# Triennial Performance Audit

*of the*

# Livermore/Amador Valley Transit Authority (LAVTA)

**Fiscal Years 2015/16, 2016/17 and 2017/18**

FINAL AUDIT REPORT

*prepared for the*

METROPOLITAN TRANSPORTATION COMMISSION

*by*

Pierlott & Associates, LLC
*Management Consulting*

**June 2019**

*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 Livermore/Amador Valley Transit Authority (LAVTA). 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. The two service modes operated by LAVTA, bus, and paratransit, are the prime focus of this performance audit. The audit period is Fiscal Years 2016 through 2018 (from July 1, 2015 through June 30, 2018).

**Performance Audit and Report Organization**

The performance audit is being 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;
- A review of compliance with selected PUC requirements;
- An evaluation of LAVTA'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 LAVTA's performance based on the results of the previous sections.

Comments received from LAVTA 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 LAVTA 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 LAVTA is in compliance with the data collection and reporting requirements for these performance indicators; however, LAVTA has had some difficulties with inconsistencies with data reporting for paratransit service.

Paratransit vehicle service hours and vehicle service miles exhibited significant irregularities in FY2014 and FY2015. These irregularities were addressed in the prior LAVTA TDA Triennial Performance Audit report. LAVTA changed paratransit contractors in FY2014, which may account for some of the reporting issues. LAVTA indicated that the paratransit contractor's data reporting system did not produce results that were easily transferrable to the NTD reporting database. To correct this, LAVTA's contractor implemented a new software system in 2016.

A review of LAVTA's current paratransit reporting shows more consistent data reporting for service hours and miles for both FY2016 and FY2017, however, there was an inconsistency between hours and miles in FY2018. Vehicle service hours increased 5.9 percent while vehicle service miles decreased 3.0 percent. LAVTA responded that this

was due to a significant reduction in ridership, which decreased service miles, and their contractor, MTM, hiring additional subcontractors to correct a shortage of drivers. The procurement of additional subcontractors resulted in a temporary oversupply of drivers, causing hours to rise that same year.

Although the decrease in ridership corroborates the decrease in service miles, the increase in service hours is not consistent with the evidence provided. Passenger productivity has decreased, and passenger miles dropped over the last two years, which follows the decrease in ridership. The addition of subcontractors to the paratransit service would not counter the decline in passengers to the extent seen in the service hour data.

Performance Indicators and Trends – LAVTA'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.

- Bus Service – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:
  - Cost efficiency decreased slightly, with an average annual increase in the operating cost per hour of 1.9 percent. Performance in this indicator improved when using inflation adjusted dollars, with a one percent annual average decrease. The largest annual increase (6.1 percent) occurred in FY2016.
  - The cost per passenger increased on average by 3.0 percent per year, which amounted to a relatively flat average annual increase of 0.1 percent in constant FY2013 dollars.
  - Passenger productivity showed slightly negative trends, with passengers per vehicle service hour decreasing by about one percent

per year and passengers per vehicle service mile almost unchanged, decreasing by 0.1 percent per year.

– As LAVTA contracts for all its transit services, the indicator for employee productivity is not applicable for this audit.

The following is a brief summary of the component operating costs trend highlights for the bus service between FY2013 and FY2018:

– Overall, total operating costs increased an annual average of two percent. The most significant changes were a 31 and 53 percent average annual increase in the materials/supplies and casualty/liability areas, respectively, but both those areas comprised less than five percent of the total operating costs.

– Purchased transportation costs represented the largest portion of the total costs, representing between 63 to 65 percent in all six years.

– In-house labor, fringe benefits, and services costs all showed increases of less than three percent annually, while miscellaneous costs increased about five percent annually. Fuel/lubricants experienced the only cost decrease, averaging about 11 percent annually.

- Paratransit – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:

  – Cost efficiency decreased overall, with an average annual increase of 5.2 percent in the operating cost per hour (2.3 percent in inflation adjusted dollars). Operating costs increased an annual average of 8.5 percent, while at the same time, service hours increased an average 3.1 percent annually.

  – The operating cost per passenger averaged an annual increase of 6.6 percent, or 3.6 percent when normalized in FY2013 dollars. Again, operating costs increased at a greater rate than passenger levels over the six-year period.

  – Passenger productivity declined, with passengers per hour decreasing 1.3 percent and passengers per mile decreasing 11.8

percent per year on average. An anomaly in service miles in FY2015 caused by incorrect data reporting by the operating contractor was largely responsible for the significant decrease in passengers per service mile. Once corrected, the passengers per mile indicator stabilized over the current three-year audit period.

The following is a brief summary of the component operating costs trend highlights for paratransit between FY2013 and FY2018:

- Purchased transportation costs, the largest component cost category, increased by 8.2 percent per year on average. Purchased transportation as a percentage of total costs was steady at about 87 percent to 90 percent during this period.

- Significant cost increases were seen in the services (20.4 percent), materials/supplies (39.4 percent) casualty/liability (11.3 percent) and miscellaneous other costs (10.3 percent), however, all of these categories combined comprise less than six percent of the total operating costs.

Compliance with Statutory Requirements – The results from this review are detailed by individual requirement in Exhibit 6. LAVTA is in compliance with all of the seven sections of the state PUC that were reviewed as part of this performance audit. These sections included requirements concerning CHP terminal safety inspections, vehicle staffing, labor contracts, reduced fares, revenue sharing, welfare-to-work transportation coordination, and evaluating passenger needs.

Status of Prior Audit Recommendations – There were two recommendations in the prior LAVTA audit report. LAVTA has implemented corrective actions for one of the two recommendations from the prior audit, and implementation is in progress for the second recommendation.

In the prior TDA audit, LAVTA's paratransit service data reporting was found to have several flaws. Reporting anomalies were found in paratransit vehicle service hour and vehicle service reporting in fiscal years 2014 and 2015, and data for paratransit trip cancellations and late trip cancellations data was missing for some years, which made calculating performance in these indicators difficult. It was recommended that LAVTA examine the data collection and reporting activities of its paratransit contractor to ensure that operating data are being accurately collected and reported.

LAVTA reported that its paratransit contractor installed a new paratransit software system in 2016 to collect accurate data on service miles & hours, deadhead hours & miles, and trip cancellations by specific categories. In 2017 LAVTA overhauled and audited the contractor monthly reporting. The monthly reports now include accurate data, and internal auditing checks have been placed into the report to ensure that all the data is captured and accurate. LAVTA has confirmed that definitions of data being reported are aligned with NTD and TDA definitions for data categories. LAVTA continues to audit data on a monthly basis and resolves any issues with the contractor.

A review of LAVTA's paratransit operating data for the current audit period shows that the vehicle service mile and vehicle service hour data are relatively consistent for FY2016 and FY2017. There was an anomaly noted between increased service hours and decreased service miles in FY2018 that LAVTA attributed to decreased ridership combined with a temporary overstaffing caused by the contractor hiring additional drivers, which increased hours. While the improvement in data consistency during the current audit period is a positive development, the anomaly between paratransit service hours and miles in FY2018 indicates that LAVTA needs to continue to monitor its paratransit contractor's data collection and reporting methods to ensure consistency in the future.

On the fixed-route side, it was noted that LAVTA did not meet its fixed-route on-time performance standard in any year of the prior audit period. Fixed-route on-time performance was consistently in the 80 percent range for all three years of the audit period.

LAVTA responded that it has been continually working with its operations contractor, MV Transportation, Inc. (MV) to improve the on-time performance of its bus service. LAVTA has lowered its on-time performance goal to 85 percent, which is a more realistic goal given the operating characteristics and area of its service. LAVTA also implemented the recommendations of its Comprehensive Operations Analysis in August 2018, which updated bus schedules to reflect existing running times, and improved on-time performance. An examination of LAVTA's current fixed-route on-time performance shows a gradual improvement in on-time bus performance from 80.2 percent in FY2016 to 84.6 percent in FY2018. LAVTA's bus service on-time performance has met the overall goal of 85 percent on-time in every month except one between November 2017 and June 2018.

Functional Performance Indicator Trends - To further assess LAVTA'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 FY2016 and FY2018:
  - Administrative costs increased slightly to about 30 percent of total operating costs, averaging between $26 and $29 per vehicle service hour.

- Marketing costs increased to 13 percent of total administrative costs, with marketing cost per passenger trip increasing from $0.22 to $0.34.

- The systemwide farebox recovery ratio increased from 14.5 to 15.4 percent.

- Bus Service – The following is a brief summary of the bus service functional trend highlights between FY2013 and FY2015:

  - Service Planning results displayed a moderate eight percent increase in operating cost per passenger mile, consistent rates of about 88 and 91 percent vehicle miles and hours in service, and steady rates of passengers per mile and hour. Farebox recovery increased from 15 to 16 percent, while the TDA Article 4 operating ratio (including local support) decreased slightly from 35 to 34 percent.

  - Operations experienced about a five percent increase in both percentage of vehicle operations cost to total operating cost, and in vehicle operations cost per hour. Schedule adherence improved from 80 to 85 percent, while valid complaints increased from seven to eleven per 100,000 passenger trips. The number of commendations remained steady and there were almost no missed trips.

  - Maintenance results showed vehicle maintenance costs decreasing as a percentage of total operating cost, but maintenance costs per service mile increasing by about ten percent. The bus spare ratio decreased from about 26 to 22 percent. The total mechanical failure rate varied from year to year, but overall, the mean distance between major failures decreased about six percent, while distance between all failures decreased about 11 percent. The decrease in miles between failures is attributed to a new failure tracking methodology which increased the number of failures recorded in FY2018 that would not have been recorded under the old tracking system.

  - Safety performance resulted in preventable accidents per 100,000 miles decreasing from 1.2 to 0.8 over the audit period.

- Paratransit – The following is a brief summary of the paratransit functional trend highlights between FY2016 and FY2018:

  - Service Planning results showed a significant increase in operating costs per passenger mile, which is attributed to incorrect passenger mile data in NTD for FY2016, caused by errors in the contractor's scheduling software. The contractor updated their software in late FY2016. Farebox recovery remained stable at about 13 percent while TDA recovery ratio (including local support), increased almost 16 percent. There was improvement in both vehicle miles in service and vehicle hours in service during the audit period. Both passengers per mile and hour were almost unchanged.

  - Operations results included about a ten percent decrease in percentage of vehicle operations cost to total operating cost, and a 20 percent decrease in vehicle operations costs per hour. Schedule adherence was steady in FY2016 and FY2017, but decreased by almost eight percent in FY2018. Valid passenger complaints increased between FY2016 and FY2018 to just over one per 1,000 passenger trips. There were a very small percentage of both passenger commendations and missed trips during the audit period.

  - There were no ADA trip denials reported during the period. Trip cancellations and passenger no-shows both decreased, but late trip cancellations increased from 1.4 percent to 3.2 percent over the audit period.

  - Maintenance results revealed total vehicle maintenance costs slightly increasing as a percentage of total operating cost, and maintenance costs per service mile increasing by about seven percent. The vehicle spare ratio decreased over 65 percent, due to an NTD reporting error in FY2016, and large fluctuations were seen in the mechanical failure rates. LAVTA's contractor severed contracts with some of their subcontractors in FY2017 due to consistent breakdowns of vehicles, improving performance in FY2018.

  - Safety performance had zero preventable accidents in FY2016 and FY2017, and only two preventable accidents in FY2018.

**Recommendations**

1. CONTINUE TO ENSURE THAT DATA IS COLLECTED AND REPORTED ACCURATELY FOR PARATRANSIT SERVICE.
   *[Reference Section: II. Review of TDA Data Collection and Reporting Methods; III. TDA Performance Indicators and Trends; and VI. Functional Performance Indicator Trends]*

   LAVTA's prior TDA audit report found deficiencies in the collection and reporting of performance data, mostly due to LAVTA's contractor not reporting service data correctly. The current review of LAVTA's data collection and reporting methods found that while the data definitions and collection appear to comply with TDA requirements, there are still apparent reporting anomalies during this audit period, mostly on the paratransit side of operations. Specifically, paratransit vehicle service hours increased by about six percent in FY2018, while vehicle service miles decreased by about three percent the same year. Service hours and miles typically move in tandem.

   LAVTA responded that the vehicle service hour and vehicle service mile anomaly was caused by decreasing ridership which lowered service miles, combined with a temporary staffing increase in drivers that caused service hours to rise. The decrease in ridership and service miles is borne out by the decrease in passenger productivity in the passengers per mile indicator, and by the decrease in passenger miles reported in NTD, resulting in lower average trip length. The decrease in these indicators does not support the explanation for increasing service hours. If LAVTA's explanation is accurate, it would mean that fewer passengers are taking shorter trips, but spending more time on the vehicles.

   It is recommended that LAVTA continue to examine the data collection and reporting activities of its paratransit contractor to ensure that operating data are being accurately collected and reported. Continued monitoring will allow LAVTA to determine if the data collection and reporting changes implemented since the last TDA audit result in more consistent and accurate results.

# Table of Contents

# List of Exhibits

Page No.

# 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 Livermore-Amador Valley Transit Authority (LAVTA). LAVTA operates bus service under the banner of WHEELS. LAVTA provides ADA complementary paratransit service. The audit period is Fiscal Years 2016 through 2018 (from July 1, 2015 through June 30, 2018).

An overview of LAVTA is provided in Exhibit 1. This is followed by organization charts in Exhibits 2.0 through 2.2, which reflect the basic organizational structure during the audit period.

**Performance Audit and Report Organization**

This performance audit of LAVTA 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. Comments received from LAVTA and MTC staff will be incorporated into the final report.

# Exhibit 1: System Overview

**Location** Headquarters: 1362 Rutan Court, Livermore, CA 94551

**Establishment** The Cities of Dublin, Livermore and Pleasanton, and the County of Alameda created the Livermore/Amador Valley Transit Authority (LAVTA) in 1985 through a Joint Powers Agreement. LAVTA began service in 1986 under the WHEELS name. LAVTA serves the Cities of Dublin, Livermore and Pleasanton, and adjacent areas of Alameda County.

**Board** LAVTA is governed by a seven-member Board of Directors consisting of two elected officials from each of the three member cities and one director from the Alameda County Board of Supervisors. The board is divided into two committees: the Finance and Administration Committee and the Projects and Services Committee. The committees meet regularly to discuss issues under their purview.

**Facilities** The LAVTA Maintenance, Operations and Administration facility is the central base of operations for WHEELS. It houses both agency staff and contractor employees. The Livermore Transit Center (LTC) is a hub for LAVTA's Livermore routes and includes a parking structure for transit users and the general public. The LTC provides direct access to the adjacent Altamont Commuter Express (ACE) train station. In 2013, LAVTA completed construction of the Atlantis Operations and Maintenance Facility, a secured parking facility with bus wash and fueling functions.

**Service Data** LAVTA operates fixed-route bus service (WHEELS) that serves the communities of Dublin, Livermore and Pleasanton and some unincorporated areas of surrounding Alameda County. Contracting the operation and maintenance for this service to MV Transportation, Inc., LAVTA provides 15 mainline routes, and 15 supplemental "school-tripper" routes. The mainline routes provide connections between transit hubs - such as BART stations and the LTC, and major employment and retail centers. Seven of the mainline routes operate throughout the day and on weekends, while the remainder are limited to weekday commute hours. LAVTA provides at least some service 365 days a year. LAVTA's 15 supplemental routes are designed to serve area middle schools and high schools, but also are available to the general public. The supplemental service is limited to school days, with most routes providing one inbound trip in the morning and one outbound trip in the afternoon. The fixed-route adult base fare is $2.00. The discounted fare for senior and disabled riders is $1.00.

Paratransit service for ADA-certified riders is provided through WHEELS' Dial-A-Ride service. WHEELS paratransit services are operated by a contractor, Medical Transportation Management (MTM). Dial-A-Ride provides door-to-door service throughout the entire LAVTA service area. LAVTA also has a cooperative service agreement with Pleasanton

Paratransit, which provides door to door local trips for eligible Pleasanton residents. LAVTA provides Dial-A-Ride services in Pleasanton during Pleasanton Paratransit's non-operating hours and covers any overflow service needed in Pleasanton. The paratransit fare is $3.50. LAVTA also participates in a Para-Taxi Program that provides same day paratransit service primarily as a more convenient alternative for non-mobility impaired riders who are ADA certified. Riders submit their taxi receipts to LAVTA and are reimbursed 85% of the cost, up to $20 per trip.

LAVTA also provides an on-demand service in Dublin, CA called GoDublin. The program is a partnership with Transportation Network Companies (TNCs). Individuals that request a ride on Lyft, Uber, or DeSoto cab in the city of Dublin and their end destination is in the City of Dublin are eligible for a subsidy of their fare of fifty percent (50%) up to five dollars ($5).

LAVTA's current operating fleet consists of a total of 60 standard 29 to 40-foot transit buses used for fixed-route service. MTM uses its own fleet and subcontracted fleet of vehicles for Dial-A-Ride services.

**Recent Changes**

LAVTA completed a comprehensive operations analysis (COA) of the entire fixed route system in 2016. The study, named *Wheels Forward*, and undertaken by Nelson Nygaard as the lead consultant, evaluated existing service, demographics, and key employment areas, leading to a short-term service plan that was implemented in the fall of 2016. The agency has secured funding to develop a new short-range (10-year) and long-range (25-year) service plan. This effort is anticipated to begin in mid-2019 and to be implemented in early 2020.With the changes brought through the COA, LAVTA created the GoDublin partnership with TNCs to replace some of the service that was eliminated in Dublin.

LAVTA's planned capital projects include facility improvements and maintenance over the next ten years, fixed-route fleet engine, transmission overhauls and replacements, battery replacements on the Hybrid buses and support vehicle replacements. LAVTA replaced twenty 40' buses in 2016 and twenty 40' buses in 2017. With a mix of 29', 35' and 40' diesel hybrid buses.

