	<b>320</b>	<b>172</b>	<b>174</b>	<b>322</b>	<b>176</b>	<b>178</b>
4th & King	4:00p	4:06p	4:12p	4:30p	4:36p	4:42p	5:00p	5:06p	5:12p	5:30p	5:36p	5:42p	6:00p	6:06p	6:12p	6:30p	6:36p	6:42p
22nd Street			4:17p			4:47p			5:17p			5:47p			6:17p			6:47p
Bayshore			4:21p			4:51p			5:21p			5:51p			6:21p			6:51p
South SF		4:17p	4:26p		4:47p	4:56p		5:17p	5:26p		5:47p	5:56p		6:17p	6:26p		6:47p	6:56p
San Bruno		4:19p			4:49p			5:19p			5:49p			6:19p			6:49p	
Millbrae	4:16p	4:22p	4:31p	4:46p	4:52p	5:01p	5:16p	5:22p	5:31p	5:46p	5:52p	6:01p	6:16p	6:22p	6:31p	6:46p	6:52p	7:01p
Broadway						5:04p						6:04p						7:04p
Burlingame			4:33p			5:05p			5:33p			6:05p			6:33p			7:05p
San Mateo	4:23p	4:26p	4:36p		4:56p	5:08p	5:23p	5:26p	5:36p		5:56p	6:08p	6:23p	6:26p	6:36p		6:56p	7:08p
Hayward Park			4:39p			5:11p			5:39p			6:11p			6:39p			7:11p
Hillsdale		4:29p	4:41p	4:55p	4:59p	5:13p		5:29p	5:41p	5:55p	5:59p	6:13p		6:29p	6:41p	6:55p	6:59p	7:13p
Belmont		4:31p			5:01p			5:31p			6:01p			6:31p			7:01p	
San Carlos		4:34p			5:04p			5:34p			6:04p			6:34p			7:04p	
Redwood City	4:33p	4:37p	4:47p		5:07p	5:19p	5:33p	5:37p	5:47p		6:07p	6:19p	6:33p	6:37p	6:47p		7:07p	7:19p
Atherton			4:50p						5:50p						6:50p			
Menlo Park		4:41p	4:53p		5:11p	5:23p		5:41p	5:53p		6:11p	6:23p		6:41p	6:53p		7:11p	7:23p
Palo Alto	4:40p	4:43p	4:55p	5:07p	5:13p	5:25p	5:40p	5:43p	5:55p	6:07p	6:13p	6:25p	6:40p	6:43p	6:55p	7:07p	7:13p	7:25p
California Ave.		4:46p			5:16p			5:46p			6:16p			6:46p			7:16p	
San Antonio		4:49p			5:19p			5:49p			6:19p			6:49p			7:19p	
Mountain View		4:52p	5:02p	5:15p	5:22p	5:32p		5:52p	6:02p	6:15p	6:22p	6:32p		6:52p	7:02p	7:15p	7:22p	7:32p
Sunnyvale	4:51p	4:56p	5:06p		5:26p	5:36p	5:51p	5:56p	6:06p		6:26p	6:36p	6:51p	6:56p	7:06p		7:26p	7:36p
Lawrence			5:09p			5:39p			6:09p			6:39p			7:09p			7:39p
Santa Clara		5:04p			5:34p			6:04p			6:34p			7:04p			7:34p	
College Park																		
San Jose Diridon	5:03p	5:12p	5:20p	5:30p	5:42p	5:48p	6:03p	6:12p	6:20p	6:30p	6:42p	6:48p	7:03p	7:12p	7:20p	7:30p	7:42p	7:48p
Tamien		5:16p	5:24p			5:52p			6:24p			6:52p						7:52p

