Short Range Transit Plan

SANTA CLARA VALLEY TRANSPORTATION AUTHORITY

Capital Improvement Program

Fleet Management Plan

30% Travel Time Savings

Bus Rapid Transit

DRAFT: Jan. 22, 2010

DECEMBER 2009

FY 2010–2019

Valley Transportation Plan 2035

Measure A Capital Program

Inside Front Cover

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This and previous versions of this document can be accessed at **http://www.vta.org/studies/index.html**

Federal transportation statutes require that the Metropolitan Transportation Commission (MTC), in partnership with state and local agencies, develop and periodically update a long-range Regional Transportation Plan (RTP), and a Transportation Improvement Program (TIP), which implements the RTP by programming federal funds to transportation projects contained in the RTP. In order to effectively execute these planning and programming responsibilities, MTC requires that each transit operator in its region, which receives federal funding through the TIP, prepare, adopt, and submit to MTC a Short Range Transit Plan (SRTP).

The preparation of this SRTP has been funded, in part, by a grant from the United States Department of Transportation (USDOT), through section 5303 of the Federal Transit Act. The contents of this SRTP reflect the views of the Santa Clara Valley Transportation Authority (VTA) and are not necessarily those of USDOT, the Federal Transit Administration (FTA), or MTC. VTA is solely responsible for the accuracy of the information presented in this SRTP.

Table of Contents

Background

Relationship to Other Documents

The Short Range Transit Plan (SRTP) is a planning document that represents Santa Clara Valley Transportation Authority's (VTA's) plan for transit service over the next 10 years. The plan is largely guided by the agency's long-term plan, Valley Transportation Plan 2035 which sets out the overarching goals, priorities, and vision for transportation in Santa Clara County through the year 2035. The Valley Transportation Plan also guided the Metropolitan Transportation Commission's Regional Transportation Plan 2035, a long-range plan for transportation throughout the 9-county Bay Area.

VTA's Transit Sustainability Policy (TSP) & Service Design Guidelines (SDG) provide a detailed description of VTA's various transit services and prescribes guidelines for evaluating their performance. The performance standards of the TSP and SDG are the basis for the performance evaluations in Chapter 1 of the SRTP.

The SRTP is divided into three chapters. Chapter 1 introduces VTA's various transit services and details their performance during Fiscal Year 2009 (FY09, from July 2008 to June 2009). Chapter 2 presents VTA's financial operating plan. Chapter 3 details VTA's capital improvement program. Appendix A is the full text of the 2000 Measure A ballot measure, passed by Santa Clara County voters in November 2000. Appendix B is the FY10-FY24 Fleet Management Plan, which describes VTA's plan for revenue vehicles over the next 15 years. Appendix C details VTA's assumptions for sales tax, inflation, interest rates, and other projections. Appendix D details the assumptions of the BART extension project.

Accomplishments

In FY09, VTA accomplished several major transit-related achievements:

- Completion and adoption of Valley Transportation Plan 2035
- Completion and adoption of the Bus Rapid Transit Strategic Plan
- Completion of the East San Jose Community-Based Transportation Plan
- Completion of the light rail station platform retrofit project
- Passage of local Measures B, C, and D by Santa Clara County voters

Ridership Trends

Figures A and B show the average weekday ridership over the last five fiscal years for the bus and light rail systems, respectively. Bus average weekday ridership has increased from 97,424 in July 2004 to 103,510 in June 2009, a 6.2% increase. Light rail average weekday ridership has increased from 20,894 in July 2004 to 31,768 in June 2009, a 52% increase.

Figure A: Bus Ridership

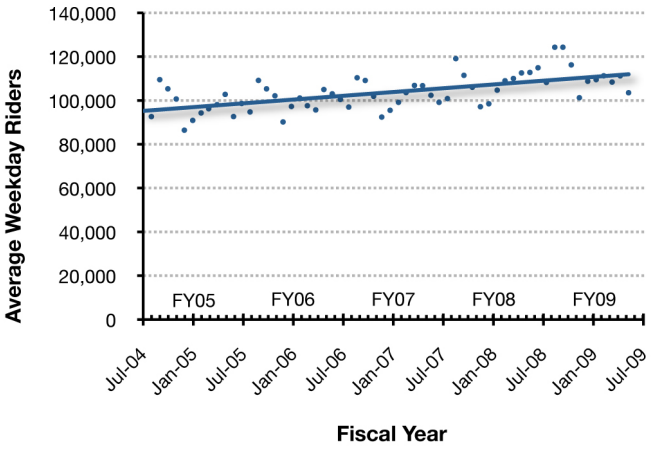
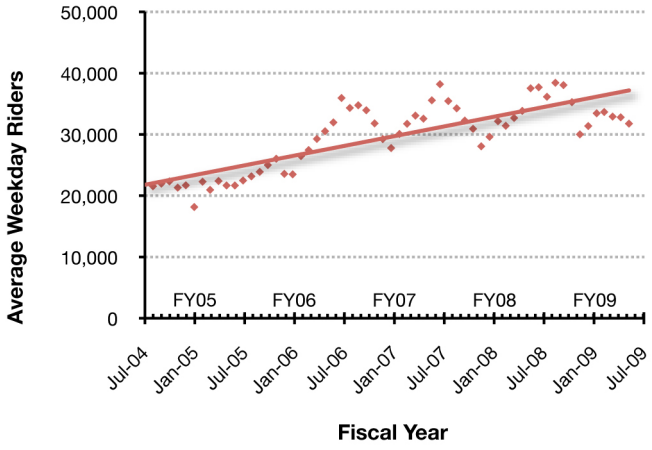


Figure B: Light Rail Ridership



Chapter 1: Service and System Evaluation

1.1 Transit Sustainability Policy

The Transit Sustainability Policy (TSP) is a process to evaluate performance of the transit system using Board adopted standards for productivity. The routes in each transit mode are evaluated to determine their performance. Routes that fall below the standards are candidates for corrective actions such as changes in route frequency, increased marketing and promotion, or deletion and reinvestment of those resources into stronger transit markets. The goals of the TSP are to:

- Improve system ridership, productivity, and efficiency
- Improve farebox recovery
- Improve transit's role as a viable alternative mode
- Use transit investments and resources more effectively

The Service Performance Standards are the primary criteria for the TSP evaluation and recommendation process and are applied to service changes, new lines, and capital projects. In the case of existing services, the standards are used to evaluate route performance and make recommendations for improving under performing routes. In the case of new service, the standards are used to identify the projected performance of the service and make recommendations if necessary. The standards are recalculated periodically to reflect current system performance. The TSP standards include the following:

Primary Standard. The Primary Standard is Average Boarding per Revenue Hour. This standard applies to Community Bus, Core and Local Bus, BRT and new Light Rail (LRT) services. This indicator shows how well service is utilized given the hours of service provided. It also indicates whether the transit capacity offered is appropriate, and how well capital and operating resources are used. Average weekday performance is used for SRTP purposes.

Secondary Standards. The Secondary Standards are: Average Daily Boardings per Station for BRT, LRT, Commuter Rail and Heavy Rail, and the Average Boardings per Mile applied to BRT and LRT modes.

Express Bus Standard. The Express bus standard is 60% of the seated vehicle loading capacity. This singular standard is needed due to the special characteristics of express bus lines where seat turnover is low and people spend longer periods of time on the bus.

The categorical minimum standard for any bus transit service is 15 Boardings per Revenue Hour. Bus lines that consistently operate below this threshold and that are unresponsive to marketing, restructuring, and operational refinements shall be discontinued. There is no minimum standard for existing rail lines. Since

the capital investments in these lines have already been made, it is the policy of VTA to increase ridership on these lines by working with cities to improve surrounding land uses and develop supporting polices and to apply standards whereby consistently underperforming stations may be skipped or closed.

Non-Express bus service is grouped into three categories for the purposes of evaluation (Core, Local, and Community). The categories are distinguished by operational characteristics such as frequency, service span and days of operation. Level of bus service is driven by the market demand for transit in a corridor. Thus, high intensity corridors with many large attractors and generators are provided with the highest level of service. Land use and corridor characteristics further define categories of bus service. Figure 1-1 provides a comparison of the range of VTA transit products. Figure 1-2 shows examples of corridor characteristics for VTA products.

Figure 1-1: Transit Products Operational Characteristics

	Weekday Frequency (min.)	Weekend Service	Span Hours	Days/ Week	Capacity
Core Network	15 or lower	15 or lower	18+	7	Medium
Local Network	30	30-60	17 or below	7 or below	Low
Community Bus	30-60	30-60	14 or below	7 or below	Lowest
Express	Commute-period service, some all-day		17 or below	7 or below	Low
Bus Rapid Transit	10 or lower	10 or lower	18+	7	Medium
Light Rail	15 or lower	15-30	18+	7	High
Heavy Rail/ Commuter Rail	20-60	60	18+	7	Highest

Figure 1-2: Corridor Characteristics

	Corridor Characteristics	Examples
Core Network	• Major arterials • Transit interconnectivity • Major generators & attractors • Long distance, multiple jurisdictions	• El Camino Real • Stevens Creek Blvd • King Road
Local Network	• Neighborhood Collectors • Feeder service to Core • Community generators & Schools • Medium Distance trips	• Middlefield Road • Saratoga-Sunnyvale Road • Lincoln Avenue
Community Bus	• Residential Streets • Feeder service to core, and local networks • Community activity centers • Neighborhood circulators • Downtown circulators	• Gilroy and Morgan Hill • Evergreen District • South Palo Alto • Japantown Community Bus (Rte. 11) • Downtown San Jose (DASH)
Express Bus	• Expressways, highways or freeways • Weekday peak directional period • Between transit centers/ Park & Rides and Urban Centers • Long distance trips	• Lawrence Expressway • Hwy 237 • I-880, I-680, I-280
Bus Rapid Transit	• Major arterials • Transit interconnectivity • Major generators & attractors • Long distance, multiple jurisdictions	• El Camino Real (2013) • Stevens Creek Blvd (2017)
Light Rail	• Established trunk corridors • Link major trip generators • Higher capacity than Bus • Well defined station areas	• North First Street • Tasman Blvd. I-87 median
Heavy Rail	• Established rail corridor • Links regional centers • Higher capacity system • Can operate at high speeds	• Caltrain • BART

1.2 Route Performance - Bus

In FY08, VTA completed the Comprehensive Operations Analysis (COA), which used the TSP performance standards to analyze existing bus service. The objective of the study was to develop a cost neutral bus network redesign by redistributing resources from underperforming routes to more productive routes. The study revealed that a select few lines within VTA's local and express routes were carrying a vast majority of the system's riders. Many of the remaining routes were underused, contributing to an overall farebox recovery rate of just below 14 percent (the VTA Board has established a target farebox recovery rate of 20 to 25 percent). Corrective actions were made for underperforming routes. The COA service changes were implemented in January 2008 and have resulted in significant ridership increases across the bus and light rail systems. The 6-month average weekday bus ridership for July through December 2008 (after COA implementation) was 8.76% higher than the same period in 2007 (before COA implementation).

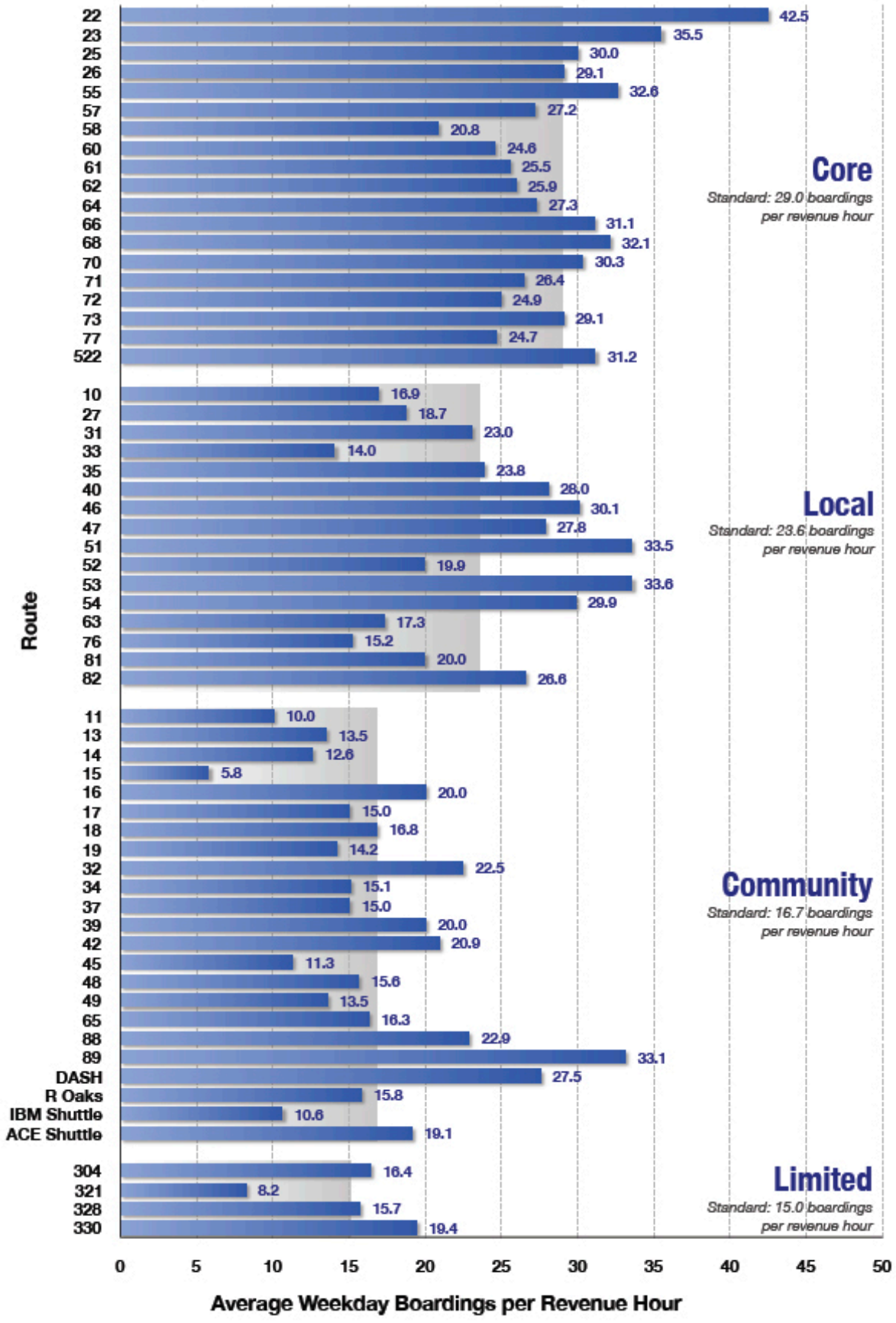
VTA evaluates all bus routes as part of the Annual Transit Service Plan (ATSP). This process uses route performance, customer feedback, and other input to develop a set of recommended service adjustments for public review and Board approval. The most recent ATSP was implemented in July 2009. Outside of the regular ATSP process, VTA will implement a series of service cuts in January 2010 in order to deal with a budget shortfall resulting from the weakened economy.

In addition to the Annual Transit Service Plan, VTA's Board has adopted criteria that can be used to determine when service changes must be approved by VTA's Board and those improvements that can be handled at the staff level. The Board has adopted the approach that 'major service' changes will require VTA's Board of Directors and must undergo a Title VI Evaluation. Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving Federal financial assistance, and compliance is regulated by the Federal Transit Administration (FTA). VTA's Board has defined major service changes to include:

- Establishing a new transit line or service
- Eliminating a transit line or service
- Any route change which impacts 25% or more of a line's route miles
- Span of service or frequency changes affecting 25% or more of a line's revenue vehicle hours
- Changes that may be controversial with a particular community or interested parties

Figure 1-3 shows the performance of the non-Express bus routes for FY09. Each route is listed on the vertical axis, grouped by category and sorted numerically within each category. The routes are all measured in Boardings per Revenue Hour along the horizontal axis. Per VTA's Service Design Guidelines (SDG), each route category has a separate performance standard to meet, which is indicated in gray.

Figure 1-3: Non-Express Bus Route Performance



Core Bus Routes

The core bus route network is composed of 19 routes that form the backbone and primary grid of the bus system (this includes the Rapid 522). Their performance is measured in average weekday Boardings per Revenue Hour. For FY09, these routes ranged from the low-performing route 58 (at 20.8 Boardings per Revenue Hour) to the popular route 22 (at 42.5 Boardings per Revenue Hour). The standard for the core routes is 29.0 Boardings per Revenue Hour (an increase of 5.8% from FY08), which 10 of these routes met, though many under-performing routes were relatively close to meeting the standard. The Rapid 522 is included in the core category, though its performance is measured separately (see section 1.3 later).

Local Bus Routes

The local bus route network is composed of 16 routes that form the local network of the bus system. Their performance is measured in average weekday Boardings per Revenue Hour. For FY09, these routes ranged from the low-performing route 33 (at 14.0 Boardings per Revenue Hour) to route 53 (at 33.6 Boardings per Revenue Hour). The current standard for the local bus routes is 23.6 Boardings per Revenue Hour (an 11.3% increase from FY08). Eight (8) of these routes meet the standard.

Community Bus and Shuttle Bus Routes

The community bus and shuttle routes are 23 routes that serve as community feeders to the rest of the transit system. Their performance is measured in average weekday Boardings per Revenue Hour. For FY09, these routes ranged from the low-performing route 15 (at 5.8 Boardings per Revenue Hour) to route 89 (at 33.1 Boardings per Revenue Hour). The current standard for the community bus routes is 16.7 Boardings per Revenue Hour (an 11.3% increase from FY08). Nine (9) of these routes meet the standard.

Limited Stop Bus Routes

The four limited stop routes serve as long, commute-oriented service and make limited stops in order to provide faster service. Though Limited Routes are technically classified as a type of Express Service, their performance is measured in average weekday Boardings per Revenue Hour, along with the other non-Express routes. For FY09, these routes ranged from the low-performing route 321 (at 8.2 Boardings per Revenue Hour) to route 330 (at 19.4 Boardings per Revenue Hour). The current standard for the limited stop routes is 15.0 Boardings per Revenue Hour. All limited stop routes except the 321 meet the standard.

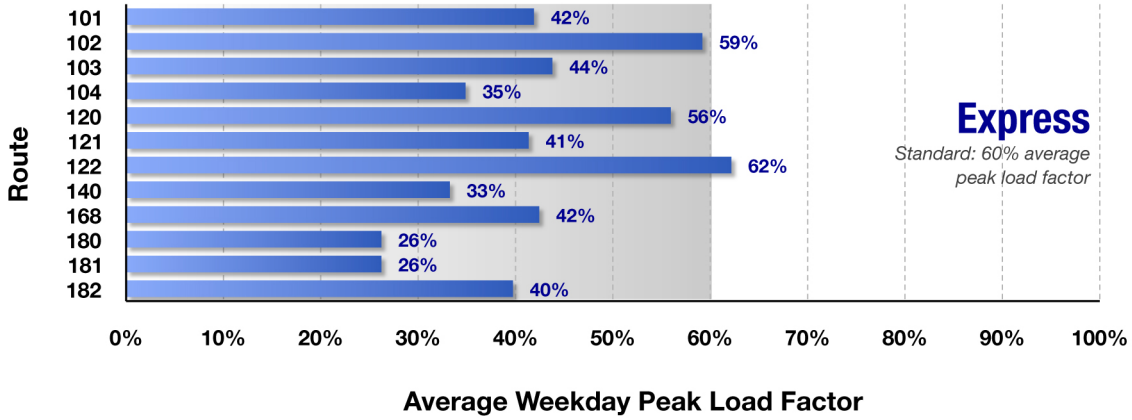
Express Bus Service

Express routes provide service that is tailored to meet the needs of commuters traveling long distances, often operating on highways, freeways, and expressways. Express routes have fewer pick-up stops before traveling non-stop to the final destination. These routes are designed to be time-competitive with automobiles and often stop at Park-and-Ride lots.

Express routes are evaluated using Peak Load Factors. The average Peak Load Factor of a route compares the supply of seats available on a regular bus (37 seats) to the average peak number of passengers aboard each trip. For all-day routes, the average Peak Load Factor is based on the Peak Load Factor over the entire day. The standard, which does not change year-to-year, is a minimum 60% Peak Load Factor. This means that a minimum of 60% of the seats are full during an average trip. Currently, only the 122 (at 62% Peak Load Factor) meets the standard (see Figure 1-4).

The Express Bus Study (or Highway-Based BRT Alternatives Analysis) began in February 2009 and the results are forthcoming. The Study may provide recommendations for changes to any aspect of VTA's express bus system.

Figure 1-4: Express Bus Route Performance



1.3 Route Performance - Bus Rapid Transit

Bus Rapid Transit (BRT) is defined in the Service Design Guidelines (SDG) as a means to provide high quality rapid transit service with rubber tire vehicles. The SDG describes two types of BRT service, BRT 1 and BRT 2, which are distinguished by their differing capital and infrastructure requirements.

BRT 1: is a premium service with higher operating speeds, greater reliability, and fewer stops than local bus service. VTA's current Rapid 522 is an example of BRT 1 type service.

BRT 2: requires considerably higher capital investment than BRT 1 due to specialized or dedicated rights-of-way, related infrastructure, and passing lanes at stations to allow vehicles the flexibility to bypass stations. These improvements are designed to result in significant travel time savings for riders. VTA plans to upgrade several corridors to BRT 2 service in the future.

The primary evaluation standard for BRT is average Boardings per Revenue Hour. The Rapid 522 is currently the only BRT 1 line in the system, and should be held to a standard of 45 Boardings per Revenue Hour. Until VTA operates additional BRT routes, the Rapid 522 is being shown in the Core Route evaluation category (Figure 1-3) for comparison.

In May 2008, VTA completed the Bus Rapid Transit Strategic Plan, which used the SDG performance standards to develop a plan for BRT in Santa Clara County. The study evaluated six potential corridors for BRT implementation, recommended BRT service elements, established a BRT brand identity, and developed a plan for implementation. The study recommends three corridors for near-term implementation of BRT 2 service, listed below. VTA is actively moving forward on developing these corridors, as shown in the Measure A capital project tables in Chapter 3:

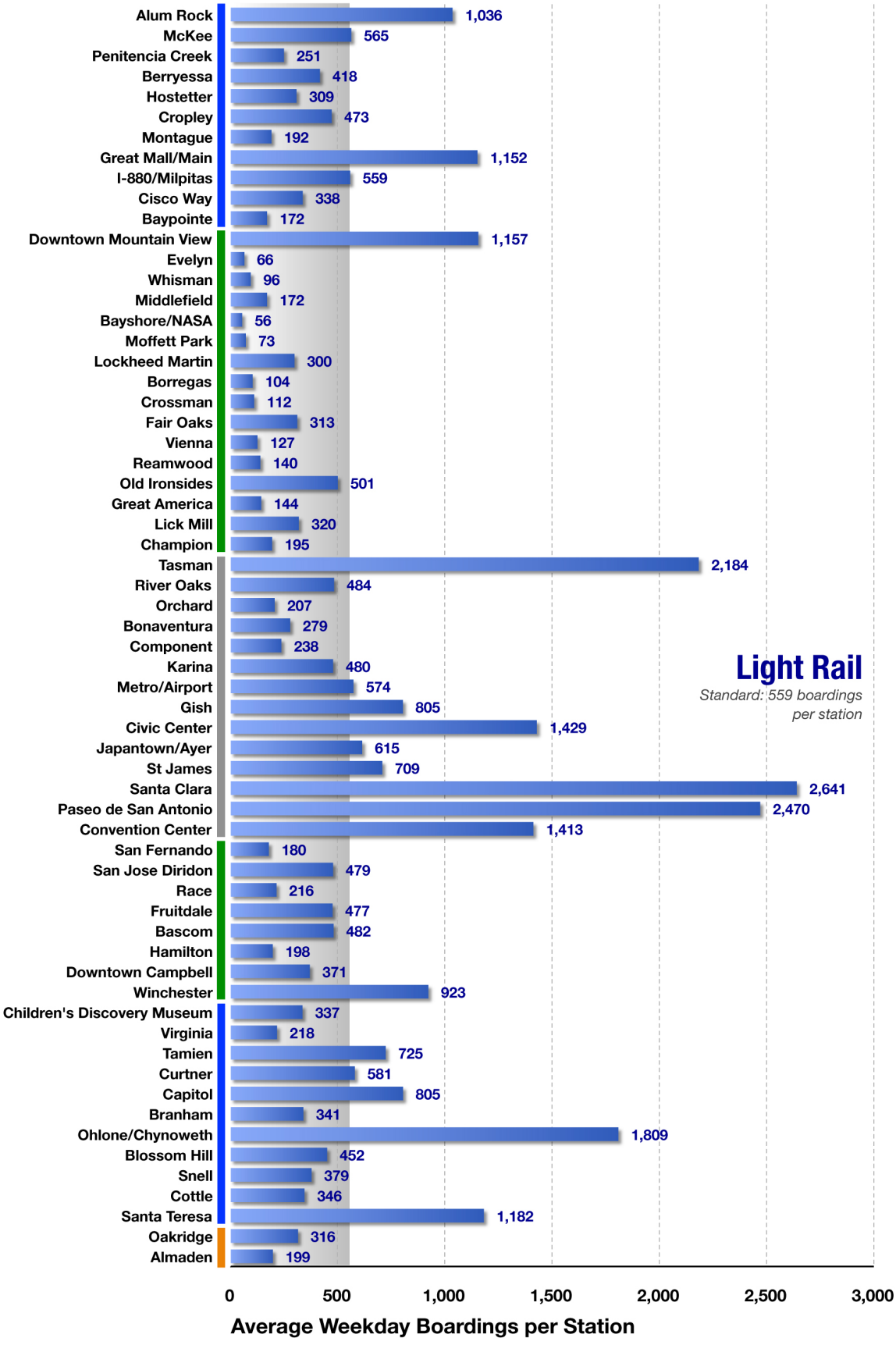
- Santa Clara/Alum Rock: from Eastridge Transit Center to the Arena
- El Camino Real: from the Arena to Palo Alto Transit Center
- Stevens Creek: from Eastridge Transit Center to De Anza College

1.4 Route Performance - Light Rail

At present, VTA's LRT system has two primary lines: the Alum Rock–Santa Teresa line, and the Mountain View–Winchester line. Additionally, the system operates the Ohlone/Chynoweth–Almaden spur line. Figure 1-5 shows the system's average weekday Boardings per Station. The standard is 559 Boardings per Station; many stations do not meet this standard. Santa Clara has the highest average daily Boardings per Station in the system at 2,641. Paso de San Antonio Station, largely driven by ridership due to San Jose State University, has the second highest at 2,470. In general, most of the high boarding stations are either located in downtown San Jose, located at the end-of-line stations, or have heavy transfer activity between lines. VTA is particularly concerned about the poor performance of many stations between Champion and Evelyn.

The Light Rail Transit System Analysis is a project in progress that will evaluate the current and future market conditions along with possible operating or capital improvements to the system over the next 20 years. The overarching goal of the analysis is to increase ridership on the system by making light rail more competitive in the overall travel market. This will be accomplished by improving operating speeds, flexibility, and efficiency. The study will recommend capital and operational improvements. VTA has not yet identified funding for the Plan's potential capital improvements, which could be significant. The Capital Improvement Program in Chapter 3 includes an unfunded placeholder for these resulting capital projects (the item titled "Various Light Rail Capital Improvements" in Figure 3-5).

Figure 1-5: Light Rail Station Performance



1.5 Key Performance Indicators

VTA collects data on key indicators to evaluate performance and measure the efficiency and effectiveness of the transit system. Key indicators covering the period from FY06 through FY09 are shown in Figure 1-6 through 1-9. Note that some FY09 numbers are preliminary.

VTA Performance – Bus Service

Figure 1-6 shows that bus service annual ridership has increased 4.2% from FY08 to FY09; this continues a trend of positive ridership growth since FY06. Boardings per Revenue Hour, an important measure of efficiency, also continues an upward trend and increased by almost 5% from FY08 to FY09. On-time performance fell to 88.6%, missing VTA's goal of 95%. Total Bus Operating fell to $196.2 million.

Figure 1-6: Key Performance Indicators for Bus

BUS	FY 2006	FY 2007	FY 2008	FY 2009	FY 09 Met Goal?
Total Annual Boardings	30,938,044	31,646,555	33,103,913	34,510,273	YES
Percent Annual Change in Boardings	2.1%	2.3%	4.6%	4.2%	-
Average Weekday Boardings	99,966	102,123	106,674	111,820	YES
Boardings per Revenue Hour	25.0	25.2	25.8	27.0	-
Percent of Scheduled Service Operated	99.33%	99.44%	99.61%	99.69%	YES
Miles Between Major Mechanical Schedule Loss	5,394	5,590	7,475	8,289	YES
Miles Between Chargeable Accidents	169,725	123,064	90,310	92,503	No
On-time Performance	90.3%	89.7%	90.1%	88.6%	No
Scheduled Total Hours	1,346,841	1,364,903	1,389,344	1,379,428	-
Scheduled Revenue Hours	1,236,301	1,254,464	1,282,419	1,277,905	-
Scheduled Total Miles	18,499,971	18,705,711	18,784,524	18,500,655	-
Scheduled Revenue Miles	15,678,367	15,882,356	16,013,930	15,849,345	-
Total Bus Operating Cost	$193,456,328	$199,010,149	$199,074,243	$196,217,250	-
Operating Cost per Revenue Hour	$156.48	$158.64	$155.23	$153.55	
Operating Cost per Boarding	$6.25	$6.29	$6.01	$5.69	

VTA Performance - Light Rail Service

Figure 1-7 shows that Light Rail service annual boardings increased by 2.9% from FY08 to FY09; this continues a growth trend since FY05. Boardings per Revenue Hour follows an upward trend as well and grew 3% from FY08. Light rail on-time performance improved compared to FY08 but still missed VTA's goal of 95%. Total Light Rail Operating Cost increased to $58 million.

Figure 1-7: Key Performance Indicators for Light Rail

LIGHT RAIL	FY 2006	FY 2007	FY 2008	FY 2009	FY 09 Met Goal?
Total Annual Boardings	8,279,807	10,278,460	10,451,136	10,754,161	YES
Percent Annual Change in Boardings	22.1%	24.1%	1.7%	2.9%	-
Average Weekday Boardings	26,137	32,567	33,043	34,305	YES
Boardings per Revenue Hour	63.9	75.4	76.5	78.8	
Percent of Scheduled Service Operated	99.94%	99.95%	99.96%	99.97%	YES
Miles Between Major Mechanical Schedule Loss	26,615	25,817	28,511	38,223	No
Miles Between Chargeable Accidents	2,129,189	2,220,230	444,765	1,108,479	No
On-time Performance	92.0%	90.0%	87.4%	90.1%	No
Scheduled Total Train Hours	138,348	143,816	143,830	143,533	-
Scheduled Revenue Train Hours	129,636	136,380	136,814	136,519	-
Scheduled Total Train Miles	2,129,189	2,220,230	2,223,823	2,216,957	-
Scheduled Revenue Train Miles	1,993,940	2,105,819	2,112,080	2,105,555	-
Total Light Rail Operating Cost	$53,866,962	$55,935,496	$55,544,365	$58,068,693	-
Operating Cost per Revenue Train Hour	$415.52	$410.14	$406.72	$425.35	
Operating Cost per Boarding	$6.51	$5.44	$5.31	$5.40	

VTA Performance – Total System

Figure 1-8 shows that system ridership increased 3.9% from FY08 to FY09. Boardings per Revenue Hour also continues to increase, improving by 4% to FY09. The system wide Farebox Recovery Ratio improved slightly to 14.2%. VTA is concerned about the Average Fare per Boarding which continues to fall and now rests at $0.80 per Boarding.

Figure 1-8: Key Performance Indicators for Total System

TOTAL SYSTEM	FY 2006	FY 2007	FY 2008	FY 2009	FY 09 Met Goal?
Total Annual Boardings	39,217,851	41,925,015	43,555,049	45,264,434	YES
Percent Annual Change in Boardings	5.8%	6.9%	3.9%	3.9%	-
Average Weekday Boardings	126,103	134,690	139,716	146,125	YES
Boardings per Revenue Hour	28.7	30.1	30.7	32.0	-
Percent of Scheduled Service Operated	99.38%	99.49%	99.64%	99.72%	YES
Miles Between Major Mechanical Schedule Loss	5,877	6,097	8,155	9,047	YES
Miles Between Chargeable Accidents	189,258	135,883	96,369	102,562	No
Total System Operating Cost	$247,323,290	$254,945,645	$254,618,608	$254,285,943	-
Operating Cost per Revenue Hour	$181.06	$183.30	$179.44	$182.16	
Operating Cost per Boarding	$6.31	$6.08	$5.85	$5.62	
Farebox Recovery Ratio	13.9%	13.8%	14.1%	14.2%	
Operating Cost Recovery Ratio	14.6%	14.5%	14.8%	14.8%	
Total Fare Revenues	$34,334,622	$35,242,544	$35,830,186	$36,184,000	-
Average Fare per Boarding	$0.88	$0.84	$0.82	$0.80	No

VTA Performance – Paratransit

VTA is required under the Americans with Disabilities Act to provide paratransit service to eligible persons with disabilities who are unable to use fixed route bus or light rail service. Figure 1-9 shows the two key performance measures for our paratransit service. Passengers per Revenue Hour continues to improve, growing to 2.39 in FY09. Net Cost per Passenger also continues to improve; it fell to $24.84.

Figure 1-9: Key Performance Indicators for Paratransit

PARATRANSIT	FY 2006	FY 2007	FY 2008	FY 2009*	FY 09 Met Goal?
Passengers per Revenue Hour	2.31	2.31	2.36	2.39	YES
Net Cost per Passenger	$25.52	$25.39	$25.29	$24.84	YES

** preliminary*

Chapter 2: Operating Plan

2.1 Plan for Future Bus & Rail Service

Figure 2-1 presents planned service levels for bus, light rail, and BRT during the SRTP planning period of FY10 through FY19. In addition to the services described below, VTA will continue to be a funding partner for services operated by other agencies, including Caltrain and ACE.

VTA bus service continues to build upon the success of the bus COA. Initial bus service levels are consistent with existing VTA bus service. However, due to the current economic downturn, VTA will reduce service levels in FY10. These service levels will be restored by FY19. Over time, bus service is projected to utilize a greater share of articulated vehicles which are able to carry a greater number of passengers than standard 40' vehicles.

VTA plans to introduce Bus Rapid Transit service for two corridors during the SRTP period. The Santa Clara/Alum Rock to El Camino corridor, an upgrade of the existing Rapid 522, will open in FY13. The Stevens Creek to downtown corridor is planned to open in FY17 (a new line to supplement the existing 23 local bus).

Initial Light Rail service levels are consistent with existing service, though Light Rail service will also be reduced in FY10. These service levels will be restored by FY19 as well. As ridership increases, longer trains will be used in order to carry more passengers at the same hourly vehicle operator cost. The Light Rail Systems Analysis may recommend future service changes, which would be incorporated into future SRTPs.

This SRTP also incorporates the first years of BART service to Santa Clara County. Upon completion of the SVRT extension to Berryessa in FY18, BART will begin operating trains to Santa Clara County on two lines—Berryessa to Richmond and Berryessa to Daly City. Each line will operate at 15-minute frequencies, resulting in a combined frequency of 7.5 minutes for both the Milpitas and Berryessa stations. Appendix D describes the financial details of the SVRT project.

Figure 2-1: Planned Service Levels 2010-2019

Miles and hours figures in thousands

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Total Bus (Standard Bus + BRT + BART Feeder Bus)											
Revenue Vehicle Miles	15,800	14,933	14,066	14,066	14,066	14,066	14,066	14,066	14,066	14,414	14,697
Revenue Bus Hours	1,274	1,212	1,150	1,150	1,150	1,150	1,150	1,150	1,150	1,238	1,271
Peak Vehicles	338	331	324	324	324	324	324	324	324	331	345
Light Rail											
Revenue Car Miles	3,327	3,206	3,103	3,103	3,103	3,103	3,103	3,103	3,103	4,206	4,206
Revenue Train Hours	136	129	122	122	122	122	122	122	122	137	137
Peak Vehicles	49	49	47	47	47	47	47	47	47	46	46
Total System (Bus & Light Rail)											
Revenue Car Miles	19,127	8,139	17,169	17,169	17,169	17,169	17,169	17,169	17,169	18,620	18,902
Revenue Bus/Train Hours	1,410	1,341	1,272	1,272	1,272	1,272	1,272	1,272	1,272	1,375	1,408
Peak Vehicles	387	380	371	371	371	371	371	371	371	377	391
Paratransit											
Revenue Vehicle Miles	7,069	6,823	6,923	7,033	7,143	7,253	7,364	7,440	7,516	7,592	7,668
Revenue Vehicle Hours	478	462	468	476	483	491	498	503	508	514	519

2.2 Financial Plan

The financial plan applies a financial analysis model that integrates projections of expenses and revenues, both capital and operating. The model addresses the capital cost, level of service and resulting operating and maintenance cost, ridership and resulting fare revenue, and grant implications of each "line-item" capital project or program. The model also applies a comprehensive economic projection of inflation and interest rates. In addition to projecting a baseline rate of inflation, inflation assumptions were applied to construction and vehicle capital costs and for operating costs and revenues.

