SFMTA
Municipal
Transportation
Agency

Municipal Transportation Quality Review

Fiscal Years 2013-2014

For Review by Citizens' Advisory Council

FINAL DRAFT

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Chapter 1
Introduction

This report is the seventh Transportation Quality Review produced since the passage of Proposition E in 1999. Proposition E amended the City Charter, creating the San Francisco Municipal Transportation Agency (SFMTA) by combining the transit operations of Muni and the street operations of the Department of Parking and Traffic into a single agency. This report fulfills the requirement under Proposition E for a biennial audit of Muni "service standards" reporting. Data describing Muni performance in various service standards categories have historically been published by the SFMTA on a quarterly basis; however, with the adoption of the FY 2013-2018 Strategic Plan and the SFMTA leadership's commitment to more timely and transparent performance reporting, data covering most service standards have been published on a monthly basis. The Charter mandates that an independent auditor review the data every two years to ensure that it is being accurately collected and reported, and to make recommendations for improved reporting.

This report presents the findings of the Municipal Transportation Quality Review for the period between July 1, 2012 and June 30, 2014 (Fiscal Years [FY] 2013 and 2014). This report is the first to review performance standards and metrics introduced as part of a new system that was developed in part on the basis of Quality Review recommendations made over the past several audit periods and was made possible by the implementation of the SFMTA's central business intelligence tool, Transtat. This report also includes a more detailed analysis focused on Muni's transit operations and performance, conducted concurrently with the audit process. Included as Chapter 4, the "Operations Analysis" is based on a review of available data and a series of informational meetings with SFMTA staff, and includes specific recommendations that SFMTA staff may use to improve transit performance in the short-term future.

Finally, this chapter summarizes the findings and recommendations developed in more detail later in the report, which are specific to each individual service standard.

OVERVIEW

Proposition E – The Muni Reform Initiative

On November 2, 1999, the voters of San Francisco overwhelmingly approved Proposition E, the most substantial reform in Muni history. The voters' intent was to institute structural, administrative, and financial reforms designed to provide Muni with the "resources, independence and focus necessary" to become one of the best urban transit systems in the world. Recognizing the City's dependence on public transit and its need for efficient and reliable transit service that can compete with the private automobile, the drafters of the initiative sought to restructure the City's provision and administration of transportation and parking services, and strengthen the City's Transit First Policy.

The overall goals for transit service articulated in Proposition E (now Article VIIIA of the San Francisco City Charter) are as follows (Section 8A.100):

1. Reliable, safe, timely, frequent, and convenient service to all neighborhoods;
2. A reduction in breakdowns, delays, over-crowding, preventable accidents;
3. Clean and comfortable vehicles and stations, operated by competent, courteous, and well-trained employees;
4. Support and accommodation of the special transportation needs of the elderly and the disabled;
5. Protection from crime and inappropriate passenger behavior on the Municipal Railway; and
6. Responsive, efficient, and accountable management.

To achieve these goals, Article VIIIA created the San Francisco Municipal Transportation Agency (SFMTA), combining the responsibility for street operations (Department of Parking and Traffic) with the dominant "user" of the streets, Muni.

Article VIIIA also established parameters for service standards and accountability measures that the SFMTA could use to gauge its performance over time (Section 8A.300). These parameters ranged from the very specific to the general. For example, the article requires that the SFMTA set its minimum standards for on-time performance and service delivery at 85% (on-time performance, defined as between one minute early and 4 minutes late) and 98.5%

(scheduled service hours & scheduled pull-outs). By comparison, it simply requires that the SFMTA establish standards/measures to address the following categories:

1. Passenger, public, and employee safety and security;
2. Coverage of neighborhoods and equitable distribution of service;
3. Level of crowding;
4. Frequency and mitigation of accidents and breakdowns;
5. Improvements in travel time, taking into account adequate recovery and layover times for operators;
6. Vehicle cleanliness, including absence of graffiti;
7. Quality and responsiveness of customer service;
8. Employee satisfaction;
9. Effectiveness of the preventive maintenance program; and
10. Frequency and accuracy of communications to the public.
11. The Agency's duties related to parking and traffic functions and any other functions that may be added to the Agency's responsibilities.

Proposition E also required an independent, biennial quality review of transit operations. This report represents the findings of an independent review of Muni's performance for Fiscal Years 2013 and 2014.

An Independent Transportation Quality Review

The biennial Quality Review mandated by Proposition E provides yet another tool that the SFMTA can use to continue to improve Muni's performance. This review has been conducted with the following goals in mind:

- Help the SFMTA assess Muni's progress toward the goals and objectives of Proposition E
- Evaluate Muni's established goals and performance against the letter and intent of Proposition E
- Assess whether specific implementation goals, methods, and definitions of measurement are appropriate or could be improved
- Provide independent verification to the public that Muni is on track by auditing Muni's data collection and analysis procedures

The Quality Review consists of the following main elements:

Review of Data Collection and Reporting Methods

Proposition E requires a routine audit of Muni's quality assurance process including an audit of data collection methods and service standards reporting. This audit covers Fiscal Years 2013 and 2014 (July 1, 2012 – June 30, 2014). Auditors reviewed the SFMTA's monthly Strategic Plan Metrics Reports from this period to verify that data were collected according to the definitions and methods of measurement specified by Proposition E, the SFMTA Board of Directors, and the SFMTA Performance Team, and that the data were calculated correctly. During winter 2014-2015, auditors met with Muni staff responsible for data collection and reporting to review procedures as well as the actual reported data. Systematic spot checks of original source data and of automated tracking systems and procedures were used to determine the accuracy of reported data. Almost without exception, the auditors found that data reported by Muni appeared to be accurate and reliable, with only one minor issue identified. These findings are discussed in more detail in the section "Data Collection and Reporting at the SFMTA," below.

Analysis of Trends in Reported Data

Auditors reviewed trends in data and performance achievement over the two-year audit period, focusing on metrics pertaining to transit system performance. Overall Muni performance remained relatively stable during the audit period, with service delivery measures such as on-time performance and instances of bunches and gaps remaining essentially unchanged during FY 2013 and 2014. During this timeframe Muni made improvements in important areas of customer security, employee safety, and vehicle reliability. Performance trends are discussed in more detail in Chapter 3.

Auditor Recommendations

Auditor recommendations focus on ways to further refine or improve performance reporting to make it more relevant to the SFMTA and the public, or on ways to improve performance in areas where Muni has not yet met its goals. Although the recommendations focus on the two-year audit period, they incorporate any changes that have been made since that time. The recommendations are reviewed with Muni staff to ensure that they are in line with current budget and resource constraints.

The following section summarizes general and measure-specific recommendations, which are discussed in more detail in Chapter 3.

General Recommendations

- Ensure that all new Agency recordkeeping and data management software use inter-compatible formats.
- Consider improvements to the Operations Central Control (OCC) data management system to simplify performance data sharing, processing, and analysis.
- Expand public documentation of Strategic Plan Metrics Report metrics.
- To the extent possible and pursuant to data availability, explore opportunities to report additional historic data (i.e., prior to FY 2012) in the monthly Strategic Plan Metrics Reports.
- Continue to ensure the accuracy and internal consistency of publicly reported data.

Measure-Specific Recommendations

- **1.1.1 SFPD-Reported Muni-related Crimes/100,000 miles.** 1) Coordination between the Performance Team and the Security, Investigations & Enforcement (SIE) team should continue, with the Performance Team ensuring that any new software introduced by SIE staff will be compatible with Transtat. 2) The Performance Team and other SFMTA leadership as necessary should discuss whether or not the current goal for this metric (3.39 SFPD-reported Muni-related crimes/100,000 miles) is appropriate, and how the goal should be tied to performance.
- **1.3.1 Muni Collisions/100,000 Miles**
  1.3.3 Muni Falls On Board/100,000 miles
  The SFMTA should explore opportunities to streamline the tracking and reporting of incidents in the TransitSafe replacement software.
- **2.1.1 Customer Rating: Overall Customer Satisfaction with Transit Services.** The SFMTA Performance Team should work with the Agency's Communications team to re-evaluate its approach to customer surveys, identifying the precise reasons why these data are desired, what specific questions should be asked, and what timeframe is most reasonable.
- **2.2.1 Percentage of Transit Trips with <2 Minute Bunching on Rapid Network**
  2.2.1 Percentage of Transit Trips with +5 Minute Gaps on Rapid Network.
  To reduce confusion with the new "Rapid" Network brand of limited stop service, redefine this metric to focus on Muni's 'Frequent' services (i.e., routes operating every 10 minutes or less).

  To clarify how and why these metrics are reported, the Performance Team should ensure that full definitions of each metric are provided both within the internal Transtat tool and as part of the monthly Strategic Plan Metric Reports provided to the public.
- **2.2.2 Percentage of On-Time Performance for Non-Rapid Network Routes.** With the redefinition of Metric 2.2.1 to focus on 'Frequent' services only (i.e., routes that operate with frequencies of every 10 minutes or less), redefine this metric in tandem by calculating on-time performance of services that have scheduled headways of more than 10 minutes (i.e., 'Infrequent' services).
- **2.2.4 Percentage of On-Time Departures from Terminals.** The Performance Team should coordinate with the Transit Division to determine potential amendments to the definition of "on-time" for this metric.
- **2.2.7 Percentage of Trips Over Capacity During AM Peak (8:00a-8:59a, Inbound) at Max Load Points**
  2.2.7 Percentage of Trips Over Capacity During PM Peak (5:00p-5:59p, Outbound) at Max Load Points.
  Expand the public documentation of this metric, explaining at a minimum that "Inbound" and "Outbound" definitions do not solely mean routes in and out of downtown San Francisco.

  The Performance Team should consider the value in differentiating between different route types in reported data (i.e., between 'Frequent' routes and community circulators).

- **2.2.8 Mean Distance Between Failure.**
  - **Cable Car:** Cable Car "chargeable" definitions should be formalized, but in such a way as to preserve the flexibility desired by experienced Cable Car division staff as well as to provide a consistent basis for accurate and historical record-keeping in the future.
  - **Rubber Tire:** The Performance Team should work with Bus Maintenance staff to identify opportunities to 1) ensure that the forthcoming Enterprise Asset Management program will work with the Transtat tool, 2) improve the frequency and detail of information sharing, and ultimately 3) identify a workflow for information sharing that reflects the various needs (and/or limitations) of both parties. In particular, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.
  - **Light Rail and Streetcar.** The Performance Team should work with Rail Maintenance staff to identify opportunities to improve the frequency and detail of information sharing with a workflow that reflects the various needs (and/or limitations) of both parties. In particular, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.
- **2.2.11 Ridership (Rubber Tire, Average Weekday).**
  2.2.11 Ridership (Faregate Entries, Average Weekday).
  To facilitate analyses of ridership over time (a valuable public accountability and evaluation tool), the SFMTA should consider reporting additional aggregate historical ridership data in its monthly Strategic Plan Metric Reports.
- **3.2.1 Estimated Economic Impact of Muni Service Delays (Annualized).** The SFMTA Performance Team should update the wage data underlying this metric, which was last updated in 2013. Given its complex origin, this metric's full methodology should be included as a footnote in the monthly Strategic Plan Metrics Reports.
- **4.3.3 Unscheduled absence rate by employee group (Transit operators).** 1) Improve the accuracy and efficacy of metric 4.4.3, "Unscheduled absence rate" for transit operators by reviewing and simplifying the current Trapeze coding system. 2) Institute (an) additional metric(s) to track Agencywide attendance and/or absence rates using paid and unpaid labor data (when available from Oracle/PeopleSoft).

IMPLEMENTATION OF PAST AUDIT RECOMMENDATIONS

The service standards (or performance measures) recommended by Proposition E were not intended to create onerous reporting requirements, but rather to provide the SFMTA with the tools needed to create a world-class transit service. In order to do this effectively, the service standards need to provide information and feedback that SFMTA management can readily use to help shape decisions and policies so that the desired outcomes can be achieved.

While Proposition E explicitly stated the method of measurement and goals for several of the service standards – specifically, on-time performance (minimum 85%, whereby a vehicle is on-time if it is no more than one minute or four minutes late) and service delivery (at least 98.5% of scheduled service hours delivered; at least 98.5% of scheduled departures must begin service at the scheduled time) – it also provided some flexibility with regard to the way in which other standards could be measured and the milestones or goals that could be achieved. When not specified by Proposition E, the SFMTA Board adopted methods and definitions of measurement as well as specific goals and milestones for each of the service standards.

Muni's Citizens' Advisory Council (CAC) and the SFMTA Board review Muni's performance quarterly, and annually review the definitions of measurement, methods of measurement, and the goals for each of the service standards. Beginning in FY 2013, the SFMTA introduced a complete overhaul of the performance standard reporting system. The new system brought a wide variety of changes, including a re-categorization of metrics based on the four goals and 16 objectives set forth in the SFMTA's six-year Strategic Plan.

Because the previous audit report was the last to review data reported using the SFMTA's previous service standards reporting system, no substantive recommendations were put forth to upgrade that system as Transtat was already under development. Furthermore, Transtat was developed in part due to recommendations outlined in previous audit reports. Below are brief summaries of the recommendations made in the last audit, and descriptions of Muni's progress toward implementation of those recommendations:

- **Ensure the accuracy and internal consistency of publicly reported data.** With the introduction of Transtat in FY 2013, the Agency made great strides toward increased transparency and accountability.

However, due to ongoing complexities in existing data systems throughout the Agency, this recommendation is repeated in this Quality Review to ensure that these goals remain paramount.

- **Ensure timely and transparent performance reporting.** Strategic Plan Metrics Reports are now published on a monthly basis. There remains an opportunity, however, to improve their usability to the general public through the development of more detailed documentation of the data.
- **A2 Service Delivery (Late Pull-Outs): Adopt a more aggressive goal (0.5% / 99.5%).** Unbeknownst to Auditors when the previous audit was being finalized, this particular metric was not retained in the switch to the new Strategic Plan metrics.

Note: In future audit reports, this section will more comprehensively review reporting changes that were made or are planned to be made, as well as changes that were not made, in response to recommendations from the previous Quality Review.

DATA COLLECTION AND REPORTING AT THE SFMTA

For this Quality Review, auditors both reviewed Muni's Service Standards Reports and interviewed Muni staff to verify that data were collected according to the definitions and methods of measurement specified by the SFMTA and that data were calculated and reported correctly. Almost without exception, the auditors found that data reported by Muni appeared to be reliable. Only one exception was noted:

- In reviewing past Strategic Plan Metrics Reports, it became clear that between May and June 2014, audit period data for metric 2.2.7, "Percentage of trips over capacity during AM peak at max load points," had been revised. SFMTA staff explained that this correction resulted from an internal error. If the SFMTA notices a major discrepancy in data already posted, it should revise the data in the next report and note that a correction had been made.

As a general observation, the Agency is currently determining the best way to optimize how data are collected and analyzed both at the division level, where it may be used to inform daily maintenance tasks (in the case of Mean Distance Between Failure inputs), and at the Performance Team level, where it will be used to conduct advanced analysis. At this time, data for some metrics such as MDBF is still delivered in hard-coded (i.e., pre-summarized) formats per conventional practice. As noted in the recommendations, there are opportunities to identify workflows that accommodate the myriad needs of various divisions, expanding access to detailed information throughout the Agency.

Transtat: Major Changes to Data Reporting & Analysis

Introduced in FY 2013 to help fulfill SFMTA leadership's commitment to timely and transparent performance reporting, Transtat is the SFMTA's central performance business intelligence tool. Used at a minimum to produce the monthly Strategic Plan Metrics Reports analyzed in this audit, it also functions as a crucial data analysis and visualization tool for Agency employees.

Overview

Beginning in FY 2013, with the completion of a six-year Strategic Plan, the SFMTA began placing an even greater emphasis on performance reporting with resources devoted to a Performance unit housed within the Technology and Performance Section of its Finance and Information Technology Division, henceforth referred to as the "Performance Team." Since that time, the unit has focused on developing Transtat, a business intelligence tool serving as the central repository of the Agency's performance data and metrics spanning both mandated Proposition E reporting as well as others associated with the Strategic Plan. The SFMTA's Performance Team is tasked with a few key, high-level goals. They include:

- Collect high-quality performance data from throughout the Agency.
- Ensure that data are used to drive nuanced and intelligent decision making.
- Manage the Transtat business intelligence tool as a utility for internal and external data sharing, analysis and visualization.

Additionally, the tool is still very much in development. Depending on the availability or quality of suitable data for inclusion in the system, the Performance Team is constantly evaluating whether additional metrics are warranted. One Strategic Plan metric introduced and subsequently retired during the audit period included "3.3.3, % of all capital projects delivered in-scope by phase," while others have been reworded to more accurately reflect availability of data.

For example, in January 2013, metric 2.3.1 was originally titled "Non-private auto mode share when traveling to work," but by June 2014 had been re-titled "Non-private auto mode share (all trips)," presumably to reflect the level of data available from the 2011 Mode Share Survey sourced in that month's report.

Use within the Agency

Internally, the SFMTA holds regular "Transtat" meetings to discuss performance issues, not only on Transit Operations but other topics as well. Currently, the meetings consist of updates from division leaders coupled with a review of key statistics using the Transtat tool. Meetings are held every month using a set rotation schedule of Muni divisions.

Ultimately, Transtat is intended to be used as a robust internal tool allowing all divisions to regularly monitor the performance data that is most relevant to them. Transtat will also continue to be used to summarize selected performance data for the public. In fact, as of early 2015, the Performance Team is currently working on an online portal for public review of key performance indicators using the Transtat Tableau software as a base.

Public Reporting

Transtat is also used to develop the SFMTA's monthly Strategic Plan Metrics Reports, which are available for public review and which were analyzed for this report. These reports include data for the 10 months prior to the month of publication, as well as average annual data for the present and past two fiscal years. A "sparkline" (a small, simple, graphic representation of data) is also provided to illustrate monthly data trends at a glance. Metrics are organized by Strategic Plan Goals and Objectives.

Currently, Strategic Plan Metrics Reports measure progress in two ways:

- For Strategic Plan Key Performance Indicators (KPIs), such as Percentage of Transit Trips with Bunching/Gaps (2.2.1) and Cost per Revenue Hour (3.4.1), specific targets were set forth in the FY 13-18 Strategic Plan. (Over time, these targets may be modified for clarity and/or due to reporting limitations.) By contrast, targets of 85% and 98.5%, respectively, for non-KPI metrics Percentage of On-Time Performance (2.2.2, 2.2.6) and Percentage of Scheduled Service Delivered (2.2.3) are specified by the City Charter.
- For all metrics for which consistent monthly data are available, including KPIs, progress is measured in terms of monthly and (average) yearly performance compared to the previous year, using a color code system: Green = "Outperforms Previous FY Average," Red = "Underperforms Previous FY Average," and Yellow = "Equal to Previous FY Average."

Differences between Current & Past Metrics

With the completion of the SFMTA's six-year Strategic Plan and the Agency's renewed focus on dutiful performance measurement, the previous set of performance metrics (described in previous audit reports) was effectively retired. The new set of metrics published in the monthly Strategic Plan Metrics Reports is explicitly tied to Strategic Plan goals and objectives, establishing a clear lineage for the performance measures. While this hierarchy of goals, objectives, and measures is clearly defined, there remain opportunities to make the public-facing data more understandable through the development of a "data dictionary" or like documentation (see General Recommendations in the following chapter).

While some metrics, particularly those specified in the City Charter, were retained from the previous system, others were developed through the FY 13-18 strategic planning process with input from subject matter experts from throughout the Agency. These metrics address all aspects of Agency performance in a way that is more customer-focused than in the past. In particular, transit metrics (which are examined in detail in this report) are intended to provide clear measures for service quality and delivery.

See Figure 1-1 for a summary of previous metrics reported by the SFMTA, showing how they match up to currently reported metrics. Note: this table only examines metrics that were covered by previous Quality Reviews.