**Table A.1.4 2020 Project (PCEP) – Diesel and EMU Mixed Fleet Service Evening Period**

<b>Northbound</b>	<b>181</b>	<b>183</b>	<b>185</b>	<b>187</b>	<b>189</b>
Tamien		7:25p	8:27p	9:27p	
San Jose Diridon	7:00p	7:30p	8:32p	9:32p	10:30p
College Park					
Santa Clara	7:04p	7:34p	8:36p	9:36p	10:34p
Lawrence	7:09p	7:39p	8:41p	9:41p	10:39p
Sunnyvale	7:12p	7:42p	8:44p	9:44p	10:42p
Mountain View	7:15p	7:45p	8:47p	9:47p	10:45p
San Antonio	7:18p	7:48p	8:50p	9:50p	10:48p
California Avenue	7:22p	7:52p	8:54p	9:54p	10:52p
Palo Alto	7:25p	7:55p	8:57p	9:57p	10:55p
Menlo Park	7:27p	7:57p	8:59p	9:59p	10:57p
Atherton	7:29p	7:59p	9:01p	10:01p	10:59p
Redwood City	7:33p	8:03p	9:05p	10:05p	11:03p
San Carlos	7:36p	8:06p	9:08p	10:08p	11:06p
Belmont	7:38p	8:08p	9:10p	10:10p	11:08p
Hillsdale	7:41p	8:11p	9:13p	10:13p	11:11p
Hayward Park	7:43p	8:13p	9:15p	10:15p	11:13p
San Mateo	7:45p	8:15p	9:17p	10:17p	11:15p
Burlingame	7:47p	8:17p	9:19p	10:19p	11:17p
Broadway	7:51p	8:21p	9:23p	10:23p	11:21p
Millbrae	7:53p	8:23p	9:25p	10:25p	11:23p
San Bruno	7:56p	8:26p	9:28p	10:28p	11:26p
So. San Francisco	7:59p	8:29p	9:31p	10:31p	11:29p
Bayshore	8:04p	8:34p	9:36p	10:36p	11:34p
22nd Street	8:08p	8:38p	9:40p	10:40p	11:38p
4th & King	8:18p	8:48p	9:50p	10:50p	11:48p

<b>Southbound</b>	<b>180</b>	<b>182</b>	<b>184</b>	<b>186</b>	<b>188</b>
4th & King	7:30p	8:30p	9:30p	10:30p	12:01a
22nd Street	7:35p	8:35p	9:35p	10:35p	12:06a
Bayshore	7:39p	8:39p	9:39p	10:39p	12:10a
South SF	7:44p	8:44p	9:44p	10:44p	12:15a
San Bruno	7:46p	8:46p	9:46p	10:46p	12:17a
Millbrae	7:49p	8:49p	9:49p	10:49p	12:20a
Broadway	7:52p	8:52p	9:52p	10:52p	12:23a
Burlingame	7:53p	8:53p	9:53p	10:53p	12:24a
San Mateo	7:56p	8:56p	9:56p	10:56p	12:27a
Hayward Park	7:59p	8:59p	9:59p	10:59p	12:30a
Hillsdale	8:01p	9:01p	10:01p	11:01p	12:32a
Belmont	8:03p	9:03p	10:03p	11:03p	12:34a
San Carlos	8:06p	9:06p	10:06p	11:06p	12:37a
Redwood City	8:09p	9:09p	10:09p	11:09p	12:40a
Atherton	8:12p	9:12p	10:12p	11:12p	12:43a
Menlo Park	8:15p	9:15p	10:15p	11:15p	12:46a
Palo Alto	8:17p	9:17p	10:17p	11:17p	12:48a
California Ave.	8:20p	9:20p	10:20p	11:20p	12:51a
San Antonio	8:23p	9:23p	10:23p	11:23p	12:54a
Mountain View	8:26p	9:26p	10:26p	11:26p	12:57a
Sunnyvale	8:30p	9:30p	10:30p	11:30p	1:01a
Lawrence	8:33p	9:33p	10:33p	11:33p	1:04a
Santa Clara	8:37p	9:37p	10:37p	11:37p	1:08a
College Park					
San Jose Diridon	8:47p	9:49p	10:49p	11:47p	1:18a
Tamien	8:51p	9:53p	10:53p		

**Table 1.5 2020 Project Electrification – Diesel and EMU Mixed Fleet Service Peak Period; Gilroy Service (Pass-through Diesel Service to San Francisco)**

