Triennial Performance Audit

of the

Bay Area Rapid Transit District (BART)

Fiscal Years 2013/14, 2014/15 and 2015/16

FINAL AUDIT REPORT

prepared for the

METROPOLITAN TRANSPORTATION COMMISSION

by

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Management Consulting

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NOTE:

All exhibits in this report are presented at the end of the associated discussion in each section.

EXECUTIVE SUMMARY

This executive summary highlights the findings from the performance audit of the San Francisco Bay Area Rapid Transit District (BART). In California, a performance audit must be conducted every three years of any transit operator receiving Transportation Development Act (TDA) Article 4 funds, to determine whether the operator is in compliance with certain statutory and regulatory requirements, and to assess the efficiency and effectiveness of the operator's services. BART operates a rapid rail system, which extends into three member counties (Alameda, Contra Costa, and San Francisco), and part of San Mateo County. BART also operates an automated guideway people mover service between the BART Coliseum Station in Oakland and Oakland International Airport, which began operations in November 2014. The audit period is Fiscal Years 2014 through 2016 (from July 1, 2013 through June 30, 2016).

BART meets its requirement for providing ADA complementary paratransit service through the East Bay Paratransit Consortium (EBPC), which was established by BART and AC Transit. EBPC's performance is not included in this audit report, but the EBPC report is presented as an appendix to this report, since it is a shared responsibility of both BART and AC Transit.

Performance Audit and Report Organization

The performance audit is being conducted for MTC in accordance with its established procedures for performance audits. This final audit report consists of these sections:

- An assessment of data collection and reporting procedures;

- A review of performance trends in TDA-mandated indicators and component costs;
- A review of compliance with selected PUC requirements;
- An evaluation of BART's actions to implement the recommendations from the last performance audit;
- An evaluation of functional performance indicator trends; and
- Findings, conclusions, and recommendations to further improve BART's performance based on the results of the previous sections.

Comments received from BART and MTC staff regarding the draft report have been incorporated into this final report. Highlights from the key activities are presented in this executive summary.

Results and Conclusions

Review of TDA Data Collection and Reporting Methods - The purpose of this review is to determine if BART is in compliance with the TDA requirements for data collection and reporting. The review is limited to the five data items needed to calculate the TDA-mandated performance indicators. This review has determined that BART is in compliance with the data collection and reporting requirements for all five TDA statistics. In addition, the statistics collected over the six-year review period appear to be consistent with the TDA definitions, and indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics.

As the automated people mover service began operations in November 2014, the statistics reported for that mode are limited to part of FY2015 and all of FY2016.

Consistency of the automated people mover statistics cannot be determined at this time due to the limited time frame.

Performance Indicators and Trends – BART's performance trends for the five TDA-mandated indicators were analyzed by mode. A six-year analysis period was used for all the indicators. In addition, component operating costs were analyzed.

- Heavy Rail Service – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2011 through FY2016:

  – There was an average annual increase in the operating cost per hour of 3.7 percent, or 1.2 percent in inflation adjusted dollars. The largest annual increase of 6.9 percent occurred in FY2013.

  – The cost per passenger increased on average by 2.2 percent per year, which, when measured in constant FY2011 dollars, resulted in an average annual decrease of 0.3 percent.

  – Passenger productivity showed modest improvement, with passengers per car service hour increasing by 1.4 percent per year overall, and passengers per car service mile increasing by 1.7 percent annually.

  – Employee productivity was mostly static, increasing an average 0.2 percent per year.

  The following is a brief summary of the component operating costs trend highlights for heavy rail service between FY2011 and FY2016:

  – Labor costs went up by about two percent per year, but their share of total costs was reduced from about 50 to 40 percent.

  – Fringe benefit costs went up 3.4 percent per year, slightly higher than labor costs, and their share of total costs also decreased over the audit period from about 40 percent to 33 percent of total costs.

- Services costs experienced the highest increase among the cost categories, at 11.5 percent annually. Services comprised between seven and nine percent of total operating costs. The increase in service costs was attributed to increased costs for IT professional services, fleet maintenance and repairs, and payment to AC Transit for feeder services not covered by STA funding.

- There were moderate changes overall in the remaining component costs. Materials and supplies and casualty/liability costs both increased by 6.7 percent per year, with materials accounting for about six percent of total costs and casualty less than two percent. Utilities costs, about eight percent of total operating costs, were mostly unchanged.

- The other expenses category showed a decrease of over 180 percent annually, due to negative costs reported in FY2011 and FY2012 per NTD reporting guidelines. NTD guidelines instructed transit operators to reclassify some of their operating costs to other functions or as capital costs. This practice was eliminated from NTD reporting beginning with the 2013 report.

- Automated People Mover Service – With just one partial year and one full fiscal year of NTD data to examine, the TDA performance presented here may not constitute a trend. However, we are presenting the following performance information below. The following is a brief summary of the TDA performance trend highlights between FY2015 and FY2016:

  - Cost efficiency decreased slightly, with operating costs per car service hour rising one percent. With the effects of inflation removed, cost per hour decreased 1.4 percent.

  - Cost effectiveness, measured as operating cost per passenger, increased with a 10 percent drop in this area. In constant dollars, cost per passenger decreased 12.1 percent.

  - Passenger productivity showed positive performance, with passengers per service hour and passengers per service mile both increasing over 10 percent between FY2015 and FY2016.

The following is a brief summary of the component operating costs trend highlights for automated people mover service between FY2015 and FY2016:

- Labor costs decreased by 21.5 percent, while fringe benefits costs increased 16.1 percent. Together, these two cost categories comprise less than a five percent share of the automated people mover total operating costs.

- Utilities costs increased 52.5 percent, and comprised about 12 percent of the total operating costs.

- Purchased transportation is the largest component of total operating costs at about 85 percent. Purchased transportation costs increased approximately 66 percent between FY2015 to FY2016.

- No costs were reported in the casualty/liability and other costs categories, and only minimal expenses were reported for materials and supplies. All three of these categories represented a zero percent share of total operating costs.

- Overall, the majority of the cost increases reported between FY2015 and FY2016 can be attributed to the fact that FY2015 costs reporting was for a partial year of service, while FY2016 reflects the first full year of service for the system.

PUC Compliance – BART is in compliance with six of the seven sections of the state PUC that were reviewed as part of this performance audit. The sections reviewed included requirements concerning labor contracts, reduced fares, Welfare-to-Work, revenue sharing, and evaluation of passenger needs. As a rapid rail operator, the PUC requirement concerning CHP terminal safety inspections is not applicable to BART.

Status of Prior Audit Recommendations – There were no recommendations made in BART's prior performance audit.

Functional Performance Indicator Trends - To further assess BART's performance over the past three years, a detailed set of systemwide and modal functional area performance indicators was defined and reviewed.

- Systemwide – The following is a brief summary of the systemwide functional trend highlights between FY2014 and FY2016:
  - Administrative costs were consistently less than 20 percent of total operating costs, but increased modestly from about $51 to about $57 per vehicle service hour over the audit period.
  - Marketing costs decreased overall compared to total administrative costs and remained unchanged per passenger trip.
  - Systemwide farebox recovery ratio improved slightly overall, fluctuating between 76 and 78 percent throughout the audit period.
- Heavy Rail Service – The following is a brief summary of the heavy rail service functional trend highlights between FY2014 and FY2016:
  - For service planning, there was steady performance in operating cost per passenger mile, with an increase of two cents per mile over the period. Vehicle miles in service consistently averaged about 98 percent each year, while vehicle hours in service demonstrated a slight increase from 83 to 85 percent.
  - There was a four percent decrease in the vehicle operations cost per total operating cost, and a less than two percent decrease in vehicle operations costs per service hour. Farebox recovery ranged between 78 percent in the first and last year of the period and 80 percent in FY2015.
  - Operator scheduled absences increased just over six percent. Operator unscheduled absences decreased about 20 percent overall, but still demonstrated a rate of absences exceeding more than 22 percent of total hours worked each year. Approximately 68 percent of unscheduled absences are due to protected leave (i.e. disability, FMLA, and California AB109, a state law which allows employees to

use a portion of their allotted sick leave to care for family members), and 32 percent are due to unprotected leave (i.e. sick days, non-paid leave, etc.). BART has been working to reduce the number of unscheduled operator absences and is implementing several strategies in order to reduce unscheduled absences in the future. These strategies are described further in the Functional Performance Indicator Trends section of this report.

- The actual operator pay hour to train hour ratio was consistently 300 percent or more during the audit period. As such, operators are paid an average of one hour for every 20 minutes that a train is in service. Schedule adherence decreased from 92 to 88 percent, and complaints per 100,000 passenger trips decreased from 5.95 in FY2014 to 4.47 in FY2016.

- Maintenance costs remained steady as a proportion of total operating costs, while vehicle maintenance cost per service hour and maintenance pay hours per service hour both increased by about 10 percent. Maintenance scheduled absences increased about four percent, while unscheduled absences decreased 12 percent. The vehicle spare ratio was steady at 19.3 percent each year. Mechanical reliability improved, with distance between mechanical failure rates increasing over 40 percent for major failures and 30 percent for all failures.

- Safety results included a slight increase in preventable accidents over the audit period, decreased casualty and liability costs per service hour and mile, and an overall decrease in lost days due to industrial accidents.

- Automated People Mover Service – The following is a brief summary of the people mover functional trend highlights for FY2015 and FY2016:

  - Service Planning results included decreasing costs per passenger mile and a consistent 99 percent of vehicle miles and hours in service.

  - There was about a 10 percent decrease in both vehicle operations cost per total operating cost, and in vehicle operations costs per hour. The farebox recovery ratio increased almost 12 percent overall, while

service availability was a consistent 99 percent in both years. There was less than one complaint reported per 100,000 passenger trips.

- The proportion of maintenance costs to total costs decreased 6.5 percent while vehicle maintenance costs per mile decreased more than 37 percent. Mean distance between major failures decreased almost 20 percent, but the distance between all failures increased over 87 percent.

- For safety, there were no lost days due to industrial accidents and no casualty/liability costs attributed to the people mover service.

Recommendations

No recommendations are suggested for BART based on the results of this triennial performance audit.

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I. INTRODUCTION

Public Utilities Code (PUC) Section 99246 requires that a performance audit be conducted every three years of each public transit operator in California. The audit requirement pertains to recipients of Transportation Development Act (TDA) funds, and is intended to assure that the funds are being used efficiently. The substance and process of the performance audit is defined by the Regional Transportation Planning Agency (RTPA).

In the San Francisco Bay Area, the Metropolitan Transportation Commission (MTC) has been designated the RTPA and has this responsibility. By statute, the audit must be conducted in accordance with the U.S. Comptroller General's "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions" (the "yellow book"). The performance audit is a systematic review to determine the extent to which a transit operator has complied with pertinent laws and regulations, and conducted operations in an efficient and economical manner. Relative to system compliance testing, all findings are reported regardless of materiality.

This report has been prepared as part of the performance audit of the San Francisco Bay Area Rapid Transit District (BART). BART operates a rapid rail system, which extends into three member counties (Alameda, Contra Costa, and San Francisco), and part of San Mateo County. BART also operates an automated people mover service between the BART Coliseum Station in Oakland and Oakland International Airport, which began operations in November 2014. The audit period is Fiscal Years 2014 through 2016 (from July 1, 2013 through June 30, 2016).

BART meets its requirement for providing ADA complementary paratransit service through the East Bay Paratransit Consortium (EBPC), which was established by BART and AC Transit. The consortium contracts with a broker, who executes and administers contracts with several service providers for the consortium. EBPC's performance is not included in this audit report, but is presented as an appendix to this report, since it is a shared responsibility of both BART and AC Transit.

An overview of BART is provided in Exhibit 1. This is followed by audit period organization charts in Exhibits 2.1 and 2.2, which reflect the basic organizational structure during the audit period and beyond.

Performance Audit and Report Organization

This performance audit of BART is being conducted for MTC in accordance with its established procedures for performance audits. The audit consists of two discrete steps:

1. Compliance Audit - Activities in this phase include:
    - An overview of data collection and reporting procedures for the five TDA performance indicators;
    - Analysis of the TDA indicators; and
    - A review of compliance with selected state Public Utilities Code (PUC) requirements.

2. Functional Review - Activities in this phase include:
    - A review of actions to implement the recommendations from the prior performance audit;
    - Calculation and evaluation of performance indicator trends; and
    - Findings, conclusions, and the formulation of recommendations.

This report presents the findings from both phases of the audit. Comments received from BART and MTC staff regarding this draft report will be incorporated into the final report.

Exhibit 1: System Overview

Location Headquarters: 300 Lakeside Drive, Oakland CA 94612

Establishment BART was established in 1957 by the California State Legislature. In 1962 voters in San Francisco, Alameda and Contra Costa Counties approved a bond issue to fund the core system. Construction began in June 1964 and revenue service began operating in September 1972.

Board BART is governed by a nine-member Board of Directors, elected by voters in nine districts within the three BART counties. Members serve four-year terms. The Board appoints the General Manager, General Counsel, Controller/Treasurer, District Secretary, and Independent Police Auditor. Day-to-day operations are the responsibility of the General Manager.

Facilities The BART system consists of 104 miles of track and uses a fleet of 669 rail cars. There are 44 stations - 16 surface, 13 elevated and 15 subway. Four of these are a combination of BART and MUNI Metro stations in downtown San Francisco and one station is a combination of BART and Caltrain in Millbrae. BART also operates a 3.2 mile automated guideway people mover system which provides train service from BART's Coliseum Station to the Oakland International Airport. The system, known as the Oakland Airport Connector (OAC), is integrated into BART's existing fare system, however, it does not utilize BART rolling stock and it is not physically connected with BART tracks. Instead, it has its own fleet of four cable-drawn automated guideway transit vehicles that operate on fixed guideways. OAC uses an independent control center located near the Oakland International Airport. BART's administrative offices are located at the Kaiser Center in downtown Oakland. The Operations Control Center (OCC), also in downtown Oakland, functions as the nerve center of the system, performing supervisory control of train operations and remote control of electrification, ventilation and emergency response systems.

Service Data BART provides rapid rail service within its three-County district and to Colma, Millbrae and the San Francisco International Airport in San Mateo County. General hours of operation for rail service are Monday through Friday from 4:00 a.m. to midnight; Saturdays from 6:00 a.m. to midnight; and Sundays and holidays from 8:00 a.m. to midnight. All Nighter bus service runs when BART is closed, serving 30 BART stations either directly or within a few blocks. The rail service consists of five lines, four of which provide Transbay service. Three lines operate seven days a week during all service hours, providing basic service to every station. The other two

serve many stations during daytime hours Monday through Saturday. Service frequencies are 15 minutes during weekday daytimes, and 20 minutes during evenings, weekends and holidays.

Fares are collected through an automated fare collection system and BART participates in the regional "Clipper" smart card program. Adult one-way fares currently range from $1.95 to $15.70 (between the San Francisco and Oakland International airports), and will increase on January 1, 2018 by an inflation based percentage. Fares are based on distance traveled, with surcharges for transbay trips and trips into San Mateo County, and there are additional surcharges for trips to the San Francisco and Oakland International airports. There is also a "speed premium" based on the scheduled speed of a trip compared to the system average. Discounts are available to children age 5 through 12 (children under 5 are free), and to senior citizens and people with disabilities.

Previously, BART contracted for express bus service to several rail stations. These services were transferred to the local bus operators in the applicable parts of the service area, who provide them as part of their existing networks. BART provides subsidies to these local bus operators in exchange for their continuing station access service

BART provides ADA-mandated complementary paratransit within its service area through a partnership with AC Transit. Known as the East Bay Paratransit Consortium (EBPC), this service is administered and operated through a broker, with several contracted service providers.

Recent Changes

BART implemented a fare increase in January 2014 valued at 5.2 percent on average and a fare increase in January 2016, valued at 3.4 percent on average. These fare increases are part of BART's inflation-based fare increase program in effect since 2003. Beginning with the January 2014 fare increase, all incremental fare increase revenue is dedicated to funding BART's highest priority capital projects, which include new railcars, the new Hayward maintenance complex, and a new automated train control system.

BART opened the connector to the Oakland International Airport in November, 2014. As previously mentioned, it is a 3.2 mile aerial guideway people mover system which uses four cable-drawn cars and provides train service from BART's Coliseum Station to the Oakland International Airport.

BART is embarking on a Station Modernization Program that will invest resources and efforts into the existing core stations and surrounding areas. By upgrading and modernizing station functionality and improving capacity and flow, stations will become safer and more pleasant places to be.

BART is close to completing the Earthquake Safety Program to upgrade vulnerable portions of the original BART system. Portions of the original system with the highest traffic are upgraded for life safety and to ensure that they can return to operation shortly after a major earthquake.

Planned Changes

BART fares will increase systemwide on January 1, 2018, based on an inflation-based calculation done in January 2017. As noted previously, since 2014, fare increase revenue has been dedicated to help pay for high priority projects including new rail cars and related system improvements.

System expansion projects currently under construction include the Warm Springs/Silicon Valley extension, and the East Contra Costa (eBART) connecting diesel rail extension. Several other projects are in the planning and design phases.

BART has a contract to procure 775 new rail cars to replace the current fleet that has largely been in service since 1972, and is nearing the end of its useful life. BART is also planning to procure an additional 306 rail cars.

The Hayward Maintenance Complex (HMC) project, which is underway, includes improvements to three properties which have been acquired to expand the existing Hayward Yard. The improvements include a new component repair shop, a vehicle overhaul shop, a new central parts warehouse, and a new maintenance and engineering repair shop. The project also includes improvements to the existing Hayward primary shop which will increase vehicle servicing capacity, and the construction of additional storage tracks. The Hayward Maintenance Complex (HMC) will help to ensure that BART's maintenance and repair capacity is sufficient to support the new railcar fleet for both the current system and system expansions.

BART will be modernizing the train control system to allow trains to operate more frequently. Train control operates rail vehicles and supervises scheduling and routing while preventing collisions. The modernization of BART's 40+ year old train control system is an important component in addressing critical capacity, reliability and safety.

Staff

BART's full time equivalent employees as of July 1, 2016, assigned to the following areas:

General Manager	99.0
Legal	18.0
Finance	95.0
District Secretary	5.0
External Affairs	56.1
Police	259.0
Operations	2,505.6
Planning, Development and Construction	88.0
Administration and Budget	115.0
Capitol Corridor	21.0
Independent Police Auditor	2.0
Employee Relations	36.6
TOTAL	3,300.3

Exhibit 2.1: Organization Chart FY2014

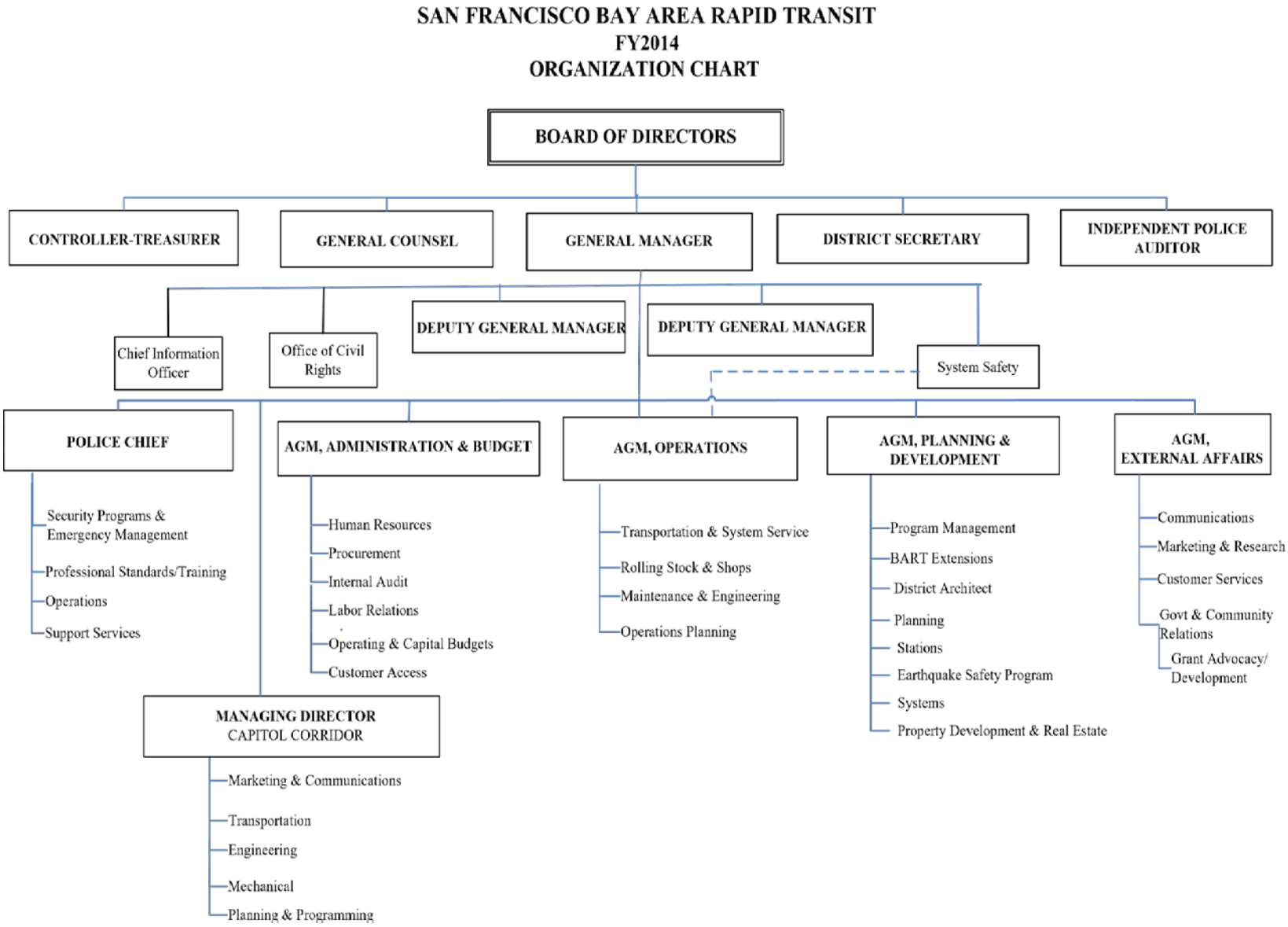
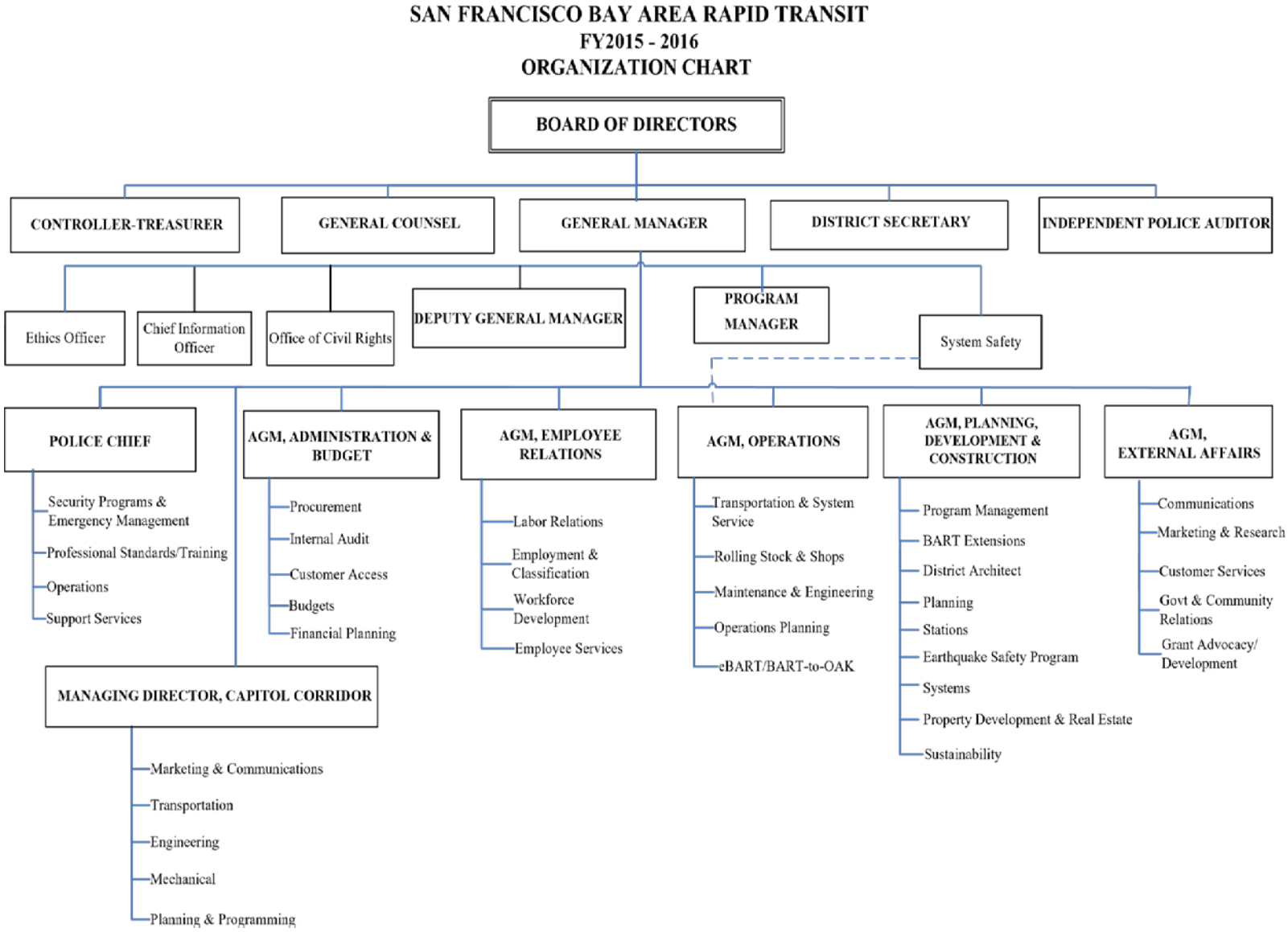


Exhibit 2.2: Organization Chart FY2015 – FY2016



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II. REVIEW OF TDA DATA COLLECTION AND REPORTING METHODS

This section focuses on the five performance indicators required by TDA law. These indicators have been defined by the state PUC to evaluate the transit operator's efficiency, effectiveness and economy. The purpose of this review is to determine if BART is compliance with the data collection and reporting requirements necessary to calculate the TDA performance indicators. The review is limited to the data items needed to calculate the indicators:

- Operating costs
- Vehicle service hours
- Vehicle service miles
- Unlinked passengers
- Employees (full-time equivalents)

The TDA indicator analysis is based on these operating and financial statistics in the National Transit Database (NTD) reports submitted annually to the Federal Transit Administration (FTA). The information reported by BART covering the audit period has been reviewed.