Figure 1-1 FY 11-12 & FY 13-14 Performance Metrics: Analytical Compatibility

FY 11-12 Metric	FY 13-14 Metric	Directly Comparable	Replacement/Similar
A1 On-Time Performance - Customer Observed Schedule Adherence	2.2.6 Percentage of On-Time Performance	X	
A1 On-Time Performance - Headway Adherence	2.2.1 Bunching/Gaps		X
A2 Service Delivery - Scheduled Service Hours Delivered	2.2.9 Percentage of Scheduled Service Hours Delivered	X	
A2 Service Delivery - Late Pull-Outs	2.2.4 Percentage of On-Time Departures from Terminals		X
A3 Load Factors: % of Runs Exceeding 125% Load During Peak Periods	2.2.7 Percentage of Trips Over Capacity During AM/PM Peak at Max Load Points		X
A4 Unscheduled Absences: SFMTA Administration, Muni, Other Functions	4.3.3 Unscheduled Absence Rate: Transit Operators (Pending methodology review)	X	
A5 Mean Distance Between Failure	2.2.8 Mean Distance Between Failure	X	
A6 Vacancy Rate for Service Critical Positions: Crafts, Maintenance	N/A (Discontinued due to unreliability of measure.)	-	-
A13 Productivity: Average # of Boardings per Service Hour (Systemwide and by vehicle type)	3.4.2 Passengers per Revenue Hour for Buses		X
A17 Sustainability: % of Trips by More Sustainable Modes	All 3.1.X metrics & 2.3.1 Non-Private Auto Mode Share (All Trips)		X
B1 Ridership: Annual Customers Carried	2.2.11 Ridership (Rubber Tire & Faregate Entries, Average Weekday)		X
B2 Revenue: Fare Revenue	N/A	-	-
B3 Farebox Performance: Average Fare	3.4.5 Farebox Recovery Ratio		X
B4 Cost per Hour	3.4.1 Average Annual Transit Cost per Revenue Hour	X	
B5 Cost per Boarding	3.4.3 Cost per Unlinked Trip	X	
C1 Customer Perceptions (City Survey)	All Customer Survey metrics (1.1.2, 1.1.3, 1.3.5; 2.1.1 – 2.1.5; 2.1.8, 2.2.9)		X
C2 Customer Feedback Received	N/A	-	-
C2 Complaint Resolution Rate: % Resolved within 14 or 45 Days	2.1.7 Percentage of Actionable 311 Muni-Related Complaints Addressed Within 28 Days		X
C4 Safety - Collisions per 100,000 Miles	1.3.1 Muni Collisions/100,000 Miles	X	
C4 Safety - Falls on Board per 100,000 Miles	1.3.3 Muni Falls on Board/100,000 Miles	X	
C5 Security Incidents: # of SFPD-Reported Crimes and Other Incidents	1.1.1 SFPD-Reported Muni-Related Crimes/100,000 Miles	X	
C6 Proof-of-Payment Program: Fare Evasion, etc. Rates	N/A	-	-
D1 Grievance Resolution Rate: % Resolved within 90 Days	N/A	-	-
D3 Employee Satisfaction: SFMTA Employee Survey	All 4.X metrics		X

Chapter 2
Trends Analysis & Recommendations

TRENDS ANALYSIS

The analysis contained in this chapter focuses on Muni performance for each of the service standards that were in effect during the period covered by this review (FY 2013 and 2014). Since then, the SFMTA's transit performance has changed. Up-to-date monthly performance reports can be viewed on the SFMTA website.

Figure 2-1 summarizes the findings for FY13 and FY 14 performance. The arrow graphics indicate general trends (up for "positive," facing right for "neutral," and turned down for "negative") in terms of both historic patterns and performance over the course of the audit period. Attainment of goals for each standard is not generally addressed below, but is addressed in the detailed performance review that makes up the body of this report. All data informing this analysis were sourced from the SFMTA's monthly Strategic Plan Metrics Reports and were subject to availability.

As of September 2014 there were over 90 Strategic Plan metrics addressing the SFMTA's performance in terms of infrastructure, operations, sustainability, and labor. Chapter 3 discusses in detail 42 of those metrics, chosen in collaboration with SFMTA Performance Team staff to document the primary focus of this audit report: Muni transit performance. Figure 2-1 below presents an overview of the trends observed in these metrics for the FY 2013-2014 audit period. As with Chapter 3, Figure 2-1 is divided into "Core" and "Additional" Muni transit metrics, defined loosely as follows: "Core" metrics highlight the safety and effectiveness of Muni services, encompassing the Strategic Plan's Key Performance Indicators for transit services. "Additional" Muni performance metrics provide more contextual measures of transit performance.

Figure 2-1 FY 2013-2014 Performance Summary

Metric #	Metric Description	Trend	▲ ▶ ▼
Core Muni Transit Metrics			
1.1.1	SFPD-Reported Muni-Related Crimes/100,000 Miles	▲	After peaking in October 2013, reported crime dropped 40% in November 2013 due to a "surge" program to put more officers on Muni vehicles, which was funded by a grant from the Department of Homeland Security. While crime began to increase again as funding for the "surge" was depleted in early 2014, crime over the entire audit period dropped slightly.
1.2.1	Workplace Injuries/200,000 Hours	▲	Historically and during the audit period, SFMTA's workplace safety improved, consistently staying below the goal of 14.6 workplace injuries/200,000 hours. This may be partly due to the Ergonomic Program, as well as the Employee Health Program's "Road to Fitness" initiative.
1.3.1 1.3.3	Muni Collisions/100,000 Miles & Muni Falls on Board/100,000 Miles	▼	Historically and during the audit period, rates of collisions and falls on board have been gradually increasing. In particular, collisions/100,000 miles hit an eight-year high with 5.88 collisions/100,000 miles in FY 2014.
2.1.1	Customer Rating: Overall Customer Satisfaction with Transit Services	▼	Results from the survey began to be released in the Strategic Plan Metrics Reports in the second quarter of FY 2014. While the average "overall customer satisfaction with transit services" rating for this year was 3.02, representing a 'neutral' (i.e., neither satisfied nor dissatisfied) position, the rating trended downward quarter by quarter.
2.2.1	Percentage of Transit Trips with <2 Minute Bunching on Rapid Network Percentage of Transit Trips with +5 Minute Gaps on Rapid Network	▶	These metrics were introduced with Transtat and the new Strategic Plan Metric Reports in FY 2013 as more user-friendly ways to quantify schedule adherence and customer-observed delay. During the course of the audit period, the incidences of bunching and gapping remained relatively neutral, remaining at 5.6% (bunches) and at approximately 18% (gaps), though the metric goals were not met.

Metric #	Metric Description	Trend	▲ ▶ ▼
2.2.2	Percentage of On-Time Performance for Non-Rapid Network Routes	▶	Historically and during the audit period, on-time performance on non-Rapid routes did not meet the Charter-specified goal of 85%; however, the performance remained relatively neutral, fluctuating between an average of 61% in FY 2012 and a 59% average in FY 2014. During the FY 13-14 audit period (July 2013), on-time performance for non-Rapid routes hit a high of 62.5%.
2.2.3	Percentage of Scheduled Service Delivered (Trips)	▶	While the SFMTA did not meet the 98.5% annual scheduled service delivery target established by Proposition E during the past three fiscal years, on a month to month basis during the FY 13-14 audit period, performance occasionally exceeded the target.
2.2.4	Percentage of On-Time Departures from Terminals	▶	Over the course of the audit period, the percentage of on-time departures from terminals remained relatively consistent, fluctuating seasonally, but falling short of the 85% Charter-mandated goal. The audit period high was 76.6% in July 2012, with the two-year low occurring the following month (70.1%).
2.2.5	Average Muni System Speed	N/A	Metric is under development.
2.2.6	Percentage of On-Time Performance	▶	As with metric 2.2.2 (On-Time Performance for Non-Rapid Network Routes), the SFMTA did not meet the Charter-mandated 85% performance goal during the audit period. Performance fluctuated between a low of 55.6% in August 2012 and a high of 61.4% in April 2013.
2.2.7	Percentage of Trips Over Capacity During AM Peak (8:00a-8:59a, Inbound) at Max Load Points	▲	During the course of the audit period, the percent of trips over capacity during the AM and PM peak periods trended slightly downward, fluctuating from month to month: Trips over capacity during the PM peak had a high at 12% trips over capacity in August 2012 and hit an audit period low in December 2013 with 5.2% of trips over capacity. For AM peak trips, the audit period high occurred in September 2013 (11% of trips over capacity) and the low occurred in December 2013 when only 5.5% of trips were over capacity.
	Percentage of Trips Over Capacity During PM Peak (5:00p-5:59p, Outbound) at Max Load Points		
2.2.8	Mean Distance Between Failure: Bus	▲	The reliability of the SFMTA's bus fleet has been steadily increasing since FY 2010, with the largest gains occurring more recently, in FY 2014, when the yearly mean distance between failure reached over 4,600 miles.
	Mean Distance Between Failure: LRV	▶	Breda LRV and historic streetcar performance has been mixed over the past seven fiscal years, with reliability dropping slightly during the current audit period.
	Mean Distance Between Failure: Historic Streetcar		
	Mean Distance Between Failure: Cable Car	▲	Historically, cable car performance has been improving since a seven-year low in FY 2011, rising throughout the audit period to a six-year high of 4,734 miles between failures in FY 2014.
2.2.9	Percentage of Scheduled Service Hours Delivered	▶	Historical and audit period performance has remained relatively neutral, though on an annual basis the SFMTA has not achieved the Charter-mandated 98.5% goal in any fiscal year since FY 2002. During the audit period, however, the SFMTA exceeded this goal in both March and April 2013, delivering 98.6% and 99.4% of scheduled service hours, respectively. The SFMTA hit an audit period low in June 2014, delivering just under 91% of scheduled service in that month, an outlier that can be largely attributed to the operator sickout during the first week of the month.
2.2.11	Ridership (Rubber Tire, Average Weekday)	▲	Rubber tire ridership data are available for the entire audit period, while faregate entries were added beginning in June 2013. Average weekday ridership for rubber tire vehicles stayed relatively steady during the audit period, with faregate entries climbing very slightly in FY 2014.
	Ridership (Faregate Entries, Average Weekday)		

Metric #	Metric Description	Trend	▲ ▶ ▼
2.2.12	Percentage of Days that Elevators are in Full Operation	▶	Historically (i.e., since FY 2012), Muni station elevators have been more consistently reliable (on average) than station escalators, with the latter metric falling under 90% in FY 2013, though returning to near FY 2012 levels the following year. During the audit period, performance fluctuated from month to month.
2.2.13	Percentage of Days that Escalators are in Full Operation		
3.2.1	Estimated Economic Impact of Muni Service Delays (Annualized)	▲	Data are only available for a portion of the audit period, representing the time period March 2013 through June 2014. Annually, according to the data, the economic impact of Muni delays fell from $3.7 million in FY 2013 to $2.8 million in FY 2014.
3.4.1	Average Annual Transit Cost per Revenue Hour	▼	After consistently rising since FY 2006, Muni's operating cost per hour of revenue service began to level off during the previous (FY 2011-2012) audit period, even dropping slightly in FY 2012 as bus revenue hours increased in the two audit years. Muni's cost per hour increased over the current audit period, in part due to a combination of increased service and regular costs of operations. *Note: The SFMTA currently reports Cost per Hour data as adjusted to the most recent reporting year's CPI deflator, resulting in the reporting of nominal figures for the most recent year and changing adjusted figures for prior years. To ensure consistent comparability over time, the Auditor's analysis does not account for inflation (i.e., it uses nominal values for the present and all prior years). Consequently, this may act as a contributing factor to year-over-year trends. Additionally, FY 2014 data are based on preliminary unaudited financials.*
3.4.2	Passengers per Revenue Hour for Buses	▶	Within the audit period, Muni's yearly performance dropped slightly, from approximately 68 to 67 boardings per revenue hour. (1) Please note that this figure is inclusive of layover/recovery time at each terminal, when the vehicles are stopped and not servicing revenue customers. (2) From a customer perspective, decreases in the number of passengers per revenue hour for buses may actually result in a better riding experience. For example, more frequent service can relieve overcrowding and reduce waiting times but may result in fewer passengers per revenue hour.
3.4.3	Cost per Unlinked Trip	▼	Operating cost per unlinked trip (or "boarding") is an industry standard measure, reported by transit operators to the Federal Transit Administration, that Muni began reporting in Service Standards reports in FY 2008. As with cost per hour, Muni's operating cost per unlinked trip rose steadily from FY 2006 until FY 2010, when it began to level off. In FY 2012, Muni's cost per unlinked trip fell slightly to $2.83, rising again in the current audit period. In FY 2014, however, preliminary financial data indicate that the average cost per unlinked trip increased to $3.13. *Note: The SFMTA currently reports Cost per Hour data as adjusted to the most recent reporting year's CPI deflator, resulting in the reporting of nominal figures for the most recent year and changing adjusted figures for prior years. To ensure consistent comparability over time, the Auditor's analysis does not account for inflation (i.e., it uses nominal values for the present and all prior years). Consequently, this may act as a contributing factor to year-over-year trends. Additionally, FY 2014 data are based on preliminary unaudited financials*.
3.4.5	Farebox Recovery Ratio	▼	This metric replaces the old measure of farebox performance, systemwide average fare. Performance during the audit period slightly increased from FY 2012, rising to 34% in FY 2013. According to unaudited FY 2014 data, Muni's farebox performance fell in the final audit year, to just under 30%. Note: FY 2014 data are based on preliminary unaudited financials.

Metric #	Metric Description	Trend	▲ ▶ ▼
4.3.3	Unscheduled Absence Rate by Employee Group (Transit Operators)	▼	Transit operator absenteeism dropped between FY 2012 and FY 2013, culminating in a 10-year low in FY 2013, when the rate was 8.6%. Largely as a consequence of this drop, the historical trend for the period FY 2003-FY 2014 was neutral. However, absenteeism began to increase again in FY 2014, to 9.4%.
Additional Muni Transit Metrics			
1.1.2	Customer rating: Security of Transit Riding Experience (While on a Muni Vehicle) Customer rating: Security of Transit Riding Experience (While Waiting at a Muni Stop or Station)	▶	This metric was added in FY 2014. Muni customers' opinions of transit security on vehicles and stations did not fluctuate dramatically in FY 2014, with survey takers expressing neither satisfaction nor dissatisfaction with Muni's security.
1.1.4	Security Complaints to 311 (Muni)	▲	The number of reports trended downward over the audit period, with the FY 2014 average (28.6) representing an over 30% reduction since FY 2012.
1.2.2	Security Incidents Involving SFMTA Personnel (Muni Only)	▲	From FY 2012 to FY 2014, the average number of monthly assaults and/or threats on Muni operators fell from 11.3 to 9.9, despite a brief increase to 12.1 in FY 2013. This may be a residual effect of the SFMTA's "surge" enforcement campaign, implemented in FY 2014.
1.3.4	"Unsafe Operation" Muni Complaints to 311	▶	Despite a dip in the average number of monthly "unsafe operation" complaints to 311 in FY 2013 (to just under 160), the number climbed to the pre-audit period level of approximately 179 "unsafe operation" complaints in FY 2014.
1.3.5	Customer Rating: Safety of Transit Riding Experience	▼	This metric was added in FY 2014. Muni customers' opinions of the safety of the overall transit riding experience did not fluctuate dramatically in FY 2014, with survey takers on average expressing neither satisfaction nor dissatisfaction. Quarterly results indicated a slight downward trend.
2.1.5	City Survey Rating: Communications to Passengers Customer Rating: Communications to Passengers	N/A	Customer satisfaction with Muni communications was relatively static, with neutral ratings reported between the 2011 and 2013 yearly City surveys. The average rating fell slightly in FY 2014, to 2.76, though this result cannot be compared to previous average ratings due to differences in the makeup of survey takers and the ways the surveys were conducted.
2.1.7	Percentage of Actionable 311 Muni-Related Complaints Addressed within 28 Days	▼	After a slight increase from 87% in FY 2012 to 90% in FY 2013, the percentage of actionable 311 Muni-related complaints addressed within 28 days fell to under 80% in FY 2014.
2.1.8	Customer Rating: Cleanliness of Muni Vehicles	▼	Metrics introduced in FY 2014. On average, Muni customers rate the cleanliness of Muni vehicles and facilities in the "dissatisfied" to neutral range (i.e., a rating of between 2 and 3). Over the course of FY 2014, the average rating of Muni facilities fell from 2.75 in the 2nd Quarter to 2.57 in the 4th Quarter.
2.1.9	Customer Rating: Cleanliness of Muni Facilities (Stations, Elevators, Escalators)		
3.4.4	Pay to Platform Hours Ratio	▶	This metric has remained remarkably stable over the past three fiscal years, fluctuating between 1.12 in FYs 2012 and 2013 to 1.11 in FY 2014, with occasional increases to 1.13 or decreases to 1.10 during the course of the audit period.

RECOMMENDATIONS

Particularly with the development and implementation of the Transtat business intelligence (BI) tool, significant improvements have been made in performance reporting in recent years. The recommendations on the following pages are envisioned as further refinements to a process that has already been greatly improved.

As part of the Quality Review process, the Auditor has developed two sets of recommendations for the SFMTA. These include higher level General Recommendations, which are based on a holistic review of the SFMTA's data collection, analysis, and reporting practices during Fiscal Years 2013 and 2014. The second set of recommendations is Measure-Specific, and is summarized here from Chapter 3.

General Recommendations

The Quality Review team identified a few general issues related to Muni performance reporting:

- *Ensure that all new Agency recordkeeping and data management software use inter-compatible formats.* As noted in several of the measure-specific discussions and recommendations, several divisions at the SFMTA are currently investing in improved data reporting/tracking software packages. For example, the System Safety Division is exploring a replacement for its TransitSafe program, the Bus Maintenance team is exploring how best to use the SFMTA's new Enterprise Asset Management system, and the Security, Investigations & Enforcement (SIE) team is also exploring potential improvements to internal recordkeeping. While the Performance Team is already coordinating with SIE staff on improving data sharing, it is critical that as the SFMTA as a whole works to modernize its means of recordkeeping, it should ensure that all its data management systems are able to export and/or share data using inter-compatible formats. At a minimum, software programs should be developed with input from the Performance Team to ensure that data may be conveniently imported into the Transtat business intelligence tool on a timely basis.
- *Consider improvements to the Operations Central Control (OCC) data management system to simplify performance data sharing, processing, and analysis.* Based on interviews to confirm data collection and reporting methods for metric 2.2.8, "Mean Distance Between Failure," it is evident that SFMTA maintenance staff have found OCC data difficult to review and/or edit in its current form. Bus Maintenance staff, in particular, have created a macro to re-compile daily incident data into a more useable format in Microsoft Excel. While this is a relatively minor inconvenience, reducing the number of steps required to process daily operations data may make it easier for divisions to share transactional/incident-level data with relevant Agency partners such as division mechanics or the Performance Team.
- *Expand public documentation of Strategic Plan Metrics Report metrics.* Current Strategic Plan Metrics Reports are published by the SFMTA on a monthly basis. While the names of many metrics are themselves descriptive of what the metric measures (e.g., 4.2.6 "Employee rating: I feel comfortable sharing my thoughts and opinions, even if they're different than others"), other metrics, such as 3.2.1 "Estimated economic impact of Muni service delays (Monthly $M)" are more methodologically complex. While footnotes currently serve the role of providing necessary contextual information, the SFMTA should develop a basic "data dictionary" to accompany the data, providing short synopses of the metric's purpose, data source, and methodology, as applicable. As metrics are added, retired, and/or modified, the data dictionary would also help satisfy the City Charter's requirement that "[e]ach performance report shall note any changes in the rules governing the methods by which performance is measured so as to inform interpretation of performance trends over time." [Sec. 8A.103.(e)]. Additionally, if the SFMTA notices a major discrepancy in data already published, it should revise the data in the next report and note that a correction has been made. These relatively small steps would improve transparency and further reduce hurdles to public understanding of important Agency performance measurements. (Note: later in FY 2015, the SFMTA will be hosting Strategic Plan metric dashboards on the Agency's public website, which will include data documentation.)
- *To the extent possible and pursuant to data availability, explore opportunities to report additional historic data (i.e., prior to FY 2012) in the monthly Strategic Plan Metrics Reports.* As documented in this and previous Quality Reviews, the definitions and data collection methods of several metrics (most notably, on-time performance) have been slightly modified over the past several years, some in response to Auditor recommendations. Additionally, according to SFMTA staff, on-time performance records prior to October 2011 are no longer accessible. Given these challenges, it is not possible to integrate historic data (i.e., data prior to FY 2012) into the Transtat business intelligence tool. However, there remains an opportunity to include additional historic data in the public-facing Strategic Plan Metrics Reports. Potential data include:

  - *Systemwide ridership data.* Use data submitted on an annual basis to the Federal Transit Administration for the National Transit Database (NTD) to provide a more complete picture of Muni ridership on an annual basis, complementing the average weekday rubber tire boardings and Muni Metro faregate entries reported as Strategic Plan Metric 2.2.11. (See the recommendation for metric 2.2.11 below.) *While this would not necessarily*
  - *Nominal cost per revenue hour/cost per unlinked trip data.* As noted above, the SFMTA currently reports Cost per Hour (3.4.1) and Cost per Unlinked Trip (3.4.3) data as adjusted to the most recent reporting year's CPI deflator, resulting in the reporting of nominal figures for the most recent year and changing adjusted figures for prior years. To ensure consistent comparability over time, the performance analyses in this report do not account for inflation (i.e., they use nominal values for the present and all prior years). Likewise, the SFMTA may also consider reporting the nominal figures submitted to the FTA on a yearly basis in its Strategic Plan Metric Reports, as a complement to the inflation-adjusted figures. While these data are also available through the NTD, including them in the monthly reports could help facilitate consistent year-over-year historical comparisons.