A forecast of operating sources-and-uses-of-funds is shown in Figure 2-2. Tier II operating and capital expenditures are not currently funded during the SRTP period, and as a result are offset by Unspecified Tier II Revenues. See Section 3.1 for a description of the two project tiers.

Figure 2-2: Operating Forecast

(Year of Expenditure Dollars in Millions)		Actual		Preliminary Unaudited
OPERATING SOURCES OF FUNDS	**Fiscal Year**	**2007**	**2008**	**2009**
Fare Revenue		35.24	35.83	36.18
1976 1/2 Cent Sales Tax		163.68	163.04	137.64
TDA		81.06	83.55	73.36
STA & State Operating Grants (AB 434)		11.66	20.53	6.94
FTA Sec 5307 Preventive Maintenance		35.51	22.42	33.45
Investment, Advertising and Other Income		22.48	10.20	6.52
Joint Development Revenue				
Measure A 1/2 Cent Sales Tax - Operating Assistance		29.78	29.63	25.33
Measure A Reimbursement of VTA Sales Tax Bond Debt Service		13.64	12.89	12.26
Measure B 1/8 Cent Sales Tax - BART Operations				
Silicon Valley Express Lanes Revenue				
Unspecified Revenue (Tier II Projects)				
TOTAL OPERATING SOURCES OF FUNDS		**393.06**	**378.09**	**331.68**

OPERATING USES OF FUNDS	**Fiscal Year**	**2007**	**2008**	**2009**
VTA Operations				
Bus		157.10	157.30	215.04
Bus Rapid Transit				
BART Feeder Bus				
Light Rail		39.95	38.69	54.34
Operations Support & General Administration[1]		66.47	71.01	
ADA Paratransit		29.27	27.25	30.86
Caltrain		15.88	15.42	16.00
ACE		2.70	3.68	3.84
Other Services		3.30	1.41	2.16
Tier II Projects				
BART Subsidy				
Debt Service		24.12	22.96	20.73
Operating Cost Savings Measures				
TOTAL OPERATING USE OF FUNDS		**338.80**	**337.71**	**342.96**
NET OPERATING CASH FLOW		**54.26**	**40.37**	**(11.28)**

CORE SYSTEM FUND BALANCE	**Fiscal Year**	**2009**
Beginning Balance[2]		150.22
Net Operating Cash Flow		(11.28)
Net Capital Cash Flow - VTA Core Capital (See Chapter 3 - VTA Core Capital Table)		(15.49)
Transfer (To) From Measure B Fund		-
Cumulative Fund Balance		**123.45**

2008 MEASURE B FUND BALANCE[3]	**Fiscal Year**	**2009**
Transfer (To) From Operations		-
Additional Contributions (To) From BART[4]		-
Interest on Prior Year Balance		-
Cumulative Ending Balance		**-**

[1] Beginning FY2009, costs are allocated between bus and rail [2] Includes Operating Reserve & Transit Enterprise Debt Reduction Fund
[3] Measure B Fund is dedicated for BART operations associated with extension of service to Santa Clara County
[4] Represents operating, capital or capital reserve requirements that are in excess of or surplus to Bart subsidy amount payment

SRTP Range									
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
37.00	37.50	45.12	55.13	61.71	70.04	77.54	89.21	93.43	98.63
119.60	122.41	132.06	137.13	140.38	139.14	140.48	143.55	145.75	149.39
47.55	57.53	62.07	64.45	65.98	65.40	66.03	67.47	68.50	70.22
2.02	1.80	15.40	16.31	30.72	31.27	32.44	33.39	34.38	35.62
55.68	42.63	44.33	45.66	47.03	48.44	49.90	51.39		
7.60	6.34	8.11	7.35	6.73	6.93	7.85	7.83	8.06	8.21
						0.92	2.84	5.56	9.67
22.01	22.53	24.31	25.24	25.84	25.61	25.86	26.42	26.83	27.50
12.10	12.00	12.06	11.94	11.52	11.33	16.72	16.57	16.41	16.25
			34.19	35.00	34.69	35.02	35.79	36.34	37.24
					5.16	9.58	11.56	14.19	16.24
			1.86	1.89	1.92	2.00	2.06	5.30	5.49
303.55	**302.74**	**343.47**	**399.26**	**426.81**	**439.93**	**464.34**	**488.07**	**454.75**	**474.46**
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
217.52	216.12	229.84	221.10	221.07	226.68	241.13	234.66	212.63	223.48
			21.09	20.75	21.14	22.44	36.12	36.97	38.54
								9.65	10.04
55.48	56.84	60.57	63.24	64.69	66.31	69.47	71.81	73.32	76.57
32.13	34.26	37.42	39.93	41.34	42.88	45.30	47.40	49.59	52.26
18.18	18.68	19.90	20.79	21.16	21.57	22.46	23.18	23.94	24.89
4.51	4.68	4.98	5.21	5.30	5.40	5.62	5.81	6.00	6.23
2.79	2.86	3.04	3.18	3.23	3.30	3.43	3.54	3.66	3.80
			1.86	1.89	1.92	2.00	2.06	5.30	5.49
								16.95	46.32
20.89	20.69	20.79	20.68	20.25	27.05	37.30	41.35	47.26	46.64
	(41.79)	(40.53)	(38.41)	(14.57)	(8.92)	(31.51)	(26.27)	(11.47)	(40.10)
351.50	**312.34**	**336.02**	**358.67**	**385.11**	**407.33**	**417.63**	**439.66**	**473.79**	**494.18**
(47.94)	**(9.60)**	**7.45**	**40.59**	**41.70**	**32.60**	**46.71**	**48.41**	**(19.04)**	**(19.72)**
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
123.45	64.35	50.85	56.57	59.89	63.58	67.97	69.50	72.44	75.08
(47.94)	(9.60)	7.45	40.59	41.70	32.60	46.71	48.41	(19.04)	(19.72)
(11.16)	(3.90)	(1.72)	(3.09)	(3.02)	6.48	(10.16)	(9.67)	41.07	8.25
-	-	-	(34.19)	(35.00)	(34.69)	(35.02)	(35.79)	(19.39)	9.07
64.35	**50.85**	**56.57**	**59.89**	**63.58**	**67.97**	**69.50**	**72.44**	**75.08**	**72.69**
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
-	-	-	34.19	35.00	34.69	35.02	35.79	19.39	(9.07)
-	-	-	-	-	-	-	-	(3.28)	(10.09)
-	-	-	-	1.09	2.30	4.65	5.74	7.37	9.04
-	**-**	**-**	**34.19**	**70.27**	**107.26**	**146.93**	**188.46**	**211.95**	**201.83**

2.3 Financial Goals – VTA Core System

The financial model includes significant uncertain goals that, if they materialize will result in achieving VTA's goal of a balanced 10 year operating and capital forecast. These goals are based on what VTA believes to be the most likely financial scenario over the next ten years. These goals are listed below. If any one of the goals do not materialize, VTA will be required to revisit the planned expenditures, reprioritize and perhaps cut additional services.

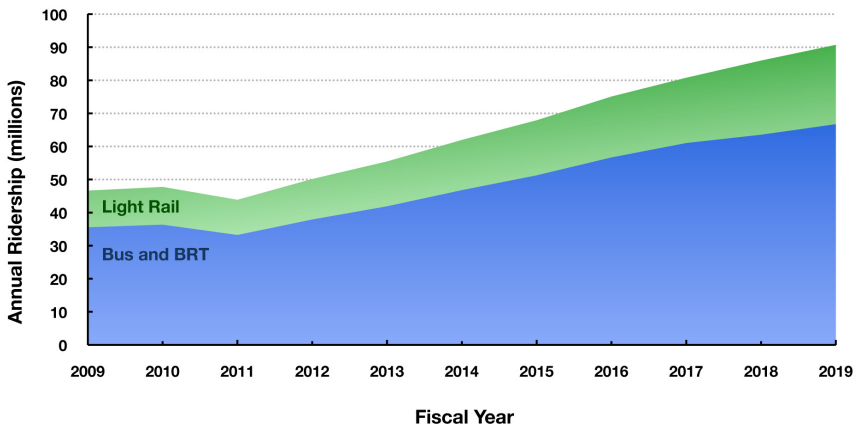
- **State Transit Assistance Funds.** The Plan assumes the annual State Transit Assistance funds will return in FY12 and continue through the SRTP period. Total is $229.5 million from FY12 through FY19.
- **Federal 5307 Capital Grant Funds.** The Plan diverts all 5307 capital grant funds from the capital program to operations (i.e. preventative maintenance). Total is $385.1 million from FY10 through FY17.
- **Unidentified Cost Savings.** The Plan includes unidentified cost savings, the specifics of which have not yet been determined. Total is $253.6 million from FY11 through FY19.
- **Issue debt for bus procurement.** Because Federal 5307 grant revenues are assumed to be real-located to operations (i.e. preventive maintenance) , these funds are not available to support the capital program; therefore, the plan assumes that VTA will issue new debt in order to fund bus procurement. Total new debt is $198.4 million from FY15 through FY18.
- **Fare Revenue.** As a result of unprecedented ridership growth on both the Light Rail and Bus systems, VTA's fare revenue will total $665.3 in the SRTP period.

Operating Sources of Funds

Fare Revenues: The VTA financial plan captures the impacts on ridership—and the resulting fare revenue—associated with the set of transit service changes modeled both in the travel demand analysis and the financial plan. Projected fare revenues are affected by three factors: 1) change in passengers; 2) change in average fare paid per passenger; and 3) change in fare evasion. Ridership in FY09 is given. Ridership forecasted in 2018, the opening year of the SVRT project (and in the 2030 design year—which is outside the SRTP period) comes from the VTA travel demand analysis used to support project planning.

The ridership forecast applied in the financial plan is consistent with the service plan assumed in both the financial plan and the travel demand forecast model. Both assume the following service level changes: 1) BRT route 522 introduction in FY15; 2) BRT route 523 introduction in FY17; 3) Santa Clara County BART service introduction in FY18; and 4) a roughly 8% service cut implemented in mid-FY10 and lasting through FY17. These service changes are reflected in the ridership projections in Figure 2-3 and the resulting fare projections are reflected in Figures 2-4 and 2-5. No incremental ridership or fare revenue is assumed for any of the Tier II Enterprise or Tier II Measure A expansion projects for which capital and operating funding has not been identified.

Figure 2-3: Annual Ridership Projection



Source: VTA Travel Demand Model

Near-term average fare per passenger is assumed to grow to reflect the implementation of VTA's planned fare increase in FY10. Future fare increases are assumed to have adjustments every two years at a rate slightly lower than projected inflation to maintain no real growth in fares in the long term, consistent with the travel demand analysis. An additional increment to the average fare of 5.0% is assumed based on VTA's planned implementation of the regional TransLink smart transit fare card by FY12. Application of TransLink is projected to reduce the incidence of fare evasion associated with passes, and the re-pricing of VTA's Eco Pass program, in which employers pay VTA directly for passes that enable all employees to use transit, with payment to VTA on the basis of expected transit usage. This additional incremental fare revenue is comparable to the impact of implementing similar smart transit fare cards on farebox revenues in other cities around the country. Therefore, the financial forecast assumes that in base year (2009) dollars the average fare paid per passenger in FY19 is roughly equivalent to the FY09 average fare per passenger (see figures 2-4 and 2-5).

Figure 2-4: Fare Projection (inflated)

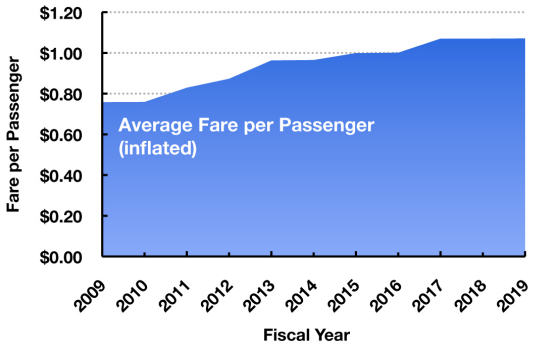
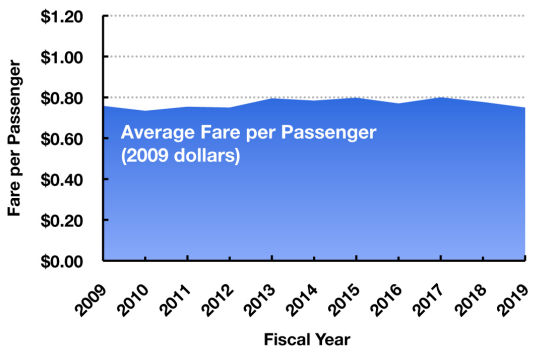


Figure 2-5: Fare Projection (2009 dollars)



Source: VTA Travel Demand Model

1976 ½-cent Sales Tax: This funding source is used to support both operating and capital needs. The projections and assumptions underlying sales tax forecasts are described in Appendix C. Figures 2-6 and 2-7 show projected sales tax receipts for the 1976 ½-cent sales tax in year-of-expenditure and 2009 dollars, respectively.

Figure 2-6: Sales Tax Projection (inflated)

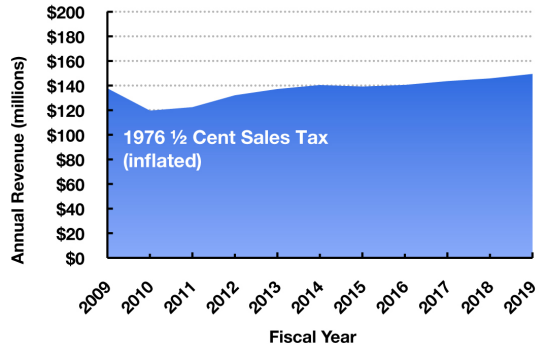
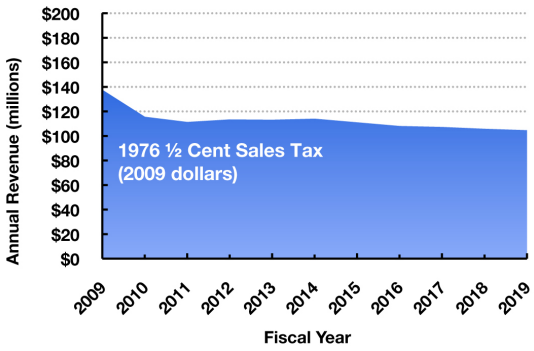


Figure 2-7: Sales Tax Projection (2009 dollars)



Source: Moody's economy.com February 2009 forecast

2000 Measure A Sales Tax – Operating Assistance: Portions of this funding source may be used for operations, but that amount is being limited to 18.5%. The projections and assumptions underlying sales tax forecasts are described in Appendix C.

2000 Measure A Sales Tax – Reimbursement of VTA Sales Tax Bond Debt Service: A portion of the debt issued against the VTA 1976 ½-cent Sales Tax supports Measure A projects, so a commensurate portion of debt issued against the VTA sales tax is covered by funds transferred from Measure A.

Silicon Valley Express Lanes Revenue: For planning purposes, the SRTP applies up to 95 percent of the net toll revenue forecast for Express Lanes on SR-85 and U.S. Highway 101 in Santa Clara County. Express Lanes, often referred to as High Occupancy Toll (HOT) lanes, are a new congestion management tool and a potential new revenue source for transportation improvements being developed as part of a regional initiative led by Alameda & Santa Clara Counties and the Metropolitan Transportation Commission to construct and operate roadway congestion pricing facilities throughout the San Francisco Bay Area. The allocation of Express Lane net revenue is subject to future approvals by VTA Board of Directors and potentially the Bay Area Toll Authority. Any proceeds not applied to cover the operations and maintenance and debt service costs for the Express Lane facilities may be applied to provide transportation improvements and transit services in adjacent corridors. VTA anticipates the application of a portion of these revenues to provide funding for eligible transportation improvements and transit services in the County.

Federal 5307 Preventive Maintenance Grants: The Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA LU) federal surface transportation program's Section 5307 Large Urban Cities grant program (formerly the Urbanized Area Formula grant program) and Section 5309 Rail and Fixed Guideway Modernization programs are major sources of capital funding for VTA. Federal formula funds are awarded to the San Jose urbanized area (UZA, an area defined by the U.S. Census Bureau) based on demographics, levels of service, ridership, and operating measures. Funding for the region, which includes several UZAs, is allocated to individual transit operators by the Metropolitan Transportation Commission. The financial forecast applies an MTC forecast of 3.0% annual growth in federal transit capital funding beyond the term of VTA's adopted FY10 and FY11 budget. This projection assumes that the current tiered system of Section 5307 Large Urban Cities grants and Section 5309 Rail and Fixed Guideway Modernization grants and MTC's present system of allocating grants to the region's transit agencies continues throughout the SRTP period. The operating forecast assumes that 100% of Section 5307 Large Urban Cities grants are applied to preventive maintenance-related operating and maintenance costs through FY17.

California State TDA and STA: The Transportation Development Act (TDA) of 1971 provides state funding allocated to transit properties complying with regional plans. The program provides two funding sources: the Local Transportation Fund (LTF) is derived from a 1/4-cent statewide sales tax, and the State Transit Assistance (STA) is derived from the statewide sales tax on gasoline and diesel fuel. LTF revenues are returned to their originating county, while STA revenues are allocated based on population transit revenues from the prior year.

In early 2009, the California Legislature opted to suspend STA funding for up to five years; however, the California Transit Association sued the State of California for diverting dedicated transportation dollars. The court concurred with the California Transit Association. No agreement has been established that indicates when STA funding will be restored. However, the SRTP includes an assumption that STA will return in FY12 (excluding an increment associated with Prop 42, which is assumed to resume in FY14). STA is assumed to grow with projected inflation.

The TDA program is assumed to continue. Revenues are projected to grow proportionate to sales tax receipts in Santa Clara County.

Investment Income: Year-end cash balances earn interest at the projected 3-month Treasury bill rate. A portion of this interest is allocated to the operating program and the balance is applied to the capital program.

Advertising: VTA collects revenues from the placement of advertisements inside its vehicles and on bus shelters. The budgeted FY09 through FY11 amounts are projected to grow at the rate of San Jose CPI.

Joint Development: The land areas surrounding VTA transit stations represent significant opportunities for transit-oriented development, which could yield revenues for VTA's operating program. VTA commissioned a study by Economics Research Associates (ERA) in June 2007 to prepare a conceptual joint development program. Based on the findings of ERA, VTA estimated the ability to raise potential capital revenues through joint development. However, given the uncertainty of these revenues, this financial forecast discounts the potential revenue stream. Initial revenues are discounted more steeply than future revenues. This is based on a professional judgment that growth in joint development revenue at SVRT station sites will ramp-up more slowly than the ERA forecast. In addition, due to the current state of the economy, the financial forecast assumes that joint development revenues will not materialize until FY15. Furthermore, joint development revenue is assumed only at parcels adjacent to VTA light rail stations as well as the Mitchell Block in downtown San Jose.

Unspecified Revenue: Tier 2 of Measure A includes the Downtown-East Valley Capital Expressway Light Rail Phase II, light rail to Eastridge expansion project, along with various BRT projects, for which neither capital nor operating funding has been identified. The operating and maintenance cost impact of this project, therefore, is covered by an unspecified revenue source in the financial forecast. If no funding materializes, these expansion projects will not proceed.

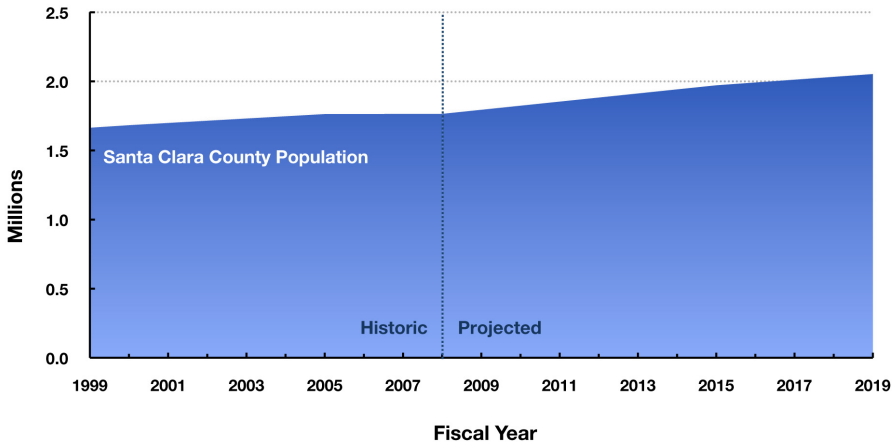
Operating Uses of Funds

VTA's O&M costs are driven by the level of service and the unit cost associated with each level of service driving variable. The level of service changes assumed in the model are: 1) BRT route 522 introduction in FY15; 2) BRT route 523 introduction in FY17; 3) Santa Clara County BART service introduction in FY18; and 4) a roughly 8% service cut implemented in mid-FY10 and lasting through FY17. There are no incremental changes in expenses associated with the introduction of BRT services because any additional cost for BRT service will be offset by equivalent reductions in traditional bus service, keeping overall expenses constant. BART service to Santa Clara County and its associated expenses are detailed in Appendix D and the SVBX New Starts financial plan report. The model assumes savings of approximately $6.4 million per year (through FY17) as a result of VTA's 8% service reductions.

VTA Bus O&M Costs	VTA Light Rail O&M Costs
Peak Buses	Directional Track Miles
Active Fleet Vehicles	Total Stations
Operating Divisions (Maintenance Facilities)	Elevated Stations
Annual Revenue Vehicle-Miles	At-Grade Stations
Annual Revenue Vehicle-Hours	Peak Vehicles
Annual Boardings (Unlinked Trips)	Active Fleet Vehicles
Articulated Bus Revenue Vehicle-Miles	Operating Divisions (Maintenance Facilities)
BRT Stations	Annual Revenue Car Miles
	Annual Revenue Train Hours
	Annual Boardings (Unlinked Trips)

The VTA financial projection does not include any changes in expenses as a result of labor or service contract changes. Paratransit ridership, the cost driver for ADA service costs, is forecasted to track closely with projected Santa Clara County population. Figure 2-8 shows Santa Clara County population growth.

Figure 2-8: Santa Clara County Population



Source: Moody's economy.com February 2009 forecast

Other Operators: The operating forecast projects VTA annual payments to other operators, including Caltrain, Altamont Commuter Express (ACE), Dumbarton Express, and Monterey-San Jose bus service, on the basis of VTA's budgeted FY10 and FY11 payments to these operators, inflated by Moody's Economy.com annual projection of Bay Area CPI multiplied by 110%. This reflects the historic growth in the cost of these services at a rate greater than inflation.

Annual O&M Unit Costs: Operating and Maintenance (O&M) costs were computed by multiplying the unit cost results estimated from VTA's O&M cost model by projected level of service (LOS) indicators. The level of service was estimated based on future year changes to the bus, BRT, BART, and light rail service layered on the FY09 schedule. Costs are categorized into seven object classes. The growth projection applied to each object class is summarized in Figure 2-9.

Operating Cost Savings Measures: Operating cost savings measures are added to the forecast to reflect the amount of cost reductions necessary to ensure that no one year during the SRTP period falls below a 15% operating reserve. Potential savings measures have yet to be identified, but could include items such as consolidation of operating facilities, use of alternative service delivery models, labor savings, and the elimination of VTA participation in contracted services partnerships.

Figure 2-9: Growth Projections by Object Class

Object Class	Growth Rate Projection Applied	Source
Labor & Salary Costs	San Jose Consumer Price Index (CPI) for all urban consumers	Moody's Economy.com
Healthcare Fringe Benefits	San Jose CPI	Moody's Economy.com
Other Fringe Benefits	San Jose CPI	Moody's Economy.com
Materials & Supplies	San Jose CPI	Moody's Economy.com
Other Costs	San Jose CPI	Moody's Economy.com
Electricity Costs	California commodity-specific forecast	Moody's Economy.com
Fuel Costs	California commodity-specific forecast	Moody's Economy.com

The resulting unit costs are applied to the total level of service values and escalated as described above to compute total O&M cost estimates.

BART Subsidy: VTA's payment to BART to cover partial O&M costs associated with the Silicon Valley Rapid Transit project. This payment and funding agreement are detailed in Appendix D.

Chapter 3: Capital Improvement Program

3.1 VTA's Capital Improvement Program

Chapter 3 presents VTA's ten-year Capital Improvement Program (CIP), for FY10 through FY19. The project lists outline VTA's program needs and the current status of each project across discrete program areas. Figure 3-1 shows a comprehensive list of the sources and uses of capital funds over the SRTP period.

There are two major changes from previous versions of the SRTP. The first change is the incorporation of the Measure A expenditure plan into the CIP, rather than showing the Measure A projects in a separate appendix. As such, projects fall into either the Enterprise capital program or the Measure A capital program. The second change is the practice of categorizing each project based on funding constraints. This approach is intended to satisfy the desire to show a comprehensive capital needs list with the need to consider the reality of constrained funding. The projects are therefore divided into two tiers:

Tier I: Fiscally constrained projects that may be considered "funded." These are projects that have a reasonable source of funding identified.

Tier II: Fiscally unconstrained projects that are not yet considered "funded." These projects do not have a reasonable funding source identified and can be considered unmet capital needs.

Core Capital Program

Figures 3-2 through 3-9 show the capital projects in each of the program areas of the Core capital program. The Core program funds approximately $120 million in capital investments during the budget years (FY10-FY11) and $458 million for the remaining years (FY12-FY19) in order to maintain VTA's existing bus and rail system (including bus replacement, rail rehabilitation, and facility modifications and improvements). The Enterprise program focuses on VTA's current transit network and ensures adequate investment and enhancements in its existing infrastructure. VTA has prioritized a number of rehabilitation and replacement projects to keep the bus and light rail system in a state of good repair. Clean fuel, safety and security, and passenger facility improvements will also contribute to improving overall level of transit service in Santa Clara County.

The Light Rail System Enhancements program area (Figure 3-5) is new for this year's SRTP. This program area contains various light rail enhancement projects that are not part of the Measure A program, such as the West San Carlos infill station. In this table, the "Various Light Rail Capital Improvements" project is a placeholder for forthcoming capital projects that will result from VTA's Light Rail System Analysis. This study is an 18-month comprehensive analysis of the light rail system and is scheduled for completion in mid-FY10. The analysis will make operating and capital investment recommendations aimed at increasing ridership on the system by making LRT more competitive in the overall travel market. Once the capital recommendations are identified, they will be incorporated into future SRTPs.

Measure A Capital Program

In November 2000, the voters in Santa Clara County approved Measure A, a 30-year countywide ½-cent sales tax devoted to specified public transit capital improvement projects and operations (See Appendix A for a complete text of the Measure A ballot language). Those projects that are eligible for Measure A are shown in the Measure A capital program. Collection of the sales tax began on April 1, 2006 and will continue through March 31, 2036. The VTA Board of Directors is responsible for implementation of the 2000 Measure A Program and for all policy-related decisions including the composition, implementation schedule, and funding level of projects. Figure 3-10 details the Measure A program through FY19.

Figure 3-1: Capital Forecast

CAPITAL IMPROVEMENT PROGRAM: CAPITAL SOURCES OF FUNDS		Preliminary Unaudited
millions of Year of Expenditure dollars	Fiscal Year	2009
Grants		
Section 5309 Rail & Fixed Guideway Modernization Grants		14.30
Section 5307 Large Urban Cities Urbanized Area Formula Grants		3.31
Prop 1B Pub. Transp. Mod. Imprvmt. & Svc. Enhanc. Acct. (PTMISEA)		
ARRA - Federal Formula & State Share		
ARRA - TIGGER		
Lifeline		
State/Proposition 1B		0.05
Regional Measure 2 Capital Grants		1.03
Developer Fees		
Other		1.57
Subtotal Grants		**20.26**
Unspecified Funding (Tier II Core Projects)		**-**
Financing Program		
VTA 1976 1/2 Sales Tax Bonds		
Subtotal Financing Program		**-**
TOTAL VTA CORE CAPITAL SOURCES OF FUNDS		**20.26**

CAPITAL IMPROVEMENT PROGRAM: CAPITAL USES OF FUNDS		
millions of Year of Expenditure dollars	Fiscal Year	2009
Core System Tier I		
Vehicles & Equipment		2.76
Operations Facilities & Equipment		4.34
Light Rail System Maintenance		2.99
Light Rail System Enhancements		
Passenger Facilities		12.03
Information Systems & Technology		8.73
Security Projects		1.97
Miscellaneous Projects		2.92
Core System Tier II		
Vehicles & Equipment		
Operations Facilities & Equipment		
Light Rail System Maintenance		
Light Rail System Enhancements		
Passenger Facilities		
Information Systems & Technology		
Security Projects		
Miscellaneous Projects		
Subtotal Capital Improvement Program		**35.75**
NET CAPITAL CASH FLOW - VTA CORE CAPITAL[1]		**(15.49)**

[1] *For VTA Core Enterprise Fund Balance see Operating Forecast, Chapter 2*

SRTP RANGE										
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2010-2019**
9.07	5.86	12.46	12.83	13.21	13.61	14.02	14.44	14.87	15.32	125.70
5.88	3.42	0.95	0.98	1.01	1.04	1.07	1.10	54.07	55.69	125.19
15.20	2.93	3.11	3.21	3.30	15.90	16.38	0.43			60.46
42.44										42.44
										-
1.75										1.75
4.69	0.50	3.29	3.29	3.29	3.29	3.29				21.64
2.53										2.53
			2.00							2.00
9.77	0.61									10.37
91.32	**13.32**	**19.81**	**22.30**	**20.81**	**33.84**	**34.75**	**15.97**	**68.94**	**71.01**	**392.08**
-	**-**	**75.06**	**87.78**	**40.87**	**108.56**	**118.06**	**55.45**	**19.06**	**23.47**	**528.30**
					59.27	45.10	39.04	54.99	-	198.39
-	**-**	**-**	**-**	**-**	**59.27**	**45.10**	**39.04**	**54.99**	**-**	**198.39**
91.32	**13.32**	**94.86**	**110.08**	**61.68**	**201.67**	**197.91**	**110.46**	**142.99**	**94.48**	**1,118.78**

2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2010-2019**
63.23	0.97			5.09	62.71	49.62	44.46	58.56	5.10	289.74
0.73		0.97	7.32	4.02	2.54	5.12	4.01	4.02	4.26	32.97
13.04	7.82	12.83	7.80	6.81	13.39	14.04	8.76	11.91	25.90	122.29
			2.36						18.10	20.46
3.33	0.60	0.66	0.68	0.61	0.63	1.21	1.25	1.28	1.32	11.58
0.30	0.69					12.50	1.77	2.52	3.38	21.16
9.13	3.50	3.65	3.67	3.68	3.69	3.71	0.53	0.55	0.57	32.67
12.73	3.64	3.42	3.56	3.63	3.68	3.80	3.90	4.01	4.14	46.51
		2.37	9.86		10.44					22.67
		9.49	6.59	5.70	2.45					24.23
		5.59	1.09	1.92	0.61	0.63				9.84
		14.15	39.53	15.01	77.37	112.72	53.85	16.59	17.14	346.36
		3.48								3.48
		14.68	15.24	6.18	4.22	3.22	1.60	2.47	6.32	53.93
		0.54								0.54
		24.75	15.47	12.06	13.47	1.50				67.25
102.48	**17.23**	**96.59**	**113.16**	**64.70**	**195.19**	**208.07**	**120.13**	**101.92**	**86.23**	**1,105.70**
(11.16)	**(3.90)**	**(1.72)**	**(3.09)**	**(3.02)**	**6.48**	**(10.16)**	**(9.67)**	**41.07**	**8.25**	

Figure 3-2: Vehicles and Equipment

Year of Expenditure dollars

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
40' Bus Replacements - Hybrid	Procure 40-foot hybrid diesel buses to replace 40-foot diesel fleet	51,806,072	
60' Artic Replacement - Hybrid	Procure 60-foot hybrid diesel buses to replace 60-foot diesel fleet		
CARB Compliance Non-Revenue Vehicle Replacements	Replace non-revenue vehicles that do not meet CARB requirements	2,607,600	
Light Rail Vehicle 942		2,150,000	
Hybrid Bus Battery replacements	Mid-life battery replacements for hybrid buses		
NRV Fleet Procurement	Acquire vehicles to maintain non-revenue vehicle fleet		
Paratransit Vehicles	Acquire vehicles to maintain and expand paratransit services	6,664,000	973,000
Small Bus Replacement	Procure small buses to replace 40-foot diesels and existing small bus fleet		
SUBTOTAL TIER I		**63,227,672**	**973,000**
TIER II: UNFUNDED IN 2010 SRTP			
NRV Fleet Procurement	Acquire vehicles to maintain non-revenue vehicle fleet		
Paratransit Operating Facility			
SUBTOTAL TIER II		**-**	**-**
TOTAL VEHICLES & EQUIPMENT		**63,227,672**	**973,000**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
			60,088,294	39,954,912	40,346,627	33,245,621		225,441,526
						24,660,213		24,660,213
								2,607,600
								2,150,000
				8,358,366				8,358,366
		917,290		864,494	876,900	656,187	938,132	4,253,002
			2,619,959		3,238,258			13,495,217
		4,173,387		442,755			4,160,765	8,776,906
-	**-**	**5,090,676**	**62,708,253**	**49,620,527**	**44,461,785**	**58,562,021**	**5,098,897**	**289,742,831**
2,371,445	1,596,521		690,835					4,658,801
	8,259,900		9,747,237					18,007,137
2,371,445	**9,856,421**	**-**	**10,438,072**	**-**	**-**	**-**	**-**	**22,665,938**
2,094,936	**8,353,000**	**5,090,676**	**73,141,325**	**49,620,527**	**36,151,500**	**58,562,021**	**3,907,880**	**312,408,769**

Figure 3-3: Operations Facilities and Equipment

Year of Expenditure dollars

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
Core Switch Upgrade - Cerone	Replace old and noncompliant electrical switchgears and sub-panels		
Facilities & Equipment Repair Allowance		725,000	
Green Facility Improvements	Implementation of Green business practices		
HVAC Replacement	Long-term preventative maintenance program to replace old HVAC units with new energy-efficient units		
Maintenance Equipment Replacement			
Office Facilities Program	Internal configurations, moves, new set-ups required each year		
Painting Management	Long-term preventative maintenance for painting		
Pavement Management	Long-term preventative maintenance program for pavement		
Roofing Management	Long-term preventative maintenance program to protect and extend roofing		
TIER I: SUBTOTAL		**725,000**	**-**
TIER II: UNFUNDED IN 2010 SRTP			
Administration Office Space Program	Internal configurations, moves, new set-ups required each year		
Cerone Fuel Conversion	Convert Cerone facility utilities from propane to natural gas		
Cerone O&R Industrial Waste Tie-In			
Chaboya Division Bus Detail Area			
Emergency Lighting Trailers			
Enhance LR signal shop for TVM Maintenance	Remodel the signal shop in Way Power & Signal Building B at the Guadalupe Division		
Facilities Master Plan Study			
Green Facility Improvements	Implementation of Green business practices		
HVAC Replacement	Long-term preventative maintenance program to replace old HVAC units with new energy-efficient units		
Maintenance Equipment Replacement			
Material Disposition Request			
Chaboya - Replace Training Floor			
Small Bus Operating Facilities Upgrades			
SUBTOTAL TIER II		**-**	**-**
TOTAL FACILITIES & EQUIPMENT		**725,000**	**-**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
966,289								966,289
	884,989	480,301	487,362	513,862	226,181	597,195	617,142	4,532,032
				1,259,465				1,259,465
				730,490	1,377,765		277,028	2,385,283
	258,417			392,953	440,730	790,952	367,542	2,250,594
				154,914	164,143	175,177	186,514	680,748
	1,632,832	1,394,384	1,376,797	1,243,092	1,156,754	1,660,203	1,936,453	10,400,516
	2,987,939	1,433,773	488,580	639,997	452,362	464,485	479,999	6,947,136
	1,552,038	706,564	182,761	188,920	193,869	331,775	390,856	3,546,784
966,289	**7,316,216**	**4,015,023**	**2,535,500**	**5,123,692**	**4,011,804**	**4,019,788**	**4,255,535**	**32,968,847**
121,123	130,978	138,087	144,990					535,178
1,264,432								1,264,432
995,019	200,598							1,195,616
1,416,119								1,416,119
174,326								174,326
503,735								503,735
339,597								339,597
1,131,989	1,179,986	1,200,753	1,218,405					4,731,133
314,976	1,540,648		238,807					2,094,432
578,447		762,478	848,010					2,188,935
140,367								140,367
241,433								241,433
2,263,979	3,539,957	3,602,260						9,406,197
9,485,541	**6,592,167**	**5,703,579**	**2,450,212**	**-**	**-**	**-**	**-**	**24,231,500**
10,451,830	**13,908,383**	**9,718,602**	**4,985,712**	**5,123,692**	**4,011,804**	**4,019,788**	**4,255,535**	**57,200,346**