Compliance with Requirements

To support this review, BART staff confirmed that most of the data collection and reporting procedures remain unchanged from those described in the prior performance audit. The only changes were reporting of operating expenses for the Oakland Airport Connector people mover service and changes in the reporting of purchased transportation expenses associated with the East Bay Paratransit service in BART's NTD report.

Based on the information provided, as shown in Exhibit 3.1, BART is in compliance with the data collection and reporting requirements for all five TDA statistics.

Consistency of the Reported Statistics

The resulting TDA statistics for BART's heavy rail and automated people mover services are shown in Exhibits 3.2 and 3.3. Included in the heavy rail exhibit are statistics covering each fiscal year of the three-year audit period, plus the immediately preceding three fiscal years, resulting in a six-year trend. The statistics collected over the period appear to be consistent with the TDA definitions. Further, they indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics. For example, increases or decreases in annual operating costs are relatively proportional to increases or decreases in annual vehicle service hours and miles.

As the automated people mover service began operations in November 2014, the statistics reported for that mode are limited to part of FY2015 and all of FY2016. Consistency of the people mover statistics cannot be determined at this time due to the limited time frame.

Exhibit 3.1: Compliance with TDA Data Collection and Reporting Requirements

TDA Statistic	TDA Definition	Compliance Finding	Verification Information
Operating Cost	"Operating cost" means all costs in the operating expense object classes exclusive of the costs in the depreciation and amortization expense object class of the uniform system of accounts and records adopted by the Controller pursuant to Section 99243. Also excluded are all subsidies for commuter rail services operated on railroad lines under the jurisdiction of the Federal Railroad Administration, all direct costs for providing charter services, all vehicle lease costs, and principal and interest payments on capital projects funded with certificates of participation.	In Compliance	- Definition in accordance with NTD reporting requirements; tracked by Executive Office of Finance. - Reported by function for each object class, which divides expenses into categories such as labor, fringe benefits, services, or materials and supplies. This includes subsidy payments to local bus operators for feeder service. Operating expenses for the Oakland Airport Connector are reported separately. - The District reports its share of purchased transportation expenses associated with the contract for the East Bay Paratransit program in BART's NTD report, including all related expenses associated with the administration of the program. Total costs of the East Bay Paratransit program, including allocated wages and benefits of BART personnel for administration and other expenses, are reported by AC Transit in its NTD report.
Vehicle Service Hours	"Vehicle service hours" means the total number of hours that each transit vehicle is in revenue service, including layover time.	In Compliance	- Includes hours accumulated by a rail car in service with the intent to provide revenue service and carry passengers (from door-close at first station to door-open at last station on each one-way trip). - Reported by Reliability Engineering. - Train control computer system (ICS) collects train movement data. - *PFM* car mile accumulation system processes ICS train movement data, and determines car service hours based on wheel roll information.

TDA Statistic	TDA Definition	Compliance Finding	Verification Information
Vehicle Service Miles	"Vehicle service miles" means the total number of miles that each transit vehicle is in revenue service.	In Compliance	- Includes miles accumulated by a rail car in service with the intent to provide revenue service and carry passengers. - Gathered directly from *PFM* car mile accumulation system, actuated by door-open cycle of train beginning revenue service. - Reported by Reliability Engineering.
Unlinked Passengers	"Unlinked passengers" means the number of boarding passengers, whether revenue producing or not, carried by the public transportation system.	In Compliance	- Includes all single passenger trips without a transfer to another rail route. - Ridership recorded by computerized *DAS*, based on passenger entry and exit activity transmitted by fare gates. - *DAS* can identify station pairs requiring a transfer. - Reported by the Department of Financial Planning.
Employee Full-Time Equivalents	2,000 person-hours of work in one year constitute one employee.	In Compliance	- Hours of service include paid hours for work, vacation, holiday, illness, disability, leave of absence, etc. - Count of employee hours is from the Payroll & Finance PeopleSoft reports. - Count of full-time and part-time employees is from the Human Resources Information System PeopleSoft reports.

Exhibit 3.2: TDA Statistics – Heavy Rail

TDA Statistic	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Operating Cost (Actual $)	$450,366,069	$488,882,256	$525,014,637	$533,550,586	$575,457,469	$618,531,406
Annual Change	- -	*8.6%*	*7.4%*	*1.6%*	*7.9%*	*7.5%*
Car Service Hours	1,774,548	1,813,621	1,821,197	1,803,171	1,905,466	2,032,292
Annual Change	- -	*2.2%*	*0.4%*	*-1.0%*	*5.7%*	*6.7%*
Car Service Miles	63,347,043	63,439,052	65,652,045	64,766,101	67,269,149	71,628,728
Annual Change	- -	*0.1%*	*3.5%*	*-1.3%*	*3.9%*	*6.5%*
Unlinked Passengers	111,099,037	118,674,764	126,546,495	125,784,207	134,660,058	136,627,121
Annual Change	- -	*6.8%*	*6.6%*	*-0.6%*	*7.1%*	*1.5%*
Employee Full-Time Equivalents	2,509.2	2,550.8	2,648.2	2,576.9	2,725.1	2,843.1
Annual Change	- -	*1.7%*	*3.8%*	*-2.7%*	*5.8%*	*4.3%*

Sources: FY2011 through FY2013 - Prior Performance Audit Report
FY2014 through FY2016 - NTD Reports

Exhibit 3.3: TDA Statistics – Automated People Mover

TDA Statistic	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Operating Cost (Actual $)	*(a)*	*(a)*	*(a)*	*(a)*	$4,333,277	$6,929,774
Annual Change	- -	- -	- -	- -	- -	
Vehicle Service Hours	*(a)*	*(a)*	*(a)*	*(a)*	12,977	20,550
Annual Change	- -	- -	- -	- -	- -	
Vehicle Service Miles	*(a)*	*(a)*	*(a)*	*(a)*	258,192	414,268
Annual Change	- -	- -	- -	- -	- -	
Unlinked Passengers	*(a)*	*(a)*	*(a)*	*(a)*	580,501	1,031,091
Annual Change	- -	- -	- -	- -	- -	
Employee Full-Time Equivalents	*(a)*	*(a)*	*(a)*	*(a)*	*(b)*	*(b)*
Annual Change	- -	- -	- -	- -	- -	- -

(a) Service began November 2014

(b) Contracted service - FTEs not applicable

Sources: FY2015 through FY2016 - NTD Reports

III. TDA PERFORMANCE INDICATORS AND TRENDS

The performance trends for BART's rapid rail and people mover services are presented in this section. A similar discussion of the paratransit service provided by EBPC is provided in an appendix to this report. Performance is discussed for each of the five TDA-mandated performance indicators:

- operating cost per vehicle service hour
- passengers per vehicle service hour
- passengers per vehicle service mile
- operating cost per passenger
- vehicle service hours per full-time equivalent employee (FTE)

The performance results in these indicators were primarily developed from the information in the NTD reports filed with the FTA for the three years of the audit period (two years for the people mover service). BART's NTD reports were the source of all operating and financial statistics. It should be noted that vehicle service hours and miles for both the rapid rail and people mover services are defined as car service hours and miles, not train service hours and miles.

In addition to presenting performance for the three years of the audit period (FY2014 through FY2016), this analysis features two enhancements:

- Six-Year Time Period (Heavy Rail only) – While the performance audit focuses on the three fiscal years of the audit period, six-year trend lines have been constructed for BART's service to provide a longer perspective on performance and to clearly present the direction and magnitude of the performance trends. In this analysis, the FY2014 to FY2016 trend lines have been combined with those from the prior audit period (FY2011 through FY2013) to define a six-year period of performance.

- Normalized Cost Indicators for Inflation – Two financial performance indicators (cost per hour and cost per passenger) are presented in both constant and current dollars to illustrate the impact of inflation in the Bay Area. The inflation adjustment relies on the All Urban Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) for the San Francisco Metropolitan Area. The average CPI-W percent change for each fiscal year has been calculated based on the bi-monthly results reported on the U.S. Department of Labor – Bureau of Labor Statistics website. The CPI-W is used since labor is the largest component of operating cost in transit. Since labor costs are typically controlled through labor contracts, changes in normalized costs largely reflect those factors that are within the day-to-day control of the transit system.

The following discussion is organized to present an overview of BART's performance trends in each of the five TDA performance indicators. The analysis is also expanded to include a breakdown of the various component costs that contributed to the total and hourly operating costs during the last six years.

Heavy Rail Service Performance Trends

This section provides an overview of the performance of BART's heavy rail service over the past six years. The trends in the TDA indicators and input statistics are presented in Exhibit 4. The six-year trends are illustrated in Exhibits 4.1 through 4.4.

- Operating Cost Per Car Service Hour (Exhibit 4.1)

  - A key indicator of cost efficiency, the cost per hour of heavy rail service increased an average of 3.7 percent annually during the six-year review period.

  - Cost per hour increased each year, from $253.79 in FY2011to $304.35 in FY2016. The largest increase occurred in FY2013.

  - In FY2011 constant dollars, there was an average annual increase in this indicator of 1.2 percent.

- Passengers per Car Service Hour (Exhibit 4.2)

  - A key indicator of passenger productivity, passengers per hour increased an average of 1.4 percent annually during the six-year period.

  - The increase reflects a modest increase in passengers combined with a smaller increase in service hours. A slight decrease in car service hours, car service miles and ridership in FY2014 was attributed to two strikes that occurred in July and October 2013.

  - Passengers per hour increased overall from 62.6 in FY2011 to 67.2 in FY2016, with the highest level, 70.7, occurring in FY2015.

- Passengers per Car Service Mile (Exhibit 4.2)

  - Similar to passengers per hour, passengers per mile increased by 1.7 percent annually on average.

  - There was an average of just under two passengers per mile in all years, with the highest level of 2.0 passengers per mile occurring in FY2015.

- Operating Cost per Passenger (Exhibit 4.3)

  - A key measure of cost effectiveness, the cost per passenger increased from $4.05 in FY2011, to $4.53 in FY2016.

  - The trend in cost per passenger increased over the six-year period, increasing on average by 2.2 percent annually.

  - The largest annual increase was 5.9 percent in FY2016, when the increase in operating costs of 7.5 percent outpaced the 1.5 percent increase in ridership that year.

  - With the impact of inflation removed from the cost side (normalization), the six-year resulted in an average annual decrease of 0.3 percent in the cost per passenger.

- Car Service Hours per Employee (FTE) (Exhibit 4.4)

  - A measure of employee productivity, car service hours per employee was almost unchanged, increasing an average 0.2 percent per year over the six years.

  - Hours per FTE fluctuated over the period, but increased overall from 707 hours in the first review year to 715 hours in the last year.

  - Annual FTEs and car service hours increased almost in tandem overall during the period, with FTEs increasing an annual average of 2.5 percent while service hours increased 2.7 percent.

* * * * *

The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2011 through FY2016:

- There was an average annual increase in the operating cost per hour of 3.7 percent, or 1.2 percent in inflation adjusted dollars. The largest annual increase of 6.9 percent occurred in FY2013.

- The cost per passenger increased on average by 2.2 percent per year, which, when measured in constant FY2011 dollars, resulted in an average annual decrease of 0.3 percent.

- Passenger productivity showed modest improvement, with passengers per car service hour increasing by 1.4 percent per year overall, and passengers per car service mile increasing by 1.7 percent annually.

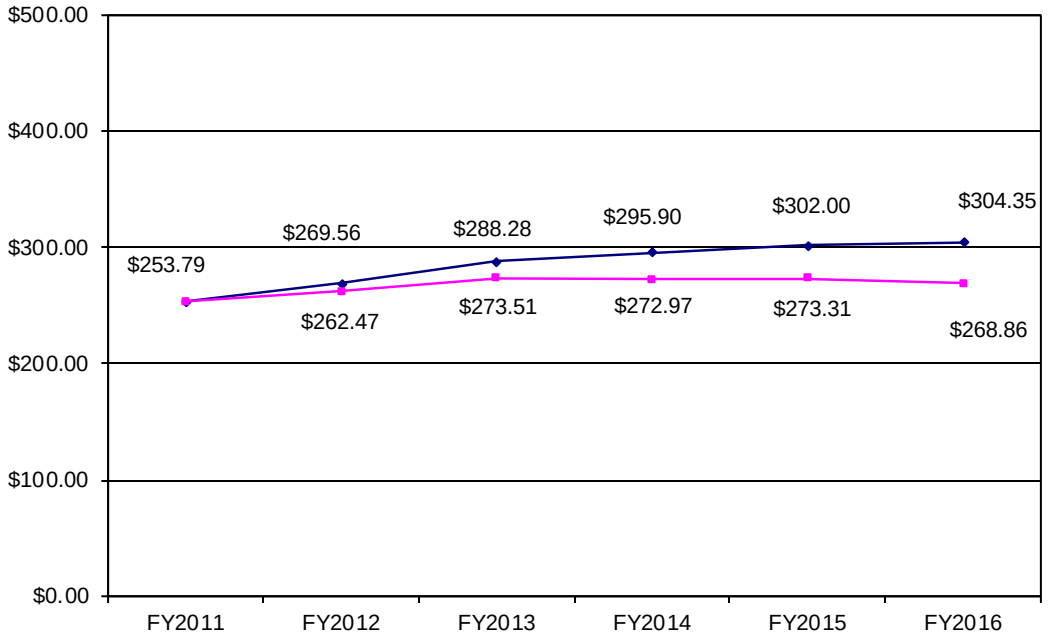
- Employee productivity was mostly static, increasing an average 0.2 percent per year.

Exhibit 4: TDA Indicator Performance – Heavy Rail

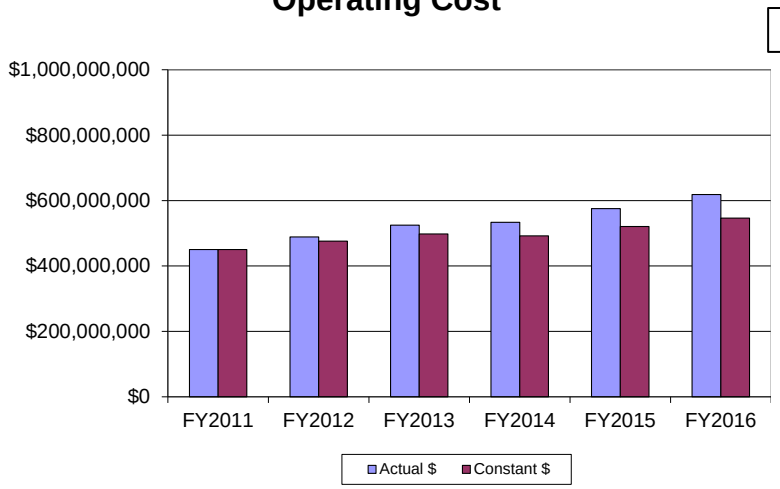
	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
Performance Indicators							
Op. Cost per Car Svc. Hour (Actual $)	$253.79	$269.56	$288.28	$295.90	$302.00	$304.35	- -
Annual Change	- -	*6.2%*	*6.9%*	*2.6%*	*2.1%*	*0.8%*	*3.7%*
Op. Cost per Car Svc. Hour (Constant $)	$253.79	$262.47	$273.51	$272.97	$273.31	$268.86	- -
Annual Change	- -	*3.4%*	*4.2%*	*-0.2%*	*0.1%*	*-1.6%*	*1.2%*
Passengers per Car Service Hour	62.6	65.4	69.5	69.8	70.7	67.2	- -
Annual Change	- -	*4.5%*	*6.2%*	*0.4%*	*1.3%*	*-4.9%*	*1.4%*
Passengers per Car Service Mile	1.75	1.87	1.93	1.94	2.00	1.91	- -
Annual Change	- -	*6.7%*	*3.0%*	*0.8%*	*3.1%*	*-4.7%*	*1.7%*
Op. Cost per Passenger (Actual $)	$4.05	$4.12	$4.15	$4.24	$4.27	$4.53	- -
Annual Change	- -	*1.6%*	*0.7%*	*2.2%*	*0.7%*	*5.9%*	*2.2%*
Op. Cost per Passenger (Constant $)	$4.05	$4.01	$3.94	$3.91	$3.87	$4.00	- -
Annual Change	- -	*-1.0%*	*-1.9%*	*-0.6%*	*-1.2%*	*3.4%*	*-0.3%*
Car Service Hours per FTE	707	711	688	700	699	715	- -
Annual Change	- -	*0.5%*	*-3.3%*	*1.8%*	*-0.1%*	*2.2%*	*0.2%*
Input Data							
Operating Cost (Actual $)	$450,366,069	$488,882,256	$525,014,637	$533,550,586	$575,457,469	$618,531,406	- -
Annual Change	- -	*8.6%*	*7.4%*	*1.6%*	*7.9%*	*7.5%*	*6.6%*
Operating Cost (Constant $)	$450,366,069	$476,029,461	$498,116,354	$492,205,338	$520,775,990	$546,405,836	- -
Annual Change	- -	*5.7%*	*4.6%*	*-1.2%*	*5.8%*	*4.9%*	*3.9%*
Car Service Hours	1,774,548	1,813,621	1,821,197	1,803,171	1,905,466	2,032,292	- -
Annual Change	- -	*2.2%*	*0.4%*	*-1.0%*	*5.7%*	*6.7%*	*2.7%*
Car Service Miles	63,347,043	63,439,052	65,652,045	64,766,101	67,269,149	71,628,728	- -
Annual Change	- -	*0.1%*	*3.5%*	*-1.3%*	*3.9%*	*6.5%*	*2.5%*
Unlinked Passengers	111,099,037	118,674,764	126,546,495	125,784,207	134,660,058	136,627,121	- -
Annual Change	- -	*6.8%*	*6.6%*	*-0.6%*	*7.1%*	*1.5%*	*4.2%*
Employee Full-Time Equivalents	2,509.2	2,550.8	2,648.2	2,576.9	2,725.1	2,843.1	- -
Annual Change	- -	*1.7%*	*3.8%*	*-2.7%*	*5.8%*	*4.3%*	*2.5%*
Bay Area CPI - Annual Change	- -	2.7%	2.6%	2.9%	1.9%	2.5%	- -
- Cumulative Change	- -	2.7%	5.4%	8.4%	10.5%	13.2%	*2.5%*

Sources: FY2011 through FY2013 - Prior Performance Audit Report
FY2014 through FY2016 - NTD Reports
CPI Data - U.S. Department of Labor, Bureau of Labor Statistics

Exhibit 4.1: Operating Cost per Vehicle Service Hour – Heavy Rail



Operating Cost



Car Service Hours

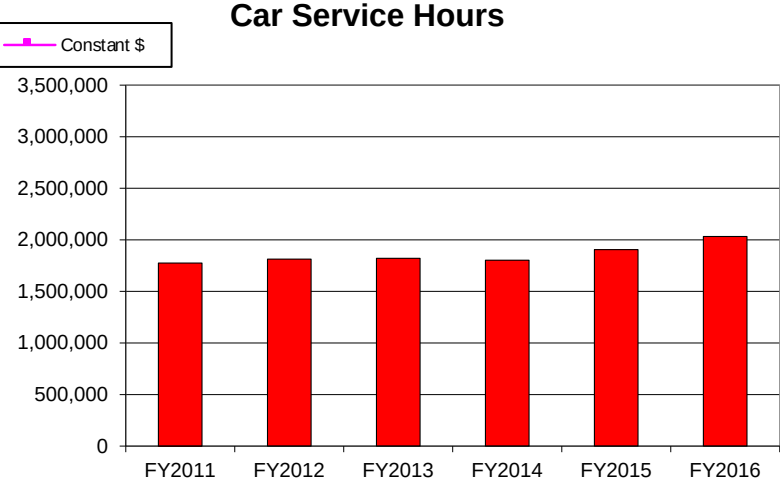
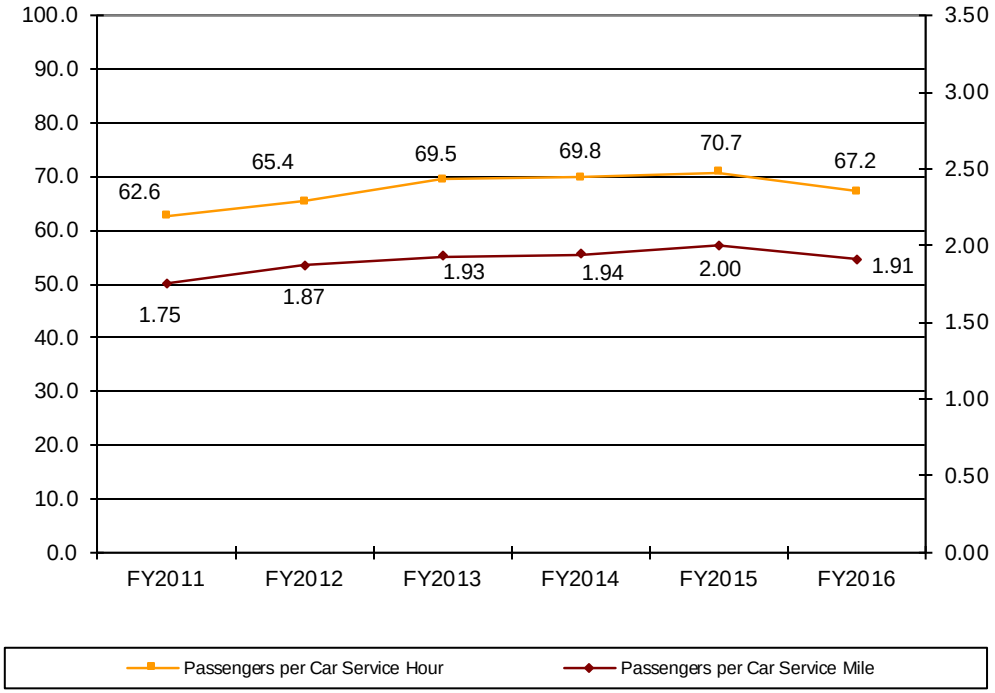
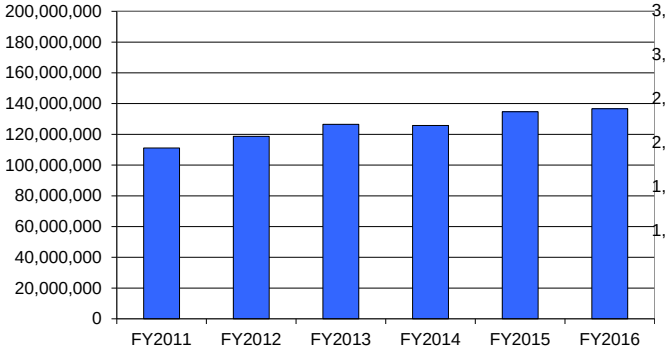


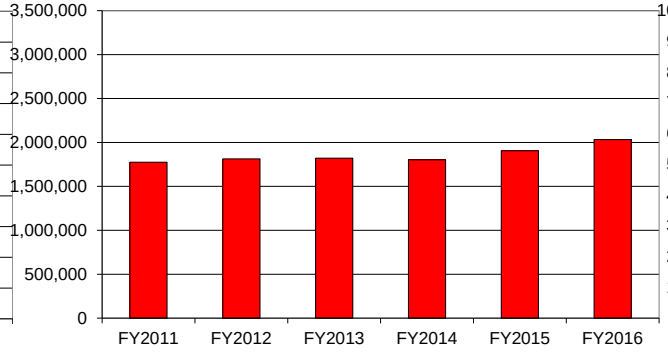
Exhibit 4.2: Passengers per Hour and per Mile – Heavy Rail