**Northbound**

Gilroy	6:10a	6:40a	7:10a
San Martin	6:19a	6:49a	7:19a
Morgan Hill	6:25a	6:55a	7:25a
Blossom Hill	6:38a	7:08a	7:38a
Capitol	6:44a	7:14a	7:44a
Tamien	6:52a	7:22a	7:52a
San Jose Diridon	7:00a	7:29a	8:00a

**Southbound**

San Jose Diridon	5:03p	6:03p	7:03p
Tamien	5:08p	6:08p	7:08p
Capitol	5:15p	6:15p	7:15p
Blossom Hill	5:21p	6:21p	7:21p
Morgan Hill	5:34p	6:34p	7:34p
San Martin	5:39p	6:39p	7:39p
Gilroy	5:51p	6:51p	7:51p

**Table A.2.1 2040 Project + TTC Fully Electrified fleet between SJ – SF Schedule - AM Peak Service**

Northbound Service																				
	400	402	404	406	408	410	412	414	416	418	420	422	424	426	428	430	432	434	436	438
Tamien		5:00		6:05			6:35			7:05			7:35			8:05			8:35	
San Jose Diridon	4:30	5:05	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50	8:00	8:10	8:20	8:30	8:40	8:50
College Park																				
Santa Clara	4:35	5:10	6:05			6:35			7:05			7:35			8:05			8:35		
Lawrence	4:39	5:14		6:18			6:48			7:18			7:48			8:18			8:48	
Sunnyvale	4:42	5:17	6:11	6:21	6:30	6:41	6:51	7:00	7:11	7:21	7:30	7:41	7:51	8:00	8:11	8:21	8:30	8:41	8:51	9:00
Mountain View	4:47	5:22	6:16	6:26	6:35	6:46	6:56	7:05	7:16	7:26	7:35	7:46	7:56	8:05	8:16	8:26	8:35	8:46	8:56	9:05
San Antonio	4:50	5:25			6:38			7:08			7:38			8:08			8:38			9:08
California Ave.	4:53	5:28	6:21			6:51			7:21			7:51			8:21			8:51		
Palo Alto	4:57	5:32	6:25	6:34	6:44	6:55	7:04	7:14	7:25	7:34	7:44	7:55	8:04	8:14	8:25	8:34	8:44	8:55	9:04	9:14
Menlo Park	4:59	5:34		6:36	6:46		7:06	7:16		7:36	7:46		8:06	8:16		8:36	8:46		9:06	9:16
Atherton	5:01	5:36	6:28						7:28						8:28					
Redwood City	5:05	5:40	6:32	6:43	6:51	7:01	7:13	7:21	7:32	7:43	7:51	8:01	8:13	8:21	8:32	8:43	8:51	9:01	9:13	9:21
San Carlos	5:08	5:43			6:54			7:24			7:54			8:24			8:54			9:24
Belmont	5:10	5:45		6:47			7:17			7:47			8:17			8:47			9:17	
Hillsdale	5:13	5:48	6:39	6:50	6:58	7:08	7:20	7:28	7:39	7:50	7:58	8:08	8:20	8:28	8:39	8:50	8:58	9:08	9:20	9:28
Hayward Park	5:15	5:50			7:00						8:00						9:00			
San Mateo	5:17	5:52	6:42	6:53		7:11	7:23		7:42	7:53		8:11	8:23		8:42	8:53		9:11	9:23	
Burlingame	5:20	5:55		6:56			7:26			7:56			8:26			8:56			9:26	
Broadway	5:22	5:57				7:15						8:15						9:15		
Millbrae	5:26	6:01	6:50	7:01	7:08	7:19	7:31	7:37	7:50	8:01	8:08	8:19	8:31	8:37	8:50	9:01	9:08	9:19	9:31	9:37
San Bruno	5:30	6:05			7:12			7:41			8:12			8:41			9:12			9:41
South SF	5:34	6:09	6:57			7:26			7:57			8:26			8:57			9:26		
Bayshore	5:39	6:14						7:45						8:45						9:45
22nd Street	5:44	6:19			7:19						8:19						9:19			
4th & King			7:04		7:23	7:33		7:52	8:04		8:23	8:33		8:52	9:04		9:23	9:33		9:52
4th & Townsend	5:50	6:25		7:16			7:46			8:16			8:46			9:16			9:46	
Transbay Terminal	5:54	6:29		7:20			7:50			8:20			8:50			9:20			9:50	