- *Continue to ensure the accuracy and internal consistency of publicly reported data.* Clearly, this is a top priority for the SFMTA, reflected in the development of new public-facing metrics and the introduction of Transtat as an internal analytical tool. Indeed, there are few peers for such a program, and the SFMTA is truly an industry leader in its implementation of accessible, accountable, and transparent data management and analysis. Nevertheless, as within any large organization, ensuring consistent data quality is always a challenge. The SFMTA should continue to pursue data collection methods that are efficient and internally consistent. Publicly reported data should always be clearly defined and contextualized for public consumption (see above recommendations).

Measure-Specific Recommendations

In addition to the general recommendations, a number of recommendations are made below to refine specific measures.

1.1.1 SFPD-Reported Muni-related Crimes/100,000 Miles

Coordination between the Performance Team and the Security, Investigations & Enforcement (SIE) team should continue, with the Performance Team ensuring that any new software introduced by SIE staff will be compatible with Transtat. SFMTA's SIE staff are concerned that the metric as it currently exists does not accurately reflect incidents of crime on Muni, as the only incidents that are included in the calculation are those that resulted in SFPD reports. Consequently, crimes such as vandalism, altercations, and/or thefts that do not result in SFPD reports are NOT included in this metric. Recently, the SIE team has been keeping an internal spreadsheet to track incidents reported through the Agency's Operations Central Control (OCC) Logs. As of early 2015, Performance Team staff has informed the Auditor that they have been working with the SIE team to revisit this metric and improve data sharing. However, there are apparent limitations to improving data efficiency at this time. For example, because the SFPD and OCC logs are separate, SIE staff must manually review and combine the data, ensuring that incidents are not duplicated.

The Performance Team and other SFMTA leadership as necessary should discuss whether or not a goal for this metric is appropriate, and how it should be tied to performance. SFMTA Security, Investigations & Enforcement staff also expressed concern that this metric's goal (3.39 SFPD-reported Muni-related crimes/100,000 miles in FYs 2013 and 2014) was unreasonable, given current levels of crime and SFPD's revised methodology. The current goal is derived from historic performance prior to the inclusion of incidents at stations and stops.

1.3.1 Muni Collisions/100,000 Miles
1.3.3 Muni Falls On board/100,000 Miles

The SFMTA should explore opportunities to streamline the tracking and reporting of incidents in the TransitSafe replacement software. As of early 2015, the SFMTA is working on a replacement to the current TransitSafe software. This replacement will, at a minimum, eliminate the use of paper forms in the process of reporting collisions and falls on board. System Safety staff are also reviewing the types of data they track for increased specificity in preventing collisions.

2.1.1 Customer Rating: Overall Customer Satisfaction with Transit Services

The SFMTA Performance Team should work with the Agency's Communications team to re-evaluate its approach to customer surveys, identifying the precise reasons why these data are desired, what specific questions should be asked, and what timeframe is most reasonable.

The quarterly survey, while it has been a useful tool for the SFMTA over the past year, still has several key limitations. First, there is a long-term need for people to continually take the survey, and staff is concerned about so-called "survey fatigue." Second, the survey needs to be more representative, as there are relatively few responses from the Bayview and Visitacion Valley. Currently, staff weight survey responses by zip code, but this approach may not be accurate because the percentage of people taking transit in each zip code may be different. Third, because the survey is opt-in, not randomized, results are not statistically significant. Given this range of issues, staff recognizes that long-term, cost-effective solutions are difficult. Nevertheless, as of early 2015, the Performance Team is working with the Communications team to explore the option of broadening and diversifying the survey pool through social media and other Agency outreach channels.

2.2.1 Percentage of Transit Trips with <2 Minute Bunching on Rapid Network

2.2.1 Percentage of Transit Trips with +5 Minute Gaps on Rapid Network

To reduce confusion with the new "Rapid" Network brand of limited stop service, redefine this metric to focus on Muni's 'Frequent' services (i.e., routes operating every 10 minutes or less). Through the Transit Effectiveness Project and Muni Forward programs, the SFMTA has identified a backbone of high-ridership bus and rail routes branded as the "Rapid" Network. While they generally operate frequently (e.g., 10 minutes or less), frequent service is not mutually exclusive with the Rapid network. Lines that are not on the Rapid Network (e.g., 41 Union) may offer frequent service, while the Rapid Network may not operate frequently at certain off-peak times.

To clarify how and why these metrics are reported, the Performance Team should ensure that full definitions of each metric are provided both within the internal Transtat tool and as part of the monthly Strategic Plan Metric Reports provided to the public.

2.2.2 Percentage of On-Time Performance for Non-Rapid Network Routes

With the redefinition of Metric 2.2.1 to focus on 'Frequent' services only (i.e., routes that operate with frequencies of every 10 minutes or less), redefine this metric in tandem by calculating on-time performance of services that have scheduled headways of more than 10 minutes (i.e., 'Infrequent' services). If the goal of this metric is to capture the waiting time experience during infrequent service rather than the "Rapid" Network per se, then the calculation should be exclusive to service that comes infrequently.

2.2.4 Percentage of On-Time Departures from Terminals

The Performance Team should coordinate with the Transit Division to determine potential amendments to the definition of "on-time" for this metric. This metric currently uses the same definition for "on-time" as for regular timepoints (i.e., -1 to 4 minutes within schedule). Because of travel time variability once a vehicle is en route, an even tighter standard, such as -1 to 1 minutes within schedule, may be required for a terminal departure in order to maximize the chances of remaining on-time further down the route.

2.2.7 Percentage of Trips Over Capacity During AM Peak (8:00a-8:59a, Inbound) at Max Load Points

2.2.7 Percentage of Trips Over Capacity During PM Peak (5:00p-5:59p, Outbound) at Max Load Points

Expand the public documentation of this metric, explaining at a minimum that "Inbound" and "Outbound" definitions do not solely mean routes in and out of downtown San Francisco. The SFMTA may also consider the value of a separate metric that specifically evaluates the percentage of trips over capacity for only those routes that terminate in downtown San Francisco.

The Performance Team should consider the value in differentiating between different route types in reported data (i.e., between 'Frequent' routes and community circulators). Currently, the SFMTA reports the average of all

vehicles/routes, which may not present the entire picture as more popular routes experience very high crowding during peak periods while others, such as community circulators which are designed to provide coverage to more isolated neighborhoods, may not. The SFMTA currently collects these data for each route separately.

2.2.8 Mean Distance Between Failure

Cable Car. Cable Car "chargeable" should definitions be formalized, but in such a way as to preserve the flexibility desired by experienced Cable Car division staff as well as provide a consistent basis for accurate and historical record-keeping in the future. A formal, codified definition of what a "chargeable" failure remains somewhat elusive, in large part due to a prevailing opinion that the service is unique and therefore should retain a high degree of flexibility in categorizing incidents that affect service. The service is indeed one-of-a-kind; while the FTA's National Transit Database has a separate "cable car" category, the only system in the country listed in this category is in San Francisco. Unfortunately, in the future, informal internal categorizations could lead to confusion among staff and ultimately, an unreliable measure of vehicle reliability.

Rubber Tire. The Performance Team should work with Bus Maintenance staff to identify opportunities to 1) ensure that the forthcoming Enterprise Asset Management program will work with the Transtat tool, 2) improve the frequency and detail of information sharing, and ultimately 3) identify a workflow for information sharing that reflects the various needs (and/or limitations) of both parties. SFMTA Woods Division staff noted that they are working with software developers to ensure their near-term compatibility with the Agency's new Enterprise Asset Management. Additionally, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.

Light Rail and Streetcar. The Performance Team should work with Rail Maintenance staff to identify opportunities to improve the frequency and detail of information sharing with a workflow that reflects the various needs (and/or limitations) of both parties. Due to occasional variability in the OCC logs, SFMTA Green Division staff noted that identifying and reporting chargeable failures on a monthly basis is the most convenient and accurate approach. However, as with rubber tire buses, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.

2.2.11 Ridership (Rubber Tire, Average Weekday)

2.2.11 Ridership (Faregate Entries, Average Weekday)

To facilitate analyses of ridership over time (a valuable public accountability and evaluation tool), the SFMTA should consider reporting additional aggregate historical ridership data in its monthly Strategic Plan Metric Reports. Annual ridership data by mode and systemwide are available through data submitted to the Federal Transit Administration, and according to Performance Team staff, the SFMTA also has weekday ridership averages on a route-by-route basis dating back to FY 2000.

3.2.1 Estimated economic impact of Muni service delays (annualized)

The SFMTA Performance Team should update the wage data underlying this metric, which was last updated in 2013. Given its complex origin, this metric's full methodology should be included as a footnote in the monthly Strategic Plan Metrics Reports.

4.3.3 Unscheduled absence rate by employee group (Transit operators)

First, improve the accuracy and efficacy of metric 4.4.3, "Unscheduled absence rate" for transit operators by reviewing and simplifying the current Trapeze coding system. Currently, the Trapeze database contains multiple overlapping codes for various types of "unscheduled" or "scheduled" absences. It is unclear the extent to which these codes are either applied consistently and/or used to complete additional fine-grained analysis internally. The SFMTA should re-review these codes, exploring opportunities to simplify the categories as needed. There may also be an opportunity to utilize Trapeze's ability to prevent operators who are "locked out" from driving without assigning multiple absence codes to categorize the situation, potentially reducing double-counts in the data. Finally, the precise definitions of "absence" (absence from work, duty, or from a run?) and "scheduled" (i.e., what amount of advance notice given of an absence is needed to qualify as "scheduled") are unclear at present, and should be re-reviewed and/or codified.

Second, institute (an) additional metric(s) to track Agencywide attendance and/or absence rates using paid and unpaid labor data (when available from Oracle/PeopleSoft). Sophisticated employee time analysis is already available for internal review within the Transtat tool, using paid labor data from PeopleSoft. A helpful feature of this dataset is that PeopleSoft labor codes are the same throughout the Agency; even the more complex transit operator absence data from Trapeze is coded into PeopleSoft using the standard Agencywide codes. However, unpaid labor data is not available at this time, making it impossible to do a full analysis of employee absence rates. Once the full dataset becomes available, the SFMTA should institute additional metrics (the precise nature of which are to be determined) to measure Agencywide attendance and/or absence rates in accordance with Absence Management Task Force goals and objectives.

Chapter 3
Analysis of SFMTA Transit Performance Metrics

With the introduction of a new set of performance standards and metrics based on the Agency's Strategic Plan goals and objectives, the SFMTA has effectively tied specific quantitative measures to wider qualitative goals.

In total, as of September 2014 there were over 90 Strategic Plan metrics addressing the SFMTA's infrastructure, operations, sustainability, and labor. This chapter discusses in detail 42 of those metrics, chosen in collaboration with SFMTA Performance Team staff to document the primary focus of this audit report: Muni transit performance. Of the 42 metrics, 30 are defined here as "Core" metrics, which highlight the safety and effectiveness of Muni services. "Core" metrics also include the Strategic Plan's Key Performance Indicators for transit services. The Auditor also conducted interviews with SFMTA staff responsible for collecting and reporting data for the "core" metrics, providing an additional level of detail for this set of standards. The remaining 12 transit-related metrics are defined as "Additional" Muni performance metrics, as they provide more contextual measures of transit performance.

Each section of metric analysis is structured the same way, although "core" metrics include more detail. First, metrics are presented in the order in which they appear in Strategic Plan Metrics Reports, with the Strategic Plan goal and objective they are intended to support noted at the top of the page. Second, each metric page includes the following elements:

Purpose: to explain why the metric is being reported.

Definition: to provide the meaning of the metric.

Method: to explain how data are collected, reported, and analyzed to produce the metric.

Metric Goal: Yearly goal for the metric, if publicly reported.

FY 13-14 Performance: Whether or not the SFMTA achieved the metric goal during the audit period.

Trend: Assessment of the historical and audit period performance, determined to be positive, negative, or neutral in relation to attainment of goals or, in the absence of a publicly reported goal, as pertains to improvement of performance.

Audit Period Performance: Graphical or tabular representation of FY 2013-2014 data.

Historic Performance: Graphical or tabular representation of historical data, where such data are available.

Discussion: Describes observed trends and/or the results of interviews with applicable SFMTA staff.

Recommendations: Identifies where problems or inefficiencies in data collection, reporting, or analysis may be occurring and recommends 1) clear solutions to these problems or 2) approaches the SFMTA may take in addressing the issues.

CORE MUNI PERFORMANCE METRICS

This first section discusses metrics that highlight the safety and effectiveness of Muni services.

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.1: Improve security for transportation system users

1.1.1 SFPD-Reported Muni-related crimes/100,000 miles

Purpose

To measure security incidents on Muni.

Definition: For FY 13-14, this metric tracks only those security incidents that resulted in an SFPD police report. In January 2013, the metric was expanded to include incidents at Muni stops and stations.

Method: SFPD data is collected daily by Security, Investigations & Enforcement (SIE) staff and entered into an Access database; these data are then visualized by the Transtat system.

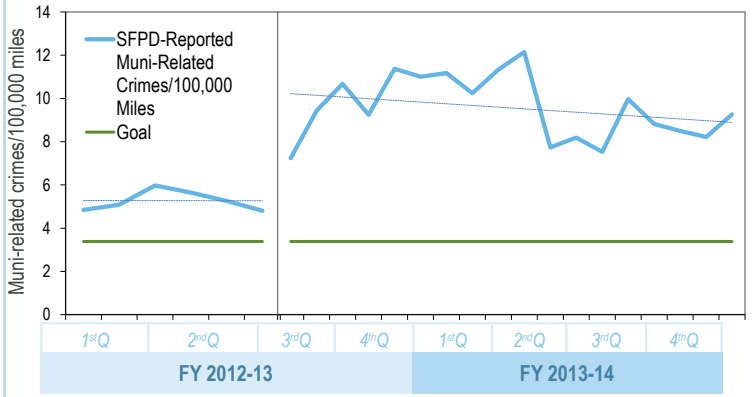
Discussion

The methodologies by which the SFMTA has publicly reported its crime and security incident data have changed significantly over the past several fiscal years, making historical comparisons challenging. For instance, from FY 2009 to FY 2011, the SFMTA reported "SFPD-Reported Crimes & Other Incidents per 100,000 Boardings." Concurrently, the agency reported the raw number of SFPD Reported Crimes and Other Incidents, but in FY 2012, switched to reporting SFPD-Reported Crimes only. This metric, "SFPD-Reported Muni-related crimes per 100,000 miles," was introduced with the Strategic Plan Metrics Reports in January 2012.

A significant methodological change occurred during the audit period, when the definition was expanded to include incidents at Muni stops and stations; this caused the number of incidents to appear to rise significantly in January 2013. However, controlling for this change, SFPD-reported Muni-related crimes per 100,000 miles slightly decreased during the FY 13-14 period. In particular, after peaking in October 2013, reported crime dropped 40% in November 2013 due to a "surge" program to put more officers on Muni vehicles, which was funded by a grant from the Department of Homeland Security. Crime began to increase again as funding for the "surge" was depleted in early 2014.

Metric Goal: 3.39	FY 13-14 Performance	Trend
	▼ Did not meet goal	▲ Positive (decreasing)

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
3.77	7.55	9.45

Recommendations

- **Coordination between the Performance Team and the SIE team should continue, with the Performance Team ensuring that any new software introduced by SIE staff will be compatible with Transtat.** SFMTA's SIE staff are concerned that the metric as it currently exists does not accurately reflect incidents of crime on Muni, as the only incidents that are included in the calculation are those that resulted in SFPD reports. Consequently, crimes such as vandalism, altercations, and/or thefts that do not result in SFPD reports are NOT included in this metric. Recently, the SIE team has been keeping an internal spreadsheet to track incidents reported through the Agency's Operations Central Control (OCC) Logs. As of early 2015, Performance Team staff has informed the Auditor that they have been working with the SIE team to revisit this metric and improve data sharing. However, there are apparent limitations to improving data efficiency at this time. For example, because the SFPD and OCC logs are separate, SIE staff must manually review and combine the data, ensuring that incidents are not duplicated.
- **The Performance Team and other SFMTA leadership as necessary should discuss whether or not a goal for this metric is appropriate, and how it should be tied to performance.** SFMTA Security, Investigations & Enforcement staff also expressed concern that this metric's goal (3.39 SFPD-reported Muni-related crimes/100,000 miles in FYs 2013 and 2014) was unreasonable, given current levels of crime and SFPD's revised methodology. At a minimum, SIE staff may prefer to measure SFPD-reported Muni-related crimes by ridership instead of miles. The current goal is derived from historic performance prior to the inclusion of incidents at stations and stops.

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.2: Improve workplace safety and security

1.2.1 Workplace Injuries/200,000 hours

Purpose

To quantify the SFMTA's commitment to improving workplace safety.

Definition: This metric measures Worker's Compensation (WC) claims opened in a given month in relation to employee pay hours. In the context of these WC claims, an "injury" is an event that occurs to any SFMTA employee where the need for medical treatment and/or disability is assigned by a medical provider.

Method: Count of WC claims opened Agency-wide in a given month, as reported in the monthly Worker's Claim Status Report, over monthly employee pay hours.

Discussion

In addition to tracking workplace injuries/200,000 hours, which is a U.S. Department of Transportation (USDOT) benchmark metric, the SFMTA also does a substantial amount of additional internal tracking and reporting.

Historically and during the audit period, SFMTA's workplace safety improved, consistently staying below the goal of 14.6 workplace injuries/200,000 hours. This may be partly due to the Ergonomic Program, as well as the Employee Health Program's "Road to Fitness" initiative, which won an achievement award for the 2014 year from the American Diabetes Association. Participation in this program continues to rise and will likely reduce the frequency and/or severity of injuries in the future. (Note: Since this metric includes data for WC claims rather than actual injury reports, claims may be filed much later than an actual injury may have occurred, ranging from the same month as the incident to several months later.)

Recommendations

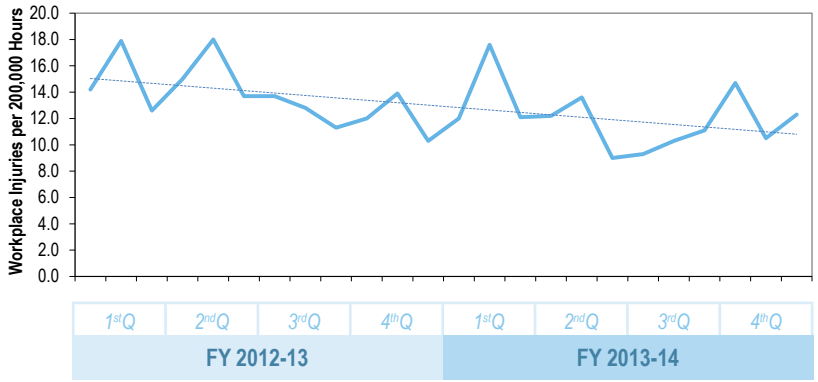
None.