Unlinked Passengers



Car Service Hours



Car Service Miles

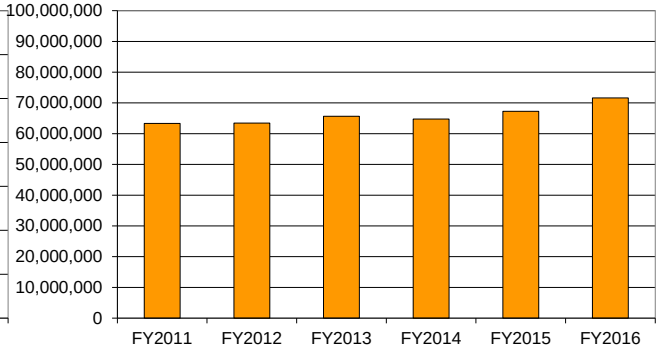
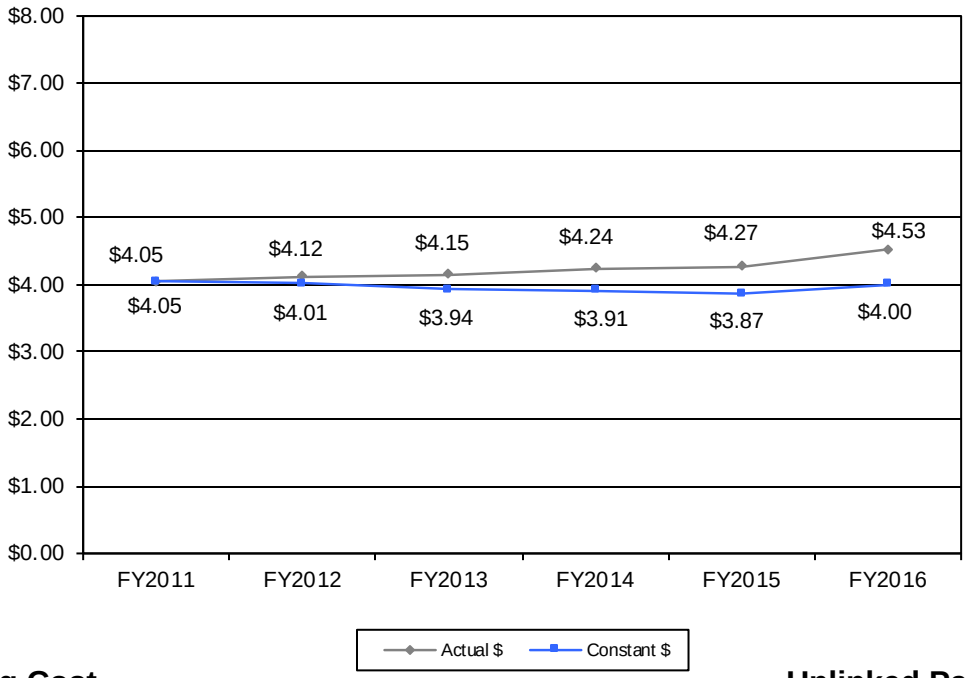
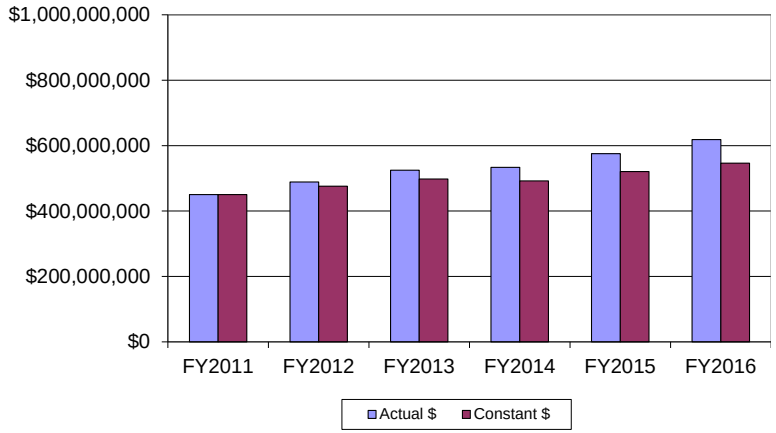


Exhibit 4.3: Operating Cost per Passenger – Heavy Rail



Operating Cost



Unlinked Passengers

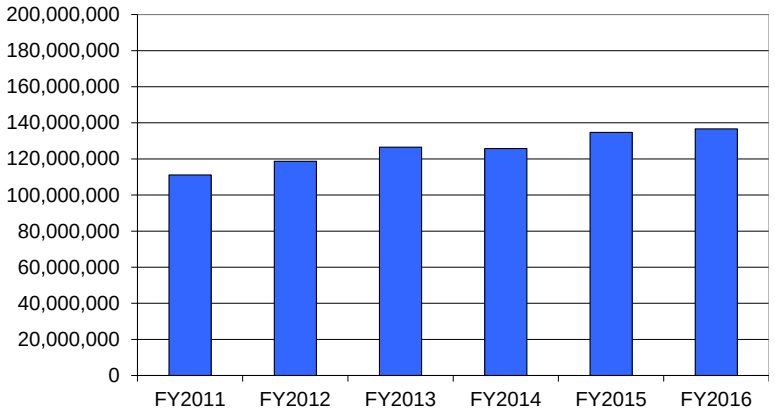
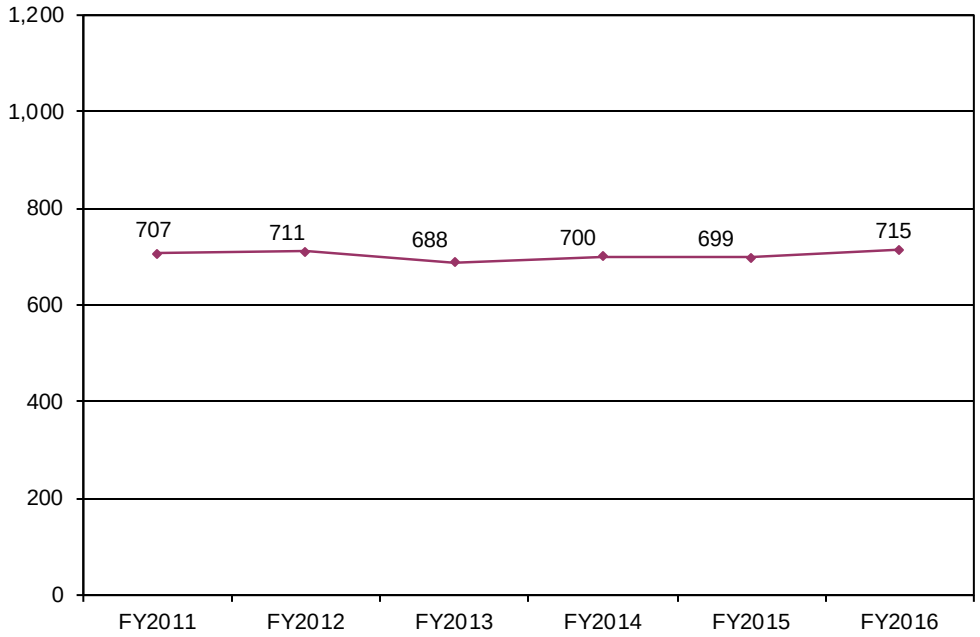
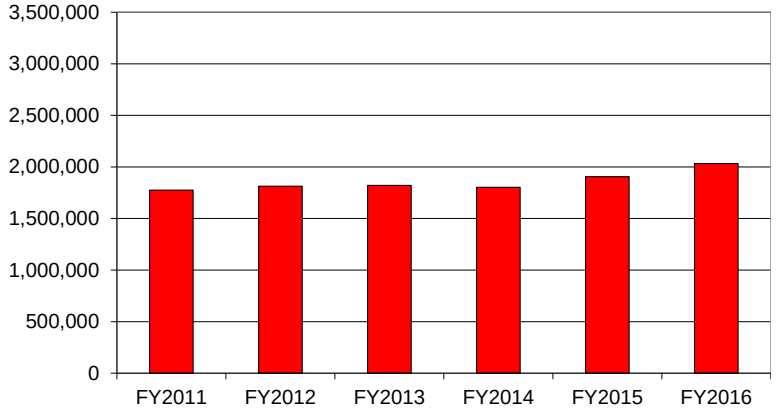


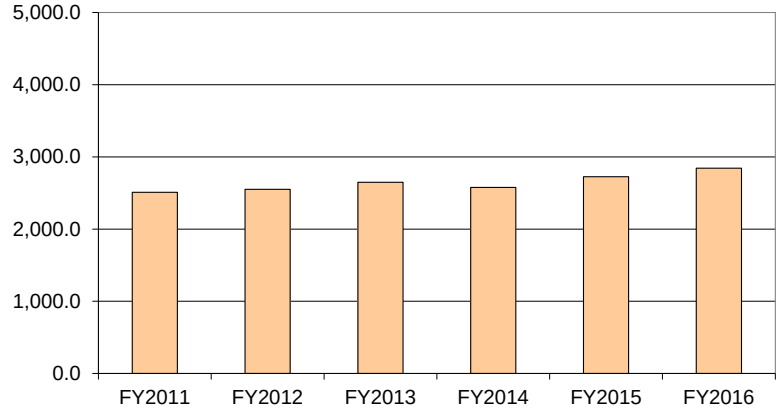
Exhibit 4.4: Car Service Hours per FTE – Heavy Rail



Car Service Hours



Full-time Equivalents



Heavy Rail Service Component Costs

Year-to-year changes in selected operating cost categories over the past six years are presented in Exhibit 4.5. Examining components of operating costs (e.g., labor, fringes, fuel, and casualty/liability) may determine what particular components had the most significant impacts on the operating costs. Exhibit 4.5 also shows the concurrent changes in car service hours, and Exhibit 4.6 illustrates the portion of the cost per car service hour that can be attributed to each included cost component.

- Over the six years, labor costs increased annually on average by 2.3 percent, and fringe benefits costs increased annually by 3.4 percent.

- Services costs went up approximately 11.5 percent per year on average, with the largest increases of 33.4 percent and 21.9 percent occurring in FY 2012 and FY2015 respectively. BART staff attributed the FY2015 increase in services costs to:

  - Increased professional fees for IT related expenses (about $2 million);

  - Increased repair and maintenance costs associated with an aging fleet and higher service miles and ridership (about $4 million); and

  - A one-time payment to AC Transit for feeder service not covered by STA funding (about $3.25 million – due to a shortfall in STA funding).

- Materials and supplies costs, which includes fuel and lubricants, and casualty and liability costs both increased an average of 6.7 percent annually. Materials/supplies costs increased each year except FY2014. Casualty and liability costs fluctuated over the six-year period.

- Utility costs were mostly unchanged, with an increase of just over one percent on average per year.

- Costs for miscellaneous expenses and expense transfers decreased an annual average of 180 percent over the six-year period. This was caused by large negative costs reported in FY2011 and FY2012. The negative costs in those years were the result of inclusion of an expense transfers object class

in NTD reporting for those years. Expense transfers included certain costs that were reclassified to other functions or to capital accounts, resulting in the negative amounts reported as expense transfers. The NTD reporting guidelines were changed in 2013, which eliminated expense transfers as an object class. In the current three-year audit period (FY2014-2016), the other expenses costs, which includes taxes and miscellaneous expenses, increased an average of 18 percent annually.

* * * * *

The following is a brief summary of the bus service component operating costs trend highlights between FY2011 and FY2016:

- Labor costs went up by about two percent per year, but their share of total costs was reduced from about 50 to 40 percent.

- Fringe benefit costs went up 3.4 percent per year, slightly higher than labor costs, and their share of total costs also decreased over the audit period from about 40 percent to 33 percent of total costs.

- Services costs experienced the highest increase among the cost categories, at 11.5 percent annually. Services comprised between seven and nine percent of total operating costs. The increase in service costs was attributed to increased costs for IT professional services, fleet maintenance and repairs, and payment to AC Transit for feeder services not covered by STA funding.

- There were moderate changes overall in the remaining component costs. Materials and supplies and casualty/liability costs both increased by 6.7 percent per year, with materials accounting for about six percent of total costs and casualty less than two percent. Utilities costs, about eight percent of total operating costs, were mostly unchanged.

- The other expenses category showed a decrease of over 180 percent annually, due to negative costs reported in FY2011 and FY2012 per NTD reporting guidelines. NTD guidelines instructed transit operators to reclassify some of their operating costs to other functions or as capital costs. This practice was eliminated from NTD reporting beginning with the 2013 report.

Exhibit 4.5: TDA Component Cost Trends – Heavy Rail

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
COST CATEGORIES							
Labor - (Salaries, Wages)	$227,780,542	$233,847,113	$211,404,482	$214,071,489	$233,514,788	$255,003,898	- -
Annual Change	- -	*2.7%*	*-9.6%*	*1.3%*	*9.1%*	*9.2%*	*2.3%*
Fringe Benefits	$171,245,312	$186,006,431	$175,968,692	$182,747,606	$191,715,131	$202,010,443	- -
Annual Change	- -	*8.6%*	*-5.4%*	*3.9%*	*4.9%*	*5.4%*	*3.4%*
Services	$32,416,680	$43,249,135	$39,967,270	$42,365,428	$51,647,014	$55,944,766	
Annual Change	- -	*33.4%*	*-7.6%*	*6.0%*	*21.9%*	*8.3%*	*11.5%*
Materials/Supplies *(a)*	$27,212,312	$29,869,824	$34,786,095	$31,710,905	$34,505,294	$37,659,158	- -
Annual Change	- -	*9.8%*	*16.5%*	*-8.8%*	*8.8%*	*9.1%*	*6.7%*
Utilities	$38,925,813	$38,721,883	$41,356,548	$41,472,259	$39,799,523	$41,568,268	- -
Annual Change	- -	*-0.5%*	*6.8%*	*0.3%*	*-4.0%*	*4.4%*	*1.3%*
Casualty/Liability	$5,807,198	$5,904,146	$7,983,615	$8,056,092	$7,103,228	$8,041,893	- -
Annual Change	- -	*1.7%*	*35.2%*	*0.9%*	*-11.8%*	*13.2%*	*6.7%*
Other Exp. & Expense Transfers *(b)*	-$53,021,788	-$48,716,276	$13,547,936	$13,126,807	$17,172,491	$18,302,980	- -
Annual Change	- -	*-8.1%*	*-127.8%*	*-3.1%*	*30.8%*	*6.6%*	*-180.8%*
Total	$450,366,069	$488,882,256	$525,014,638	$533,550,586	$575,457,469	$618,531,406	- -
Annual Change	- -	*8.6%*	*7.4%*	*1.6%*	*7.9%*	*7.5%*	*6.6%*
OPERATING STATISTICS							
Car Service Hours	1,774,548	1,813,621	1,821,197	1,803,171	1,905,466	2,032,292	- -
Annual Change	- -	*2.2%*	*0.4%*	*-1.0%*	*5.7%*	*6.7%*	*2.7%*

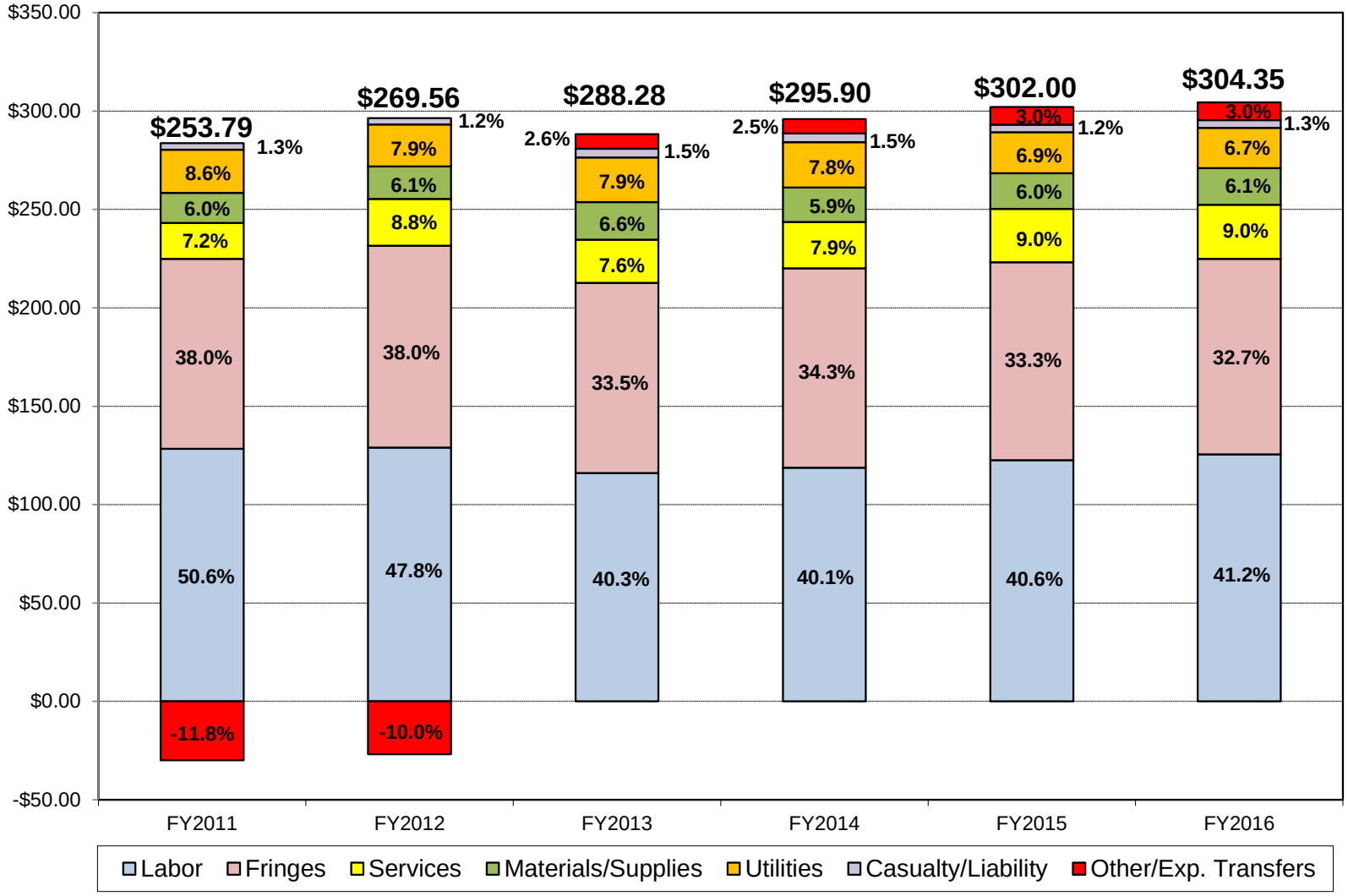
Source: FY 2011 –FY2013 prior audit report; FY2014 through FY2016 NTD Reports

(a) Includes fuel, lubricants and tires

(b) Includes taxes and miscellaneous expenses

Exhibit 4.6: Distribution of Component Costs – Heavy Rail

Operating Cost per Car Service Hour



Automated People Mover Service Performance Trends

This section provides an overview of the performance of BART's automated people mover service over the past two years. The Oakland Airport Connector (OAC) began operation on November 22, 2014. This automated people mover is a fully automated, driverless system, operated and maintained under contract by Doppelmayr Cable Car. The people mover operates on a 3.2 mile dual guideway which is by times, an elevated, at-grade or below grade level system. There are two stations, Airport Station and Coliseum Station - where the system connects with the BART heavy rail system. The initial system utilizes four 3-car trains operating on two separate lanes in a pinched-loop configuration, with maximum capabilities of four 4-car trains capable of carrying 1,900 passengers per hour in each direction.

As people mover service began November 2014, NTD service data is available for one partial year (FY2015), and one full year (FY2016) of service, thus it is difficult to extrapolate "trends" in performance from such a small sample. The data for the TDA indicators and input statistics are presented in Exhibit 5. The two-year trends are illustrated in Exhibits 5.1 through 5.3.

- Operating Cost per Car Service Hour (Exhibit 5.1)
  - An indicator of cost efficiency, operating cost per service hour increased one percent between FY2015 and FY2016, from $333.92 to $337.22.
  - While the operating cost per hour did increase, it is notable that the percentage increase in both operating costs and car service hours were almost identical between FY2015 and FY2016.
  - With the impact of inflation removed from the cost side (normalization), there was a decrease of 1.4 percent in the cost per passenger.

- Passengers per Car Service Hour (Exhibit 5.2)

  - An indicator of passenger productivity, passengers per hour increased 12.2 percent in FY2016, from 44.7 to 50.2.

  - While the increase in productivity can be largely attributed to having a full year of data versus a partial year, one positive note is that ridership gains in FY2016 outpaced the level of increase in hours of service.

- Passengers per Car Service Mile (Exhibit 5.2)

  - Similar to passengers per hour, passengers per car service mile increased 10.7 percent in FY2016, from 2.25 to 2.49.

  - Again, on a positive note, the percentage of ridership gains in FY2016 outpaced the level of increase in service miles.

- Operating Cost per Passenger (Exhibit 5.3)

  - A measure of cost effectiveness, the cost per passenger decreased from $7.46 in FY2015 to $6.72 in FY2016.

  - The increase in cost effectiveness is due to ridership gains outpacing the increase in operating costs between FY2015 and FY2016.

  - With the impact of inflation removed from the cost side (normalization), the result was a decrease of 12.1 percent in the cost per passenger.

* * * * *

With just one partial year and one full fiscal year of NTD data to examine, the TDA performance presented here may not constitute a trend. However, we are presenting the following performance information below. The following is a brief summary of the TDA performance trend highlights between FY2015 and FY2016:

- Cost efficiency decreased slightly, with operating costs per car service hour rising one percent. With the effects of inflation removed, cost per hour decreased 1.4 percent.

- Cost effectiveness, measured as operating cost per passenger, increased with a 10 percent drop in this area. In constant dollars, cost per passenger decreased 12.1 percent.

- Passenger productivity showed positive performance, with passengers per service hour and passengers per service mile both increasing over 10 percent between FY2015 and FY2016.

Exhibit 5: TDA Indicator Performance – Automated People Mover

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
Performance Indicators							
Op. Cost per Car Svc. Hour (Actual $)	*(a)*	*(a)*	*(a)*	*(a)*	$333.92	$337.22	- -
Annual Change	- -	- -	- -	- -	- -	*1.0%*	*1.0%*
Op. Cost per Car Svc. Hour (Constant $)	*(a)*	*(a)*	*(a)*	*(a)*	$302.19	$297.89	- -
Annual Change	- -	- -	- -	- -	- -	*-1.4%*	*-1.4%*
Passengers per Car Service Hour	*(a)*	*(a)*	*(a)*	*(a)*	44.7	50.2	- -
Annual Change	- -	- -	- -	- -	- -	*12.2%*	*12.2%*
Passengers per Car Service Mile	*(a)*	*(a)*	*(a)*	*(a)*	2.25	2.49	- -
Annual Change	- -	- -	- -	- -	- -	*10.7%*	*10.7%*
Op. Cost per Passenger (Actual $)	*(a)*	*(a)*	*(a)*	*(a)*	$7.46	$6.72	- -
Annual Change	- -	- -	- -	- -	- -	*-10.0%*	*-10.0%*
Op. Cost per Passenger (Constant $)	*(a)*	*(a)*	*(a)*	*(a)*	$6.76	$5.94	- -
Annual Change	- -	- -	- -	- -	- -	*-12.1%*	*-12.1%*
Car Service Hours per FTE	*(a)*	*(a)*	*(a)*	*(a)*	*(b)*	*(b)*	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Input Data							
Operating Cost (Actual $)	*(a)*	*(a)*	*(a)*	*(a)*	$4,333,277	$6,929,774	- -
Annual Change	- -	- -	- -	- -	- -	*59.9%*	*59.9%*
Operating Cost (Constant $)	*(a)*	*(a)*	*(a)*	*(a)*	$3,921,518	$6,121,708	- -
Annual Change	- -	- -	- -	- -	- -	*56.1%*	*56.1%*
Car Service Hours	*(a)*	*(a)*	*(a)*	*(a)*	12,977	20,550	- -
Annual Change	- -	- -	- -	- -	- -	*58.4%*	*58.4%*
Car Service Miles	*(a)*	*(a)*	*(a)*	*(a)*	258,192	414,268	- -
Annual Change	- -	- -	- -	- -	- -	*60.4%*	*60.4%*
Unlinked Passengers	*(a)*	*(a)*	*(a)*	*(a)*	580,501	1,031,091	- -
Annual Change	- -	- -	- -	- -	- -	*77.6%*	*77.6%*
Employee Full-Time Equivalents	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Bay Area CPI - Annual Change	- -	2.7%	2.6%	2.9%	1.9%	2.5%	- -
- Cumulative Change	- -	2.7%	5.4%	8.4%	10.5%	13.2%	*2.5%*

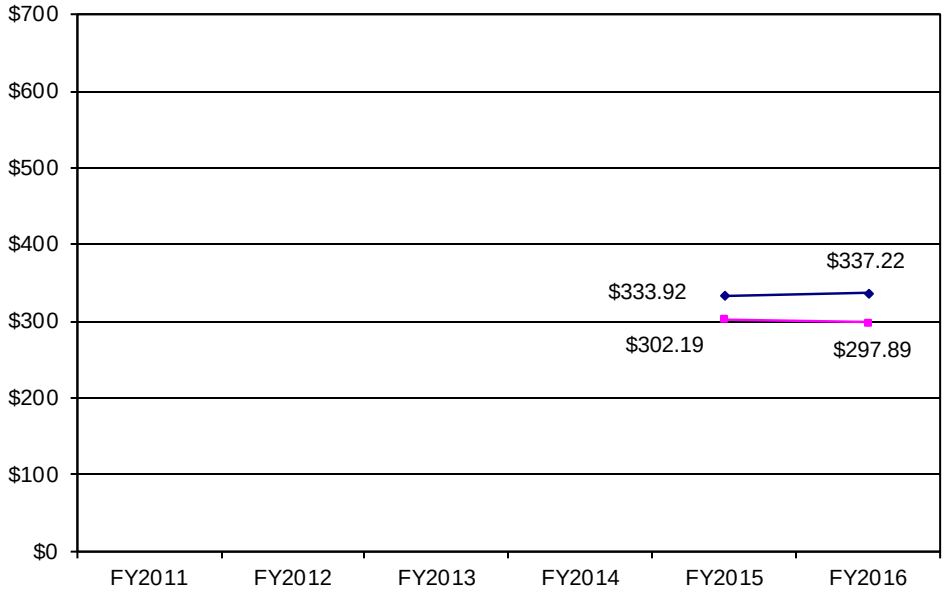
(a) - Service began November 2014

(b) - Contracted service - FTEs not applicable

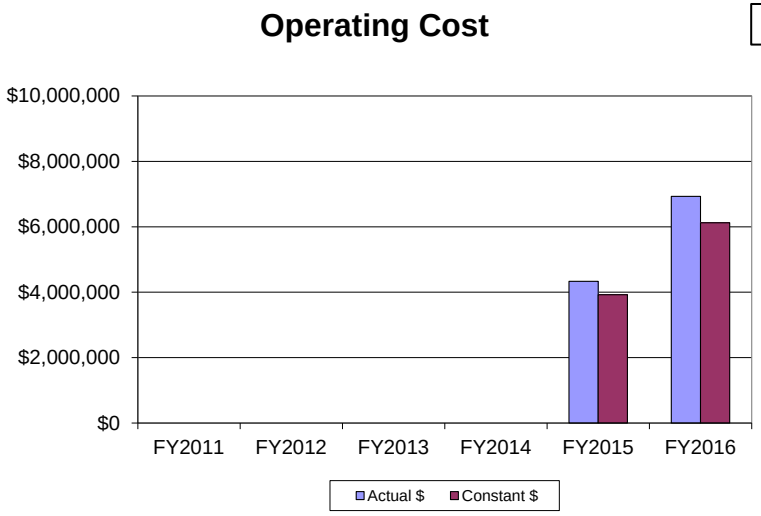
Sources: FY2015 through FY2016 - NTD Reports