**Southbound Service**

	<b>401</b>	<b>403</b>	<b>405</b>	<b>407</b>	<b>409</b>	<b>411</b>	<b>413</b>	<b>415</b>	<b>417</b>	<b>419</b>	<b>421</b>	<b>423</b>	<b>425</b>	<b>427</b>	<b>429</b>	<b>431</b>	<b>433</b>	<b>435</b>	<b>437</b>	<b>439</b>
Transbay Terminal	4:50	5:20		6:05			6:35			7:05			7:35			8:05			8:35	
4th & Townsend	4:55	5:25		6:10			6:40			7:10			7:40			8:10			8:40	
4th & King			6:00		6:20	6:30		6:50	7:00		7:20	7:30		7:50	8:00		8:20	8:30		8:50
22nd Street	5:00	5:30	6:05	6:15	6:25	6:35	6:45	6:55	7:05	7:15	7:25	7:35	7:45	7:55	8:05	8:15	8:25	8:35	8:45	8:55
Bayshore	5:04	5:34		6:19						7:19						8:19				
South SF	5:09	5:39				6:43						7:43						8:43		
San Bruno	5:13	5:43		6:27			6:56			7:27			7:56			8:27			8:56	
Millbrae	5:16	5:46	6:18	6:30	6:38	6:49	6:59	7:08	7:18	7:30	7:38	7:49	7:59	8:08	8:18	8:30	8:38	8:49	8:59	9:08
Broadway	5:19	5:49																		
Burlingame	5:21	5:51		6:34			7:03			7:34			8:03			8:34			9:03	
San Mateo	5:24	5:54		6:37	6:44		7:06	7:14		7:37	7:44		8:06	8:14		8:37	8:44		9:06	9:14
Hayward Park	5:26	5:56		6:39						7:39						8:39				
Hillsdale	5:29	5:59	6:27	6:42		6:58	7:10		7:27	7:42		7:58	8:10		8:27	8:42		8:58	9:10	
Belmont	5:31	6:01			6:49			7:19			7:49			8:19			8:49			9:19
San Carlos	5:33	6:03	6:30	6:45		7:01	7:13		7:30	7:45		8:01	8:13		8:30	8:45		9:01	9:13	
Redwood City	5:39	6:09		6:51	6:56		7:19	7:26		7:51	7:56		8:19	8:26		8:51	8:56		9:19	9:26
Atherton	5:42	6:12					7:22						8:22						9:22	
Menlo Park	5:44	6:14	6:39		7:00	7:10		7:30	7:39		8:00	8:10		8:30	8:39		9:00	9:10		9:30
Palo Alto	5:47	6:17	6:42	6:57	7:03	7:13	7:26	7:33	7:42	7:57	8:03	8:13	8:26	8:33	8:42	8:57	9:03	9:13	9:26	9:33
California Ave.	5:50	6:20			7:06			7:36			8:06			8:36			9:06			9:36
San Antonio	5:53	6:23	6:47			7:18			7:47			8:18			8:47			9:18		
Mountain View	5:57	6:27	6:51	7:05	7:12	7:22	7:34	7:42	7:51	8:05	8:12	8:22	8:34	8:42	8:51	9:05	9:12	9:22	9:34	9:42
Sunnyvale	6:01	6:31			7:16			7:46			8:16			8:46			9:16			9:46
Lawrence	6:04	6:34	6:57			7:28			7:57			8:28			8:57			9:28		
Santa Clara	6:09	6:39	7:02			7:33			8:02			8:33			9:02			9:33		
College Park																				
San Jose Diridon	6:11	6:41	7:07	7:18	7:29	7:38	7:47	7:59	8:07	8:18	8:29	8:38	8:47	8:59	9:07	9:18	9:29	9:38	9:47	9:59
Tamien		6:45	7:11		7:33		7:51		8:11		8:33		8:51		9:11		9:33		9:51	