**Planned Changes**

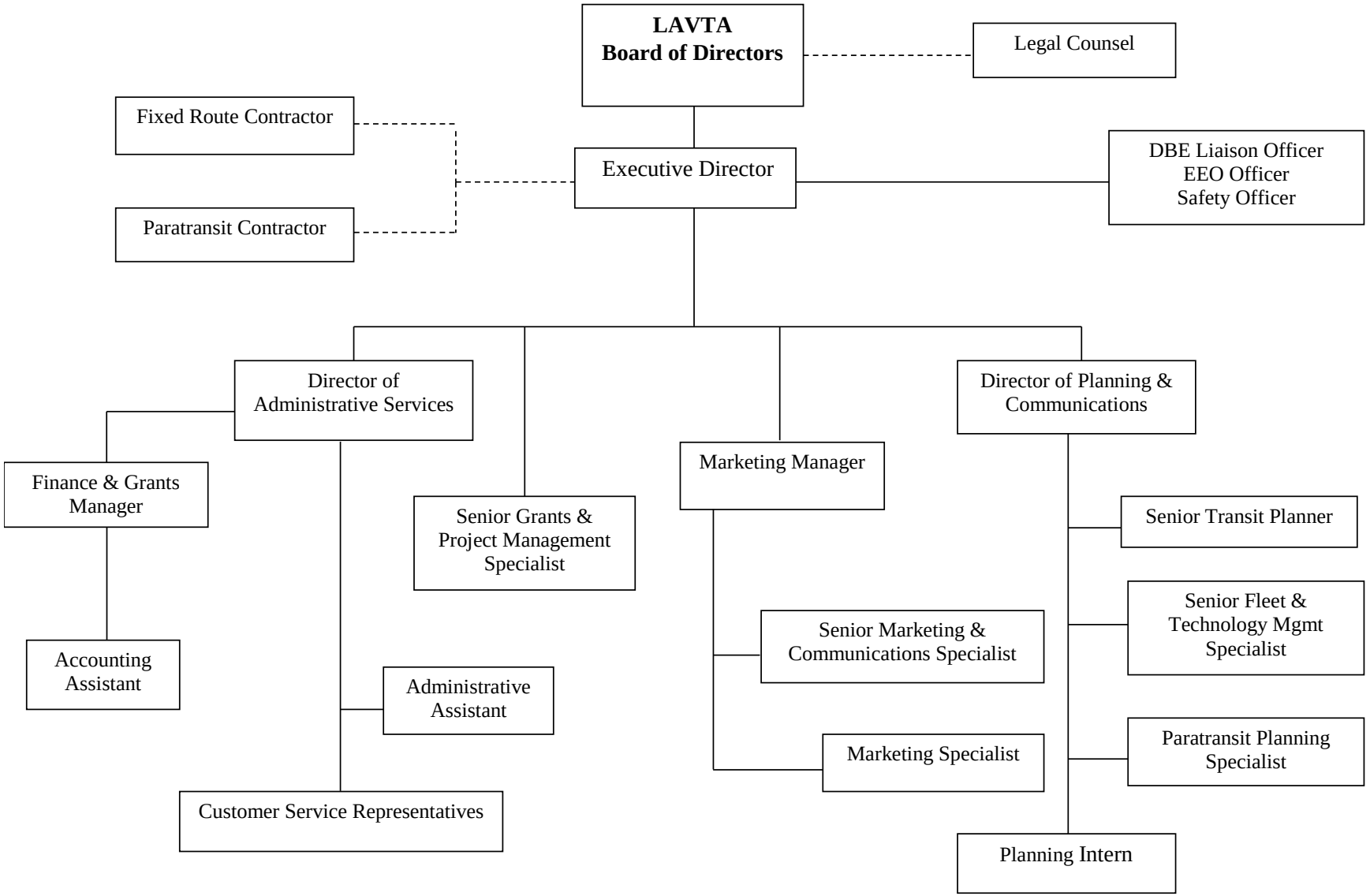
In January 2019 LAVTA will implement a new Fare Policy. This policy will eliminate paper transfers, and paper "farebuster" tickets (individual tickets sold in sheets of 10). LAVTA will create a new Clipper based youth Fare of $1.60 and increase Paratransit Fares from $3.50 to $3.75, with an additional increase to $4.00 in 2021. Additionally, in CY 2019 the Senior and Disabled Monthly passes will increase from $18 to $22. Additional increases to $26 in 2020 and $30 in 2021 are also planned. With the elimination of transfers LAVTA also added a Day Pass option of $3.75 for youth and adults and $1.75 for seniors and those with disabilities. This Day Pass matches the one provided on the Clipper Card.

**Staff**

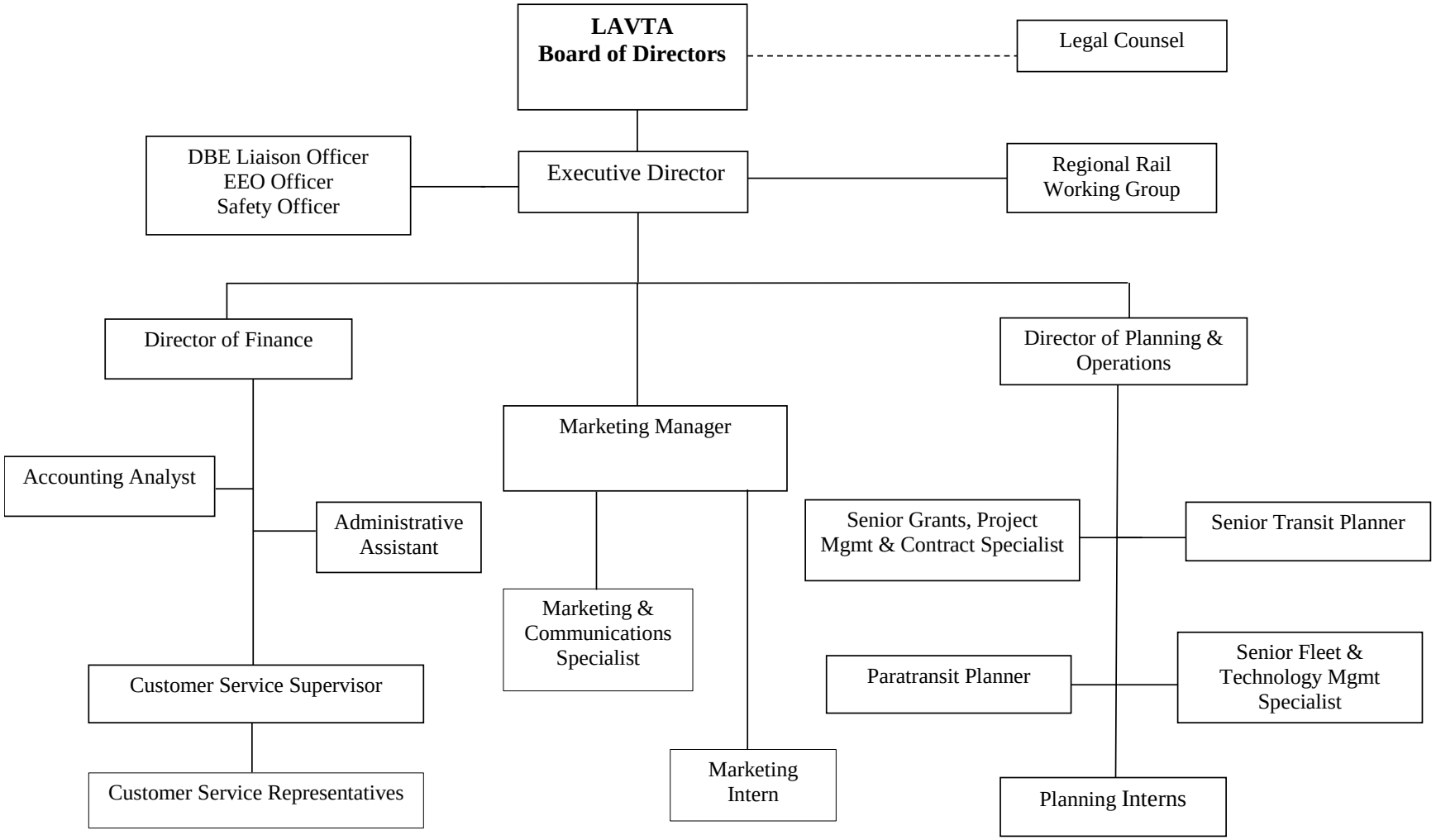
During the audit period, LAVTA's contractor, MV Transportation, employed about 150-160 full and part-time employees to operate and maintain WHEELS services. LAVTA currently has 14 full-time staff members and five part-time interns. During the audit period LAVTA combined the positions of Director of Administrative Services and Finance and Grants Manager into a Director of Finance. Then combined the Director of Planning and Operations and the Marketing Manager into the Director of Planning and Marketing and then added a Manager of Customer Service and Contract Oversight. The breakdown of LAVTA's in-house staff is:

Executive Director – 1
Finance /Administrative Services – 4
Planning & Marketing – 3
Operations - 6

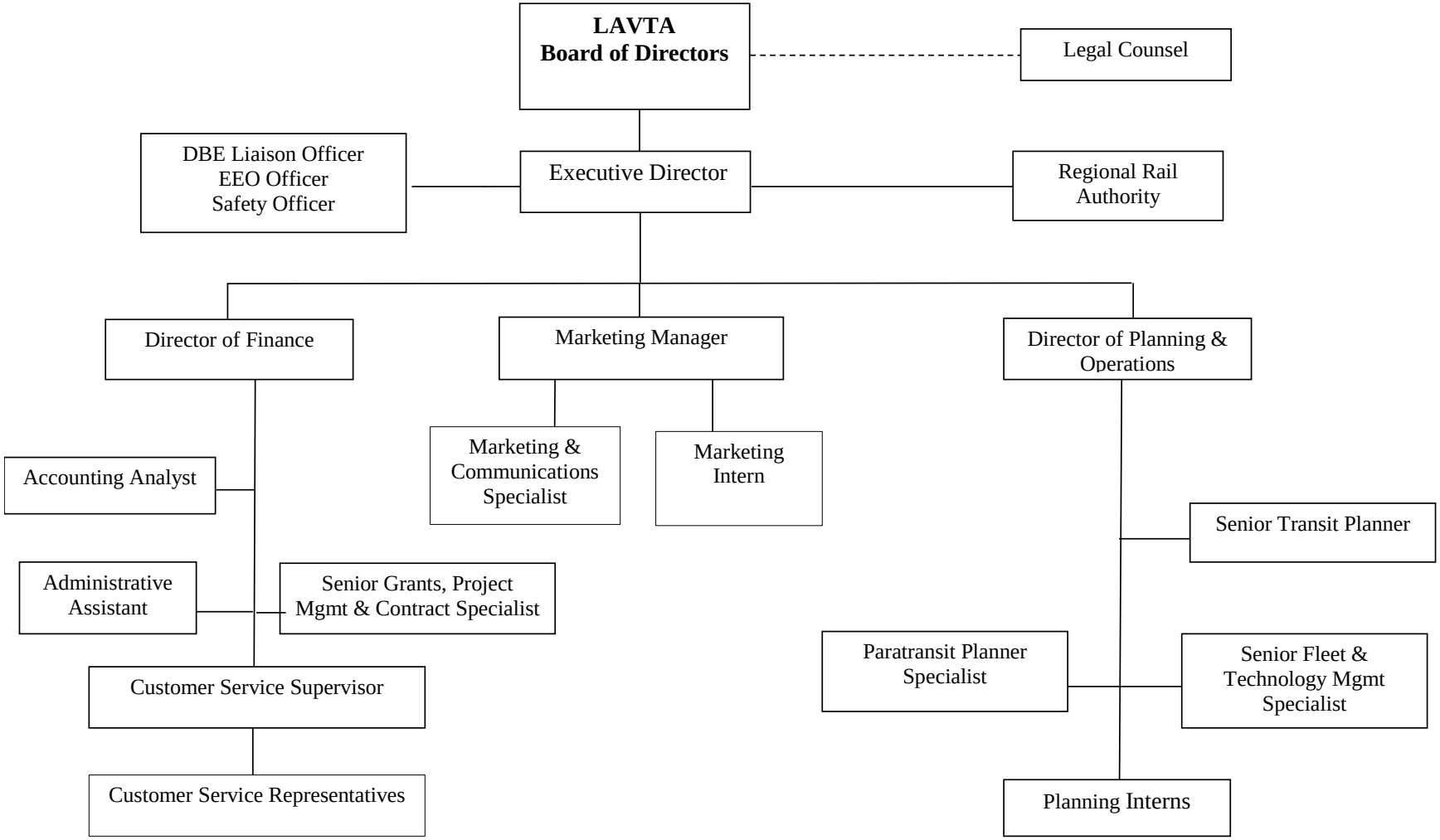
## Exhibit 2.0: Organization Chart 2016



## Exhibit 2.1: Organization Chart 2017



## Exhibit 2.2: Organization Chart 2018



# 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 LAVTA 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 LAVTA covering the audit period has been reviewed. LAVTA's NTD reports include its bus and paratransit services. However, consistent with FTA reporting requirements, LAVTA does not submit employee hour information for purchased transportation service to the NTD. Responsibility for sufficient staffing and employee productivity is borne by the operations contractor and therefore, employee full-time equivalent (FTE) data is not used in this audit report.

Compliance with Requirements

To support this review, LAVTA provided information to confirm and/or update its data collection and reporting procedures as described in the prior performance audit. There were only minor changes. The staff indicated that the definitions and procedures used to derive the TDA indicator statistics generally are consistent with those used for the NTD reporting system.

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

Consistency of the Reported Statistics

The TDA statistics for LAVTA's bus and paratransit services are presented in Exhibits 3.2 and 3.3, respectively. 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. LAVTA is in compliance with the definition and methodology for collection and reporting of TDA statistics, however, LAVTA has had some difficulties with inconsistencies with data reporting for paratransit service.

As seen in Exhibit 3.3, paratransit vehicle service hours and vehicle service miles exhibited significant irregularities in FY2014 and FY2015. These irregularities were addressed in the prior LAVTA TDA Triennial Performance Audit report. LAVTA changed paratransit contractors in FY2014, which may account for some of the reporting issues. LAVTA indicated that the paratransit contractor's data reporting system did not produce results that were easily transferrable to the NTD reporting database. To correct this, LAVTA's contractor implemented a new software system in 2016.

A review of LAVTA's current paratransit reporting shows more consistent data reporting for service hours and miles for both FY2016 and FY2017, however, there was an inconsistency between hours and miles in FY2018. Vehicle service hours increased 5.9 percent while vehicle service miles decreased 3.0 percent. LAVTA responded that this was due to a significant reduction in ridership, which decreased service miles, and their contractor, MTM, hiring additional subcontractors to correct a shortage of drivers. The procurement of additional subcontractors resulted in a temporary oversupply of drivers, causing hours to rise that same year.

Although the decrease in ridership corroborates the decrease in service miles, the increase in service hours is not consistent with the evidence provided. Passenger productivity has decreased, and passenger miles dropped over the last two years, which follows the decrease in ridership. The addition of subcontractors to the paratransit service would not counter the decline in passengers to the extent seen in the service hour data.

## 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, and exclusive of all subsidies for commuter rail services operated under the jurisdiction of the Interstate Commerce Commission and of all direct costs for providing charter services, and exclusive of all vehicle lease costs. | In Compliance | • LAVTA divides operating costs into six categories: Board of Directors, Executive Director, administrative services, transit planning, marketing, and operations.<br>• Total operating expenses include internal costs plus the cost of purchased transportation provided by the contract operator.<br>• Operating costs reported to external agencies are based on LAVTA's audited financial statements. |
| 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 with Follow Up | • LAVTA calculates fixed route service hours based on 1) fixed-route service schedules and 2) any variations in service, as reported by the operations contractor and reviewed by agency oversight staff, consistent with TDA definitions.<br>• Dial a Ride service hours are calculated based on the actual times reported by the drivers using the contractor's proprietary software. The actual pickup and drop-off times are recorded per trip and reported to LAVTA monthly. |
| Vehicle Service Miles | "Vehicle service miles" means the total number of miles that each transit vehicle is in revenue service. | In Compliance with Follow Up | • LAVTA calculates fixed route service miles based on the current fixed route schedule, consistent with TDA definitions.<br>• Dial a Ride miles are based on the distances from origin to destination using the contractor's proprietary mapping software. The contractor submits monthly reports to LAVTA. |

| TDA Statistic | TDA Definition | Compliance Finding | Verification Information |
|---|---|---|---|
| Unlinked Passengers | "Unlinked passengers" means the number of boarding passengers, whether revenue producing or not, carried by the public transportation system. | In Compliance | • Fixed-route passengers are manually counted by bus operators on electronic fareboxes; data is downloaded from fareboxes daily, and is included in weekly and monthly reports to LAVTA.<br>• Dial-A-Ride passenger counts are tracked by the contractor's proprietary software. The driver confirms the number of passengers on the trip reservation (both the passenger type and count) at the beginning of each trip. Monthly reports are submitted to LAVTA.<br>• LAVTA includes all categories of boarding, traveling passengers - regardless of fare payment or payment method - as required by TDA guidelines. |
| Employee Full-Time Equivalents | 2,000 person-hours of work in one year constitute one employee. | In Compliance | • Definition corresponds with TDA definition.<br>• Fixed Route service is contracted out to private operator; contractor reports its FTEs to LAVTA.<br>• Dial-A-Ride service is contracted out to private operator that subcontracts; no FTE reporting. |

## Exhibit 3.2: TDA Statistics – Bus Service

| TDA Statistic | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Operating Cost (Actual $) | $12,333,360 | $13,062,559 | $12,733,073 | $13,555,486 | $13,646,760 | $13,643,794 |
| *Annual Change* | - - | *5.9%* | *-2.5%* | *6.5%* | *0.7%* | *0.0%* |
| Vehicle Service Hours | 124,635 | 125,826 | 125,201 | 125,604 | 122,825 | 125,619 |
| *Annual Change* | - - | *1.0%* | *-0.5%* | *0.3%* | *-2.2%* | *2.3%* |
| Vehicle Service Miles | 1,826,997 | 1,818,649 | 1,831,125 | 1,780,948 | 1,726,726 | 1,748,817 |
| *Annual Change* | - - | *-0.5%* | *0.7%* | *-2.7%* | *-3.0%* | *1.3%* |
| Unlinked Passengers | 1,727,085 | 1,652,151 | 1,650,388 | 1,648,811 | 1,536,084 | 1,647,002 |
| *Annual Change* | - - | *-4.3%* | *-0.1%* | *-0.1%* | *-6.8%* | *7.2%* |
| Employee Full-Time Equivalents | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* |
| *Annual Change* | - - | - - | - - | - - | - - | - - |

*(a) - Not applicable as LAVTA service is provided by a private contractor*

*Sources: FY2013 through FY2015 - Prior Performance Audit Report*
*FY2016 through FY2018 - NTD Reports*

## Exhibit 3.3: TDA Statistics – Paratransit Service

| TDA Statistic | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Operating Cost (Actual $) | $1,133,961 | $1,276,106 | $1,524,148 | $1,842,854 | $1,707,058 | $1,703,128 |
| *Annual Change* | - - | *12.5%* | *19.4%* | *20.9%* | *-7.4%* | *-0.2%* |
| Vehicle Service Hours | 26,809 | 21,877 | 27,062 | 29,859 | 29,474 | 31,219 |
| *Annual Change* | - - | *-18.4%* | *23.7%* | *10.3%* | *-1.3%* | *5.9%* |
| Vehicle Service Miles | 200,561 | 199,923 | 375,873 | 421,306 | 424,072 | 411,459 |
| *Annual Change* | - - | *-0.3%* | *88.0%* | *12.1%* | *0.7%* | *-3.0%* |
| Unlinked Passengers | 44,741 | 43,739 | 46,461 | 54,975 | 54,121 | 48,872 |
| *Annual Change* | - - | *-2.2%* | *6.2%* | *18.3%* | *-1.6%* | *-9.7%* |
| Employee Full-Time Equivalents | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* |
| *Annual Change* | - - | - - | - - | - - | - - | - - |

*(a) - Not applicable as LAVTA service is provided by a private contractor*

*Sources:* *FY2013 through FY2015 - Prior Performance Audit Report*
*FY2016 through FY2018 - NTD Reports*

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# III. TDA PERFORMANCE INDICATORS AND TRENDS

The performance trends for the LAVTA's bus and paratransit service modes are presented in this section. 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)

Most of the performance results in these indicators were developed from the information in the NTD reports filed with the FTA for the three years of the audit period. LAVTA's NTD reports were the source of all operating and financial statistics except for contractor FTEs. As noted in Section II: Review of TDA Data Collection and Reporting Methods, LAVTA contracts for all of its transit services, and does not report FTE data in its NTD reports. The operating contractor is responsible for staffing and employee productivity, therefore, FTE data and results are not included as part of this audit report.