CPI Data - U.S. Department of Labor, Bureau of Labor Statistics

Exhibit 5.1: Operating Cost per Car Service Hour – Automated People Mover



Operating Cost



Car Service Hours

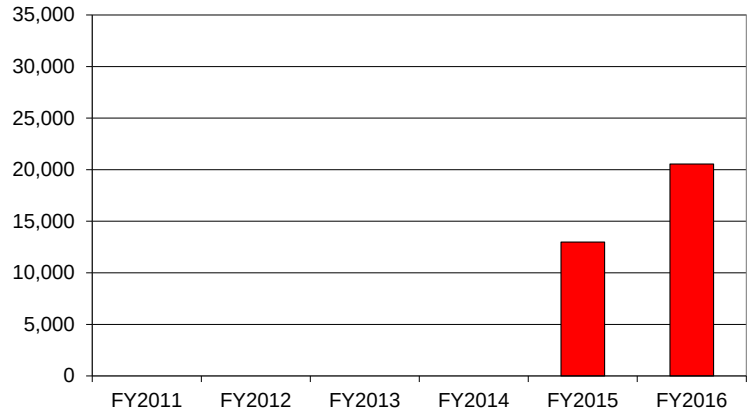
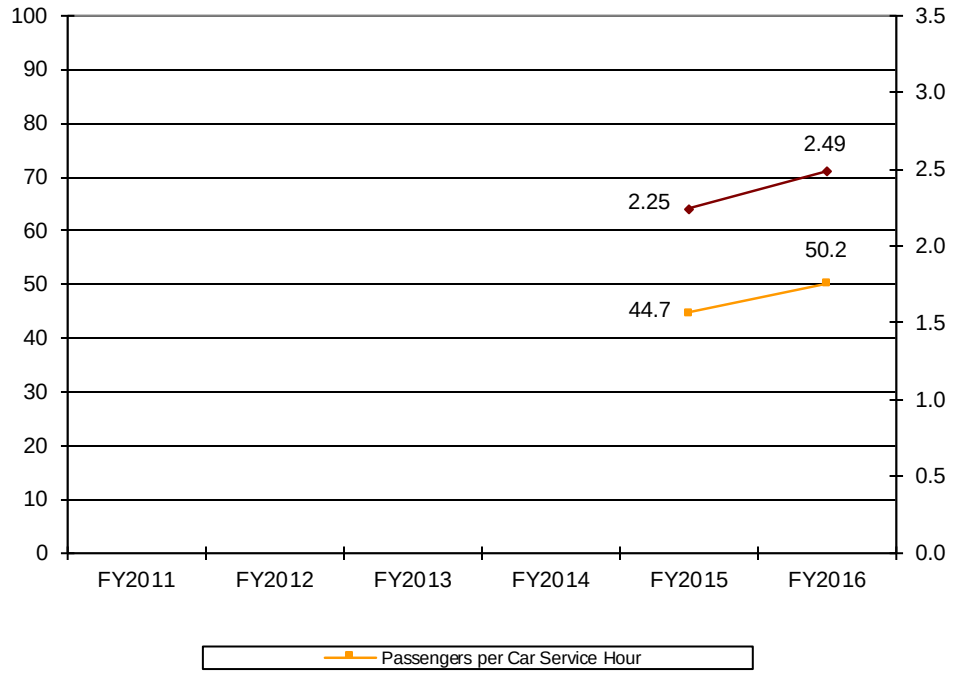
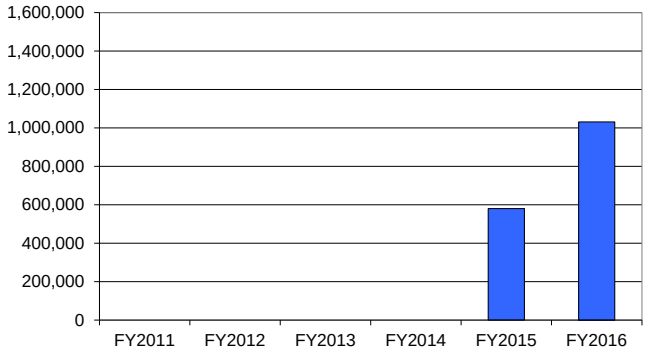


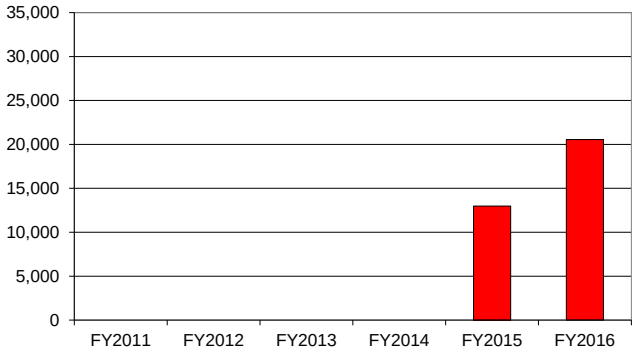
Exhibit 5.2: Passengers per Hour and per Mile – Automated People Mover



Unlinked Passengers



Car Service Hours



Car Service Miles

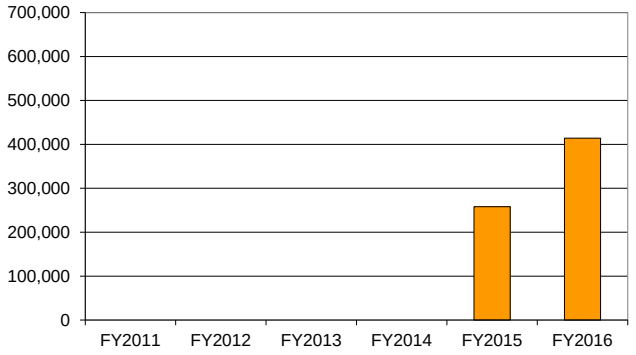
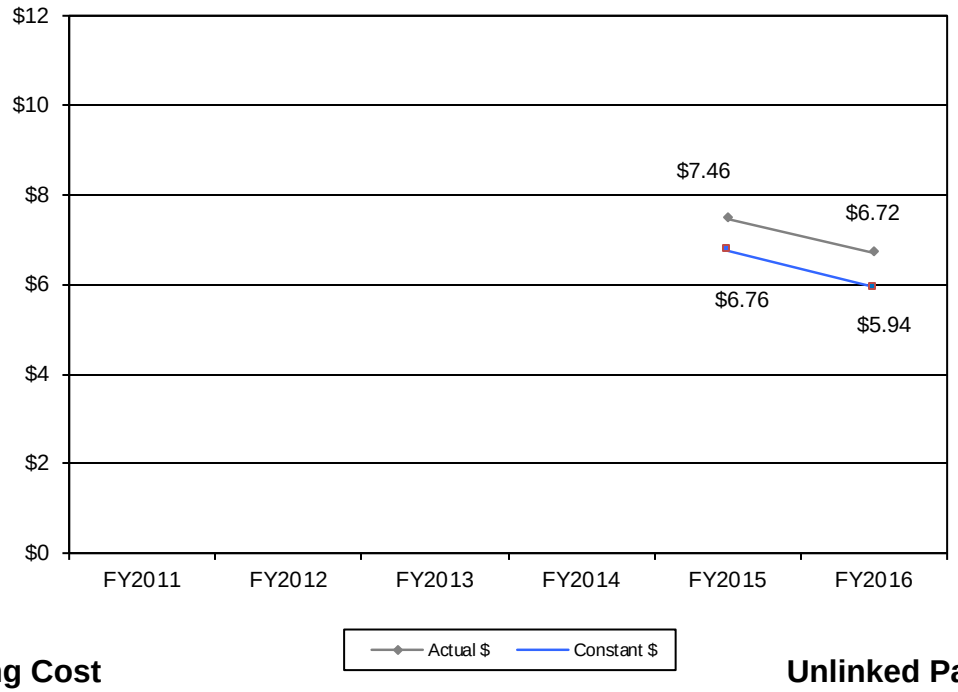
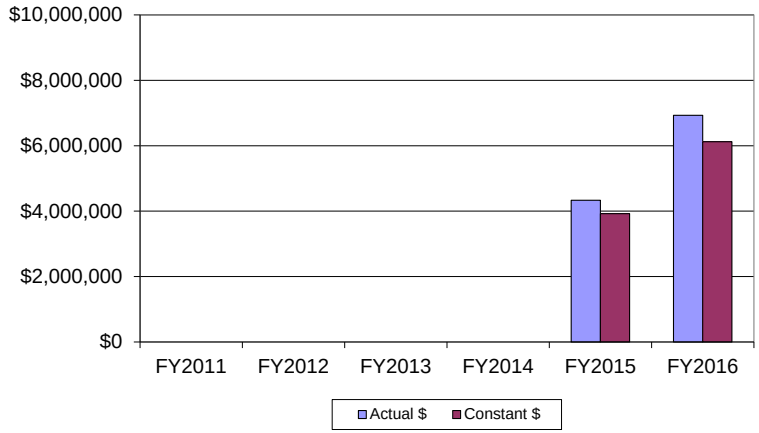


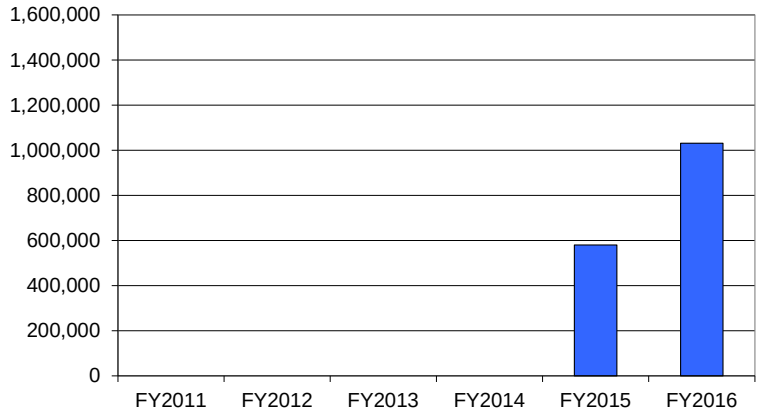
Exhibit 5.3: Operating Cost per Passenger – Automated People Mover



Operating Cost



Unlinked Passengers



Automated People Mover Service Component Costs

Year-to-year changes in selected operating cost categories over FY2015-FY2016 time period are presented in Exhibit 5.4. Examining components of operating costs (e.g., labor, fringes, fuel, and casualty/liability) may determine what particular components had the most significant impacts on the operating costs. Exhibit 5.4 also shows the concurrent changes in car service hours, and Exhibit 5.5 illustrates the portion of the cost per car service hour that can be attributed to each included cost component.

- Labor costs decreased by 21.5 percent, but fringe benefits costs increased by 16.1 percent.
- Utilities costs went up by 52.5 percent, most likely a reflection of a whole year of cost reporting versus a partial year.
- Not surprising for a contracted service, purchased transportation costs were the largest category of costs, and they increased almost 66 percent between FY2015 and FY2016.
- Materials and supplies costs decreased almost 25 percent, but were minimal in terms of dollar amounts. No costs were reported in the casualty/liability and other costs categories.

* * * * *

The following is a brief summary of the component operating costs trend highlights between FY2015 and FY2016:

- Labor costs decreased by 21.5 percent, while fringe benefits costs increased 16.1 percent. Together, these two cost categories comprise less than a five percent share of the automated people mover total operating costs.

- Utilities costs increased 52.5 percent, and comprised about 12 percent of the total operating costs.

- Purchased transportation is the largest component of total operating costs at about 85 percent. Purchased transportation costs increased approximately 66 percent between FY2015 to FY2016.

- No costs were reported in the casualty/liability and other costs categories, and only minimal expenses were reported for materials and supplies. All three of these categories represented a zero percent share of total operating costs.

- Overall, the majority of the cost increases reported between FY2015 and FY2016 can be attributed to the fact that FY2015 costs reporting was for a partial year of service, while FY2016 reflects the first full year of service for the people mover system.

Exhibit 5.4: TDA Component Costs Trends – Automated People Mover

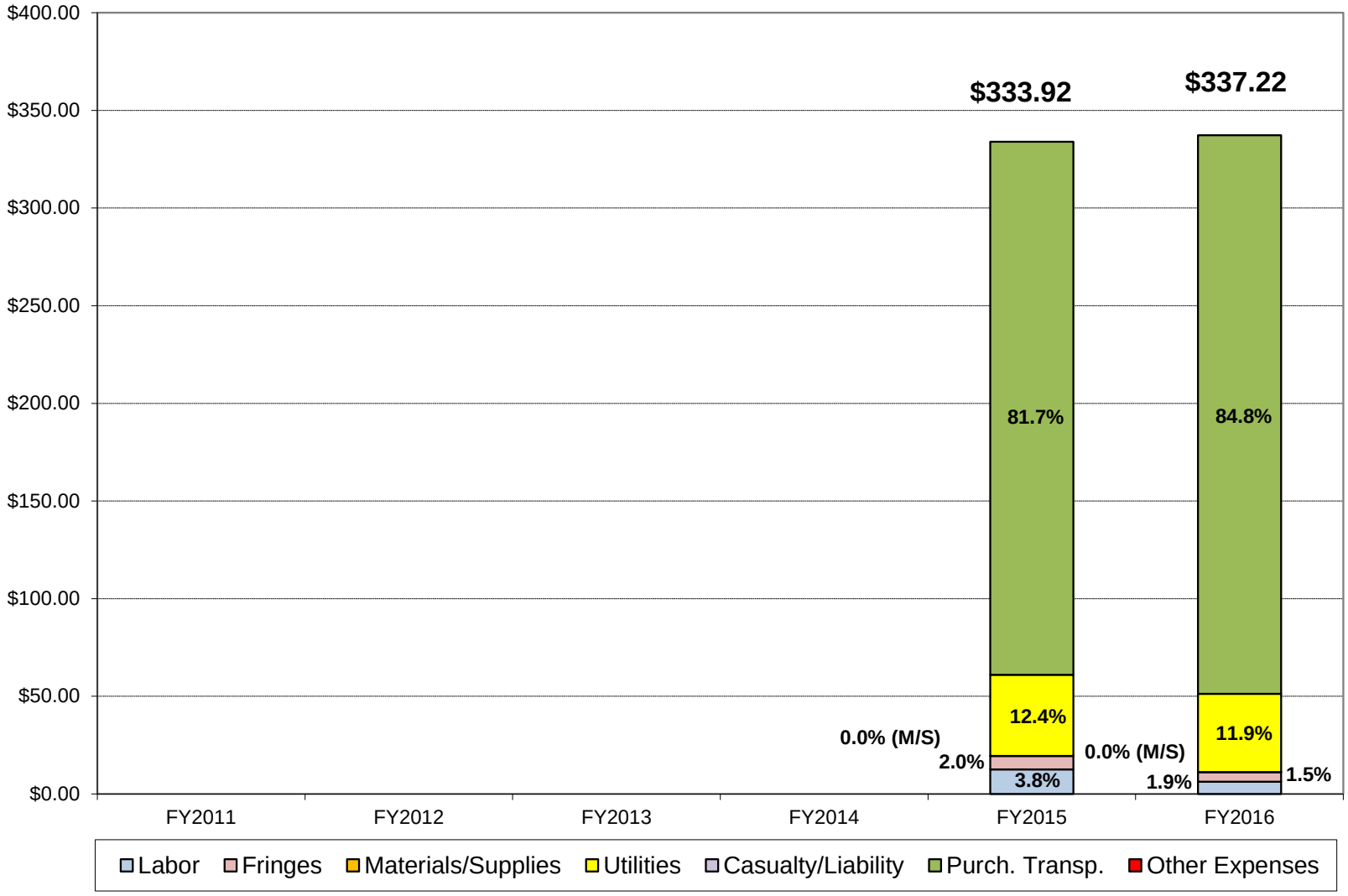
	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
COST CATEGORIES							
Labor - (Salaries, Wages)	*(a)*	*(a)*	*(a)*	*(a)*	$163,668	$128,502	- -
Annual Change	- -	- -	- -	- -	- -	*-21.5%*	*-21.5%*
Fringe Benefits	*(a)*	*(a)*	*(a)*	*(a)*	$88,544	$102,801	- -
Annual Change	- -	- -	- -	- -	- -	*16.1%*	*16.1%*
Materials/Supplies	*(a)*	*(a)*	*(a)*	*(a)*	$516	$388	- -
Annual Change	- -	- -	- -	- -	- -	- -	*-24.8%*
Utilities	*(a)*	*(a)*	*(a)*	*(a)*	$538,573	$821,506	- -
Annual Change	- -	- -	- -	- -	- -	*52.5%*	*52.5%*
Casualty/Liability	*(a)*	*(a)*	*(a)*	*(a)*	$0	$0	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Purchased Transportation	*(a)*	*(a)*	*(a)*	*(a)*	$3,541,976	$5,876,577	- -
Annual Change	- -	- -	- -	- -	- -	*65.9%*	*65.9%*
Other Expenses	*(a)*	*(a)*	*(a)*	*(a)*	$0	$0	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Total	*(a)*	*(a)*	*(a)*	*(a)*	$4,333,277	$6,929,774	- -
Annual Change	- -	- -	- -	- -	- -	*59.9%*	*59.9%*
OPERATING STATISTICS							
Vehicle Service Hours	*(a)*	*(a)*	*(a)*	*(a)*	12,977	20,550	- -
Annual Change	- -	- -	- -	- -	- -	*58.4%*	*58.4%*

Source: FY2015 through FY2016 NTD Reports

(a) Service began November 2014

Exhibit 5.5: Distribution of Component Costs – Automated People Mover

Operating Cost per Car Service Hour



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IV. COMPLIANCE WITH PUC REQUIREMENTS

An assessment of BART's compliance with selected sections of the state Public Utilities Code (PUC) has been performed. The compliance areas included in this review are those that MTC has identified for inclusion in the triennial performance audit. Other statutory and regulatory compliance requirements are reviewed by MTC in conjunction with its annual review of BART's TDA-STA claim application.

The results from this review are detailed by individual requirement in Exhibit 6. BART is in compliance with six of the seven sections of the state PUC that were reviewed as part of this performance audit. These sections included requirements concerning labor contracts, reduced fares, Welfare-to-Work, revenue sharing, and evaluating passenger needs. As a rapid rail operator, the PUC requirement concerning CHP terminal safety inspections is not applicable to BART.

Exhibit 6: Compliance with State PUC Requirements

Code Reference	Operator Compliance Requirements	Compliance Finding	Verification Information
PUC99251	CHP Certification - The CHP has, within the 13 months prior to each TDA claim submitted by an operator, certified the operator's compliance with Vehicle Code Section 1808 following a CHP inspection of the operator's terminal	Not Applicable	BART is a rapid rail system. This requirement does not apply.
PUC99264	Operator-to-Vehicle Staffing - The operator does not routinely staff with two or more persons public transportation vehicles designed to be operated by one person	In Compliance	No provision for excess staffing in Agreement with ATU Local 1555, effective 07/01/13.
PUC99314.5 (e)(1)(2)	Part Time Drivers and Contracting - Operators receiving STA funds are not precluded by contract from employing part-time drivers or from contracting with common carriers	In Compliance	• Part Time Train Operators and Station Agents - Section 44.0 of Agreement with ATU Local 1555, effective 07/01/13. • Contracting – Allowances for contracting activities established in Section 1.8 of Agreement with ATU Local 1555, effective 07/01/13, and Section 1.8 of Labor Agreement with SEIU Local 1021, effective 07/01/13.
PUC99155	Reduced Fare Eligibility - For any operator who received TDA Article 4 funds, if the operator offers reduced fares to senior citizens and disabled persons, applicant will honor the federal Medicare identification card, the California Department of Motor Vehicles disability ID card, the Regional Transit Connection Discount Card, or any other current identification card issued by another transit operator that is valid for the type of transportation service or discount requested; and if the operator offers reduced fares to senior citizens, it also offers the same reduced fare to disabled patrons	In Compliance	Fare information in public information materials: • BART Fares and Schedules brochure, February 2016 • Tickets / Smart Cards section on BART's web site

Code Reference	Operator Compliance Requirements	Compliance Finding	Verification Information
PUC99155.1 (a)(1)(2)	Welfare to Work Coordination - Operators must coordinates with county welfare departments in order to ensure that transportation moneys available for purposes of assisting recipients of aid are expended efficiently for the benefit of that population; if a recipient of CalWORKs program funds by the county, the operator shall give priority to the enhancement of public transportation services for welfare-to-work purposes and to the enhancement of transportation alternatives, such as, but not limited to, subsidies or vouchers, van pools, and contract paratransit operations, in order to promote welfare-to-work purposes	In Compliance	Coordination efforts include: • BART is a stakeholder in the MTC Coordinated Public Transit-Human Services Transportation Plan, directed by MTC as the RTAP and MPO for the Bay Area. • A request was made to BART for any additional coordination efforts. No response has been received as of this writing.
PUC99314.7, Govt Code 66516, MTC Res. Nos. 3837, 4073	Joint Revenue Sharing Agreement - The operator has current joint fare revenue sharing agreements in place with transit operators in the MTC region with which its service connects, and submitted copies of agreements to MTC	In Compliance	Valid transfer/revenue sharing agreements with connecting operators: AC Transit, CCCTA, City of Rio Vista, City of Union City, ECCTA, LAVTA, SFMTA, and WCCTA.
PUC99246(d)	Process for Evaluation of Passenger Needs - The operator has an established process in place for evaluating the needs and types of passengers being served	In Compliance	• BART Customer Satisfaction Study (2014) • BART Public Participation Procedures (2015) • Discussions of Goals, Objectives and Performance in latest Short Range Transit Plan (FY2014/15 – FY2023/24)

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V. STATUS OF PRIOR AUDIT RECOMMENDATIONS

BART's prior performance audit was completed in May 2014. Generally, MTC has used the audit recommendations as the basis for developing the Productivity Improvement Program (PIP) projects the operator is required to complete. MTC tracks PIP project implementation as part of its annual review of the operator's TDA-STA claim application. This section provides an assessment of actions taken by TDA-STA recipients toward implementing the recommendations advanced in the prior audit. This assessment provides continuity between the current and prior audits, which allows MTC to fulfill its obligations where the recommendations were advanced as PIP projects.

This review addresses BART's responses to the recommendations made in the prior performance audit, and whether BART made reasonable progress toward their implementation. However, there were no recommendations made in BART's prior audit.

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VI. FUNCTIONAL PERFORMANCE INDICATOR TRENDS

To further assess BART's performance over the past three years, a detailed set of functional area performance indicators was defined. This assessment consists of a three-year trend analysis of the functions in each of the following areas:

- Management, Administration and Marketing
- Service Planning
- Operations
- Maintenance
- Safety

The indicators selected for this analysis were primarily those that were tracked regularly by BART or for which input data were maintained by BART on an on-going basis, such as performance reports, contractor reports, annual financial reports and NTD reports. As such, there may be some overlap with the TDA indicators examined earlier in the audit process, but most indicators will be different. Some indicators were selected from the California Department of Transportation's Performance Audit Guidebook for Transit Operators and Regional Transportation Planning Entities as being appropriate for this evaluation. The input statistics for the indicators, along with their sources, are contained in Appendix A at the end of this report.

The trends in performance are presented over the three-year audit period to give an indication of which direction performance is moving for these indicators. The remainder of this section presents the findings from this review. The discussion presents

the highlights of performance by mode (Systemwide, Heavy Rail and Automated People Mover), each followed by an exhibit illustrating the indicators by function as applicable.

Systemwide

For the purposes of this review, BART's functional indicators relating to Management, Administration and Marketing have been included generally on a systemwide basis. Audit period performance is discussed below and presented in Exhibit 7.

- Administrative costs averaged between 17 and 18 percent of total operating costs.
- Administrative cost per vehicle service hour trended upward about eight percent, ranging between $51 and $57 overall.
- The portion of administrative costs attributed to marketing activities decreased slightly overall, remaining below two percent.
- Marketing cost per passenger trip remained steady at $0.01 in all three years.
- Systemwide farebox recovery ratio improved slightly from 76.3 percent in FY2014 to 76.8 percent in FY2016, with an increase to 78.3 percent in FY2015.

* * * * *

The following is a brief summary of the systemwide functional trend highlights between FY2014 and FY2016:

- Administrative costs were consistently less than 20 percent of total operating costs, but increased modestly from about $51 to about $57 per vehicle service hour over the audit period.

- Marketing costs decreased overall compared to total administrative costs and remained unchanged per passenger trip.

- Systemwide farebox recovery ratio improved slightly overall, fluctuating between 76 and 78 percent throughout the audit period.

Exhibit 7: Functional Performance Trends – Systemwide

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
MANAGEMENT, ADMINISTRATION & MARKETING			
Administrative Cost/Total Operating Cost	17.0%	18.3%	18.4%
Annual Percent Change	- -	*7.7%*	*0.8%*
Three Year Percent Change	- -	- -	*8.5%*
Adminstrative Cost/Car Service Hour	$51.26	$56.33	$57.08
Annual Percent Change	- -	*9.9%*	*1.3%*
Three Year Percent Change	- -	- -	*11.4%*
Marketing Cost/Total Administrative Cost	1.55%	1.22%	1.36%
Annual Percent Change	- -	*-21.0%*	*10.7%*
Three Year Percent Change	- -	- -	*-12.5%*
Marketing Cost/Unlinked Passenger Trip	$0.01	$0.01	$0.01
Annual Percent Change	- -	*-14.1%*	*18.0%*
Three Year Percent Change	- -	- -	*1.4%*
Farebox Revenue/Operating Cost	76.3%	78.3%	76.8%
Annual Percent Change	- -	*2.7%*	*-1.9%*
Three Year Percent Change	- -	- -	*0.8%*

Heavy Rail Service

BART's heavy rail service functional area trends represent areas of cost efficiency, safety, productivity and service reliability. Audit period performance is discussed below and presented in Exhibit 8.