Figure 3-4: Light Rail System Maintenance

Year of Expenditure dollars

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
Cerone Switchgear Testing	All major circuit breakers and ground fault circuits will be inspected and tested		
Emergency Power Generator Upgrade	Replace existing generator	942,000	
Guadalupe Corridor 12 TPSS Replacement	Replacement TPSS four at a time every five years	5,400,000	
Guadalupe Corridor Signalization Assessment and SCADA System Replacement			
Guadalupe Corridor TPSS Rehabilitation	Replace/Rehab TPSS	2,700,000	1,900,000
Guadalupe LRV Washer Replacement			
Kinkisharyo LRV Overhaul			
LRT Crossovers and Switches			
LRV Body Shop Dust Separation Wall	Construct a 6,120 SF dust wall to separate tracks 4 & 5 of Guadalupe LRV Maintenance Facility		
LRV Maintenance Shop In-Floor Hoists			
LRV Public Address System	Upgrade PA system at LRT stations to something capable of providing real-time information and voice address		
Overhead Caternary System (TPSS) Rehabilitation	The Overhead Catenary System needs to be rehabilitated or replaced	925,000	3,675,000
Rail Rehabilitation and Replacement	Capital replacement program to ensure reliability and safety of light rail system	3,069,000	2,244,000
TIER I: SUBTOTAL		**13,036,000**	**7,819,000**
TIER II: UNFUNDED IN 2010 SRTP			
Automated Passenger Counters	Purchase and install automated passenger counters on 10 more light rail vehicles		
Electronic Aid to Parts Picking/RFID (LRT)			
Full Coverage Train Tracking System			
Guadalupe Blow Down Bldg/Catwalk			
LRT Crossovers and Switches			
Guadalupe Southline Emergency Generators/Lighting			
LRT Maintenance Info Systems Upgrades			
LRV Public Address System	Upgrade PA system at LRT stations to something capable of providing real-time information and voice address		
Replace SCADA Display			
Way Power & Signal Equipment Enhancement			
SUBTOTAL TIER II		**-**	**-**
TOTAL		**13,036,000**	**7,819,000**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
	250,363							250,363
								942,000
			6,579,385					11,979,385
				2,518,930	3,877,388		20,571,389	26,967,707
								4,600,000
				3,778,394				3,778,394
	3,594,237	2,713,703	2,753,594	2,846,390	1,115,395	3,292,537	3,402,508	19,718,365
		600,377		629,732				1,230,109
616,934								616,934
3,890,648								3,890,648
						1,231,550		1,231,550
3,503,507	3,436,119	3,496,594	3,547,994	3,667,562	3,763,652	1,734,521	1,353,597	29,103,545
4,822,275	488,514		504,419	598,246		5,653,449	567,770	17,947,674
12,833,364	**7,769,233**	**6,810,674**	**13,385,393**	**14,039,254**	**8,756,435**	**11,912,057**	**25,895,265**	**122,256,674**
		386,643						386,643
450,532								450,532
1,208,965								1,208,965
223,002								223,002
724,473	884,989		609,202					2,218,665
				629,732				629,732
1,924,382								1,924,382
788,997		1,532,161						2,321,158
148,291								148,291
124,519	206,498							331,017
5,593,160	**1,091,487**	**1,918,804**	**609,202**	**629,732**	**-**	**-**	**-**	**9,842,385**
18,426,523	**8,860,719**	**8,729,478**	**13,994,595**	**14,668,987**	**8,756,435**	**11,912,057**	**25,895,265**	**132,099,059**

Figure 3-5: Light Rail System Enhancements

Year of Expenditure dollars

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
West San Carlos Infill Station	Construct infill station at West San Carlos		
TIER I: SUBTOTAL		-	-
TIER II: UNFUNDED IN 2010 SRTP			
Vasona Extension to Vasona Jcn (SR 85)	Extend Vasona line to SR 85, including stations at Hacienda and SR 85		
Various Light Rail Capital Improvements	Various capital projects resulting from Light Rail Analysis Study		
SUBTOTAL TIER II		-	-
TOTAL		-	-

Figure 3-6: Passenger Facilities

Year of Expenditure dollars

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
Bus Stop Improvements	Meet ADA requirements for accessibility, restore failed pavement, and to improve safety of passengers	728,000	527,000
Elocker Program	Convert 100 mechanical lockers to electric lockers	75,000	75,000
LRT Passenger Facility Enhancements			
Real Time Information	Install signs, visual message boards and GPS devices on LRVs	2,530,000	
Transit Enhancement Projects	Transit facility upgrades, repairs, etc.		
TIER I: SUBTOTAL		**3,333,000**	**602,000**
TIER II: UNFUNDED IN 2010 SRTP			
Fare Collection System - LR Enhancements	LR validators compatible with new fare boxes		
Tasman Station Shelter			
SUBTOTAL TIER II		-	-
TOTAL		**3,333,000**	**602,000**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
	2,359,972						18,102,823	20,462,794
-	**2,359,972**	**-**	**-**	**-**	**-**	**-**	**18,102,823**	**20,462,794**
	24,779,701		62,138,633	96,978,790	37,696,831			221,593,956
14,149,868	14,749,822	15,009,419	15,230,057	15,743,310	16,155,785	16,588,760	17,142,824	124,769,845
14,149,868	**39,529,523**	**15,009,419**	**77,368,691**	**112,722,101**	**53,852,616**	**16,588,760**	**17,142,824**	**346,363,801**
14,149,868	**41,889,494**	**15,009,419**	**77,368,691**	**112,722,101**	**53,852,616**	**16,588,760**	**35,245,647**	**366,826,595**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
								1,255,000
84,899	88,499							323,398
				566,759	581,608	597,195	617,142	2,362,704
								2,530,000
574,630	591,868	609,624	627,913	646,751	666,153	686,138	706,722	5,109,799
659,529	**680,367**	**609,624**	**627,913**	**1,213,510**	**1,247,761**	**1,283,333**	**1,323,864**	**11,580,902**
2,716,775								2,716,775
760,697								760,697
3,477,471	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3,477,471**
4,137,000	**680,367**	**609,624**	**627,913**	**1,213,510**	**1,247,761**	**1,283,333**	**1,323,864**	**15,058,373**

Figure 3-7: Information Technology

(Year of Expenditure dollars)

Project Title	Project Description
TIER I: FISCALLY CONSTRAINED	
Implement Grants Management SAP Module	Implement new SAP version of grants management software
Network Equipment Replacement	Replaces network equipment, including core switches, core router, and cables; improves network throughput and reliability
Radio Narrowbanding	Brings radio network into compliance with new FCC regulations.
SAP Upgrade	Upgrade SAP software to SAP ERP 2005 (ECC 6.0)
Technology Infrastructure	Infrastructure replacement plan for River Oaks and back-up recovery datacenters
Voicemail Replacement	VTA's voicemail server will be replaced with a newer intergrated one.
TIER I: SUBTOTAL	
TIER II: UNFUNDED IN 2010 SRTP	
ACS Mobile Replacement	Upgrades Advanced Communications System to the newest version to complement the real-time information project
Audiovisual Improvements in R/O B104	
Budget Preparation	Evaluates VTA's budget preparation process; recommends options, including SAP
Business Intelligence / Business Automation	Purchase and upgrade of various technology software and hardware
Client Relationship Management (CRM) Software	Purchase a unified and comprehensive Customer Relationship Management (CRM) solution software
Discipline and Grievance	Enhances the Discipline and Grievance component of SAP software
Electronic Content Management Upgrade – Phase 1	Software upgrade to electronic contenet management system
Enterprise Geospatial	Create a centralized and comprehensive enterprise geographic information system (GIS)
Enterprise Monitoring Enhancement	Upgrades to enhance the service provided to VTA computer clients through the service desk
Implement Grants Management SAP Module	Implement new SAP version of grants management software
Infrastructure Replacement	Infrastructure replacement plan for River Oaks and back-up recovery datacenters
Integration of Transportation Management Systems	Purchase a transit operations solution that integrates the following areas: route schedules, dispatch, workforce management, yard/vehicle management, and timekeeping.
Marketing VoIP Deployment	Replaces old telephone equipment in customer service call center with VoIP technology
Network Enhancement	Enhances network monitoring tools, improves network security, provides wireless access in all River Oaks meeting rooms
Network Equipment Replacement	Replaces network equipment, including core switches, core router, and cables; improves network throughput and reliability
Office/Mobile MTC Pilot for WP&S	
Palo Alto Radio Site Move	Relocate Palo Alto radio equipment from private building to VTA's North Yard
Procurement Assessment	Assessment of VTA's procurement business process including supplier relationship management; recommendations for new SAP version
Project Systems Assessment	Assessment of VTA's capital project management process; recommendations for coordinating with new SAP version
Radio Interoperability	Provide communications interoperability between the VTA push-to-talk radio system and devices such as mobile phones, IP phones, public telephone network phones, and PC clients
Voicemail Replacement	VTA's voicemail server will be replaced with a newer intergrated one.
WiFi on Light Rail	Purchase and install cellular-based router on all 100 light rail vehicles to allow riders WiFi access
SUBTOTAL TIER II	
TOTAL	

FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
								705,703		705,703
									1,079,998	1,079,998
	690,000									690,000
						10,775,427				10,775,427
300,000						1,725,257	1,770,459	1,817,907	1,878,625	7,492,247
									419,656	419,656
300,000	**690,000**	**-**	**-**	**-**	**-**	**12,500,684**	**1,770,459**	**2,523,610**	**3,378,279**	**21,163,032**
			7,018,260							7,018,260
		342,993								342,993
		1,131,989								1,131,989
		956,531	997,088	1,014,637	1,029,552	1,064,248	1,092,131		1,425,245	7,579,432
		503,735	241,897							745,632
			259,597							259,597
		1,934,230	1,347,652	2,051,728		2,152,048			2,343,356	9,829,013
		289,789	11,800							301,589
		1,714,964	1,787,678					2,472,732	2,555,322	8,530,696
		601,950								601,950
		1,550,637	1,616,384	1,644,832	1,669,011					6,480,864
		3,412,099	1,245,770	300,188	304,601					5,262,659
		417,704								417,704
		442,042	460,784				504,707			1,407,533
				945,593	959,494					1,905,087
				218,537						218,537
		282,997								282,997
					260,251					260,251
			252,045							252,045
		292,053								292,053
		346,389								346,389
		464,116								464,116
-	**-**	**14,684,219**	**15,238,956**	**6,175,515**	**4,222,909**	**3,216,295**	**1,596,838**	**2,472,732**	**6,323,923**	**53,931,387**
300,000	**690,000**	**14,684,219**	**15,238,956**	**6,175,515**	**4,222,909**	**15,716,979**	**3,367,296**	**4,996,342**	**9,702,202**	**75,094,419**

Figure 3-8: Security

(Year of Expenditure dollars)

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
CCTV on bus replacement	Replace 232 CCTV systems on Gillig and New Flyer buses	1,521,000	
Chaboya Site Hardening / Security Improvements		1,464,000	
Guadalupe CCTV		2,099,000	
Hamilton Station LIDS	Install laser intrusion detection system at Hamilton light rail station	1,164,000	
Security Improvement	Meet security needs as assessed and proposed	2,878,000	3,500,000
TIER I: SUBTOTAL		**9,126,000**	**3,500,000**
TIER II: UNFUNDED IN 2010 SRTP			
Aerial View Bus Numbering			
Emergency Comm Vehicle			
SUBTOTAL TIER II		**-**	**-**
TOTAL		**9,126,000**	**3,500,000**

Figure 3-9: Miscellaneous

(Year of Expenditure dollars)

Project Title	Project Description	FY 2010	FY 2011
TIER I: FISCALLY CONSTRAINED			
Caltrain Capital Program - Annual Local Match	Provide VTA local funds to support Caltrain's ongoing capital improvement program	2,931,174	3,019,109
Joint Development Sites A, B, C	Joint Development program placeholder	300,000	
W San Carlos Site Remediation/Demolition	Remediation and Demolition of W San Carlos site in preparation for development	325,000	625,000
Caltrain Right-of-Way	SCL payment for JPB acquisition of Caltrain ROW	7,177,000	
Capital Contingency	Contingency fund for unanticipated capital expenses	2,000,000	
TIER I: SUBTOTAL		**12,733,174**	**3,644,109**
TIER II: UNFUNDED IN 2010 SRTP			
Caltrain Capital Program - Annual Local Match	VTA Local contribution to Caltrain's State of Good Repair (SOGR) Program (non-Measure A eligible elements)		16,386,396
SUBTOTAL TIER II		**-**	
TOTAL		**12,733,174**	**3,644,109**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
								1,521,000
								1,464,000
								2,099,000
								1,164,000
3,651,349	3,665,140	3,679,345	3,693,976	3,709,046	532,923	548,910	565,377	26,424,066
3,651,349	**3,665,140**	**3,679,345**	**3,693,976**	**3,709,046**	**532,923**	**548,910**	**565,377**	**32,672,066**
258,094								258,094
282,997								282,997
541,091	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**541,091**
4,192,440	**3,665,140**	**3,679,345**	**3,693,976**	**3,709,046**	**532,923**	**548,910**	**565,377**	**59,637,223**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total 10-Year Period
3,417,600	3,562,506	3,625,206	3,678,496	3,802,462	3,902,086	4,006,662	4,140,485	36,085,786
								300,000
								950,000
								7,177,000
								2,000,000
3,417,600	**3,562,506**	**3,625,206**	**3,678,496**	**3,802,462**	**3,902,086**	**4,006,662**	**4,140,485**	**46,512,786**
24,754,260	15,466,655	12,060,630	13,470,445	1,495,519				
24,754,260	**15,466,655**	**12,060,630**	**13,470,445**	**1,495,519**	**-**	**-**	**-**	**67,247,509**
28,171,859	**19,029,161**	**15,685,836**	**17,148,942**	**5,297,981**	**3,902,086**	**4,006,662**	**4,140,485**	**113,760,295**

Figure 3-10: Measure A

CAPITAL IMPROVEMENT PROGRAM: MEASURE A SOURCES OF FUNDS

(Year of Expenditure dollars in millions)	Projected 2009
Fiscal Year	**2009**
Measure A Sales Tax Revenue	**137.26**
Grants	
Prop 1B Pub. Transp. Mod. Imprvmt. & Svc. Enhanc. Acct. (PTMISEA)	2.30
Federal/Section 5309 New Starts	
Federal/Very Small Starts	
Federal/STP	
State/Proposition 1B	
State/STIP	
State/TCRP	41.47
State/Proposition 1A (High-Speed Rail Connectivity)	
City/County/Other Local Funds	
Regional Unspecified	
Other Revenue	11.64
Subtotal Grants	**55.41**
Unspecified Funding (Tier 2 Measure A Projects)	**-**
Financing Program	
Construction Tax Exempt Commercial Paper	
2000 Measure A Bonds	
Subtotal Financing Program	**-**
TOTAL MEASURE A PROGRAM SOURCES OF FUNDS	**192.67**

Fiscal Year	**2009**
MEASURE A FUND BALANCE	
Beginning Balance[1]	291.23
Interest Earnings	13.80
Net Capital Cash Flow - Measure A Program	64.17
Measure A Operating Assistance	(25.33)
Debt Service - Measure A Bonds	(31.74)
Cumulative Fund Balance	**312.12**

[1] *Includes uncommitted Measure A Funds & Measure A Debt Reduction Fund*

SRTP Range										
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2010-2019**
119.26	**122.07**	**131.70**	**136.75**	**139.99**	**138.76**	**140.09**	**143.15**	**145.35**	**148.98**	**1,366.10**
16.72	40.04	32.81								89.56
			50.00	150.00	150.00	150.00	87.70	100.00	100.00	787.70
12.65	12.50									25.15
2.40	0.08									2.48
4.00	4.00	6.42	6.42	6.42	6.42	6.42	6.42			46.52
10.05	9.95									20.00
91.68	62.96	42.24	80.00	40.00	40.00	40.00				396.88
		5.00	5.00	10.00						20.00
8.89	22.99	36.25								68.12
									45.00	45.00
1.61	0.47		22.05	22.00						46.13
147.99	**152.98**	**122.71**	**163.47**	**228.42**	**196.42**	**196.42**	**94.12**	**100.00**	**145.00**	**1547.54**
-	**-**	**61.60**	**160.96**	**162.37**	**181.24**	**103.22**	**105.92**	**69.31**	**-**	**844.61**
	7.77	116.37	135.44	138.38	148.46	66.54	112.11	41.52		766.59
	8.73	131.44	152.21	153.40	165.45	75.58	127.29	47.34		861.44
-	**16.51**	**247.82**	**287.65**	**291.79**	**313.91**	**142.12**	**239.40**	**88.85**	**-**	**1628.04**
267.25	**291.56**	**563.83**	**748.83**	**822.57**	**830.33**	**581.85**	**582.59**	**403.51**	**293.98**	**5386.29**

2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2010-2019**
312.12	164.50	62.17	98.06	108.14	110.35	120.28	89.51	77.04	69.88	312.12
4.58	4.02	5.51	5.71	4.45	4.74	5.50	3.74	3.29	3.68	45.23
(94.88)	(14.11)	122.78	113.87	117.14	143.30	125.67	266.35	283.94	272.67	1,336.73
(22.01)	(22.53)	(24.31)	(25.24)	(25.84)	(25.61)	(25.86)	(26.42)	(26.83)	(27.50)	(252.14)
(35.29)	(69.72)	(68.09)	(84.26)	(93.54)	(112.50)	(136.09)	(256.14)	(267.56)	(260.79)	(1,383.98)
164.50	**62.17**	**98.06**	**108.14**	**110.35**	**120.28**	**89.51**	**77.04**	**69.88**	**57.95**	

Figure 3-10: Measure A

CAPITAL IMPROVEMENT PROGRAM: MEASURE A USES OF FUNDS

(Year of Expenditure dollars)

			Projected 2009	SRTP Range	
Project Title	**Project Description**	**Fiscal Year**	**2009**	**2010**	**2011**
Tier I Measure A					
SVRT Program	Extend BART service to Santa Clara County		90,780,000	178,965,000	157,773,000
BART Extension to Warm Springs	VTA share of project to extend BART from Fremont to Warm Springs			8,000,000	8,000,000
Caltrain Electrification	VTA share of project to electrify Caltrain service from Gilroy to San Francisco			400,000	400,000
Caltrain Safety Enhancements	VTA share of Caltrain projects		2,555,000	7,695,000	9,565,000
Caltrain South County Capacity Improv.	VTA share of Caltrain projects		1,976,000	13,987,000	19,817,000
Caltrain Santa Clara and Diridon Station Upgrade	VTA share of Caltrain projects		362,000	2,436,000	1,238,000
Caltrain/UP Blossom Hill Ped. Grade Sep	Construct bicycle/pedestrian overcrossing in Blossom Hill/Monterey Road area		1,609,000	7,055,000	1,222,000
DTEV Capitol Expressway Light Rail Phase I: BRT & Ped. Impvmts.	Pedestrian improvements on Capitol Expwy to support BRT and light rail			37,598,000	22,450,000
DTEV Santa Clara/Alum Rock BRT	Capital improvements to bring BRT 2 service from downtown San Jose to Eastridge Transit Center		349,000	16,718,000	56,025,000
Dumbarton Rail	Near-term planning efforts for future Dumbarton rail project		672,000	548,000	
Highway 17 Bus Service Improvements	VTA share of operating and capital funds to support enhanced service			2,500,000	
Palo Alto Intermodal Center - Near-Term Planning	Redesign of Palo Alto transit center		23,000	102,000	45,000
SJC Airport People Mover - Near-Term Planning	Near-term planning effort to connect SJC airport, BART, Caltrain, and Light Rail		11,000	1,931,000	2,000,000
BRT on El Camino & Stevens Creek	Engineering work for future BRT corridors		708,000	8,600,000	1,000,000
BRT 522 Vehicle Procurement	Purchase 29 specialized hybrid BRT vehicles for BRT line 522			41,100,000	2,150,000
Light Rail System Analysis	Various capital improvements resulting from Light Rail Analysis		690,000	3,064,000	2,768,000
New Rail Corridors Major Investment Study	Required study to analyze corridors for potential light rail service		13,000	947,000	306,000
STIP Swap Projects			20,048,000	20,058,000	12,132,000
ZEB Demonstration Program			758,000	400,000	
Other Measure A Projects			3,121,000	5,457,000	2,312,000
Measure A Program Wide Management	Administration and management costs to support the Measure A program		4,827,442	4,576,723	6,463,022
Tier II Measure A					
DTEV Capitol Expressway Light Rail Phase II: LRT to Eastridge	Light rail from Alum Rock Transit Center to Eastridge Transit Center				
BRT on El Camino	Capital improvements to bring BRT 2 service from downtown San Jose to Palo Alto				
BRT on Stevens Creek	Capital improvements to bring BRT 2 service from downtown San Jose to De Anza College				
BRT 523 Vehicle Procurement	Purchase 11 specialized hybrid vehicles for BRT line 523 (Stevens Creek)				
Highway 17 Bus Service Improvements (Tier II)	VTA share of operating and capital funds to support enhanced service				
Subtotal Measure A Capital Expenditures			**128,502,442**	**362,137,723**	**305,666,022**
NET CAPITAL CASH FLOW - MEASURE A PROGRAM			**64,167,134**	**(94,884,377)**	**(14,110,442)**

SRTP Range								
2012	2013	2014	2015	2016	2017	2018	2019	2010-2019
282,444,255	445,327,556	524,553,436	472,369,629	350,691,490	208,740,164	49,662,982	21,204,988	2,691,732,500
								16,000,000
	15,000,000	15,000,000	30,000,000					60,800,000
								17,260,000
20,851,000								54,655,000
8,923,000								12,597,000
								8,277,000
								60,048,000
65,040,489	10,509,085							148,292,575
								548,000
								2,500,000
								147,000
								3,931,000
								9,600,000
								43,250,000
								5,832,000
								1,253,000
								32,190,000
								400,000
								7,769,000
2,194,294	3,158,965	3,509,605	3,418,031	2,269,553	1,573,318	594,864	106,025	27,864,401
	61,626,541	62,711,168	63,633,022	65,777,455	67,500,824	69,309,846		390,558,857
60,297,215	62,853,817	63,960,044	64,900,257					252,011,334
	35,078,937	35,696,327	36,221,063	37,441,712	38,422,685			182,860,724
			16,482,132					16,482,132
1,302,920	1,397,103							2,700,023
441,053,174	**634,952,005**	**705,430,579**	**687,024,133**	**456,180,211**	**316,236,992**	**119,567,693**	**21,311,013**	**4,049,559,545**
122,775,977	**113,873,701**	**117,135,131**	**143,303,228**	**125,671,049**	**266,352,291**	**283,944,328**	**272,667,835**	

3.2 Bus Fleet Plan

The VTA 2009 Fleet Management Plan, which is included as Appendix B in this SRTP, describes and documents vehicle demand on a year-by-year basis for the FY 2009-2024 time frame. It reflects current plans for changes to the VTA transit system. Its approach includes new goals and assumptions about fleet orders and the evolution of VTA's fleet over the next 15 years. Orders for standard buses based on this plan will be the first since 2001. The Plan also describes vehicle conditions for light rail and paratransit.

Plan goals and assumptions include:

- Meet Bus Rapid Transit (BRT) vehicle requirements as outlined in the BRT Strategic Plan with special diesel hybrid articulated buses in 2013 (route 522) and 2017 (route 523).
- Meet vehicle requirements for changes in passenger demand as a result of the BART extension to Silicon Valley in 2018.
- Aim to place bus orders every 2 years to manage staff resources effectively, distribute the fleet retirement schedule, and create large groups of identical buses for interchangeable parts.
- Even-out fleet age for more equal-size orders each order year for financial consistency.
- Maintain 20 percent spare ratio according to Federal Transit Administration (FTA) guidelines.
- Specify diesel hybrid propulsion for the majority of standard and articulated buses.

The most significant changes in bus system needs under this plan will be the implementation of Bus Rapid Transit (BRT) on El Camino in 2013 and Steven's Creek in 2017 and the BART extension in 2018. The move towards evenly-sized orders every two years will even out the demand for maintenance and staff hours dedicated to vehicle procurement. The 20 percent spare ratio is an FTA requirement and spare vehicles are needed to meet peak service requirements and keep buses maintained. In addition, the BART extension to Berryessa is planned to begin service in 2018 with accompanying adjustments to the bus network.

Figure 3-11: Bus Assignment Summary

FIS Code	SAP BUS	Bus Type	# Series	Year of Mfg.	Cerone	Chaboya	North	Total Active	Inactive Fleet	Total Fleet
92	J	Metro 92	9201-9291	1992					15	15
9700	M	Gillig 97	9701-9786	1997	23	37	25	85	1	86
9800	N	Gillig 98	9801-9847	1998	22	25		47		47
9900	O	Gillig 99	9901-9912	1999	12			12		12
9950	P	Gillig 99 LF	9951-9953	1999			2	2		2
1000	Q	Gillig 10 LF	1001-1015,1028, & 1030-1052	2001	6	20	13	39		39
1000	Q	Gillig 10 BRT	1016-1027 & 1029	2001			13	13		13
2000	R	Gillig 20 LF	2011-2071	2002	23	26	10	59		59
2100	S	Gillig 21 LF 35'	2102-14,17,22,23	2002	4	13		17		17
2101	AF	Gillig 21AF LF 35'	2115,16,2118-2121	2002	5			5		5
2200	T	Gillig 22 LF	2201-2256	2002	28	28		56		56
2300	U	NF Artic LF	2301-2307 & 2313-2340	2002			35	35		35
2300	U	NF Artic BRT	2308-2312	2002			5	5		5
4000	V	Gillig LF ZEB	4001-4003	2004					3	3
5000	W	CB 05	5001-5005	2005						
7000	Y	CB 07	7001-7020	2007		17		17		17
7000	Y	CB 07 DASH	7018-7020	2007		3		3		3
8000	Z	CB 08	8002-8025	2008		13	11	24		24
8000	Z	CB 08 DASH	8001	2008		1		1		1
					123	183	114	420	19	439

Given peak pullout requirements, a 20 percent spare ratio and current plans for BRT expansion, Figure 3-12 displays bus inventory goals at key points in time under this plan. Appendix B provides these details. This plan assumes that articulated buses can replace standard 40' buses, but otherwise bus types are not interchangeable.

The Fleet Plan outlines when VTA vehicles will be ordered, retained and retired taking into consideration state and federal requirements as well as VTA stated fleet management goals. A number of other planning documents provide guidance and input for the fleet management plan including: Valley Transportation plan (VTP) 2035, Service Design Guidelines (SDG), Comprehensive Operations Analysis (COA), BRT Strategic Plan, Express Bus Study, Annual Transit Service Plan, and Light Rail System Analysis. This fleet plan is a dynamic document to be revised and updated as often as VTA's plans, and timelines for those plans, change. Figure 3-13 summarizes plans for ordering buses over the next 10 years (the timeframe of the Fleet Management Plan).

3.3 Paratransit Fleet Plan

In order to contain and reduce paratransit operating costs, VTA has implemented a program to directly fund and provide certain vehicles and facilities to our contracted paratransit vendor. VTA does not directly provide paratransit services, but contracts with Outreach and Escort, Inc., a local non-profit organization, to provide paratransit broker services. Outreach in turn contracts for services with taxi, sedan, and accessible van companies to provide the daily paratransit service.

Currently 263 sedans and accessible vans are used to provide VTA's ADA paratransit service. Outreach also contracts with local taxi vendors to provide taxi-based paratransit services. These taxis are not included in our paratransit fleet procurement plan, as they are not used exclusively for VTA operations. Outreach contracts with a private transit provider to operate the sedans and accessible vans. In addition to vehicles provided by Outreach, VTA acquires and provides vehicles through federal capital grant programs to be operated by the private provider.

Figure 3-12: Fleet Inventory Replacement Plan

ORDER YEAR	MFR. YEAR		TYPE	Retirement Year	FY 2009	FY 2010	FY 2011
TOTAL NEW BUSES			**Goal: 77 every 2 years**				**70**
1993	1994	FLXIBLE 9300	40' Standard	2007			
1996	1997	GILLIG 9700	40' Standard	2010	50	50	
1997	1998	GILLIG 9700	40' Standard	2011	36	36	12
1997	1998	GILLIG 9800	40' Standard	2011	47	47	47
1998	1999	GILLIG 9900	40' Standard	2012	12	12	12
1998	1999	GILLIG 9950	40' Low Floor	2012	2	2	2
2000	2001	GILLIG 1000	40' Low Floor	2014	52	52	52
2000	2001	GILLIG 2100	35' Low Floor	2014	22	22	22
2000	2001	GILLIG 2000	40' Low Floor	2014	59	59	59
2001	2002	FLYER 2300	Articulated Low Floor	2015	40	40	40
2001	2002	GILLIG 2200	40' Low Floor	2015	56	56	56
2002	2003	GILLIG/BALLARD 4000	ZEB demo	2016			
2007	2008	EL DORADO 7000	< 30' Small Buses	2014	20	20	20
2007	2008	EL DORADO 8000	< 30' Small Buses	2014	25	25	25
2009	2010	Repl 9700, 9800	40' Low Floor	2023			70
2011	**2012**	**BRT, Repl 9800 (Measure A)**	**Articulated Hybrid**	**2025**			
2014	2015	Repl 7000	< 30' Small Buses	2021			
2015	**2016**	**BRT (Measure A)**	**Articulated Hybrid**	**2029**			
2015	2016	Repl Gill 1000	40' Low Floor	2029			
2015	2016	Repl GILLIG 2100	35' Low Floor	2029			
2016	2017	BEP Artics (SVRT Project fund)	Artics 60'	2030			
2016	2017	Repl 2200 series	40' Low Floor	2030			
2017	2018		40' Low Floor	2031			
2018	2019	Repl 2300	Artic low floor	2032			
2018	2019	Repl Repl 9700	40' low floor	2032			
2019	2020	Repl Repl Small Bus, 8000	< 30' Small Buses	2026			
2020	2021	Repl FLYER 2300	Artic low floor	2034			
2020	2021	Repl Repl 9800	40' Low Floor	2034			
2022	2023	BEP Artics (SVRT Project fund)	Artic low floor	2036			
2022	2023	Repl FLYER 2300	Artic low floor	2036			
TOTAL ACTIVE FLEET AT YEAR END					421	421	417
		Standard + artics	A+D-artic goal		324	324	320
Total Standard Buses in Fleet			B		314	314	310
Total 35' Buses in Fleet			C		22	22	22
Total Articulated Buses in Fleet			D		40	40	40
Total Small Buses in Fleet			E		45	45	45
TOTAL PEAK PULLOUTS					345	344	344
SPARE RATIO					23%	24%	21%
AVERAGE FLEET AGE					7.12	8.12	7.00
RESERVE FLEET							
1993		FLXIBLE 9200	40' Standard		15	15	
1996		GILLIG 9700	40' Standard				25
1997		GILLIG 9800	40' Standard				
2000		GILLIG 2000	40' Low Floor				
2001		GILLIG 2200	40' Low Floor				
TOTAL FLEET					**450**	**450**	**442**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
	29			**50**	**90**	**57**	**50**	**61**	**43**	**61**		**20**
12												
47	47	47	47	47								
12	12	12	12	12								
2	2	2	2	2								
52	52	52	52	52	30							
22	22	22	22	22								
59	59	59	59	59	59	41						
40	40	40	40	40	40	40	40	18	18			
56	56	56	56	56	56	56	54	28	28			
20	20	20	20									
25	25	25	25									
70	70	70	70	70	70	70	70	70	70	70	70	33
	29	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**
				50	50	50	50	50				
					11	**11**	**11**	**11**	**11**	**11**	**11**	**11**
					62	62	62	62	62	62	62	62
					17	17	17	17	17	17	17	17
						6	6	6	6	6	6	6
						51	51	51	51	51	51	51
							50	50	50	50	50	50
								21	21	21	21	21
								40	40	40	40	40
									43	43	43	43
										20	20	20
										41	41	41
												2
												18
417	434	434	434	439	424	433	440	453	446	461	461	444
320	317	317	317	317	296	299	299	306	299	307	301	277
310	298	298	298	298	277	280	287	301	301	314	314	277
22	22	22	22	22	17	17	17	17	17	17	17	17
40	69	69	69	69	80	86	86	85	85	87	87	107
45	45	45	45	50	50	50	50	50	43	43	43	43
344	344	344	344	344	344							
21%	26%	26%	26%	28%	23%							
8.00	8.26	9.26	10.26	10.41	7.70	6.75	5.97	4.96	5.50	4.39	5.39	5.55
25	25	25	25	25								
					25	25						
							25					
								25	25	25	25	25
442	**459**	**459**	**459**	**464**	**449**	**458**	**465**	**478**	**471**	**486**	**486**	**469**

Figure 3-13: Paratransit Fleet Plan

					FY2010 FLEET		FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Year	**Make**	**Model**	**Type**	**In Service Date**	**VTA**	**Outreach**									
2004	Ford	Tranzporter	Modified Van			9									
2006	Chevrolet	Uplander	Minivan	Jan. 07 (FY08)	99	4	100				100				100
2006	Toyota	Prius	SULEV Sedan			18									
2007	Chevrolet	Uplander	Minivan			10									
2007	Toyota	Prius	SULEV Sedan	Jan. 07 (FY08)	59	3		60					60		
2007	ElDorado	Aerotech	Type 2 Cutaway	Jan. 07 (FY08)	13					13					
2008	Ford	Tranzporter	Modified Van			14									
2010	Toyota	Prius	SULEV Sedan	Nov. 09 (FY10)	23						23				
2010	ElDorado	Aerolite	Type 1b Cutaway	On Order		11									
			Minivan	Expansion				0				19		26	
			Sedan	Expansion								23			
			Cutaway	Expansion						21					
OUTREACH OWNED						**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**
VTA OWNED					**194**	**194**	**194**	**194**	**213**	**215**	**234**	**238**	**257**	**264**	**283**
TOTAL FLEET						**263**	**263**	**263**	**282**	**303**	**303**	**326**	**326**	**352**	**352**

3.4 Light Rail Fleet Plan

VTA operates a fleet of 99 low-floor Light Rail Vehicles (LRVs), all built by Kinkisharyo (USA). These cars were commissioned in 2002 and 2003. They are bi-directional, articulated, six-axle vehicles and are electrically power by 750 volts of direct current. Up to three cars can be joined together. VTA does not plan to purchase new LRVs through the 2019 horizon year.