In addition to presenting performance for the three years of the audit period (FY2016 through FY2018), 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 LAVTA'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 FY2016 to FY2018 trend lines have been combined with those from the prior audit period (FY2013 through FY2015) 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 LAVTA's performance trends in each of the five TDA performance indicators. The discussion is organized by service mode -- bus service is discussed first, followed by paratransit. The analysis is expanded to include a breakdown of the various component costs that contributed to the total and hourly operating costs during the six-year period. This expanded analysis normally is not included for contracted services, where the cost breakdowns are internal contractor issues; however, we have included them in this report to illustrate the trends in contracted cost categories.

Bus Service Performance Trends

This section provides an overview of the performance of LAVTA's bus 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 Vehicle Service Hour (Exhibit 4.1)

  – Operating cost per vehicle service hour, a key indicator of cost efficiency, increased an average of 1.9 percent annually as operating

costs increased an annual average of two percent while service hours were almost unchanged.

- The cost per hour increased in every year except FY2015 and FY2018, decreasing about two percent in those years.

- In FY2013 constant dollars, there was an average annual decrease in this indicator of one percent.

- Passengers per Vehicle Service Hour (Exhibit 4.2)

  - An indicator of passenger productivity, passengers per hour decreased an average of 1.1 percent annually during the six-year period.

  - This reflects a slight decrease in passengers combined with almost unchanged service hours.

  - Passengers per hour decreased overall from 13.9 in FY2013 to 13.1 in FY2018.

- Passengers per Vehicle Service Mile (Exhibit 4.2)

  - Another passenger productivity indicator, the six-year trend in this indicator was almost unchanged, decreasing by 0.1 percent annually on average.

  - The rate of change in passengers was equal to that of vehicle service miles, both decreasing an average of 0.9 percent annually.

  - There were 0.95 passengers per mile in FY2013, decreasing to 0.94 in FY2018.

- Operating Cost per Passenger (Exhibit 4.3)

  - A measure of cost effectiveness, LAVTA's bus cost per passenger was $7.14 in FY2013, increasing to $8.28 per passenger in FY2018.

  - Total operating costs increased modestly by 2.0 percent annually, as passengers fell by 0.9 percent per year on average.

- With the impact of inflation removed from the cost side (normalization), the six-year result was almost unchanged, with an average annual increase of 0.1 percent in the cost per passenger.

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

  - Employee productivity is measured as vehicle service hours per full-time employee.

  - As LAVTA contracts its bus services, the operating contractor is responsible for staffing and employee productivity, therefore, FTE data and results are not included as part of this audit report.

* * * * *

The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:

- Cost efficiency decreased slightly, with an average annual increase in the operating cost per hour of 1.9 percent. Performance in this indicator improved when using inflation adjusted dollars, with a one percent annual average decrease. The largest annual increase (6.1 percent) occurred in FY2016.

- The cost per passenger increased on average by 3.0 percent per year, which amounted to a relatively flat average annual increase of 0.1 percent in constant FY2013 dollars.

- Passenger productivity showed slightly negative trends, with passengers per vehicle service hour decreasing by about one percent per year and passengers per vehicle service mile almost unchanged, decreasing by 0.1 percent per year.

- As LAVTA contracts for all its transit services, the indicator for employee productivity is not applicable for this audit.

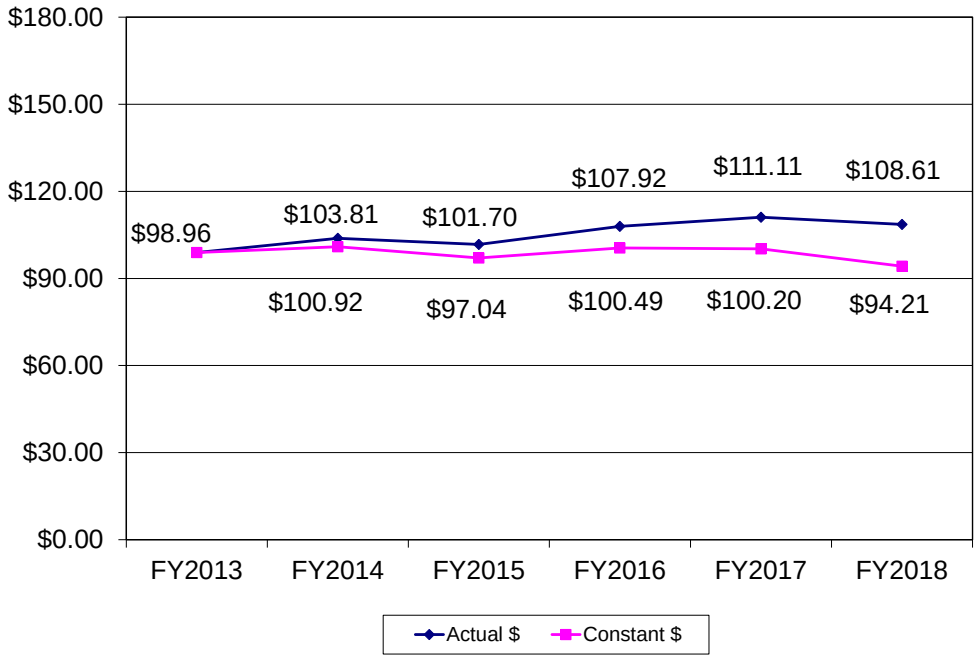
# Exhibit 4: TDA Indicator Performance – Bus Service

| | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | *Av. Ann. Chg.* |
|---|---|---|---|---|---|---|---|
| **Performance Indicators** | | | | | | | |
| Op. Cost per Vehicle Svc. Hour (Actual $) | $98.96 | $103.81 | $101.70 | $107.92 | $111.11 | $108.61 | - - |
| *Annual Change* | - - | *4.9%* | *-2.0%* | *6.1%* | *3.0%* | *-2.2%* | *1.9%* |
| Op. Cost per Vehicle Svc. Hour (Constant $) | $98.96 | $100.92 | $97.04 | $100.49 | $100.20 | $94.21 | - - |
| *Annual Change* | - - | *2.0%* | *-3.9%* | *3.6%* | *-0.3%* | *-6.0%* | *-1.0%* |
| Passengers per Vehicle Service Hour | 13.9 | 13.1 | 13.2 | 13.1 | 12.5 | 13.1 | - - |
| *Annual Change* | - - | *-5.2%* | *0.4%* | *-0.4%* | *-4.7%* | *4.8%* | *-1.1%* |
| Passengers per Vehicle Service Mile | 0.95 | 0.91 | 0.90 | 0.93 | 0.89 | 0.94 | - - |
| *Annual Change* | - - | *-3.9%* | *-0.8%* | *2.7%* | *-3.9%* | *5.9%* | *-0.1%* |
| Op. Cost per Passenger (Actual $) | $7.14 | $7.91 | $7.72 | $8.22 | $8.88 | $8.28 | - - |
| *Annual Change* | - - | *10.7%* | *-2.4%* | *6.6%* | *8.1%* | *-6.8%* | *3.0%* |
| Op. Cost per Passenger (Constant $) | $7.14 | $7.69 | $7.36 | $7.66 | $8.01 | $7.19 | - - |
| *Annual Change* | - - | *7.6%* | *-4.2%* | *4.0%* | *4.7%* | *-10.3%* | *0.1%* |
| Vehicle Service Hours per FTE | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | - - |
| *Annual Change* | - - | - - | - - | - - | - - | - - | - - |
| **Input Data** | | | | | | | |
| Operating Cost (Actual $) | $12,333,360 | $13,062,559 | $12,733,073 | $13,555,486 | $13,646,760 | $13,643,794 | - - |
| *Annual Change* | - - | *5.9%* | *-2.5%* | *6.5%* | *0.7%* | *0.0%* | *2.0%* |
| Operating Cost (Constant $) | $12,333,360 | $12,698,900 | $12,149,044 | $12,622,503 | $12,307,139 | $11,834,142 | - - |
| *Annual Change* | - - | *3.0%* | *-4.3%* | *3.9%* | *-2.5%* | *-3.8%* | *-0.8%* |
| Vehicle Service Hours | 124,635 | 125,826 | 125,201 | 125,604 | 122,825 | 125,619 | - - |
| *Annual Change* | - - | *1.0%* | *-0.5%* | *0.3%* | *-2.2%* | *2.3%* | *0.2%* |
| Vehicle Service Miles | 1,826,997 | 1,818,649 | 1,831,125 | 1,780,948 | 1,726,726 | 1,748,817 | - - |
| *Annual Change* | - - | *-0.5%* | *0.7%* | *-2.7%* | *-3.0%* | *1.3%* | *-0.9%* |
| Unlinked Passengers | 1,727,085 | 1,652,151 | 1,650,388 | 1,648,811 | 1,536,084 | 1,647,002 | - - |
| *Annual Change* | - - | *-4.3%* | *-0.1%* | *-0.1%* | *-6.8%* | *7.2%* | *-0.9%* |
| Employee Full-Time Equivalents | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | - - |
| *Annual Change* | - - | | - - | - - | - - | - - | - - |
| *Bay Area CPI - Annual Change* | - - | 2.9% | 1.9% | 2.5% | 3.3% | 4.0% | - - |
| *- Cumulative Change* | - - | 2.9% | 4.8% | 7.4% | 10.9% | 15.3% | *2.9%* |

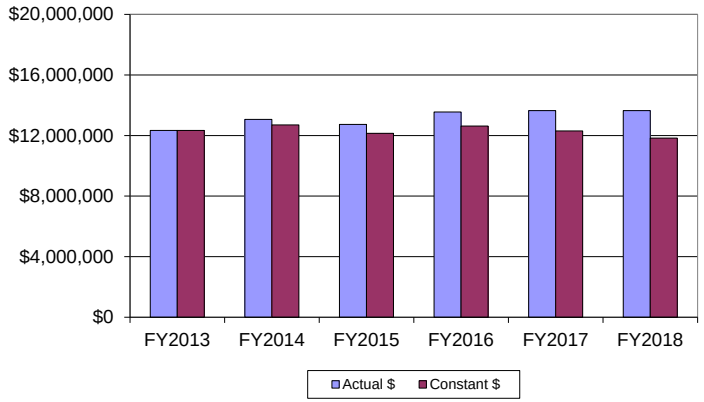
*(a) - Not applicable as LAVTA service is provided by a private contractor*

*Sources:* *FY2013 through FY2015 - Prior Performance Audit Report*
*FY2016 through FY2018 - NTD Reports*
*CPI Data - U.S. Department of Labor, Bureau of Labor Statistics*

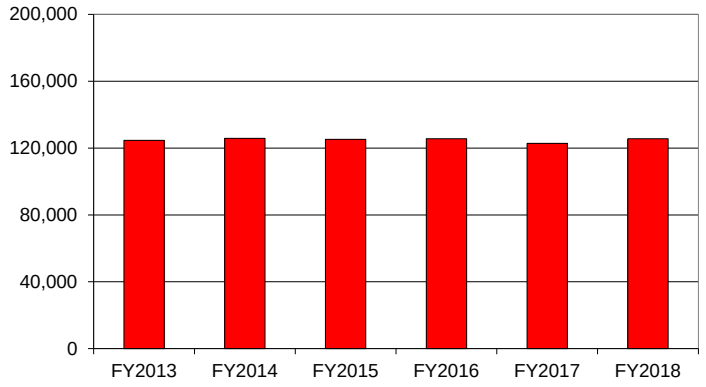
## Exhibit 4.1: Operating Cost per Vehicle Service Hour – Bus Service



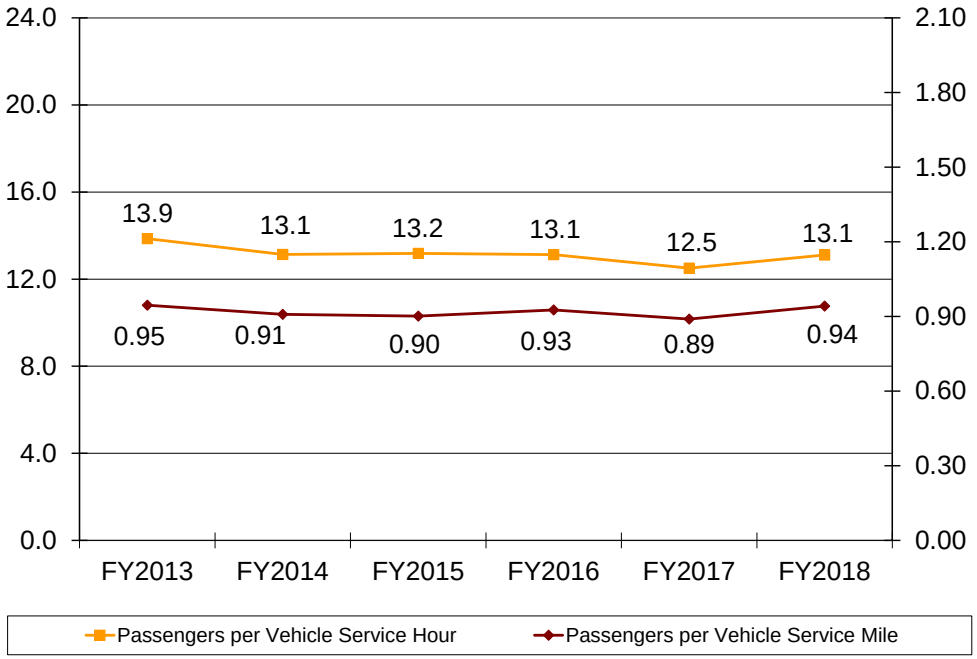

**Operating Cost**



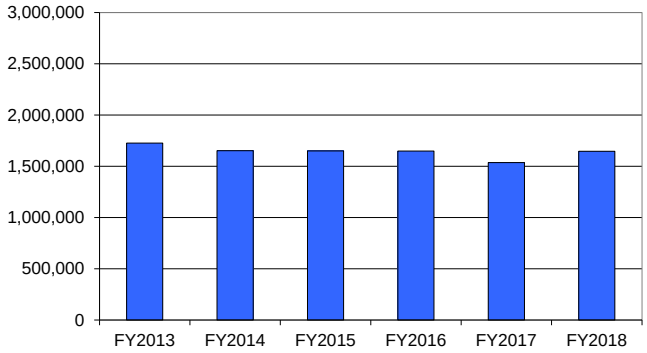

**Vehicle Service Hours**



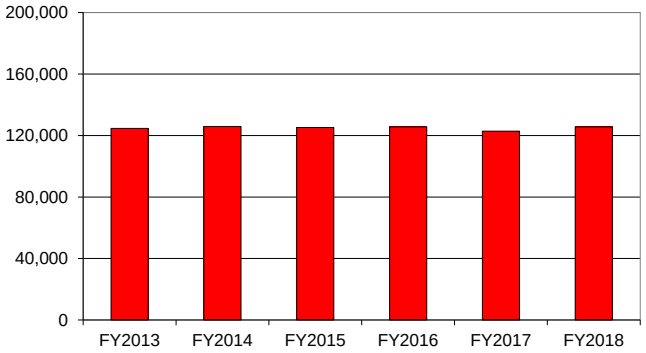
## Exhibit 4.2: Passengers per Hour and per Mile – Bus Service