- Service Planning

  - Cost per passenger mile was unchanged at $0.32 per mile for the first two years before increasing slightly in FY2016 to $0.34 per mile.

  - About 98 percent of all vehicle miles traveled were in service, as were about 84 percent of all vehicle hours in all three years.

- Operations

  - Vehicle operations costs per total operating cost decreased from almost 45 percent in FY2014 to 43 percent in FY2016, a four percent average annual decrease.

  - Vehicle operations costs per car service hour decreased slightly in each year, from $132.46 per hour in FY2014 to $130.79 per hour in FY2016.

  - Farebox recovery began and ended the audit period at about 78 percent for FY2014 and FY2016, with an increase to 80 percent in FY2015.

  - Operator scheduled absences per total hours worked stayed mostly steady between nine and ten percent annually.

  - Operator unscheduled absences decreased at an overall rate of about 20 percent during the audit period, from 28 percent to 22 percent of total hours worked. Although it has decreased, the FY2016 rate of unscheduled absences appears to be high. BART reports that approximately 68 percent of unscheduled absences to protected leave time, (i.e. disability, Family Medical Leave Act or California AB109 leave, a state law which allows workers to use up to half of their allotted annual sick leave to care for a parent, child or spouse). The remaining

32 percent of unscheduled absences are unprotected leave (i.e. sick days, non-paid leave, etc.). Although largely controlled by the rules established of the Collective Bargaining Agreement (CBA) between BART and its operators, BART indicated that the organization has been working to reduce unscheduled absences by implementing the following strategies:

  - Proactively analyzing absences trends;
  - Identifying absence causes and the correlation to labor costs by using special absence tracking codes;
  - Identifying employees with excessive absences and providing alternatives and assistance in returning to work; and
  - Providing attendance training to Transportation Supervisors.

- Actual operator pay hour to train hour ratio was consistently 300 percent or more during the audit period. As such, operators are paid an average of one hour for every 20 minutes that a train is in service.

- Schedule adherence decreased from 92 percent in FY2014 to just under 88 percent in the last two years.

- Complaints per 100,000 passenger trips decreased almost 25 percent overall, from 5.95 in FY2014 to 4.47 in FY2016, while the incidence of missed trips remained very low at less than one percent throughout the period.

- <u>Maintenance</u>

  - Maintenance costs per total operating costs remained steady at about 38 percent over the entire audit period.

  - Vehicle maintenance costs per service mile increased over the audit period from $1.52 per mile to $1.67 per mile, about 10 percent.

  - Maintenance pay hours per car service hours increased almost 10 percent over the audit period, from 26 percent to about 29 percent.

- Maintenance employee scheduled absences increased slightly but remained around 11 percent each year.

- Maintenance employee unscheduled absences decreased about 12 percent over the period.

- The vehicle spare ratio was unchanged at 19.3 percent throughout the three-year audit period.

- The mean distance between major failures increased overall by about 40 percent. In terms of distance between all mechanical failures, there was an increase of almost 34 percent through the period, with the largest improvement occurring in FY2016.

- Safety

  - The rate of preventable accidents per 100,000 miles increased slightly from just under one to just over one between FY2014 and FY2016.

  - Casualty and liability costs per car service hour decreased about 11 percent over the audit period from $4.47 to $3.96.

  - Casualty and liability cost per service mile decreased slightly from $0.12 to $0.11.

  - Lost days due to industrial accidents increased five percent, rising from 27,957 in FY2014 to 30,094 in FY2015 before decreasing to 29,343 in FY2016.

* * * * *

The following is a brief summary of the heavy rail service functional trend highlights between FY2014 and FY2016:

- For service planning, there was steady performance in operating cost per passenger mile, with an increase of two cents per mile over the period. Vehicle miles in service consistently averaged about 98 percent each year, while vehicle hours in service demonstrated a slight increase from 83 to 85 percent.

- There was a four percent decrease in the vehicle operations cost per total operating cost, and a less than two percent decrease in vehicle operations costs per service hour. Farebox recovery ranged between 78 percent in the first and last year of the period and 80 percent in FY2015.

- Operator scheduled absences increased just over six percent. Operator unscheduled absences decreased about 20 percent overall, but still demonstrated a rate of absences exceeding more than 22 percent of total hours worked each year. BART attributes approximately 68 percent of unscheduled absences to protected leave (i.e. disability, FMLA, and California AB109, a state law which allows employees to use a portion of their allotted sick leave to care for family members), and 32 percent to unprotected leave (i.e. sick days, non-paid leave, etc.). BART has been implementing several strategies to reduce unscheduled absences in the future.

- The actual operator pay hour to train hour ratio was consistently 300 percent or more during the audit period. As such, operators are paid an average of one hour for every 20 minutes that a train is in service. Schedule adherence decreased from 92 to 88 percent, and complaints per 100,000 passenger trips decreased from 5.95 in FY2014 to 4.47 in FY2016.

- Maintenance costs remained steady as a proportion of total operating costs, while vehicle maintenance cost per service hour and maintenance pay hours per service hour both increased by about 10 percent. Maintenance scheduled absences increased about four percent, while unscheduled absences decreased 12 percent. The vehicle spare ratio was steady at 19.3 percent each year. Mechanical reliability improved, with distance between mechanical failure rates increasing over 40 percent for major failures and over 30 percent for all failures.

- Safety results included a slight increase in preventable accidents over the audit period, decreased casualty and liability costs per service hour and mile, and an overall decrease in lost days due to industrial accidents.

Exhibit 8: Functional Performance Trends – Heavy Rail Service

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
SERVICE PLANNING			
Total Operating Cost/Passenger Mile	$0.32	$0.32	$0.34
Annual Percent Change	- -	*-0.3%*	*4.4%*
Three Year Percent Change	- -	- -	*4.0%*
Car Service Miles/Total Miles	97.4%	97.7%	97.9%
Annual Percent Change	- -	*0.3%*	*0.2%*
Three Year Percent Change	- -	- -	*0.4%*
Car Service Hours/Total Hours	83.1%	84.2%	85.0%
Annual Percent Change	- -	*1.4%*	*0.9%*
Three Year Percent Change	- -	- -	*2.3%*
OPERATIONS			
Vehicle Operations Cost/Total Operating Cost	44.8%	43.7%	43.0%
Annual Percent Change	- -	*-2.3%*	*-1.7%*
Three Year Percent Change	- -	- -	*-4.0%*
Vehicle Operations Cost/Car Service Hour	$132.46	$132.04	$130.79
Annual Percent Change	- -	*-0.3%*	*-0.9%*
Three Year Percent Change	- -	- -	*-1.3%*
Farebox Revenue/Operating Cost	77.9%	79.8%	77.9%
Annual Percent Change	- -	*2.4%*	*-2.3%*
Three Year Percent Change	- -	- -	*0.0%*
Operator Sched. Absences/Total Hours Worked	9.3%	10.1%	9.9%
Annual Percent Change	- -	*9.3%*	*-2.6%*
Three Year Percent Change	- -	- -	*6.5%*
Operator Unsched. Absences/Total Hours Worked	27.8%	22.5%	22.3%
Annual Percent Change	- -	*-18.8%*	*-1.2%*
Three Year Percent Change	- -	- -	*-19.8%*
Operator Pay Hours to Train Hours - Actual	300.1%	309.8%	313.2%
Annual Percent Change	- -	*3.2%*	*1.1%*
Three Year Percent Change	- -	- -	*4.3%*
Trips On-Time/Total Trips	91.9%	87.8%	87.5%
Annual Percent Change	- -	*-4.5%*	*-0.3%*
Three Year Percent Change	- -	- -	*-4.8%*
Complaints per 100,000 Passenger Trips	5.95	4.33	4.47
Annual Percent Change	- -	*-27.2%*	*3.2%*
Three Year Percent Change	- -	- -	*-24.8%*
Missed Trips/Total Trips	0.5%	0.7%	0.6%
Annual Percent Change	- -	*27.3%*	*-14.6%*
Three Year Percent Change	- -	- -	*8.7%*

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
MAINTENANCE			
Vehicle + Non-Veh. Maint. Cost/Total Operating Cost	38.3%	38.0%	38.8%
Annual Percent Change	- -	*-0.8%*	*1.9%*
Three Year Percent Change	- -	- -	*1.1%*
Vehicle Maintenance Cost/Car Service Mile	$1.52	$1.58	$1.67
Annual Percent Change	- -	*4.3%*	*5.5%*
Three Year Percent Change	- -	- -	*10.1%*
Maintenance Pay Hours/Car Service Hours	26.0%	28.2%	28.6%
Annual Percent Change	- -	*8.5%*	*1.2%*
Three Year Percent Change	- -	- -	*9.8%*
Maintenance Employee Scheduled Absences	10.9%	11.5%	11.3%
Annual Percent Change	- -	*5.4%*	*-1.8%*
Three Year Percent Change	- -	- -	*3.5%*
Maintenance Employee Unscheduled Absences	12.0%	8.8%	10.5%
Annual Percent Change	- -	*-26.1%*	*18.9%*
Three Year Percent Change	- -	- -	*-12.1%*
Spare Vehicles/Total Vehicles	19.3%	19.3%	19.3%
Annual Percent Change	- -	*0.0%*	*0.0%*
Three Year Percent Change	- -	- -	*0.0%*
Mean Distance between Major Failures (Miles)	365,222	417,312	511,851
Annual Percent Change	- -	*14.3%*	*22.7%*
Three Year Percent Change	- -	- -	*40.1%*
Mean Distance between All Failures (Miles)	260,669	265,855	348,546
Annual Percent Change	- -	*2.0%*	*31.1%*
Three Year Percent Change	- -	- -	*33.7%*
SAFETY			
Preventable Accidents/100,000 Vehicle Miles	0.97	1.05	1.08
Annual Percent Change	- -	*7.7%*	*3.5%*
Three Year Percent Change	- -	- -	*11.5%*
Casualty & Liability Cost/Car Service Hour	$4.47	$3.73	$3.96
Annual Percent Change	- -	*-16.6%*	*6.1%*
Three Year Percent Change	- -	- -	*-11.4%*
Casualty & Liability Cost/Car Service Mile	$0.12	$0.11	$0.11
Annual Percent Change	- -	*-15.1%*	*6.3%*
Three Year Percent Change	- -	- -	*-9.7%*
Lost Days Due to Industrial Accidents	27,957	30,091	29,343
Annual Percent Change	- -	*7.6%*	*-2.5%*
Three Year Percent Change	- -	- -	*5.0%*

Automated People Mover Service

BART's people mover functional area trends represent mostly similar areas to the bus service. As the people mover service began in November 2014, functional area trends are presented for eight months of FY2015 and FY2016 only. Audit period performance is discussed below and presented in Exhibit 9.

- Service Planning
  - Operating cost per passenger mile decreased 10 percent from $2.33 per mile to $2.10 per mile between FY2015 to FY2016.
  - About 99 percent of all vehicle miles traveled were in service, as was the case with vehicle hours in both years.
- Operations
  - Vehicle operations cost per total cost decreased from about 45 percent to 40 percent over the two years (10.7 percent).
  - Vehicle operations costs per service hour also decreased from $151.74 per hour to $136.88 per hour.
  - The farebox recovery ratio increased from 86 to 96 percent.
  - Schedule adherence, measured as passenger service availability, remained steady at 99 percent.
  - Complaints per 100,000 passenger trips decreased from 0.34 in FY2015 to 0.10 in FY2016.
- Maintenance
  - Total maintenance costs per total operating cost decreased slightly from 36.5 to 34.1 percent.

- Vehicle maintenance cost per car service mile decreased over 37 percent from $4.46 mile to $2.80 per mile.

- The people mover had no spare vehicles during this period.

- The mean distance between major failures declined 20 percent, while mean distance between all failures increased over 87 percent.

- Safety

  - There were no casualty/liability costs associated with the people mover service, and no lost days due to industrial accidents.

* * * * *

The following is a brief summary of the people mover functional trend highlights for FY2015 and FY2016:

- Service Planning results included decreasing costs per passenger mile and a consistent 99 percent of vehicle miles and hours in service.

- There was about a 10 percent decrease in both vehicle operations cost per total operating cost, and in vehicle operations costs per hour. The farebox recovery ratio increased almost 12 percent overall, while service availability was a consistent 99 percent. There was less than one complaint reported per 100,000 passenger trips.

- The proportion of maintenance costs to total costs decreased 6.5 percent while vehicle maintenance costs per mile decreased more than 37 percent over the audit period. Mean distance between major failures decreased almost 20 percent, but the distance between all failures increased over 87 percent.

- For safety, there were no lost days due to industrial accidents and no casualty/liability costs attributed to the people mover service.

Exhibit 9: Functional Performance Trends – Automated People Mover

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
SERVICE PLANNING			
Total Operating Cost/Passenger Mile	- -	$2.33	$2.10
Annual Percent Change	- -	- -	*-10.0%*
Three Year Percent Change	- -	- -	- -
Car Service Miles/Total Miles	- -	99.5%	99.4%
Annual Percent Change	- -	- -	*0.0%*
Three Year Percent Change	- -	- -	- -
Car Service Hours/Total Hours	- -	98.9%	98.8%
Annual Percent Change	- -	- -	*-0.1%*
Three Year Percent Change	- -	- -	- -
OPERATIONS			
Vehicle Operations Cost/Total Operating Cost	- -	45.4%	40.6%
Annual Percent Change	- -	- -	*-10.7%*
Three Year Percent Change	- -	- -	- -
Vehicle Operations Cost/Car Service Hour	- -	$151.74	$136.88
Annual Percent Change	- -	- -	*-9.8%*
Three Year Percent Change	- -	- -	- -
Farebox Revenue/Operating Cost	- -	86.1%	96.2%
Annual Percent Change	- -	- -	*11.7%*
Three Year Percent Change	- -	- -	- -
Passenger Service Availability	- -	99.2%	99.7%
Annual Percent Change	- -	- -	*0.6%*
Three Year Percent Change	- -	- -	- -
Complaints per 100,000 Passenger Trips	- -	0.34	0.10
Annual Percent Change	- -	- -	*-71.9%*
Three Year Percent Change	- -	- -	- -

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
MAINTENANCE			
Vehicle + Non-Veh. Maint. Cost/Total Operating Cost	- -	36.5%	34.1%
Annual Percent Change	- -	- -	*-6.5%*
Three Year Percent Change	- -	- -	- -
Vehicle Maintenance Cost/Car Service Mile	- -	$4.46	$2.80
Annual Percent Change	- -	- -	*-37.3%*
Three Year Percent Change	- -	- -	- -
Spare Vehicles/Total Vehicles	- -	0.0%	0.0%
Annual Percent Change	- -	- -	- -
Three Year Percent Change	- -	- -	- -
Mean Distance between Major Failures (Miles)	- -	129,804	104,152
Annual Percent Change	- -	- -	*-19.8%*
Three Year Percent Change	- -	- -	- -
Mean Distance between All Failures (Miles)	- -	37,087	69,435
Annual Percent Change	- -	- -	*87.2%*
Three Year Percent Change	- -	- -	- -
SAFETY			
Casualty & Liability Cost/Car Service Hour	- -	$0.00	$0.00
Annual Percent Change	- -	- -	- -
Three Year Percent Change	- -	- -	- -
Casualty & Liability Cost/Car Service Mile	- -	$0.00	$0.00
Annual Percent Change	- -	- -	- -
Three Year Percent Change	- -	- -	- -
Lost Days Due to Industrial Accidents	- -	0	0
Annual Percent Change	- -	- -	- -
Three Year Percent Change	- -	- -	- -

VII. CONCLUSIONS AND RECOMMENDATIONS

The preceding sections presented a review of BART's transit service performance during the three-year period of FY2014 through FY2016 (July 1, 2013 through June 30, 2016). They focused on TDA compliance issues including trends in TDA-mandated performance indicators and compliance with selected sections of the state Public Utilities Code (PUC). They also provided the findings from an overview of BART's data collection activities to support the TDA indicators, actions taken to implement recommendations from the prior performance audit, and a review of selected key functional performance results.

Conclusions

The key findings and conclusions from the individual sections of this performance audit are summarized below:

- Data Collection – BART is in compliance with the data collection and reporting requirements for all five TDA statistics. In addition, the statistics collected over the six-year review period appear to be consistent with the TDA definitions, and indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics.

- TDA Performance Trends

  Heavy Rail Service – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2011 through FY2016:

- There was an average annual increase in the operating cost per hour of 3.7 percent, or 1.2 percent in inflation adjusted dollars. The largest annual increase of 6.9 percent occurred in FY2013.

- The cost per passenger increased on average by 2.2 percent per year, which, when measured in constant FY2011 dollars, resulted in an average annual decrease of 0.3 percent.

- Passenger productivity showed modest improvement, with passengers per car service hour increasing by 1.4 percent per year overall, and passengers per car service mile increasing by 1.7 percent annually.

- Employee productivity was mostly static, increasing an average 0.2 percent per year.

The following is a brief summary of the component operating costs trend highlights for the heavy rail service between FY2014 and FY2016:

- Labor costs went up by about two percent per year, but their share of total costs was reduced from about 50 to 40 percent.

- Fringe benefit costs went up 3.4 percent per year, slightly higher than labor costs, and their share of total costs also decreased over the audit period from about 40 percent to 33 percent of total costs.

- Services costs experienced the highest increase among the cost categories, at 11.5 percent annually. Services comprised between seven and nine percent of total operating costs. The increase in service costs was attributed to increased costs for IT professional services, fleet maintenance and repairs, and payment to AC Transit for feeder services not covered by STA funding.

- There were moderate changes overall in the remaining component costs. Materials and supplies and casualty/liability costs both increased by 6.7 percent per year, with materials accounting for about six percent of total costs and casualty less than two percent. Utilities costs, about eight percent of total operating costs, were mostly unchanged.

- The other expenses category showed a decrease of over 180 percent annually, due to negative costs reported in FY2011 and FY2012 per NTD reporting guidelines. Following NTD guidelines, operating costs reclassified to other functions or to capital accounts were reported in the expense transfers object class. This object class was eliminated from NTD reporting in 2013.

Automated People Mover Service – With just one partial year and one full fiscal year of NTD data to examine, the TDA performance presented here may not constitute a trend. However, we are presenting the following performance information below. The following is a brief summary of the TDA performance trend highlights for the automated people mover over the two-year period of service from FY2015 through FY2016:

- Cost efficiency decreased slightly, with operating costs per car service hour rising one percent. With the effects of inflation removed, cost per hour decreased 1.4 percent.

- Cost effectiveness, measured as operating cost per passenger, increased with a 10 percent drop in this area. In constant dollars, cost per passenger decreased 12.1 percent.

- Passenger productivity showed positive performance, with passengers per service hour and passengers per service mile both increasing over 10 percent between FY2015 and FY2016.

The following is a brief summary of the component operating costs trend highlights for automated people mover service between FY2015 and FY2016:

- Labor costs decreased by 21.5 percent, while fringe benefits costs increased 16.1 percent. Together, these two cost categories comprise less than a five percent share of the automated people mover total operating costs.

- Utilities costs increased 52.5 percent, and comprised about 12 percent of the total operating costs.

- Purchased transportation is the largest component of total operating costs at about 85 percent. Purchased transportation costs increased approximately 66 percent between FY2015 to FY2016.

- No costs were reported in the casualty/liability and other costs categories, and only minimal expenses were reported for materials and supplies. All three of these categories represented a zero percent share of total operating costs.

- Overall, the majority of the cost increases reported between FY2015 and FY2016 can be attributed to the fact that FY2015 costs reporting was for a partial year of service, while FY2016 reflects the first full year of service for the system.

- PUC Compliance – BART is in compliance with six of the seven sections of the state PUC that were reviewed as part of this performance audit. These sections included requirements concerning labor contracts, reduced fares, Welfare-to-Work, revenue sharing, and evaluating passenger needs. As a rapid rail operator, the PUC requirement concerning CHP terminal safety inspections is not applicable to BART.

- Status of Prior Audit Recommendations – There were no recommendations made in BART's prior performance audit.

- Functional Performance Indicator Trends

  To further assess BART's performance over the past three years, a detailed set of systemwide and modal functional area performance indicators was defined and reviewed.

  Systemwide – The following is a brief summary of the systemwide functional trend highlights between FY2014 and FY2016:

  - Administrative costs were consistently less than 20 percent of total operating costs, but increased modestly from about $51 to about $57 per vehicle service hour over the audit period.

- Marketing costs decreased overall compared to total administrative costs and remained unchanged per passenger trip.

- Systemwide farebox recovery ratio improved slightly overall, fluctuating between 76 and 78 percent throughout the audit period.

Heavy Rail Service – The following is a brief summary of the heavy rail service functional trend highlights between FY2014 and FY2016:

- For service planning, there was steady performance in operating cost per passenger mile, with an increase of two cents per mile over the period. Vehicle miles in service consistently averaged about 98 percent each year, while vehicle hours in service demonstrated a slight increase from 83 to 85 percent.

- There was a four percent decrease in the vehicle operations cost per total operating cost, and a less than two percent decrease in vehicle operations costs per service hour. Farebox recovery ranged between 78 percent in the first and last year of the period and 80 percent in FY2015.

- Operator scheduled absences increased just over six percent. Operator unscheduled absences decreased about 20 percent overall, but still demonstrated a rate of absences exceeding more than 22 percent of total hours worked each year. BART attributes approximately 68 percent of unscheduled absences to protected leave (i.e. disability, FMLA, and California AB109, a state law which allows employees to use a portion of their allotted sick leave to care for family members), and 32 percent to unprotected leave (i.e. sick days, non-paid leave, etc.). BART has been implementing several strategies to reduce unscheduled absences in the future.

- The actual operator pay hour to train hour ratio was consistently 300 percent or more during the audit period. As such, operators are paid an average of one hour for every 20 minutes that a train is in service. Schedule adherence decreased from 92 to 88 percent, and complaints per 100,000 passenger trips decreased from 5.95 in FY2014 to 4.47 in FY2016.

- Maintenance costs remained steady as a proportion of total operating costs, while vehicle maintenance cost per service hour and maintenance pay hours per service hour both increased by about 10 percent. Maintenance scheduled absences increased about four percent, while unscheduled absences decreased 12 percent. The vehicle spare ratio was steady at 19.3 percent each year. Mechanical reliability improved, with distance between mechanical failure rates increasing over 40 percent for major failure and 30 percent for all failures.

- Safety results included a slight increase in preventable accidents over the audit period, decreased casualty and liability costs per service hour and mile, and an overall decrease in lost days due to industrial accidents.

Automated People Mover Service – The following is a brief summary of the people mover functional trend highlights for FY2015 and FY2016:

- Service Planning results included decreasing costs per passenger mile and a consistent 99 percent of vehicle miles and hours in service.

- There was about a 10 percent decrease in both vehicle operations cost per total operating cost, and in vehicle operations costs per hour. The farebox recovery ratio increased almost 12 percent overall, while service availability was a consistent 99 percent in both years. There was less than one complaint reported per 100,000 passenger trips.

- The proportion of maintenance costs to total costs decreased 6.5 percent while vehicle maintenance costs per mile decreased more than 37 percent. Mean distance between major failures decreased almost 20 percent, but the distance between all failures increased over 87 percent.

- For safety, there were no lost days due to industrial accidents and no casualty/liability costs attributed to the people mover service.

Recommendations

No recommendations are suggested for BART based on the results of this triennial performance audit.