Appendix A: Ballot Text of Measure A

Adopted by the voters of Santa Clara County on November 7, 2000

Shall the Board of Directors of the Santa Clara Valley Transportation Authority (VTA) be authorized to enact a retail transactions and use tax ordinance imposing (a) a tax for the privilege of selling tangible personal property at retail upon every retailer in Santa Clara County, the territory of VTA; such tax to be at the rate at one-half of one percent of the gross receipts of the retailer from the sale of all tangible personal property sold by him at retail in the territory of VTA, and (b) a complimentary tax upon the storage, use, or other consumption in Santa Clara County, the territory of VTA; such tax to be at the rate of one-half of one percent of the sales price of the property whose storage, use, or other consumption is subject to the tax, such taxes to be imposed for a period not to exceed 30 years, and to take effect only upon the expiration of the current County of Santa Clara 1996 Measure B ½-cent sales tax in April, 2006, and to be used only to:

Extend BART from Fremont through Milpitas to Downtown San Jose and the Santa Clara Caltrain Station, specifically,
To build a BART Extension from Fremont to Milpitas, San Jose and Santa Clara with a major connection to the Tasman Light Rail line at the Milpitas BART Station. In San Jose to include a BART subway section with stations at San Jose State University, the new San Jose City Hall, Downtown San Jose at Market Street, San Jose Arena and the Diridon Multimodal Station connecting to Caltrain, ACE, Amtrak, the Vasona Light Rail line and VTA bus service. In Santa Clara, to serve Santa Clara University, and the Caltrain Station with a people mover connection to San Jose International Airport

Provide Connections from San Jose International Airport to BART, Caltrain and the VTA Light Rail, specifically,
To build a people mover rail line connecting the airport passenger terminals directly with BART, Caltrain, and the VTA Light Rail line.

Extend Light Rail from Downtown San Jose to the East Valley by
Building a Downtown/East Valley Light Rail line from downtown San Jose serving the new San Jose City Hall and San Jose State University, out Santa Clara Street to Capitol Avenue to join the Capitol Light Rail line then south to Eastridge Shopping Center.

Purchase Low Floor Light Rail Vehicles, specifically
To better serve disabled, seniors and others; purchase an additional 20 low floor light rail vehicles to join the 30 low floor vehicles now being constructed for the new Tasman, Capitol and Vasona Light Rail lines and 50 new low floor vehicles to replace VTA's existing 50 light rail vehicles.

Improve Caltrain: Double Track to Gilroy and Electrify from Palo Alto to Gilroy
Extend the Caltrain double track from the San Jose Tamien Station through Morgan Hill to Gilroy. Provide VTA's funds for the partnership with San Francisco and San Mateo counties to electrify Caltrain from San Francisco to Gilroy.

Increase Caltrain Service, specifically
Purchase new locomotive train sets for increased Caltrain service in Santa Clara County from Gilroy to Palo Alto and provide additional facilities to support the increased service.

Construct a New Palo Alto Intermodal Transit Center
In partnership with the City of Palo Alto and Stanford University, design and construct a new parkway and underpass for University Avenue from the campus to downtown Palo Alto to improve bicycle, pedestrian and transit access to the campus, Palo Alto Caltrain station and downtown Palo Alto. Upgrade passenger facilities at the historic Palo Alto Caltrain station, upgrade transit facilities for VTA, SAMTRANS, Dumbarton Express and the Stanford Marguerita and Palo Alto shuttle services.

Improve Bus Service in Major Bus Corridors
For VTA Line 22 (Palo Alto to Eastridge Center) and the Stevens Creek Boulevard Corridor, purchase new low floor articulated buses. Improve bus stops and major passenger transfer points and provide bus queue jumping lanes at intersections to permit buses quick access along the corridors.

Upgrade Altamont Commuter Express (ACE)
Provide VTA's matching funds for additional train sets, passenger facilities and service upgrades for the ACE Commuter Service from San Joaquin and Alameda Counties.

Improve Highway 17 Express Bus Service
Provide VTA's share of funds for the partnership with the Santa Cruz County Transit District for additional buses and service upgrades for the Highway 17 Express Bus Service.

Connect Caltrain with Dumbarton Rail Corridor
Provide VTA's share of matching funds for a partnership With Alameda and San Mateo counties for the rebuilding of the Dumbarton Rail Corridor to connect to Caltrain and train sets for this new service conditioned on Alameda and San Mateo County's funding.

Purchase Zero Emission Buses and Construct Service Facilities
Provide funds to supplement federal funds to expand and replace existing VTA diesel bus fleet from current size of just over 500 vehicles to 750 vehicles with the new zero emission buses and to provide maintenance facilities for this new, clean vehicle propulsion system. All new buses to be low floor for easier boarding by seniors and the disabled.

Develop New Light Rail Corridors
Provide capital funds for at least two new future light rail corridors to be determined by Major Investment Studies (MIS). Potential corridors include: Sunnyvale/Cupertino; Santa Teresa/Coyote Valley; Downtown/East Valley Connection to Guadalupe Line; Stevens Creek Boulevard; North County/Palo Alto; Winchester/Vasona Junction; and, initial study of BART connection from Santa Clara through Palo Alto to San Mateo County.

Fund Operating and Maintenance Costs for Increased Bus, Rail and Paratransit Service
Provide revenue to ensure funding, to at least 2014, and possibly longer, of the following: the new Tasman East, Capitol and Vasona Light Rail lines, the commuter rail connection to BART, expanded paratransit services, expanded bus fleet of 750 vehicles, the Downtown/East Valley Light Rail line operations, which can commence in 2008, and the BART extension to San Jose which can commence operations by 2010;
all subject to the following mandatory requirements:

The Tax Must Expire 30 Years After Implementation.
If approved by the voters, this half-cent sales tax must expire 30 years after implementation. The tax will be imposed for the period commencing April 1, 2006 when current tax expires and terminate on March 31, 2036. The length of this tax cannot be extended without a vote - and the approval - of the residents of Santa Clara County.

An Independent Citizen's Watchdog Committee Must Review all Expenditures.
The Independent Citizen's Watchdog Committee will consist of private citizens, not elected officials, who comprise the VTA's Citizen's Advisory Committee. Responsibilities of the Citizen's Watchdog Committee are:

Public Hearings and Reports: The Committee will hold public hearings and issue reports on at least an annual basis to inform Santa Clara County residents how the funds are being spent. The hearings will be held in full compliance with the Brown Act, California's open meeting law with information announcing the hearings well-publicized and posted in advance.

Annual Independent Audits: An annual audit conducted by an Independent Auditor will be done each fiscal year to ensure tax dollars are being spent in accordance with the intent of this measure.

Published Results of Audits and Annual Reports: The Committee must publish the results of the Independent Auditor and the Annual Report in local newspapers. In addition, copies of these documents must be made available to the public at large. Such authorization being pursuant to the provisions of Sections 100250 et seq. of the Public Utilities Code and Sections 7251 et seq. of the Revenue and Taxation Code.

DRAFT 1/22/10

Fleet Management Plan

SANTA CLARA VALLEY TRANSPORTATION AUTHORITY

Bus Rapid Transit

Diesel Hybrid Propulsion

PROJECT STAFF

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Graphic Designer

20% Spare Ratio

Vehicle Replacement Program

DECEMBER 2009

FY 2010–2024

California Air Resources Board (CARB) Requirement

Service Design Guidelines

1. Executive Summary

This Fleet Management Plan describes and documents vehicle demand on a year-by-year basis for the FY 2009-2024 time frame. It reflects current plans for changes to the Santa Clara Valley Transportation Authority (VTA) system. Its approach includes new goals and assumptions about fleet orders and the evolution of VTA's fleet over the next 15 years. Orders for standard buses based on this fleet plan will be the first since 2001. The Plan also describes vehicle conditions for light rail and paratransit.

Plan goals and assumptions include:

- Meet Bus Rapid Transit (BRT) vehicle requirements as outlined in the BRT Strategic Plan with special diesel hybrid articulated buses in 2013 (route 522) and 2017 (route 523).
- Meet vehicle requirements for changes in passenger demand as a result of the BART extension to Silicon Valley in 2018.
- Aim to place bus orders every 2 years to manage staff resources effectively, distribute the fleet retirement schedule, and create large groups of identical buses for interchangeable parts.
- Even-out fleet age for more equal-size orders each order year for financial consistency.
- Maintain 20 percent spare ratio according to Federal Transit Administration (FTA) guidelines.
- Specify diesel hybrid propulsion for the majority of standard and articulated buses.

The most significant changes in bus system needs under this plan will be the implementation of Bus Rapid Transit (BRT) on Alum Rock and El Camino in 2013 and Steven's Creek in 2017 and the BART extension in 2018. The move towards evenly-sized orders every two years will even out demand for maintenance and staff hours dedicated to vehicle procurement. The 20 percent spare ratio is an FTA guideline and spare vehicles are needed to meet peak service requirements and keep buses maintained. In addition, the BART extension to Silicon Valley Berryessa Extension Project (SVBX) is planned to begin service in 2018 with accompanying adjustments to the bus network to provide correction to the BART service.

Given peak pullout requirements, a 20 percent spare ratio and current plans for BRT expansion, Figure B-1 displays bus inventory goals at key points in time under this plan. The body of the document provides these details. This plan assumes that articulated buses can replace standard 40' buses on select routes, but otherwise bus types are not interchangeable.

Figure B-1. Bus Fleet Inventory Goals

	FY2009	FY2013	FY2017	FY2018 w/BART	FY2024 w/ BART
40' Buses	327	322	296	299	277
35' Buses	17	17	17	12	13
Articulated Buses	30	50	61	67	107
<30' Buses	47	50	50	52	43
TOTAL	**421**	**424**	**424**	**430**	**440**

The Fleet Plan outlines when VTA vehicles will be ordered, retained and retired taking into consideration state and federal requirements as well as VTA stated fleet management goals. A number of other planning documents provide guidance and input for the Fleet Management Plan including: Valley Transportation Plan (VTP) 2035, Short-Range Transit Plan (SRTP), Service Design Guidelines (SDG), Comprehensive Operations Analysis (COA), BRT Strategic Plan, Express Bus Study and Light Rail System Analysis. This fleet plan is a dynamic document to be revised and updated as often as VTA's plans, and timelines for those plans, change. Figure B-2 summarizes plans for ordering buses over the next 10 years.

Figure B-2. Bus Orders

Fiscal Year	Vehicle Type	Total Vehicles	Total Cost
2010	40'	70	$ 51,806,072
	Artic		
	Small (<30')		
2011	40'		
	Artic	29	20,520,989
	Small (<30')		
2014	40'		
	Artic		
	Small (<30')	50	$ 4,173,387
2015	40'	79	$ 60,088,294
	Artic	11	$11,821,118
	Small (<30')		
2016	40'	50	$ 39,954,912
	Artic		
	Small (<30')	5	$442,755
2017	40'	50	$ 40,346,627
	Artic		
	Small (<30')		
2018	40'	40	$ 33,245,621
	Artic	21	$ 24,660,213
	Small (<30')		
2019	40'		
	Artic		
	Small (<30')	43	$ 4,160,765
Totals		**449**	**$ 291,220,752**

This document also describes conditions for light rail and paratransit vehicles; although the procurement and retirement schedule for these vehicles during the time period covered by this Plan is not as complicated. Specifically, VTA currently has 100 light rail vehicles. Peak pull out is currently 47 vehicles making the vehicle requirement 71 vehicles assuming a 20 percent spare ratio. Therefore, even as the system and demand grow over the period covered by this plan, VTA has sufficient light rail vehicles to accommodate possible increases in service.

2. Table of Contents

3. System Overview

The Santa Clara Valley Transportation Authority (VTA) is an independent special district responsible for bus, light rail and paratransit operations; congestion management; specific highway improvement projects; and countywide transportation planning. As such, VTA is both an accessible transit provider and multi-modal transportation planning organization involved with transit, highways and roadways, bikeways and pedestrian facilities. VTA provides services to cities throughout the county including Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga and Sunnyvale.

VTA's entire bus and light rail system is accessible to the disabled community. Additionally, VTA provides a complementary paratransit service throughout its service area for residents who are unable to use fixed-route service, in accordance with its responsibilities under the Americans with Disabilities Act. VTA provides this service through an agreement with Outreach and Escort, Inc.

Pursuant to the Federal Transit Administration's (FTA) Circular 9030.1C, VTA is required to prepare and maintain a Fleet Management Plan. The purpose of the Fleet Management Plan is to properly plan for and carry out the overall management of its vehicle fleet.

This Fleet Management Plan was prepared in order to describe and document vehicle demand on a year-by-year basis for the FY 2009-2024 time frame. This document accompanies VTA's completed its 2009 Short Range Transit Plan (SRTP). The Fleet Management Plan is an ancillary document to the SRTP, and like the SRTP, is subject to future revisions and updates.

An additional goal of this Fleet Management Plan is to facilitate any possible future planned fleet expansion and/or rehabilitation program to meet fleet demand within defined assumptions and funding constraints and to plan to accommodate future changes in fleet size and composition with operating and maintenance facilities. The Fleet Management Plan is prepared in accordance with FTA guidance for capital program assistance (49 U.S.C. § 5309) and will accompany any grant application VTA may submit to obtain federal assistance for fleet and service needs.

Figure B-3 provides a summary of system characteristics now and projected for 2024. Figure B-10 provides a map of VTA administrative and operating facilities.

Figure B-3. Summary of System Changes between FY 2009 and FY 2024

RT System	Fiscal Year 2009	Fiscal Year 2024 Projection	Percent Increase
Bus System			
Annual Bus Boardings (Projected)	33,103,495	80,839,667	144%
Peak Bus Requirement (Projected)	345	358	4%
Total Active Bus Fleet (Projected)	425	444	4%
Revenue Vehicle Hours (Projected)	1,282,419	1,496,628	17%
Spare Ratio (Projected)	23%	20% assumed	
Light Rail System			
Light Rail Route Miles (Projected)	42	47	12%
Light Rail Boardings (Projected)	10,451,136	24,000,000	130%
LRV Peak Requirement (Projected)	54	70-84	32-58%
Total LR Vehicle Fleet (Projected)	99	99 (projected need 84-101)	0%
Revenue Vehicle Hours (Projected)	136,566	168,403	23%
Light Rail Spare Ratio (Projected)	86.8%	18-41%	
TOTAL VTA SYSTEM BOARDINGS	**43,554,631**	**104,839,667**	**141%**

4. Bus System

While VTA's service area corresponds to the boundaries of Santa Clara County, only the urbanized areas are served encompassing approximately 326 square miles and a population of 1.6 million. VTA operates on 73 routes throughout the urbanized area serving 15 cities.

VTA has established categories of transit for the purposes of monitoring performance. Operational characteristics such as frequency, service span and days of operation distinguish the categories. Local bus level of service is driven by the market demand for transit in a corridor. Thus, high intensity corridors with many large attractors and generators are provided with the highest level of service. Land use and corridor characteristics further define categories of local bus service. Figure B-4 and B-5 provide a comparison of the range of VTA transit products: Core, Local Bus, Express, Bus Rapid Transit, Light Rail and Heavy Rail.

Figure B-4. Transit Products Operational Characteristics

	Weekday Frequency (min.)	Weekend Service	Span Hours	Days/ Week	Capacity
Core Network	15 or lower	15 or lower	18+	7	Medium
Local Network	30	30-60	17 or below	7 or below	Low
Community Bus/Feeder Bus	30-60	30-60	14 or below	7 or below	Lowest
Express	Scheduled Service	N/A	17 or below	7 or below	Low
Bus Rapid Transit	10 or lower	10 or lower	18+	7	Medium
Light Rail	15 or lower	15-30	18+	7	High
Heavy Rail/ Commuter Rail (Station Area)	Varies		18+	7	Highest

Figure B-5. Corridor Characteristics

	Corridor Characteristics	Examples
Core Network	• Major arterials • Transit interconnectivity • Major generators & attractors • Long distance, multiple jurisdictions	• El Camino Real • Stevens Creek Blvd • King Road
Local Network	• Neighborhood Collectors • Feeder service to Core • Community generators & Schools • Medium Distance trips	• Middlefield Road • Saratoga-Sunnyvale Road • Lincoln Avenue
Community Bus	• Residential Streets • Feeder service to core, and local networks • Community activity centers • Neighborhood circulators • Downtown circulators	• Gilroy and Morgan Hill • Evergreen District • South Palo Alto • Japantown Shuttle (Rte. 11) • Downtown San Jose (DASH)
Express Bus	• Expressways, highways or freeways • Weekday peak directional period • Between transit centers/ Park & Rides and Urban Centers • Long distance trips	• Lawrence Expressway • Hwy 237 • I-880, I-680, I-280
Bus Rapid Transit	• Major arterials • Transit interconnectivity • Major generators & attractors • Long distance, multiple jurisdictions	• El Camino Real (2012) • Stevens Creek Blvd (2014)
Light Rail	• Established trunk corridors • Link major trip generators • Higher capacity than Bus • Well defined station areas	• North First Street • Tasman Blvd. I-87 median
Heavy Rail	• Established rail corridor • Links regional centers • Higher capacity system • Can operate at high speeds	• Caltrain • BART

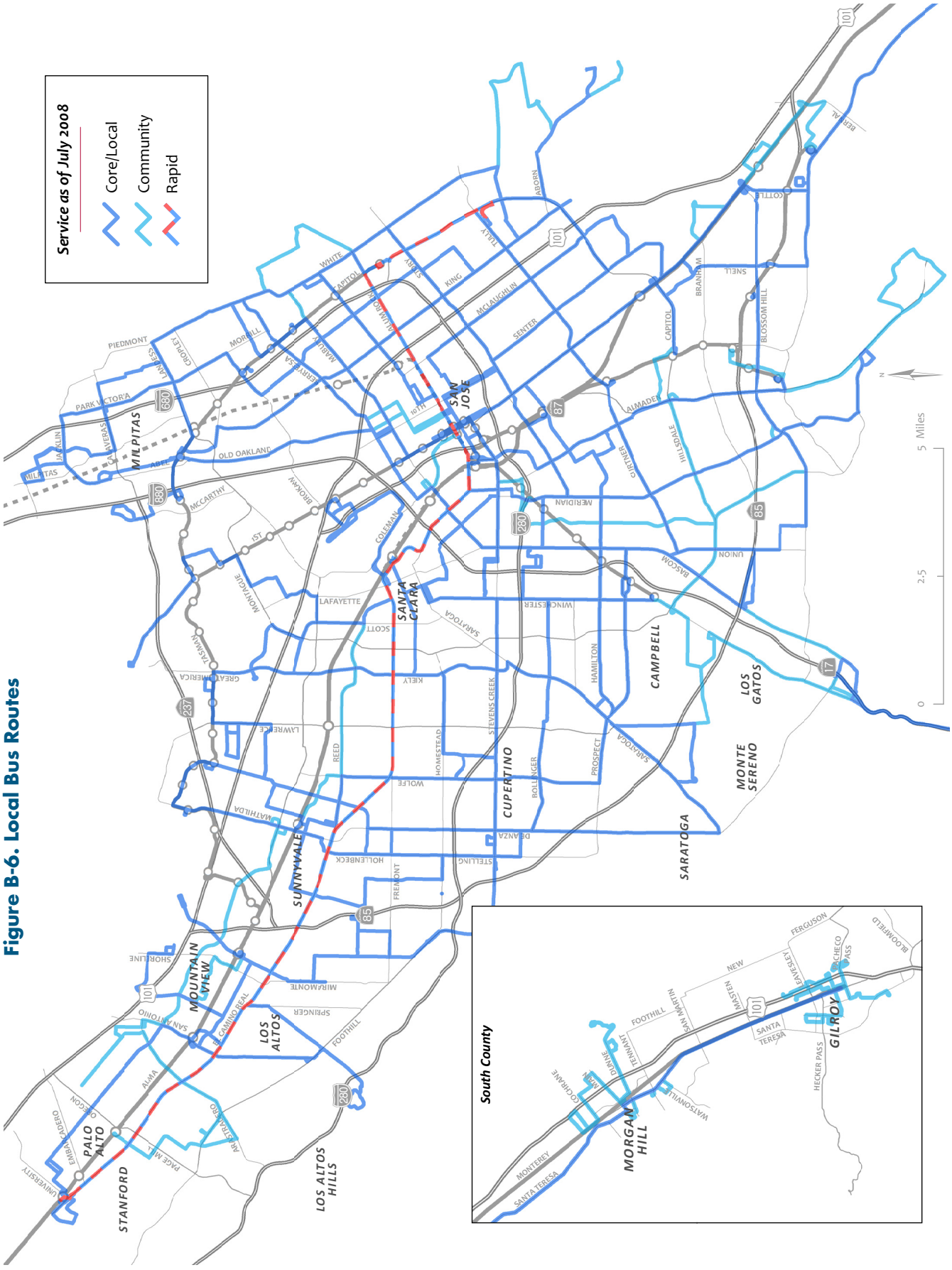


Figure B-6. Local Bus Routes

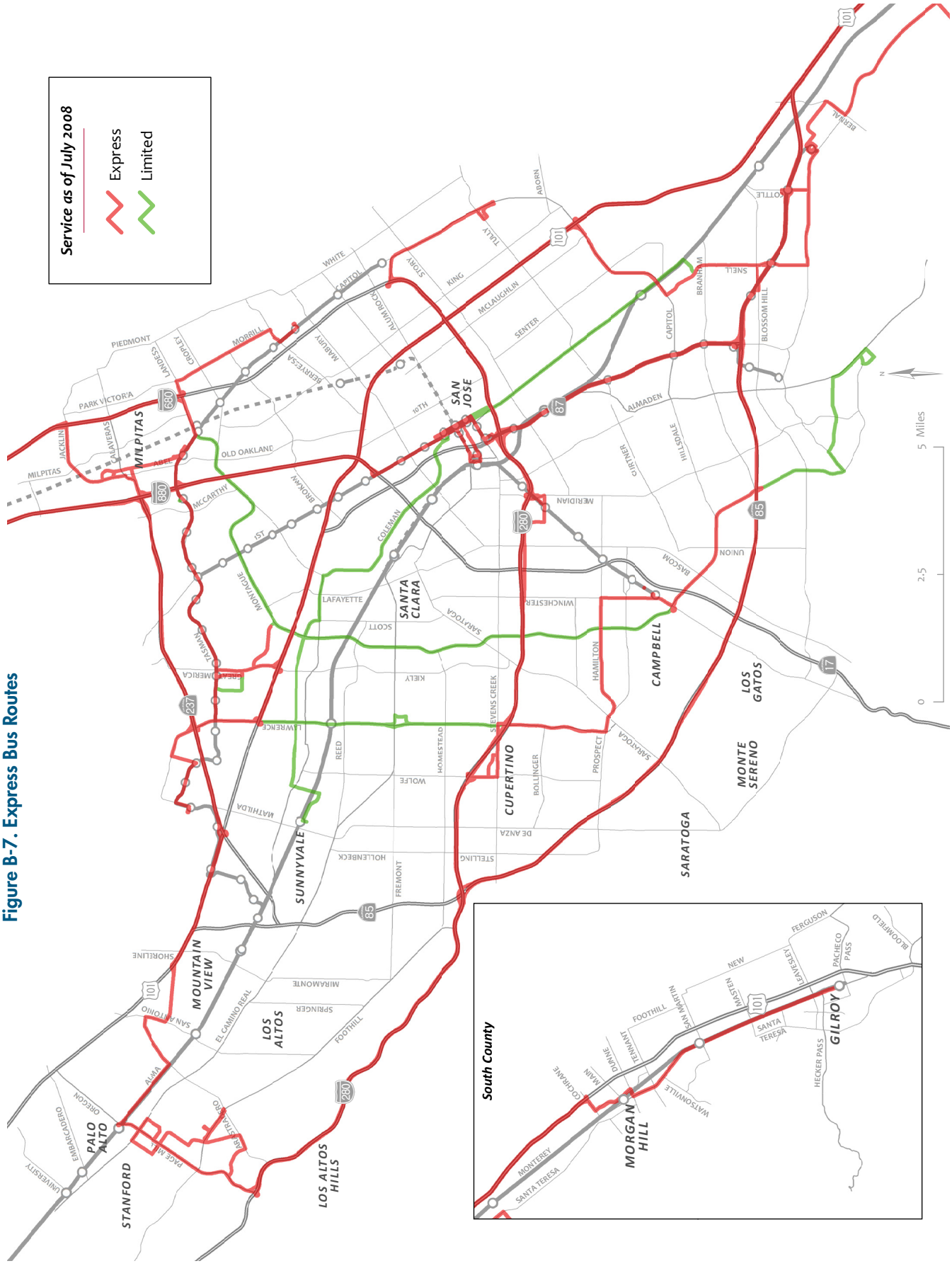
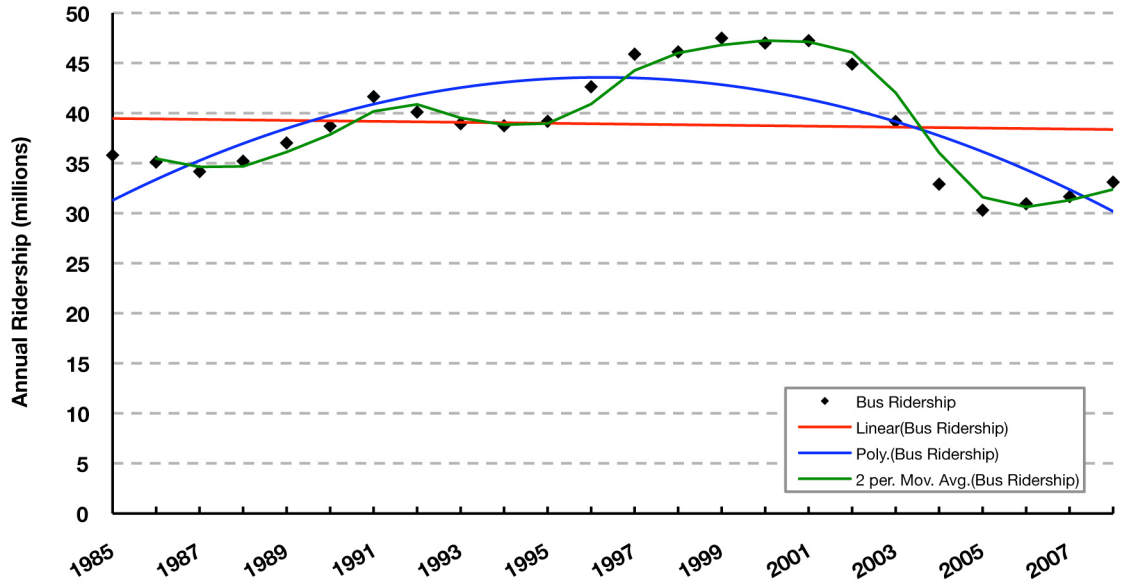


Figure B-7. Express Bus Routes

4.1 Bus Ridership

Bus ridership levels have varied widely since the agency's inception. Figure B-8 provides a chart that shows VTA historic average daily bus ridership with associated trendlines to help predict future conditions. Figure B-9 describes VTA's current bus system data including annual riders by mode.

Figure B-8. Historic Systemwide Ridership in Millions (with Trendlines)



Trendline key:
- *Polynomial – ex: y = -1E-12x6 + 6E-10x5 - 1E-07x4 + 9E-06x3 - 0.0004x2 + 0.0102x - 0.1289*
- *2-year moving average – just evening out the curve*
- *Linear – ex: y = a + bx*

In the early 2000s, with the dot com boom and bust, ridership trends in Santa Clara County corresponded with employment trends: as employment decreased, ridership declined. VTA's FY2006-2015 SRTP (page 36-38) includes a more complete discussion on this relationship. Service adjustments in 2005 (and after), combined with an increase in employment, have since contributed to improvements in ridership. VTA started both the Rapid 522 and Line 48 and 49 Los Gatos Community Bus services in July 2005. In October 2005, the Vasona light rail extension from San Jose to Campbell opened. The section on Community Bus more fully describes these services. Significant marketing campaigns to introduce these services along with other campaigns directed at commuters, youth riders and senior and disabled riders also contributed to our recent ridership growths.

The 2007 bus comprehensive operations analysis (COA) included an in-depth examination of VTA's existing transit operations and performance in the data analysis phase. It revealed that a select few lines within VTA's 70-plus local and express routes were carrying the vast majority of riders. A select group of corridors make up a core transit network where service improvements should focus. New riders may have been attracted to the system as a result of the system improvements launched in January 2008 as a result of the Comprehensive Operations Analysis (COA, see more information on this study in section 4.2).

The national recession of 2008 and 2009, although severe in terms of its affects on employment and household income, was not immediately accompanied by a decrease in transit ridership. Bus and light rail ridership have increased every month since mid-2008 (as of April 2009). However, ridership was down 9% in September 2009. Transit ridership may not correlate directly with employment.

Figure B-9. FY09 System Data, October 2009

Demographic Information	
Santa Clara County Population	1,857,621*
Urbanized Area (UZA)	326 sq. miles
Route Mileage (round trip)	1,235

Facilities	
Bus Stops	3,808
Shelters	799
Benches	1,932
Trash Cans	828
Transit Centers	16

Park and Ride Lots	No. of Lots	Parking Spaces
Bus	8	560
Light Rail	21	6,471
Caltrain	16	5,006

Routes by Service Type	
Core/Primary	19
Local/Secondary	7
Feeder	11
Community Bus	20
Full-day Express	1
Express	11
Limited	4
Total	**73**

Active Vehicles	
Large Coach	375
Community Bus	49
Total	**424**

Fare Information			
Bus Routes	**Single Ride**	**Day Pass**	**Monthly Pass**
Senior/Disabled	$1.00	$2.50	$25.00
Youth	$1.75	$5.00	$45.00
Adult	$2.00	$6.00	$70.00
Community Bus Routes			
Senior/Disabled & Youth	$0.50	same fare as local bus routes	
Youth	$0.75		
Adult	$1.25		
Express Routes			
Adult	$4.00	$12.00	$140.00
Airport Flyer, DASH, Great America, River Oaks: FREE			

Bus Deployment	Base to Peak ratio 77.5 percent		
AM Peak	**Midday**	**PM Peak**	**Sat/Sun**
331	268	346	188/161

** Source: California Department of Finance*

Historical Data								
Fiscal Year	**Active Buses**	**Peak Buses**	**Scheduled Total Hours**	**Scheduled Revenue Hours**	**Scheduled Total Miles**	**Scheduled Revenue Miles**	**Ridership**	**Ave. Weekday Ridership**
2009	424	336	1,379,428	1,277,905	18,500,655	15,849,345	34,510,273	111,820
2008	456	343	1,389,344	1,282,419	18,784,524	16,013,930	33,103,495	106,673
2007	453	345	1,364,903	1,254,464	18,705,711	15,882,356	31,646,555	102,123
2006	440	345	1,346,841	1,236,301	18,499,971	15,678,367	30,938,044	99,966
2005	441	344	1,330,707	1,202,770	18,259,119	15,416,363	30,296,718	97,117
2004	457	345	1,359,608	1,247,051	18,681,967	15,754,661	32,902,350	105,588
2003	454	375	1,497,846	1,376,086	20,556,769	17,471,291	39,169,325	126,030
2002	491	402	1,589,200	1,461,039	22,043,527	18,714,024	44,900,522	144,823
2001	502	418	1,616,941	1,485,789	22,640,485	19,176,759	47,237,748	152,708
2000	512	427	1,623,603	1,489,397	22,923,518	19,373,202	47,007,594	151,480
1999	522	415	1,565,500	1,434,798	22,399,973	18,950,490	47,486,765	154,082
1998	506	398	1,464,964	1,346,821	21,184,990	18,026,401	46,118,198	150,437
1997	468	386	1,407,689	1,291,461	20,721,892	17,604,745	45,887,950	150,224
1996	457	377	1,371,163	1,251,531	20,452,092	17,310,143	42,625,173	139,787
1995	460	378	1,367,258	1,247,948	20,401,172	17,286,482	39,183,337	130,432
1994	461	380	1,367,725	1,245,214	20,577,474	17,368,451	38,737,136	128,392
1993	474	392	1,437,719	1,310,713	21,544,840	18,307,125	38,943,000	131,368
1992	512	413	1,563,141	1,426,429	23,313,885	19,938,487	40,104,000	135,375
1991	512	422	1,586,495	1,446,922	23,683,679	20,248,799	41,652,000	141,000
1990	508	412	1,539,093	1,402,819	22,983,312	19,649,685	38,700,000	132,000
1989	518	417	1,524,689	1,386,698	22,904,636	19,510,964	37,024,000	124,958
1988	526	420	1,534,980	1,390,529	23,054,441	19,520,772	35,220,000	118,432

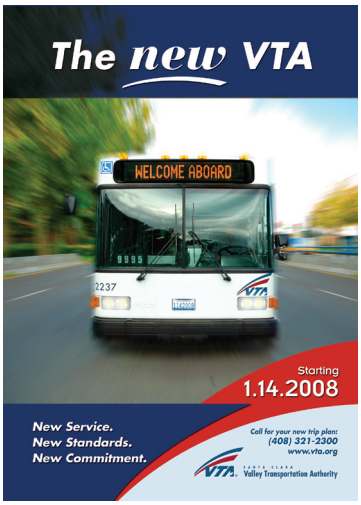
4.2 Plans and Documents

This section provides a brief description of plans and documents that influence the bus fleet plan. The relevance of each to the plan is covered in greater detail under the appropriate section.

Service Design Guidelines

The Service Design Guidelines provide specific standards for each type of VTA service including vehicle characteristics. Bus service types include Community Bus, Local Bus, Express Bus and Bus Rapid Transit (BRT). The Fleet Management Plan includes these guidelines in its description of each individual service type.

Comprehensive Operations Analysis



The Comprehensive Operations Analysis (COA) was an in-depth effort to analyze VTA's existing transit services, identify underserved markets and ultimately produce a new structure for bus services. A key component of the COA effort was the development of policy standards to continually evaluate and monitor the performance of the bus system against Board-adopted measures of productivity. The VTA Board adopted a new Bus Service Operating Plan at its August 30, 2007 meeting. VTA implemented the service changes in January 2008.

Bus Rapid Transit (BRT) Strategic Plan

VTA is developing an integrated Bus Rapid Transit (BRT) network linking activity centers throughout the county. The BRT Strategic Plan studied candidate BRT corridors identified in VTA's long-range plan, Valley Transportation Plan 2030 and the Comprehensive Operations Analysis (COA). The goals of the BRT Strategic Plan are to 1) establish a brand identity for VTA's future network of BRT services; 2) evaluate the feasibility and effectiveness of developing BRT facilities in the candidate corridors, and; 3) develop an action plan for implementation in each corridor. Recommendations from this study will include unique vehicle specifications for the new service(s).

Express Bus Study

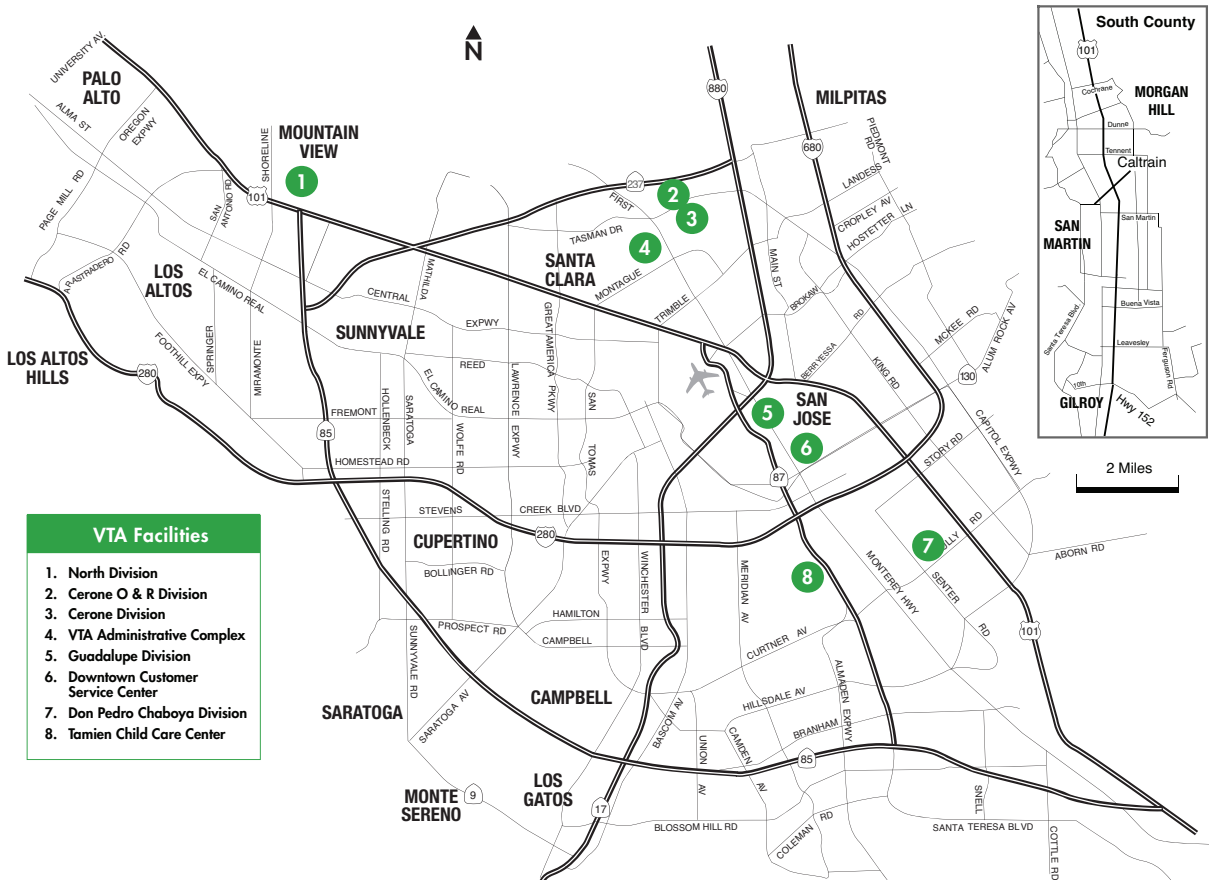
Capitalizing on a number of other studies including the BRT Strategic Plan, 2007 Comprehensive Operations Analysis (COA) and the upcoming Silicon Valley Congestion Pricing (High Occupancy Toll, HOT, lane network) Plan, VTA's Express Bus Study (also known as the Highway-Based BRT Alternatives Analysis) will evaluate the system of express buses together with the market potential to determine the business case for providing highway-based bus services in each corridor. The study is designed to engage all the players in providing commuter bus services in the Valley including employers and business associations. The result will be a product tailored specifically to this market possibly including unique vehicles.