**Table A.2.2 2040 Project +TTC Fully Electrified fleet between SJ – SF Schedule - Mid-day Service**

<b>Northbound Service</b>														
	<b>440</b>	<b>442</b>	<b>444</b>	<b>446</b>	<b>448</b>	<b>450</b>	<b>452</b>	<b>454</b>	<b>456</b>	<b>458</b>	<b>460</b>	<b>462</b>	<b>464</b>	<b>466</b>
Tamien		9:25		10:25		11:25		12:25		13:25		14:25		15:25
San Jose Diridon	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30
College Park													15:03	
Santa Clara	9:05	9:35	10:05	10:35	11:05	11:35	12:05	12:35	13:05	13:35	14:05	14:35	15:06	15:35
Lawrence	9:09	9:39	10:09	10:39	11:09	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:10	15:39
Sunnyvale	9:12	9:42	10:12	10:42	11:12	11:42	12:12	12:42	13:12	13:42	14:12	14:42	15:13	15:42
Mountain View	9:17	9:47	10:17	10:47	11:17	11:47	12:17	12:47	13:17	13:47	14:17	14:47	15:18	15:47
San Antonio	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:21	15:50
California Ave.	9:23	9:53	10:23	10:53	11:23	11:53	12:23	12:53	13:23	13:53	14:23	14:53	15:24	15:53
Palo Alto	9:27	9:57	10:27	10:57	11:27	11:57	12:27	12:57	13:27	13:57	14:27	14:57	15:28	15:57
Menlo Park	9:29	9:59	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:30	15:59
Atherton	9:31	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:32	16:01
Redwood City	9:35	10:05	10:35	11:05	11:35	12:05	12:35	13:05	13:35	14:05	14:35	15:05	15:36	16:05
San Carlos	9:38	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:39	16:08
Belmont	9:40	10:10	10:40	11:10	11:40	12:10	12:40	13:10	13:40	14:10	14:40	15:10	15:41	16:10
Hillsdale	9:43	10:13	10:43	11:13	11:43	12:13	12:43	13:13	13:43	14:13	14:43	15:13	15:44	16:13
Hayward Park	9:45	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:46	16:15
San Mateo	9:47	10:17	10:47	11:17	11:47	12:17	12:47	13:17	13:47	14:17	14:47	15:17	15:48	16:17
Burlingame	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:51	16:20
Broadway	9:52	10:22	10:52	11:22	11:52	12:22	12:52	13:22	13:52	14:22	14:52	15:22	15:53	16:22
Millbrae	9:56	10:26	10:56	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:26	15:57	16:26
San Bruno	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:01	16:30
South SF	10:04	10:34	11:04	11:34	12:04	12:34	13:04	13:34	14:04	14:34	15:04	15:34	16:05	16:34
Bayshore	10:05	10:35	11:05	11:35	12:05	12:35	13:05	13:35	14:05	14:35	15:05	16:39	16:39	16:39
22nd Street	10:09	10:39	11:09	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:09	15:39	16:15	16:44
4th & King														
4th & Townsend	10:15	10:45	11:15	11:45	12:15	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:21	16:50
Transbay Terminal	10:19	10:49	11:19	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:19	15:49	16:25	16:54