Metric Goal: 14.6

FY 13-14 Performance	Trend
▲Achieved Goal	▲Positive*

*# of injury claims are dropping

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
16.2	13.8	12.1

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.3: Improve the safety of the transportation system

1.3.1 Muni Collisions/100,000 Miles | 1.3.3 Muni Falls On Board/100,000 Miles

Purpose

To reduce collisions and falls on board through effective operator training programs as well as effective accident follow-up training.

Definition: Track reduction in collisions and falls on board as a result of more effective operator training and/or collision retraining. As reported, a "collision" is defined as "contact between one of Muni's vehicles and another vehicle, person, or object." As reported, "falls on board" are defined as simply passenger falls that occur on board a Muni vehicle.

Method: Number of reportable revenue service collisions and falls on board. SFMTA staff manually enter individual incidents into a TransitSafe database, which is automatically synced with Transtat.

Discussion

Historically and during the audit period, rates of collisions and falls on board have been gradually increasing. In particular, collisions/100,000 miles hit an eight-year high with 5.88 collisions/100,000 miles in FY 2014. According to System Safety staff, reasons for this increase may include the introduction of new low-floor buses, which have significantly different turning radii, a change that has affected both experienced and new operators alike. Staff also proposed that a recent hiring campaign (the SFMTA added 200 new operators) may have led to a spike in 'rookie collisions,' which would cause the metric to jump temporarily.

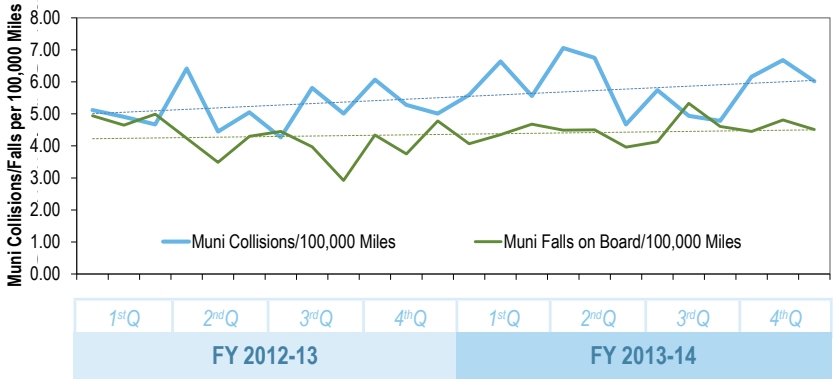
Recommendations

The SFMTA should explore opportunities to streamline the tracking and reporting of incidents in the TransitSafe replacement software. As of early 2015, the SFMTA is working on a replacement to the current TransitSafe software. This replacement will, at a minimum, eliminate the use of paper forms in the process of reporting collisions and falls on board. System Safety staff are also reviewing the types of data they track for increased specificity in preventing collisions.

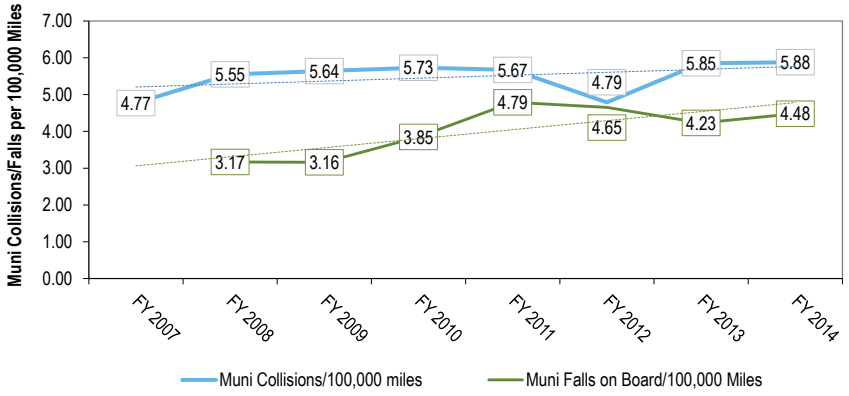
Metric	FY 13-14 Performance	Trend
Goal: 4.53 (collisions)	▼ Did not Achieve Goal	▼ Negative*

**Slight Increase*

Audit Period Performance



Historic Performance



Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.1: Improve customer service and communications

2.1.1 Customer Rating: Overall Customer Satisfaction with Transit Services

Purpose

To measure the level of satisfaction of transit riders. Use the results of the survey to implement improvements.

Definition: This metric presents the results of the "Overall Satisfaction with Transit Services" question of the Agency's new quarterly customer satisfaction survey, where 1 = very dissatisfied, 5 = very satisfied.

Method: Conduct a quarterly online customer satisfaction survey sent out to a panel of opt-in Muni customers. Only results of San Francisco residents are then weighted by ZIP code.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▼ Downward

Audit Period Performance

FY 2014 Q2	FY 2014 Q3	FY 2014 Q4	FY 2014 Average
3.12	3.02	2.93	3.02

Historic Performance

N/A

Discussion

During the development of the FY 2013-2018 SFMTA Strategic Plan, SFMTA leadership established a mandate for high-frequency surveying to gauge the Agency's progress as defined by its regular users. After the team tried several approaches, such as soliciting feedback in person and partnering with the Communications Division to advertise the survey through cards on board transit vehicles, the team settled on a quarterly customer satisfaction survey. Begun in FY 2014, the resulting survey is conducted online by an opt-in panel consisting of approximately 6,000 members, not all of whom take the survey regularly (in FY 2014, between 2,500 and 3,500 members took the survey each quarter). The membership of the online panel is also consistently changing, albeit slightly, with about 100 new members signing up per quarter and roughly the same amount unsubscribing from the list.

Results from the survey began to be released in the Strategic Plan Metrics Reports in the second quarter of FY 2014. While the average "overall customer satisfaction with transit services" rating for this year was 3.02, representing a 'neutral' (i.e., neither satisfied nor dissatisfied) position, the rating trended downward quarter by quarter.

Recommendations

The SFMTA Performance Team should work with the Agency's Communications team to re-evaluate its approach to customer surveys, identifying the precise reasons why these data are desired, what specific questions should be asked, and what timeframe is most reasonable.

The quarterly survey, while it has been a useful tool for the SFMTA over the past year, still has several key limitations. First, there is a long-term need for people to continually take the survey, and staff is concerned about so-called "survey fatigue." Second, the survey needs to be more representative, as there are relatively few responses from the Bayview and Visitacion Valley. Currently, staff weight survey responses by zip code, but this approach may not be accurate because the percentage of people taking transit in each zip code may be different. Third, because the survey is opt-in, not randomized, results are not statistically significant. Given this range of issues, staff recognizes that long-term, cost-effective solutions are difficult. Nevertheless, as of early 2015, the Performance Team is working with the Communications team to explore the option of broadening and diversifying the survey pool through social media and other Agency outreach channels.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.1 Percentage of Transit Trips with < 2 Minute Bunching on Rapid Network Percentage of Transit Trips with +5 Minute Gaps on Rapid Network

Purpose

To measure schedule adherence and help riders better understand how long they may be waiting for a bus.

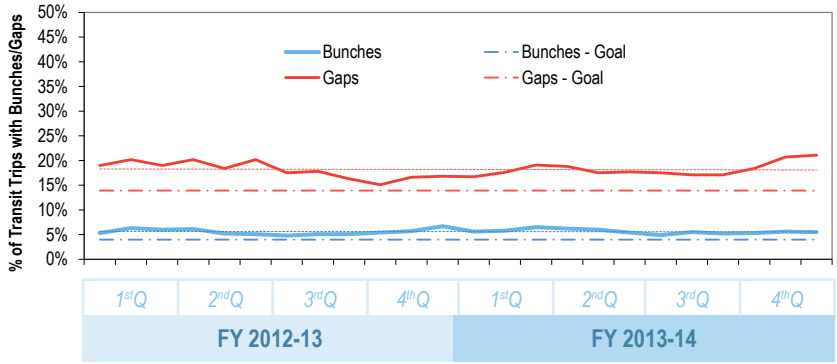
Definition: For FY13-14 reported data, "Rapid" network defined as any key or busy route, such as the 1, 8X, 22, 30, 47/49, etc. "Bunching" defined as two buses within two minutes of each other (for routes with a headway greater than five minutes), or buses within one minute of each other (for routes with a scheduled headway of five minutes or less). "Gaps" are defined as a bus's scheduled headway plus five minutes or more.

Method: Compare Trapeze run scheduling data (i.e., scheduled headways) with NextBus arrival times at timepoints along each route (i.e., actual headways).

Metric Goal:
Bunches - 4.0%
Gaps - 13.9%

FY 13-14 Performance	Trend
▼ Did not meet goals	▶ Neutral

Audit Period Performance



Discussion

These metrics were introduced with Transtat and the new Strategic Plan Metric Reports in FY 2013 as more user-friendly ways to quantify schedule adherence and customer-observed delay. During the course of the audit period, the incidences of bunching and gapping remained relatively neutral, remaining at 5.6% (bunches) and at approximately 18% (gaps), though the metric goals were not met.

On a more structural note, the definition of "Rapid" at the SFMTA has fluctuated over the past several years. In the context of these reported data, "Rapid" was used to describe any key or busy route, such as the 1, 8X, 22, etc. (see Definition above). Currently, the "Rapid" designation is given to routes that offer limited stop service as well as the Muni Metro system, and as of April 25, 2015, all limited stop routes are being rebranded as "Rapid," with the 38L becoming the 38R, and so forth.

Historic Performance

N/A (new metric)

Metric	FY 2012	FY 2013	FY 2014
Bunches (Goal 4.0%)	**5.3%**	**5.6%**	**5.6%**
Gaps (Goal 13.9%)	**18.5%**	**18.0%**	**18.2%**

Note: Due to a NextBus/schedule data syncing issue, results are not available for 6/21/2014-6/30/2014; June 2014 averages reflect data from 6/1/2014-6/20/2014 only. Also, this metric was first put into use in FY 2013, but data available as far back as October 2011 was retroactively calculated to produce FY 2012 results.

Recommendations

To reduce confusion with the new "Rapid" Network brand of limited stop service, redefine this metric to focus on Muni's 'Frequent' services (i.e., routes operating every 10 minutes or less). Through the Transit Effectiveness Project and Muni Forward programs, the SFMTA has identified a backbone of high-ridership bus and rail routes branded as the "Rapid" Network. While they generally operate frequently (e.g., 10 minutes or less), frequent service is not mutually exclusive with the Rapid network. Lines that are not on the Rapid Network (e.g., 41 Union) may offer frequent service, while the Rapid Network may not operate frequently at certain off-peak times.

To clarify how and why these metrics are reported, the Performance Team should ensure that full definitions of each metric are provided both within the internal Transtat tool and as part of the monthly Strategic Plan Metric Reports provided to the public.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.2 Percentage of On-Time Performance for Non-Rapid Network Routes

Purpose

To measure schedule adherence.

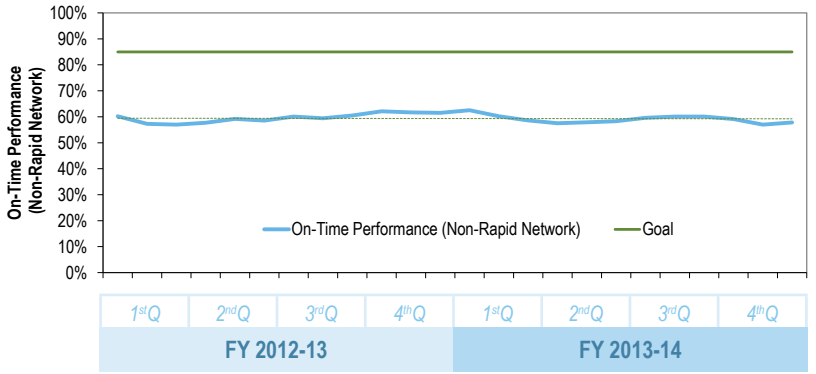
Definition: The City Charter stipulates that the definition of "on time" shall be between one minute early and four minutes late (-1 to 4 minutes). Other designations include: "Very late" (>10 minutes), "Late" (4-10 minutes), "Early" (> -1 minutes), and "No show."

Method: Compare Trapeze run scheduling data (i.e., scheduled arrival times) of non-Rapid routes with NextBus arrival times at timepoints along each route. (For FY13-14 reported data, "non-Rapid" routes are all routes not classified as "Rapid," i.e., not a key or busy route, such as the 1, 8X, 22, 30, 47/49, etc.)

Metric Goal: 85%

FY 13-14 Performance	Trend
▼ Did not achieve goal	▶ Neutral

Audit Period Performance



Discussion

Historically and during the audit period, on-time performance on non-Rapid routes did not meet the Charter-specified goal of 85%; however, the performance remained relatively neutral, fluctuating between an average of 61% in FY 2012 and a 59% average in FY 2014. During the FY 13-14 audit period (July 2013), on-time performance for non-Rapid routes hit a high of 62.5%. While on-time performance is influenced by multiple factors, including service delivery percentages, these findings could indicate that current schedules may not be realistic in practice. In addition to redeveloping schedules, the SFMTA is implementing small improvements such as red transit-only lanes to improve network on-time performance.

Historic Performance

FY 2012	FY 2013	FY 2014
61.0%	59.6%	59.0%

Note: Due to a NextBus/schedule data syncing issue, results are not available for 6/21/2014-6/30/2014; June 2014 averages reflect data from 6/1/2014-6/20/2014 only.

Recommendations

With the redefinition of Metric 2.2.1 to focus on 'Frequent' services only (i.e., routes that operate with frequencies of every 10 minutes or less), redefine this metric in tandem by calculating on-time performance of services that have scheduled headways of more than 10 minutes (i.e., 'Infrequent' services). If the goal of this metric is to capture the waiting time experience during infrequent service rather than the "Rapid" Network per se, then the calculation should be exclusive to service that comes infrequently.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.3 Percentage of Scheduled Service Delivered (Trips)

Purpose

To measure schedule adherence and system reliability.

Definition: The percentage of scheduled trips for which operators are present in the Trapeze database.

Method: In Trapeze database, identify the number of trips with an operator assignment. (These are trips on filled runs.) Calculate the percentage of filled trips over total trips.

Discussion

While the SFMTA did not meet the 98.5% annual scheduled service delivery target established by Proposition E during the past three fiscal years, on a month to month basis during the FY 13-14 audit period, performance occasionally exceeded the target. Increased operator hirings may help the SFMTA more consistently achieve the goal in the future; as of mid FY 2015, the SFMTA has already exceeded the 98.5% goal and is working to ensure more consistent service delivery.

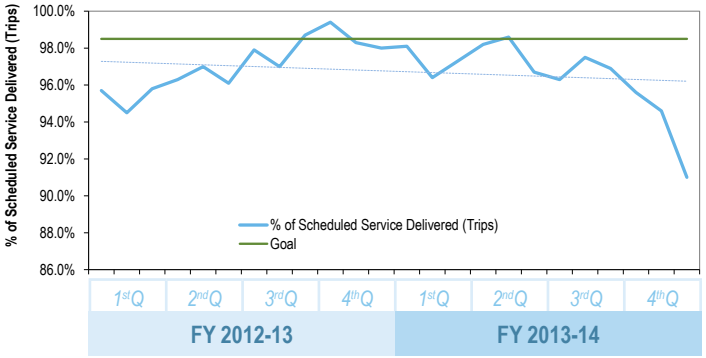
Recommendations

None.

Metric Goal: 98.5%

FY 13-14 Performance	Trend
▼ Did not meet goal	▶ Neutral

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
96.7%	97.0%	96.4%

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.4 Percentage of On-Time Departures from Terminals

Purpose

To measure system reliability.

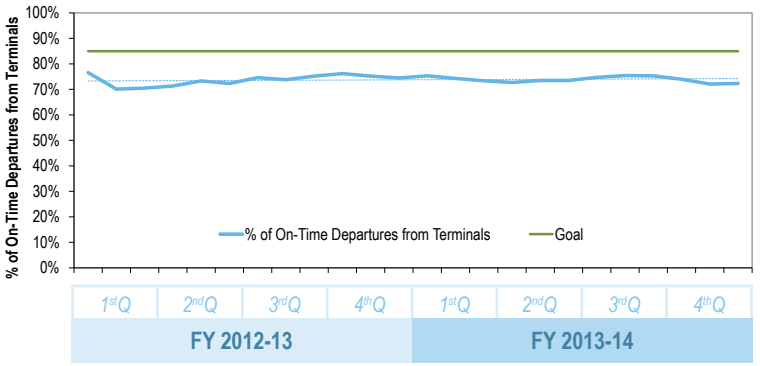
Definition: For public reporting purposes, "on-time" is defined as -1 to 4 minutes within schedule.

Method: Compare Trapeze run scheduling data (i.e., scheduled arrivals at timepoints) with actual arrival times at timepoints along each route, using NextBus data. Timepoints are classified as Initial Terminal, Final Terminal, and mid-stop; for this metric, SFMTA staff filter results by Initial Terminal.

Metric Goal: 85%

FY 13-14 Performance	Trend
▼ Did not achieve Goal	▶ Neutral

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
76.9%	73.7%	73.9%

Note: Due to a NextBus/schedule data syncing issue, results are not available for 6/21/2014-6/30/2014; June 2014 averages reflect data from 6/1/2014-6/20/2014 only.

Discussion

Over the course of the audit period, the percentage of on-time departures from terminals remained relatively consistent, fluctuating seasonally, but falling short of the 85% Charter-mandated goal. The audit period high was 76.6% in July 2012, with the two-year low occurring the following month (70.1%). SFMTA staff noted that Green Division experimented with targeted projects to improve on-time departures, such as installing synchronized clocks at terminals so operators do not need to rely on their own timekeeping devices and stationing supervisors at terminals to monitor operators. Staff explained that these projects led to a significant positive improvement in performance.

Recommendations

The Performance Team should coordinate with the Transit Division to determine potential amendments to the definition of "on-time" for this metric. This metric currently uses the same definition for "on-time" as for regular timepoints (i.e., -1 to 4 minutes within schedule). Because of travel time variability once a vehicle is en route, an even tighter standard, such as -1 to 1 minutes within schedule, may be required for a terminal departure in order to maximize the chances of remaining on-time further down the route.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.5 Average Muni System Speed

Purpose

Twofold – first, to provide another customer-focused gauge of Muni performance; and second, to give SFMTA planners insights into where transit vehicles are experiencing significant slowdowns, and thus where they should prioritize transit improvements.

Definition: Average Muni system speed.

Method: Analyze data from APCs for travel times and mileage between stops. Given that APCs are only on one-third of vehicles, this metric thus relies on a sample of bus system data.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	N/A

Audit Period Performance

N/A

Historic Performance

N/A

Discussion

As of the writing of this Audit, data from 2012 to the present for this metric are available in Transtat, but are not being publicly reported. The schedule for reporting these data is not yet known.

Recommendations

None.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.6 Percentage of On-Time Performance

Purpose

To measure schedule adherence.

Definition: The City Charter stipulates that the definition of "on-time" shall be between one minute early and four minutes late (-1 to 4 minutes). Other designations include: "Very late" (>10 minutes), "Late" (4-10 minutes), "Early" (> -1 minutes), and "No show." This metric includes all transit services; i.e., both "Rapid" and "non-Rapid" routes as defined for reporting purposes in FYs 2013 and 2014.

Method: Compare Trapeze run scheduling data (i.e., scheduled timepoint arrivals) with actual arrival times at timepoints along each route, using NextBus data.

Discussion

Midway through FY 2012, the SFMTA adjusted the way on-time performance was calculated, causing what appears to be an abnormally large drop in on-time performance between FY 2011 and FY 2012. Because this result is largely due to the change in the SFMTA's reporting methodology, a trendline is omitted from this graphic.

As with metric 2.2.2 (On-Time Performance for Non-Rapid Network Routes), the SFMTA did not meet the Charter-mandated 85% performance goal during the audit period. Performance fluctuated between a low of 55.6% in August 2012 and a high of 61.4% in April 2013. While average performance during the audit period resulted in a neutral trend, SFMTA staff cautioned that a host of factors are causing on-time performance to slip in FY 2015, including attendance problems as well as a culture of encouraging drivers to not be late that may unintentionally lead to drivers leaving too early.