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APPENDIX A:
INPUT STATISTICS FOR
FUNCTIONAL PERFORMANCE MEASURES

Functional Performance Inputs – BART Systemwide

Data Item	FY2014	FY2015	FY2016	Source
Total Operating Costs	$545,091,162	$591,951,890	$637,102,885	NTD F-40 (31% of DR) *(a)*
Administrative Costs	$92,422,014	$108,059,652	$117,175,613	NTD F-40
Car Service Hours	1,803,171	1,918,443	2,052,842	NTD S-10 (all modes)
Marketing Costs	$1,431,986	$1,322,837	$1,588,370	BART Budget Perf. Reports
Unlinked Passenger Trips	125,784,207	135,240,559	137,658,212	NTD S-10 (all modes)
Farebox Revenue (All Modes)	$415,742,134	$463,634,019	$489,583,067	NTD F-10 (31% of DR) *(a)*

(a) Includes 31% of EBPC DR costs and fares per split agreement between BART and AC Transit

Functional Performance Inputs – BART Heavy Rail

Data Item	FY2014	FY2015	FY2016	Source
Operator Pay Hours - Actual	879,634	929,538	966,953	BART Staff
Car Service Miles	64,766,101	67,269,149	71,628,728	NTD S-10 HR
Total Car Miles	66,470,479	68,856,495	73,194,683	NTD S-10 HR
Train Hours - Actual	293,073	300,031	308,748	NTD S-10 HR
Car Service Hours	1,803,171	1,905,466	2,032,292	NTD S-10 HR
Total Car Hours	2,170,444	2,262,038	2,391,873	NTD S-10 HR
Unlinked Passenger Trips	125,784,207	134,660,058	136,627,121	NTD S-10 HR
Farebox Revenue	$415,742,134	$459,041,781	$482,050,036	NTD F-10
Total Operating Costs	$533,550,586	$575,457,469	$618,531,406	NTD F-30 HR
Passenger Miles	1,655,369,324	1,791,366,239	1,844,823,552	NTD S-10 HR
Vehicle Operations Costs	$238,840,044	$251,593,628	$265,801,674	NTD F-30 HR
Operator Work Hours	729,038	766,523	796,121	BART Staff
Operator Scheduled Absences (Hours)	67,618	77,742	78,668	BART Staff
Operator Unscheduled Absences (Hours)	202,573	172,848	177,394	BART Staff
Trips On-Time	197,343	193,727	190,371	BART Staff
Total Trips	214,684	220,660	217,544	BART Staff
Complaints	7,479	5,831	6,108	BART Staff
Missed Trips	1,109	1,451	1,221	BART Staff
Mechanic Pay Hours	469,336	538,065	580,726	BART Staff
Maintenance Employee Work Hours	1,106,134	1,256,732	1,407,945	BART Staff
Maint. Employee Sched. Absences (Hours)	120,515	144,378	158,835	BART Staff
Maint. Employee Unsched. Absences (Hours)	132,292	111,113	147,956	BART Staff
Vehicle Maintenance Costs	$98,231,644	$106,380,988	$119,559,715	NTD F-30 HR
Non-Vehicle Maintenance Costs	$106,218,324	$112,459,822	$120,123,112	NTD F-30 HR
Spare Vehicles (Total less Maximum Service)	128	128	128	NTD S-10 HR
Total Vehicles	662	662	662	NTD S-10 HR
Revenue Vehicle Mechanical System Failures - Total	255	259	210	NTD R-20
Revenue Vehicle Mechanical System Failures - Major	182	165	143	NTD R-20
Preventable Accidents	646	721	793	BART Staff
Casualty/Liability Costs	$8,056,092	$7,103,228	$8,041,893	NTD F-30 HR
Lost Days - Industrial Accidents	27,957	30,091	29,343	BART Staff

Functional Performance Inputs – BART Automated People Mover

Data Item	FY2014	FY2015	FY2016	Source
Car Service Miles	*(a)*	258,192	414,268	NTD S-10 MG
Total Car Miles	*(a)*	259,607	416,609	NTD S-10 MG
Car Service Hours	*(a)*	12,977	20,550	NTD S-10 MG
Total Car Hours	*(a)*	13,124	20,794	NTD S-10 MG
Unlinked Passenger Trips	*(a)*	580,501	1,031,091	NTD S-10 MG
Farebox Revenue	*(a)*	$3,732,554	$6,666,416	NTD F-10 MG
Total Operating Costs	*(a)*	$4,333,277	$6,929,774	NTD F-30 MG
Passenger Miles	*(a)*	1,857,603	3,299,491	NTD S-10 MG
Vehicle Operations Costs	*(a)*	$1,969,186	$2,812,949	NTD F-30 MG
Passenger Service Availability	*(a)*	99.19%	99.74%	BART Staff
Complaints	*(a)*	2.0	1.0	BART Staff
Vehicle Maintenance Costs	*(a)*	$1,152,295	$1,159,152	NTD F-30 MG
Non-Vehicle Maintenance Costs	*(a)*	$429,679	$1,206,585	NTD F-30 MG
Spare Vehicles (Total less Maximum Service)	*(a)*	0	0	NTD S-10 MG
Total Vehicles	*(a)*	4	4	NTD S-10 MG
Revenue Vehicle Mechanical System Failures - Total	*(a)*	7	6	NTD R-20
Revenue Vehicle Mechanical System Failures - Major	*(a)*	2	4	NTD R-20
Casualty/Liability Costs	*(a)*	$0	$0	NTD F-30 MG
Lost Days - Industrial Accidents	*(a)*	0	0	BART Staff

(a) Service began November 2014 (FY2015)

APPENDIX B

TRIENNIAL PERFORMANCE AUDIT

OF THE
EAST BAY PARATRANSIT CONSORTIUM (EBPC)

FINAL AUDIT REPORT

MAY 2017

NOTE:

All exhibits in this report are presented at the end of the associated discussion in each section.

EXECUTIVE SUMMARY

This executive summary highlights the findings from the performance audit of the East Bay Paratransit Consortium (EBPC), which was formed by AC Transit and BART to meet the requirements for providing ADA-mandated complementary paratransit in their overlapping service areas. In California, a performance audit must be conducted every three years of any transit operator receiving Transportation Development Act (TDA) Article 4 funds, to determine whether the operator is in compliance with certain statutory and regulatory requirements, and to assess the efficiency and effectiveness of the operator's services.

Since EPBC is a shared responsibility of both BART and AC Transit, EBPC's performance audit is being included in the performance audits of both operators, as an appendix. The audit covers the period of Fiscal Years 2014 through 2016 (from July 1, 2013 through June 30, 2016).

Performance Audit and Report Organization

The performance audit was conducted for MTC in accordance with its established procedures for performance audits. The final audit report consists of these sections:

- An assessment of data collection and reporting procedures;
- A review of performance trends in TDA-mandated indicators and component costs;
- An evaluation of EBPC's actions to implement the recommendations from the last performance audit;
- An evaluation of functional performance indicator trends; and

- Findings, conclusions, and recommendations to further improve EBPC's performance based on the results of the previous sections.

Comments received from AC Transit, BART and MTC staff regarding the draft report have been incorporated into the final report. Highlights from the key activities are presented in this executive summary.

Results and Conclusions

Review of TDA Data Collection and Reporting Methods - The purpose of this review is to determine if EBPC is in compliance with the TDA requirements for data collection and reporting. The review is limited to the five data items needed to calculate the TDA-mandated performance indicators. This review has determined that EBPC is in compliance with the data collection and reporting requirements for all five TDA statistics. In addition, the statistics collected over the six-year review period appear to be consistent with the TDA definitions, and indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics.

Performance Indicators and Trends – EBPC's performance trends for four of the five TDA-mandated indicators were analyzed. The fifth indicator, vehicle service hours per employee, was not analyzed since FTEs were not reported for this service, which is provided by multiple contractors. A six-year analysis period was used for all the indicators. In addition, component operating costs were analyzed.

- The following is a brief summary of EBPC's TDA performance trend highlights over the six-year period of FY2011 through FY2016:
  - There was an average annual increase in the operating cost per hour of 1.5 percent, which amounted to an annual decrease of one percent

in inflation adjusted dollars. After a generally increasing trend through FY2015, a notable reduction was achieved in the last year.

  - The cost per passenger increased on average by 2.9 percent per year, or 0.4 percent in constant FY2011 dollars.

  - Passenger productivity showed somewhat negative trends, with passengers per vehicle service hour decreasing by 1.4 percent per year overall, and passengers per vehicle service mile decreasing by 1.2 percent.

- The following is a brief summary of the component operating costs trend highlights for the bus service between FY2011 and FY2016:

  - Total annual costs increased by 2.3 percent on average, but there was significant variation reported within certain component cost areas. This was principally traced to NTD reporting protocol, wherein all component costs except "Purchased Transportation" represent costs allocated from AC Transit operations to EBPC. The NTD has periodically adjusted the reporting requirements related to these allocations.

  - FY2016 especially saw major increases in some component costs, with substantial reductions in other areas. Driven by the FY2016 results, labor and fringe benefits costs both increased on average by 25 percent annually through the period.

  - No casualty/liability costs or "other expenses" were reported in the first year, and only very minor amounts in FY2016. In the interim, much more significant amounts were reported, with casualty/liability costs contributing four to five percent shares of total costs in those years. Otherwise, all cost categories except purchased transportation contributed just minimally.

  - Purchased transportation costs increased on average by 2.1 percent annually, and retained well over a 90 percent share of the total cost per vehicle hour in all six years.

Status of Prior Audit Recommendations – There were no recommendations made in EBPC's prior performance audit.

Functional Performance Indicator Trends - To further assess EBPC's performance over the past three years, a detailed set of functional area performance indicators was defined and reviewed. The following is a brief summary of the functional trend highlights between FY2014 and FY2016:

- Service Planning results showed operating cost per passenger mile decreasing slightly, with the farebox recovery ratio increasing slightly to 7.4 percent in FY2016, and consistently 82 percent or more vehicle miles and hours in service.
- Operations results showed vehicle operations costs steady at $64 per hour but increasing from 68 to 73.5 percent of total costs. Schedule adherence decreased but remained above 90 percent, while there was an overall decrease in the rate of complaints. The missed trip rate increased but remained very low. There were trip denials in each year – up to 0.05 percent of scheduled trips in FY2016. Most were "scheduled" denials, where the rider accepted an alternate trip time, and EBPC reports recent scheduling software changes resulting in a decrease in denials in FY2017. Trip cancellations decreased slightly, but late trip cancellations and passenger no-shows both increased by more than ten percent.
- Maintenance results showed total maintenance costs increasing from 7.9 to 8.5 percent of total costs and vehicle maintenance costs increasing from $0.44 per service mile to $0.47 per service mile. The spare ratio decreased from a high of 35 percent in FY2014 (when many older vehicles were replaced during the year) to less than 15 percent in subsequent years. There was overall worsening in the mechanical failure rates, especially in FY2016.
- Safety results showed the preventable accident rate worsened significantly, especially in FY2016 when there was an influx of new drivers.

Recommendations

1. CONTINUE EFFORTS TOWARD ELIMINATING TRIP DENIALS.
[Reference Section: VI. Functional Performance Indicator Trends]

It was found that there were trip denials in each audit year -- increasing from 0.04 percent of total trips scheduled in the first two years to 0.05 percent in FY2016. This represented several hundred service denials per year, with the number growing larger each year. Most of the denials reported were scheduled denials, meaning the rider accepted an alternate trip which was outside the one hour window from the originally requested pick up time. However, there also were a small number of capacity denials, where the rider did not receive the requested trip and did not accept an alternate time. EBPC had a total of 59 capacity denials during the audit period, but with annual totals steadily decreasing.

EBPC reports its scheduling software has recently been under rigorous review, with systematic changes being implemented that have led to a decrease in denials in FY2017. Further, there does not appear to be any operational pattern or practice that significantly limits the availability of service to ADA paratransit eligible persons (as defined in the Code of Federal Regulations – 49 CFR 37.131). Nonetheless, EBPC should continue striving to eliminate all service denials, in order to better meet the needs of its constituency and to comply with the federal ADA goal of zero service denials.

2. INVESTIGATE ADDITIONAL STRATEGIES TO REDUCE LATE TRIP CANCELLATIONS AND PASSENGER NO-SHOWS.
[Reference Section: VI. Functional Performance Indicator Trends]

The rates of late trip cancellations (less than one hour before scheduled pick-up time) and passenger no-shows both increased by more than ten percent over the period, to 3.4 and 4.5 percent of total trips scheduled, respectively. Late cancellations and passenger no-shows have the potential to create capacity constraints on the ADA paratransit service. Such constraints can impede an operator's ability to successfully schedule trips, resulting in denials of service. Although EBPC has a policy which includes sanctions passengers for late cancellations and no-shows, it is unclear how this policy is being implemented considering the rise in late cancellations and no-shows during the audit period.

In order to provide service more effectively and decrease the likelihood of capacity constraints, EBPC should expand its efforts toward reducing the occurrences of late cancellations and passenger no-shows. These efforts should include providing additional outreach and education for paratransit passengers.

3. EXAMINE MAINTENANCE ACTIVITIES AND DEVELOP ADDITIONAL STRATEGIES TO ADDRESS THE RECENTLY INCREASING MECHANICAL FAILURE RATES.
[Reference Section: VI. Functional Performance Indicator Trends]

Audit period maintenance results for EBPC showed that the mean distance between major failures declined in each year, especially in FY2016, when it dropped below 30,000 miles traveled. The mean distance between major failures declined overall by 44 percent. When looking at all failures, there was also a

generally negative trend, with a 22 percent overall decline and less than 20,000 miles between failures in FY2016.

EBPC cites an aging fleet with replacement vehicles not acquired as quickly as desired, and degrading road conditions in the service area. In response, enhancements to the preventive maintenance function are being programmed. Further, a number of new vehicles are being delivered, and early results in FY2017 indicate some improvement in the failure rate. Additional efforts should be made by EBPC to improve its maintenance function to increase vehicle reliability and reduce the incidence of mechanical failures on its services.

4. DEVELOP A PLAN TO IMPROVE PERFORMANCE IN THE PREVENTABLE ACCIDENT RATE.
[Reference Section: VI. Functional Performance Indicator Trends]

It was found that the rate of preventable accidents increased in each year, and more than doubled in FY2016 compared to FY2015. There were 1.83 preventable accidents per 100,000 vehicle miles traveled in FY2016, comparing unfavorably with 0.68 in FY2015 and 0.48 in FY2014. EBPC staff attributes the FY2016 results to difficulties in driver recruitment, followed by an influx of new drivers in that year. This points to a safety issue which EBPC should address in coordination with its service providers. EBPC indicated that as part of the next five-year contract option extension, the Broker will be instructed to thoroughly review driver safety and training programs from the service providers, and review the content and percentage of classroom and behind the wheel training. This plan should include strategies to improve operator training and enhance monitoring activities to ensure that safety issues are identified and corrected.

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Table of Contents

List of Exhibits

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I. INTRODUCTION

The East Bay Paratransit Consortium (EBPC) was formed by AC Transit and BART to meet the requirements for providing ADA-mandated complementary paratransit in their overlapping service areas. Both AC Transit and BART have been instrumental in the creation of the Consortium and its subsequent operation. Both agencies provide oversight of the consortium. Passengers are Consortium passengers; they are not identified as AC Transit or BART passengers. Similarly, both agencies share responsibility for performance results and the implementation of any recommendations that would arise.

In light of the organizational arrangement, the review is being conducted separate from the concurrent AC Transit and BART performance audits. This appendix is being included in the performance audit reports for both AC Transit and BART. The audit period is also Fiscal Years 2014 through 2016 (from July 1, 2013 through June 30, 2016).

An overview of EBPC is provided in Exhibit B-1. This is followed by an organization chart in Exhibit B-2, which reflects the basic organizational structure and typical functions during the audit period and beyond.

Performance Audit and Report Organization

This performance audit of EBPC was conducted for MTC in accordance with its established procedures for performance audits. The audit included mostly similar steps as the AC Transit and BART performance audits, consisting of two discrete steps:

1. Compliance Audit - Activities in this phase included:

   - An overview of data collection and reporting procedures for the five TDA performance indicators; and
   - Analysis of the TDA indicators.

2. Functional Review - Activities in this phase included:

   - A review of actions to implement the recommendations from the prior performance audit;
   - Calculation and evaluation of functional performance indicator trends; and
   - Findings, conclusions, and the formulation of recommendations.

This report presents the findings from both phases. Comments received from AC Transit, BART and MTC staff regarding the draft report have been incorporated into this final report.

Exhibit B-1: System Overview

Location Headquarters: 1750 Broadway, Oakland CA 94612

Establishment EBPC was formed in 1994 by AC Transit and BART through a Joint Exercise of Powers agreement (JPA). It was formed to provide paratransit service to fulfill both agencies' ADA obligations in their joint service areas.

Board EBPC is governed by the Boards of Directors of BART and AC Transit, with direction from a Service Review Committee (SRC) that includes the General Managers of both agencies. The SRC receives guidance from a Service Review Advisory Committee (SRAC), comprised of riders and social service providers. Oversight of EBPC's activities is led jointly by Program Managers from both agencies. In addition, a contracted Program Coordinator's Office (PCO) was established in the JPA to serve as a neutral, central point of contact between AC Transit and BART, and to fulfill certain administrative and contract monitoring activities for the two member agencies.

Service Data EBPC provides ADA paratransit service to eligible riders in Alameda County and the western part of Contra Costa County, and to and from San Francisco. EBPC operates through a brokerage system. Transdev Services, Inc. is the contracted broker, handling eligibility certifications, reservations, schedules, customer service, and contracts with service providers. Transdev contracts in turn with three private operators for the actual provision of vehicles and drivers.

EBPC operates during the same hours as the regular AC Transit buses and BART trains. Service is limited to areas within ¾ mile of an operating bus route or BART station. Phone reservations are required. Trips can be arranged up to seven days in advance. Trips must be scheduled by 5:00 p.m. the day before traveling. Standing orders are accepted, based on availability, from riders who want to take the same trip on a regular basis. Trip cancellations must be made at least one hour before the pick-up time, or the passenger will be considered a "no-show/late cancellation".

Fares are based on the distance traveled, and range from $4.00 to $10.00. These fares represent rates in effect since January 2011. San Francisco trips that go beyond BART's service area require an additional $2.25 charge collected on behalf of SFMTA Paratransit. Ten-trip ticket books are available in denominations of $4.00 and $1.00. Each rider may bring one companion (more can be added on the day of service if there is room), who must pay the same fare as the rider. A required Personal Care Attendant (PCA) can accompany a certified rider at no extra charge.

Recent Changes In May 2016, EBPC implemented new IVR (Interactive Voice Response) software which calls riders not traveling on a standing order, the night before the day of service to remind them about their trip. On the day of service, all riders are called when the vehicle is about ten minutes away.

EBPC completed a Paratransit Emergency Plan in 2014. It has continued to implement recommendations from the plan by holding regular training exercises,

monitoring of emergency supplies, and preparing and distributing outreach materials to the riders and service providers.

In December 2016, EBPC modified its website to allow for fare ticket purchases using a credit card. Previously riders mailed in an order form plus a check, or came directly to the main office with their check or with cash to buy tickets. In addition to the new online ordering, a kiosk has been installed at the main office for ticket purchases, which also accepts credit cards.

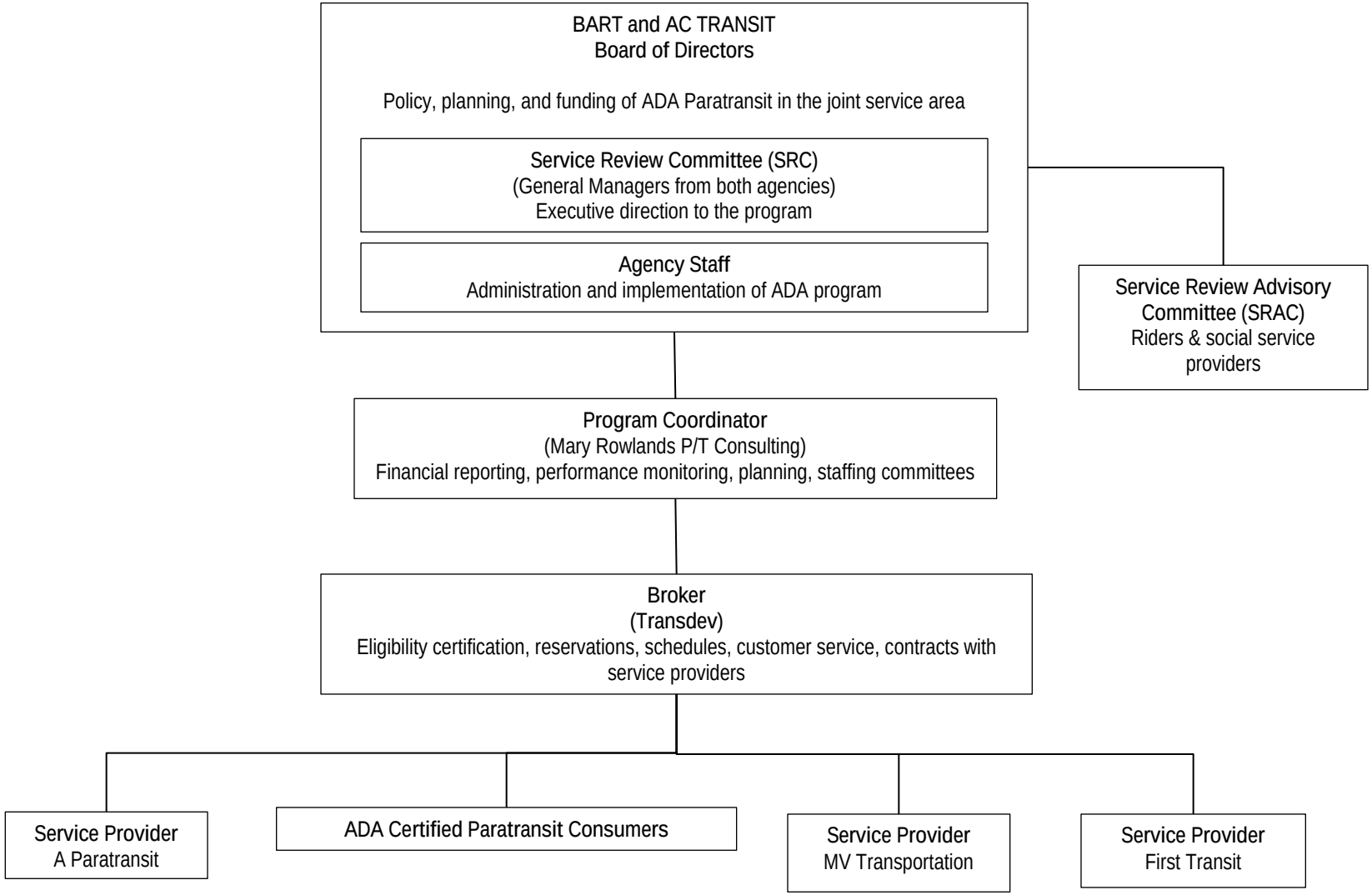
Planned Changes

Over the next year and one-half, EBPC plans to continue Emergency Preparedness training for the paratransit Broker staff and the Service Providers, especially the drivers.

Staff

In addition to AC Transit and BART staff time, the contracted Program Coordinator assigns 1.0 FTEs to EBPC management and oversight activities, and the Broker assigns about 82 FTEs to its various duties.

Exhibit B-2: Organization Chart



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II. REVIEW OF TDA DATA COLLECTION AND REPORTING METHODS

This section focuses on the five performance indicators required by TDA law. These indicators have been defined by the state PUC to evaluate the transit operator's efficiency, effectiveness and economy. The purpose of this review is to determine if EBPC is in compliance with the data collection and reporting requirements necessary to calculate the TDA performance indicators. The review is limited to the data items needed to calculate the indicators:

- Operating costs
- Vehicle service hours
- Vehicle service miles
- Unlinked passengers
- Employees (full-time equivalents)

The TDA indicator analysis is based on these operating and financial statistics in the National Transit Database (NTD) reports submitted annually to the Federal Transit Administration (FTA). AC Transit and BART both submit EBPC data to the NTD. BART submits primarily operating cost data, which is limited to BART's 31 percent share of EBPC costs. This is not in addition to AC Transit's reporting, which reflects 100 percent of all EBPC data. AC Transit submits complete systemwide data for total costs, passengers, hours, and miles, as well as other statistics. The EBPC information reported by AC Transit covering the audit period has been reviewed.

Compliance with Requirements

To support this review, the EBPC Program Coordinator confirmed that the data collection and reporting procedures remain essentially unchanged from those described

in the prior performance audit. The agreement between the Consortium and the Broker requires that the definitions and procedures conform to TDA and NTD requirements. AC Transit and BART staff members review this as part of their oversight activities.

Based on the information provided, as shown in Exhibit B-3.1, EBPC is in compliance with the data collection and reporting requirements for all five TDA statistics.

Consistency of the Reported Statistics

The resulting TDA statistics for EBPC's service are shown in Exhibit B-3.2. Included are statistics covering each fiscal year of the three-year audit period, plus the immediately preceding three fiscal years, resulting in a six-year trend. The statistics collected over the period appear to be consistent with the TDA definitions. Further, they indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics. For example, increases or decreases in annual operating costs are relatively proportional to increases or decreases in annual vehicle service hours and miles.

However, it should be noted that the operating cost statistics included for this review represent the totals reported to the NTD by AC Transit covering its demand-response services. Based on the NTD reporting protocol, this includes both the actual EBPC operating costs plus a share of costs allocated from AC Transit operations to EBPC. The NTD has periodically adjusted the allocation formulas and which costs should be included.

Exhibit B-3.1: Compliance with TDA Data Collection and Reporting Requirements

TDA Statistic	TDA Definition	Compliance Finding	Verification Information
Operating Cost	"Operating cost" means all costs in the operating expense object classes exclusive of the costs in the depreciation and amortization expense object class of the uniform system of accounts and records adopted by the Controller pursuant to Section 99243. Also excluded are all subsidies for commuter rail services operated on railroad lines under the jurisdiction of the Federal Railroad Administration, all direct costs for providing charter services, all vehicle lease costs, and principal and interest payments on capital projects funded with certificates of participation.	In Compliance	Costs are gathered monthly for all elements of the operation. These include the service providers' expenses net of imposed liquidated damages, fuel, Broker's office, Program Coordinator's Office, incentives/disincentives, and miscellaneous expenses. Costs are invoiced to EBPC with supporting documentation and paid in arrears after invoice review and approval. AC Transit and BART share in the full costs of the service, based on an allocation agreement.
Vehicle Service Hours	"Vehicle service hours" means the total number of hours that each transit vehicle is in revenue service, including layover time.	In Compliance	Hours are captured from information recorded on the driver's manifest and on-board mobile data computers, and tabulated each month. Drivers report garage pull-out and pull-in times plus first pick-up and last drop-off times. These are entered from the manifest into the scheduling software system at the Broker's office, which calculates total and vehicle service hours. Vehicle service hours include the time between the first passenger pick up and the last drop off, less time for driver breaks or any other time when the vehicle is out of service.

TDA Statistic	TDA Definition	Compliance Finding	Verification Information
Vehicle Service Miles	"Vehicle service miles" means the total number of miles that each transit vehicle is in revenue service.	In Compliance	Miles are captured from information recorded on the driver's manifest and on-board mobile data computers, and tabulated each month. Drivers report garage pull-out and pull-in mileage plus first pick-up and last drop-off mileage. These are entered from the manifest into the scheduling software system at the Broker's office, which calculates total and vehicle service miles. Vehicle service miles include the miles between the first passenger pick up and the last drop off.
Unlinked Passengers	"Unlinked passengers" means the number of boarding passengers, whether revenue producing or not, carried by the public transportation system.	In Compliance	The paratransit scheduling system at the Broker's office is programmed to automatically calculate unlinked passengers. One passenger is defined as one-way trip taken by one individual from one origin to one destination. Total unlinked passengers include escorts and attendants.
Employee Full-Time Equivalents	2,000 person-hours of work in one year constitute one employee.	In Compliance	Hours worked at the Broker's office are tabulated each month and billed at the individual's hourly rate. Service providers are under contract to the Broker. The billing structure of provider services is a comprehensive hourly rate per total vehicle hour. This rate includes salaries, along with vehicles, training, uniforms, insurance, etc. Therefore, EBPC does not report total FTEs.