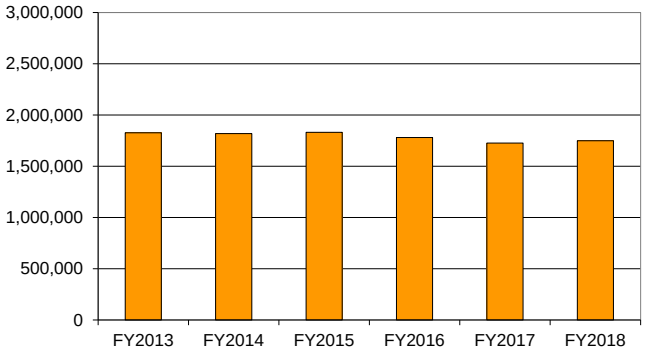

**Unlinked Passengers**



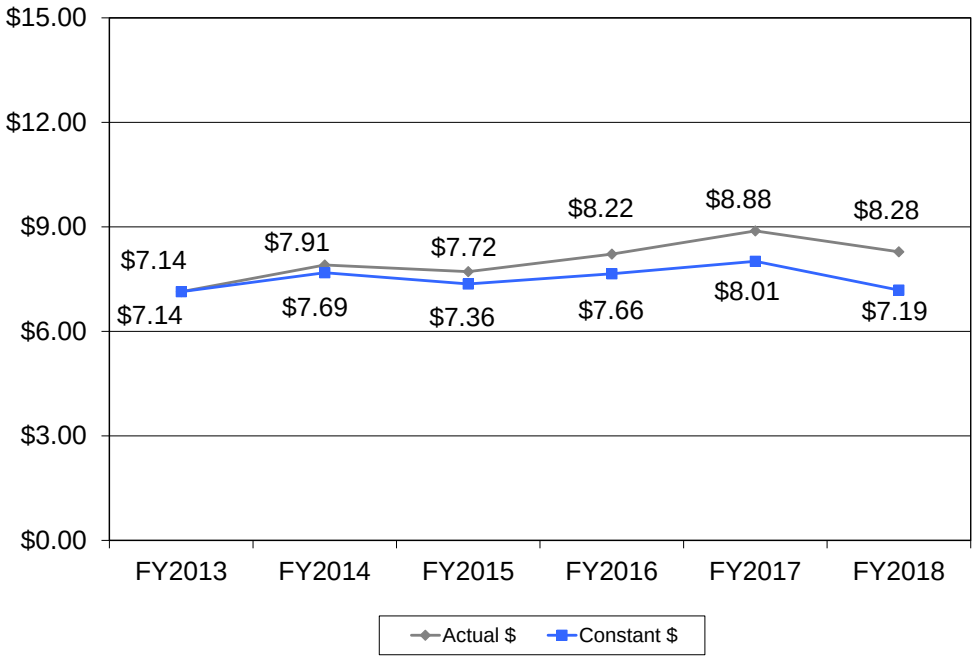

**Vehicle Service Hours**



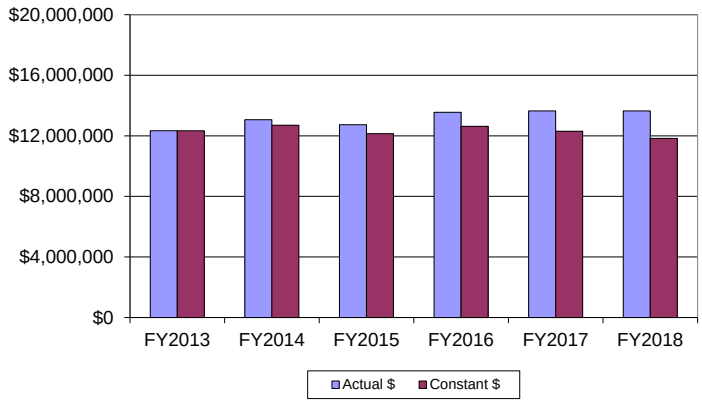

**Vehicle Service Miles**



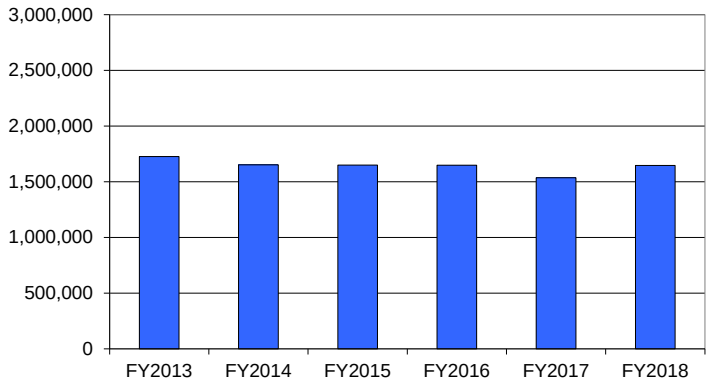
## Exhibit 4.3: Operating Cost per Passenger – Bus Service




### Operating Cost




### Unlinked Passengers



Bus Service Component Costs

In addition, year-to-year changes in selected operating cost categories over the past six years are presented in Exhibits 4.5 and 4.6. 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 vehicle service hours and Exhibit 4.6 illustrates the portion of the cost per bus service hour that can be attributed to each included cost component.

- As shown in Exhibit 4.5, between FY2013 and FY2018, there were only modest changes in most component cost categories. Overall, operating costs increased by two percent annually.

- There was an average annual increase of about 31 percent in the materials/supplies area, attributed to increased printing costs in FY2017, and facility costs instituted by a new facilities manager in FY2018.

- Casualty/liability costs increased an average of 53 percent in the area, due to market changes and a small uptick in accidents in FY2016.

- Purchased transportation costs experienced an average annual increase of 2.2 percent over the period while labor and fringe benefits costs increased an average of four percent annually.

- As shown in Exhibit 4.6, purchased transportation costs represented the largest portion of the total costs, with the share between 63 and 66 percent in all six years.

- Labor and fringe benefits costs contributed between 12 and 13 percent, and service costs between five and eight percent.

- Fuels costs decreased from about 12 percent in FY2013 to six percent in FY2018.

- All other cost categories contributed less than five percent each of total costs.

*  *  *  *  *

The following is a brief summary of the component operating costs trend highlights between FY2013 and FY2018:

- Overall, total operating costs increased an annual average of two percent. The most significant changes were a 31 and 53 percent average annual increase in the materials/supplies and casualty/liability areas, respectively, but both those areas comprised less than five percent of the total operating costs.

- Purchased transportation costs represented the largest portion of the total costs, representing between 63 to 65 percent in all six years.

- In-house labor, fringe benefits, and services costs all showed increases of less than three percent annually, while miscellaneous costs increased about five percent annually. Fuel/lubricants experienced the only cost decrease, averaging about 11 percent annually.

## Exhibit 4.5: TDA Component Costs Trends – Bus Service

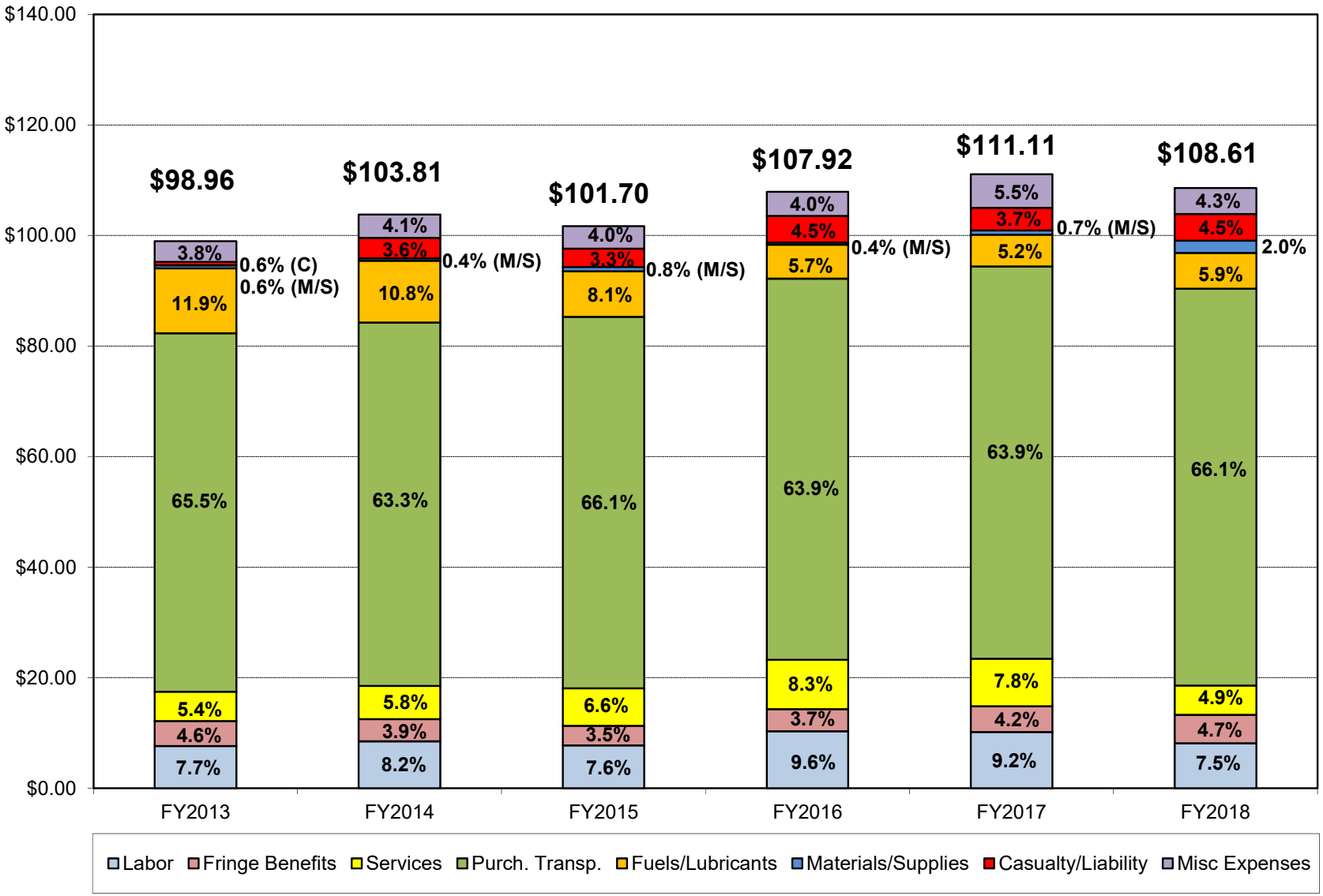
| | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | *Av. Ann. Chg.* |
|---|---|---|---|---|---|---|---|
| COST CATEGORIES | | | | | | | |
| Labor - (Salaries, Wages) | $949,800 | $1,069,649 | $972,179 | $1,294,884 | $1,252,115 | $1,026,387 | - - |
| *Annual Change* | - - | *12.6%* | *-9.1%* | *33.2%* | *-3.3%* | *-18.0%* | *1.6%* |
| Fringe Benefits | $564,112 | $506,587 | $443,452 | $503,239 | $568,893 | $640,376 | - - |
| *Annual Change* | - - | *-10.2%* | *-12.5%* | *13.5%* | *13.0%* | *12.6%* | *2.6%* |
| Services | $666,390 | $752,544 | $845,513 | $1,120,177 | $1,057,868 | $667,815 | |
| *Annual Change* | - - | *12.9%* | *12.4%* | *32.5%* | *-5.6%* | *-36.9%* | *0.0%* |
| Purchased Transportation | $8,078,745 | $8,272,858 | $8,416,907 | $8,661,419 | $8,714,347 | $9,021,116 | - - |
| *Annual Change* | - - | *2.4%* | *1.7%* | *2.9%* | *0.6%* | *3.5%* | *2.2%* |
| Fuels/Lubricants | $1,461,527 | $1,405,845 | $1,029,917 | $769,474 | $708,343 | $811,707 | - - |
| *Annual Change* | - - | *-3.8%* | *-26.7%* | *-25.3%* | *-7.9%* | *14.6%* | *-11.1%* |
| Materials/Supplies | $71,647 | $54,236 | $97,510 | $49,701 | $93,829 | $275,171 | - - |
| *Annual Change* | - - | *-24.3%* | *79.8%* | *-49.0%* | *88.8%* | *193.3%* | *30.9%* |
| Casualty/Liability | $73,613 | $469,474 | $417,526 | $608,600 | $503,795 | $608,182 | - - |
| *Annual Change* | - - | *537.8%* | *-11.1%* | *45.8%* | *-17.2%* | *20.7%* | *52.6%* |
| Misc. Expenses *(a)* | $467,526 | $531,366 | $510,069 | $547,992 | $747,570 | $593,040 | - - |
| *Annual Change* | - - | *13.7%* | *-4.0%* | *7.4%* | *36.4%* | *-20.7%* | *4.9%* |
| **Total** | $12,333,360 | $13,062,559 | $12,733,073 | $13,555,486 | $13,646,760 | $13,643,794 | - - |
| *Annual Change* | - - | *5.9%* | *-2.5%* | *6.5%* | *0.7%* | *0.0%* | *2.0%* |
| OPERATING STATISTICS | | | | | | | |
| Vehicle Service Hours | 124,635 | 125,826 | 125,201 | 125,604 | 122,825 | 125,619 | - - |
| *Annual Change* | - - | *1.0%* | *-0.5%* | *0.3%* | *-2.2%* | *2.3%* | *0.2%* |

*(a) Inclues tires/tubes, utilities, taxes, and miscellaneous expenses*

*Source: FY2013 - FY2015, prior audit; FY2016 through FY2018, NTD Reports*

## Exhibit 4.6: Distribution of Component Costs – Bus Service

*Operating Cost per Vehicle Service Hour*



Paratransit Performance Trends

This section provides an overview of the performance of LAVTA's paratransit service over the six year analysis period. The trends in the TDA indicators and input data are presented in Exhibit 5. The six-year trends are illustrated in Exhibits 5.1 through 5.3.

- Operating Cost per Vehicle Service Hour (Exhibit 5.1)
  - LAVTA's paratransit cost per hour increased from $42.30 in FY2013 to $54.55 in FY2018.
  - The largest annual increase (37.9 percent) occurred in FY2014, when operating costs increased by 12.5 percent and service hours decreased by 18.4 percent, however, the service hour data was questionable in that year.
  - Operating costs decreased in both FY2017 and FY2018, resulting in a drop in operating cost per service hour in those years, helping to offset significant operating cost increases in FY2014 and FY2016, reflecting the increase in billing rates in the FY2014 operating contract.
  - Overall, the cost per hour increased an average of 5.2 percent per year over the six years.
  - In constant FY2013 dollars, there was an average annual increase of 2.3 percent over the six years.
- Passengers per Vehicle Service Hour (Exhibit 5.2)
  - Passengers per vehicle service hour decreased slightly over the review period, with an average annual decrease of 1.3 percent, as overall annual service hours increased at a slightly higher rate than passenger levels over the six years.
  - Overall passengers per service hour declined from 1.7 passengers in FY2013 to 1.6 in FY2018, with minor fluctuations in the intervening years.

- Passengers per Vehicle Service Mile (Exhibit 5.2)

  - Performance in passengers per vehicle service mile also declined, with passengers per vehicle service mile decreasing from 0.22 in FY2013 to 0.12 in FY2018.

  - The net effect of these changes was an average annual decrease in this indicator of 11.8 percent.

  - A reporting anomaly was seen in the service mile data for FY2015, with service miles increasing 88 percent. This was caused by incorrect reporting by the paratransit contractor, which was addressed in the prior audit report. Paratransit ridership also increased over 18 percent between FY2015 and FY2016, which LAVTA attributed to an increase in its alternative transportation methods, such as ParaTaxi service.

  - The FY2015 incorrect data reporting was largely responsible for the significant average annual decrease in passengers per service mile over the six-year period. LAVTA corrected the reporting error, and passengers per service mile remained at a stable 0.12 to 0.13 passengers per mile from FY2015 through FY2018.

- Operating Cost per Passenger (Exhibit 5.3)

  - Cost effectiveness worsened, by 6.6 percent per year on average through the review period, from $25.35 per passenger in FY2013 to $34.85 in FY2018.

  - Operating costs outpaced ridership, increasing an average 8.5 percent per year over the period, while passenger levels increased by 1.8 percent per year.

  - With the impact of inflation is removed from the cost side (normalization), the result was similar with an average annual increase in cost per passenger of 3.6 percent over the six years.

*  *  *  *  *

The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:

- Cost efficiency decreased overall, with an average annual increase of 5.2 percent in the operating cost per hour (2.3 percent in inflation adjusted dollars). Operating costs increased an annual average of 8.5 percent, while at the same time, service hours increased an average 3.1 percent annually.

- The operating cost per passenger averaged an annual increase of 6.6 percent, or 3.6 percent when normalized in FY2013 dollars. Again, operating costs increased at a greater rate than passenger levels over the six-year period.

- Passenger productivity declined, with passengers per hour decreasing 1.3 percent and passengers per mile decreasing 11.8 percent per year on average. An anomaly in service miles in FY2015 caused by incorrect data reporting by the operating contractor was largely responsible for the significant decrease in passengers per service miles. Once corrected, the passengers per mile indicator stabilized over the current three-year audit period.