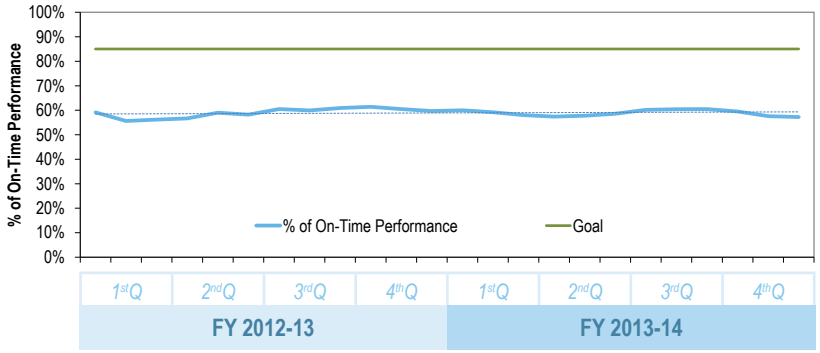
Recommendations

None.

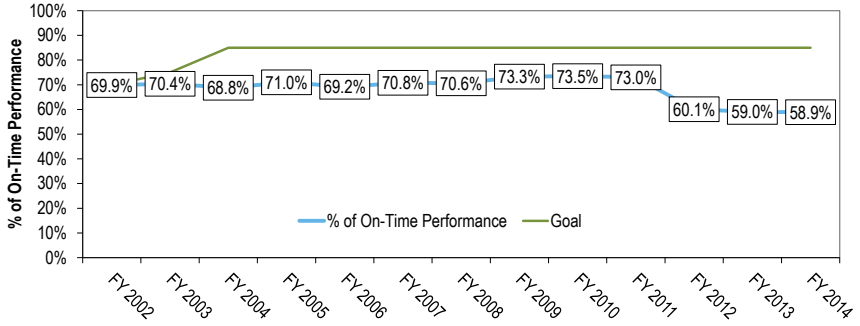
Metric
Goal: 85%

FY 13-14 Performance	Trend
▼ Did not meet goal	▶ Neutral

Audit Period Performance



Historic Performance



Note: Due to a NextBus/schedule data syncing issue, results are not available for 6/21/2014-6/30/2014; June 2014 averages reflect data from 6/1/2014-6/20/2014 only. Additionally, as confirmed by SFMTA staff in February 2014, the historic FY 2012 figure (60.1%) is a partial measure of that year's performance as it only includes data from October 15, 2011 through June 30, 2012.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.7 % of Trips Over Capacity During AM Peak (8:00a-8:59a, Inbound) at Max Load Points % of Trips Over Capacity During PM Peak (5:00p-5:59p, Outbound) at Max Load Points

Purpose

To measure overcrowding at peak periods.

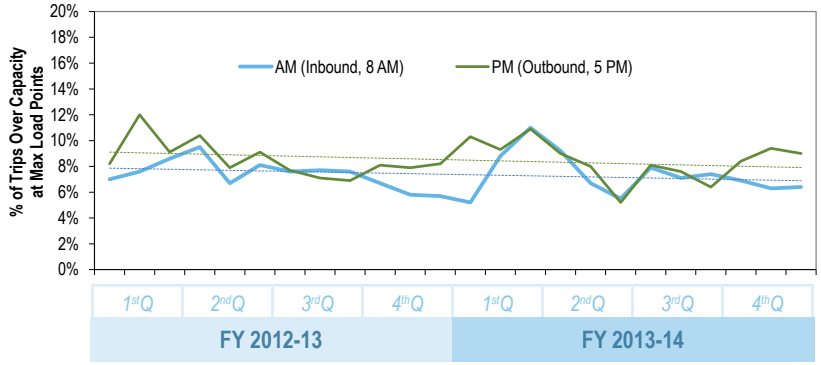
Definition: Passenger counts from Automatic Passenger Counting (APC) units are compared against bus capacities. Reported results represent an average of all vehicles/ routes.

Method: The highest recorded number of passengers on board during a trip is compared to reported vehicle capacity. The number of trips with a maximum load above reported capacity is divided by the total number of trips. Data analyzed are from Inbound 8am and Outbound 5pm hourly periods.

Metric Goal: Not Provided

FY 13-14 Performance	Trend
No goal established	▲ Positive

Audit Period Performance



Historic Performance

N/A

Discussion

This is a new metric, introduced to replace the traditional "Load Factor" performance standard, which can underestimate the impact of crowding on riders. The traditional load factor methodology compares the sum of maximum passenger loads over an hour with the sum of vehicle capacity. That methodology assumes that both customers and vehicles arrive at even intervals. In reality, variations in both ridership and actual head-ways can cause uneven loads. The new methodology, which measures the percentage of full buses, accounts for the fact that there can be significant variation in loads from the average. (The traditional load lactor metric, however, continues to be tracked internally but is not reported publicly.)

During the course of the audit period, the percent of trips over capacity during the AM and PM peak periods trended slightly downward, fluctuating from month to month: Trips over capacity during the PM peak had a high at 12% trips over capacity in August 2012 and hit an audit period low in December 2013 with 5.2% of trips over capacity. For AM peak trips, the audit period high occurred in September 2013 (11.0% of trips over capacity) and the also occurred in December 2013 when only 5.5% of trips were over capacity.

The Performance Team noted that with the introduction of more low-floor buses and new locks on existing flip-up seats, the capacity of vehicles has been reduced overall. Average capacity numbers are no longer accurate and must be adjusted; when they are, the number of overcapacity runs will increase in the near-term. Additionally, existing APC technology consists of sensors that are laterally mounted at the front and rear doorwars on approximately 30 percent of the rubber-tire fleet (motor coaches and electric trolley coaches). Simultaneous customer movement and blocking of the sensors may impact data quality. In conjunction with a major initiative to upgrade radio communications on vehicles, the SFMTA intends to sue new infrared technology with overhead-mounted sensors to improve data quality.

Recommendations

Expand the public documentation of this metric, explaining at a minimum that "Inbound" and "Outbound" definitions do not solely mean routes in and out of downtown San Francisco. The SFMTA may also consider the value of a separate metric that specifically evaluates the percentage of trips over capacity for only those routes that terminate in downtown San Francisco.

The Performance Team should consider the value in differentiating between different route types in reported data (i.e., between 'Frequent' routes and community circulators). Currently, the SFMTA reports the average of all vehicles/routes, which may not present the entire picture as more popular routes experience very high crowding during peak periods while others, such as community circulators which are designed to provide coverage to more isolated neighborhoods, may not. The SFMTA currently collects these data for each route separately.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.8 Mean Distance Between Failure

Purpose

To measure reliability as indicated by the miles a vehicle travels between failures.

Definition: Measurement is guided in part by the Federal Transit Administration, which classifies failures as either a major or an "other" failure of an element of the vehicle's mechanical system that prevents the vehicle from completing its scheduled revenue trip or starting its next scheduled revenue trip. For each incident of a major or "other" failure, transit agencies must report whether the vehicle completes the trip or the vehicle does not complete the trip. Incidents that occur during deadhead or layover must also be included in this measurement. According to the Federal Transit Administration, "major" mechanical failures prevent revenue vehicles from returning to service "because actual movement is limited or because of safety concerns," while "other" failures prevent revenue vehicles from returning to service "because of local agency policy," even though the vehicle may be physically able to continue in revenue service.

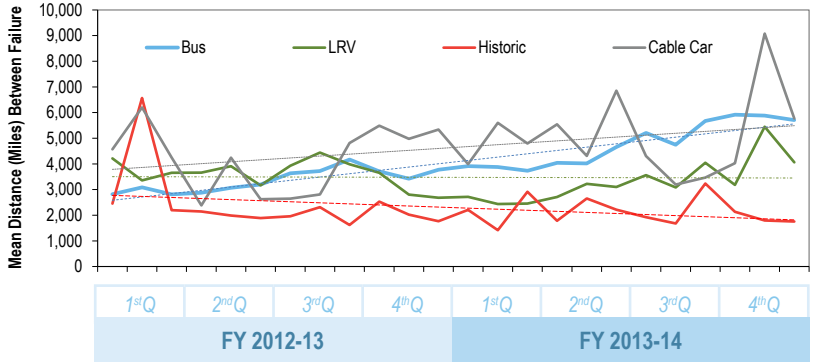
Method: Varies by mode. Generally, data are collected from the Central Control Log and the online SHOPS system and are processed differently between cable car, light rail/streetcar, and rubber tire modes due to distinct needs and policies at each division. Data are compiled and submitted on a monthly basis (with cable car failures being bundled together with LRV and historic streetcar data) in hard-coded (i.e., pre-summarized) spreadsheets.

For rubber tire vehicles, all verifiable major and "other" mechanical defects (defined as "chargeable") are included as part of the mean distance between failure figure. Areas that do not result in a chargeable road call to the maintenance shops include accident damage, sick passengers, vandalism, body damage, and broken windows.

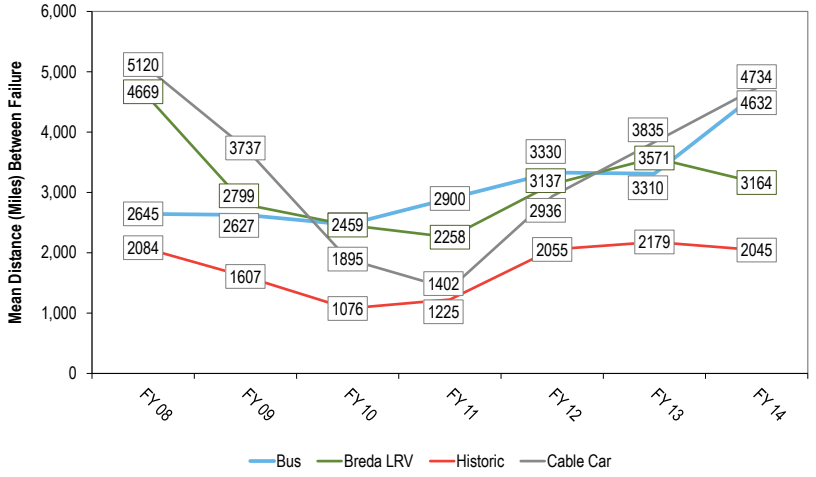
For light rail vehicles and streetcars, chargeable "major" and "other" failures are included in the MDBF figure if and only if the incident causes a line delay of five minutes or more, or causes a vehicle to not finish its run due to mechanical defect. Non-chargeable incidents for rail vehicles are similar to buses, including accident damage, vandalism, and damage to ad signs.

Metric	FY 13-14 Performance	Trend
Goal: None Provided	No goal established	Bus: ▲ Positive
		Cable Car: ▲ Positive
		Other Rail: ▶ Neutral

Audit Period Performance



Historic Performance



2.2.8 Mean Distance Between Failure *(continued)*

For cable cars, chargeable "major" and "other" failures are largely defined per institutional memory and thus may vary among staff. Chargeable failures for cable cars generally include "[brake], truck, electrical, and body" failures, as well as broken glass and a broken bell (as this is essential to the operation of the vehicle). However, currently, wooden track brake and grip failures are considered operator-induced wear items and therefore not chargeable and not included in the MDBF calculation.

The overall goal for bus and rail vehicles is based on a weighted average using the number of vehicles by type and yard.

Discussion

Historical and audit period performance is mixed overall, and highly mode-specific.

- **Cable Car.** Historically, cable car performance has been improving since a seven-year low in FY 2011, rising throughout the audit period to a six-year high of 4,734 miles between failures in FY 2014. During the course of the audit period, month-to-month results were much more variable, largely because monthly mileage is relatively consistent and since relatively few chargeable failures occur per month, big jumps in MDBF occur with small increases or decreases in failures.
- **Rubber tire buses.** The reliability of the SFMTA's bus fleet has been steadily increasing since FY 2010, with the largest gains occurring more recently, in FY 2014, when the yearly mean distance between failure reached over 4,600 miles. SFMTA staff attributed these gains to a number of different factors, including:
  - Fleet improvements, including the introduction of new New Flyer Hybrid buses, which achieved MDBF over 13,000 miles in FY 2014. The Agency has also been more targeted in its mid-life rehab of vehicles, striving to "build a better bus out of mid-life" than the originally delivered product.
  - Employing additional staff in the Agency's training department, which allows the SFMTA to be able to train on-the-ground staff in more specific vehicle maintenance categories. The Agency has been conducting more training in the past 18 months than in the previous ten years. In particular, trolleybus maintenance staff are already training for the new New Flyer trolleybuses, which were ordered in March 2014.
  - SFMTA staff have also instituted a more aggressive preventative maintenance program: if they notice a problematic trend for a particular vehicle part, maintenance staff address this part regularly for the life of the vehicle. Similarly, if staff identify a component that needs work, they will preemptively replace it.
- **Light Rail and Streetcar.** Breda LRV and historic streetcar performance has been mixed over the past seven fiscal years, with reliability dropping slightly during the current audit period. Recent performance reflects ongoing trends as well as improved preventative maintenance programs; while the SFMTA has instituted a door and step replacement program for the Breda LRVs, these vehicles are currently hitting their mid-life (the first vehicles were delivered in 1996, with an expected lifespan of approximately 25 years), negatively impacting their performance.

2.2.8 Mean Distance Between Failure *(continued)*

Recommendations

Cable Car

Cable Car "chargeable" should definitions be formalized, but in such a way as to preserve the flexibility desired by experienced Cable Car division staff as well as provide a consistent basis for accurate and historical record-keeping in the future. A formal, codified definition of what a "chargeable" failure remains somewhat elusive, in large part due to a prevailing opinion that the service is unique and therefore should retain a high degree of flexibility in categorizing incidents that affect service. The service is indeed one-of-a-kind; while the FTA's National Transit Database has a separate "cable car" category, the only system in the country listed in this category is in San Francisco. Unfortunately, in the future, informal internal categorizations could lead to confusion among staff and ultimately, an unreliable measure of vehicle reliability.

Rubber tire buses

The Performance Team should work with Bus Maintenance staff to identify opportunities to 1) ensure that the forthcoming Enterprise Asset Management program will work with the Transtat tool, 2) improve the frequency and detail of information sharing, and ultimately 3) identify a workflow for information sharing that reflects the various needs (and/or limitations) of both parties. SFMTA Woods Division staff noted that they are working with software developers to ensure their near-term compatibility with the Agency's new Enterprise Asset Management. Additionally, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.

Light Rail and Streetcar

The Performance Team should work with Rail Maintenance staff to identify opportunities to improve the frequency and detail of information sharing with a workflow that reflects the various needs (and/or limitations) of both parties. Due to occasional variability in the OCC logs, SFMTA Green Division staff identified that identifying and reporting chargeable failures on a monthly basis is the most convenient and accurate approach. However, as with rubber tire buses, access to individual, transaction-level incident detail would improve reporting accuracy and analysis of fleetwide trends in Transtat.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.9 Percentage of Scheduled Service Hours Delivered

Purpose

To measure service hours through available operators and equipment deployed in revenue service, along with the percentage of equipment available for service; to measure timely deployment of service.

Definition: Monthly measurement of the percent of total available hours for service measuring operators and equipment and percentage of equipment available daily.

Method: In Trapeze database, identify the "trip start" and "end time" for each trip, summing all service hours. Trips are identified as "filled" if an operator is assigned, or "unfilled" if not. The cumulative scheduled service hours of filled trips is divided by the scheduled service hours of all trips.

Discussion

Historical and audit period performance has remained relatively neutral, though on an annual basis the SFMTA has not achieved the Charter-mandated 98.5% goal in any fiscal year since FY 2002. During the audit period, however, the SFMTA exceeded this goal in both March and April 2013, delivering 98.6% and 99.4% of scheduled service hours, respectively. Due to the Muni "sickout" in the first week of the June 2014, the SFMTA hit an audit period low that month, delivering just under 91% of scheduled service.

Note: an additional metric, 2.2.10 Percentage of Scheduled Mileage Delivered, is currently under development.

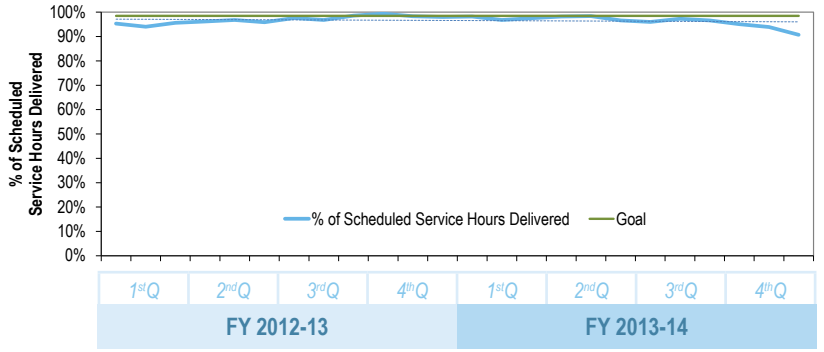
Recommendations

None.

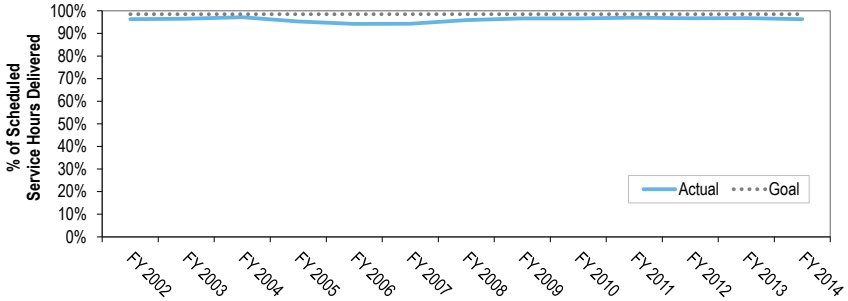
Metric
Goal: > 98.5%

FY 13-14 Performance	Trend
▼ Did not achieve goal	▶ Neutral

Audit Period Performance



Historic Performance



Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.11 Ridership (Rubber Tire, Average Weekday) Ridership (Faregate Entries, Average Weekday)

Purpose

To measure ridership.

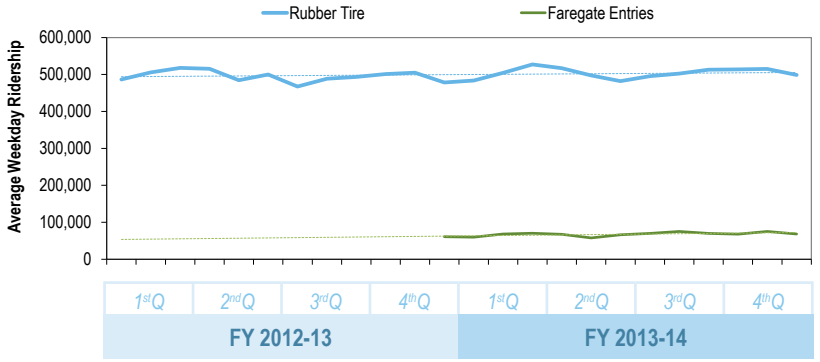
Definition: Average weekday ridership, using APC counts on rubber tire vehicles and Muni Metro faregate entries as proxies for network ridership.

Method: Calculate average weekday ridership for rubber tire buses and Muni Metro light rail services using data from two sources:

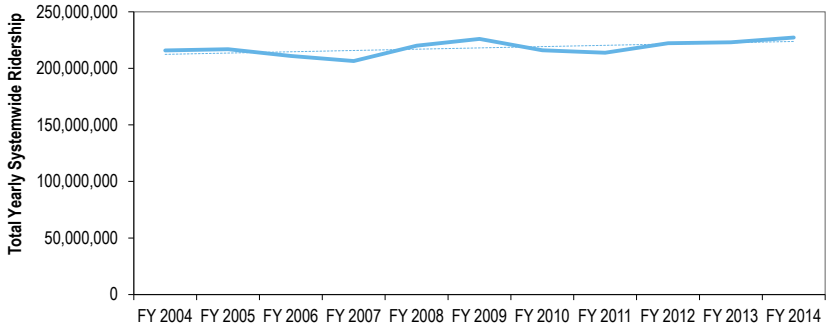
- For rubber tire buses, report results of a sample-based analysis conducted by the Transit Division, whereby APC-equipped vehicles are cycled through all rubber tire routes at different times of day over the course of a month. These sample data are then used to extrapolate an estimate of overall rubber tire ridership on a monthly basis.
- For Muni Metro rail services, report Nextfare entries at Muni Metro station faregates, which also includes people who enter for free due to passes (collected on a monthly basis). Cable car riders, as well as surface Muni rail boardings, are not included in this count.