Exhibit B-3.2: TDA Statistics

TDA Statistic	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Operating Cost (Actual $) *(a)*	$33,500,787	$35,959,297	$36,781,361	$37,227,663	$39,229,496	$37,553,888
Annual Change	- -	*7.3%*	*2.3%*	*1.2%*	*5.4%*	*-4.3%*
Vehicle Service Hours	411,335	413,890	408,835	404,355	413,534	428,785
Annual Change	- -	*0.6%*	*-1.2%*	*-1.1%*	*2.3%*	*3.7%*
Vehicle Service Miles	6,365,949	6,374,048	6,396,827	6,470,829	6,524,042	6,579,584
Annual Change	- -	*0.1%*	*0.4%*	*1.2%*	*0.8%*	*0.9%*
Unlinked Passengers	752,693	753,896	716,684	706,491	727,651	731,299
Annual Change	- -	*0.2%*	*-4.9%*	*-1.4%*	*3.0%*	*0.5%*
Employee Full-Time Equivalents	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*
Annual Change	- -	- -	- -	- -	- -	- -

(a) Includes both the actual EBPC operating costs plus a share of costs allocated from AC Transit operations to EBPC
(b) Not available

Sources: FY2011 through FY2013 - Prior Performance Audit Report
FY2014 through FY2016 - AC Transit NTD Reports

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III. TDA PERFORMANCE INDICATORS AND TRENDS

The performance trends for EBPC's service are presented in this section. Performance is discussed for four of the five TDA-mandated performance indicators:

- operating cost per vehicle service hour
- passengers per vehicle service hour
- passengers per vehicle service mile
- operating cost per passenger

These indicators were calculated using information from AC Transit's NTD reports filed with the FTA, which included the EBPC service for the three years of the audit period. The fifth indicator, vehicle service hours per employee, was not analyzed since FTEs were not reported for this service, which is provided by multiple contractors.

In addition to presenting performance for the three years of the audit period (FY2014 through FY2016), this analysis features two enhancements:

- Six-Year Time Period – While the performance audit focuses on the three fiscal years of the audit period, six-year trend lines have been constructed for EBPC's service to provide a longer perspective on performance and to clearly present the direction and magnitude of the performance trends. In this analysis, the FY2014 to FY2016 trend lines have been combined with those from the prior audit period (FY2011 through FY2013) to define a six-year period of performance.

- Normalized Cost Indicators for Inflation – Two financial performance indicators (cost per hour and cost per passenger) are presented in both constant and current dollars to illustrate the impact of inflation in the Bay Area. The inflation adjustment relies on the All Urban Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) for the San Francisco Metropolitan Area. The average CPI-W percent change for each

fiscal year has been calculated based on the bi-monthly results reported on the U.S. Department of Labor – Bureau of Labor Statistics website. The CPI-W is used since labor is the largest component of operating cost in transit. Since labor costs are typically controlled through labor contracts, changes in normalized costs largely reflect those factors that are within the day-to-day control of the transit system.

The following discussion is organized to present an overview of EBPC's performance trends in the four included TDA performance indicators. The analysis is also expanded to include a breakdown of the various component costs that contributed to the total and hourly operating costs during the last six years.

EBPC Service Performance Trends

This section provides an overview of the performance of EBPC's service over the past six years. The trends in the TDA indicators and input statistics are presented in Exhibit B-4. The six-year trends are illustrated in Exhibits B-4.1 through B-4.3.

- Operating Cost Per Vehicle Service Hour (Exhibit B-4.1)
  - A key indicator of cost efficiency, the cost per hour of EBPC service increased an average of 1.5 percent annually during the six-year review period.
  - The cost per hour ranged from a low of $81.44 in FY2011 to a high of $94.86 in FY2015. There were increases in every year except FY2016, when a reduction to $87.58 per hour was achieved.
  - In FY2011 constant dollars, there was an average annual decrease in this indicator of one percent.
- Passengers per Vehicle Service Hour (Exhibit B-4.2)
  - A key indicator of passenger productivity, passengers per hour decreased an average of 1.4 percent annually during the six-year period.

- Decreases reflect a modest overall decline in passengers combined with a slightly larger increase in service hours.

- Passengers per hour decreased overall from 1.83 in FY2011 to 1.71 in FY2016.

- Passengers per Vehicle Service Mile (Exhibit B-4.2)

  - Similar to passengers per hour, passengers per mile decreased overall, but by only 1.2 percent annually on average.

  - There were nearly 0.12 passengers per mile in the first two years, but closer to 0.11 passengers through the remainder of the period.

- Operating Cost per Passenger (Exhibit B-4.3)

  - A key measure of cost effectiveness, the cost per passenger was $44.51 in the first year of the review period, followed by increases in the next four years to $53.91 by FY2015.

  - The cost per passenger went down in FY2016, ending the period at $51.35

  - Over the six years, the cost per passenger increased on average by 2.9 percent annually.

  - With the impact of inflation removed from the cost side (normalization), the six-year result was an average annual increase of 0.4 percent.

* * * * *

The following is a brief summary of EBPC's TDA performance trend highlights over the six-year period of FY2011 through FY2016:

- There was an average annual increase in the operating cost per hour of 1.5 percent, which amounted to an annual decrease of one percent in inflation

adjusted dollars. After a generally increasing trend through FY2015, a notable reduction was achieved in the last year.

- The cost per passenger increased on average by 2.9 percent per year, or 0.4 percent in constant FY2011 dollars.

- Passenger productivity showed somewhat negative trends, with passengers per vehicle service hour decreasing by 1.4 percent per year overall, and passengers per vehicle service mile decreasing by 1.2 percent.

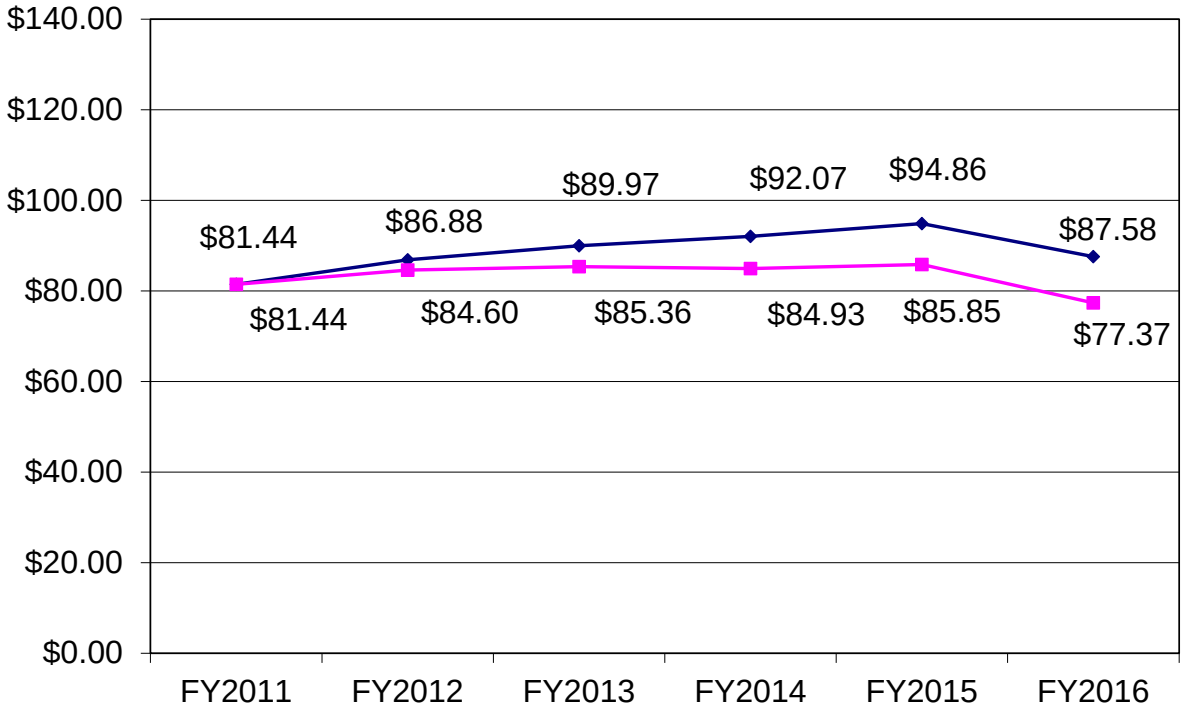
Exhibit B-4: TDA Indicator Performance

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
Performance Indicators							
Op. Cost per Vehicle Svc. Hour (Actual $)	$81.44	$86.88	$89.97	$92.07	$94.86	$87.58	- -
Annual Change	- -	*6.7%*	*3.6%*	*2.3%*	*3.0%*	*-7.7%*	*1.5%*
Op. Cost per Vehicle Svc. Hour (Constant $)	$81.44	$84.60	$85.36	$84.93	$85.85	$77.37	- -
Annual Change	- -	*3.9%*	*0.9%*	*-0.5%*	*1.1%*	*-9.9%*	*-1.0%*
Passengers per Vehicle Service Hour	1.83	1.82	1.75	1.75	1.76	1.71	- -
Annual Change	- -	*-0.5%*	*-3.8%*	*-0.3%*	*0.7%*	*-3.1%*	*-1.4%*
Passengers per Vehicle Service Mile	0.118	0.118	0.112	0.109	0.112	0.111	- -
Annual Change	- -	*0.0%*	*-5.3%*	*-2.5%*	*2.2%*	*-0.3%*	*-1.2%*
Op. Cost per Passenger (Actual $)	$44.51	$47.70	$51.32	$52.69	$53.91	$51.35	- -
Annual Change	- -	*7.2%*	*7.6%*	*2.7%*	*2.3%*	*-4.7%*	*2.9%*
Op. Cost per Passenger (Constant $)	$44.51	$46.44	$48.69	$48.61	$48.79	$45.36	- -
Annual Change	- -	*4.3%*	*4.8%*	*-0.2%*	*0.4%*	*-7.0%*	*0.4%*
Vehicle Service Hours per FTE	*(a)*	*(a)*	*(a)*	*(a)*	*(a)*	*(a)*	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Input Data							
Operating Cost (Actual $)	$33,500,787	$35,959,297	$36,781,361	$37,227,663	$39,229,496	$37,553,888	- -
Annual Change	- -	*7.3%*	*2.3%*	*1.2%*	*5.4%*	*-4.3%*	*2.3%*
Operating Cost (Constant $)	$33,500,787	$35,013,921	$34,896,927	$34,342,863	$35,501,806	$33,174,813	- -
Annual Change	- -	*4.5%*	*-0.3%*	*-1.6%*	*3.4%*	*-6.6%*	*-0.2%*
Vehicle Service Hours	411,335	413,890	408,835	404,355	413,534	428,785	- -
Annual Change	- -	*0.6%*	*-1.2%*	*-1.1%*	*2.3%*	*3.7%*	*0.8%*
Vehicle Service Miles	6,365,949	6,374,048	6,396,827	6,470,829	6,524,042	6,579,584	- -
Annual Change	- -	*0.1%*	*0.4%*	*1.2%*	*0.8%*	*0.9%*	*0.7%*
Unlinked Passengers	752,693	753,896	716,684	706,491	727,651	731,299	- -
Annual Change	- -	*0.2%*	*-4.9%*	*-1.4%*	*3.0%*	*0.5%*	*-0.6%*
Employee Full-Time Equivalents	*(a)*	*(a)*	*(a)*	*(a)*	*(a)*	*(a)*	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Bay Area CPI - Annual Change	- -	2.7%	2.6%	2.9%	1.9%	2.5%	- -
- Cumulative Change	- -	2.7%	5.4%	8.4%	10.5%	13.2%	*2.5%*

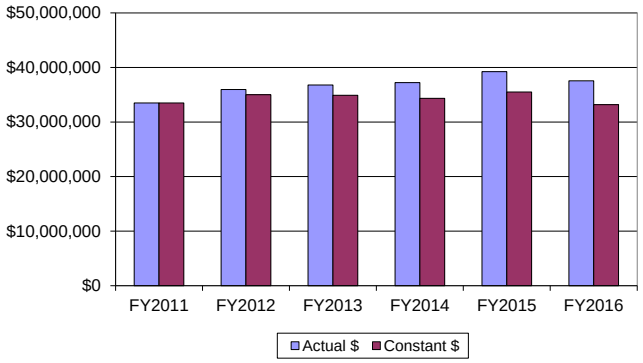
Sources: FY2011 through FY2013 - Prior Performance Audit Report
FY2014 through FY2016 - AC Transit NTD Reports
CPI Data - U.S. Department of Labor, Bureau of Labor Statistics

(a) Not available

Exhibit B-4.1: Operating Cost per Vehicle Service Hour



Operating Cost



Vehicle Service Hours

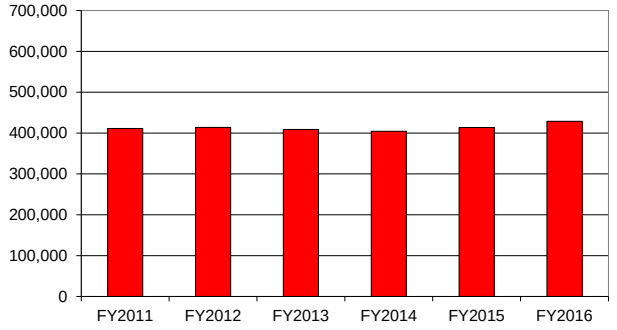
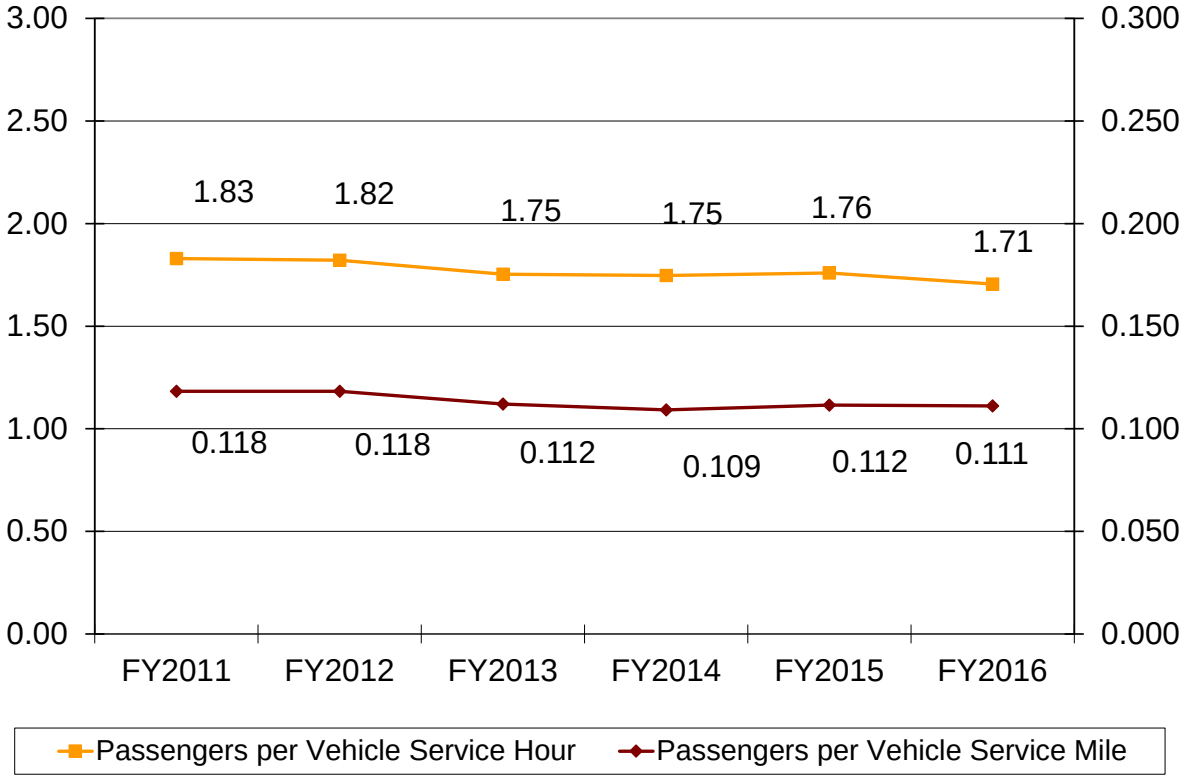
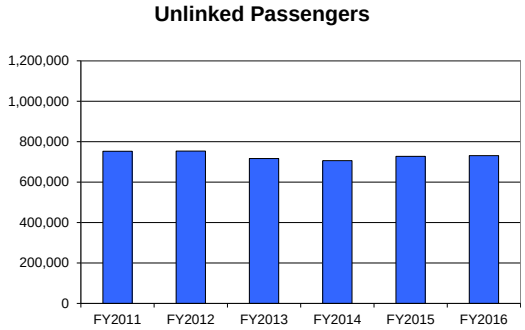
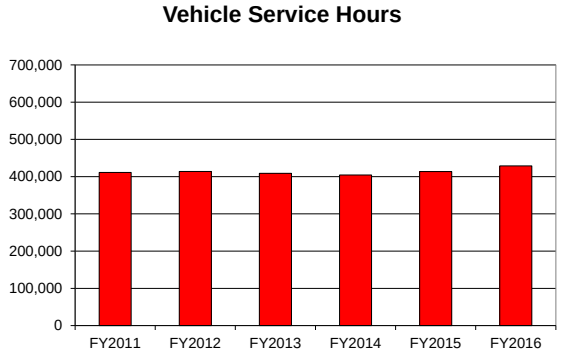


Exhibit B-4.2: Passengers per Hour and per Mile







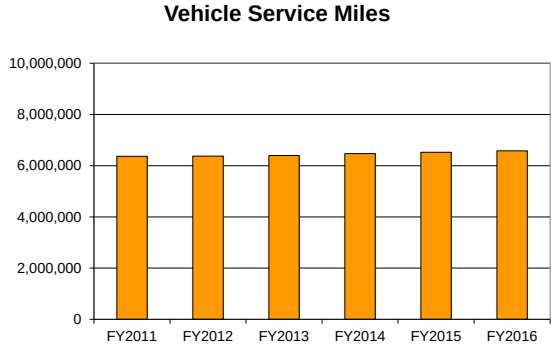
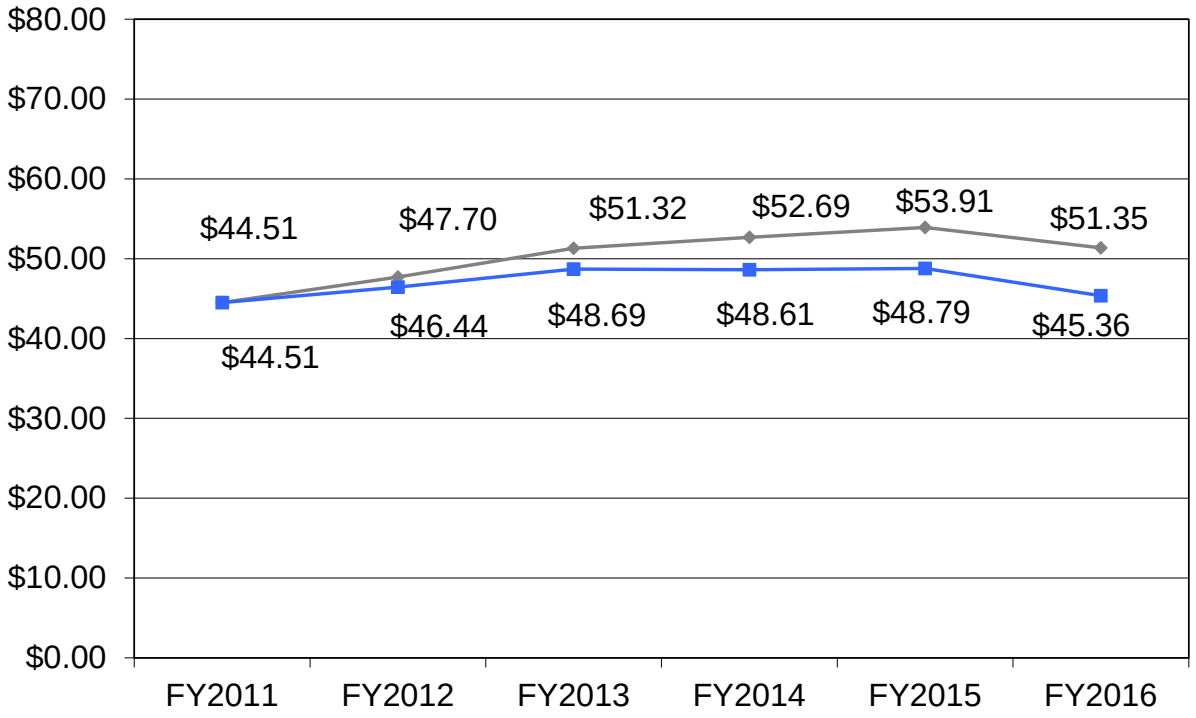
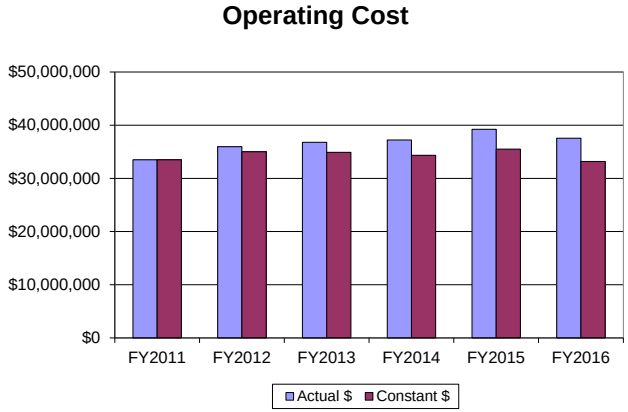
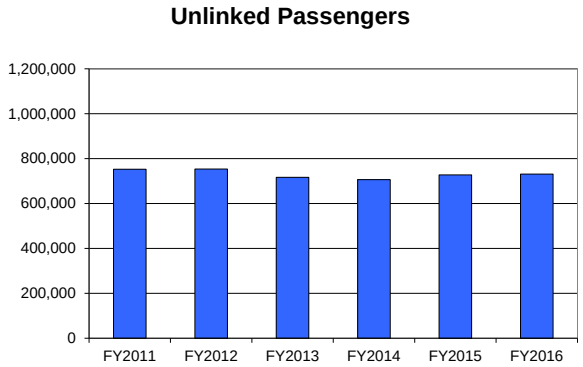


Exhibit B-4.3: Operating Cost per Passenger







EBPC Service Component Costs

Year-to-year changes in selected operating cost categories over the past six years are presented in Exhibit B-4.4. Examining components of operating costs (e.g., labor, fringes, fuel, and casualty/liability) may determine what particular components had the most significant impacts on the operating costs. Exhibit B-4.4 also shows the concurrent changes in vehicle service hours, and Exhibit B-4.5 illustrates the portion of the cost per bus service hour that can be attributed to each included cost component.

- Between FY2011 and FY2016, the total annual costs increased by 2.3 percent on average. However, there was significant variation reported within certain component cost areas. This was principally traced to NTD reporting protocol as directed by the NTD. As noted previously, AC Transit's NTD report filing for EBPC services includes both the actual EBPC operating costs plus a share of costs allocated from AC Transit operations to EBPC. The actual EBPC costs are reported as "Purchased Transportation", while all other component costs reflect amounts allocated from AC Transit. The NTD has periodically changed the presentation of required report submittals as well as the formulas to use and which allocated costs should be added for EBPC.

- Most notably, FY2016 saw major increases in the in-house labor and fringe benefits costs, and there were fuel/lubricants costs for the first time in the period. At the same time, there were substantial reductions in the services, casualty/liability, and "other expenses" categories.

- Driven by the FY2016 results, in-house labor and fringe benefits costs both increased on average by 25 percent annually over the period.

- No casualty/liability costs or "other expenses" were reported in the first year (FY2011), and only very minor amounts were reported in FY2016. In the interim, much more significant amounts were reported, with increases of varying proportions from year to year.

- Purchased transportation costs did not appear impacted by the NTD reporting issues. They increased on average by 2.1 percent annually, and

comprised by far the largest share of total cost per vehicle hour (well over 90 percent) in all years.

- Reported casualty/liability costs contributed four to five percent shares of the total in the four interim years. Otherwise, all cost categories except purchased transportation contributed just minimally.

* * * * *

The following is a brief summary of the component operating costs trend highlights between FY2011 and FY2016:

- Total annual costs increased by 2.3 percent on average, but there was significant variation reported within certain component cost areas. This was principally traced to NTD reporting protocol, wherein all component costs except "Purchased Transportation" represent costs allocated from AC Transit operations to EBPC. The NTD has periodically adjusted the reporting requirements related to these allocations.

- FY2016 especially saw major increases in some component costs, with substantial reductions in other areas. Driven by the FY2016 results, labor and fringe benefits costs both increased on average by 25 percent annually through the period.

- No casualty/liability costs or "other expenses" were reported in the first year, and only very minor amounts in FY2016. In the interim, much more significant amounts were reported, with casualty/liability costs contributing four to five percent shares of total costs in those years. Otherwise, all cost categories except purchased transportation contributed just minimally.

- Purchased transportation costs increased on average by 2.1 percent annually, and retained well over a 90 percent share of the total cost per vehicle hour in all six years.