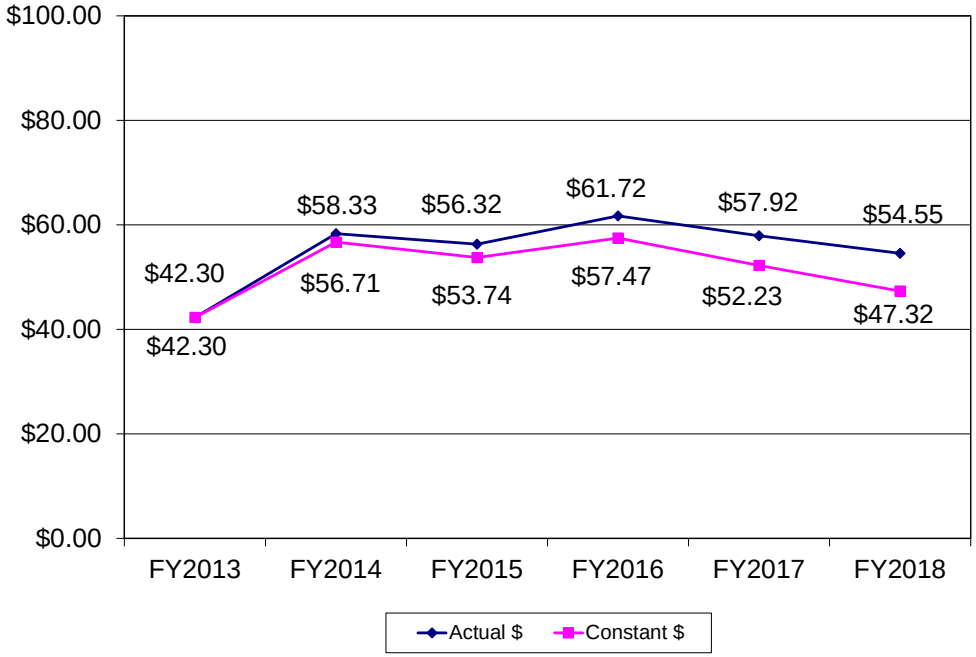
# Exhibit 5: TDA Indicator Performance – Paratransit

| | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | *Av. Ann. Chg.* |
|---|---|---|---|---|---|---|---|
| **Performance Indicators** | | | | | | | |
| Op. Cost per Vehicle Svc. Hour (Actual $) | $42.30 | $58.33 | $56.32 | $61.72 | $57.92 | $54.55 | - - |
| *Annual Change* | - - | *37.9%* | *-3.4%* | *9.6%* | *-6.2%* | *-5.8%* | *5.2%* |
| Op. Cost per Vehicle Svc. Hour (Constant $) | $42.30 | $56.71 | $53.74 | $57.47 | $52.23 | $47.32 | - - |
| *Annual Change* | - - | *34.1%* | *-5.2%* | *6.9%* | *-9.1%* | *-9.4%* | *2.3%* |
| Passengers per Vehicle Service Hour | 1.7 | 2.0 | 1.7 | 1.8 | 1.8 | 1.6 | - - |
| *Annual Change* | - - | *19.8%* | *-14.1%* | *7.2%* | *-0.3%* | *-14.7%* | *-1.3%* |
| Passengers per Vehicle Service Mile | 0.22 | 0.22 | 0.12 | 0.13 | 0.13 | 0.12 | - - |
| *Annual Change* | - - | *-1.9%* | *-43.5%* | *5.6%* | *-2.2%* | *-6.9%* | *-11.8%* |
| Op. Cost per Passenger (Actual $) | $25.35 | $29.18 | $32.80 | $33.52 | $31.54 | $34.85 | - - |
| *Annual Change* | - - | *15.1%* | *12.4%* | *2.2%* | *-5.9%* | *10.5%* | *6.6%* |
| Op. Cost per Passenger (Constant $) | $25.35 | $28.36 | $31.30 | $31.21 | $28.45 | $30.23 | - - |
| *Annual Change* | - - | *11.9%* | *10.4%* | *-0.3%* | *-8.9%* | *6.3%* | *3.6%* |
| Vehicle Service Hours per FTE | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | - - |
| *Annual Change* | - - | - - | - - | - - | - - | - - | - - |
| **Input Data** | | | | | | | |
| Operating Cost (Actual $) | $1,133,961 | $1,276,106 | $1,524,148 | $1,842,854 | $1,707,058 | $1,703,128 | - - |
| *Annual Change* | - - | *12.5%* | *19.4%* | *20.9%* | *-7.4%* | *-0.2%* | *8.5%* |
| Operating Cost (Constant $) | $1,133,961 | $1,240,579 | $1,454,240 | $1,716,016 | $1,539,486 | $1,477,233 | - - |
| *Annual Change* | - - | *9.4%* | *17.2%* | *18.0%* | *-10.3%* | *-4.0%* | *5.4%* |
| Vehicle Service Hours | 26,809 | 21,877 | 27,062 | 29,859 | 29,474 | 31,219 | - - |
| *Annual Change* | - - | *-18.4%* | *23.7%* | *10.3%* | *-1.3%* | *5.9%* | *3.1%* |
| Vehicle Service Miles | 200,561 | 199,923 | 375,873 | 421,306 | 424,072 | 411,459 | - - |
| *Annual Change* | - - | *-0.3%* | *88.0%* | *12.1%* | *0.7%* | *-3.0%* | *15.5%* |
| Unlinked Passengers | 44,741 | 43,739 | 46,461 | 54,975 | 54,121 | 48,872 | - - |
| *Annual Change* | - - | *-2.2%* | *6.2%* | *18.3%* | *-1.6%* | *-9.7%* | *1.8%* |
| Employee Full-Time Equivalents | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | *(a)* | - - |
| *Annual Change* | - - | - - | - - | - - | - - | - - | - - |
| *Bay Area CPI - Annual Change* | - - | 2.9% | 1.9% | 2.5% | 3.3% | 4.0% | - - |
| *- Cumulative Change* | - - | 2.9% | 4.8% | 7.4% | 10.9% | 15.3% | *2.9%* |

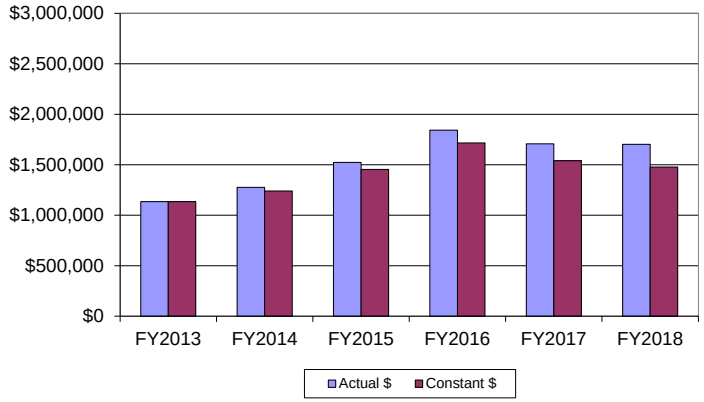
*(a) - Not applicable as LAVTA service is provided by a private contractor*

*Sources:* *FY2013 through FY2015 - Prior Performance Audit Report*
*FY2016 through FY2018 - NTD Reports*
*CPI Data - U.S. Department of Labor, Bureau of Labor Statistics*

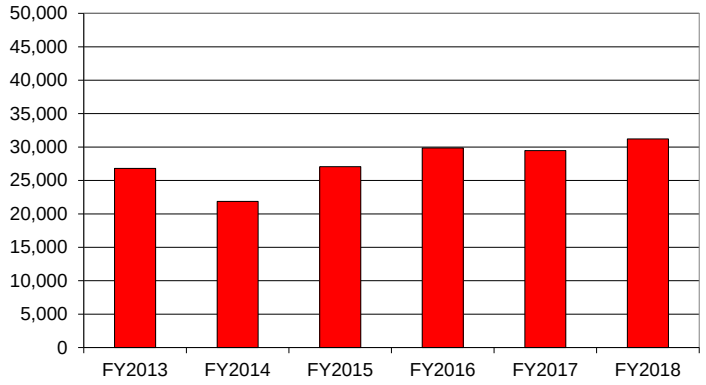
## Exhibit 5.1: Operating Cost per Vehicle Service Hour – Paratransit




**Operating Cost**

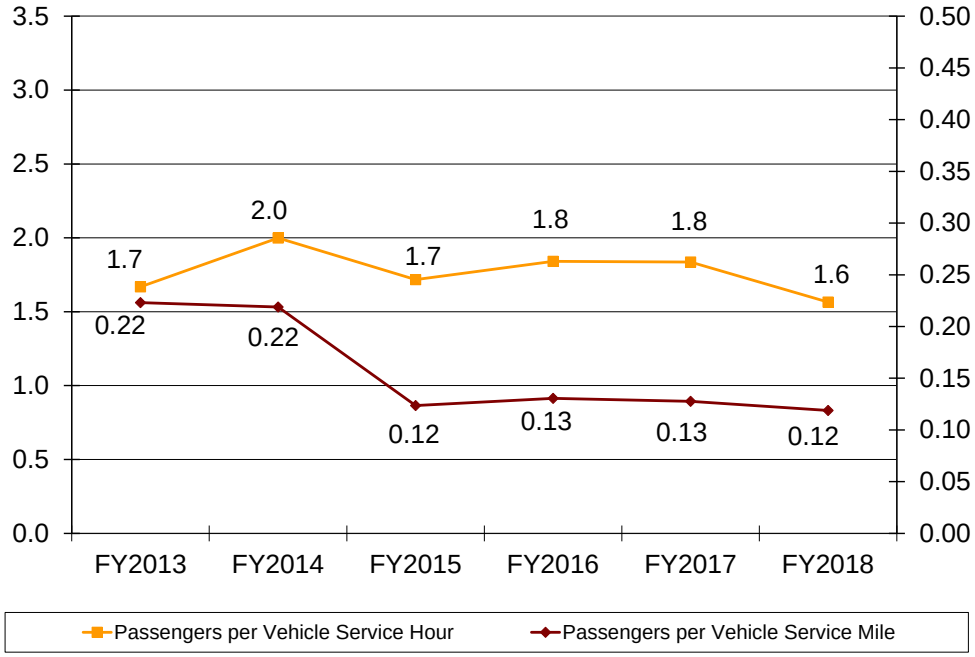



**Vehicle Service Hours**

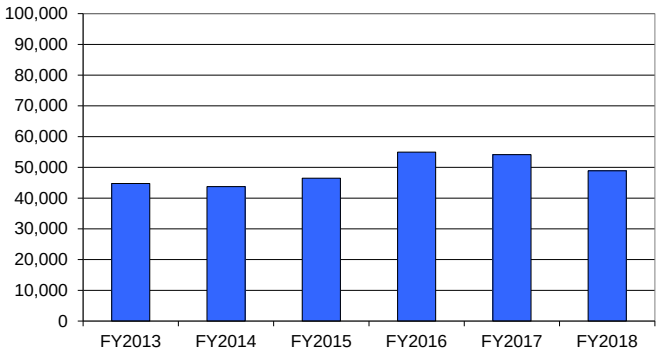


## Exhibit 5.2: TDA Indicator Performance – Paratransit

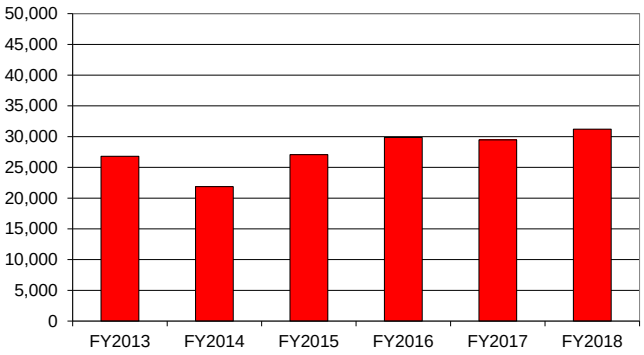
*Passengers per Hour and per Mile*



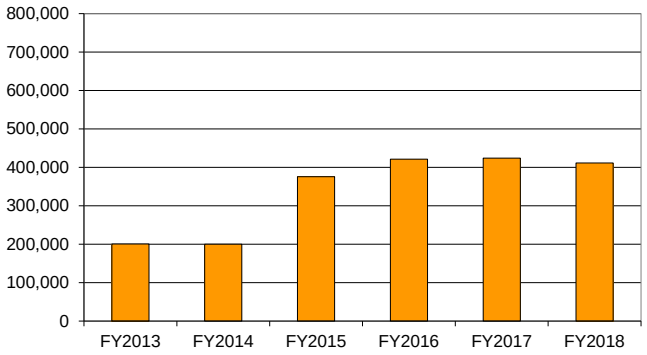

**Unlinked Passengers**



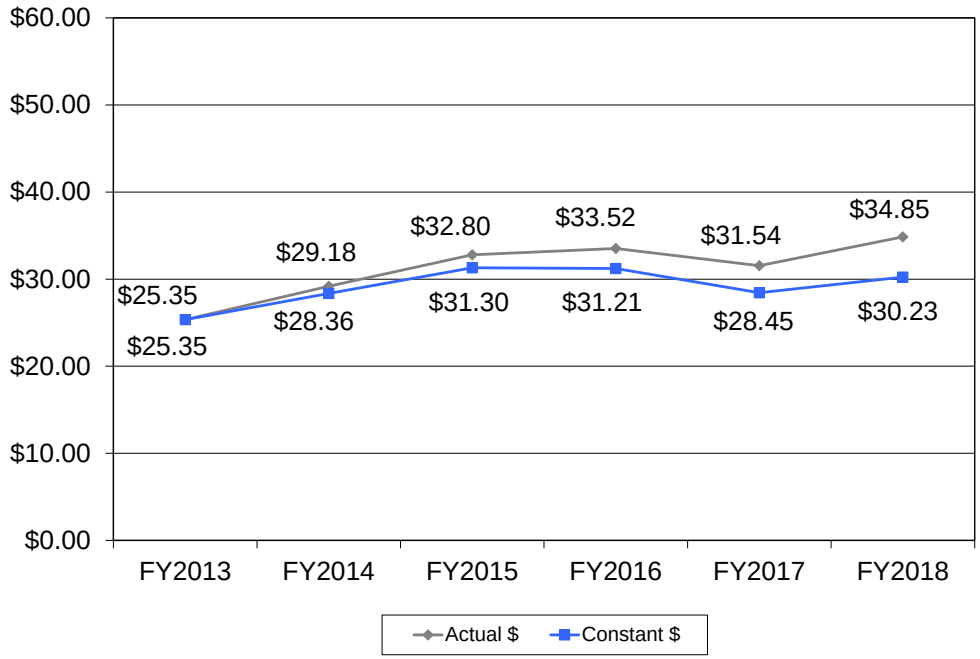

**Vehicle Service Hours**



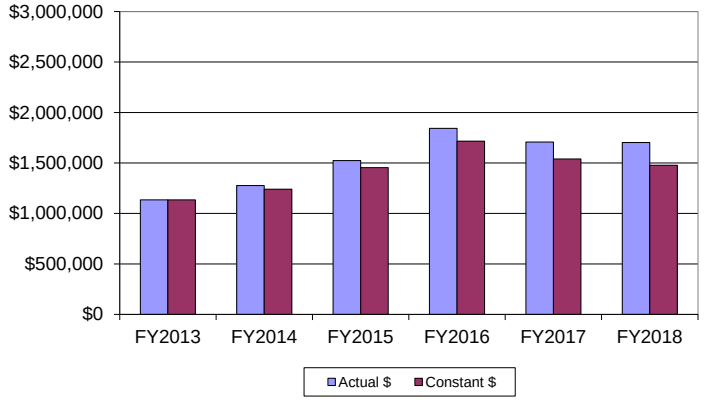

**Vehicle Service Miles**



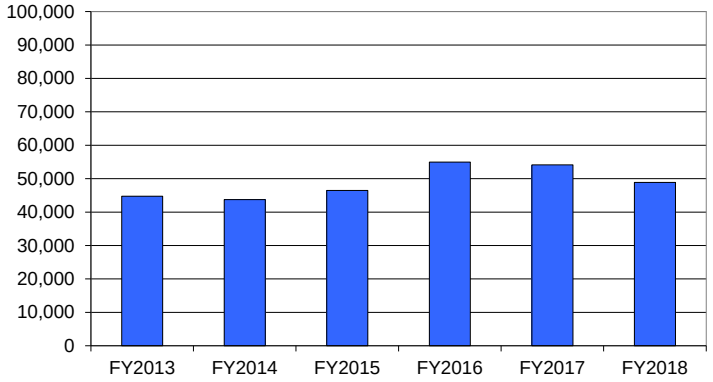
## Exhibit 5.3: Operating Cost per Passenger – Paratransit




**Operating Cost**




**Unlinked Passengers**



Paratransit Component Costs

The year-to-year changes in selected operating cost categories over the current audit period are presented in Exhibit 5.4, along with the concurrent changes in vehicle service hours. The portions of the cost per vehicle service hour that can be attributed to each included cost component are shown in Exhibit 5.5.

- As shown in Exhibit 5.4, between FY2013 and FY2018, the total annual costs increased by 8.5 percent on average.
- Operating costs increased in all cost categories, including in-house labor (6.4 percent), fringe benefits (5.5 percent), services (20.4 percent), materials/supplies (39.4 percent), casualty/liability (11.3 percent), and miscellaneous (10.3 percent).
- As shown in Exhibit 5.5, purchased transportation is by far the largest component cost category and increased an annual average of 8.2 percent.
- Purchased transportation costs as a percentage of total costs ranged from about 87 percent to 90 percent over the six-year period.

* * * * *

The following is a brief summary of the component operating costs trend highlights between FY2013 and FY2018:

- Purchased transportation costs, the largest component cost category, increased by 8.2 percent per year on average. Purchased transportation as a percentage of total costs was steady at about 87 percent to 90 percent during this period.
- Significant cost increases were seen in the services (20.4 percent), materials/supplies (39.4 percent) casualty/liability (11.3 percent) and miscellaneous other costs (10.3 percent), however, all of these categories combined comprise less than six percent of the total operating costs.