**Southbound Service**

	<b>441</b>	<b>443</b>	<b>445</b>	<b>447</b>	<b>449</b>	<b>451</b>	<b>453</b>	<b>455</b>	<b>457</b>	<b>459</b>	<b>461</b>	<b>463</b>	<b>465</b>	<b>467</b>
Transbay Terminal	8:55	9:25	9:55	10:25	10:55	11:25	11:55	12:25	12:55	13:25	13:55	14:25	14:55	15:25
4th & Townsend	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30
4th & King														
22nd Street	9:05	9:35	10:05	10:35	11:05	11:35	12:05	12:35	13:05	13:35	14:05	14:35	15:05	15:35
Bayshore	9:09	9:39	10:09	10:39	11:09	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:09	15:39
South SF	9:14	9:44	10:14	10:44	11:14	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:44
San Bruno	9:18	9:48	10:18	10:48	11:18	11:48	12:18	12:48	13:18	13:48	14:18	14:48	15:18	15:48
Millbrae	9:21	9:51	10:21	10:51	11:21	11:51	12:21	12:51	13:21	13:51	14:21	14:51	15:21	15:51
Broadway	9:24	9:54	10:24	10:54	11:24	11:54	12:24	12:54	13:24	13:54	14:24	14:54	15:24	15:54
Burlingame	9:26	9:56	10:26	10:56	11:26	11:56	12:26	12:56	13:26	13:56	14:26	14:56	15:26	15:56
San Mateo	9:29	9:59	10:29	10:59	11:29	11:59	12:29	12:59	13:29	13:59	14:29	14:59	15:29	15:59
Hayward Park	9:31	10:01	10:31	11:01	11:31	12:01	12:31	13:01	13:31	14:01	14:31	15:01	15:31	16:01
Hillsdale	9:34	10:04	10:34	11:04	11:34	12:04	12:34	13:04	13:34	14:04	14:34	15:04	15:34	16:04
Belmont	9:36	10:06	10:36	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06
San Carlos	9:38	10:08	10:38	11:08	11:38	12:08	12:38	13:08	13:38	14:08	14:38	15:08	15:38	16:08
Redwood City	9:44	10:14	10:44	11:14	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:44	16:14
Atherton	9:47	10:17	10:47	11:17	11:47	12:17	12:47	13:17	13:47	14:17	14:47	15:17	15:47	16:17
Menlo Park	9:49	10:19	10:49	11:19	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:19	15:49	16:19
Palo Alto	9:52	10:22	10:52	11:22	11:52	12:22	12:52	13:22	13:52	14:22	14:52	15:22	15:52	16:22
California Ave.	9:55	10:25	10:55	11:25	11:55	12:25	12:55	13:25	13:55	14:25	14:55	15:25	15:55	16:25
San Antonio	9:58	10:28	10:58	11:28	11:58	12:28	12:58	13:28	13:58	14:28	14:58	15:28	15:58	16:28
Mountain View	10:02	10:32	11:02	11:32	12:02	12:32	13:02	13:32	14:02	14:32	15:02	15:32	16:02	16:32
Sunnyvale	10:06	10:36	11:06	11:36	12:06	12:36	13:06	13:36	14:06	14:36	15:06	15:36	16:06	16:36
Lawrence	10:09	10:39	11:09	11:39	12:09	12:39	13:09	13:39	14:09	14:39	15:09	15:39	16:09	16:39
Santa Clara	10:14	10:44	11:14	11:44	12:14	12:44	13:14	13:44	14:14	14:44	15:14	15:44	16:14	16:44
College Park														
San Jose Diridon	10:19	10:49	11:19	11:49	12:19	12:49	13:19	13:49	14:19	14:49	15:19	15:49	16:19	16:49
Tamien		10:53		11:53		12:53		13:53		14:53		15:53		

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**Table A.2.3 2040 Project + TTC Fully Electrified fleet between SJ – SF Schedule - PM Peak Service**