4.3 Existing Facilities and Fleet

Facilities

Figure B-10 displays map of VTA facilities.

Figure B-10. Map of VTA Facilities



Buses are operated and maintained from the following three operating divisions and an Overhaul and Repair (O&R) facility:

Cerone Bus Operating Division and O&R Facility (North San Jose) - VTA's Cerone facility includes the Cerone Bus Operating Division (Transportation and Minor Maintenance), the O&R Division and the Distribution Center. The Cerone facility occupies 57.5 acres. VTA also owns additional property to the south of the Cerone facility. Cerone Minor Maintenance currently serves as a base for operations, fueling (diesel only), servicing, detailing, running repair, and preventive maintenance for up to 180 coaches. The O&R facility provides a centralized major maintenance program for the entire VTA bus fleet, including paint and body repair, upholstery, farebox repair, transmission and small component rebuild, engine overhaul, and the heavy repair and maintenance associated with major component removal. The Distribution Center is responsible for the distribution of parts to support all bus operating divisions. This operating division includes hydrogen fueling station and maintenance bays for Zero Emission Buses but currently does not have gasoline facilities although plans are underway to add gas to Cerone. The O&R facility was expanded to accommodate articulated buses. This division is also responsible for VTA's fleet of inactive buses.

Don Pedro Chaboya Bus Operating Division (South San Jose) - Chaboya is VTA's largest capacity bus operations and maintenance facility, with the capacity to maintain up to 210 buses. The facility occupies approximately 18.9 acres and includes a maintenance shop, fueling facility, two bus washers, transit operations, bus operator training and a Maintenance Training and facility maintenance building. There is also steam cleaning equipment and a water treatment plant to treat wastewater from steam cleaning operations. The division is equipped with a fueling facility for both diesel and gasoline vehicles. It is proposed to modify the facility to handle 60' articulated buses in the future.

North Bus Operating Division (Mountain View) – The North Division, the smallest of VTA's operating facilities at 16.9 acres, currently serves as a base for operations, fueling, servicing, detailing, running repair, and preventive maintenance operation of up to 150 buses, including 40 New Flyer 60-foot articulated buses. The division is equipped with a fueling facility for both diesel and gasoline vehicles. The facility also has been equipped with a fueling facility that can handle biodiesel.

Bus Fleet and Equipment

VTA currently has an active fleet of 420 powered buses (40 are 60-foot articulated buses), including 375 diesel buses and 45 gasoline-powered buses. At the present time 231 of these buses are low floor, and all future bus purchases will be low-floor. Figure B-11 outlines the current fleet.

Figure B-11. Special Service Sub-Fleets (FY10)

Quantity	Type	Description
3	Fuel cell buses	Operate as extra service and are not part of the active bus fleet
19	BRT 522	Specially wrapped 40' and 60' articulated buses
35	Route 22	60' Articulated buses
4	Airport Service	Luggage Carrier Equipped 35' buses, no farebox
18	35' Buses	for restricted service application
45	Community Buses	25 passenger cutaway bus as follows:
4	Downtown Area Shuttle Service (DASH)	Special wrapped small cutaway bus no farebox
41	General Community Buses	

All buses meet the accessibility requirements of the Americans with Disabilities Act (ADA), accom and the standards mandated by the Federal Clean Air Act (CAA) and the California Air Resources Board (CARB). New vehicle models must proceed through the Federal Transit Administration (FTA) First Article Bus Durability Tests Program in order for procurements to qualify for federal funding participation. The age of VTA's buses in the active fleet range from one year old (<30' buses only) to over 10 years old with an average age of 7.12 years. Buses in the active fleet operate an average of 44,000 scheduled miles annually. The spare ratio for the fleet reflects these specialized sub-fleets. Standard bus retirement age is 12 years.

4.4 Service Types

Local Bus

As described in Figures B-6 and B-7, core and local service comprises the bulk of VTA's transit network. Core service operates on major arterials between important locations within the county where many people wish to travel. Local service provides feeder connecting service for shorter medium-distance trips.

Line 22 Buses

Line 22 is VTA's high-capacity local route. To this end, VTA purchased 60' articulated diesel buses to cover this service. Thirty five (35) diesel articulated buses are assigned to this route. It works in conjunction with the Rapid 522 discussed as Bus Rapid Transit (BRT) later in this section.

COA

The COA is described under studies earlier in this report. This section sheds some light on the impact the COA had on the bus system. The data analysis phase of the COA also included an in-depth examination of VTA's existing transit operations and performance. It revealed that a select few lines within VTA's 70-plus local and express routes were carrying the vast majority of riders. While these lines tend to perform well, the vast majority of VTA services are underused contributing to the overall farebox recovery rate of just under 14 percent. VTA Board policy states that the system should achieve a target farebox recovery rate of between 20 and 25 percent.

The Plan intends that a revised bus transit network will be cost neutral. In other words, while reductions may vary in some areas, overall system service levels will remain the same. The goal is to increase ridership and improve farebox recovery through more efficient use and distribution of the equivalent resources. Through measures such as eliminating or consolidating unproductive route segments, the proposal generates resource savings. These savings were then reinvested into the areas of the system that are most productive and offer the best opportunities for ridership growth.

Based on the Board-adopted criteria for managing VTA services, a number of routes were identified for service adjustments or corrective action. Actions to correct underutilized service include marketing activities, route modifications, reducing frequency and eliminating routes. Considerations are made relative to financial contributions from external entities, Title VI and Lifeline services when developing a recommendation for service reductions. While some minor changes (e.g. deleting individual unproductive trips) can improve route performance, the Comprehensive Operations Analysis (COA) includes the service evaluation process to develop a total package of recommendations that staff will submit to the Board of Directors for implementation. When VTA eliminates service, those resources are reallocated to supplement current or create new services.

Service Design Guidelines for Local Bus

Local bus service typically deploys standard 40-foot coaches. If demand warrants, 60-foot articulated buses may be deployed. Most local buses are low-floor design for easier and quicker boarding. Typically, local buses use one of two types of propulsion systems: (i) Internal Combustion Engines (ICE—usually diesel or gasoline); and (ii) hybrid electric that allows for regenerative braking and improved fuel efficiencies and reduced emissions. Some operators, including VTA, recently deployed vehicles with fuel cells (typically hydrogen-fueled). Most VTA buses have diesel internal combustion engines. VTA has also rolled out three zero emission, hydrogen fuel cell buses but they are not in standard circulation. Local bus branding matches standard VTA livery, and vehicles comply with VTA bicycle policy. Figure B-12 shows the Service Design Guideline's recommended characteristics for all local bus services.

Figure B-12. Recommended VTA Local Bus Characteristics

Vehicle Characteristic	40-Foot Standard	60-Foot Articulated
Floor Height	Low-floor (14"-15")	Low-floor (14"-15")
Seating Capacity	~ 40	~ 60
Seating + Standing Capacity	50–60	80–90
Minimum # of Doors	2	3
Propulsion System	ICE/Hybrid	ICE/Hybrid
Branding	Matching standard VTA livery	Matching standard VTA livery
Bicycle Racks	Compliance with VTA Bicycle Policy required	Compliance with VTA Bicycle Policy required

Community Bus/Shuttle

VTA's Community Bus service is planned to meet the needs of individual communities and neighborhoods, improve general circulation within a local area and provide access to arterial bus routes, light rail or transit centers. Community Bus service is typically deployed in lower-density residential developments, central business districts, and to provide connections amongst housing, schools, shopping malls, employment centers, and recreational areas. It is provided in areas not physically conducive to operating standard bus service or exhibiting higher ridership demand.

As part of the opening of the Vasona light rail extension in October 2005, VTA introduced Community Bus Lines 48 and 49 to connect the Winchester Light Rail Station with Campbell and downtown Los Gatos. They proved to be very popular, and VTA decided to implement more of these services throughout the county. The Comprehensive Operations Analysis (COA), a system wide review of all VTA bus services, completed in 2007 investigated market opportunities to expand the program into other areas in the county. Eleven Community Bus routes were implemented in January 2008 as recommended by the COA. VTA currently has 19 community bus routes that operate throughout the county.

VTA service planning staff works closely with cities and communities to design the Community Bus routes and schedules. A collaborative planning, outreach and community involvement process is conducted. Local stakeholders work with VTA staff over 2 to 3 meetings to develop the service. It is then reviewed in public meeting sessions and a final plan is submitted to the VTA Board for adoption and implementation.

The service uses smaller vehicles with a distinctive paint scheme. VTA's community buses are 28 feet long, seat 25 and accommodate 10 to 12 standees. At the present time VTA has 45 Community Buses in the active fleet. Of these 45 buses, 4 are specially painted to operate exclusively on the DASH service. These buses are gasoline vehicles of a high-floor design, which requires use of a lift using a separate door located just behind the front door. The buses are equipped with VTA's Advanced Communication System, automatic passenger counters, automated stop annunciations and onboard security cameras. VTA's plan is to procure future community buses that are of low floor, hybrid design. The market for a vehicle meeting these specifications is relatively new and continues to emerge.

VTA's Marketing Department developed a comprehensive marketing and branding program to support the launch of the Community Bus Program. The branding addresses the overall Community Bus design and identity that will be displayed on vehicles, signage, timeguides, system map and promotional materials. One overall branding scheme will be used for all routes and vehicles in this program. The related market

ing program promotional efforts include newspaper and radio advertising, VTA website information, direct mailings, community and employer outreach, press releases, and other activities. Also, local community/city generated promotion of the service is a key component of the marketing effort.

Lower community bus fares were introduced with the service. Single ride fares were $1 for adults and $0.50 for youth, seniors and people with disabilities. In October 2009, fares increased to $1.25 for adults and $0.75 for youth, seniors and people with disabilities. Regular VTA day passes and monthly passes are also valid fare. Some routes operate free if a particular city or community group subsidizes the service equaling at least a 25 percent farebox recovery for that route. In some cases, the subsidy level is higher, depending on the desired service levels and particular funding arrangements negotiated for each route.

DASH

VTA operates the free Downtown Area Shuttle Service (DASH) in San Jose. To accommodate this service, VTA has painted four Community Buses with a specialized DASH logo. These buses are not equipped with fareboxes and thus can only be used for this service. This service is funded by the City of San Jose and The Air District.

Airport

VTA operates a free shuttle service to serve the Norman Mineta Airport, Metro Airport Light Rail Station and the Santa Clara Caltrain station, and is partially funded by te City of San Jose. These buses are equipped with luggage racks and special roof-mounted airport gate sensors and do not have fareboxes. Thus these buses can only operate on this service.

Service Design Guidelines for Community Bus

Community Buses typically range in length from 20 to 30 feet, with varying seating capacities and typically do not permit standing. The vehicles deployed for Community Bus service are propelled by gas, although hybrid electric or fuel cell units are becoming more commonplace. In 2006, VTA ordered 45 new Community Buses to add to the four ordered in 2004. The buses are 28-foot long gas-fueled vehicles with seating capacity for 25 passengers and space for two wheelchair riders. Community Bus vehicles are specially branded to reflect the particular community or area served. Recommended VTA Community Bus characteristics as outlined in the Service Design Guidelines are shown in Figure B-13. VTA plans to maintain a fleet of about 50 community bus vehicles throughout the 10-year period this plan covers.

Figure B-13. Recommended VTA Community Bus Characteristics

Vehicle Characteristic	Recommended Characteristic
Floor Height	Normal (equipped with ADA-compliant lift)[a]
Minimum Number of Doors	1
Vehicle Type	28' Shuttle
Propulsion System	Gas-powered with potential for alternative fuels
Seating Capacity	25
Seating + Standing	Capacity 37 (includes 2 wheelchair slots)
Branding	Specialized to distinguish services
Bicycle Racks	Buses will be equipped to accommodate bicycle racks

[a] *In the future VTA will pursue low-floor fleet.*

Express Bus

The Service Design Guidelines define Express Bus service as four different types of service:

- Limited Stop: Long routes operating during weekday peak commute periods and through major corridors, generally arterials and expressways serving major transfer points, as well as commute origin and destination pairs.
- Peak Express: Long distance commute-oriented lines that usually traverse over 20 miles. This route serves a maximum of three Park & Ride lots with more than 50 percent of the trip being shall be on freeways and/or expressways.
- Full-Day Express: Similar to peak Express Bus routes except that service is provided all-day in both directions.
- Regional Express: Provides inter-county long distance service which is designed for longer multi-purpose trips. Supplements the local bus and rail networks.

Express Bus Study

The Express Bus Study (or Highway-Based BRT Alternatives Analysis) began in Feburary 2009. The Study may provide recommendation for changes to any aspect of VTA's express bus system. These changes are to be determined through the process of the study.

Service Design Guidelines for Express Bus

Standard 40-foot coaches (similar to buses used for local service) and 45-foot commuter coach style buses (similar to Greyhound) may be deployed for express services. Currently buses used are the same 40-foot coaches as local service. While capacity is nearly the same for either standard or commuter coaches, commuter coaches shall be deployed on relatively long routes so that every passenger has a comfortable seat for long trips. Figure B-14 shows the Service Design Guideline's recommended express bus vehicle characteristics.

Figure B-14. Recommended VTA Express Bus Characteristics

Vehicle Characteristics	40-Foot Standard	45-Foot Commuter Coach
Seating Capacity	35–44	42
Seating + Standing Capacity	50–60	42
Minimum # of Doors	2	1
Style	Conventional	Conventional
Branding	Conventional VTA	Conventional VTA
Bicycle Racks	Compliance with VTA Bicycle Policy required	
Application Limited Stop and shorter express routes Longer and Regional Express Bus routes		

Bus Rapid Transit (BRT)

Bus Rapid Transit (BRT) is defined in the Service Design Guidelines (SDG) as a means to provide high quality rapid transit service with rubber-tire vehicles. The SDG describes two types of BRT service, BRT 1 and BRT 2, which are distinguished by their capital and infrastructure requirements.

- BRT 1: is a premium level service, with higher operating speeds, greater reliability, and fewer stops than local bus service. VTA's current Rapid 522 is an example of BRT 1 type service.
- BRT 2: requires considerably higher capital investment than BRT 1 due to specialized or dedicated running ways, related infrastructure, and passing lanes at stations to allow vehicles the flexibility to bypass stations. VTA is planning BRT 2 service along the Santa Clara/Alum Rock and Stevens Creek corridors, which will have a dedicated running way along parts of Alum Rock Avenue.

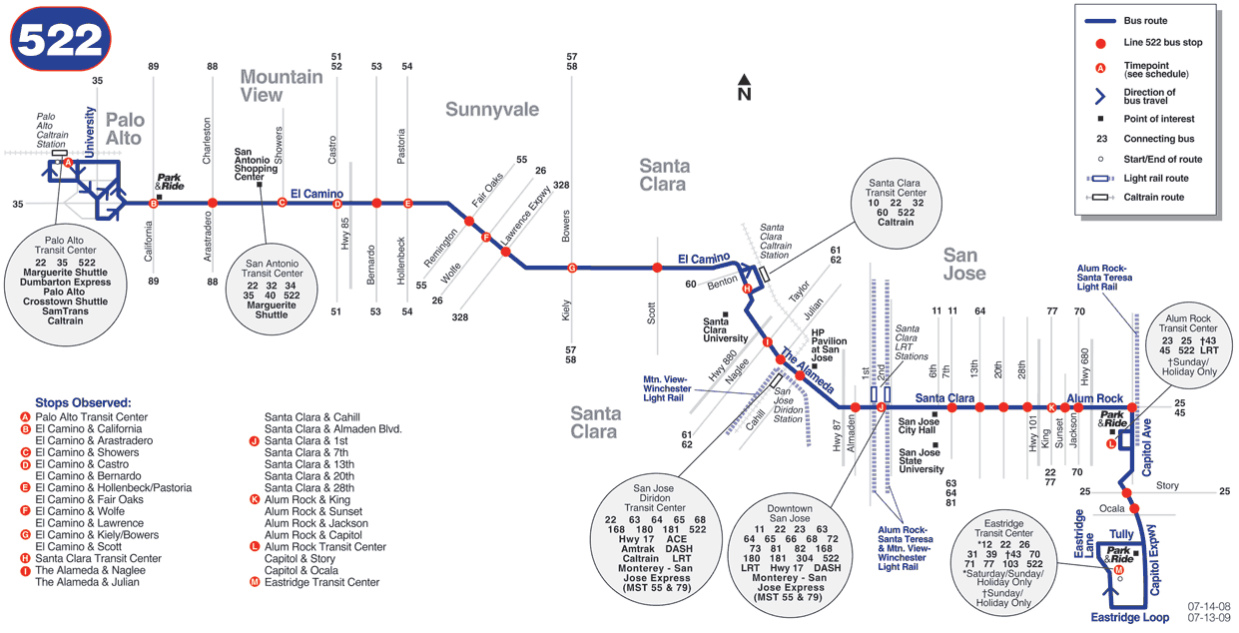
522

VTA operates BRT service on the 522 using 19 specially-wrapped buses accompanying the Local 22 high-capacity bus route described earlier in this section. Fourteen of these buses are 40' diesel buses and five are 60' articulated diesel buses. Due to their branding, these buses can only operate on this service.

VTA Rapid Line 522 replaced Limited Stop Line 300 and supplements Line 22 service in the El Camino Real corridor. It provides faster, more frequent, and more direct service between Eastridge and the Palo Alto Transit Center. The service combines state-of-the-art technology and service enhancements. In comparison to the Line 22 schedules, travel times have been reduced about 25 percent. This Line 522 is VTA's first Rapid service and a precursor to full BRT implementation in this corridor in approximately 2013 per the BRT Strategic Plan.

Line 522, shown in Figure B-15, was implemented in July 2005. Bus Signal Priority, limited stops, frequent service, headway-based schedules, queue-jump lanes and a new service image were key elements of the implementation.

Figure B-15. VTA Rapid 522



The project features included "Rapid" Branding. The new Line 522 service is known as Rapid service. Marketing and outreach efforts were implemented to promote the faster trips this service provides. Vehicle wraps, bus stop signage, time guides and collateral material presented the new image and enhance the service delivery.

VTA's Short Range Transit Plan (SRTP) identifies funds for design and construction of BRT lines. Future improvements could include permanent rail-like stations, more intersections with Bus Signal Priority, real-time station display information, new higher-capacity vehicles, exclusive bus lanes and off-vehicle fare payment as outlined in the BRT Strategic Plan.

BRT Strategic Plan

At this time, the BRT Strategic Plan proposes implementation of BRT improvements on El Camino (22/522) in 2013 and Steven's Creek (23) in 2017. Figure B-16 displays the vehicle requirements of BRT implementation.

Figure B-16. BRT Planned Vehicle Requirements and Roundtrip Trip Times

Route	Service Type	One-way Length	Peak Headway	Base Headway	Owl Headway	Assumed Speed	Roundtrip Time (w/Layover)	Peak # of Vehicles	Existing Peak
22	Local	24.6	15	15	60	12.5	272	19	25
23	Local	9.9	20	20	0	11	124	7	17
522	BRT 2	24.8	10	10	0	19	180	19	16
523	BRT 2	15.7	10	10	0	16.5	131	14	
							Total	**59**	**58**

Service Design Guidelines for BRT

Standard 40-foot coaches are typically the initial choice to provide BRT 1 services due to their smaller capacities, lower operating costs and quicker acceleration. Articulated 60-foot buses will be deployed for BRT 2 implementation per the BRT Strategic Plan. Usually, BRT vehicles have low-floors and multiple wide doors for easier and quicker boarding. Doors may be used for both alighting and boarding due to the service's honor-based fare system, with roaming fare inspectors, similar to our light rail system. BRT vehicles may have a conventional boxy design or stylized design with rounded curves and an aerodynamic front, mimicking the contours of a rail transit car. BRT vehicles are brand-distinguished from other services with unique colors, designs or bus wraps. Low-emission BRT buses are often deployed to further differentiate service and emphasize the unique services and time saving and environmental benefits resulting from BRT service. Vehicles are designed for comfort and a smooth ride. Interiors are characterized by high-quality amenities, such as comfortable seats, better lighting and real-time arrival and information displays.

Typically, BRT vehicles possess one of four types of propulsion systems:

- Diesel Internal Combustion Engines (ICE)
- Electric catenary
- Dual mode engines (having both a combustion engine — diesel, Compressed Natural Gas (CNG), or gas turbine — and an electric motor)
- Hybrid electric (having on-board energy capabilities that can be diesel, CNG, or gas turbine, allowing buses to operate at maximum fuel efficiency and minimum emissions)

In addition, propulsion system fuel cells (typically hydrogen) are being tested by some operators including VTA. Currently, VTA deploys low-floor conventional 40-foot standard and 60-foot articulated buses for its BRT services with diesel internal combustion engines. BRT 2 service involves the procurement of special buses, while BRT 1 typically uses conventional buses. Figure B-17 displays the Service Design Guideline's recommendations for BRT vehicle characteristics.

Figure B-17. Recommended VTA BRT Vehicle Characteristics

Vehicle Characteristics	40-Foot Standard	60-Foot Articulated
Seating Capacity	35–44	31–65
Seating + Standing Capacity	50–60	80–90
Minimum # of Doors	2	3
Floor Height	Low-floor (14"–15")	
Boarding/Alighting	Doors used for boarding or alighting, not both	
Bicycle Racks	Compliance with VTA Bicycle Policy required	
Style	Conventional (Shorter-term); Stylized (Longer-term)	
Propulsion System	Currently Diesel, (Hybrid in the Future)	
On-Board Intelligent Transportation Systems (ITS)	Automatic Vehicle Location (AVL), Automatic Passenger Counters (APC), Automatic Mobile Data Terminal (AMDT), and audio/visual next station announcement	
Branding	Specialized wraps and designs (see Section 12 Specialized Branding/Marketing)	
ADA Compliance	Vehicles shall be fully compliant with ADA requirements, including amenities such as lifts, low-floor vehicles, and wheelchair storage areas.	

Source: Characteristics of Bus Rapid Transit for Decision-Making, Office of Research, Demonstration and Innovation, Federal Transit Administration, August 2004.

Figure B-18. BRT Vehicle Design

4.5 Bus Performance Indicators

Figure B-19 displays maintenance and other performance indicators relating to bus service.

Figure B-19. Bus Performance Indicators

BUS	FY 2006	FY 2007	FY 2008	FY 2009	FY 09 Met Goal?
Total Annual Boardings	30,938,044	31,646,555	33,103,495	34,510,273	YES
Percent Annual Change in Boardings	2.1%	2.3%	4.6%	4.2%	-
Average Weekday Boardings	99,966	102,123	106,673	111,820	YES
Boardings per Revenue Hour	25.0	25.2	25.8	27.0	-
Percent of Scheduled Service Operated	99.33%	99.44%	99.61%	99.69%	YES
Miles Between Major Mechanical Schedule Loss	5,394	5,590	7,520	8,289	YES
Miles Between Chargeable Accidents	169,725	122,260	88,190	92,503*	No
On-time Performance	90.3%	89.7%	90.1%	88.6%	No
Scheduled Total Hours	1,346,841	1,364,903	1,389,344	1,379,428	-
Scheduled Revenue Hours	1,236,301	1,254,464	1,282,419	1,277,905	-
Scheduled Total Miles	18,499,971	18,705,711	18,784,524	18,500,655	-
Scheduled Revenue Miles	15,678,367	15,882,356	16,013,930	15,849,345	-
Total Bus Operating Cost	$193,456,328	$199,010,149	$199,074,243	$206,106,400*	-
Operating Cost per Revenue Hour	$156.48	$158.64	$155.23	$161.28*	
Operating Cost per Boarding	$6.25	$6.29	$6.01	$5.97*	

** preliminary*

5. Light Rail System

5.1 Overview

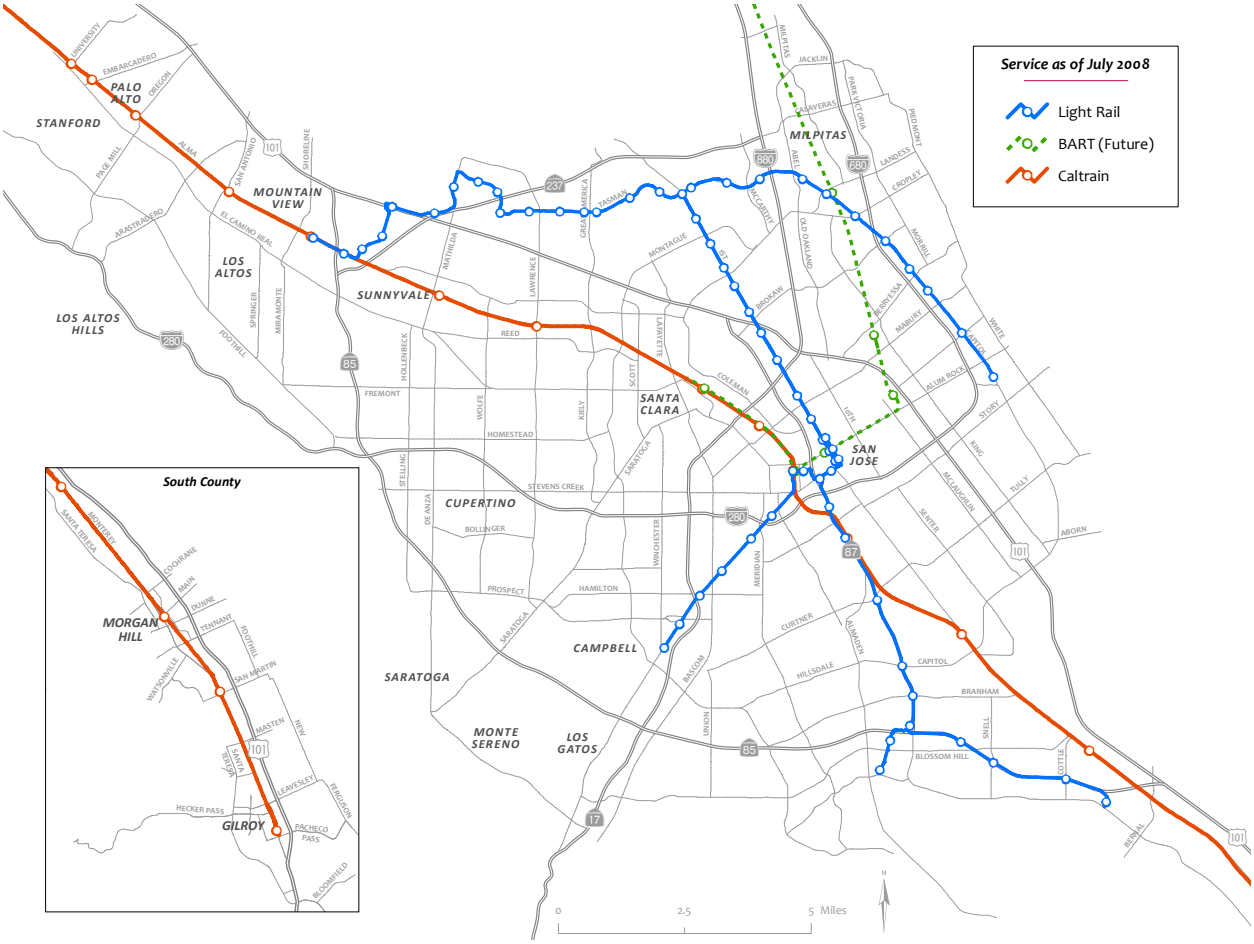
VTA operates nearly 42 miles of light rail service and serves 62 stations. Light rail service is provided on three routes (Figure B-20):

Alum Rock–Santa Teresa Line operates between the Alum Rock Station in East San Jose and the Santa Teresa Station in South San Jose. It is approximately 27 miles long serving 38 stations.

Mountain View–Winchester Line operates between the downtown Mountain View multimodal station and Winchester Station in Campbell. It is approximately 22 miles long serving 37 stations including the segment jointly served by the Alum Rock-Santa Teresa and Mountain View-Winchester Lines from the Convention Center Station in downtown San Jose to Tasman Station in North San Jose.

Ohlone/Chynoweth–Almaden Shuttle operates between the Ohlone/Chynoweth Station and Almaden Station in Almaden Valley, South San Jose. This line is slightly over one mile in length serving 3 stations.

Figure B-20. Lightrail System Map



Light Rail Service – The Alum Rock-Santa Teresa line operates 22 hours a day, seven days a week. Weekday service operates on a 15-minute headway from 5:00 a.m. to 7:00 p.m., and 30- to 60-minute headways during early morning, late evening periods, and midday. Weekend and holiday service operates on a 15-minute headway during most of the day except in the early mornings and late evenings when headways are 30 to 60 minutes.

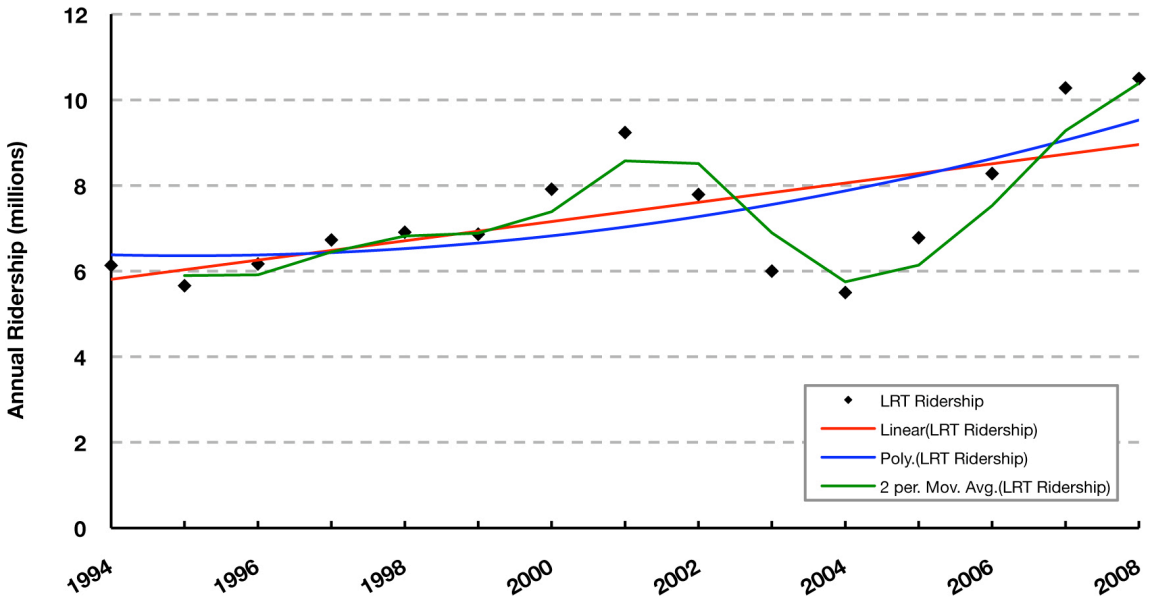
The Mountain View-Winchester Line operates approximately 19 hours a day on weekdays and 18 hours on weekends. Weekday service operates on a 15-minute headway during the peak commute hours and 30-minute service the rest of the day except late evenings when headways are 60 minutes. Weekend and holiday service operates on a 15-minute headway during most of the day except in the early mornings and late evenings when headways are 30 to 60 minutes.

From the San Jose Convention Center to Tasman Station, peak-hour light-rail frequency is 7.5 minutes because two lines (Alum Rock–Santa Teresa and Mountain View-Winchester) operate on this section together.

5.2 Light Rail Ridership

As shown in Figure B-21, Light Rail ridership has grown. Figure B-22 displays the details on the system.

Figure B-21. Light Rail Ridership in Millions (with Trendlines)



Trendline key:
- *Polynomial – ex: y = -1E-12x6 + 6E-10x5 - 1E-07x4 + 9E-06x3 - 0.0004x2 + 0.0102x - 0.1289*
- *2-year moving average – just evening out the curve*
- *Linear – ex: y = a + bx*

Figure B-22. Current Light Rail System Data, October 2009

Demographic Information	
Santa Clara County Population	1,857,621[A]
Urbanized Area (UZA)	326 sq. miles
Hours of Operation:	
Alum Rock-Santa Teresa	4:30am - 1:30am
Moutain View-Winchester	5 am -12 midnight

Facilities and Transit Way Mileages			
	Alum Rock-Santa Teresa[B]	Mtn. View-Winchester	Total (unique stations)
Total Number of Stations	38	38	62
Length of Line	26.6 miles	22.5 miles	42.2 miles
Track Miles[C]	52.0 miles	34.5 miles	79.6 miles

Park and Ride Lots		
	No. of Lots	Parking Spaces
Light Rail	21	6,471
Caltrain lots near Light Rail[D]	4	1,337

Vehicle/Cars	
Light Rail	99
Historic Trolley	4

Fare Information			
	Single Ride	Day Pass	Monthly Pass
Senior/ Disabled	$1.00	$2.50	$25.00
Youth	$1.75	$5.00	$45.00
Adult	$2.00	$6.00	$70.00

Service Frequency				
	Commute Hour	Midday	Night	Sat./Sun.
Every	15 mins.	15-30 mins.	15-60 mins.	15-30 mins.