## Exhibit 5.4: TDA Component Costs Trends – Paratransit

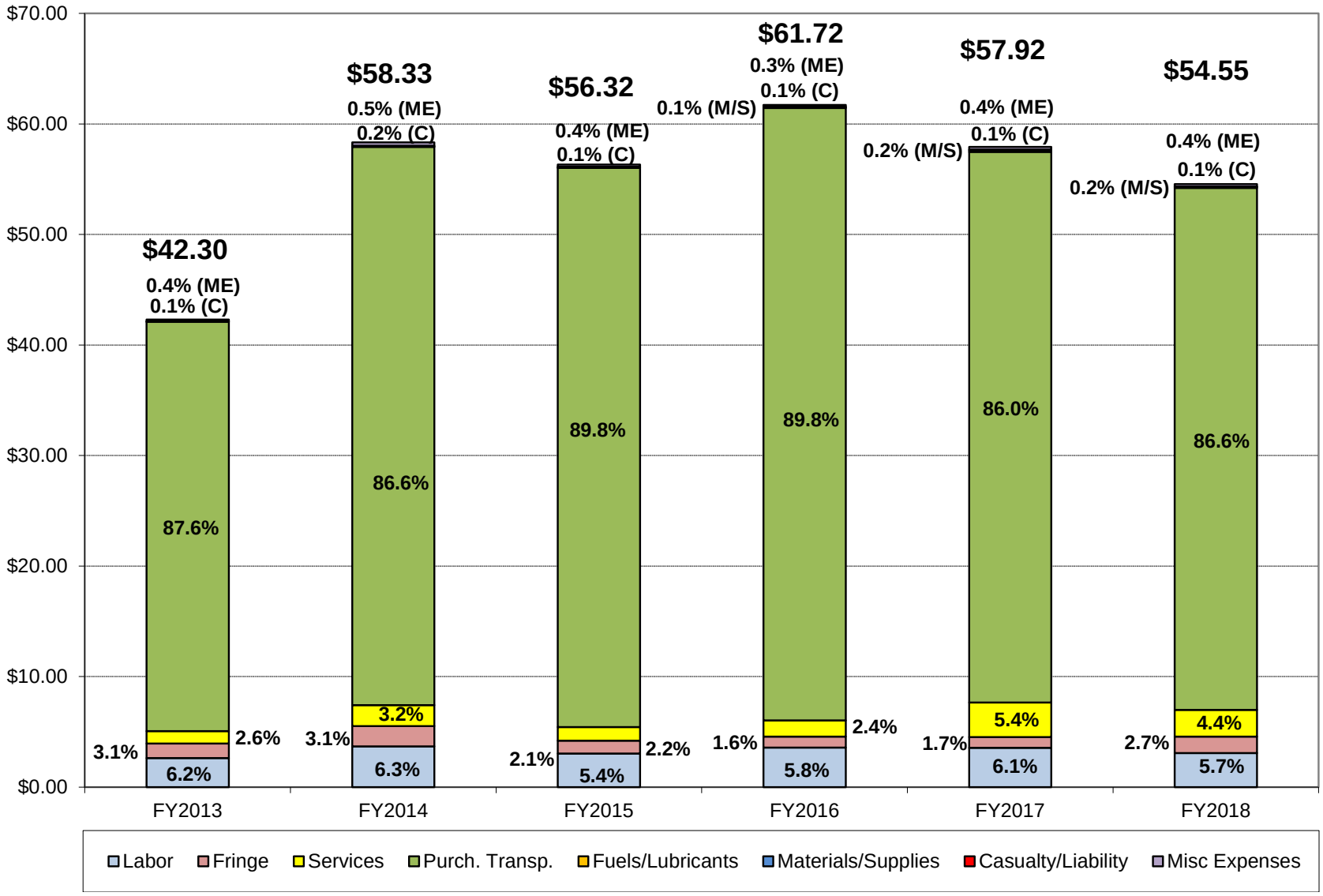
| | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | *Av. Ann. Chg.* |
|---|---|---|---|---|---|---|---|
| COST CATEGORIES | | | | | | | |
| Labor - (Salaries, Wages) | $70,676 | $80,730 | $82,332 | $106,654 | $104,784 | $96,334 | - - |
| *Annual Change* | - - | *14.2%* | *2.0%* | *29.5%* | *-1.8%* | *-8.1%* | *6.4%* |
| Fringe Benefits | $35,287 | $40,025 | $31,254 | $30,003 | $28,686 | $46,103 | - - |
| *Annual Change* | - - | *13.4%* | *-21.9%* | *-4.0%* | *-4.4%* | *60.7%* | *5.5%* |
| Services | $29,760 | $41,390 | $33,338 | $43,540 | $91,946 | $75,437 | - - |
| *Annual Change* | - - | *39.1%* | *-19.5%* | *30.6%* | *111.2%* | *-18.0%* | *20.4%* |
| Purchased Transportation | $992,824 | $1,105,069 | $1,369,069 | $1,654,054 | $1,468,134 | $1,474,484 | - - |
| *Annual Change* | - - | *11.3%* | *23.9%* | *20.8%* | *-11.2%* | *0.4%* | *8.2%* |
| Fuels/Lubricants | $0 | $0 | $0 | $0 | $0 | $0 | - - |
| *Annual Change* | - - | - - | - - | - - | - - | - - | - - |
| Materials/Supplies | $511 | $416 | $566 | $1,593 | $4,244 | $2,691 | - - |
| *Annual Change* | - - | *-18.6%* | *36.1%* | *181.4%* | *166.4%* | *-36.6%* | *39.4%* |
| Casualty/Liability | $892 | $1,953 | $2,152 | $2,254 | $2,313 | $1,523 | - - |
| *Annual Change* | - - | *118.9%* | *10.2%* | *4.7%* | *2.6%* | *-34.2%* | *11.3%* |
| Misc. Expenses *(a)* | $4,011 | $6,523 | $5,437 | $4,756 | $6,951 | $6,556 | - - |
| *Annual Change* | - - | *62.6%* | *-16.6%* | *-12.5%* | *46.2%* | *-5.7%* | *10.3%* |
| **Total** | $1,133,961 | $1,276,106 | $1,524,148 | $1,842,854 | $1,707,058 | $1,703,128 | - - |
| *Annual Change* | - - | *12.5%* | *19.4%* | *20.9%* | *-7.4%* | *-0.2%* | *8.5%* |
| OPERATING STATISTICS | | | | | | | |
| Vehicle Service Hours | 26,809 | 21,877 | 27,062 | 29,859 | 29,474 | 31,219 | - - |
| *Annual Change* | - - | *-18.4%* | *23.7%* | *10.3%* | *-1.3%* | *5.9%* | *3.1%* |

*(a) Includes utilities and miscellaneous expenses*

*Source: FY2013 - FY2015 – prior audit; FY2016 – FY2018 – NTD Report*

## Exhibit 5.5: Distribution of Component Costs – Paratransit

*Operating Cost per Vehicle Service Hour*



# IV. COMPLIANCE WITH PUC REQUIREMENTS

An assessment of LAVTA'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 LAVTA's TDA-STA claim application.

The results from this review are detailed by individual requirement in Exhibit 6. LAVTA is in compliance with all of the seven sections of the state PUC that were reviewed as part of this performance audit. These sections included requirements concerning CHP terminal safety inspections, vehicle staffing, labor contracts, reduced fares, revenue sharing, welfare-to-work transportation coordination, and evaluating passenger needs.

# 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 | In Compliance | Satisfactory Inspections:<br>• FY2016: 01/07/2016<br>• FY2017: 09/05/2017<br>• FY2018: 01/23/2019 |
| 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 fixed-route service staffing in Agreement with MV Transportation, Inc. 4/19/2018.<br>• No provision for excess paratransit service staffing in Agreement with Medical Transportation Management, Inc., 5/1/2014. |
| PUC99314.5 (e)(1)(2) | Part Time Drivers - Operators receiving STA funds are not precluded by contract from employing part-time drivers or from contracting with common carriers | In Compliance | • All applicable LAVTA services are contractor operated. |
| 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 material:<br>• LAVTA web site (www.wheelsbus.com/fares) |

| Code Reference | Operator Compliance Requirements | Compliance Finding | Verification Information |
|---|---|---|---|
| PUC99155.1<br>(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:<br>• LAVTA sells bus passes to Alameda County for distribution to qualified recipients by County agencies.<br>• LAVTA 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. |
| 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 revenue sharing/transfer agreements with:<br>• Regional Transit Discount Card – 08/28/2013 (MTC, AC Transit, BART, CCCTA, ECCTA, Golden Gate Transit, SFMTA, Rio Vista, SamTrans, Santa Rosa Transit, Sonoma Transit and VTA).<br>• Clipper MOU – 05/21/2014 (AC Transit, Golden Gate Transit, BART, SFMTA, SamTrans, VTA, Caltrain and WETA). |
| 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 | The following mechanisms are utilized to evaluate passenger needs:<br>• LAVTA Public Hearing Policies and Procedures<br>• LAVTA Short Range Transit Plan<br>• Numerous Customer Outreach Events |

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# V. PRIOR AUDIT RECOMMENDATIONS

LAVTA's prior performance audit was completed in June 2016. 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 LAVTA's responses to the recommendations made in the prior performance audit, and whether LAVTA made reasonable progress toward their implementation. There were two recommendations made in LAVTA's prior audit. A summary of the recommendations and the actions taken by LAVTA in response is presented in Exhibit 7. A determination of the status of the recommendation also is provided, using one of the following four evaluation categories:

- Implemented – appropriate actions have been taken and the issue has been sufficiently addressed.

- Implementation in Progress – actions have been taken to address the issue, but the recommendation remains open until further actions are completed.

- Not Implemented – no actions have been taken to address the issue, and the recommendation remains open.

- Closed – no actions have been taken to address the issue, but changes in circumstances have impacted the need to implement the recommendation.

LAVTA has implemented corrective actions for one of the two recommendations from the prior audit, and implementation is in progress for the second recommendation.

In the prior TDA audit, LAVTA's paratransit service data reporting was found to have several flaws. Reporting anomalies were found in paratransit vehicle service hour and vehicle service reporting in fiscal years 2014 and 2015, and data for paratransit trip cancellations and late trip cancellations data was missing for some years, which made calculating performance in these indicators difficult. It was recommended that LAVTA examine the data collection and reporting activities of its paratransit contractor to ensure that operating data are being accurately collected and reported.

LAVTA reported that its paratransit contractor installed a new paratransit software system in 2016 to collect accurate data on service miles & hours, deadhead hours & miles, and trip cancellations by specific categories. In 2017 LAVTA overhauled and audited the contractor monthly reporting. The monthly reports now include accurate data, and internal auditing checks have been placed into the report to ensure that all the data is captured and accurate. LAVTA has confirmed that definitions of data being reported are aligned with NTD and TDA definitions for data categories. LAVTA continues to audit data on a monthly basis and resolves any issues with the contractor.

A review of LAVTA's paratransit operating data for the current audit period shows that the vehicle service mile and vehicle service hour data are relatively consistent for FY2016 and FY2017. There was an anomaly noted between increased service hours and decreased service miles in FY2018 that LAVTA attributed to decreased ridership combined with a temporary overstaffing caused by the contractor hiring additional drivers, which increased hours. While the improvement in data consistency during the current audit period is a positive development, the anomaly between paratransit service

hours and miles in FY2018 indicates that LAVTA needs to continue to monitor its paratransit contractor's data collection and reporting methods to ensure consistency in the future.

On the fixed-route side, it was noted that LAVTA did not meet its fixed-route on-time performance standard in any year of the prior audit period. Fixed-route on-time performance was consistently in the 80 percent range for all three years of the audit period. It was recommended that LAVTA examine the causes of, and prepare a plan to improve the on-time performance of its fixed-route service.

LAVTA responded that it has been continually working with its operations contractor, MV Transportation, Inc. (MV) to improve the on-time performance of its bus service. LAVTA has lowered its on-time performance goal to 85 percent, which is a more realistic goal given the operating characteristics and area of its service. LAVTA also implemented the recommendations of its Comprehensive Operations Analysis in August 2018, which updated bus schedules to reflect existing running times, and improved on-time performance. An examination of LAVTA's current fixed-route on-time performance shows a gradual improvement in on-time bus performance from 80.2 percent in FY2016 to 84.6 percent in FY2018. LAVTA's bus service on-time performance has met the overall goal of 85 percent on-time in every month except one between November 2017 and June 2018.

## Exhibit 7: Status of Prior Audit Recommendations

| Recommendation | Actions Taken | Evaluation |
|---|---|---|
| 1. Ensure that data is collected and reported accurately by the paratransit contractor. | The paratransit contractor, Medical Transportation Management (MTM), installed a new paratransit software system, Novus Trip Spark, in April 2016. This allows MTM to collect accurate data on service miles & hours, deadhead hours & miles, and trip cancellations by specific categories. LAVTA has overhauled and audited MTM's monthly reporting. Internal auditing checks have been placed into the report to ensure that all the data is captured and accurate. LAVTA has confirmed with MTM that definitions of data being reported are aligned with NTD and TDA definitions for data categories. LAVTA continues to audit data on a monthly basis and resolves any issues with the contractor MTM immediately | Implementation in Progress |
| 2. Examine causes and prepare a plan for improving on-time performance of the fixed-route bus service. | LAVTA has lowered its on-time performance goal to a more realistic 85 percent. LAVTA also implemented the recommendations of its Comprehensive Operations Analysis in August 2016, which updated bus schedules to reflect existing running times, and improved on-time performance. LAVTA's current fixed-route on-time performance improved from 80.2 percent in FY2016 to 84.6 percent in FY2018. LAVTA's bus service on-time performance has met the overall goal of 85 percent on-time in every month except one between November 2017 and June 2018. | Implemented |

# VI. FUNCTIONAL PERFORMANCE

To further assess LAVTA'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 LAVTA or for which input data were maintained by LAVTA 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 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 the indicators performance by mode (Systemwide, Bus Service and Paratransit), each followed by an exhibit illustrating the indicators by function as applicable.

Systemwide

For the purposes of this review, LAVTA's functional indicators relating to Management, Administration and Marketing have been included on a systemwide basis. Audit period performance is discussed below and presented in Exhibit 8.

- Administrative costs averaged between 27 to 29 percent of total operating costs, ranging between $26.71 and $28.57 per vehicle service hour. The overall three-year trend was up about eight percent.

- The portion of administrative costs attributed to marketing activities increased from 9.2 percent to 13 percent. In terms of passenger trips, marketing costs showed an increase from $0.22 and $0.34 per passenger trip over the period.

- The systemwide farebox recovery ratio increased from 14.5 percent in FY2016 to 15.4 percent in FY2018.

* * * * *

The following is a brief summary of the systemwide functional trend highlights between FY2016 and FY2018:

- Administrative costs increased slightly to about 30 percent of total operating costs, averaging between $26 and $29 per vehicle service hour.

- Marketing costs increased to 13 percent of total administrative costs, with marketing cost per passenger trip increasing from $0.22 to $0.34.

- The systemwide farebox recovery ratio increased from 14.5 to 15.4 percent.

## Exhibit 8: Functional Performance Trends – Systemwide (All Modes)

| FUNCTION/Indicator | Actual Performance | | |
|---|---|---|---|
| | FY2016 | FY2017 | FY2018 |
| **MANAGEMENT, ADMINISTRATION & MARKETING** | | | |
| Administrative Cost/Total Operating Cost | 27.0% | 28.3% | 29.2% |
| *Annual Percent Change* | - - | *4.9%* | *3.2%* |
| *Three Year Percent Change* | - - | - - | *8.3%* |
| Adminstrative Cost/Vehicle Service Hour | $26.71 | $28.51 | $28.57 |
| *Annual Percent Change* | - - | *6.8%* | *0.2%* |
| *Three Year Percent Change* | - - | - - | *7.0%* |
| Marketing Cost/Total Administrative Cost | 9.2% | 17.3% | 13.0% |
| *Annual Percent Change* | - - | *88.6%* | *-24.8%* |
| *Three Year Percent Change* | - - | - - | *41.8%* |
| Marketing Cost/Unlinked Passenger Trip | $0.22 | $0.47 | $0.34 |
| *Annual Percent Change* | - - | *111.3%* | *-27.3%* |
| *Three Year Percent Change* | - - | - - | *53.7%* |
| Farebox Recovery Ratio (Farebox Rev./Oper. Cost) | 14.5% | 13.7% | 15.4% |
| *Annual Percent Change* | - - | *-5.9%* | *12.3%* |
| *Three Year Percent Change* | - - | - - | *5.7%* |

Bus Service

LAVTA's bus service functional area trends represent areas of cost efficiency, safety, productivity and service reliability. Audit period performance is discussed below and presented in Exhibit 9.

- Service Planning
  - Total operating cost per passenger mile increased modestly by 8.2 percent overall, from $1.66 in FY2016 to $1.79 in FY2018.
  - LAVTA's bus farebox recovery ratio increased from 14.8 percent to 15.7 percent. TDA Article 4 operating ratio, reflecting farebox revenue plus local support, decreased slightly over the period from 34.6 percent to 33.7 percent between FY2016 and FY2018.
  - Vehicle miles traveled in service increased from about 86 percent to 88 percent, with a similar gain in vehicle hours in service from 91 percent to 92 percent over the three years.
  - There were 0.9 passengers carried per service mile and about 13 passengers per service hour in all three years.
- Operations
  - Vehicle operating costs share of total operating costs increased from 47.7 percent in FY2016 to 50.1 percent in FY2018.
  - Vehicle operations costs per service hour increased in each year, from $51.50 in FY2016 to $54.43 in FY2018.
  - Schedule adherence improved from approximately 80 percent to 85 percent between FY2016 and FY2018.
  - The incidence of valid complaints per 100,000 riders increased from 6.6 to 10.8, attributed to increased complaints from the changes to the bus service due to implementing the COA in FY2016, and overcrowded

buses due to increased use of the school tripper service. Commendations remained steady at about one per 100,000 riders. Missed trips as percentage of total trips remained very low throughout the period, accounting for less than one-tenth of one percent each year.

- Maintenance

  - Total maintenance costs share of total operating costs decreased from 25.2 percent in FY2016 to 21.1 percent in FY2018.

  - Vehicle maintenance costs per service mile increased over the audit period from $1.22 to $1.35, about ten percent.

  - LAVTA decreased its vehicle spare ratio from about 26 percent in the first two years to about 22 percent in the last year.

  - Service reliability results were mixed. The mean distance between major failures decreased slightly overall, from 19,869 miles to 18,718 miles, about six percent. Distance between all failures decreased about 11 percent over the audit period, although there was an improvement in both these indicators between FY2016 and FY2017, before declining again in FY2018. These numbers were attributed to a new failure tracking system which increased the number of incidents recorded as failures in FY2018. In the past they would have been recorded as loss of service incidents, not failures.

- Safety

  - The rate of preventable accidents decreased overall by over 33 percent during the period, from 1.2 accidents per 100,000 miles in FY2016 to 0.8 accidents in the last two years.

* * * * *

The following is a brief summary of the bus service functional trend highlights between FY2016 and FY2018:

- Service Planning results displayed a moderate eight percent increase in operating cost per passenger mile, consistent rates of about 88 and 91 percent vehicle miles and hours in service, and steady rates of passengers per mile and hour. Farebox recovery increased from 15 to 16 percent, while the TDA Article 4 operating ratio (including local support) decreased slightly from 35 to 34 percent.

- Operations experienced about a five percent increase in both percentage of vehicle operations cost to total operating cost, and in vehicle operations cost per hour. Schedule adherence improved from 80 to 85 percent, while valid complaints increased from seven to eleven per 100,000 passenger trips. The number of commendations remained steady and there were almost no missed trips.

- Maintenance results showed vehicle maintenance costs decreasing as a percentage of total operating cost, but maintenance costs per service mile increasing by about ten percent. The bus spare ratio decreased from about 26 to 22 percent. The total mechanical failure rate varied from year to year, but overall, the mean distance between major failures decreased about six percent, while distance between all failures decreased about 11 percent. The decrease in miles between failures is attributed to a new failure tracking methodology which increased the number of failures recorded in FY2018 that would not have been recorded under the old tracking system.

- Safety performance resulted in preventable accidents per 100,000 miles decreasing from 1.2 to 0.8 over the audit period.