Northbound Service																							
	468	470	472	474	476	478	480	482	484	486	488	490	492	494	496	498	500	502	504	506	508	510	512
Tamien		16:05			16:35			17:05			17:35			18:05			18:35				20:25	21:25	
San Jose Diridon	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:30	20:30	21:30	22:30
College Park																							
Santa Clara	16:05			16:35			17:05			17:35			18:05			18:35			19:05	19:35	20:35	21:35	22:35
Lawrence	16:09			16:39			17:09			17:39			18:09			18:39			19:09	19:39	20:39	21:39	22:39
Sunnyvale			16:30			17:00			17:30			18:00			18:30			19:00	19:12	19:42	20:42	21:42	22:42
Mountain View	16:16	16:23	16:35	16:46	16:53	17:05	17:16	17:23	17:35	17:46	17:53	18:05	18:16	18:23	18:35	18:46	18:53	19:05	19:17	19:47	20:47	21:47	22:47
San Antonio	16:19			16:49			17:19			17:49			18:19			18:49			19:20	19:50	20:50	21:50	22:50
California Ave.			16:40			17:10			17:40			18:10			18:40			19:10	19:23	19:53	20:53	21:53	22:53
Palo Alto	16:25	16:31	16:44	16:55	17:01	17:14	17:25	17:31	17:44	17:55	18:01	18:14	18:25	18:31	18:44	18:55	19:01	19:14	19:27	19:57	20:57	21:57	22:57
Menlo Park	16:27		16:46	16:57		17:16	17:27		17:46	17:57		18:16	18:27		18:46	18:57		19:16	19:29	19:59	20:59	21:59	22:59
Atherton					17:06						18:06						19:06		19:31	20:01	21:01	22:01	23:01
Redwood City		16:37	16:51		17:10	17:21		17:37	17:51		18:10	18:21		18:37	18:51		19:10	19:21	19:35	20:05	21:05	22:05	23:05
San Carlos	16:31	16:40		17:01	17:13		17:31	17:40		18:01	18:13		18:31	18:40		19:01	19:13		19:38	20:08	21:08	22:08	23:08
Belmont			16:55			17:25			17:55			18:25			18:55			19:25	19:40	20:10	21:10	22:10	23:10
Hillsdale	16:35	16:44		17:05	17:17		17:35	17:44		18:05	18:17		18:35	18:44		19:05	19:17		19:43	20:13	21:13	22:13	23:13
Hayward Park		16:46						17:46						18:46					19:45	20:15	21:15	22:15	23:15
San Mateo		16:48	17:00		17:20	17:30		17:48	18:00		18:20	18:30		18:48	19:00		19:20	19:30	19:47	20:17	21:17	22:17	23:17
Burlingame		16:51			17:23			17:51			18:23			18:51			19:23		19:50	20:20	21:20	22:20	23:20
Broadway																			19:52	20:22	21:22	22:22	23:22
Millbrae	16:44	16:56	17:07	17:14	17:28	17:37	17:44	17:56	18:07	18:14	18:28	18:37	18:44	18:56	19:07	19:14	19:28	19:37	19:56	20:26	21:26	22:26	23:26
San Bruno		17:00			17:32			18:00			18:32			19:00			19:32		20:00	20:30	21:30	22:30	23:30
South SF				17:21						18:21						19:21			20:04	20:34	21:34	22:34	23:34
Bayshore		17:08						18:08						19:08					20:09	20:39	21:39	22:39	23:39
22nd Street	16:59	17:13	17:22	17:30	17:44	17:52	17:59	18:13	18:22	18:30	18:44	18:52	18:59	19:13	19:22	19:30	19:44	19:52	20:14	20:44	21:44	22:44	23:44
4th & King	17:03		17:26	17:34		17:56	18:03		18:26	18:34		18:56	19:03		19:26	19:34		19:56					
4th & Townsend		17:19			17:50			18:19			18:50			19:19			19:50		20:20	20:50	21:50	22:50	23:50
Transbay Terminal		17:23			17:54			18:23			18:54			19:23			19:54		20:24	20:54	21:54	22:54	23:54