[A] *Source: California Department of Finance*
[B] *Includes the Almaden Line*
[C] *4.8 miles of the rail track is a single track*
[D] *Tamien, San Jose Diridon, and two in Mountain View*

System Line Openings	
Segment Name	Opening Date
Old Ironsides to Younger St.	Dec. 11, 1987
Younger St. to Downtown San Jose	Jun. 17, 1988
Downtown San Jose to Tamien	Aug. 17, 1990
Tamien to Santa Teresa & Almaden line	Apr. 25, 1991
Mtn. View to Old Ironsides & Baypointe	Dec. 20, 1999
Baypointe to I-880 Milpitas	May 17, 2001
I-880 Milpitas to Alum Rock	Jun. 24, 2004
Convention Center to SJ Diridon	Aug. 1, 2005
SJ Diridon to Winchester	Oct. 1, 2005

Distance Between Key Segments					
	Distance	Cumulative		Distance	Cumulative
Alum Rock-Santa Teresa	4.5	4.5	Baypointe-G. Mall	2.8	20.2
Santa. Teresa-Ohlone	4.2	8.7	Great Mall-Alum Rock	5.3	25.5
Tamien-Sta. Clara	2.2	10.9	Almaden-Ohlone	1.1	1.1
Santa. Clara-Civic	1.4	12.3	Moutain View-Lockheed	4.5	4.5
Civic-Metro	1.5	13.8	Lockheed-Baypointe	5.8	10.3
Metro-Baypointe	3.6	17.4	Convention Ctr-Winchester	5.3	15.6

Historical Data							
Fiscal Year	Peak Cars	Scheduled Train Total Hours	Revenue Hours	Scheduled Train		Ridership	Average Weekday Ridership
				Total Miles	Revenue Miles		
2009	54	143,533	136,519	2,216,957	2,105,555	10,754,161	34,305
2008	53	143,576	136,566	2,223,823	2,112,080	10,451,136	33,043
2007	53	143,816	136,380	2,220,230	2,105,819	10,278,460	32,567
2006	39	138,348	129,636	2,129,189	1,993,940	8,279,807	26,137
2005	34	114,663	107,060	1,774,543	1,647,376	6,780,431	21,436
2004	26	98,930	93,564	1,464,325	1,372,375	5,473,024	17,636
2003	29	106,416	102,050	1,567,594	1,498,685	6,052,519	19,772
2002	41	137,087	131,999	2,032,588	1,961,941	7,789,570	25,573
2001	41	136,483	130,461	1,986,763	1,925,908	9,237,074	30,383
2000	43	112,202	108,745	1,648,334	1,608,254	7,913,730	25,673
1999	33	88,800	85,480	1,359,589	1,334,084	6,862,705	22,579
1998	33	87,285	84,886	1,368,229	1,336,483	6,910,100	22,727
1997	32	84,909	82,479	1,339,564	1,305,182	6,728,392	22,006
1996	31	82,006	80,048	1,274,202	1,255,078	6,168,085	20,008
1995	32	78,630	76,184	1,198,107	1,173,052	5,659,319	18,138
1994	32	79,280	76,611	1,203,823	1,176,695	6,133,001	19,735
1993	36	85,419	83,058	1,283,621	1,264,231	6,245,699	20,339
1992	34	94,191	91,810	1,394,480	1,374,845	6,135,561	19,756
1991	16	67,424	62,134	890,617	803,984	4,001,142	12,569
1990	8	45,378	44,151	557,449	553,330	2,498,985	8,083
1989	8	42,665	41,628	538,799	535,440	2,118,710	7,630
1988	6	16,622	15,724	222,329	212,902	359,965	1,101

5.3 Historic Trolley

The Santa Clara Valley Transportation Authority (VTA) operates and maintains four restored trolleys. When in service, the cars run on light-rail tracks serving a 4.1-mile route through downtown San Jose.

Volunteers at the Trolley Barn have restored seven vintage cars. VTA maintains the following four trolleys:

- Car 1 ran in Sacramento from 1903 to 1906 and then ran in Santa Cruz from 1906 to 1923
- Car 73 ran in San Jose between 1912 and 1934
- Car 531 is from Melbourne, Australia
- Car 2001 is from Milan, Italy

Four trolley cars were restored through the efforts of the San Jose Trolley Corporation (a nonprofit organization) and modified to run on VTA's light rail system. Historic Trolley service previously operated between Younger Street and the San Jose Convention Center from early April to October, weather permitting, at a frequency of about every 45 minutes seven days a week and recently during weekends for the holiday season. VTA has suspended the operation of the historic trolleys due to financial constraints. SJ Trolley Corporation owns the four trolley cars.

5.4 Light Rail Fleet

In order to improve accessibility, VTA has transitioned to an entirely low-floor Light Rail Vehicle (LRV) fleet. VTA operates a fleet of 99 LRVs on the Alum Rock-Santa Teresa, Mountain View-Winchester and Ohlone/Chynoweth-Almaden Lines. Kinkisharyo International, LLC built these vehicles which were commissioned in 2002 and 2003. These vehicles have a life of 30 years. The LRV cars are electrically powered by 750 volts of direct current. They are bi-directional articulated, six-axle vehicles. Each vehicle seats 65 passengers and can accommodate up to 4 wheelchairs and 4 bicycles on a built-in rack plus 4 bicycles standing. Maximum operating capacity is 140-150 passengers per vehicle. Up to three vehicles can be coupled together.

With 99 Light Rail Vehicles, the VTA fleet is large in comparison with number of cars required for maximum service.

Assuming a spare vehicle requirement of 20 percent above the peak scheduled demand, the total operating VTA fleet should be (59) + [(.2)(59)] = 59 + 12 = 71 cars. With an actual on-site fleet of 100 Kinkisharyo light rail vehicles, this means that 29 more cars are on the property than are actually required to meet current peak needs. However, the actual revenue assignments are rotated through the entire fleet of 100, and are not restricted to a smaller subset of the fleet. While on any given day, some cars are being held in the shop for preventive maintenance (PM) work, and some may be held for parts, the entire fleet is used for purposes of rev

enue service. The revenue service mileage, therefore, is spread over a large number of cars.

VTA must maintain the entire fleet. While most car-builders specify preventive maintenance activities on either a time or a distance (mileage/kilometer) basis, there are also often provisions in maintenance practice, as at Sacramento, to bring cars in for PM work on the basis of time or mileage – whichever comes first. PM intervals at VTA are mileage based, suggesting that the average LRV in revenue service might be inspected fairly infrequently. It might be worthwhile evaluating this practice, as a time-based minimum might provide a better basis for scheduled maintenance purposes on a low-average-mileage system. VTA's results are good. The light rail 12-month rolling MDBF, or "Mean Distance Between in-service Failures," through November 2008 was 37,669. This standard measure of vehicle reliability is currently about twice the level of vehicle reliability at Sacramento Regional Transit, and many times higher than that at San Francisco MUNI, the Bay Area's other light rail operator.

Therefore, in looking at the level of staffing, it is not only the VTA's overall level of service, its productive output, that needs to be considered, but also the size of the "additional" fleet (apparently about 29 cars of the 100) that is being maintained. These additional cars definitely represent a burden on vehicle maintenance. They have to be inspected, cleaned and otherwise run through the shops. In addition, the shops and yard and parts inventory are sized for the larger fleet in order to support the existing level of service.

Earlier evaluations of staffing levels reflected lower peak vehicle requirements, determined light rail staffing was not optimal. Recent preliminary re-evaluation of staffing levels shows that the recent increase to 59 cars, as noted above, places the labor-power efficiency of VTA maintenance well within the range of light rail agency peer practice.

Service Design Guidelines

The Service Design Guidelines provide specific standards for each type of VTA service including vehicle characteristics. LRT systems in North America deploy a variety of electric catenary vehicles for service, with varying lengths, looks, and configurations. For LRT services operated by VTA, a standard 88.5-foot boxy articulated vehicle is deployed. The vehicles may be joined with up to two additional cars to form a three car train consist. All VTA LRT vehicles are low-floor and have four sets of doors on each side for both alighting and boarding. Fare is on a proof-of-purchase basis and no cash is exchanged on the vehicles.

Figure B-23. Typical LRT Vehicle Characteristics

Aspect	Recommended Characteristics
Vehicle Type	Bi-directional, articulated vehicles
Vehicle Length	Standard (88.5')
Floor Height	Low floor (14" above pavement)
Seating Capacity	~65 (single car consist)
Seating + Standing Capacity	150
Train Consist	Up to three cars
Boarding/Alighting	Doors used for boarding and alighting
Propulsion System	Overhead catenary (750 volts DC)
Branding	Matches standard VTA branding
Bicycle Racks	Vehicles accomodate bicycles inside their cars. Compliance with VTA Bicycle Policy required

5.5 Light Rail System Analysis

The Light Rail System Analysis, a study currently underway in 2008/2009, will provide a comprehensive evaluation of infrastructure and operations deficiencies of the existing light rail system and an evaluation of operational impacts and user benefits of the planned extensions and other capital improvements. The study will consist of these inter-relating components: market analysis, operations analysis and capital needs.

This Analysis will address a number of issues relating to the Fleet Management Plan. These include how many passengers on board constitutes a "crush load", the maximum peak hour service VTA plans for, and how many light rail cars can run through the downtown area. These questions may become important when VTA addresses load increases as a result of the BART extension for example.

5.6 Light Rail Operating and Maintenance Facility

Light rail vehicles (LRVs) are stored and maintained at the Guadalupe Light Rail Maintenance Facility near downtown San Jose. This facility is equipped and staffed to perform all operations and maintenance functions, including major vehicle overhaul, historic trolley maintenance and light rail operator and maintenance training.

The same facility is also home to the Way, Power and Signal Department which is responsible for preventive maintenance and repair of wayside facilities including Substations and overhead contact systems, light rail signals, tracks, stations and park & ride lots.

Aside from the operation of the light rail system, VTA's Operations and Control Center (OCC) is also located at this facility. The OCC is responsible for communication with all VTA revenue vehicles including LRVs and buses and response to emergencies.

The Guadalupe Maintenance Facility has been modified and expanded to store and maintain 100 LRVs. With the implementation of Alum Rock–Santa Teresa and Mountain View–Winchester Lines, VTA's fleet increased to 100 Light Rail Vehicles (LRVs). The facility was recently modified and expanded to provide space for the maintenance of the new low¬floor vehicles, additional areas for employees, material storage for the maintenance of additional trackway and a layover area for the Mountain-Winchester Line vehicles.

5.7 Light Rail Vehicle Maintenance

The Light Rail Vehicle Maintenance unit provides timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of light rail vehicles and service equipment. Components of the Light Rail Vehicle Maintenance Program are as follows:

a) Daily Inspection: After a light rail vehicle is returned from service at the end of each day, the following actions shall take place and work orders written if applicable:
- Interior Inspection/Walk-through
- Operator Defect Card Analyzed
- Visual Inspection of Undercarriage
- Interior/Exterior Cleaning
- Seat and Window Cleaning
- Graffiti Removal/Vandalism Repair

b) Preventive Maintenance: Regular maintenance is performed at prescheduled cycles using a direct scheduling method based on mileage to ensure optimal performance, efficiency, safety and reliability of assigned equipment to assist in providing improved services to transit customers. The direct scheduling method ensures that each light rail vehicle receives the number of preventive maintenance inspections as specified by the manufacturer. Preventive maintenance cycles shall be as follows:

Figure B-24. Light Rail Preventative Maintenance Cycles

PM Type	Inspection	Cycle (Every)	Within
Daily/Safety	Daily	Daily	
Minor	"A"	10,000 miles	-500/+1000 miles
Major	"B"	30,000 miles	-500/+1000 miles
Major	"C"	60,000 miles	-500/+1000 miles
Comp Change Out	"D"	120,000 miles	

c) Running Repair /Corrective Maintenance: Light Rail Vehicle Maintenance repairs items identified by operators during the daily operation of a LRV. The program completes these repairs without removing or withholding a vehicle from normal service. This happens either the day the operator reports a problem or as scheduled when parts are available. LRVs with running repair defects are routed to have the defects repaired or repairs scheduled.

d) Light Rail Vehicle Overhaul Program: The normal service life of VTA's light rail vehicle fleet is about 30 years. In order to achieve this efficiency, the manufacture, Kinkisharyo, has recommended scheduled overhauls in accordance to manufacturer and vendor specifications. VTA has established a 3-phased maintenance overhaul program involving major components of the LRV fleet. A brief description of each phase follows:

Overhaul I - Rebuild and overhaul of contactors and air system, including brake boxes and subcomponents consisting of mag valves, test fittings, pressure switches, sand valves, indicator switches, SAV and SEV valves, drain valves, air gauges, C-2 valves, air compressors, tappet valves, uncoupling valves, couplers, and pantograph collectors (120,000 miles or two years).

Overhaul II - Rebuild and overhaul of major components including: motor alternator, gearbox, traction motor, pantographs, coupler assembly, trucks and sub-assemblies, and axle bearing assembly (240,000 miles or four years).

Overhaul III - Rebuild and overhaul of the air conditioning system, car body repainting and furnishings, and potential replacement of major electronic components, roof resistors and PC boards (as needed, approx. every 7 to 10 years).

5.8 Way, Power & Signal Maintenance:

The Way, Power & Signal Maintenance unit of this section shall be responsible for the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of light rail right-of-way, rail system power, tracks, signals, station facilities and related equipment. Preventive maintenance is primarily time driven in accordance with system specific functions. Components of the Way, Power & Signal unit are described as follows:

a) Station and wayside maintenance: Station and wayside maintenance area shall be responsible for the maintenance and repair of light rail stations, terminal buildings, restrooms, park & ride lots, landscaping, fences, guardrails, station graffiti removal and other trackside areas.

b) Track maintenance area: Track maintenance area shall be responsible for the maintenance (including right-of-way weed eradication, vegetation control and graffiti removal), preventive maintenance, inspections, and servicing and repair of rail, switches, ties, roadbed and track systems.

c) Power maintenance area: The Power maintenance area shall be responsible for the maintenance (including trackside right-of-way tree trimming), preventive maintenance, inspections, repair and

servicing of light rail electric power systems including overhead, substations, lighting and other electrical systems.

d) Signal maintenance area: Signal maintenance area shall be responsible for the maintenance, preventive maintenance, inspections, repair and servicing of signal systems, crossing gates, fare machines, SCADA (Supervisory Control and Data Acquisition) control and station audio/video equipment.

e) Passenger Facilities Maintenance: The Passenger Facilities Maintenance unit of this section shall be responsible for the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of all VTA maintained passenger facilities, including bus stops. VTA has approximately 4,400 bus stops and 19 transit centers throughout the Santa Clara Valley. Bus stops and transit centers are inspected and serviced by VTA Passenger Facilities staff either daily, twice a week, once a week, or as needed depending on ridership and other factors. Services include but are not limited to the following: bench installation, painting, and repair, core drilling for poles at new bus stops, garbage collection, trash receptacle installation and relocation, graffiti abatement, litter removal, pressure washing, red curb painting, signage inspection, route updates, and sweeping services. Janitorial services for transit centers are provided daily through a Facilities Maintenance service contract with a vendor.

5.9 Light Rail Performance Indicators

Figure B-25. Light Rail Performance Indicators

LIGHT RAIL	FY 2006	FY 2007	FY 2008	FY 2009	FY 09 Met Goal?
Total Annual Boardings	8,279,807	10,278,460	10,451,136	10,754,161	YES
Percent Annual Change in Boardings	22.1%	24.1%	1.7%	2.9%	-
Average Weekday Boardings	26,137	32,567	33,043	34,305	YES
Boardings per Revenue Hour	63.9	75.4	76.5	78.8	
Percent of Scheduled Service Operated	99.94%	99.95%	99.96%	99.97%	YES
Miles Between Major Mechanical Schedule Loss	26,615	25,817	28,511	38,223	No
Miles Between Chargeable Accidents	2,129,189	2,220,230	444,765	1,108,479*	No
On-time Performance	92.0%	90.0%	87.4%	90.1%	No
Scheduled Total Train Hours	138,348	143,816	143,576	143,421	-
Scheduled Revenue Train Hours	129,636	136,380	136,566	136,407	-
Scheduled Total Train Miles	2,129,189	2,220,230	2,223,823	2,216,957	-
Scheduled Revenue Train Miles	1,993,940	2,105,819	2,112,080	2,105,555	-
Total Light Rail Operating Cost	$53,866,962	$55,935,496	$55,544,365	$51,526,600*	-
Operating Cost per Revenue Train Hour	$415.52	$410.14	$406.72	$377.74*	
Operating Cost per Boarding	$6.51	$5.44	$5.31	$4.79*	

** preliminary*

6. Paratransit

In order to contain and reduce paratransit operating costs, VTA has initiated a program to directly fund and provide certain vehicles and facilities to its contracted paratransit vendor. VTA does not directly provide paratransit services, but contracts with Outreach and Escort, Inc., a local non-profit organization, to provide paratransit broker services. Outreach in turn contracts for services with taxi, sedan and accessible van companies to provide the daily paratransit service.

6.1 Paratransit Fleet

Currently 263 sedans and accessible vans are used to provide VTA's ADA paratransit service. Outreach also contracts with local taxi vendors to provide taxi-based paratransit services. These taxis are not included in our paratransit fleet procurement plan, as they are not used exclusively for VTA operations. Outreach contracts with a private transit provider to operate the sedans and accessible vans. In addition to vehicles provided by Outreach, VTA acquires and provides vehicles through federal capital grant programs to be operated by the private provider. Figure B-26 shows the current Paratransit Fleet Inventory as well as the replacement plan.

Figure B-26. Paratransit Fleet Plan

					FY2010 FLEET		FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Year	**Make**	**Model**	**Type**	**In Service Date**	**VTA**	**Outreach**									
2004	Ford	Tranzporter	Modified Van			9									
2006	Chevrolet	Uplander	Minivan	Jan. 07 (FY08)	99	4	100				100				100
2006	Toyota	Prius	SULEV Sedan			18									
2007	Chevrolet	Uplander	Minivan			10									
2007	Toyota	Prius	SULEV Sedan	Jan. 07 (FY08)	59	3		60					60		
2007	ElDorado	Aerotech	Type 2 Cutaway	Jan. 07 (FY08)	13					13					
2008	Ford	Tranzporter	Modified Van			14									
2010	Toyota	Prius	SULEV Sedan	Nov. 09 (FY10)	23						23				
2010	ElDorado	Aerolite	Type 1b Cutaway	On Order		11									
			Minivan	Expansion				0				19		26	
			Sedan	Expansion								23			
			Cutaway	Expansion						21					
OUTREACH OWNED						**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**	**69**
VTA OWNED					**194**	**194**	**194**	**194**	**213**	**215**	**234**	**238**	**257**	**264**	**283**
TOTAL FLEET						**263**	**263**	**263**	**282**	**303**	**303**	**326**	**326**	**352**	**352**

6.2 Paratransit Performance

Figure B-27 outlines performance indicators for the paratransit system.

Figure B-27. Paratransit Performance Indicators

PARATRANSIT	FY 2006	FY 2007	FY 2008	FYTD 2009	Met Goal?	FYTD 2009
Passengers per Revenue Hour	2.31	2.31	2.36	**2.39**	**YES**	>= 2.30
Net Cost per Passenger	$25.52	$25.39	$25.29	**$24.84**	**YES**	<= $27.00

7. Fleet Plan Assumptions and Future Inputs

7.1 Ridership Growth Projections and Fleet Needs

This section predicts fleet requirements over the next 15 years for bus, light rail and paratransit service. While light rail and paratransit are relatively straight forward, bus fleet projections can be a bit more complicated.

Bus

The methodology for predicting bus fleet requirements in the future given changes in the system such as BRT and the BART extension relies on VTA's travel demand forecast model and a subsequent equilibration model by Connetics. The limitations of this model are similar to those of travel demand forecast models. Since it models the entire bus system, it may not take into consideration precise existing bus ridership maximums, route constraints that might dictate specific vehicle requirements, and historical ridership growth trends.

VTA recently completed its Bus Rapid Transit (BRT) Strategic Plan. This plan included a detailed fleet requirements projection up to the full implementation of the BRT system in 2017. This BRT projection does not include growth associated with the opening of BART that same year. The BRT Strategic Plan prediction finds no growth in fleet requirements compared with today as a result of changes in passenger demand. It predicts that the fleet requirements in response to demand will remain the same as number of buses are today. For this reason, this plan applies the incremental increase of the BART Connetics projections to the BRT Strategic Plan projections as described in the table below.

BART Projections Methodology

The Connetics methodology for the BART extension relies on projections from VTA's Travel Demand Model. It is consistent with other documents currently being prepared for submittal to the Federal Transit Administration (FTA) in support of VTA's request for New Starts funding for extension of the BART system under the Silicon Valley Rapid Transit program. In order to maintain a fair and consistent basis for comparison of projects competing for funding on a nationwide level, FTA specifies the methodologies that must be applied for estimation of ridership, vehicle requirements and operating costs.

In this methodology, future bus ridership by route for the horizon year is taken directly from the output of the regional Travel Demand Model (TDM). A single cycle of equilibration is performed, in which headways are adjusted for routes that are projected to exceed capacity or have unused capacity, to better align service with demand patterns. The revised service patterns are then fed back into a second run of the TDM to arrive at final ridership levels and verify the results of the equilibration.

This methodology has been used to prepare VTA's estimates of future service levels, operating costs, and ridership in support of the New Starts grant application process. The results of this effort are therefore consistent with operating statistics reported in other documents submitted to FTA for New Starts.

Figure B-28. BART/Connectics Projections

	Connetics Projections					BRT Strategic Plan	Connetics change applied to BRT SP Projections		
	18 NP	18 BART	30 BART	18 BART Change	30 BART Change	2017	18 BART	24 BART (midpt)	30 BART
Total	**408**	**414**	**432**	**6**	**24**	**424**	**430**	**440**	**448**
Community Bus	50	52	33	2	-17	50	52	43	33
Standard Bus (40' and 35')	271	269	226	-2	-45	313	311	290	268
All Non-Articulated	321	321	259	0	-62	363	363	333	301
Articulated	87	93	173	6	86	61	67	107	147

Light Rail

Light rail passenger demand is likely to increase significantly over the Fleet Management Plan time period. The current system also has significant capacity for growth before an increase in service will be necessary. In addition, the current fleet of 100 vehicles and the current demand of 71 vehicles including spares indicate that the excess of 29 vehicles (41 percent excess vehicles) can more than adequately accommodate future demand that isn't already accommodated. Vehicle retirement is scheduled for 2033 which is beyond the scope of this Fleet Management Plan.

Paratransit

Demand for paratransit service is likely to increase significantly over the next 15 years due to an increase in the size of the aging population. However, the details of that increase are not included in this document.

7.2 Service Changes

In 1999, the VTA Board of Directors approved the creation of a Service Management Plan, a process to evaluate the performance of the transit system using adopted standards of productivity. This plan, which included an evaluation of transit service ridership performance and recommendations for route improvements, was annually presented to the VTA Board for review and approval. This annual process was deferred in 2007 and 2008, while VTA developed and conducted the Comprehensive Operations Analysis (COA).

The COA was an 18-month in-depth process to analyze VTA's existing bus services, identify underserved markets, and ultimately produce a new structure for bus services. The VTA Board adopted a new Bus Service Operating Plan at its August 30, 2007 meeting and implementation occurred on January 14, 2008. The COA incorporated the latest in market research and a detailed examination of VTA's existing transit operations and ridership performance to develop a new cost-neutral bus transit network.

As part of the COA, the annual service review process was further defined and strengthened when the VTA Board of Directors adopted the Transit Sustainability Policy (TSP) and the accompanying Service Design Guidelines (SDG). The TSP provides a policy framework for the efficient and effective expenditure of funds to achieve the highest return on transit investments. The policy guides the development and implementation of new transit services, as well as the refinement of existing services. In accordance with the Transit Sustainability Policy, all transit services are subject to an annual evaluation of ridership and operating efficiency, based on the performance standards contained in the Service Design Guidelines.

The primary performance standard is Average Boardings per Revenue Hour. This standard applies to Community Bus, Local Bus, Bus Rapid Transit, and Light Rail. For evaluation purposes, the standard is calculated for all time-periods and for weekdays, Saturdays, and Sundays. This standard is recalculated quarterly and may move up or down. This indicator shows how well service is utilized, given the hours of service provided.

The categorical minimum standard for any bus transit service is 15 Boardings per Revenue Hour. Bus lines that consistently operate below this threshold and that are unresponsive to marketing, restructuring, and operational refinements are subject to deletion. Express routes are evaluated on a different standard of 60% of the seated vehicle loading capacity to reflect the special characteristics of Express lines, where seat turnover is low.

The Annual Transit Service Plan functions as the process and document that implements the policies set forward in the Transit Sustainability Policy. The mandated annual review of transit services, which is now called the Annual Transit Service Plan, includes an evaluation of existing services compared to the performance standards contained in the Service Design Guidelines, review of potential new services, assessment of opportunities for service refinement and resource reallocation, route-specific service changes, and recommendations for further analysis and study. The plan includes an extensive marketing and community outreach effort.

The Quarterly Transit Operations Performance Report provides the VTA Board a regular report card on the performance of every line in the VTA transit system. Based on these performance updates, passenger and operator input, detailed ridership data, and other information, the Annual Transit Service Plan proposes modifications to the bus and rail service through measures such as increases or decreases in service hours or frequency, changes in routing or service span, and increased marketing. The ultimate alternative for under-performing lines is deletion and reinvestment of those resources into stronger transit markets.

VTA also has an adopted policy that requires proposed major service changes that meet any of the criteria listed below to be submitted to the VTA Board of Directors for review and approval. The approval process typically takes place with the adoption of the Annual Transit Service Plan, as presented here. Major service changes requiring VTA Board approval are:

- The establishment of a new or elimination of a transit line.
- A change that impacts 25% or more of a line's route miles or revenue vehicle hours.
- Proposed changes that are anticipated to be controversial with a particular community or interested parties.

Service change proposals not meeting the criteria for formal approvals described above are handled at the staff level. However, these proposals are still subject to an appropriate level of public and community review and comment. VTA implements service changes quarterly (January, April, July, October). Major changes are typically planned for January and July, while minor changes are implemented in April and October.

Finally, to comply with Federal Transit Administration (FTA) Title VI requirements, VTA must evaluate significant system-wide service changes and proposed improvements at the planning and programming stages to determine whether the changes have a discriminatory impact on minority and low-income populations.

Specific changes planned for each service type are as follows.

Local Bus

Post-Comprehensive Operations Analysis (COA), VTA intends to continue monitoring route performances and making adjustments based on those performances, budget considerations, and other factors. These adjustments occur on a quarterly basis.

Community Bus

VTA considers the community bus program an excellent transit service solution in many areas that have developed in a suburban, auto-oriented environment. Overall the current Community Bus service levels and fleet size is expected to remain relatively stable. Some new routes might be added, while others could be discontinued due to low ridership or converted to a regular bus operation due to high ridership demand.

BRT

The BRT Strategic Plan proposes implementation of BRT improvements on El Camino (22/522) in 2013 and Steven's Creek (23) in 2017. This requires a shift of 11 buses from standard (40') to special BRT artic (60') buses by 2017.

Light Rail

VTA has a surplus of vehicles and thus may be able to accommodate an increase in ridership with the existing fleet.

Paratransit

The number of boardings for Paratransit is assumed to grow at the same rate of population growth per ABAG assumptions on population (last forecast shows about 2% each year through FY15 followed by 1% thereafter). Cost per boarding escalates by inflation.

7.3 CARB Requirement

California Air Resources Board (CARB) was going to require that 15 percent of all heavy-duty diesel bus orders received starting in calendar year 2011 be zero emission buses (ZEB). CARB's ultimate goal was for VTA to have 80 percent of buses be ZEBs. However, this requirement is suspended indefinitely. At the present time, VTA has 3 ZEBs that are not in standard use.

Lessons learned: 2002 ZEB demonstration

In 2002, VTA implemented a Zero-Emission Bus demonstration project of fuel cell technology to evaluate the impacts on operations, maintenance and the public. As part of this demonstration project, VTA purchased three 40-foot low-floor fuel cell powered buses from the Gillig Corporation. In addition to the fuel cell buses, the program included installation of a hydrogen fueling facility and modification of the Cerone maintenance facility to accommodate the fuel cell buses, the training of staff, the public and emergency departments, and an evaluation of the overall program. The buses operate as extra service and are not part of the active bus fleet due to problems with reliability. VTA maintains these buses with trained mechanics and in accordance with the manufacturer's recommended schedules.

7.4 Maintenance Program

The purpose of the Maintenance Plan is to provide consistent, systematic and integrated program guidance to properly maintain and service the assigned vehicles, equipment, and facilities in support of revenue operations. The maintenance of vehicles, equipment and facilities and the development of the workforce fall under the guidance of the Chief Operating Officer. The Maintenance Plan shall detail the approach to supporting this mission. Policies for maintenance shall reflect the following:

- Standardized procedures, training and practices shall be utilized for the maintenance of vehicles, equipment and facilities.
- Maintenance procedures and work performed shall be in compliance with all applicable regulatory requirements.
- An effective maintenance program shall be in place.

The VTA Maintenance Plan is a "living document", which is to be updated on a periodic basis to reflect changes in equipment, personnel, system requirements and improvements. The entire Maintenance Plan is included in Appendix 9.2.

Maintenance requirements correspond with fleet size and age. If the fleet stays the same size, but we order new buses, maintenance requirements will decrease. Bus maintenance includes the following:

Daily Servicing: Servicing of the bus after it is returned from service at the end of each day: includes fueling, cleaning, vandalism repair and analyzing the operator defect cards.

Preventive Maintenance: Regular maintenance performed at prescheduled cycles, as specified by the manufacturer, to ensure optimal performance, efficiency, safety and reliability of assigned equipment.

Running Repair/Corrective Maintenance: A program to repair items identified by operators during the daily operation of a bus. These repairs are completed without removing or withholding a vehicle from normal service and may be done either the day reported or scheduled when parts are available.

Scheduled Component Change-out: A component change-out program based on manufacturer's recommendations, failure history and failure analysis.

Overhaul and Repair (O&R) Program: A centralized maintenance program which includes paint and body repair, upholstery, farebox repair, component overhaul and the heavy repair/rebuild of engines and other components.

7.5 Spare Ratio

The FTA recommended spare ratio is defined as those vehicles which are available for service, but which are not engaged in service, and it is derived by subtracting the peak vehicle requirement from the total active fleet and dividing the difference by the peak vehicle requirement.

Spare Ratio = (Total Active Fleet - Peak Vehicle Requirement)/Peak Vehicle Requirement

The FTA guidance regarding a bus fleet spare ratio states "The number of spare buses in the active fleet… should normally not exceed 20 percent of the vehicles operated in maximum service."

VTA provides emergency contingency support for a number of agencies and thus also maintains an inactive fleet for such support. As such VTA is proceeding to achieve the following spares ratio. VTA's current bus spare ratio in FY2009 is 23 percent. Figure B-30 displays more information on VTA's vehicle requirements and spares.

Figure B-29. Bus Spare Ratio by Vehicle Type (FY10)

Bus type	Peak Requirement	Spares	Total Vehicles - Oct. 08	Percent Spares
40'	252	47	299	19 percent
35'	11	7	18	64 percent
Airport	4	0	4	0 percent
Artic	25	10	35	40 percent
Artic BRT	5	0	5	0 percent
40' BRT	11	3	14	27 percent
DASH	3	1	4	33 percent
Other Community Bus	35	6	41	17 percent
Total	**346**	**74**	**420**	**21 percent**
40'	Inactive Fleet Assignment		21	
ZEB	CARB Demonstration Buses		3	
Total Buses			**448**	

Used to backfill the (4) bus shortage among 40' buses and the (1) bus shortage among airport buses
Used to backfill the (1) bus shortage among Artic BRT's.
Used to backfill the (1) bus shortage among Los Gatos buses.

This slightly higher overall spares ratio of 23 percent is due to the specialized bus subfleets. VTA is trying to make the effort to maintain a 20 percent spares ratio including the operation of two subfleets without any spares as well as the operation of the main 40' bus fleet at a 19 percent spares ratio.

7.6 Inactive Fleet

VTA has established an inactive fleet which VTA considers an important component of its expansion plans. The purpose of the inactive fleet is to be able to respond quickly to changing needs. VTA provides bus bridge support for the VTA light rail service as well as for the ACE Train, Capitol Corridor and Caltrain. Buses placed in the inactive bus fleet will be properly stored, maintained and documented in a contingency plan as per Federal guidelines. Section 8. Procurement Schedule displays the inactive bus fleet.

7.7 Future Needs

Bus

The Procurement Schedule in Section 8 provides details of equipment by type, year of manufacture, distribution by operating division, and a summary of the active, inactive and total fleet by type and location over the plan's 15-year period.

The most significant change planned over the next few years is the implementation of the BRT Strategic Plan, including BRT improvements on El Camino (in 2013) and Stevens Creek (in 2017). Based on current and planned system needs, Figure B-1 displays VTA's goals to meet fleet requirements for each type of vehicle for the current year through fiscal year 2024. The plan also includes fleet requirements associated with the BART extension to Silicon Valley and a resulting increase in transit passenger demand.

Figure B-30 displays the number of vehicles of each type for each fiscal year of the plan based on the Fleet Replacement Plan outlined in this document.

The bus assignment summary in Figure B-31 provides details of equipment by type, year of manufacture, distribution by operating division, and a summary of the active, inactive and total fleet by type and location.

Figure B-30. Projected Bus Fleet Chart to FY2024

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Standard Buses in Fleet	314	314	310	310	298	298	298	298	277	280	287	301	301	314	314	277
Total Articulated Buses in Fleet	40	40	40	40	69	69	69	69	80	86	86	87	87	87	87	107
Total 35' Buses in Fleet	22	22	22	22	22	22	22	22	17	17	17	17	17	17	17	17
Total Small Buses in Fleet	45	45	45	45	45	45	45	50	50	50	50	43	43	43	43	43
TOTAL ACTIVE FLEET	421	421	417	417	434	434	434	439	424	433	440	453	446	461	461	444
TOTAL PEAK PULLOUTS	345	344	344	344	344	344	344	344	344							
SPARE RATIO	22%	22%	21%	21%	26%	26%	26%	28%	23%							

Figure B-31. Bus Assignment Summary

FIS Code	SAP BUS	Bus Type	# Series	Year of Mfg.	Cerone	Chaboya	North	Total Active	Inactive Fleet	Total Fleet
92	J	Metro 92	9201-9291	1992					15	15
9700	M	Gillig 97	9701-9786	1997	23	37	25	85	1	86
9800	N	Gillig 98	9801-9847	1998	22	25		47		47
9900	O	Gillig 99	9901-9912	1999	12			12		12
9950	P	Gillig 99 LF	9951-9953	1999			2	2		2
1000	Q	Gillig 10 LF	1001-1015,1028, & 1030-1052	2001	6	20	13	39		39
1000	Q	Gillig 10 BRT	1016-1027 & 1029	2001			13	13		13
2000	R	Gillig 20 LF	2011-2071	2002	23	26	10	59		59
2100	S	Gillig 21 LF 35'	2102-14,17,22,23	2002	4	13		17		17
2101	AF	Gillig 21AF LF 35'	2115,16,2118-2121	2002	5			5		5
2200	T	Gillig 22 LF	2201-2256	2002	28	28		56		56
2300	U	NF Artic LF	2301-2307 & 2313-2340	2002			35	35		35
2300	U	NF Artic BRT	2308-2312	2002			5	5		5
4000	V	Gillig LF ZEB	4001-4003	2004					3	3
5000	W	CB 05	5001-5005	2005						
7000	Y	CB 07	7001-7020	2007		17		17		17
7000	Y	CB 07 DASH	7018-7020	2007		3		3		3
8000	Z	CB 08	8002-8025	2008		13	11	24		24
8000	Z	CB 08 DASH	8001	2008		1		1		1
					123	183	114	420	19	439

7.8 Vehicle Replacement Program

This plan sets new goals for bus orders. To minimize bus ordering workload on staff and streamline maintenance, the bus replacement program has 2 goals:

1) Bus orders every 2 years rather than every year
2) Even-sized orders of approximately 77 buses

Standard-sized buses have a life of 12 years; in VTA's last fleet plan this goal was set at 15 years. Small, community buses have a life of approximately 5 years. Thus, orders of 77 buses every 2 years will keep the fleet age evenly-spaced in the future. VTA also wants to have consistently large orders with many of the same bus model so they have interchangeable parts to streamline maintenance. In order to implement these goals, some buses in the current fleet will need to be kept in the active fleet past 12 years. Figure B-32 provides more detail.

The above words describe the goals of this plan. However, the current financial crisis constraint to this plan. Specifically, after the current bus order of 70 standard 40' hybrid buses is fulfilled, VTA cannot afford to order new standard buses until 2015. The 2010 bus order is funded by ARRA (76%) and PTMISEA (24%). Future bus orders will be funded by issuing debt against the VTA 1976 1/2 Sales Tax (80%) and 5307/PTMISEA (20%). As a result, a number of vehicles in the current fleet will be in use well beyond their scheduled retirement year (Figure B-32).

All new VTA buses will be low-floor vehicles using ramps rather than lifts to provide access for the mobility impaired.

Figure B-32. Buses Planned for Active Fleet Beyond Standard Retirement (FY10)

Order Year	Manufacturer	Vehicle Type	Number of Buses	Retirement Extension
1997	GILLIG 9700	40' Standard	12	1 year
1997	GILLIG 9800	40' Standard	47	5 years
1998	GILLIG 9900	40' Low Floor	12	4 years
1998	GILLIG 9950	40' Low Floor	2	4 years
2000	GILLIG 1000	40' Low Floor	22	2 years
			30	3 years
2000	GILLIG 2000	40' Low Floor	18	3 years
			41	4 years
2000	GILLIG 2100	35' Low Floor	22	2 years
2001	FLYER 2300	Articulated Low Floor	22	4 years
2001	FLYER 2300	Articulated Low Floor	18	6 years
2001	GILLIG 2200	40' Low Floor	2	3 years
2001	GILLIG 2200	40' Low Floor	26	4 years
2001	GILLIG 2200	40' Low Floor	28	6 years
2007	EL DORADO 7000, 8000	<30'	45	1 years
2009	Repl 9700, 9800	40' Low Floor	29	1+ years*

**The order to replace these buses is outside the Plan horizon. The number of years these vehicle will be held beyond their retirement age will be determined in future fleet plans.*

The prices of buses described in Figure B-33 are based on the regional bus price list.