## Exhibit 9: Functional Performance Trends – Bus Service

| FUNCTION/Indicator | Actual Performance | | |
|---|---|---|---|
| | FY2016 | FY2017 | FY2018 |
| **SERVICE PLANNING** | | | |
| Total Operating Cost/Passenger Mile | $1.66 | $1.93 | $1.79 |
| *Annual Percent Change* | - - | *16.1%* | *-6.8%* |
| *Three Year Percent Change* | - - | - - | *8.2%* |
| Farebox Recovery Ratio (Farebox Rev./Oper. Cost) | 14.8% | 13.7% | 15.7% |
| *Annual Percent Change* | - - | *-7.3%* | *14.4%* |
| *Three Year Percent Change* | - - | - - | *6.0%* |
| TDA Recovery Ratio *(a)* | 34.6% | 33.1% | 33.7% |
| *Annual Percent Change* | - - | *-4.5%* | *1.9%* |
| *Three Year Percent Change* | - - | - - | *-2.6%* |
| Vehicle Service Miles/Total Miles | 86.2% | 88.9% | 88.1% |
| *Annual Percent Change* | - - | *3.1%* | *-0.8%* |
| *Three Year Percent Change* | - - | - - | *2.3%* |
| Vehicle Service Hours/Total Hours | 90.6% | 91.6% | 91.8% |
| *Annual Percent Change* | - - | *1.1%* | *0.2%* |
| *Three Year Percent Change* | - - | - - | *1.3%* |
| Passengers/Vehicle Service Mile | 0.9 | 0.9 | 0.9 |
| *Annual Percent Change* | - - | *-3.9%* | *5.9%* |
| *Three Year Percent Change* | - - | - - | *1.7%* |
| Passengers/Vehicle Service Hour | 13.1 | 12.5 | 13.1 |
| *Annual Percent Change* | - - | *-4.7%* | *4.8%* |
| *Three Year Percent Change* | - - | - - | *-0.1%* |
| **OPERATIONS** | | | |
| Vehicle Operations Cost/Total Operating Cost | 47.7% | 48.5% | 50.1% |
| *Annual Percent Change* | - - | *1.6%* | *3.3%* |
| *Three Year Percent Change* | - - | - - | *5.0%* |
| Vehicle Operations Cost/Vehicle Service Hour | $51.51 | $54.00 | $54.43 |
| *Annual Percent Change* | - - | *4.8%* | *0.8%* |
| *Three Year Percent Change* | - - | - - | *5.7%* |
| On-Time Percentage | 80.2% | 81.3% | 84.6% |
| *Annual Percent Change* | - - | *1.4%* | *4.1%* |
| *Three Year Percent Change* | - - | - - | *5.5%* |
| Valid Complaints/100,000 Unlinked Passenger Trips | 6.6 | 13.9 | 10.8 |
| *Annual Percent Change* | - - | *111.7%* | *-22.1%* |
| *Three Year Percent Change* | - - | - - | *65.0%* |
| Commendations/100,000 Unlinked Passenger Trips | 1.1 | 1.6 | 1.0 |
| *Annual Percent Change* | - - | *49.1%* | *-36.6%* |
| *Three Year Percent Change* | - - | - - | *-5.5%* |
| Missed Trips/Total Trips | 0.010% | 0.024% | 0.033% |
| *Annual Percent Change* | - - | *137.3%* | *35.6%* |
| *Three Year Percent Change* | - - | - - | *221.8%* |

*(a) - Farebox Revenue plus Local Support/Operating Cost less TDA Allowable Exclusions*

| FUNCTION/Indicator | Actual Performance | | |
|---|---|---|---|
| | FY2016 | FY2017 | FY2018 |
| **MAINTENANCE** | | | |
| Vehicle + Non-Veh. Maint. Cost/Total Operating Cost | 25.2% | 24.1% | 21.1% |
| *Annual Percent Change* | - - | *-4.4%* | *-12.7%* |
| *Three Year Percent Change* | - - | - - | *-16.6%* |
| Vehicle Maintenance Cost/Vehicle Service Mile | $1.22 | $1.26 | $1.35 |
| *Annual Percent Change* | - - | *3.6%* | *6.9%* |
| *Three Year Percent Change* | - - | - - | *10.7%* |
| Spare Vehicles/Total Vehicles | 25.8% | 25.4% | 21.7% |
| *Annual Percent Change* | - - | *-1.4%* | *-14.7%* |
| *Three Year Percent Change* | - - | - - | *-15.9%* |
| Mean Distance between Major Failures (Miles) | 19,869 | 25,563 | 18,718 |
| *Annual Percent Change* | - - | *28.7%* | *-26.8%* |
| *Three Year Percent Change* | - - | - - | *-5.8%* |
| Mean Distance between All Failures (Miles) | 17,662 | 23,129 | 15,747 |
| *Annual Percent Change* | - - | *31.0%* | *-31.9%* |
| *Three Year Percent Change* | - - | - - | *-10.8%* |
| **SAFETY** | | | |
| Preventable Accidents/100,000 Vehicle Miles | 1.2 | 0.8 | 0.8 |
| *Annual Percent Change* | - - | *-36.2%* | *4.4%* |
| *Three Year Percent Change* | - - | - - | *-33.3%* |

Paratransit

LAVTA's paratransit functional area trends represent mostly similar areas to the bus service. Audit period performance is discussed below and presented in Exhibit 10.

- Service Planning

  - Total operating cost per passenger mile increased over 55 percent, from $3.29 in FY2016 to $5.12 in FY2018, due to a significant (42 percent) decrease in passenger miles between FY2016 and FY2017. This was caused by incorrect NTD passenger mile reporting in FY2016, due to inaccurate data from the paratransit contractor's old scheduling software. As noted earlier, the contractor replaced its software in 2016.

  - Farebox recovery ratio was relatively stable around 13 percent throughout the audit period, while the TDA Article 4 operating ratio, reflecting farebox revenue plus local support, increased from 36.9 percent to 42.7 percent between FY2016 and FY2018. Vehicle service miles increased from 85 percent to 92 percent of total miles traveled, while vehicle service hours showed a similar pattern, increasing from about 93 percent to 96 percent of total vehicle hours in service.

  - Passengers per service mile and passengers per service hour both remained steady with only minor decreases seen in FY2018.

- Operations

  - Vehicle operating costs share of total operating costs decreased from 65.4 percent in FY2016 to 58.9 percent in FY2018.

  - Vehicle operations cost per service hour decreased over 20 percent from about $40 in FY2016 to about $32 in FY2018.

  - Schedule adherence decreased from about 97 percent in the first two years to 90 percent in FY2018.

  - Valid complaints per 1,000 passengers increased significantly between FY2017 and FY2018, but remained a relatively small number. The

incidence of both commendations and missed trips was very small throughout the period.

- There were no ADA trip denials reported.

- The rates of trip cancellations and passenger no-shows both decreased overall, while the incidence of late trip cancellations more than doubled over the audit period, but still remained a relatively small number, at less than four percent of total ADA trips.

- While late trip cancellations have increased significantly, LAVTA only pays its contractor for trips completed. While beyond the scope of the TDA audit, LAVTA should still monitor its late cancellation rate, as it could impact its capacity to deliver ADA required services.

- Maintenance

  - Total maintenance costs share of total operating costs increased from 8.0 percent in FY2016 to 8.9 percent in FY2018.

  - Vehicle maintenance costs per service mile remained mostly stable during the audit period, increasing from $0.28 to $0.30.

  - The vehicle spare ratio decreased significantly from 60.5 percent in FY2016 to 21.1 percent in FY2018. This was due to an NTD input error for the number of vehicles in FY2016.

  - The incidence of paratransit major and total failures increased dramatically between FY2016 and FY2017, before decreasing to more normal levels in FY2018. LAVTA reports its contractor severed contracts with some of their subcontractors in FY2017 due to consistent breakdowns of vehicles. The incidence of mechanical failures declined in FY2018.

- Safety

  - There were no preventable accidents reported for FY2016 and FY2017, and only two reported in FY2018.

*  *  *  *  *

The following is a brief summary of the paratransit functional trend highlights between FY2016 and FY2018:

- Service Planning results showed a significant increase in operating costs per passenger mile, which is attributed to incorrect passenger mile data in NTD for FY2016, caused by errors in the contractor's scheduling software. The contractor updated their software in late FY2016. Farebox recovery remained stable at about 13 percent while TDA recovery ratio (including local support), increased almost 16 percent. There was improvement in both vehicle miles in service and vehicle hours in service during the audit period. Both passengers per mile and hour were almost unchanged.

- Operations results included about a ten percent decrease in percentage of vehicle operations cost to total operating cost, and a 20 percent decrease in vehicle operations costs per hour. Schedule adherence was steady in FY2016 and FY2017, but decreased by almost eight percent in FY2018. Valid passenger complaints increased between FY2016 and FY2018 to just over one per 1,000 passenger trips. There were a very small percentage of both passenger commendations and missed trips during the audit period.

- There were no ADA trip denials reported during the period. Trip cancellations and passenger no-shows both decreased, but late trip cancellations increased from 1.4 percent to 3.2 percent over the audit period.

- Maintenance results revealed total vehicle maintenance costs slightly increasing as a percentage of total operating cost, and maintenance costs per service mile increasing by about seven percent. The vehicle spare ratio decreased over 65 percent, due to an NTD reporting error in FY2016, and large fluctuations were seen in the mechanical failure rates. LAVTA's contractor severed contracts with some of their subcontractors in FY2017 due to consistent breakdowns of vehicles, improving performance in FY2018.

- Safety performance had zero preventable accidents in FY2016 and FY2017, and only two preventable accidents in FY2018.

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## Exhibit 10 : Functional Performance Trends – Paratransit

| FUNCTION/Indicator | Actual Performance | | |
|---|---|---|---|
| | FY2016 | FY2017 | FY2018 |
| **SERVICE PLANNING** | | | |
| Total Operating Cost/Passenger Mile | $3.29 | $5.24 | $5.12 |
| *Annual Percent Change* | - - | *59.0%* | *-2.3%* |
| *Three Year Percent Change* | - - | - - | *55.3%* |
| Farebox Recovery Ratio (Farebox Rev./Oper. Cost) | 12.6% | 13.1% | 12.8% |
| *Annual Percent Change* | - - | *4.0%* | *-2.8%* |
| *Three Year Percent Change* | - - | - - | *1.1%* |
| TDA Recovery Ratio *(a)* | 36.9% | 40.2% | 42.7% |
| *Annual Percent Change* | - - | *9.2%* | *6.0%* |
| *Three Year Percent Change* | - - | - - | *15.7%* |
| Vehicle Service Miles/Total Miles | 84.5% | 93.4% | 91.9% |
| *Annual Percent Change* | - - | *10.5%* | *-1.6%* |
| *Three Year Percent Change* | - - | - - | *8.7%* |
| Vehicle Service Hours/Total Hours | 92.7% | 96.6% | 96.1% |
| *Annual Percent Change* | - - | *4.2%* | *-0.5%* |
| *Three Year Percent Change* | - - | - - | *3.7%* |
| Passengers/Vehicle Service Mile | 0.13 | 0.13 | 0.12 |
| *Annual Percent Change* | - - | *-2.2%* | *-6.9%* |
| *Three Year Percent Change* | - - | - - | *-9.0%* |
| Passengers/Vehicle Service Hour | 1.8 | 1.8 | 1.6 |
| *Annual Percent Change* | - - | *-0.3%* | *-14.7%* |
| *Three Year Percent Change* | - - | - - | *-15.0%* |
| **OPERATIONS** | | | |
| Vehicle Operations Cost/Total Operating Cost | 65.4% | 55.1% | 58.9% |
| *Annual Percent Change* | - - | *-15.8%* | *7.0%* |
| *Three Year Percent Change* | - - | - - | *-9.9%* |
| Vehicle Operations Cost/Vehicle Service Hour | $40.38 | $31.91 | $32.15 |
| *Annual Percent Change* | - - | *-21.0%* | *0.7%* |
| *Three Year Percent Change* | - - | - - | *-20.4%* |
| On-Time Percentage | 96.8% | 96.7% | 89.5% |
| *Annual Percent Change* | - - | *-0.1%* | *-7.4%* |
| *Three Year Percent Change* | - - | - - | *-7.5%* |
| Valid Complaints/1,000 Unlinked Passenger Trips | 0.51 | 0.15 | 1.21 |
| *Annual Percent Change* | - - | *-71.0%* | *716.7%* |
| *Three Year Percent Change* | - - | - - | *137.0%* |
| Commedations/1,000 Unlinked Passenger Trips | 0.05 | 0.02 | 0.04 |
| *Annual Percent Change* | | *-66.1%* | *121.5%* |
| *Three Year Percent Change* | | | *-25.0%* |
| Missed Trips/Total Trips | 0.019% | 0.006% | 0.018% |
| *Annual Percent Change* | - - | - - | *208.3%* |
| *Three Year Percent Change* | - - | - - | *-4.7%* |

*(a) Farebox Revenue plus Local Support/Operating Cost Less TDA Allowable Exclusions*

| FUNCTION/Indicator | Actual Performance | | |
|---|---|---|---|
| | FY2016 | FY2017 | FY2018 |
| **OPERATIONS, *continued*** | | | |
| ADA Trip Denials/Total ADA Trips | 0.0% | 0.0% | 0.0% |
| *Annual Percent Change* | - - | - - | - - |
| *Three Year Percent Change* | - - | - - | - - |
| Trip Cancellations/Total ADA Trips | 28.3% | 24.9% | 24.5% |
| *Annual Percent Change* | - - | *-12.1%* | *-1.6%* |
| *Three Year Percent Change* | - - | - - | *-13.5%* |
| Late Trip Cancellations/Total ADA Trips | 1.4% | 3.6% | 3.2% |
| *Annual Percent Change* | - - | *156.8%* | *-10.1%* |
| *Three Year Percent Change* | - - | - - | *130.9%* |
| No-Shows/Total ADA Trips | 5.0% | 2.5% | 3.1% |
| *Annual Percent Change* | - - | *-50.6%* | *25.1%* |
| *Three Year Percent Change* | - - | - - | *-38.2%* |
| **MAINTENANCE** | | | |
| Vehicle + Non-Veh. Maint. Cost/Total Operating Cost | 8.0% | 8.1% | 8.9% |
| *Annual Percent Change* | - - | *0.7%* | *10.0%* |
| *Three Year Percent Change* | - - | - - | *10.8%* |
| Vehicle Maintenance Cost/Vehicle Service Mile | $0.28 | $0.26 | $0.30 |
| *Annual Percent Change* | - - | *-4.6%* | *12.5%* |
| *Three Year Percent Change* | - - | - - | *7.3%* |
| Spare Vehicles/Total Vehicles | 60.5% | 20.0% | 21.1% |
| *Annual Percent Change* | - - | *-67.0%* | *5.3%* |
| *Three Year Percent Change* | - - | - - | *-65.2%* |
| Mean Dist. betw. Major Failures (Miles) | 249,247 | 30,278 | 897,466 |
| *Annual Percent Change* | - - | *-87.9%* | *2864.1%* |
| *Three Year Percent Change* | - - | - - | *260.1%* |
| Mean Dist. betw. All Failures (Miles) | 124,623 | 18,167 | 29,852 |
| *Annual Percent Change* | - - | *-85.4%* | *64.3%* |
| *Three Year Percent Change* | - - | - - | *-76.0%* |
| **SAFETY** | | | |
| Preventable Accidents/100,000 Vehicle Miles | 0.00 | 0.00 | 0.45 |
| *Annual Percent Change* | - - | - - | *100.0%* |
| *Three Year Percent Change* | - - | - - | *100.0%* |

# VII. CONCLUSIONS AND RECOMMENDATIONS

This report has presented the findings of the performance audit of LAVTA's transit service performance during the three-year period of FY2016 through FY2018 (July 1, 2015 through June 30, 2018). It has focused on TDA compliance issues including trends in TDA-mandated performance indicators and compliance with selected sections of the state Public Utilities Code (PUC). It also provided the findings from an overview of LAVTA'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 – LAVTA is in compliance with the data collection and reporting requirements for these performance indicators; however, LAVTA has had some difficulties with inconsistencies with data reporting for paratransit service.

  Paratransit vehicle service hours and vehicle service miles exhibited significant irregularities in FY2014 and FY2015. LAVTA changed paratransit contractors in FY2014, which may account for some of the reporting issues. LAVTA indicated that the paratransit contractor's data reporting system did not produce results that were easily transferrable to the NTD reporting database. To correct this, LAVTA's contractor implemented a new software system in 2016.

  A review of LAVTA's current paratransit reporting shows more consistent data reporting for service hours and miles for both FY2016 and FY2017, however, there was an inconsistency between hours and miles in FY2018. Vehicle service hours increased 5.9 percent while vehicle service miles decreased 3.0 percent. LAVTA responded that this was due to a significant

reduction in ridership, which decreased service miles, and their contractor, MTM, hiring additional subcontractors to correct a shortage of drivers. The procurement of additional subcontractors resulted in a temporary oversupply of drivers, causing hours to rise that same year.

Although the decrease in ridership corroborates the decrease in service miles, the increase in service hours is not consistent with the evidence provided. Passenger productivity has decreased, and passenger miles dropped over the last two years, which follows the decrease in ridership. The addition of subcontractors to the paratransit service would not counter the decline in passengers to the extent seen in the service hour data.

- TDA Performance Trends

LAVTA'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 for the current audit period.

Bus Service – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:

– Cost efficiency decreased slightly, with an average annual increase in the operating cost per hour of 1.9 percent. Performance in this indicator improved when using inflation adjusted dollars, with a one percent annual average decrease. The largest annual increase (6.1 percent) occurred in FY2016.

– The cost per passenger increased on average by 3.0 percent per year, which amounted to a relatively flat average annual increase of 0.1 percent in constant FY2013 dollars.

– Passenger productivity showed slightly negative trends, with passengers per vehicle service hour decreasing by about one percent per year and passengers per vehicle service mile almost unchanged, decreasing by 0.1 percent per year.

– As LAVTA contracts for all its transit services, the indicator for employee productivity is not applicable for this audit.

The following is a brief summary of the component operating costs trend highlights for the bus service between FY2013 and FY2018:

- Overall, total operating costs increased an annual average of two percent. The most significant changes were a 31 and 53 percent average annual increase in the materials/supplies and casualty/liability areas, respectively, but both those areas comprised less than five percent of the total operating costs.