Metric	FY 13-14 Performance	Trend
Goal: None Identified	No goal established	▲ Slightly upward

Audit Period Performance



Historic Performance



Note: FY 2014 values are unaudited.

Discussion

Rubber tire ridership data are available for the entire audit period, while faregate entries were added beginning in June 2013. Average weekday ridership for rubber tire vehicles stayed relatively steady during the audit period, with faregate entries climbing very slightly in FY 2014. For internal purposes, the SFMTA Performance Team is extremely satisfied with the faregate entry data in particular, in large part due to its precision; with it, the Agency can pinpoint peaking at Muni Metro stations by analyzing entries and exits at five-minute increments, which may be used in the future to slightly shift travel patterns to reduce crowding.

Historic performance data is available through the Federal Transit Administration (FTA)'s National Transit Database (NTD). Since FY 2004, Muni ridership (defined by the FTA as unlinked trips) systemwide has gradually increased, reaching an 11-year high of over 227 million riders in FY 2014.

Recommendations

To facilitate analyses of ridership over time (a valuable public accountability and evaluation tool), the SFMTA should consider reporting additional aggregate historical ridership data in its monthly Strategic Plan Metric Reports. Annual ridership data by mode and systemwide are available through data submitted to the FTA, and according to Performance Team staff, the SFMTA also has weekday ridership averages on a route-by-route basis dating back to FY 2000.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, and carsharing the preferred means of transit
Strategic Plan Objective 2.2: Improve transit performance

2.2.12, 2.2.13 Percentage of Days that Elevators and Escalators are in Full Operation

Purpose

To measure reliability of Muni Metro station accessibility.

Definition: "Incidents" are defined simply as when an elevator or escalator is not "in service" or available for use by Muni riders.

Method: SFMTA staff check escalator and elevator operation status on a daily basis through phone calls to station agents, keeping daily records of availability. The metric is calculated by dividing the number "in service" records by the total number of records on a monthly basis.

Discussion

Historically (i.e., since FY 2012), Muni station elevators have been more consistently reliable (on average) than station escalators, with the latter metric falling under 90% in FY 2013, though returning to near FY 2012 levels the following year. During the audit period, performance fluctuated from month to month. Despite the year-to-year trends, the SFMTA manages its elevator and escalator infrastructure remarkably well; all of the existing equipment was installed in the 1970s when the Muni Metro was constructed.

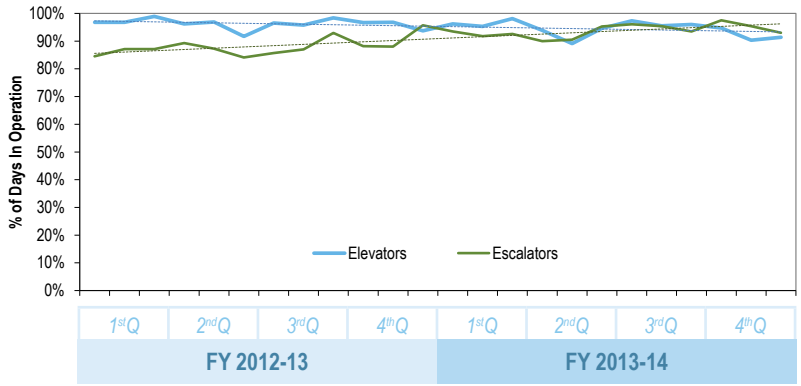
Note: this metric includes any times when elevators or escalators are not available for use, including when an elevator or escalator is legitimately broken and in need of repair, or when it is undergoing routine maintenance or other trainings.

Recommendations

None.

Metric Goal: None Identified	FY 13-14 Performance	Trend
	No goal established	Neutral

Audit Period Performance



Historic Performance

	FY12 Avg	FY13 Avg	FY14 Avg
2.2.12 Elevators	93.6%	96.3%	94.4%
2.2.13 Escalators	94.2%	88.1%	93.8%

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.2: Increase the transportation system's positive impact to the economy

3.2.1 Estimated Economic Impact of Muni Service Delays (Annualized)

Purpose

To measure the economic impact of Muni service delays.

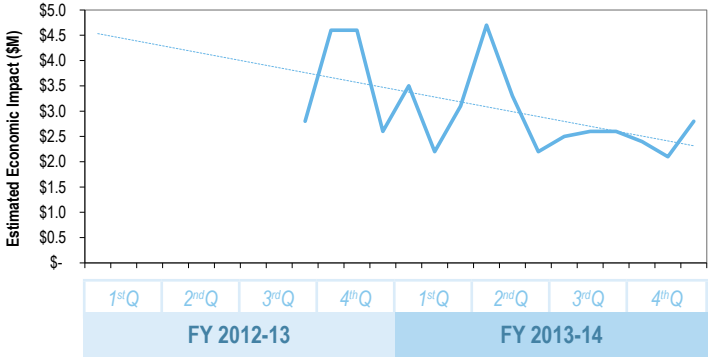
Definition: Established at the request of the Board of Supervisors and defined by the Chief Economist of the City and County of San Francisco. Includes estimates of the business and personal value of travel time to each rider and calculates the metric with the equation, "Economic impact of Muni service delays = (business value * peak hour delays) + (personal value * off-peak delays)."

Method: SFMTA Performance Team staff sources cable car and rail delays from the OCC Logs, and based on line, time (i.e. rush hour or base), and location, assign an approximate number of passengers affected by a line delay. Including only those delays 10 minutes or longer that are caused by Muni (i.e., maintenance or operational problems, not Acts of God), staff then estimate the potential hours of lost productivity due to the delay.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▲ Positive (falling)

Audit Period Performance



Historic Performance

N/A

Discussion

Data are only available for a portion of the audit period, representing the time period March 2013 through June 2014. Annually, according to the data, the economic impact of Muni delays fell from $3.7 million in FY 2013 to $2.8 million in FY 2014.

According to Performance Team staff, this metric is time consuming to calculate as it requires the analyst to calculate and then enter by hand the number of passengers impacted by delays. This is because the number of passengers affected by a delay may be higher than simple line ridership, depending on the location of the delay. For example, a delay on LRVs in the Muni Metro affects passengers throughout the subway system, not only on the line identified in the delay record. Staff also expressed concern that occasional data entry errors into the OCC Log potentially complicate the reliability of this metric.

Recommendations

The SFMTA Performance Team should update the wage data underlying this metric, which was last updated in 2013. Given its complex origin, this metric's full methodology should be included as a footnote in the monthly Strategic Plan Metrics Reports.

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.4: Deliver services efficiently

3.4.1 Average Annual Transit Cost Per Revenue Hour

Purpose

To measure the cost of producing revenue service by fully allocated costs per hour of service by passenger mile and mode.

Definition: Fully allocated cost of service per hour and per mile.

Method: Data are reported to the Board and to the National Transit Database on an annual basis based on fully allocated costs per hour of service by mode. Calculated for yearly NTD reporting.

Note: SFMTA currently reports Cost per Hour data as adjusted to the most recent reporting year's CPI deflator, resulting in the reporting of nominal figures for the most recent year and changing adjusted figures for prior years. To ensure consistent comparability over time, the Auditor's analysis does not account for inflation (i.e., it uses nominal values for the present and all prior years). Consequently, this may act as a contributing factor to year-over-year trends.

Discussion

After consistently rising since FY 2006, Muni's operating cost per hour of revenue service began to level off during the previous (FY 2011-2012) audit period, even dropping slightly in FY 2012 as bus revenue hours increased in the two audit years. Muni's cost per hour increased over the current audit period, in part due to a combination of increased service and regular costs of operations.

Recommendations

None.

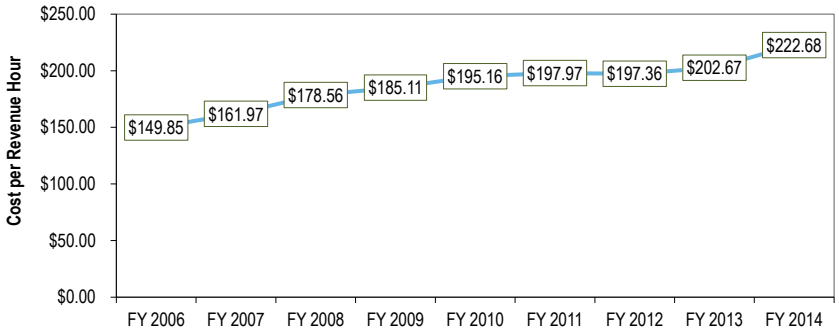
Metric Goal:
$194 (FY 13)
$192 (FY 14)

FY 13-14 Performance	Trend
▼ Did not achieve goal	▼ Negative (increasing)

Audit Period Performance

N/A

Historic Performance



Note: FY 2014 data are based on preliminary unaudited financials.

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.4: Deliver services efficiently

3.4.2 Passengers Per Revenue Hour For Buses

Purpose

To measure the productivity of Muni bus services.

Definition: Average number of boardings per service hour.

Method: Passenger boardings are divided by service hours delivered. Data are reported to the National Transit Database on an annual basis.

Metric Goal:
None Identified

FY 13-14 Performance	Trend
No goal established	▶ Neutral

Audit Period Performance

N/A

Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
68	67	67

Discussion

Prior to the introduction of the Strategic Plan Metrics, the SFMTA reported productivity data for the entire system as well as for each vehicle type. This replacement metric presents data for all buses together, limiting the ability to compare data historically.

Please note: this figure is inclusive of layover/recovery time at each terminal, when the vehicles are stopped and not serving revenue customers. Therefore, if the SFMTA needs to add layover/recovery time to improve schedule adherence, this number could decrease. Additionally, from a customer perspective, decreases in the number of passengers per revenue hour may actually result in a better riding experience. For example, more frequent service can relieve overcrowding and reduce waiting times but may result in fewer passengers per revenue hour.

Within the audit period, Muni's yearly performance dropped slightly, from approximately 68 to 67 boardings per revenue hour.

Recommendations

None.

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.4: Deliver services efficiently

3.4.3 Cost Per Unlinked Trip

Purpose

To measure cost effectiveness. Note: Replaces legacy metric, Cost per Boarding.

Definition: Operating expense per unlinked trip is calculated for each mode.

Method: Operating expenses are divided by the number of unlinked passenger trips. Data are reported to the National Transit Database on an annual basis.

Note: SFMTA currently reports Cost per Unlinked Trip data as adjusted to the most recent reporting year's CPI deflator, resulting in the reporting of nominal figures for the most recent year and changing adjusted figures for prior years. To ensure consistent comparability over time, the Auditor's analysis does not account for inflation (i.e., it uses nominal values for the present and all prior years). Consequently, this may act as a contributing factor to year-over-year trends.

Discussion

Operating cost per unlinked trip (or "boarding") is an industry standard measure, reported by transit operators to the Federal Transit Administration, that Muni began reporting in Service Standards reports in FY 2008. As with cost per hour, Muni's operating cost per unlinked trip rose steadily from FY 2006 until FY 2010, when it began to level off. In FY 2012, Muni's cost per unlinked trip fell slightly to $2.83, rising again in the current audit period. In FY 2014, however, preliminary financial data indicate that the average cost per unlinked trip increased to $3.13.

Recommendations

None.

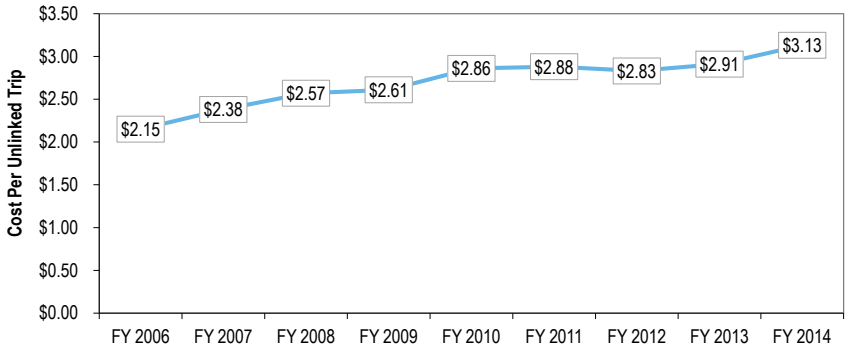
Metric Goal:
None identified

FY 13-14 Performance	Trend
No goal established	▼ Negative

Audit Period Performance

N/A

Historic Performance



Note: data for FY 2014 based on preliminary unaudited financials.

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.4: Deliver services efficiently

3.4.5 Farebox Recovery Ratio

Purpose

To measure farebox performance.

Definition: Muni's total fare revenue divided by its total operating expenses.

Method: Measured by dividing Muni's total fare revenue by its total operating expenses. Data are reported to the National Transit Database on an annual basis.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▼ Negative

Audit Period Performance

FY12 Avg	FY13 Avg	FY14 Avg
32%	34%	29.8%*

*unaudited

Historic Performance

N/A

Discussion

This metric replaces the old measure of farebox performance, systemwide average fare. Performance during the audit period slightly increased from FY 2012, rising to 34% in FY 2013. According to unaudited FY 2014 data, Muni's farebox performance fell in the final audit year, to just under 30%. Several external policy decisions may affect fare revenues and therefore, farebox recovery. For example, in March 2013, the SFMTA approved the Free Muni for Youth Program, which likely affected farebox receipts in the latter portion of FY 2013. *Note: FY 2014 data are based on preliminary unaudited financials.*

Recommendations

None.

Strategic Plan Goal 4: Create a workplace that delivers outstanding service
Strategic Plan Objective 4.3: Improve employee accountability

4.3.3 Unscheduled Absence Rate by Employee Group (Transit Operators)

Purpose

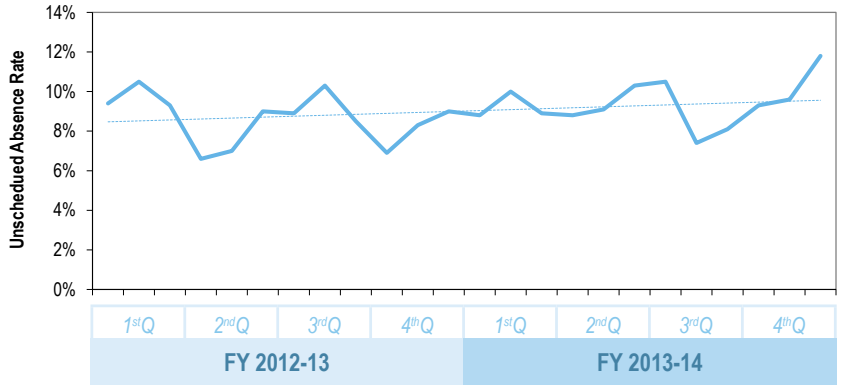
To measure unscheduled absences among transit operators.

Definition: Unscheduled absences are hard-coded in Trapeze, and include (but are not limited to): sick pay/leave, long term leave, suspensions, FMLA (Family and Medical Leave Act), "working miss outs" (late arrivals to work), and AWOL (absent all day).

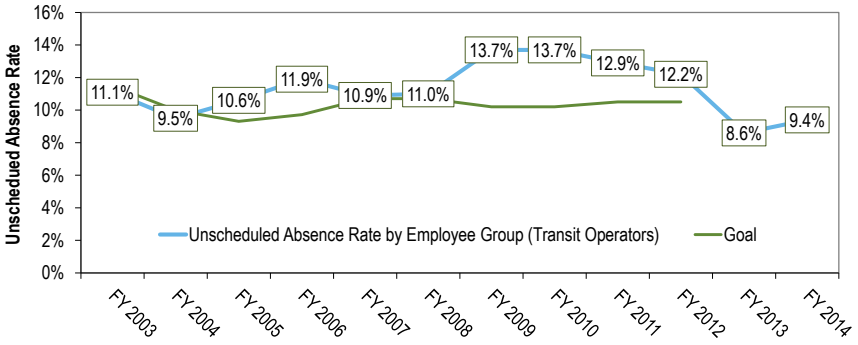
Method: Using data sourced from the Trapeze system, evaluate the percentage of scheduled operators who have an unscheduled absence by dividing the number of operators absent for reasons defined as "unscheduled" by the total number of daily bid operators.

Metric Goal: N/A	FY 13-14 Performance	Trend
	No goal established	▼ Negative

Audit Period Performance



Historic Performance



Discussion

In the transition to the new set of Strategic Plan metrics, the rate of unscheduled absences for transit operators only was retained for its clear, targeted measurement of how labor impacts service delivery.

While unscheduled absenteeism among operators has always been higher than for other departments, much of the increase in FY 2009 could be attributed to a broader definition of "absenteeism." Despite this increase, transit operator absenteeism dropped between FY 2012 and FY 2013, culminating in a 10-year low in FY 2013, when the rate was 8.6%. Largely as a consequence of this drop, the historical trend for the period FY 2003-FY 2014 was neutral. (Note: According to the San Francisco Controller's Office, this observed drop may have resulted from a slight change in the metric's methodology. Prior to the second half of FY 2012, the SFMTA measured unscheduled absences of all operators assigned to divisions; after that point, the Agency switched to measuring unscheduled absences among bid operators only. The previous methodology was found to be inaccurate as it included operators that were on long-term leave.)

Absenteeism began to increase again in FY 2014, to 9.4%. Over the course of the audit period, absenteeism tended to cycle seasonally, with higher rates in the summer and around major holidays or events.

There is are a couple of caveats to the audit period data. First, the current method of measurement includes bid operators who are not assigned work, which may slightly misrepresent the 'true' unscheduled absence rate (i.e., to the extent the rate may be interpreted as a secondary measure of service delivery). Second, there is a possibility that some unscheduled absences may be double-, or in some cases triple-counted, due to a Transit Operations business practice of assigning multiple codes to unscheduled absences. An example would be an employee with an expired drivers license and expired medical documentation who is also on FMLA; in Trapeze, their absence would be coded for each of these categories. If this issue can be confirmed, then the FY 13-14 data may be artificially high.

4.3.3 Unscheduled Absence Rate by Employee Group (Transit Operators) *(continued)*

Recommendations

The SFMTA is currently embarking on an internal process to review employee attendance – overseen by the Absence Management Task Force – with the goal of identifying systemic approaches to improving attendance rates throughout the Agency. During the interview conducted to review this metric, at which the leader of the Absence Management Task Force was present, a number of issues and opportunities for absence/attendance reporting were identified (see above). At a high level, staff identified two paths forward: first, improving the reporting of the current transit operator metric; and second, establishing (an) additional metric(s) to track Agencywide attendance. While the development of these changes can occur in the short-term, their implementation is largely contingent on upgrades delivered by the City Controller's Office, which manages payroll Citywide. The two recommendations are described below:

1. **Improve the accuracy and efficacy of metric 4.4.3, "Unscheduled absence rate" for transit operators by reviewing and simplifying the current Trapeze coding system.** Currently, the Trapeze database contains multiple overlapping codes for various types of "unscheduled" or "scheduled" absences. It is unclear the extent to which these codes are either applied consistently and/or used to complete additional fine-grained analysis internally. The SFMTA should re-review these codes, exploring opportunities to simplify the categories as needed. There may also be an opportunity to utilize Trapeze's ability to prevent operators who are "locked out" from driving without assigning multiple absence codes to categorize the situation, potentially reducing double-counts in the data. Finally, the precise definitions of "absence" (absence from work, duty, or from a run?) and "scheduled" (i.e., what amount of advance notice given of an absence is needed to qualify as "scheduled") are unclear at present, and should be re-reviewed and/or codified.
2. **Institute (an) additional metric(s) to track Agencywide attendance and/or absence rates using paid and unpaid labor data (when available from Oracle/PeopleSoft).** Sophisticated employee time analysis is already available for internal review within the Transtat tool, using paid labor data from PeopleSoft. A helpful feature of this dataset is that PeopleSoft labor codes are the same throughout the Agency; even the more complex transit operator absence data from Trapeze is coded into PeopleSoft using the standard Agencywide codes. However, unpaid labor data is not available at this time, making it impossible to do a full analysis of employee absence rates. Once the full dataset becomes available, the SFMTA should institute additional metrics (the precise nature of which are to be determined) to measure Agencywide attendance and/or absence rates in accordance with Absence Management Task Force goals and objectives.

ADDITIONAL MUNI TRANSIT METRICS

Additional metrics are those that also support Strategic Plan goals and objectives related to transit operations, but are not as directly customer-focused as the "core" metrics, and provide more of a contextual picture of Muni performance.