Figure B-33. Regional Bus/Van Pricelist FY 2008-09

	Proposed FY09 Price[1]				
	Total	Federal	Local	Federal percent	Local percent
Auto	$26,000	$21,695	$4,305	83.44%	16.56%
Minivan Under 22'	48,000	40,052	7,948	83.44%	16.56%
Cut-Away/Van Under 26', 4 or 5-Year, Gas	72,000	58,770	13,230	81.62%	18.38%
Cut-Away/Van Under 26', 4 or 5-Year, Diesel	97,000	79,176	17,824	81.62%	18.38%
Cut-Away/Van Under 26', 4 or 5-Year, CNG	108,640	88,677	19,963	81.62%	18.38%
Cut-Away/Van Under 26', 7-Year, Gas	101,000	83,830	17,170	83.00%	17.00%
Cut-Away/Van Under 26', 7-Year, Diesel	136,000	112,880	23,120	83.00%	17.00%
Cut-Away/Van Under 26', 7-Year, CNG	152,000	126,159	25,841	83.00%	17.00%
Cut-Away/Van 26'+, 4 or 5-Year, Gas	76,000	62,034	13,966	81.62%	18.38%
Cut-Away/Van 26'+, 4 or 5-Year, Diesel	102,000	83,257	18,743	81.62%	18.38%
Cut-Away/Van 26'+, 4 or 5-Year, CNG	114,000	93,052	20,948	81.62%	18.38%
Cut-Away/Van 26'+, 7-Year, Gas	106,000	87,980	18,020	83.00%	17.00%
Cut-Away/Van 26'+, 7-Year, Diesel	143,000	118,689	24,311	83.00%	17.00%
Cut-Away/Van 26'+, 7-Year, CNG	160,000	132,799	27,201	83.00%	17.00%
Transit Bus 30' Diesel	445,000	358,917	86,083	80.66%	19.34%
Transit Bus 30' CNG	498,000	401,665	96,335	80.66%	19.34%
Transit Bus 30' Hybrid	601,000	484,740	116,260	80.66%	19.34%
Transit Bus 35' Diesel	458,000	369,320	88,680	80.64%	19.36%
Transit Bus 35' CNG	513,000	413,670	99,330	80.64%	19.36%
Transit Bus 35' Hybrid	619,000	499,146	119,854	80.64%	19.36%
Transit Bus 40' Diesel	471,000	379,730	91,270	80.62%	19.38%
Transit Bus 40' CNG	528,000	425,684	102,316	80.62%	19.38%
Transit Bus 40' Hybrid	637,000	513,562	123,438	80.62%	19.38%
Over-the-Road 40' Diesel	551,000	443,608	107,392	80.51%	19.49%
Over-the-Road 40' CNG	617,000	496,744	120,256	80.51%	19.49%
Over-the-Road 40' Hybrid	744,000	598,991	145,009	80.51%	19.49%
Over-the-Road 45' Diesel	595,000	479,032	115,968	80.51%	19.49%
Over-the-Road 45' CNG	666,000	536,194	129,806	80.51%	19.49%
Over-the-Road 45' Hybrid	803,000	646,492	156,508	80.51%	19.49%
Over-the-Road 60' Diesel	785,000	631,087	153,913	80.39%	19.61%
Over-the-Road 60' CNG	879,000	706,656	172,344	80.39%	19.61%
Over-the-Road 60' Hybrid	1,060,000	852,168	207,832	80.39%	19.61%
Articulated 60' Diesel	667,000	536,223	130,777	80.39%	19.61%
Articulated 60' CNG	747,000	600,537	146,463	80.39%	19.61%
Articulated 60' Hybrid	900,000	723,539	176,461	80.39%	19.61%

Source: Metropolitan Transportation Commission
[1] This is the most recent available as of November 2009.

8. Procurement Schedule

Figure B-34. Draft Fleet Inventory Replacement Plan

ORDER YEAR	MFR. YEAR		TYPE	Retirement Year	FY 2009	FY 2010	FY 2011
TOTAL NEW BUSES			**Goal: 77 every 2 years**				**70**
1993	1994	FLXIBLE 9300	40' Standard	2007			
1996	1997	GILLIG 9700	40' Standard	2010	50	50	
1997	1998	GILLIG 9700	40' Standard	2011	36	36	12
1997	1998	GILLIG 9800	40' Standard	2011	47	47	47
1998	1999	GILLIG 9900	40' Standard	2012	12	12	12
1998	1999	GILLIG 9950	40' Low Floor	2012	2	2	2
2000	2001	GILLIG 1000	40' Low Floor	2014	52	52	52
2000	2001	GILLIG 2100	35' Low Floor	2014	22	22	22
2000	2001	GILLIG 2000	40' Low Floor	2014	59	59	59
2001	2002	FLYER 2300	Articulated Low Floor	2015	40	40	40
2001	2002	GILLIG 2200	40' Low Floor	2015	56	56	56
2002	2003	GILLIG/BALLARD 4000	ZEB demo	2016			
2007	2008	EL DORADO 7000	< 30' Small Buses	2014	20	20	20
2007	2008	EL DORADO 8000	< 30' Small Buses	2014	25	25	25
2009	2010	Repl 9700, 9800	40' Low Floor	2023			70
2011	**2012**	**BRT, Repl 9800 (Measure A)**	**Articulated Hybrid**	**2025**			
2014	2015	Repl 7000	< 30' Small Buses	2021			
2015	**2016**	**BRT (Measure A)**	**Articulated Hybrid**	**2029**			
2015	2016	Repl Gill 1000	40' Low Floor	2029			
2015	2016	Repl GILLIG 2100	35' Low Floor	2029			
2016	2017	BEP Artics (SVRT Project fund)	Artics 60'	2030			
2016	2017	Repl 2200 series	40' Low Floor	2030			
2017	2018		40' Low Floor	2031			
2018	2019	Repl 2300	Artic low floor	2032			
2018	2019	Repl Repl 9700	40' low floor	2032			
2019	2020	Repl Repl Small Bus, 8000	< 30' Small Buses	2026			
2020	2021	Repl FLYER 2300	Artic low floor	2034			
2020	2021	Repl Repl 9800	40' Low Floor	2034			
2022	2023	BEP Artics (SVRT Project fund)	Artic low floor	2036			
2022	2023	Repl FLYER 2300	Artic low floor	2036			
TOTAL ACTIVE FLEET AT YEAR END					421	421	417
		Standard + artics	A+D-artic goal		324	324	320
Total Standard Buses in Fleet			B		314	314	310
Total 35' Buses in Fleet			C		22	22	22
Total Articulated Buses in Fleet			D		40	40	40
Total Small Buses in Fleet			E		45	45	45
TOTAL PEAK PULLOUTS					345	344	344
SPARE RATIO					23%	24%	21%
AVERAGE FLEET AGE					7.12	8.12	7.00
RESERVE FLEET							
1993		FLXIBLE 9200	40' Standard		15	15	
1996		GILLIG 9700	40' Standard				25
1997		GILLIG 9800	40' Standard				
2000		GILLIG 2000	40' Low Floor				
2001		GILLIG 2200	40' Low Floor				
TOTAL FLEET					**450**	**450**	**442**

FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
	29			**50**	**90**	**57**	**50**	**61**	**43**	**61**		**20**
12												
47	47	47	47	47								
12	12	12	12	12								
2	2	2	2	2								
52	52	52	52	52	30							
22	22	22	22	22								
59	59	59	59	59	59	41						
40	40	40	40	40	40	40	40	18	18			
56	56	56	56	56	56	56	54	28	28			
20	20	20	20									
25	25	25	25									
70	70	70	70	70	70	70	70	70	70	70	70	33
	29	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**	**29**
				50	50	50	50	50				
					11	**11**	**11**	**11**	**11**	**11**	**11**	**11**
					62	62	62	62	62	62	62	62
					17	17	17	17	17	17	17	17
						6	6	6	6	6	6	6
						51	51	51	51	51	51	51
							50	50	50	50	50	50
								21	21	21	21	21
								40	40	40	40	40
									43	43	43	43
										20	20	20
										41	41	41
												2
												18
417	434	434	434	439	424	433	440	453	446	461	461	444
320	317	317	317	317	296	299	299	306	299	307	301	277
310	298	298	298	298	277	280	287	301	301	314	314	277
22	22	22	22	22	17	17	17	17	17	17	17	17
40	69	69	69	69	80	86	86	85	85	87	87	107
45	45	45	45	50	50	50	50	50	43	43	43	43
344	344	344	344	344	344							
21%	26%	26%	26%	28%	23%							
8.00	8.26	9.26	10.26	10.41	7.70	6.75	5.97	4.96	5.50	4.39	5.39	5.55
25	25	25	25	25								
					25	25						
							25					
								25	25	25	25	25
442	**459**	**459**	**459**	**464**	**449**	**458**	**465**	**478**	**471**	**486**	**486**	**469**

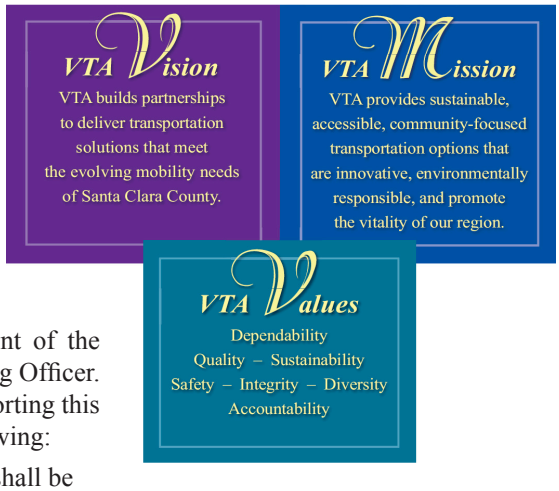
9. Appendices

9.1 Appendix: Acronyms and Definition of Terms

ADA . . . . . .Americans with Disabilities Act
BART . . . . . .Bay Area Rapid Transit
BRT . . . . . .Bus Rapid Transit
CARB. . . . . .California Air Resources Board
CARS . . . . . .Central Auto Reservation System
COA . . . . . .Comprehensive Operations Analysis
CNG . . . . . .Compressed Natural Gas
DASH. . . . . .Downtown Area Shuttle Service
CAA . . . . . .Federal Clean Air Act
FTA. . . . . .Federal Transit Administration
HOT . . . . . .High Occupancy Toll
ICE . . . . . .Internal Combustion Engines
O&R. . . . . .Overhaul and Repair
VTA . . . . . .Santa Clara Valley Transportation Authority
SDG . . . . . .Service Design Guidelines
SRTP. . . . . .Short-Range Transit Plan
SVRT . . . . . .Silicon Valley Rapid Transit
SCADA . . . . . .Supervisory Control and Data Acquisition
VTP . . . . . .Valley Transportation Plan
ZEB . . . . . .Zero Emission Buses

9.2 Appendix: Maintenance Plan

1.0 Background and Purpose



The mission of the Santa Clara Valley Transportation Authority (VTA) is to provide clean, reliable, safe and well-maintained vehicles, equipment, and facilities through the efforts of a competent and committed work force using modern facilities, tools and equipment. The purpose of this Maintenance Plan is to provide consistent, systematic and integrated program guidance to properly maintain and service the assigned vehicles, equipment, and facilities in support of revenue operations. The maintenance of vehicles, equipment and facilities and the development of the workforce fall under the guidance of the Chief Operating Officer. The Maintenance Plan shall detail the approach to supporting this mission. Policies for maintenance shall reflect the following:

- Standardized procedures, training and practices shall be utilized for the maintenance of vehicles, equipment and facilities.
- Maintenance procedures and work performed shall be in compliance with all applicable regulatory requirements.
- An effective maintenance program shall be in place.

NOTE: The VTA Maintenance Plan is a "living document", which is to be updated on a periodic basis to reflect changes in equipment, personnel, system requirements and improvements.

2.0 Maintenance Division Units

Maintenance of vehicles, equipment and facilities is managed and coordinated through several departments within the Operations Division. Reporting to the Chief Operating Officer and under the direction of the Deputy Director of Transportation Operations and Deputy Director of Maintenance Operations are organized units as listed below.

Organizational responsibilities specific to each section will be discussed later in this document.

Section	Units
Bus Maintenance	Overhaul & Repair Chaboya Maintenance North Maintenance Cerone Maintenance Roadcall
Rail Maintenance	Light Rail Vehicle Maintenance Way, Power & Signal Maintenance
Facilities Maintenance	Facilities Maintenance Passenger Facilities Maintenance Non-Revenue Vehicle Fleet Management
Materials Warranty & Quality Assurance	Materials Management Bus and Rail Parts Warranty and Quality Assurance
Maintenance Training	Bus and Rail Training Facilities Maintenance Training
Maintenance Engineering	Bus Maintenance Engineering Rail Maintenance Engineering

3.0 Maintenance Responsibilities

3.1 Bus Maintenance

VTA buses are maintained at three bus operating divisions Chaboya, North, and Cerone. The Cerone Overhaul and Repair division provides heavy repair, component rebuild, electronics shop, upholstery and additional maintenance services. Bus Maintenance shall include the daily management of bus maintenance including timely and reliable maintenance, preventive maintenance, inspections and servicing of transit buses and service equipment. This section shall evaluate bus maintenance efficiency and implement corrective action when required. Transit buses shall be maintained in a manner suitable to the needs of the public and shall be cost-effective. The VTA equipment repair policy is that safety related items and ADA equipment be repaired immediately. Non-safety related defects, which if not repaired, could lead to extensive repairs will also be repaired immediately. All other defects, if not repaired immediately, will be scheduled for repair. All preventive maintenance and corrective maintenance shall be entered into the Maintenance Management Information System/SAP/Fleet Information System. Components of the Bus Maintenance Program are as follows:

a) **Daily Servicing:** After a bus is returned from service at the end of each day, the following actions shall take place and work orders written or corrective action taken if applicable:
- Vault Pull
- Driver Defect Card Analyzed
- Fuel Island Servicing
- Interior/Exterior Cleaning
Seat and Window Cleaning/Replacement
Graffiti Removal/Vandalism Repair

b) **Preventive Maintenance:** Regular maintenance shall be performed at prescheduled cycles to ensure optimal performance, efficiency, safety and reliability of assigned equipment to assist in providing improved services to transit customers. The direct scheduling method ensures that each bus receives the number of preventive maintenance inspections as specified by the manufacturer. Preventive maintenance cycles shall be as follows:

Bus Preventive Maintenance Cycles

PM Type	12.1Inspection	Cycle (Every)	12.2Within
Minor/safety	"A"	2,000 miles	+ 500 miles
Intermediate	"B"	6,000 miles	-1000/+500 miles
Intermediate	"C"	12,000 miles	-1000/+500 miles
Major	"D"	24,000 miles	-1000/+500 miles
Special Service	Winter	Seasonal	
Special Service	Summer	Seasonal	

c) **Running Repair/Corrective Maintenance:** Bus Maintenance shall establish a program to repair items identified by operators during the daily operation of a bus. These repairs are of a nature so they may be completed with minimal impact to normal service and may be done either the day reported or scheduled when parts are available. The Roadcall maintenance unit shall be an integral part of the Running Repair Program. Maintenance repairs or actions for roadcalls are to be checked to ensure that proper corrections are made.

d) **Repairs:** Bus Maintenance shall have an efficient and effective program to repair buses and return them to revenue service. The program shall take into account parts, personnel, equipment and facility availability when scheduling buses for repairs. Where possible, inoperable passenger lifts or ramps shall be repaired the day of notification that the unit is not operational. Buses shall not be placed in revenue service where the lift or ramp has been inoperable for more than three consecutive days.

e) **Scheduled Component Change-out:** A component change-out program shall be established based on manufacturer's recommendations, failure history, and failure analysis. Designated components shall be tracked and monitored to ensure that the program is efficient and cost effective. This program will allow for the preparation of complete standardized kits with standardized replacement practices to improve efficiency.

f) **Overhaul and Repair (O&R) Program:** The O&R program shall be an efficient and effective maintenance program which includes paint and body repair, upholstery, farebox and electronic repair, component overhaul, and the heavy repair/rebuild of engines, transmissions and other components.

3.2 Rail Maintenance

Rail Maintenance consists of Light Rail Vehicle maintenance and Way Power & Signal maintenance and includes timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of light rail vehicles, right-of-way, rail system power, tracks, signals, station systems and related equipment. This section shall evaluate rail maintenance efficiency and implement corrective action when required. Light rail vehicles, right-of-way, rail system power, signals, station systems and related equipment shall be maintained in a cost-effective manner suitable to the needs of the public. VTA rail maintenance shall be based and dispatched from the Guadalupe light rail facility. The VTA equipment repair policy is that safety related items be repaired immediately. Non-safety related defects, which if not repaired, could lead to extensive repairs will also be repaired immediately. All other defects, if not repaired immediately, will be scheduled for repair. All preventive maintenance and corrective maintenance shall be entered into the Maintenance Management Information System/SAP/Fleet Information System.

3.3 Light Rail Vehicle Maintenance

The Light Rail Vehicle Maintenance unit of this section shall be responsible for the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of light rail vehicles, and service equipment. Components of the Light Rail Vehicle Maintenance Program are as follows:

a) **Daily Inspection:** After a light rail vehicle is returned from service at the end of each day, the following actions shall take place and work orders written if applicable:
- Interior Inspection/Walk-through
- Operator Defect Card Analyzed
- Visual Inspection of Undercarriage
- Interior/Exterior Cleaning

Seat and Window Cleaning
Graffiti Removal/Vandalism Repair

b) **Preventive Maintenance:** Regular maintenance shall be performed at prescheduled cycles using a direct scheduling method based on mileage to ensure optimal performance, efficiency, safety and reliability of assigned equipment to assist in providing improved services to transit customers. The direct scheduling method ensures that each light rail vehicle receives the number of preventive maintenance inspections as specified by the manufacturer. Preventive maintenance cycles shall be as follows:

Light Rail Vehicle Preventive Maintenance Cycles

PM Type	Inspection	Cycle (Every)	Within
Daily/Safety	Daily	Daily	
Minor	"A"	10,000 miles	-500/+1000 miles
Major	"B"	30,000 miles	-500/+1000 miles
Major	"C"	60,000 miles	-500/+1000 miles
Comp Change Out	"D"	120,000 miles	

c) Running Repair /Corrective Maintenance: Light Rail Vehicle Maintenance shall maintain a program to repair items identified by operators during the daily operation of a LRV. These repairs are of a nature so that they may be completed without removing or withholding a vehicle from normal service and may be done either the day reported or scheduled when parts are available. LRVs with running repair defects are to be routed to have the defects repaired or repairs scheduled.

d) Light Rail Vehicle Overhaul Program: The normal service life of VTA's light rail vehicle fleet is about 30 years. In order to achieve this efficiency, the manufacture, Kinkisharyo, has recommended scheduled overhauls in accordance to manufacturer and vendor specifications. VTA has established a 3-phased maintenance overhaul program involving major components of the LRV fleet. A brief description of each phase is as follows:

Overhaul I - Rebuild and overhaul of contactors and air system, including brake boxes and sub-components consisting of mag valves, test fittings, pressure switches, sand valves, indicator switches, SAV and SEV valves, drain valves, air gauges, C-2 valves, air compressors, tappet valves, uncoupling valves, couplers, and pantograph collectors (120,000 miles or two years).

Overhaul II - Rebuild and overhaul of major components including: motor alternator, gearbox, traction motor, pantographs, coupler assembly, trucks and sub-assemblies, and axle bearing assembly (240,000 miles or four years).

Overhaul III - Rebuild and overhaul of the air conditioning system, car body repainting and furnishings, and potential replacement of major electronic components, roof resistors and PC boards (as needed, approx. every 7 to 10 years).

3.4 Way, Power & Signal Maintenance

The Way, Power & Signal Maintenance unit of this section shall be responsible for the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of light rail right-of-way, rail system power, tracks, signals, station systems and related equipment. Preventive maintenance is primarily time driven in accordance with system specific functions.

Components of the Way, Power & Signal unit are as follows:

a) Track maintenance area: Track maintenance area shall be responsible for the maintenance (including right-of-way weed eradication, vegetation control and graffiti removal), preventive maintenance, inspections, and servicing and repair of rail, switches, ties, roadbed, fences and track systems.

b) Power maintenance area: The Power maintenance area shall be responsible for the maintenance (including trackside right-of-way tree trimming), preventive maintenance, inspections, repairs and servicing of light rail electric power systems including overhead, substations, lighting and other electrical systems.

c) Signal maintenance area: Signal maintenance area shall be responsible for the maintenance, preventive maintenance, inspections, repairs and servicing of signal systems, power switches, crossing gates, fare machines, SCADA (Supervisory Control and Data Acquisition) control and station systems and audio/visual message equipment.

4.0 FACILITIES MAINTENANCE

4.1 Facilities Maintenance

The Facilities Maintenance unit shall be responsible for the servicing of VTA's buildings, shelters, grounds (except right-of-way), fixed shop equipment and is responsible for overall environmental regulatory record keeping and oversight; hazardous waste disposal and manifests; preventive maintenance, inspections, repair. This unit evaluates Facilities maintenance efficiency and implements corrective action when required. This section also assists in the evaluation and planning of facility modifications, upgrades, expansions and equipment replacement. Typical assigned equipment includes:

Vehicle lifting systems	Overhead cranes	Lighting systems
HVAC systems	Bus Washers	Elevators
Waste disposal	Garbage/recycling	Waste treatment systems
Fire suppression systems	Fixed emergency generators	

Preventative maintenance shall be performed at prescheduled cycles to ensure optimal performance, efficiency, safety and reliability of assigned equipment and systems to assist in providing improved services to end users. Each piece of equipment receives the number of preventative maintenance inspections as specified by the manufacturer and/or Facilities Maintenance contract.

All facilities and related equipment shall be maintained in a cost-effective manner. VTA facility maintenance personnel shall be based at the Cerone, North, Chaboya, Guadalupe and River Oaks facilities.

The VTA equipment repair policy is that safety related items be repaired immediately. Non-safety related defects, that could lead to extensive repairs will also be repaired immediately. All other defects will be scheduled for repair.

All preventive maintenance and corrective maintenance shall be entered in the Maintenance Management Information System/SAP.

Preventive maintenance cycles for equipment shall be as follows:

Equipment Preventive Maintenance Cycles

Item	Cycle (Every)	Maintenance Type	Within
Fire Alarm Systems	Quarterly	Inspection	Two Weeks
Compressed Air Systems	Quarterly	Inspection and Maintenance	Two Weeks
Doors (Roll-up)	Semi-Annual	Inspection and Maintenance	Four Weeks
Elevators	Monthly	Inspection and Maintenance	Two Weeks
Emergency Generators	Weekly, Monthly, Quarterly	Inspection and Maintenance	Two Weeks
Fire Extinguishers	Monthly Annual	Inspection and Maintenance	Two Weeks
Floor Scrubbers and Brake Vacuums	Quarterly	Inspection and Maintenance	Two Weeks
Hazardous Waste	Daily, Weekly, Quarterly, and Annual	Inspections, Quarterly and Annual Pump Outs	Two Weeks
HVAC	Quarterly	Inspection and Maintenance	Two Weeks
Janitorial Transit Center Restrooms	Daily	Maintenance	N/A
Landscaping Services	Monthly	Maintenance	One Week
Mobile Equipment (Fork Lifts, Towing Tractors, Platform Lifts)	Quarterly	Inspection and Service	Two Weeks
Non-Fuel Dispensers (Lube Reels, Pumps, etc.)	Quarterly	Inspection and Maintenance	Three Weeks
Paving	Every 5-8 years or upon request	Inspected Bi-Annually	N/A
Pest Control	Monthly	Inspection/Applications	One Week
Pressure Wash Systems	Quarterly	Inspection and Maintenance	Two Weeks
Roofing	Annual and 15-20yr. Scheduled Replacements	Inspection and Maintenance	N/A
Security Monitoring Systems	Quarterly	Quarter	Two Weeks
Sweeping Services	Weekly, Semi-Monthly, or Monthly	Maintenance	N/A
Tree Trimming	Annual	Inspection	Three Weeks
Underground Tank and Piping	Daily, Weekly, Quarterly, and Annual	Inspection and Maintenance	Three Weeks
Vehicle Lifting Systems	Quarterly	Inspection and Maintenance	Two Weeks
Vehicle Wash Systems	Semi-Monthly	Inspection and Maintenance	One Week

4.2 Passenger Facilities Maintenance

The Passenger Facilities Maintenance unit of this section shall be responsible for the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of all VTA maintained passenger facilities, including bus stops signs, benches and curves.

4.3 Station and Wayside Maintenance

Station and wayside maintenance area shall be responsible for the maintenance and repair of light rail stations, terminal buildings, restrooms, park & ride lots, landscaping, fences, guardrails, station graffiti removal and other trackside areas.

4.4 Bus Stop and Transit Center Maintenance

VTA has approximately 4,400 bus stops and 19 transit centers throughout the Santa Clara Valley. Bus stops and transit centers are inspected and serviced by VTA Passenger Facilities staff either daily, twice a week, once a week, or as needed depending on ridership and other factors. Services include but are not limited to the following: bench installation, painting, and repair, core drilling for poles at new bus stops, garbage collection, trash receptacle installation and relocation, graffiti abatement, litter removal, pressure washing, red curb painting, signage inspection, route updates, and sweeping services. Janitorial services for transit centers are provided daily through a Facilities Maintenance service contract with a vendor.

4.5 Non-Revenue Vehicles Unit

Shall be responsible for administration of the "Central Auto Reservation System" (CARS), and the timely and reliable maintenance, preventive maintenance, inspections, repair and servicing of all VTA non-revenue vehicles including all vehicles not requiring California license including electric, gas, propane and diesel powered fork lifts, tugs, pallet jacks, and scissors lifts. This unit shall monitor non-revenue vehicle assignments, vendor performance, initiate and process warranty claims, and ensure work is performed in accordance with service agreements. This unit shall also plan and initiate the acquisition and disposal of non-revenue vehicles in accordance with VTA policies and procedures. All preventive maintenance and corrective maintenance shall be entered into the Maintenance Management Information System/SAP.

5.0 MATERIALS WARRANTY AND QUALITY ASSURANCE

5.1 Materials Management

The Materials Management section shall be responsible for the timely receipt, issue and management of bus and light rail parts inventory at all of VTA's facilities (Cerone, Chaboya, North, Guadalupe). This section operates one main and three operating storerooms for bus parts; and one main warehouse and one operating storeroom for rail parts.

5.2 Bus Parts

The Bus Parts unit of this section shall be responsible for the receipt, warehousing and distribution of all of the bus parts, materials and supplies to the operating bus divisions (Cerone, North and Chaboya) that are issued to Bus Maintenance work orders as required. Inventory cycle counting is conducted at each operating division and at the main distribution center on a monthly basis. The Bus Parts unit operates seven days a week at each operating division location. New repair parts, materials and supplies are continuously received into inventory. The Material Resource Scheduler is responsible for the removal of obsolete repair parts and is responsible for all entries into the Material Master database of the Maintenance Management Information System/SAP.

5.3 Rail Parts

The Rail Parts unit of this section shall be responsible for the receipt, warehousing and issuing of all Light Rail parts, materials and supplies that are issued to Light Rail Maintenance work orders as required. Inventory cycle counting is conducted on a monthly basis. The Rail Parts unit, located at the Guadalupe light rail facility, operates seven days a week, 24 hours per day. The Materials Resource Scheduler is responsible for removal of obsolete repair parts and is responsible for all entries into the Material Master database of the Maintenance Management Information System/SAP. The Rail Parts unit also operates a small storeroom at Way, Power & Signal. The Rail Parts unit provides repair parts, materials and supplies to maintain the existing rail and station operation throughout the Light Rail line. This facility operates five days a week.

5.4 Warranty and Quality Assurance

includes administration of warranty claims for bus and rail revenue vehicles, related equipment and VTA facilities. The Quality Assurance function includes tracking and reporting of equipment failure trends, along with managing and coordination of the tool calibration (Precision Measuring Equipment) and the fluid analysis condition monitoring programs

6.0 MAINTENANCE TRAINING

6.1 The Maintenance Training

This unit of this section is responsible for planning and organizing training of bus, rail and facility maintenance personnel in the proper service, repair, and maintenance of diesel buses, rail vehicles and other associated equipment in accordance with VTA policies and procedures. This unit shall assist maintenance supervisory personnel in the evaluation of work performed by tradespersons and recommend training needs if required. In addition, this unit shall consult with engineering, safety, environmental, and other training staff in the development of training programs and standardizing operating procedures.

7.0 MAINTENANCE ENGINEERING

7.1 Maintenance Engineering

Maintenance Engineering supports the activities primarily in the following areas:

a) organizing and directing engineering work in support of the Bus Maintenance, Rail Maintenance, and Maintenance Support Services sections; b) conducting reliability and performance studies; c) evaluating new vehicle/equipment design and availability; d) overall supervision of the mechanical instruction program; e) design, operation, and maintenance of shops and shop equipment; and f) developing and designing changes to upgrade vehicles, systems, and equipment, g) establish specifications for equipment and materials, h) prepare contracts for specialized engineering services including Bridge and Structures inspection, rail grinding etc.

Appendix C: Sales Tax, Inflation, Interest Rate, and Other Projections

VTA contracted with Moody's Economy.com to produce a custom economic forecast for the Silicon Valley Rapid Transit (SVRT) project financial analysis, which has also been used for the SRTP. Moody's Economy.com, a division of Moody's Analytics, is a leading provider of economic, financial, country, and industry research for planning and information needs of businesses, governments, and professional investors worldwide. The firm's research includes financial markets and regional markets. Its information and services are applied in a variety of ways, including strategic planning and risk analysis.

The Moody's February 23, 2009 forecast includes 30 years (2009 to 2038) of annual projections of national and local (San Jose, San Francisco Bay Area, or California) inflation and interest rates including San Jose CPI, as well as Santa Clara County taxable sales. This forecast is an integrated projection of economic trends, meeting a high standard of professional practice consistent with Federal Transit Administration (FTA) guidance on financial planning regarding internal consistency of planning assumptions. The period contained in the SRTP represents the first 10 years of forecasted data, with adjustments to FY10, FY11, and FY12, which reflect forecasted growth obtained from Beacon Economics, which are more focused on taxable sales projections in the short term and are updated on a quarterly basis.

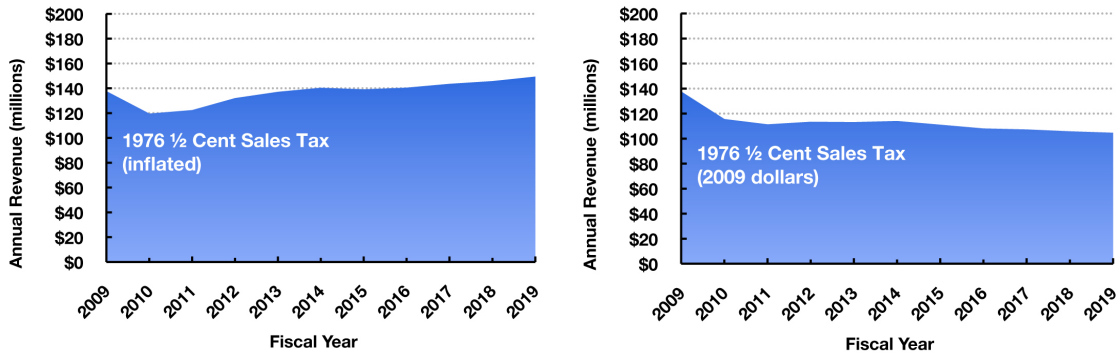
The Moody's forecast is based on historic and projected economic conditions at a single point in time and reflects a best estimate of future conditions given information available at the time the forecast was produced, usually on an annual basis. The methodology and assumptions underlying this forecast are subject to future revision as economic conditions change.

Sales Tax Forecasts

Moody's Economy.com has forecast average annual growth in Santa Clara County retail sales of 2.23 percent from 2009 through 2038. This compares to the 30 year projected growth in San Jose CPI of 2.88 percent. During the SRTP period, the forecasted compounded annual growth in sales tax revenues is 2.25% and the forecasted average annual growth in San Jose CPI is 3.27%. This represents a real decline in sales tax revenue, which is attributable to two national trends that have been identified by Moody's Economy.com.

- Changes in consumer expenditures, including greater consumption of services (especially healthcare services), which are not presently subject to sales and use tax in California, have been a continuing trend over the past two decades.
- Less investment spending is projected than was previously forecast by Moody's Economy.com as recent increases in borrowing by the U.S. government in response to the economic crisis has resulted in increasing the cost of debt for all borrowers. Decreased private investment spending results in decreased productivity growth, which in turn limits projected economic growth and sales tax receipts.

Figure C-1: 1976 ½-Cent Sales Tax Projections (2010-2019)



Source: Beacon Economics and Moody's Economy.com

Figure C-1 summarizes the forecast of VTA ½-cent sales tax revenue annually for the period 2010-2019. The graph on the left presents projected tax receipts in year-of-expenditure (inflated) dollars while the graph on the right summarizes receipts in base-year (2009) dollars.

While VTA sales tax revenues are projected to grow in inflated dollars, revenues are projected to decline in real terms, i.e., the spending power associated with sales tax revenue will decline over time, which is projected to continue even beyond the SRTP period, reflecting an aging population, increasing saving, and an increasing trend toward consumption of services (especially health care services) and other non-taxable expenditures (e.g., internet sales). This, combined with relatively modest population gains (roughly 1 percent per year, similar to the U.S. average), result in sales tax growth lower than the Moody's Economy.com San Jose CPI inflation projections produced as part of this forecast (and discussed later in this appendix).

Santa Clara County Taxable Sales Forecast Methodology

Santa Clara County taxable sales are forecast on the basis of actual receipts of the VTA 1976 ½-cent sales tax, a permanent sales tax dedicated to VTA operations and capital. This tax shares its base with VTA's other sales tax, 2000 Measure A, a 30-year sales tax approved in November 2000 and first collected in April 2006. Measure A is dedicated to VTA operations and various transit expansion projects, including the SVRT project, and will sunset in April 2036.

Purchases to which VTA's sales taxes apply are specified by California state laws and regulations. In general, California law requires sales and use tax on all purchases of tangible personal property to its ultimate consumer. Services are not subject to sales tax. Groceries are not generally taxed, but prepared foods and restaurant meals are. Sales taxes also apply to gasoline, levied on top of the actual cost of the fuel and state and federal gallonage-based fuel taxes. A number of items are exempt from sales taxes, including certain agricultural supplies, prescription drugs and certain medical supplies, and certain energy devices and supplies. Vehicle purchases are taxed based on the locality in which the purchaser registers the vehicle, not the location in which the vehicle is purchased. Sales tax does not apply to sales of tangible personal property to persons who purchase it for the purpose of incorporating it into the manufactured articles to be sold, as, for example, any raw material becoming an ingredient or component part of the manufactured article.