- Purchased transportation costs represented the largest portion of the total costs, representing between 63 to 65 percent in all six years.

- In-house labor, fringe benefits, and services costs all showed increases of less than three percent annually, while miscellaneous costs increased about five percent annually. Fuel/lubricants experienced the only cost decrease, averaging about 11 percent annually.

Paratransit Service – The following is a brief summary of the TDA performance trend highlights over the six-year period of FY2013 through FY2018:

- Cost efficiency decreased overall, with an average annual increase of 5.2 percent in the operating cost per hour (2.3 percent in inflation adjusted dollars). Operating costs increased an annual average of 8.5 percent, while at the same time, service hours increased an average 3.1 percent annually.

- The operating cost per passenger averaged an annual increase of 6.6 percent, or 3.6 percent when normalized in FY2013 dollars. Again, operating costs increased at a greater rate than passenger levels over the six-year period.

- Passenger productivity declined, with passengers per hour decreasing 1.3 percent and passengers per mile decreasing 11.8 percent per year on average. An anomaly in service miles in FY2015 caused by incorrect data reporting by the operating contractor was largely responsible for the significant decrease in passengers per

service mile. Once corrected, the passengers per mile indicator stabilized over the current three-year audit period.

The following is a brief summary of the component operating costs trend highlights for paratransit between FY2013 and FY2018:

- Purchased transportation costs, the largest component cost category, increased by 8.2 percent per year on average. Purchased transportation as a percentage of total costs was steady at about 87 percent to 90 percent during this period.

- Significant cost increases were seen in the services (20.4 percent), materials/supplies (39.4 percent) casualty/liability (11.3 percent) and miscellaneous other costs (10.3 percent), however, all of these categories combined comprise less than six percent of the total operating costs.

- PUC Compliance – LAVTA is in compliance with all of the seven sections of the state PUC that were reviewed as part of this performance audit. These sections included requirements concerning CHP terminal safety inspections, vehicle staffing, labor contracts, reduced fares, revenue sharing, welfare-to-work transportation coordination, and evaluating passenger needs.

- Status of Prior Audit Recommendations – There were two recommendations in the prior LAVTA audit report. LAVTA has implemented corrective actions for one of the two recommendations from the prior audit, and implementation is in progress for the second recommendation.

  In the prior TDA audit, LAVTA's paratransit service data reporting was found to have several flaws. Reporting anomalies were found in paratransit vehicle service hour and vehicle service reporting in fiscal years 2014 and 2015, and data for paratransit trip cancellations and late trip cancellations data was missing for some years, which made calculating performance in these indicators difficult. It was recommended that LAVTA examine the data collection and reporting activities of its paratransit contractor to ensure that operating data are being accurately collected and reported.

LAVTA reported that its paratransit contractor installed a new paratransit software system in 2016 to collect accurate data on service miles & hours, deadhead hours & miles, and trip cancellations by specific categories. In 2017 LAVTA overhauled and audited the contractor monthly reporting. The monthly reports now include accurate data, and internal auditing checks have been placed into the report to ensure that all the data is captured and accurate. LAVTA has confirmed that definitions of data being reported are aligned with NTD and TDA definitions for data categories. LAVTA continues to audit data on a monthly basis and resolves any issues with the contractor.

A review of LAVTA's paratransit operating data for the current audit period shows that the vehicle service mile and vehicle service hour data are relatively consistent for FY2016 and FY2017. There was an anomaly noted between increased service hours and decreased service miles in FY2018 that LAVTA attributed to decreased ridership combined with a temporary overstaffing caused by the contractor hiring additional drivers, which increased hours. While the improvement in data consistency during the current audit period is a positive development, the anomaly between paratransit service hours and miles in FY2018 indicates that LAVTA needs to continue to monitor its paratransit contractor's data collection and reporting methods to ensure consistency in the future.

On the fixed-route side, it was noted that LAVTA did not meet its fixed-route on-time performance standard in any year of the prior audit period. Fixed-route on-time performance was consistently in the 80 percent range for all three years of the audit period.

LAVTA responded that it has been continually working with its operations contractor, MV Transportation, Inc. (MV) to improve the on-time performance of its bus service. LAVTA has lowered its on-time performance goal to 85 percent, which is a more realistic goal given the operating characteristics and area of its service. LAVTA also implemented the recommendations of its Comprehensive Operations Analysis in August 2018, which updated bus schedules to reflect existing running times, and improved on-time performance. An examination of LAVTA's current fixed-route on-time performance shows a gradual improvement in on-time bus performance from 80.2 percent in FY2016 to 84.6 percent in FY2018. LAVTA's bus service on-time performance has met the overall goal of 85 percent on-time in every month except one between November 2017 and June 2018.

- Functional Performance Indicator Trends

  To further assess LAVTA'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 FY2016 and FY2018:

  – Administrative costs increased slightly to about 30 percent of total operating costs, averaging between $26 and $29 per vehicle service hour.

  – Marketing costs increased to 13 percent of total administrative costs, with marketing cost per passenger trip increasing from $0.22 to $0.34.

  – The systemwide farebox recovery ratio increased from 14.5 to 15.4 percent.

  Bus Service – The following is a brief summary of the bus service functional trend highlights between FY2013 and FY2015:

  – Service Planning results displayed a moderate eight percent increase in operating cost per passenger mile, consistent rates of about 88 and 91 percent vehicle miles and hours in service, and steady rates of passengers per mile and hour. Farebox recovery increased from 15 to 16 percent, while the TDA Article 4 operating ratio (including local support) decreased slightly from 35 to 34 percent.

  – Operations experienced about a five percent increase in both percentage of vehicle operations cost to total operating cost, and in vehicle operations cost per hour. Schedule adherence improved from 80 to 85 percent, while valid complaints increased from seven to eleven per 100,000 passenger trips. The number of commendations remained steady and there were almost no missed trips.

  – Maintenance results showed vehicle maintenance costs decreasing as a percentage of total operating cost, but maintenance costs per service mile increasing by about ten percent. The bus spare ratio decreased from about 26 to 22 percent. The total mechanical failure

rate varied from year to year, but overall, the mean distance between major failures decreased about six percent, while distance between all failures decreased about 11 percent. The decrease in miles between failures is attributed to a new failure tracking methodology which increased the number of failures recorded in FY2018 that would not have been recorded under the old tracking system.

– Safety performance resulted in preventable accidents per 100,000 miles decreasing from 1.2 to 0.8 over the audit period.

Paratransit – The following is a brief summary of the paratransit functional trend highlights between FY2016 and FY2018:

– Service Planning results showed a significant increase in operating costs per passenger mile, which is attributed to incorrect passenger mile data in NTD for FY2016, caused by errors in the contractor's scheduling software. The contractor updated their software in late FY2016. Farebox recovery remained stable at about 13 percent while TDA recovery ratio (including local support), increased almost 16 percent. There was improvement in both vehicle miles in service and vehicle hours in service during the audit period. Both passengers per mile and hour were almost unchanged.

– Operations results included about a ten percent decrease in percentage of vehicle operations cost to total operating cost, and a 20 percent decrease in vehicle operations costs per hour. Schedule adherence was steady in FY2016 and FY2017, but decreased by almost eight percent in FY2018. Valid passenger complaints increased between FY2016 and FY2018 to just over one per 1,000 passenger trips. There were a very small percentage of both passenger commendations and missed trips during the audit period.

– There were no ADA trip denials reported during the period. Trip cancellations and passenger no-shows both decreased, but late trip cancellations increased from 1.4 percent to 3.2 percent over the audit period.

– Maintenance results revealed total vehicle maintenance costs slightly increasing as a percentage of total operating cost, and maintenance costs per service mile increasing by about seven

percent. The vehicle spare ratio decreased over 65 percent, due to an NTD reporting error in FY2016, and large fluctuations were seen in the mechanical failure rates. LAVTA's contractor severed contracts with some of their subcontractors in FY2017 due to consistent breakdowns of vehicles, improving performance in FY2018.

– Safety performance had zero preventable accidents in FY2016 and FY2017, and only two preventable accidents in FY2018.

**Recommendations**

1. CONTINUE TO ENSURE THAT DATA IS COLLECTED AND REPORTED ACCURATELY FOR PARATRANSIT SERVICE.
*[Reference Section: II. Review of TDA Data Collection and Reporting Methods; III. TDA Performance Indicators and Trends; and VI. Functional Performance Indicator Trends]*

   LAVTA's prior TDA audit report found deficiencies in the collection and reporting of performance data, mostly due to LAVTA's contractor not reporting service data correctly. The current review of LAVTA's data collection and reporting methods found that while the data definitions and collection appear to comply with TDA requirements, there are still apparent reporting anomalies during this audit period, mostly on the paratransit side of operations. Specifically, paratransit vehicle service hours increased by about six percent in FY2018, while vehicle service miles decreased by about three percent the same year. Service hours and miles typically move in tandem.

   LAVTA responded that the vehicle service hour and vehicle service mile anomaly was caused by decreasing ridership which lowered service miles, combined with a temporary staffing increase in drivers that caused service hours to rise. The decrease in ridership and service miles is borne out by the decrease in passenger productivity in the passengers per mile indicator, and by the decrease in passenger miles reported in NTD, resulting in lower average trip length. The decrease in these indicators does not support the explanation for increasing service hours. If LAVTA's explanation is accurate, it would mean that fewer passengers are taking shorter trips, but spending more time on the vehicles.

   It is recommended that LAVTA continue to examine the data collection and reporting activities of its paratransit contractor to ensure that operating data are

being accurately collected and reported. Continued monitoring will allow LAVTA to determine if the data collection and reporting changes implemented since the last TDA audit result in more consistent and accurate results.

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# APPENDIX A:
# INPUT STATISTICS FOR
# FUNCTIONAL PERFORMANCE MEASURES

# Functional Performance Inputs - Systemwide (All Modes)

| Data Item | FY2016 | FY2017 | FY2018 | Source |
|---|---|---|---|---|
| Total Operating Costs | $15,398,340 | $15,353,818 | $15,346,922 | NTD F-40 |
| Administrative Costs | $4,152,104 | $4,342,678 | $4,480,293 | NTD F-40 |
| Vehicle Service Hours | 155,463 | 152,299 | 156,838 | NTD S-10 MB + DR |
| Marketing Costs | $380,240 | $749,882 | $581,771 | LAVTA CAFR Fin'l Trends |
| Unlinked Passenger Trips | 1,703,786 | 1,590,205 | 1,695,874 | NTD S-10 MB + DR |
| Farebox Revenue (All Modes) | $2,239,549 | $2,100,641 | $2,358,653 | NTD F-10 |

# Functional Performance Inputs – Bus Service

| Data Item | FY2016 | FY2017 | FY2018 | Source |
|---|---|---|---|---|
| Vehicle Service Miles | 1,780,948 | 1,726,726 | 1,748,847 | NTD S-10 MB |
| Total Vehicle Miles | 2,066,409 | 1,942,818 | 1,984,105 | NTD S-10 MB |
| Vehicle Service Hours | 125,604 | 122,825 | 125,619 | NTD S-10 MB |
| Total Vehicle Hours | 138,628 | 134,089 | 136,800 | NTD S-10 MB |
| Unlinked Passenger Trips | 1,648,811 | 1,536,084 | 1,647,002 | NTD S-10 MB |
| Farebox Revenue | $2,007,023 | $1,876,618 | $2,141,469 | NTD F-10 |
| Total Operating Costs | $13,555,486 | $13,676,760 | $13,643,794 | NTD F-30 MB |
| Passenger Miles | 8,168,817 | 7,100,787 | 7,602,329 | NTD S-10 MB |
| Vehicle Operations Costs | $6,470,406 | $6,632,677 | $6,837,410 | NTD F-30 MB |
| Local Support (TDA Article 4 services only) (a) | $2,686,063 | $2,647,651 | $2,459,544 | CAFR |
| TDA Oper. Cost Exclusions - PUC 99247 (b) | $0 | $0 | $0 | CAFR |
| TDA Oper. Cost Exclusions - PUC 99268.17 (c) | $0 | $0 | $0 | CAFR |
| Trips On-Time | 80.2% | 81.3% | 84.6% | Monthly Summary Statistics for Wheels |
| Total Trips | 146,169 | 147,821 | 148,370 | Planning dept/schedule plus contractor billing |
| Total Complaints | 389 | 511 | 447 | Monthly Board Stats |
| Valid Complaints | 108 | 213 | 178 | Monthly Board Stats |
| Compliments | 18 | 25 | 17 | Monthly Board Stats |
| Missed Trips | 15 | 36 | 49 | Contractor billing- verified by planning |
| Vehicle Maintenance Costs | $2,171,673 | $2,180,373 | $2,360,836 | NTD F-30 MB |
| Non-Vehicle Maintenance Costs | $1,250,488 | $1,119,495 | $513,176 | NTD F-30 DR |
| Spare Vehicles (Total less Maximum Service) | 17 | 16 | 13 | NTD S-10 MB |
| Total Vehicles | 66 | 63 | 60 | NTD S-10 MB |
| Revenue Vehicle Mechanical System Failures - Total | 117 | 84 | 126 | NTD R-20 |
| Revenue Vehicle Mechanical System Failures - Major | 104 | 76 | 106 | NTD R-20 |
| Preventable Accidents | 25 | 15 | 16 | Monthly Summary Statistics for Wheels |

*(a) Local Support includes the following (USOA revenue class in parentheses):*

- *Auxiliary transportation revenue (406)*
- *Taxes directly levied (408)*
- *Local cash grants and reimbursements (409)*
- *Local special fare assistance (410)*
- *Subsidy from other sectors of operation (440)*

*(b) Operating expense object classes exclusive of the following pursuant to PUC Section 99247:*

- *depreciation and amortization expenses*
- *subsidies for commuter rail services operated on railroad lines under the jurisdiction of the Federal Railroad Administration*
- *costs for providing charter services*
- *vehicle lease costs*
- *principal and interest payments on capital projects funded with certificates of participation*

*(c) Operating expense object class exclusions pursuant to PUC Section 99268.17:*

- *additional operating costs for federally required ADA paratransit service that exceed prior year costs (CPI adjusted)*
- *cost increases beyond the CPI change for: fuel; alternative fuel programs; power (including electricity); insurance premiums/liability claims payouts; state and federal mandates*
- *start-up costs for new services (not more than two years)*

# Functional Performance Inputs – Paratransit

| Data Item | FY2016 | FY2017 | FY2018 | Source |
|---|---|---|---|---|
| Vehicle Service Miles | 421,306 | 424,072 | 411,459 | NTD S-10 DR |
| Total Vehicle Miles | 498,493 | 454,173 | 447,779 | NTD S-10 DR |
| Vehicle Service Hours | 29,859 | 29,474 | 31,219 | NTD S-10 DR |
| Total Vehicle Hours | 32,221 | 30,512 | 32,471 | NTD S-10 DR |
| Unlinked Passenger Trips | 54,975 | 54,121 | 48,872 | NTD S-10 DR |
| Farebox Revenue | $232,526 | $224,023 | $217,184 | NTD F-10 |
| Total Operating Costs | $1,842,854 | $1,707,058 | $1,703,128 | NTD F-30 DR |
| Passenger Miles | 559,379 | 325,881 | 332,863 | NTD S-10 DR |
| Vehicle Operations Costs | $1,205,659 | $940,550 | $1,003,682 | NTD F-30 DR |
| Local Support (TDA Article 4 services only) *(a)* | $446,759 | $462,914 | $509,291 | CAFR |
| TDA Oper. Cost Exclusions - PUC 99247 *(b)* | $0 | $0 | $0 | CAFR |
| TDA Oper. Cost Exclusions - PUC 99268.17 *(c)* | $0 | $0 | $0 | CAFR |
| Trips On-Time | 96.8% | 96.7% | 89.5% | Monthly Summary Statistics for Wheels (YTD) |
| Total Trips | 53,545 | 51,940 | 50,549 | Novus Trip Count Report/ Monthly Reports |
| Complaints | 100 | 60 | 163 | Monthly board stats |
| Valid Complaints | 28 | 8 | 59 | Monthly board stats |
| Compliments | 3 | 1 | 2 | Monthly board stats |
| Missed Trips | 10 | 3 | 9 | Novus Trip Count Report/ Monthly Reports |
| Total ADA Trips | 53,545 | 51,940 | 50,549 | Novus Trip Count Report/ Monthly Reports |
| ADA Trip Denials | 0 | 0 | 0 | Novus Trip Count Report/ Monthly Reports |
| Trip Cancellations | 15,146 | 12,918 | 12,365 | Novus Trip Count Report/ Monthly Reports |
| Late Trip Cancellations | 744 | 1853 | 1622 | Novus Trip Count Report/ Monthly Reports |
| No Shows | 2,678 | 1,283 | 1,562 | Novus Trip Count Report/ Monthly Reports |
| Vehicle Maintenance Costs | $116,445 | $111,796 | $121,981 | NTD F-30 DR |
| Non-Vehicle (Facility) Maintenance Costs | $31,565 | $26,249 | $29,544 | NTD F-30 DR |
| Spare Vehicles (Total less Maximum Service) | 23 | 3 | 4 | NTD S-10 DR |
| Total Vehicles | 38 | 15 | 19 | NTD S-10 DR |
| Revenue Vehicle Mechanical System Failures - Total | 4 | 25 | 15 | NTD R-20 |
| Revenue Vehicle Mechanical System Failures - Major | 2 | 15 | 4 | NTD R-20 |
| Preventable Accidents | 0 | 0 | 2 | Monthly Summary Statistics for Wheels (YTD) |

*(a) Local Support includes the following (USOA revenue class in parentheses):*
- *Auxiliary transportation revenue (406)*
- *Taxes directly levied (408)*
- *Local cash grants and reimbursements (409)*
- *Local special fare assistance (410)*
- *Subsidy from other sectors of operation (440)*
- *Data for FY2017 is estimated*

*(b) Operating expense object classes exclusive of the following pursuant to PUC Section 99247:*
- *depreciation and amortization expenses*
- *subsidies for commuter rail services operated on railroad lines under the jurisdiction of the Federal Railroad Administration*
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- *principal and interest payments on capital projects funded with certificates of participation*

*(c) Operating expense object class exclusions pursuant to PUC Section 99268.17:*
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- *start-up costs for new services (not more than two years)*