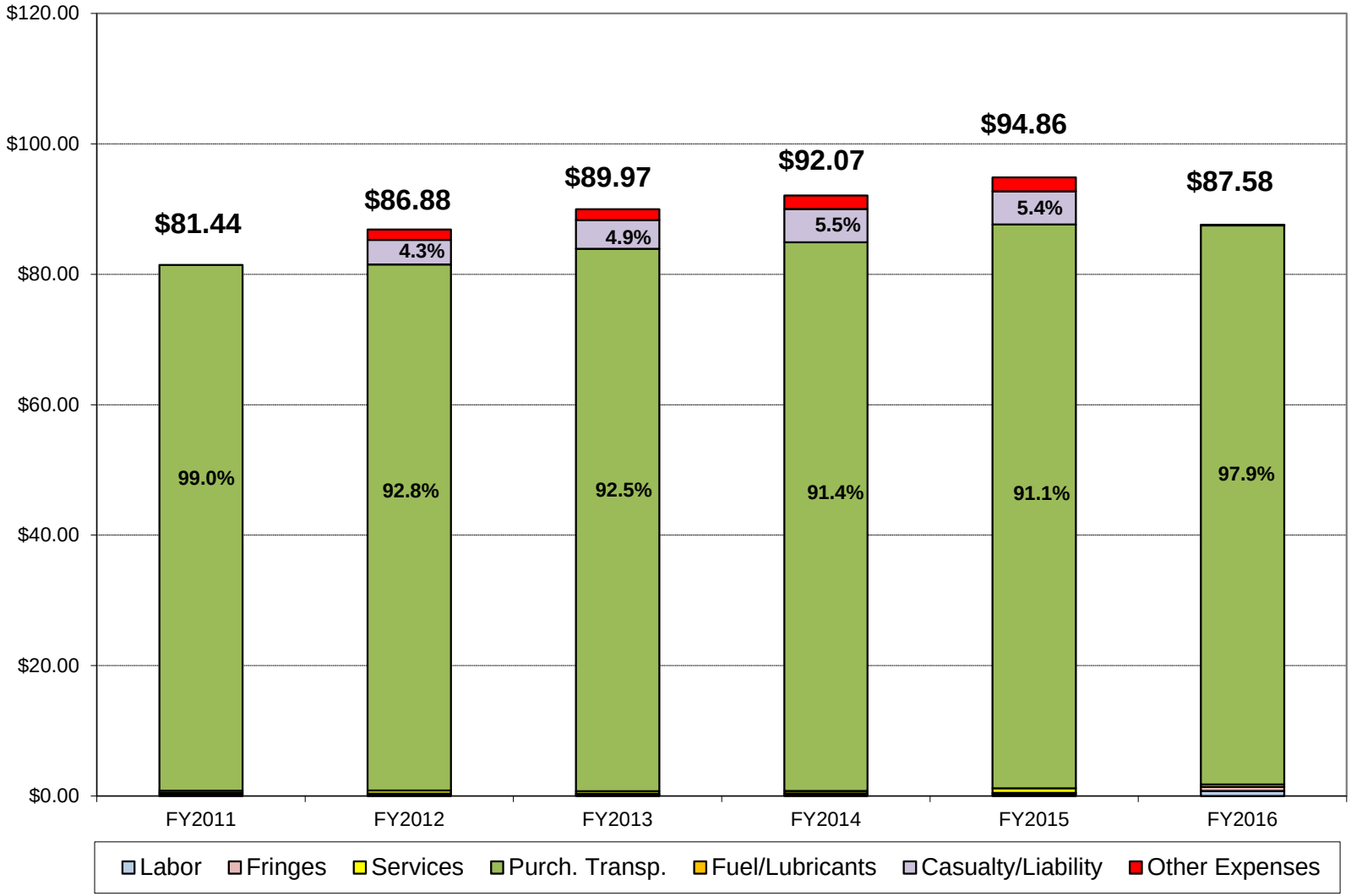
Exhibit B-4.4: Component Cost Trends

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	*Av. Ann. Chg.*
COST CATEGORIES							
Labor - (Salaries, Wages)	$103,526	$83,436	$82,581	$90,275	$109,615	$326,348	- -
Annual Change	- -	*-19.4%*	*-1.0%*	*9.3%*	*21.4%*	*197.7%*	*25.8%*
Fringe Benefits	$89,862	$72,422	$71,681	$78,359	$95,146	$272,405	- -
Annual Change	- -	*-19.4%*	*-1.0%*	*9.3%*	*21.4%*	*186.3%*	*24.8%*
Services	$141,150	$191,795	$141,724	$145,074	$286,523	$165,396	- -
Annual Change	- -	*35.9%*	*-26.1%*	*2.4%*	*97.5%*	*-42.3%*	*3.2%*
Purchased Transportation	$33,166,249	$33,387,554	$34,014,756	$34,021,782	$35,745,541	$36,751,896	- -
Annual Change	- -	*0.7%*	*1.9%*	*0.0%*	*5.1%*	*2.8%*	*2.1%*
Fuel/Lubricants	$0	$0	$0	$0	$0	$7,953	- -
Annual Change	- -	- -	- -	- -	- -	- -	- -
Casualty/Liability	$0	$1,554,918	$1,791,961	$2,055,011	$2,102,575	$9,395	- -
Annual Change	- -	- -	*15.2%*	*14.7%*	*2.3%*	*-99.6%*	- -
Other Expenses *(a)*	$0	$669,172	$678,658	$837,162	$890,096	$20,495	- -
Annual Change	- -	- -	*1.4%*	*23.4%*	*6.3%*	*-97.7%*	- -
Total	$33,500,787	$35,959,297	$36,781,361	$37,227,663	$39,229,496	$37,553,888	- -
Annual Change	- -	*7.3%*	*2.3%*	*1.2%*	*5.4%*	*-4.3%*	*2.3%*
OPERATING STATISTICS							
Vehicle Service Hours	411,335	413,890	$408,835	404,355	413,534	428,785	- -
Annual Change	- -	*0.6%*	*-1.2%*	*-1.1%*	*2.3%*	*3.7%*	*0.8%*

Sources: FY2011 through FY2013 - Prior Performance Audit Report; FY2014 through FY2016 – AC Transit NTD Reports
(a) Includes tires/tubes, utilities, and other materials/supplies

Exhibit B-4.5: Distribution of Component Costs

Operating Cost per Vehicle Service Hour



IV. STATUS OF PRIOR AUDIT RECOMMENDATIONS

EBPC's prior performance audit was completed in May 2014. Generally, MTC has used the audit recommendations as the basis for developing the Productivity Improvement Program (PIP) projects the operator is required to complete. MTC tracks PIP project implementation as part of its annual review of the operator's TDA-STA claim application. This section provides an assessment of actions taken by TDA-STA recipients toward implementing the recommendations advanced in the prior audit. This assessment provides continuity between the current and prior audits, which allows MTC to fulfill its obligations where the recommendations were advanced as PIP projects.

This review addresses EBPC's responses to the recommendations made in the prior performance audit, and whether EBPC made reasonable progress toward their implementation. However, there were no recommendations made in EBPC's prior audit.

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V. FUNCTIONAL PERFORMANCE INDICATOR TRENDS

To further assess EBPC's performance over the past three years, a detailed set of functional area performance indicators was defined. This assessment consists of a three-year trend analysis of the functions in each of the following areas:

- Service Planning
- Operations
- Maintenance
- Safety

The indicators selected for this analysis were primarily those that were tracked regularly by EBPC or for which input data were maintained by EBPC on an on-going basis, such as performance reports, contractor reports, annual financial reports and NTD reports. As such, there may be some overlap with the TDA indicators examined earlier in the audit process, but most indicators will be different. Some indicators were selected from the California Department of Transportation's Performance Audit Guidebook for Transit Operators and Regional Transportation Planning Entities as being appropriate for this evaluation. The input statistics for the indicators, along with their sources, are contained in Appendix C at the end of this report.

The trends in performance are presented over the three-year audit period to give an indication of which direction performance is moving for these indicators. EBPC's functional area trends represent areas of cost efficiency, safety, productivity and service reliability. Audit period performance is discussed below and presented in Exhibit B-5.

- Service Planning

  - Operating costs per passenger mile decreased overall from $5.10 in the first year to $5.02 in FY2016 (1.6 percent).

  - The farebox recovery ratio improved slightly overall from 7.2 percent in the first year to 7.4 percent in FY2016.

  - About 82 percent of all vehicle miles traveled were in service in all three years, as were about 86 percent of all vehicle hours.

- Operations

  - Vehicle operations costs increased from 68 percent of total operating costs in the first two years, to 73.5 percent by FY2016.

  - Vehicle operations costs per service hour remained close to $64 over the audit period.

  - Schedule adherence decreased slightly in each year, but remained above 90 percent.

  - The rate of complaints also decreased overall, by six percent from FY2014 to FY2016.

  - The incidence of missed trips remained very low throughout the period, though there was an overall increase.

  - There were trip denials in each year -- increasing from 0.04 percent of total trips scheduled in the first two years to 0.05 percent in FY2016. Most of the denials reported were classified as "scheduled", meaning the rider accepted an alternate trip which was outside the one hour window from the originally requested pick up time. However, there also were a small number of "capacity" denials, where the rider did not receive the requested trip and did not accept an alternate time. EBPC had a total of 59 capacity denials during the audit period, with annual totals steadily decreasing.

EBPC reports its scheduling software has recently been under rigorous review, with systematic changes being implemented that have led to a decrease in denials in FY2017. Further, there does not appear to be any operational pattern or practice that significantly limits the availability of service to ADA paratransit eligible persons (as defined in the Code of Federal Regulations – 49 CFR 37.131).

- The rate of trip cancellations decreased slightly in each year, from 23 percent to 22 percent of total trips scheduled.

- At the same time, late trip cancellations (less than one hour before scheduled pick-up time) and passenger no-shows both increased by more than ten percent over the period, to 3.4 and 4.5 percent of total trips scheduled, respectively.

- Maintenance

  - Total maintenance costs increased over the period from 7.9 percent of total operating costs in the first two years to 8.5 percent in FY2016.

  - Vehicle maintenance costs per service mile increased steadily from $0.44 to $0.47 (6.3 percent).

  - The vehicle spare ratio decreased from a high 35 percent in FY2014 to less than 15 percent subsequently. The FY2014 result reflects the NTD requirement that all vehicles in service for any part of the year be listed. A number of older vehicles were in service for part of that year, then retired after replacement by a newer vehicle.

  - The mean distance between major failures declined in each year, especially in FY2016, when it dropped below 30,000 miles traveled. When looking at all failures, there was also a generally negative trend, with less than 20,000 miles between failures in FY2016. EBPC cites an aging fleet and degrading road conditions in the service area. In response, enhancements to the preventive maintenance function are being programmed. Further, a number of new vehicles are being delivered, and early results in FY2017 indicate some improvement in the failure rate.

- Safety

  - The rate of preventable accidents increased in each year, and more than doubled in FY2016 compared to FY2015. EBPC staff attributes the FY2016 results to difficulties in driver recruitment, followed by an influx of new drivers in that year. As part of the next five-year contract option extension, the Broker will be instructed to thoroughly review driver safety and training programs from the service providers, and review the content and percentage of classroom and behind the wheel training.

* * * * *

The following is a brief summary of EBPC's functional trend highlights between FY2014 and FY2016:

- Service Planning results showed operating cost per passenger mile decreasing slightly, with the farebox recovery ratio increasing slightly to 7.4 percent in FY2016, and consistently 82 percent or more vehicle miles and hours in service.

- Operations results showed vehicle operations costs steady at $64 per hour but increasing from 68 to 73.5 percent of total costs. Schedule adherence decreased but remained above 90 percent, while there was an overall decrease in the rate of complaints. The missed trip rate increased but remained very low. There were trip denials in each year – up to 0.05 percent of scheduled trips in FY2016. Most were "scheduled" denials, where the rider accepted an alternate trip time, and EBPC reports recent scheduling software changes resulting in a decrease in denials in FY2017. Trip cancellations decreased slightly, but late trip cancellations and passenger no-shows both increased by more than ten percent.

- Maintenance results showed total maintenance costs increasing from 7.9 to 8.5 percent of total costs and vehicle maintenance costs increasing from $0.44 per service mile to $0.47 per service mile. The spare ratio decreased from a high of 35 percent in FY2014 (when many older vehicles were replaced during the year) to less than 15 percent in subsequent years. There was overall worsening in the mechanical failure rates, especially in FY2016.

- Safety results showed the preventable accident rate worsened significantly, especially in FY2016 when there was an influx of new drivers.

Exhibit B-5: Functional Performance Trends – EBPC

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
SERVICE PLANNING			
Total Operating Cost/Passenger Mile	$5.10	$5.25	$5.02
Annual Percent Change	- -	*3.0%*	*-4.4%*
Three Year Percent Change	- -	- -	*-1.6%*
Farebox Recovery Ratio (Farebox Rev./Oper. Cost)	7.2%	7.1%	7.4%
Annual Percent Change	- -	*-1.9%*	*5.3%*
Three Year Percent Change	- -	- -	*3.3%*
Vehicle Service Miles/Total Miles	82.4%	82.5%	82.4%
Annual Percent Change	- -	*0.1%*	*-0.2%*
Three Year Percent Change	- -	- -	*-0.1%*
Vehicle Service Hours/Total Hours	86.7%	86.3%	86.4%
Annual Percent Change	- -	*-0.5%*	*0.1%*
Three Year Percent Change	- -	- -	*-0.4%*
OPERATIONS			
Vehicle Operations Cost/Total Operating Cost	68.6%	68.4%	73.5%
Annual Percent Change	- -	*-0.3%*	*7.4%*
Three Year Percent Change	- -	- -	*7.1%*
Vehicle Operations Cost/Vehicle Service Hour	$63.20	$64.93	$64.40
Annual Percent Change	- -	*2.7%*	*-0.8%*
Three Year Percent Change	- -	- -	*1.9%*
Trips On-Time/Total Trips	91.4%	90.9%	90.1%
Annual Percent Change	- -	*-0.5%*	*-0.9%*
Three Year Percent Change	- -	- -	*-1.4%*
Complaints/10,000 Unlinked Passenger Trips	44.3	48.9	41.7
Annual Percent Change	- -	*10.3%*	*-14.7%*
Three Year Percent Change	- -	- -	*-6.0%*
Missed Trips/Total Trips Scheduled	0.21%	0.19%	0.23%
Annual Percent Change	- -	*-10.3%*	*21.6%*
Three Year Percent Change	- -	- -	*9.1%*
Capacity Trip Denials/Total Trips Scheduled	0.003%	0.002%	0.002%
Annual Percent Change	- -	*-23.9%*	*-17.2%*
Three Year Percent Change	- -	- -	*-36.9%*
Scheduled Trip Denials/Total Trips Scheduled	0.04%	0.04%	0.05%
Annual Percent Change	- -	*0.5%*	*33.1%*
Three Year Percent Change	- -	- -	*33.8%*
Total Trip Denials/Total Trips Scheduled	0.04%	0.04%	0.05%
Annual Percent Change	- -	*-1.2%*	*30.6%*
Three Year Percent Change	- -	- -	*29.0%*

FUNCTION/Indicator	Actual Performance		
	FY2014	FY2015	FY2016
OPERATIONS (continued)			
Trip Cancellations/Total Trips Scheduled	22.9%	22.6%	22.0%
Annual Percent Change	- -	*-1.0%*	*-2.8%*
Three Year Percent Change	- -	- -	*-3.7%*
Late Trip Cancellations/Total Trips Scheduled	3.0%	3.3%	3.4%
Annual Percent Change	- -	*10.5%*	*3.1%*
Three Year Percent Change	- -	- -	*13.9%*
No-Shows/Total Trips Scheduled	4.0%	4.5%	4.5%
Annual Percent Change	- -	*10.3%*	*1.2%*
Three Year Percent Change	- -	- -	*11.6%*
MAINTENANCE			
Vehicle + Non-Veh. Maint. Cost/Total Operating Cost	7.9%	7.9%	8.5%
Annual Percent Change	- -	*0.1%*	*7.3%*
Three Year Percent Change	- -	- -	*7.4%*
Vehicle Maintenance Cost/Vehicle Service Mile	$0.44	$0.46	$0.47
Annual Percent Change	- -	*4.2%*	*2.0%*
Three Year Percent Change	- -	- -	*6.3%*
Spare Vehicles/Total Vehicles	35.0%	14.6%	12.9%
Annual Percent Change	- -	*-58.2%*	*-11.9%*
Three Year Percent Change	- -	- -	*-63.2%*
Mean Dist. betw. Major Failures (Miles)	53,037	51,335	29,587
Annual Percent Change	- -	*-3.2%*	*-42.4%*
Three Year Percent Change	- -	- -	*-44.2%*
Mean Dist. betw. All Failures (Miles)	23,786	25,502	18,578
Annual Percent Change	- -	*7.2%*	*-27.2%*
Three Year Percent Change	- -	- -	*-21.9%*
SAFETY			
Preventable Accidents/100,000 Vehicle Miles	0.48	0.68	1.83
Annual Percent Change	- -	*41.1%*	*167.6%*
Three Year Percent Change	- -	- -	*277.5%*

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VI. CONCLUSIONS AND RECOMMENDATIONS

This report has presented the findings of the compliance audit portion of the performance audit of EBPC during the three-year period of FY2014 through FY2016 (July 1, 2013 through June 30, 2016). It has focused on TDA compliance issues including trends in TDA-mandated performance indicators. It also provides the findings from an overview of EBPC's data collection activities to support the TDA indicators.

Conclusions

The key findings and conclusions from the individual sections of this performance audit are summarized below:

- Data Collection – EBPC is in compliance with the data collection and reporting requirements for all five TDA statistics. In addition, the statistics collected over the six-year review period appear to be consistent with the TDA definitions, and indicate general consistency in terms of the direction and magnitude of the year-to-year changes across the statistics.

- TDA Performance Trends - The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2011 through FY2016:

  – There was an average annual increase in the operating cost per hour of 1.5 percent, which amounted to an annual decrease of one percent in inflation adjusted dollars. After a generally increasing trend through FY2015, a notable reduction was achieved in the last year.

  – The cost per passenger increased on average by 2.9 percent per year, or 0.4 percent in constant FY2011 dollars.

- Passenger productivity showed somewhat negative trends, with passengers per vehicle service hour decreasing by 1.4 percent per year overall, and passengers per vehicle service mile decreasing by 1.2 percent.

The following is a brief summary of the component operating costs trend highlights between FY2011 and FY2016:

- Total annual costs increased by 2.3 percent on average, but there was significant variation reported within certain component cost areas. This was principally traced to NTD reporting protocol, wherein all component costs except "Purchased Transportation" represent costs allocated from AC Transit operations to EBPC. The NTD has periodically adjusted the reporting requirements related to these allocations.

- FY2016 especially saw major increases in some component costs, with substantial reductions in other areas. Driven by the FY2016 results, labor and fringe benefits costs both increased on average by 25 percent annually through the period.

- No casualty/liability costs or "other expenses" were reported in the first year, and only very minor amounts in FY2016. In the interim, much more significant amounts were reported, with casualty/liability costs contributing four to five percent shares of total costs in those years. Otherwise, all cost categories except purchased transportation contributed just minimally.

- Purchased transportation costs increased on average by 2.1 percent annually, and retained well over a 90 percent share of the total cost per vehicle hour in all six years.

- Status of Prior Audit Recommendations – There were no recommendations made in EBPC's prior performance audit.

- Functional Performance Indicator Trends - To further assess EBPC's performance over the past three years, a detailed set of functional area

performance indicators was defined and reviewed. The following is a brief summary of the functional trend highlights between FY2014 and FY2016:

- Service Planning results showed operating cost per passenger mile decreasing slightly, with the farebox recovery ratio increasing slightly to 7.4 percent in FY2016, and consistently 82 percent or more vehicle miles and hours in service.

- Operations results showed vehicle operations costs steady at $64 per hour but increasing from 68 to 73.5 percent of total costs. Schedule adherence decreased but remained above 90 percent, while there was an overall decrease in the rate of complaints. The missed trip rate increased but remained very low. There were trip denials in each year – up to 0.05 percent of scheduled trips in FY2016. Most were "scheduled" denials, where the rider accepted an alternate trip time, and EBPC reports recent scheduling software changes resulting in a decrease in denials in FY2017. Trip cancellations decreased slightly, but late trip cancellations and passenger no-shows both increased by more than ten percent.

- Maintenance results showed total maintenance costs increasing from 7.9 to 8.5 percent of total costs and vehicle maintenance costs increasing from $0.44 per service mile to $0.47 per service mile. The spare ratio decreased from a high of 35 percent in FY2014 (when many older vehicles were replaced during the year) to less than 15 percent in subsequent years. There was overall worsening in the mechanical failure rates, especially in FY2016.

- Safety results showed the preventable accident rate worsened significantly, especially in FY2016 when there was an influx of new drivers.

Recommendations

1. CONTINUE EFFORTS TOWARD ELIMINATING TRIP DENIALS.
[Reference Section: VI. Functional Performance Indicator Trends]

It was found that there were trip denials in each audit year -- increasing from 0.04 percent of total trips scheduled in the first two years to 0.05 percent in FY2016. This represented several hundred service denials per year, with the number growing larger each year. Most of the denials reported were classified as "scheduled", meaning the rider accepted an alternate trip which was outside the one hour window from the originally requested pick up time. However, there also were a small number of "capacity" denials, where the rider did not receive the requested trip and did not accept an alternate time. EBPC had a total of 59 capacity denials during the audit period, but with annual totals steadily decreasing.

EBPC reports its scheduling software has recently been under rigorous review, with systematic changes being implemented that have led to a decrease in denials in FY2017. Further, there does not appear to be any operational pattern or practice that significantly limits the availability of service to ADA paratransit eligible persons (as defined in the Code of Federal Regulations – 49 CFR 37.131). Nonetheless, EBPC should continue striving to eliminate all service denials, in order to better meet the needs of its constituency and to comply with the federal ADA goal of zero service denials.

2. INVESTIGATE ADDITIONAL STRATEGIES TO REDUCE LATE TRIP CANCELLATIONS AND PASSENGER NO-SHOWS.
[Reference Section: VI. Functional Performance Indicator Trends]

The rates of late trip cancellations (less than one hour before scheduled pick-up time) and passenger no-shows both increased by more than ten percent over the period, to 3.4 and 4.5 percent of total trips scheduled, respectively. Late cancellations and passenger no-shows have the potential to create capacity constraints on the ADA paratransit service. Such constraints can impede an operator's ability to successfully schedule trips, resulting in denials of service. Although EBPC has a policy which includes sanctions passengers for late cancellations and no-shows, it is unclear how this policy is being implemented considering the rise in late cancellations and no-shows during the audit period.

In order to provide service more effectively and decrease the likelihood of capacity constraints, EBPC should expand its efforts toward reducing the occurrences of late cancellations and passenger no-shows. These efforts should include providing additional outreach and education for paratransit passengers.

3. EXAMINE MAINTENANCE ACTIVITIES AND DEVELOP ADDITIONAL STRATEGIES TO ADDRESS THE RECENTLY INCREASING MECHANICAL FAILURE RATES.
[Reference Section: VI. Functional Performance Indicator Trends]

Audit period maintenance results for EBPC showed that the mean distance between major failures declined in each year, especially in FY2016, when it dropped below 30,000 miles traveled. The mean distance between major failures declined overall by 44 percent. When looking at all failures, there was also a

generally negative trend, with a 22 percent overall decline and less than 20,000 miles between failures in FY2016.

EBPC cites an aging fleet with replacement vehicles not acquired as quickly as desired, and degrading road conditions in the service area. In response, enhancements to the preventive maintenance function are being programmed. Further, a number of new vehicles are being delivered, and early results in FY2017 indicate some improvement in the failure rate. Additional efforts should be made by EBPC to improve its maintenance function to increase vehicle reliability and reduce the incidence of mechanical failures on its services.

4. DEVELOP A PLAN TO IMPROVE PERFORMANCE IN THE PREVENTABLE ACCIDENT RATE.
[Reference Section: VI. Functional Performance Indicator Trends]

It was found that the rate of preventable accidents increased in each year, and more than doubled in FY2016 compared to FY2015. There were 1.83 preventable accidents per 100,000 vehicle miles traveled in FY2016, comparing unfavorably with 0.68 in FY2015 and 0.48 in FY2014. EBPC staff attributes the FY2016 results to difficulties in driver recruitment, followed by an influx of new drivers in that year. This points to a safety issue which EBPC should address in coordination with its service providers. EBPC indicated that as part of the next five-year contract option extension, the Broker will be instructed to thoroughly review driver safety and training programs from the service providers, and review the content and percentage of classroom and behind the wheel training. This plan should include strategies to improve operator training and enhance monitoring activities to ensure that safety issues are identified and corrected.

APPENDIX C:
EBPC - INPUT STATISTICS FOR FUNCTIONAL PERFORMANCE MEASURES

Functional Performance Inputs – EBPC

Data Item	FY2014	FY2015	FY2016	Source
Vehicle Service Miles	6,470,829	6,524,042	6,579,584	NTD S-10 DR
Total Vehicle Miles	7,849,439	7,905,602	7,988,607	NTD S-10 DR
Vehicle Service Hours	404,355	413,534	428,785	NTD S-10 DR
Total Vehicle Hours	466,138	479,201	496,327	NTD S-10 DR
Unlinked Passenger Trips	706,491	727,651	731,299	NTD S-10 DR
Farebox Revenue	$2,681,669	$2,773,174	$2,795,532	NTD F-10
Total Operating Costs	$37,227,663	$39,229,496	$37,553,888	NTD F-30 DR
Passenger Miles	7,300,766	7,466,834	7,480,767	NTD S-10 DR
Vehicle Operations Costs	$25,554,168	$26,848,905	$27,614,142	NTD F-30 DR
Trips On-Time	91.4%	90.9%	90.1%	EBPC Yr-End Monthly Rpt
Total Trips Scheduled	870,797	905,426	920,333	EBPC Yr-End Monthly Rpt
Complaints	3,131	3,557	3,048	EBPC Yr-End Monthly Rpt
Missed Trips	1,863	1,738	2,148	EBPC Yr-End Monthly Rpt
Capacity Trip Denials	24	19	16	EBPC Staff
Scheduled Trip Denials	336	351	475	EBPC Staff
Total Trip Denials	360	370	491	EBPC Yr-End Monthly Rpt
Trip Cancellations	199,206	205,046	202,664	EBPC Yr-End Monthly Rpt
Late Trip Cancellations	26,307	30,225	31,677	EBPC Yr-End Monthly Rpt
No Shows	35,221	40,397	41,536	EBPC Yr-End Monthly Rpt
Vehicle Maintenance Costs	$2,870,622	$3,016,066	$3,101,811	NTD F-30 DR
Non-Vehicle Maintenance Costs	$63,349	$78,494	$77,228	NTD F-30 DR
Spare Vehicles	100	32	30	NTD S-10 DR
Total Vehicles	286	219	233	NTD S-10 DR
Revenue Vehicle Mechanical System Failures - Total	330	310	430	NTD R-20
Revenue Vehicle Mechanical System Failures - Major	148	154	270	NTD R-20
Preventable Accidents	38	54	146	NTD R-20