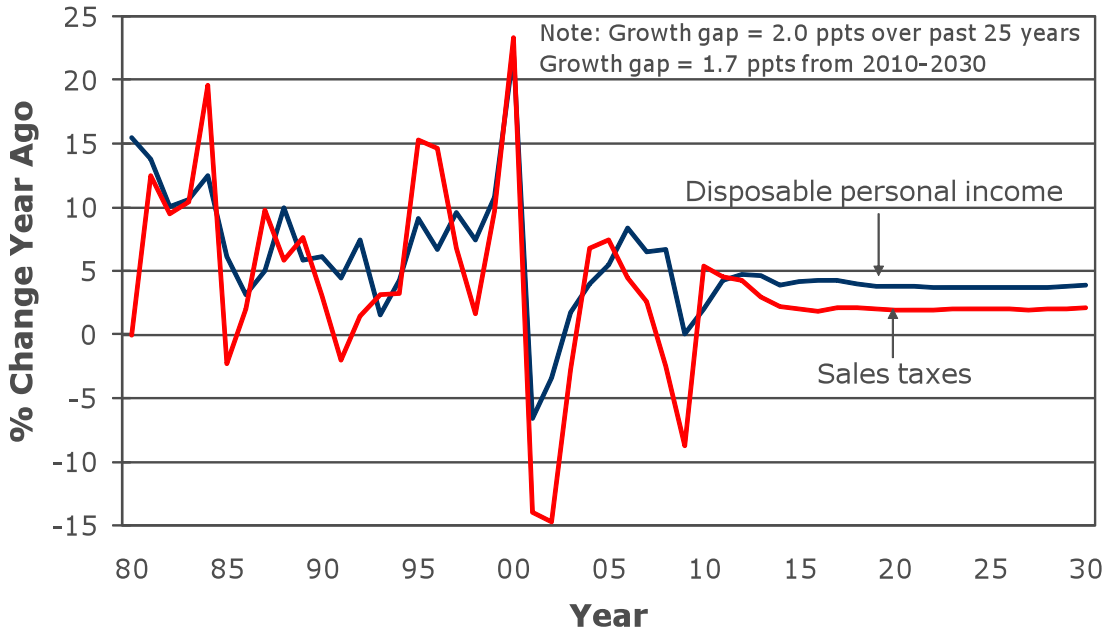
The primary independent determinant of sales tax revenues is disposable personal income. Over the past 25 years, fluctuations in sales tax revenues have roughly tracked changes in income growth, although sales tax revenues have grown at a somewhat slower rate (4.1 percent compared to 6.1 percent).

Over the extended forecast horizon, income and population gains will not match the boom years of the 1980's and 1990's. Given more modest expectations for job gains, population growth is expected to settle at just over a 1.0 percent annual rate, while income growth will remain below 4 percent per year.

The gap between growth in disposable personal income and growth in taxable sales can be largely traced to an eroding sales tax base. Over time, consumption has shifted toward goods and services that are exempt from tax. Growth in spending on untaxed services has been particularly pronounced. For example, with medical costs rising rapidly for an aging population, consumption of health services is taking up larger slice of the pie. On a smaller scale, growth in untaxed internet sales is also eroding the effectiveness of sales taxes. These are national trends that are not unique to Santa Clara County or California.

Going forward, the gap between growth in personal income and sales tax revenues is expected to narrow, but persist. This trend is graphed in Figure C-2.

Figure C-2: Income Gains Drive Santa Clara County Sales Tax Revenue

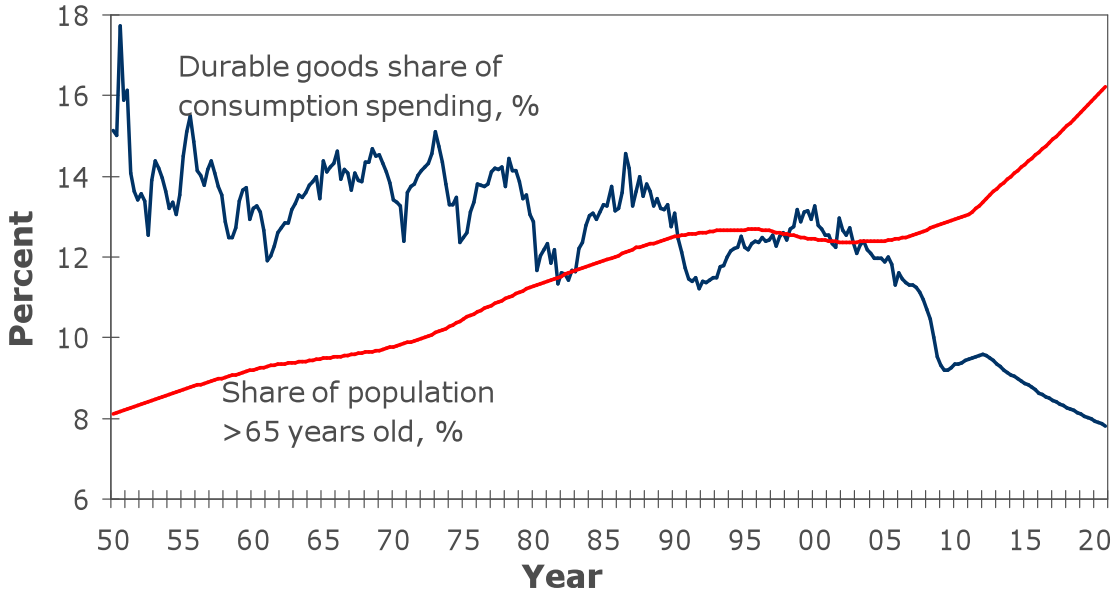


Source: Moody's Economy.com

Not only will consumption patterns continue to shift toward untaxed services, but savings rates must also rise from their current depressed state. As households save more, incomes will grow faster than taxable spending.

In an attempt to capture the many factors that erode the sales tax base, the model includes the spending share on big-ticket durable goods as an explanatory variable. When households and businesses are purchasing many vehicles and other tangible goods, sales tax collections perform well relative to income growth. Sales of vehicles, home furnishings and electronics will remain relatively modest throughout the extended forecast horizon. Figure C-3 demonstrates trends contributing to an eroded sales tax base nationally, contrasting relative growth in the population of senior citizens with declines in the consumption of durable goods. These trends are forecast to continue over the foreseeable future, and expose a vulnerability of sales tax-based financial plans that could be offset by expanding the tax base or raising the taxing rate. Expanding the tax base was accomplished in New Orleans a decade ago (by adding a sales tax on hotel accommodations) and in Oahu through the sales and use tax, which is applied to retail sales, rentals, and professional services. Increasing the tax rate was accomplished in Los Angeles County in November 2008 when voters increased the ½-cent Measure A and ½-cent Measure C taxes by yet another ½-cent by approving Measure R.

Figure C-3: Eroding U.S. Sales Tax Base



Source: Moody's Economy.com

Another factor in the forecast is the national level of investment spending. Moody's Economy.com has revised its long-term forecast of investment spending due to what it perceives to be fundamental changes in the economy during the present economic downturn. Moody's Economy.com projects decreased future economic growth resulting from deceased productivity growth due to decreased private investment. Decreased private investment is projected due to increased costs for all borrowers that result from increased borrowing by the United States government to support recent economic stimulus measures.

Moody's Economy.com County Forecast Database

The Moody's Economy.com County Forecast database (CTFOR) houses historical and forecast data over a 30-year forecast horizon for several economic variables for every county in the nation. This database is applied to forecast Santa Clara County-specific economic variables, including taxable sales. Moody's Economy.com brings together data from various publicly available sources to estimate and forecast economic variables at the county level. Variables in the county forecast database cover several economic areas, including demographic, labor, income, housing and mortgage markets.

The goal with this database is to bring together a complete set of historical data and estimates for the variables at the county level, and project the variables across the forecast horizon using trend estimations. Historical data are obtained from several public and private sources, and adjusted by Moody's Economy.com for consistency and quality. County-level forecasts are closely tied to relevant state and metro forecasts. Variables for counties within metropolitan areas are reconciled with Moody's Economy.com metro area forecasts; non-metro rural counties data are reconciled at the end so that total county data typically matches up with state trends.

All the data in the CTFOR database are of annual frequency, and are available from the last available historical data for each series (as far back as 1970) to 30 years into the forecast horizon. History and projections are updated monthly, following the updates of the Moody's Economy.com state and metro models, and are typically available in the second week of the month following the forecast period. Thus, the August county forecast is typically available by September 15.

Moody's Economy.com regularly reviews and updates the forecast methodology for the myriad of variables included in the county forecast database.

The following is a brief description of the most significant series and classes of economic variables in the CTFOR database. Please note that this list is not comprehensive, and that CTFOR includes other series besides the ones described below.

Demographics

Demographic data in the Moody's Economy.com county database include population (total and by 5-year age cohort), number of households, birth and death rates, and net migration. Population data are the primary variables in the county database, and is used to drive several other forecasts within the county database.
Historical county-level population data comes from the Census Bureau, as do the shares for the different age cohorts. Population forecasts are essentially trend forecasts, based on a 7-year moving average of the county's history. Forecasts of households, birth and death rate, and net migration are all driven by the county's population forecast.

Labor market

The county forecast database includes establishment employment estimates; broken down by major North American Industry Classification System (NAICS) based industry categories, as well as data on the labor force and unemployment rate.

Historical estimates and forecasts for establishment employment in the county forecast database come directly from the Moody's Economy.com detailed county employment database. The detailed employment database incorporates the timeliest and most comprehensive data available down to the four-digit NAICS level from the Bureau of Labor Statistics (BLS) BLS790, Bureau of Economic Analysis (BEA) Regional Economic Information System, and BLS ES202 payroll employment datasets. The county forecast database includes total non-agricultural employment estimates, as well as data for major NAICS industry categories, including manufacturing, retail trade, leisure, hospitality, and government.

Historical data for the labor force, total unemployed, and unemployment rate at the county level are obtained from the BLS on a monthly basis. Forecasts are based on growth rates of the labor force share and the unemployed share of population at the state level.

Income

Income variables in the county forecast database include personal income and its various components (wage and salary, transfer payments, etc.), as well as derived variables such as per capita, median household and personal disposable income.

Historical income estimates at the county level for personal income and its components come from annual data reported by the BEA through its Regional Economic Information System. A trend forecast derived from county level population forecasts and the projected income growth in the state is used to create and drive the total personal income and component forecasts. Median household income forecasts are derived using the county level personal income and household forecasts.

Inflation and Interest Rates

Figure C-4 lists the inflation and interest rates included in the forecast applied in the SRTP operating and capital forecasts.

Figure C-4: Inflation and Interest Rates

Inflation and Income	• US CPI: Urban Consumer - All Items, (Index 1982-84=100, SA)
	• US NIPA: Personal consumption expenditures, (Bil. C$, SAAR)
	• San Jose, CA CPI: Urban Consumer - All Items, (Index 1982-84=100, SA)
Energy Cost Indices	• US Petroleum Crude Oil Price: West Texas Intermediate - Sweet Wellhead, ($)
	• CA Petroleum Crude Oil Price, WTI Equivalent ($)
	• US Natural Gas: Henry Hub, ($ per mmbtu)
	• CA Natural Gas ($ per mmbtu)
	• US CPI: Urban Consumer - Electricity, (1982-84=100, SA)
	• San Francisco, CA CPI: Urban Consumer - Electricity, (1982-84=100, SA)
Construction Cost Indices	• US ENR: Construction Cost Index, (Index 1913=100)
	• San Francisco, CA ENR: Construction Cost Index, (Index 1913=100)
	• US ENR: Building Cost Index, (Index 1913=100)
	• San Francisco, CA ENR: Building Cost Index, (Index 1913=100)
	• US RS Means Construction Cost Index (Jan 1993=100)
	• San Francisco, CA RS Means Construction Cost Index (Jan 1993=100)
Interest Rates (U.S. National)	• Revenue Bond Index
	• Bond Buyer Index: General Obligation 20-Years to Maturity, (%)
	• Interest Rates: Nonfinancial Commercial Paper - 1 Month, (%)
	• 3-Month T-Bill, (%)
	• 6-Month T-Bill, (%)
	• 1-Year T-Note, (%)
	• 2-Year T-Note, (%)
	• 3-Year T-Note, (%)
	• 5-Year T-Note, (%)
	• 10-Year T-Bond, (%)
	• 30-Year T-Bond, (%)
Revenue Forecast	• Santa Clara County sales tax receipts ($mil, VTA fiscal years)

Unless otherwise noted, San Francisco- (or California-) specific inflation forecasts and national interest rate forecasts are described and illustrated in this appendix.

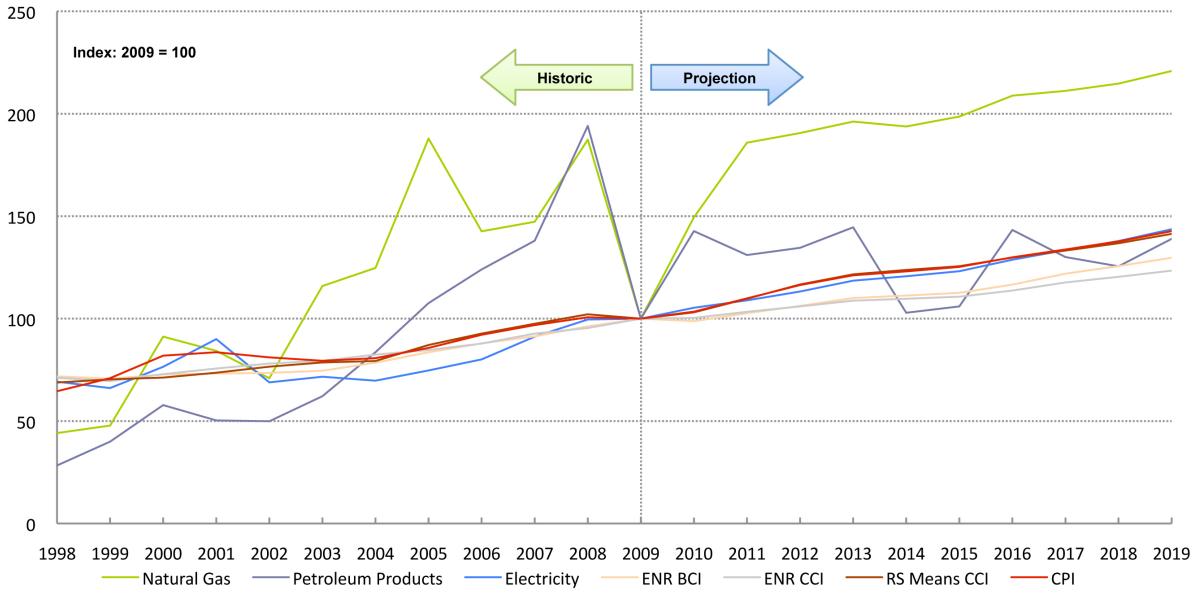
The projections provided by Moody's Economy.com include a baseline trend and baseline cycle forecast. The baseline forecasts are based on assumptions regarding the most likely set of economic outcomes over the next 30 years (which encompasses the SRTP period). The trend forecast does not assume business cycle peaks and troughs, while the cycle forecast does. The baseline cycle forecast is applied as the most likely forecast in the financial model used to develop the SRTP operating and capital forecasts.

The baseline trend forecast assumes that economic growth resumes at the end of 2009 and returns to its previous peak during the first half of 2011. The forecast projects stable economic growth beyond the period of the current economic recovery. This forecast represents a midpoint estimate of future economic growth.

The baseline cycle forecast likewise assumes that economic growth resumes at the end of 2009 and returns to its previous peak during the first half of 2011, and is a midpoint estimate of future economic growth. Unlike the baseline trend forecast, however, the baseline cycle forecast assumes annual changes in economic indicators corresponding with business cycle peaks and troughs.

Inflation Rate Forecasts

Figure C-5: Compound Inflation Forecast Trends



Source: Moody's Economy.com

Historic and Projected Trends: Figure C-5 illustrates compound trends in several key historic (since 1998) and projected (2009 onward) baseline cycle inflation rates. San Jose Consumer Price Index Urban Consumer - All Items (CPI), depicted as a red line on the graph, has a forecast annual growth rate of 2.88 percent from 2009 to 2038.

Energy prices show varying growth trends. Petroleum products are forecast to have an average annual growth rate of 2.55 percent and are projected to be highly volatile, consistent with recent historical trends. Electricity is forecast to grow at a relatively steady average annual rate of 2.93 percent, slightly higher than inflation.

Construction prices are forecast to follow forecast trends in CPI much more closely than energy prices. The ENR Building Cost Index has a forecast annual rate of growth of 2.58 percent from 2009 to 2038, and the ENR Construction Cost Index is forecast to grow 2.08 percent, both of which are just slightly higher than CPI. The RS Means Construction Cost Index is forecast to have an annual rate of growth of 2.61 percent, higher than the two ENR indices but still slightly less than CPI.

Consumer Inflation: Figure C-6 presents the San Jose CPI inflation projections by Moody's Economy.com. Business cycle trends are apparent in this graph, with regular upswings and downswings in inflation resulting from assumed swings in the business cycle. The forecast shows a slowing trend in inflation over time. This represents a higher likelihood for upside risk in inflation.

Energy Inflation: Figure C-7 shows petroleum products (diesel fuel) inflation projections (note the scale on the petroleum graph is different than the other inflation projection graphs). The forecast is of the California Petroleum Crude Oil Price: West Texas Intermediate - Sweet Wellhead equivalent (in dollars per barrel). The forecast assumes a marked, downward trend in nominal petroleum prices from their current historic highs. Volatile swings in the forecast are evident throughout the SRTP period.

Figure C-8 illustrates electricity inflation projections. The forecast is of San Francisco CPI: Urban Consumer – Electricity. Electricity prices are forecast to have a rate of growth similar to CPI. Near-term volatility in price growth is evident.

Construction Inflation Forecasts

Construction Inflation: Moody's Economy.com provided forecasts of three different construction cost indices for the San Francisco Bay Area:

- Engineering News Record Construction Cost Index (ENR CCI)
- Engineering News Record Building Cost Index (ENR BCI)
- RS Means Construction Cost Index (RS Means CCI)

Each of these indices is based on a different mix of construction commodities and labor. The ENR indices each include the same "market-basket" of construction commodities prices: 25 cwt of standard structural steel shapes at the mill price prior to 1996 and the fabricated price from 1996, plus 1.128 tons of Portland cement, plus 1,088 board-ft of 2 x 4 lumber. The ENR Construction Cost Index includes only unskilled labor (200 hours of common labor) while the ENR Building Cost Index includes both skilled (68.38 hours of skilled labor at the average of bricklayers, carpenters and structural ironworkers rates) and unskilled labor (200 hours of common labor).

The RS Means cost index is a weighted average of "put-in-place" cost of a broad range of components of construction cost across nine major building types. The index gives more value to more expensive components of construction cost and less influence to those elements that are usually the least expensive. The index applies actual skilled and unskilled labor costs rather than explicit consideration of trade wage rates, and also considers commodities, finished goods, and construction equipment rental

Figure C-6: San Jose Consumer Price Index - All Urban Consumers

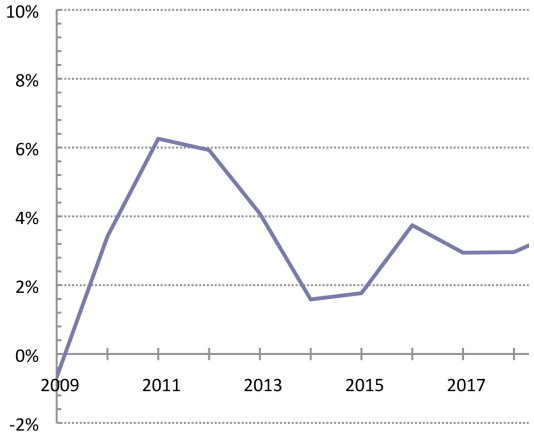


Figure C- 7: Petroleum (Diesel) Inflation Projections

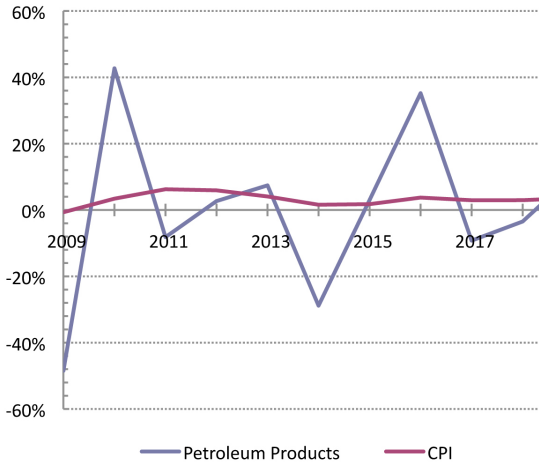
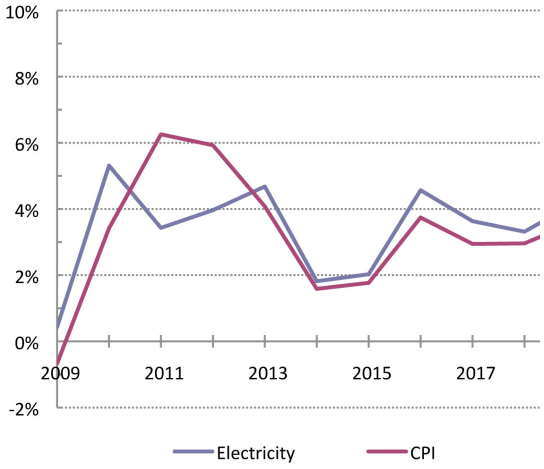


Figure C-8: Electricity Inflation Projections

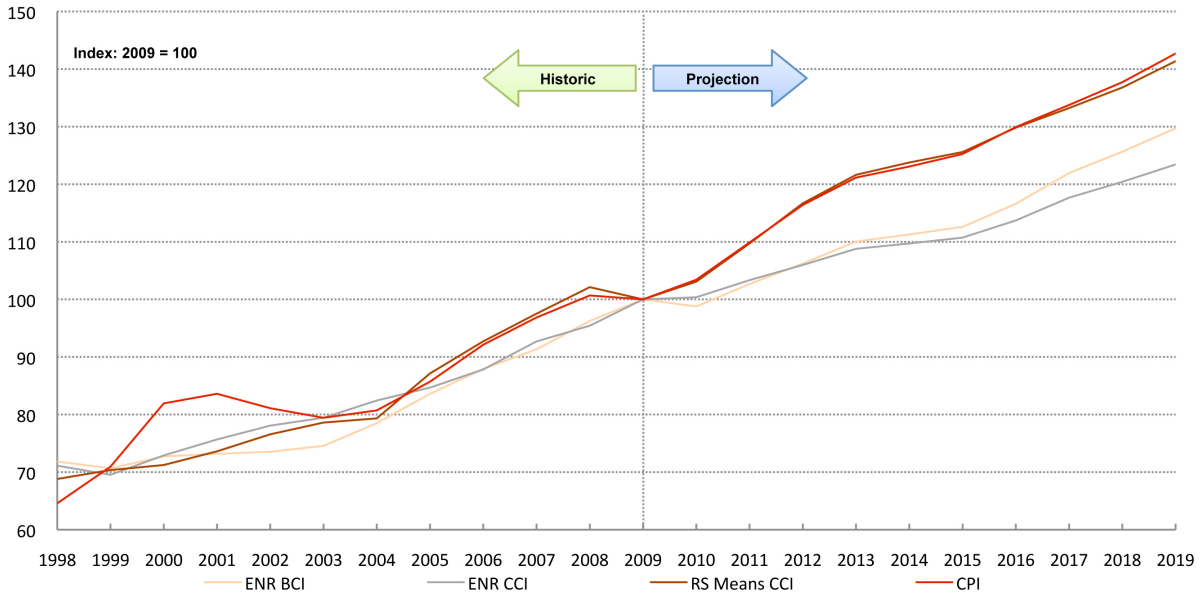


Source: Moody's Economy.com

costs. The index's exact material, labor, and equipment quantities are based on nine commonly constructed building types, weighted in proportion to expected usage. The building types include factory, office, retail, government, academic, healthcare, parking, lodging, and multi-family residential. The index considers specific quantities of 66 construction materials, specific labor hours for 21 construction trades, and specific days of equipment rental for six types of construction equipment. The RS Means Index is more representative of the mix of materials and labor in rapid transit construction than the ENR indices.

Figure C-9 presents an historic as well as a projected view of construction inflation, along with the San Jose Consumer Price Index (CPI) for all urban consumers, a common measure of consumer inflation. Bay Area CPI has historically grown at a faster rate than all measures of construction inflation in the region, reflecting the sharp rise in housing prices, a component of the CPI, in the region over the last three decades. San Jose CPI growth has averaged 3.96 percent annually since 1990. In the last five years, however, construction prices have experienced dramatic growth as the cost of construction commodities—notably, steel and concrete—has grown, driven by the emergence of China and, to a lesser extent, India in the world construction market. With the economic downturn this growth has since stabilized and, according to some indices, declined. The Bay Area RS Means Construction Cost Index has historically grown at a faster rate than the other construction inflation indices (averaging 3.09 percent growth annually since 1990), reflecting its calculation on the basis of a wider variety of construction trades and commodities prices than the ENR indices. The Bay Area ENR Construction Cost Index has averaged 2.46 percent annual growth since 1990; the Bay Area ENR Building Cost Index, 2.92 percent.

Figure C-9: Historic and Projected Bay Area Construction Inflation



Source: Moody's Economy.com

Figure C-9 also summarizes Moody's Economy.com's construction inflation projection. As previously mentioned, San Jose CPI is forecast by Moody's Economy.com to have an annual growth rate of 2.88 percent from 2009 to 2038. The Bay Area ENR Building Cost Index (tan line) has a forecast annual rate of growth of 2.52 percent from 2009 to 2038, lower than CPI, while the Bay Area ENR Construction Cost Index (grey line) is forecast to grow 1.98 percent from 2009 to 2038, much lower than Bay Area CPI. The Bay Area RS Means Construction Cost Index (brown line) is forecast to have an annual rate of growth of 2.77 percent, slightly lower than CPI and the highest of the three construction cost indices.

ENR Construction Cost Index and Build Cost Index

Figure C-10 shows Bay Area ENR construction cost inflation projections. In this figure, the line graph summarizes the baseline forecasts by Moody's Economy.com of the ENR Construction Cost Index (green line) and Building Cost Index (blue line). Both rates are forecast to grow at a slower rate than CPI (broken line); the Construction Cost Index more so than the Building Cost Index. Like forecast CPI, both ENR indices show slowing growth over time. This represents higher upside inflation risk.

RS Means Construction Cost Index

Figure C-11 shows the Bay Area RS Means construction cost inflation projections. The RS Means Construction Cost Index is forecast to grow at a slightly slower rate than CPI (broken line). Like CPI, the projected growth in the RS Means index slows down slightly.

VTA has opted to apply the Moody's Economy.com forecast of the RS Means Construction Cost Index as the basis for capital construction cost escalation. This is based on the historically faster rate of growth of the RS Means index compared to the ENR construction inflation indices, reflecting the RS Means calculation on a wider variety of construction trades and commodities prices than the ENR indices. The RS Means Construction Cost Index is also forecast to have a higher average annual rate than the ENR indices, which makes it a more conservative measure of construction inflation forecast by Moody's Economy.com. In addition, the RS Means Construction Cost Index is forecast to grow at a higher average annual rate than Bay Area CPI through the SVRT project construction period, consistent with historical trends.

Interest Rate Forecasts

Figure C-12 displays three-month U.S. Treasury Bill (TBill) interest rate projections, applied in the financial model to calculate interest earnings. The average rate over the 30-year period is 3.60 percent. As with the inflation rates, there is a decline in interest rates over time, which represents a higher upside risk in interest rates.

Figure C-10: Engineering News Record Bay Area Construction Cost Inflation Projections

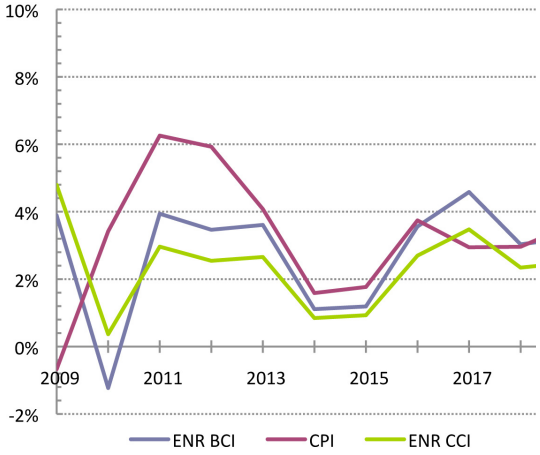


Figure C-11: RS Means Bay Area Construction Cost Index Inflation Projections

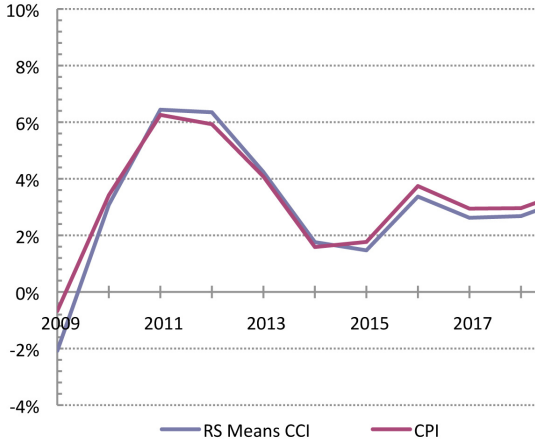
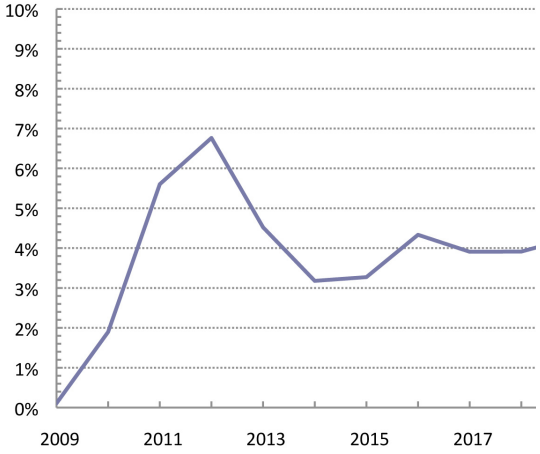


Figure C-12: Three-Month U.S. Treasury Bill (T Bill) Interest Rate Projections



Source: Moody's Economy.com

Figure C-13 shows the projection of non-financial commercial paper interest rates, applied in the financial model as the interest rate for tax-exempt commercial paper. The average projected rate over the 30-year period of the Measure A Program is 4.18 percent. Forecast commercial paper rates show a slight decline over time.

Figure C-14 shows Bond Buyer Index 20-year bond issue interest rate projections. The Bond Buyer Index is applied in the financial model as the interest rate for conventional bonds. The average projected rate over the 30-year period encompassing the Measure A Program is 4.44 percent, 0.26% higher than the projected average interest rate for non-financial commercial paper. The Bond Buyer 20 Index forecast shows a slight decline in interest rates over time. Near-term volatility in rates is again evident.

Figure C-13: Non-Financial Commercial Paper Interest Rate Projections

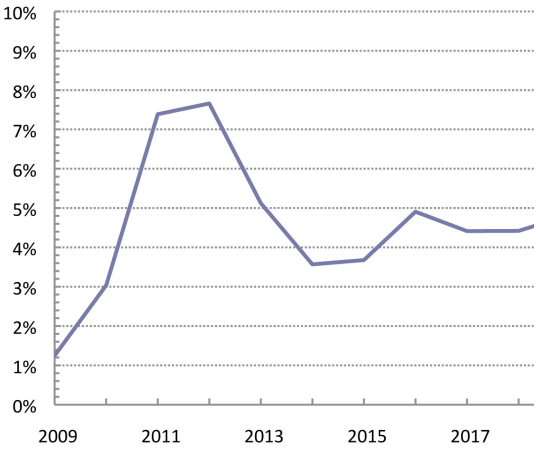
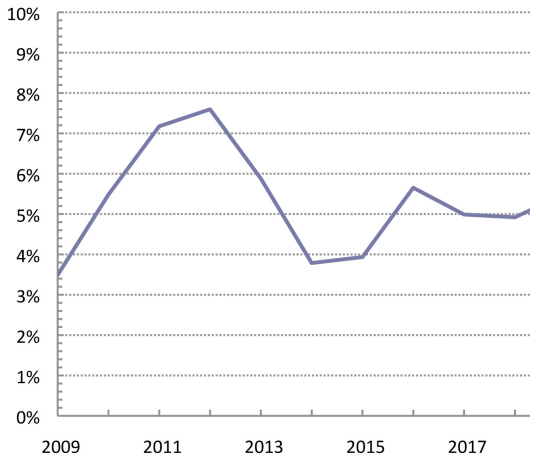


Figure C-14: Bond Buyer Index Interest Rate Projections



Source: Moody's Economy.com

Appendix D: BART Extension Financial Details

The 2001 Comprehensive Agreement between the VTA and BART calls for BART to operate the SVRT extension and to credit VTA for a portion of the fare revenue collected. VTA will pay the operating subsidy and capital costs associated with BART "core capacity" requirements through a subsidy payment to BART. In summary, the flow of funds is calculated as follows:

BART Subsidy

VTA makes a payment to BART which funds BART O&M costs, including direct and fixed O&M costs. VTA is credited with the operating revenues that are generated by the extension, including fare revenue, advertising income, and parking revenue.

The difference between VTA's payment to BART plus operating revenues credited to VTA and the O&M costs is applied as capital sources of funds.

In addition, federal transit formula funds accruing to the San Jose Urbanized Area may be applied as capital sources of funds.

Capital sources of funds fund a capital reserve contribution. Capital sources of funds equaling up to 30 percent of O&M costs are credited to a Capital Reserve Fund. Capital sources of funds in excess of the Capital Reserve Fund contribution are either credited to an Excess Capital Reserve Fund or refunded to VTA's Measure B Operating Tax Fund.

In November 2008, Santa Clara County voters approved the Measure B 1/8-cent Sales Tax. This tax is limited to thirty years and will provide funds for operating and maintenance expenses and capital reserve contribution related to the BART extension. The sales tax takes effect upon receipt of a Full Funding Grant Agreement with FTA. Collection of Measure B is assumed to begin in FY13, commensurate with the first receipt of New Starts grants to the SVRT project. The Measure B sales tax base is assumed to grow at the same rate as the VTA 1976 1/2-cent Sales Tax and 2000 Measure A 1/2-cent Sales Tax. The sales tax projection is described in the Appendix B.

There are two components of the SVRT Extension O&M cost: direct and fixed overhead costs.

Direct O&M costs are calculated by multiplying cost drivers—level-of-service variables defined in the planning process—by unit costs calculated from the current BART O&M cost model which was calibrated based on the BART FY05 budget.

BART's fixed overhead costs are allocated to the extension on the basis of extension related systemwide direct O&M costs relative to BART Core System direct O&M costs.

The O&M cost drivers, unit costs, and inflation assumptions, as well as the calculation of direct and fixed overhead O&M costs, are described below.

In addition to fixed overhead O&M costs, there are 18 variable cost drivers, which include:

Linked Passenger Trips	Early/Late Trains	At-Grade Stations
Lines	Total Car Hours	Subway Stations
Peak Vehicles	Total Train Hours	Parking Spaces
Fleet Vehicles	Revenue Route Miles	Yard with Back Shops
Peak Trains	Total Stations	Service & Inspection Yards
Base Trains	Elevated Stations	

Costs are forecasted to the design year (2030) and then interpolated based on the level-of-service in 2018 and 2019.

Unit costs are derived by cost driver from the O&M cost model developed for BART by Connetics Transportation Group. As specified in Section IV.C.3 of the Comprehensive Agreement, an O&M cost model is required as the basis for estimating VTA's subsidy to BART for operating the extension. The precise method by which the O&M cost model is developed and applied is specified in Exhibit B of the Comprehensive Agreement. The O&M cost model is calibrated to BART O&M costs, employee headcounts, and service levels specified in BART's Fiscal Year 2005 budget, which is the most recent model version available. The model has been periodically updated to reflect changes in service plans for the extension alternative as well as the steep growth in BART electricity costs since 2005.

Costs are specified by cost driver by object class, each of which may apply its own inflation rate. Object classes include:

Labor Net of Healthcare	ADA Service
Healthcare Fringe	Electric & Natural Gas
Shuttle Service	Other Non-Labor
Express Bus Service	

Certain of these object classes are excluded from the calculation of incremental O&M costs, per Exhibit B of the Comprehensive Agreement. These object classes include Shuttle Service, Express Bus Service, and ADA Service. ADA paratransit service costs are excluded based on the assumption that VTA will separately and apart from the Comprehensive Agreement assume financial responsibility for any additional ADA Paratransit services in Santa Clara County required due to the operation of the extension.

Unit costs are inflated to year-of-expenditure dollars by applying a specific inflation projection for each object class to each unit cost by cost driver.

The following basis is used to project inflation for each object class, consistent with inflation assumptions in the VTA core system:

Labor and Fringe Benefits: Moody's Economy.com forecast of Bay Area Consumer Price Index (CPI) for all urban consumers

Electric: Moody's Economy.com forecast of California electric prices. (Note that the predominant share of this object class is traction power for rail service, as well as electricity for stations and other BART facilities. Also note that electricity unit costs reflect BART's current practice of purchasing electric power on the open market with no power purchased from the Bonneville Power Administration.)

Other Non-Labor: Moody's Economy.com forecast of Bay Area CPI