Southbound Service																							
	469	471	473	475	477	479	481	483	485	487	489	491	493	495	497	499	501	503	505	507	509	511	513
Transbay Terminal		16:05			16:35			17:05			17:35			18:05			18:35		19:25	20:25	21:25	22:25	23:56
4th & Townsend		16:10			16:40			17:10			17:40			18:10			18:40		19:30	20:30	21:30	22:30	0:01
4th & King	16:00		16:20	16:30		16:50	17:00		17:20	17:30		17:50	18:00		18:20	18:30		18:50					
22nd Street			16:25						17:25						18:25				19:35	20:35	21:35	22:35	0:06
Bayshore						16:58						17:58					18:58	19:39	20:39	21:39	22:39	0:10	
South SF	16:12			16:42			17:12			17:42			18:12			18:42			19:44	20:44	21:44	22:44	0:15
San Bruno			16:36			17:06			17:36			18:06			18:36			19:06	19:48	20:48	21:48	22:48	0:19
Millbrae	16:18	16:27	16:39	16:48	16:57	17:09	17:18	17:27	17:39	17:48	17:57	18:09	18:18	18:27	18:39	18:48	18:57	19:09	19:51	20:51	21:51	22:51	0:22
Broadway				16:51						17:51						18:51			19:54	20:54	21:54	22:54	0:25
Burlingame		16:31			17:01			17:31			18:01			18:31			19:01		19:56	20:56	21:56	22:56	0:27
San Mateo	16:24	16:34		16:55	17:04		17:24	17:34		17:55	18:04		18:24	18:34		18:55	19:04		19:59	20:59	21:59	22:59	0:30
Hayward Park			16:46						17:46						18:46				20:01	21:01	22:01	23:01	0:32
Hillsdale	16:28	16:38	16:49	16:59	17:08	17:18	17:28	17:38	17:49	17:59	18:08	18:18	18:28	18:38	18:49	18:59	19:08	19:18	20:04	21:04	22:04	23:04	0:35
Belmont		16:40			17:10			17:40			18:10			18:40			19:10		20:06	21:06	22:06	23:06	0:37
San Carlos			16:52			17:21			17:52			18:21			18:52			19:21	20:08	21:08	22:08	23:08	0:39
Redwood City	16:36	16:47	16:57	17:07	17:17	17:26	17:36	17:47	17:57	18:07	18:17	18:26	18:36	18:47	18:57	19:07	19:17	19:26	20:14	21:14	22:14	23:14	0:45
Atherton	16:39						17:39						18:39						20:17	21:17	22:17	23:17	0:48
Menlo Park		16:51	17:01		17:21	17:30		17:51	18:01		18:21	18:30		18:51	19:01		19:21	19:30	20:19	21:19	22:19	23:19	0:50
Palo Alto	16:43	16:54	17:04	17:13	17:24	17:33	17:43	17:54	18:04	18:13	18:24	18:33	18:43	18:54	19:04	19:13	19:24	19:33	20:22	21:22	22:22	23:22	0:53
California Ave.	16:46			17:16			17:46			18:16			18:46			19:16			20:25	21:25	22:25	23:25	0:56
San Antonio			17:09			17:38			18:09			18:38			19:09			19:38	20:28	21:28	22:28	23:28	0:59
Mountain View	16:52	17:02	17:13	17:22	17:32	17:42	17:52	18:02	18:13	18:22	18:32	18:42	18:52	19:02	19:13	19:22	19:32	19:42	20:32	21:32	22:32	23:32	1:03
Sunnyvale	16:56	17:06	17:17	17:26	17:36	17:46	17:56	18:06	18:17	18:26	18:36	18:46	18:56	19:06	19:17	19:26	19:36	19:46	20:36	21:36	22:36	23:36	1:07
Lawrence		17:09			17:39			18:09			18:39			19:09			19:39		20:39	21:39	22:39	23:39	1:10
Santa Clara	17:03			17:33			18:03			18:33			19:03			19:33			20:44	21:44	22:44	23:44	1:15
College Park																							
San Jose Diridon	17:08	17:18	17:28	17:38	17:48	17:57	18:08	18:18	18:28	18:38	18:48	18:57	19:08	19:18	19:28	19:38	19:48	19:57	20:49	21:49	22:49	23:49	1:20
Tamien			17:32			18:01			18:32			19:01			19:32			20:01		21:53	22:53		

**Table A.2.4 2040 Project + TTC Fully Electrified fleet between SJ - SF Schedule – Gilroy Shuttle (Diesel Service)**

<b>Northbound AM</b>			
Gilroy	6:05	6:35	7:05
San Martin	6:14	6:44	7:14
Morgan Hill	6:20	6:50	7:20
Blossom Hill	6:33	7:03	7:33
Capitol	6:39	7:09	7:39
Tamien	6:47	7:17	7:47
San Jose Diridon	6:55	7:25	7:55
<b>Southbound PM</b>			
San Jose Diridon	16:55	18:13	19:13
Tamien	17:01	18:19	19:19
Capitol	17:08	18:26	19:26
Blossom Hill	17:14	18:32	19:32
Morgan Hill	17:27	18:45	19:45
San Martin	17:33	18:51	19:51
Gilroy	17:46	19:04	20:04

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