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.1: Improve security for transportation system users

1.1.2 Customer Rating: Security of Transit Riding Experience ...(While on a Muni Vehicle); Scale of 1 (Low) to 5 (High) ...(While Waiting at a Muni Stop or Station); Scale of 1 (Low) to 5 (High)

Purpose

To measure the customer experience of riding Muni on transit vehicles and while waiting at stops or stations.

Definition: Average rating from quarterly customer survey, where 1 = very dissatisfied and 5 is very satisfied. Results are weighted by ZIP code; SF residents only.

Method: Results are from quarterly responses submitted by an opt-in panel of SFMTA customers.

Discussion

This metric was added in FY 2014. Muni customers' opinions of transit security on vehicles and stations did not fluctuate dramatically in FY 2014, with survey takers expressing neither satisfaction nor dissatisfaction with Muni's security.

Recommendations

None specific to this metric; see recommendations for the quarterly survey summarized for metric 2.1.1.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▶ Neutral

Audit Period Performance

Metric	FY 2014 Q2	FY 2014 Q3	FY 2014 Q4	FY 2014 Average
1.1.2 Security on Muni vehicles	3.25	3.19	3.30	3.25
1.1.2 Security at Muni stops/ stations	3.16	3.08	3.16	3.13

Historic Performance

N/A

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.1: Improve security for transportation system users

1.1.4 Security Complaints to 311 (Muni)

Purpose

To measure trends in the customer-observed safety/security of riding Muni.

Definition: Sum of number of records in "Criminal Activity" category of 311 data. This category includes incidents such as miscellaneous altercations, larceny/theft, fare evasion/transfer abuse, and disorderly conduct/ disturbances.

Method: The SFMTA's Customer Services unit converts passengers' complaints, comments, questions, and compliments into Passenger Service Reports (PSRs). These PSRs are accessed in the Transtat BI tool and filtered on "Criminal Activity."

Discussion

The number of reports trended downward over the audit period, with the FY 2014 average (28.6) representing an over 30% reduction since FY 2012.

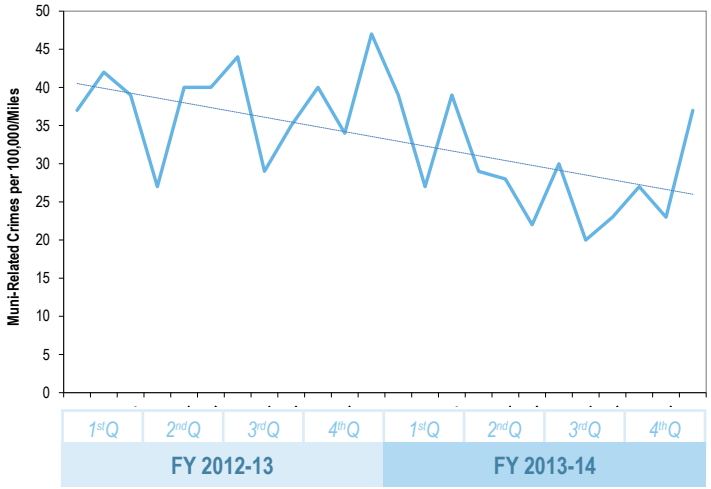
Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▲ Positive (falling)

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
42	37.8	28.6

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.2: Improve workplace safety and security

1.2.2 Security Incidents Involving SFMTA Personnel (Muni Only)

Purpose

To measure the number of security incidents involving Muni personnel.

Definition: "Incidents" are defined as assaults and threats on Muni operators.

Method: Data are recorded through the SFMTA's internal TransitSafe software and shared with the Performance Team.

Discussion

From FY 2012 to FY 2014, the average number of monthly assaults and/or threats on Muni operators fell from 11.3 to 9.9, despite a brief increase to 12.1 in FY 2013. This may be a residual effect of the SFMTA's "surge" enforcement campaign, implemented in FY 2014.

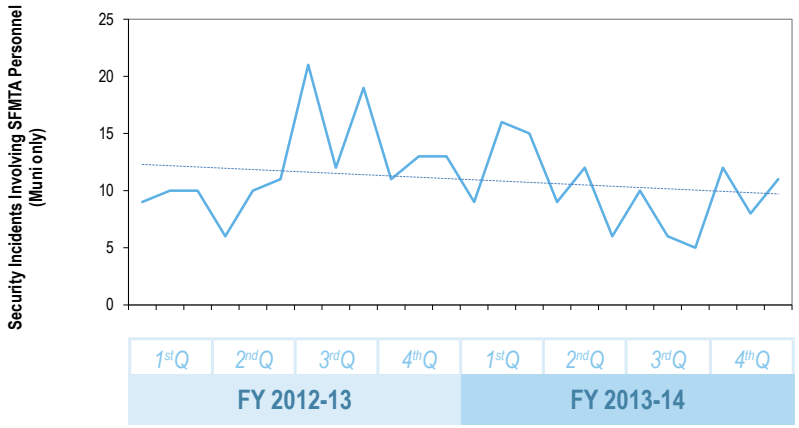
Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▲ Positive

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
11.3	12.1	9.9

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.3: Improve the safety of the transportation system

1.3.4 "Unsafe Operation" Muni Complaints to 311

Purpose

To measure Muni's operational safety.

Definition: Sum of number of records in "Unsafe Operation" category from 311. Types of activities deemed to be "Unsafe Operations" include: running a red light/stop sign, speeding, being allegedly under the influence of drugs/alcohol, using a mobile phone or radio, eating/drinking/smoking; as well as other incidents likely captured elsewhere, such as a collision, a fall boarding/on board/alighting – injury; or "general careless operation."

Method: SFMTA's Customer Services unit converts passengers' complaints, comments, questions, and compliments into Passenger Service Reports (PSRs). These PSRs are accessed in the Transtat BI tool and filtered on "Unsafe Operations."

Discussion

Despite a dip in the average number of monthly "unsafe operation" complaints to 311 in FY 2013 (to just under 160), the number climbed to the pre-audit period level of approximately 179 "unsafe operation" complaints in FY 2014. This may track with an influx of new operators who are not completely familiar with Muni's operating procedures.

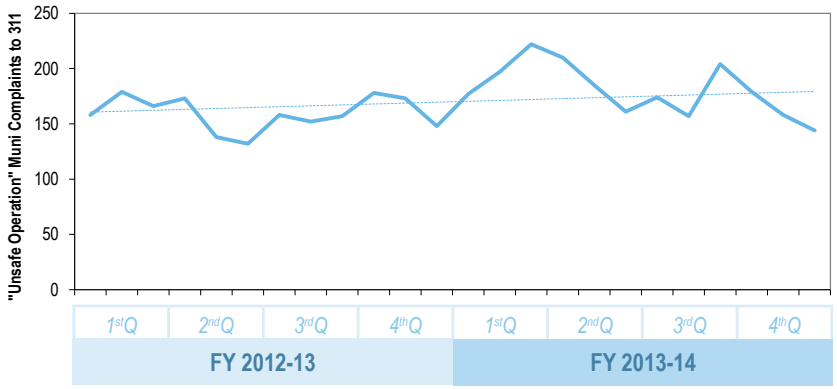
Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	Neutral

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
179	159.3	179.6

Strategic Plan Goal 1: Create a safer transportation experience for everyone
Strategic Plan Objective 1.3: Improve the safety of the transportation system

1.3.5 Customer Rating: Safety of Transit Riding Experience; Scale of 1 (Low) to 5 (High)

Purpose

To measure the customer experience of feeling safe while riding transit.

Definition: Average rating from quarterly customer survey, where 1 = very dissatisfied and 5 is very satisfied. Results are weighted by ZIP code; SF residents only.

Method: Results are from quarterly responses submitted by an opt-in panel of SFMTA customers.

Discussion

This metric was added in FY 2014. Muni customers' opinions of the safety of the overall transit riding experience did not fluctuate dramatically in FY 2014, with survey takers on average expressing neither satisfaction nor dissatisfaction. Quarterly results indicated a slight downward trend.

Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▼ Negative

Audit Period Performance

FY 2014 Q2	FY 2014 Q3	FY 2014 Q4	FY 2014 Average
3.76	3.74	3.69	3.73

Historic Performance

N/A

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, ridesharing & carsharing the preferred means of travel
Strategic Plan Objective 2.1: Improve customer service and communications

2.1.5 City Survey rating: Communications to Passengers; Scale of 1 (Low) to 5 (High) Customer Rating: Communications to Passengers; Scale of 1 (Low) to 5 (High)

Purpose

To measure the effectiveness of Muni communications to passengers.

Definition: On both the yearly City Survey (retired in Q4 FY 2014) and quarterly SFMTA Customer Survey (introduced for this question in Q4 FY 2014), 1 = low ("very dissatisfied") and 5 = high ("very satisfied").

Method: Average of individual survey taker ratings.

Discussion

Customer satisfaction with Muni communications was relatively static, with neutral ratings reported between the 2011 and 2013 yearly City surveys. The average rating fell slightly in FY 2014, to 2.76, though this result cannot be compared to previous average ratings due to differences in the makeup of survey takers and the ways the surveys were conducted.

Recommendations

None.

Metric Goal: N/A	FY 13-14 Performance	Trend
	No goal established	N/A

Audit Period Performance

N/A

Historic Performance

City Survey (Legacy)		SFMTA Customer Survey
FY12 Avg (2011 Survey)	FY13 Avg	FY14 Avg
3.00	3.20	2.76

Note: Due to the change in survey method (i.e., from the City Survey to the SFMTA quarterly Customer Survey, which included changes in frequency, questions, and set of survey takers), it is not possible to ascertain a trend in these results.

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, ridesharing & carsharing the preferred means of travel
Strategic Plan Objective 2.1: Improve customer service and communications

2.1.7 Percentage of Actionable 311 Muni-related Complaints Addressed Within 28 days

Purpose

To measure the efficiency of the SFMTA in addressing Muni complaints issued through 311 that were deemed "actionable."

Definition: SFMTA's Customer Services unit converts passengers' complaints, comments, questions, and compliments into Passenger Service Reports (PSRs). "Actionable" PSRs are those that are determined to warrant a response from a relevant SFMTA department. The performance metric is derived by dividing the number of "Resolved Actionable" complaints by the total number of complaints. This metric only includes operator conduct complaints within a Muni operations division.

Method: SFMTA Customer Services staff compiles a list of all "Resolved Actionable" reports. Total reports by division are then inputted into the Transtat data warehouse.

Discussion

After a slight increase from 87% in FY 2012 to 90% in FY 2013, the percentage of actionable 311 Muni-related complaints addressed within 28 days fell to under 80% in FY 2014.

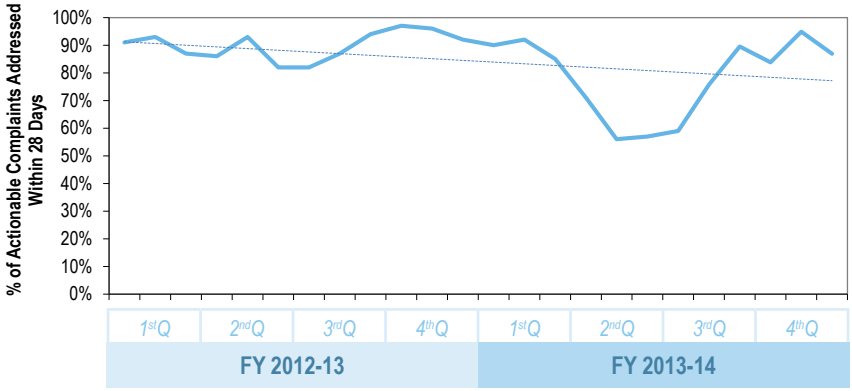
Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	▼ Negative

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
87%	90.0%	78.6%

Strategic Plan Goal 2: Make transit, walking, bicycling, taxi, ridesharing & carsharing the preferred means of travel
Strategic Plan Objective 2.1: Improve customer service and communications

2.1.8 Customer Rating: Cleanliness of Muni Vehicles; Scale of 1 (Low) to 5 (High)

2.1.9 Customer Rating: Cleanliness of Muni Facilities (Stations, Elevators, Escalators); Scale of 1 (Low) to 5 (High)

Purpose

To measure the cleanliness of Muni vehicles, stations, elevators, and escalators.

Definition: Average rating from quarterly customer survey, where 1 = very dissatisfied and 5 is very satisfied. Results are weighted by ZIP code; SF residents only.

Method: Results are from quarterly responses submitted by an opt-in panel of SFMTA customers.

Discussion

Metric introduced in FY 2014. On average, Muni customers rate the cleanliness of Muni vehicles and facilities in the "dissatisfied" to neutral range (i.e., a rating of between 2 and 3). Over the course of FY 2014, the average rating of Muni facilities fell from 2.75 in the 2nd Quarter to 2.57 in the 4th Quarter.

Recommendations

None.

Metric Goal: N/A	FY 13-14 Performance	Trend
	No goal established	▼ Negative

Audit Period Performance

Metric #	Description	Q2 FY 14	Q3 FY 14	Q4 FY 14	FY 14 Average
2.1.8	Cleanliness of Muni vehicles (Rating)	2.80	2.62	2.69	2.70
2.1.9	Cleanliness of Muni facilities (Rating)	2.75	2.61	2.57	2.64

Historic Performance

N/A

Strategic Plan Goal 3: Improve the environment and quality of life in San Francisco
Strategic Plan Objective 3.4: Deliver services efficiently

3.4.4 Pay to Platform Hours Ratio

Purpose

To measure the efficiency of Muni transit services.

Definition: "Platform" hours are the number of scheduled hours a bus or rail (including cable car) vehicle is in service (i.e., between pull-out to pull-in), while "pay" hours are the total number of hours a transit employee is paid. The pay hours to platform hours ratio is a standard measure of transit service efficiency.

Method: Divide the sum of total work-time by the sum of platform hours.

Discussion

This metric has remained remarkably stable over the past three fiscal years, fluctuating between 1.12 in FYs 2012 and 2013 to 1.11 in FY 2014, with occasional increases to 1.13 or decreases to 1.10 during the course of the audit period.

Note: as of FY 2015, this metric has been discontinued.

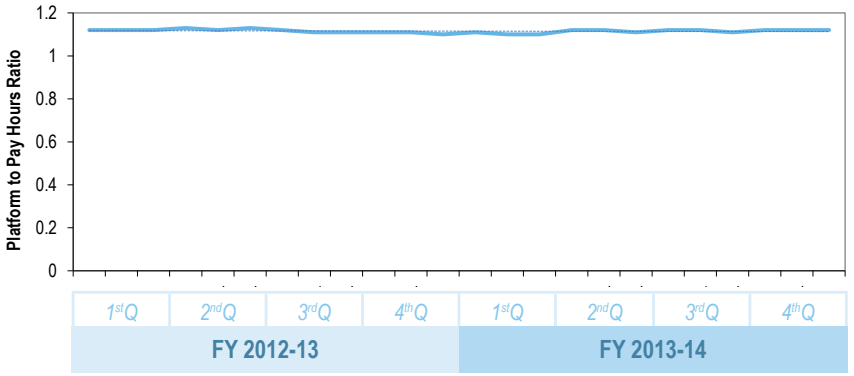
Recommendations

None.

Metric Goal: N/A

FY 13-14 Performance	Trend
No goal established	Neutral

Audit Period Performance



Historic Performance

FY12 Avg	FY13 Avg	FY14 Avg
1.12	1.12	1.11

Chapter 4
Operations Analysis

In addition to evaluating Muni's "service standards" reporting, the Municipal Transportation Quality Review (MTQR) provides a relatively high-level assessment of Muni's performance over a two-year period. Beginning with the FY 2007-2008 Quality Review, a more detailed operational analysis focused on Muni's transit performance was conducted concurrently with the audit process. These analyses are typically based on a review of available data and a series of informational meetings with SFMTA staff, and conclude with specific recommendations that SFMTA transit operations staff may use to improve transit performance.

In the recent past, these Operations Analyses have focused on Muni's reliability and capacity. During the FY 2011-2012 MTQR process, the Operations Analysis provided recommendations concerning operator availability, facilities, service monitoring, and existing capacity, among other topics.

The FY 2013-2014 Operations Analysis builds on these recommendations, focusing in particular on how Muni's current fleet capacity is not yet sufficient to meet increasing demand, and offers potential ways the SFMTA may maximize capacity within existing resources in the short-term to address this growing demand.

BACKGROUND

As a follow-up to the recommendations in the FY 2011-12 Municipal Transportation Quality Review, this Operations Analysis examines Muni's current capacity constraints and opportunities, offering recommendations for improved load factor measurement, service scheduling, and capacity planning. The following findings and recommendations also detail SFMTA's current actions and plans to address the capacity issues.

The presentation of load factor data in the FY 2013-2014 Municipal Transportation Quality Review highlights a critical measurement in the delivery of transit service. In its FY 2013-2018 Strategic Plan, the SFMTA sets specific goals for each of its transportation modes, with Goal 2.0 relating specifically to "improving transit performance." While the initial plan does not specifically reference *capacity* improvements, it does indicate that the City expects a 15% increase in population by 2035. With this increase in population, it can be assumed that transit demand will also increase significantly, highlighting the need for transit capacity improvements to accommodate this demand.

Figure 4-1 presents comparative data on demand and provision of transit capacity since 1970. This base year came shortly before the City adopted a Transit First policy (in 1973), which emphasized public transit and other sustainable transportation modes over private automobiles. While significant transit improvements have been implemented since then, most notably the opening of BART and Muni Metro, transit capacity within San Francisco has grown by merely 5.5%. Likewise, the fact that transit capacity and weekly vehicle hours have not increased at the same rate as the population of San Francisco indicates that there may be untapped demand that Muni is not yet meeting due to capacity constraints.

Figure 4-1 City & County of San Francisco Population, Transit Service Hours, Fleet, and Capacity

	1970	1980	1990	2000	2010	2014/15
Population	715,674	678,974	723,959	776,733	805,235	837,442
Change from 1970	-	-5.5%	1.1%	8.5%	12.5%	17.0%
Weekly Transit Vehicle Hours	56,403	58,061	60,206	63,573	60,957	64,365
Change from 1970	-	2.9%	6.7%	12.7%	8.1%	14.1%
Fleet Total (1)	1118	855	901	949	1000	1032*
Max Peak Vehicle Requirements (2)	860	800	793	818	730	824
Max Capacity (3)	58,722	54,722	55,806	59,991	57,546	61,942
Change from 1970	-	-6.8%	-5.0%	2.2%	-2.0%	5.5%

NOTES: 1, 2) INCLUDES ALL TRANSIT MODES. 3) CAPACITY CALCULATED AS MAX PEAK VEHICLE REQUIREMENTS * SEATS * LOAD FACTOR, AND ASSUMES 100% SERVICE DELIVERY.

*FY 2014/15 FLEET TOTAL REFLECTS ACTUAL ACTIVE VEHICLES.

SOURCES: US CENSUS BUREAU; SFMTA/MUNI SCHEDULE DOCUMENTS; TRAPEZE SYSTEM DATA.

According to the SFMTA's monthly Strategic Plan Progress Reports released in FY 2014, the SFMTA has planned a number of transit vehicle fleet and service enhancements for 2015. They include:

- May 2014: New motor coaches (112) are [currently] in service; articulated trolley coach (initial) to arrive by March 2015 and articulated motor coach (initial) by April 2015.
- October 2014: Rail Capacity Strategy assessment of near/long term vision to be completed in 2015.

The monthly Progress Reports have not presented data for Objective 2.2 and attendant metrics 2.2.5, 2.2.6 and 2.2.7 (although these data are available in the monthly Strategic Plan Metrics Reports). The September 2014 report proposed changing metric 2.2.5 to read "running time performance."

FINDINGS

Adopted Goals

The SFMTA Board of Directors adopted a multi-year budget with the inclusion of funding for service increases during the two fiscal years. That 12% stated goal would include "easing crowding on popular routes." The Rapid Network proposed in the Transit Effectiveness Program (TEP) proposals and contained in the current Muni Forward program would focus on routes that serve 70% of the ridership.

In November 2014, a presentation to the Board of Supervisors Land Use Committee outlined short-term and near-term capacity improvements. Specific attention was focused on current underserviced Light Rail Vehicle (LRV) routes and the projection of added revenue vehicles starting in late 2016. The initial LRV procurement phase (LRV4, or the fourth generation of light rail vehicles) would include 175 vehicles including an expansion of 64 vehicles, 24 of which will be used to provide service for the Central Subway. The succeeding phase/option for additional LRV procurement would allow capacity improvements on existing and planned system expansion.

In February 2015, a Muni Forward presentation included several "Reliability & Capacity Improvement" initiatives. Relative to capacity, they included:

- The current LRV fleet passenger capacity will include reconfiguration of 10 cars by spring 2015 to provide an "alternative seating configuration." While it is not apparent what percentage of total car capacity will be achieved, the SFMTA expects an approximately 10% increase in passenger capacity on retrofitted vehicles.
- Service on five rubber tire bus corridors will be increased by April 2015 and by winter 2016 on other corridors.

The "Rail Capacity Strategy" discussion documents both forecasted LRV boardings in the future (2020 and 2040) but importantly recognizes that the near-term 50% increase in demand between 2010 and 2020 is significant.

Fleet & Capacity Progress

The 2014 Fleet/Management Plan indicates that 35 Articulated Motor coaches will be added to the current fleet of 124 for a total fleet of 159. Similarly, the planned arrival of 60 Articulated (or "Artic") Trolley coaches in FY 2015 and FY 2016 will restore capacity losses due to retirement of the twenty year old New Flyer Artic fleet. Potential capacity expansion above previous 2002 level will be dependent on arrival timing and current fleet rehabilitation projections. The imminent arrival (March 2015) of 60 replacement articulated trolley coaches will in reality allow a capacity improvement above the historic available trolley coach articulated fleets.

The 5/5R[1] Fulton Pilot Project commenced in October 2013. The arrival of new standard motor coaches (112 vehicles) allowed for both fleet replacement (95 buses, including 45 NABIs and 50 Neoplans) and expansion vehicles made possible by a Life-Line grant. The 5/5R Rapid line corridor project produced a weekday net 100 service hour increase and a peak period increase in capacity of approximately 500.

Planned Service/Capacity Increases

SFMTA's Service Planning unit has indicated that service increases are planned during the current and next fiscal year as follows:

Timeframe	Percentage Increase	Rapid Lines	Other Lines
January 2015	1.5%	N/A	55 (New line)
April 2015	2.5%	5R, 8ABX, 14R, 38R	29, 1ABX, 14X, 30X, 31ABX, 41
September 2015	3.0%	TBD	TBD

There are corridors/lines where existing trips/standard vehicles will be replaced with higher-capacity articulated vehicles. The 60 articulated trolley coaches arriving during 2015 will be deployed on the 14 Mission in fall 2015, and on the 30 Stockton in winter 2016.

LRV/F-Line Rapid Corridors

No specific increases on either the Market Street subway corridor have been targeted in 2015; however, as the light rail rehabilitation program continues and is completed and rail performance increases, scheduling additional light rail service will be possible. On the historic streetcar line, SFMTA plans to launch weekend service on the E Embarcadero line in summer 2015 with daily service beginning in winter 2016.

RECOMMENDATIONS

Continue Reliability and Capacity/Load Factor Metric Reporting (Metrics 2.2.5, 2.2.6, 2.2.7)

The SFMTA Performance Team uses Transtat to summarize metrics relating to transit service delivery. In addition to informing the public Strategic Plan Metrics Reports, these data are utilized during internal performance review sessions with the Transit Division. It is imperative that both internal and public reporting continue to occur to identify service improvement priorities and document progress.

Pursue Short-term Equipment Availability Options

The 2014 acquisition of 112 New Flyer standard motor coaches replacing NABI and a portion of the Neoplan equipment allowed for a limited expansion of service. Options for short-term capacity expansion by utilizing both newly designated Standard motor coach 'reserve fleet' and substitution of existing standard motor coaches and

[1] AS PART OF MUNI FORWARD, IN APRIL 2015, "LIMITED" ROUTES WERE REBRANDED AS "RAPID" ROUTES. THIS CHAPTER REFERS TO THEM AS "RAPID" ROUTES IN KEEPING WITH THE NEW TERMINOLOGY.

trolley coaches by newly arriving articulated motor coaches and trolley coaches should be prioritized in 2015. Consideration should be given to the following deployment options:

Rapid Lines

Trolley coaches:

- 1 – Add standard trolley coach (from 14/41)
- 5 – Substitute standard with articulated vehicles
- 14 – Substitute standard with articulated vehicles
- 41 – Substitute standard with articulated vehicles
- 30/45 – Substitute standard with articulated vehicles

Motor coaches:

- 8ABX – Continue headway reduction with articulated vehicles
- 14X - Replace standard with articulated vehicles
- 28/28R - Substitute standard with articulated vehicles
- 38R – Continue headway reduction with articulated vehicles
- 7/7R (formerly 71/71L)– Substitute standard with articulated vehicles

As motor coach and trolley coach articulated vehicle testing and acceptance schedules may preclude short-term deployment as detailed above, standard motor coach deployment on an interim basis should be affected on the motor coach priorities above.

Pursue Short-term 2015-2017 Capacity Improvements in LRV/F-Line Corridors

The Breda LRV rehabilitation program will contribute to greater reliability and full deployment of the existing fleet; however, the current and continuing shortage of available LRV equipment to address existing, increasing and latent demand will not be alleviated until the LRV4 fleet is placed into service in 2017. There are both operating practice and supplemental service options in the short-term that should be considered. They include:

Equipment/Car Utilization and Peak Period Efficiencies

The attainment of passenger capacity in the Muni Metro trunk/subway corridor is dependent on throughput capacity. Many studies have highlighted the need for decreasing running time through shortening of station dwells producing decreased cycle times for trains. Likewise reduction of surface running times contributes to cycle reduction. That goal essentially allows the same LRV fleet to produce more passenger capacity through greater utilization. Figure 4-2 documents the Muni Metro capacity and fleet deployment over time and within different operational contexts.

Figure 4-2 Historic Muni Metro Capacity and Fleet Deployment (AM Peak Inbound Capacity at Van Ness Station*)

	Only K & N Lines in Operation (2/20/81)	Practice of Assembling Longer Metro Trains at Portals in Effect (8/22/84)	Assembling Longer Trains at Portals and Short Line (i.e., Metro-only Shuttle) Trips in Effect (1/12/98)	Proof of Payment Instituted on N Line (1/25/99)	Combined K & T Line in Service (6/16/08)	Reduced Fleet due to Budget Cuts (3/30/13)
Trips from 7 a.m. – 9 a.m.	120	126	138	122	122	125
Capacity	16320	17236	**18768**	16592	16592	17000
Trains per Hour	30	19	23	26.5	39.5	40.5
Train Headway	2.0	3.2	2.6	2.3	1.52	1.48
Max Cars	70	103	91	100	113	114
Trips per Car	1.71	1.22	**1.52**	1.22	1.08	1.10

*COMBINED J, K/T, L, M, N, AND S LINES

The added trunk capacity above is gained by utilizing short line trips to reduce cycle time. For four services (J, M, N, Castro) important "downstream" capacity was achieved by scheduling trips/cars where the maximum load accumulation occurs. Currently, all short line applications have been curtailed excepting four peak trips that utilize a St. Francis Circle turnback. That short line, while demonstrating an important capability of scheduling three-car surface/subway trains, does not provide targeting capacity where demand exists – a reduction of 300+ capacity resulted from utilizing three cars in tandem versus three rotating Castro shuttles. (Note: this practice was retired in spring 2014, after operating for approximately five months.)

Short line trips should be reinstituted in the AM peak period on the J at Church & 30 St, on the M at SF State/Holloway, and in the subway at Castro Station.

Motor Coach Supplemental Service with Short Line LRV Trips: In an effort to provide 'downstream' capacity with existing LRV equipment, implementation of motor coach supplemental service is a valid consideration. The current "NX" service was created to reduce outer end demand on the LRV N line that allowed downstream passengers capacity. The initial NX startup provided 700 additional capacity (1.40 load factor) without implementation of LRV short line trips. Consideration should be given to adding NX trips in the peak-of-the-peak period to increase LRV capacity downstream. Reinstituting LRV N short line trips at the end of the peak period to further enhance capacity is a practical and efficient application.

Further motor coach supplemental service is dependent on attainment of three criteria. The travel time between the maximum load point (last point of boarding) and the inner terminal should be time-competitive to the existing LRV. (The NX express zone from Judah-19 Avenue to Montgomery Station – Sansome is time-competitive). The accumulation segment should afford sufficient demand to offset LRV demand. (The NX outer segment has 11 stops compared to 14 stops along the inner segment). Lastly, the Market (origin-destination pair) should exist.

An application of both J and M short line trips would result in outer segment headway increases. It is possible that consideration of supplemental motor coach service along the segment 19th Avenue-Holloway-Ocean View-San Jose Ave/Guerrero Street, with the potential destination of Mission Bay, would provide both LRV demand offset and emerging market capacity.

The Market Street surface corridor (Castro to Steuart Streets) continues to provide increased demand (due to multiple residential buildings completed in 2014). In addition to providing 'local' service along Market Street, the surface F-Line streetcar also offers supplemental capacity in lieu of Muni Metro. With increased PCC fleet availability, consideration should be given to expansion of peak period F-Line service. Sufficient fleet capacity is available to provide this service in addition to the planned E-Line startup service.

Appendix A
Additional SFMTA Performance Metrics

The metrics reproduced below present performance data for other SFMTA divisions and functions, including measures of the Agency's effectiveness in improving parking, taxi services, and bicycle and pedestrian infrastructure. These metrics also provide quantifiable measures of the SFMTA's Strategic Plan objectives to reduce the Agency's environmental impacts, reduce capital and operating deficits, and create an inclusive, efficient, and enjoyable place to work.

The data below are reproduced from a September 2014 spreadsheet provided to the Auditor by SFMTA staff, and include monthly results by metric from the audit period. To enable limited audit period analysis, color coding used by the SFMTA to track year-over-year performance on a monthly basis is left intact. The color coding is as follows:

- Green: Outperforms Previous FY Average
- Red: Underperforms Previous FY Average
- Yellow: Equal to Previous FY Average

Note: as noted in the attached spreadsheet, several of these metrics were still under development at the beginning of FY 2015, when this report was being written.

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Figure A-1 Performance Metric Summary

ID/Metric	FY13 Goal	Target	FY15 Goal	FY12 Avg	FY13 Avg	FY14 Avg	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
Goal 1: Create a Safer Transportation Experience for Everyone																													
Objective 1.1: Improve Security for Transportation System Users																													
1.1.3 SFPD-Reported Taxi-Related Crimes[2]				3	3.9	4.3	1	2	10	6	3	4	2	1	6	3	7	2	5	2	5	2	1	2	3	10	8	2	3	8
Objective 1.2: Improve workplace safety and security																													
1.2.3 Lost Work Days Due to Injury				16,445 (CY 2013)			4,242	4,535	3,495	3,779	3,646	3,773																	
1.2.4 Employee Rating: I Feel Safe and Secure In My Work Environment; Scale of 1 (Low) to 5 (High)	Results will be reported in September.				3.23																								
Objective 1.3: Improve the safety of the transportation system																													
1.3.2 Collisions Involving Motorists, Pedestrians, and Bicyclists[4]				3,235 (CY12)																									
1.3.2 Collisions Involving Taxis				342 (CY11)																									
Goal 2: Make transit, walking, bicycling, taxi, ridesharing & carsharing the preferred means of travel																													
Objective 2.1: Improve customer service and communications																													
2.1.2 Customer Rating: Overall Customer Satisfaction With Taxi Availability; Scale of 1 (Low) to 5 (High)[1]						2.49															2.54			2.47			2.46		
2.1.3 Customer rating: Overall customer satisfaction with bicycle network; scale of 1 (low) to 5 (high)[1]						2.76															2.73			2.74			2.80		
2.1.4 Customer Rating: Overall Customer Satisfaction With Pedestrian Environment; Scale of 1 (Low) to 5 (High)[1]						3.50															3.64			3.52			3.33		
2.1.6 Percentage of Color Curb Requests Addressed Within 30 Days				86%	93.3%	93.7%	89%	92%	88%	94%	89%	95%	96%	97%	97%	92%	99%	91%	98%	87%	90%	88%	89%	92%	100%	99%	98%	94%	99%	93%
2.1.6 Percentage of Hazardous Traffic Sign Reports Addressed Within 24 Hours				99%	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	94%

1 Results are based on a non-probability sample from opt-in SFMTA online panel surveys and have been weighted to reflect the geographic distribution of the San Francisco population.
2 Beginning with FY2015, includes all taxi, TNC, and black car service-related incidents reported to SFPD. Data for prior years includes "defrauding taxi driver", "operating taxi without a permit", and "overcharging taxi fare" incidents only.
3 Includes assaults and threats on operators.
4 Injury Collisions.
5 <1 min for headway of 5 min or less.
6 Due to a NextBus/schedule data syncing issue, results are not available for 6/21/2014-6/30/2014; June 2014 averages reflect data from 6/1/2014-6/20/2014 only.
7 Due to street sensor removal, occupancy-based parking measures will not be reported after Dec 2013.
8 Running total.
9 Based on preliminary unaudited financials.
* Data forthcoming.

ID/Metric	FY13 Goal	Target	FY15 Goal	FY12 Avg	FY13 Avg	FY14 Avg	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
2.1.6 Percentage of Parking Meter Malfunctions Addressed Within 48 Hours				85%	82.4%	75.6%	82%	84%	81%	86%	63%	79%	80%	82%	87%	86%	87%	84%	86%	56%	87%	86%	84%	84%	76%	73%	75%	85%	73%	45%
2.1.6 Percentage of Traffic and Parking Control Requests Addressed Within 90 Days				81%	79.1%	53.8%	69%			76%			82%			89%			79%	79.0%		68%			26%			32%		
2.1.6 Percentage of Traffic Signal Requests Addressed Within 2 Hours				97%	96.9%	96.8%	98%	94%	99%	97%	97%	97%	95%	99%	97%	93%	98%	98%	99%	98%	97%	98%	95%	98%	97%	94%	98%	96%	98%	95%
Objective 2.3: Increase Use of All Non-Private Auto Modes																														
2.3.1 Non-Private Auto Mode Share (All Trips)	50%	50%	50%	45% (2011 Mode Share Survey)																										
Objective 2.4: Improve Parking Utilization and Manage Parking Demand																														
2.4.1 Parking Reliability Rate of Sf*park* Spaces[7]				70.0%	71.9%	75.2%	69.4%	67.8%	67.3%	66.7%	69.6%	72.9%	78.7%	74.3%	72.6%	73.2%	73.8%	75.9%	76.8%	79.4%	79.6%	73.0%	72.1%	70.0%						
2.4.2 Parking Reliability of SFMTA Garage Spaces				97.8%	97.7%	97.8%	99.2%	98.7%	99.0%	98.8%	96.8%	93.2%	97.7%	98.2%	98.4%	96.8%	96.8%	98.6%	98.0%	99.0%	98.9%	98.5%	97.3%	93.7%	97.7%	97.7%	97.7%	98.2%	98.4%	98.4%
2.4.3 # O F Secure On-Street Bicycle Parking Spaces[8]				5,095	6,208	6,730	5,356	5,474	5,518	5,590	5,604	5,616	5,860	5,866	5,950	6,052	6,118	6,208	6,250	6,288	6,404	6,426	6,522	6,614	6,618	6,618	6,618	6,672	6,730	6,730
2.4.3 # of Secure off-Street Bicycle Parking Spaces (Garage Bicycle Parking)[8]				32	32	120	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	56	56	56	56	56	120	120	120	120
2.4.4 On-Street Payment Compliance (Sf*park* Pilot Areas Only)[7]					53.3%	53.5%	53.7%	53.7%	52.9%	52.9%	51.8%	52.4%	53.2%	54.4%	54.7%	53.3%	52.9%	53.4%	53.6%	53.5%	53.8%	54.1%	52.8%	52.9%						
Goal 3: Improve The Environment and Quality of Life In San Francisco																														
Objective 3.1: Reduce The Agency's and The Transportation System's Resource Consumption, Emissions, Waste, and Noise																														
3.1.1 Metric tons of C02e For The Transportation System	1,515,000	1,515,000	1,515,000	2,266,322 (2010)																										
3.1.2 Percentage of SFMTA Non-Revenue Fleet That Is Alternative Fuel/Zero Emissions				94%	94%	98%																								
3.1.2 Percentage of SFMTA Taxi Fleet That Is Alternative Fuel/Zero Emissions					37%																									

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ID/Metric	FY13 Goal	Target	FY15 Goal	FY12 Avg	FY13 Avg	FY14 Avg	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014
3.1.3 Percentage Biodiesel to Diesel Used By SFMTA (Blend Equivalent)				14.0%	19.3%		2012	2012	2012	2012	2013	2013	2013																	
3.1.4 Number of Electric Vehicle Charging Stations				33	63	63	Jan	Oct	Nov	Dec	Jan	Oct	Nov																	
3.1.5 Citywide Gasoline Consumption Rate				149,156,104 (2009)			6,470	6,542	6,556	6,562	7,456	7,483	7,581																	
3.1.6 Agency Electricity Consumption (Kwh)				124,120,362	122,809,359																									
3.1.6 Agency Gas Consumption (Therms				436,707	415,308																									
3.1.6 Agency Water Consumption (Gallons)				20,201,299	20,116,592																									
3.1.7 Agency Compost Production (tons)				14 (CY09)																										
3.1.7 Agency Recycling Production (tons)				535 (CY09)																										
3.1.7 Agency Waste Production (tons)				593 (CY09)																										
Objective 3.3: Allocate capital resources effectively																														
3.3.1 Percentage of All Capital Projects Delivered On-Budget By Phase	Results reporting to begin in FY14.	Results reporting to begin in FY15.																												
3.3.2 Percentage of All Capital Projects Delivered On-Time By Phase	Results reporting to begin in FY14.	Results reporting to begin in FY15.																												
Objective 3.5: Reduce capital and operating structural deficits																														
3.5.1 Structural Operating Budget Deficit		Make progress towards closing operating and mission critical capital structural deficit			$70M	$35M																								
3.5.1 Structural Capital Budget Deficit (SOGR)					$260M	$260M																								
Goal 4: Create A Workplace That Delivers Outstanding Service																														
Objective 4.1: Improve Internal Communications																														
4.1.1 Employee Rating: I Have The Information and tools I Need to Do My Job; Scale of 1 (High) to 5 (Low)	Results will be reported in September.				3.45																									

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4.1.1 Employee Rating: I Have Access to Information About Agency Accomplishments, Current Events, Issues and Challenges; Scale of 1 (High) to 5 (Low)					3.40																									
4.1.2 Percentage of Employees That Complete The Survey	Results will be reported in September.				34.6%																									
4.1.3 Employee Rating: I Have A Clear Understanding of My Division's Goals/Objectives and How They Contribute to Agency Success.	Results will be reported in September.				3.44																									
4.1.4 Employee Rating: I Have Received Feedback On My Work In The Last 30 Days.					3.14																									
4.1.5 Employee Rating: I Have Noticed That Communication Between Leadership and Employees Has Improved.	Results will be reported in September.				2.92																									
4.1.6 Employee Rating: Discussions With My Supervisor About My Performance Are Worthwhile.	Results will be reported in September.				3.42																									
Objective 4.2: Create A Collaborative and Innovative Work Environment																														
4.2.1 Employee Rating: Overall Employee Satisfaction; Scale of 1 (Low) to 5 (High).	Results will be reported in September.				3.36																									
4.2.2 Employee Rating: My Concerns, Questions, and Suggestions Are Welcomed and Acted Upon Quickly and Appropriately.	Results will be reported in September.				2.94																									
4.2.3 Employee Rating: I Find Ways to Resolve Conflicts By Working Collaboratively With Others.	Results will be reported in September.				3.89																									
4.2.4 Employee Rating: I Am Encouraged to Use Innovative Approaches to Achieve Goals.	Results will be reported in September.				3.34																									

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4.2.5 Employee Rating: Employees In My Work Unit Share Job Knowledge to Solve Problems Efficiently/Effectively.	Results will be reported in September.				3.67																									
4.2.6 Employee Rating: I Feel Comfortable Sharing My Thoughts and Opinions, Even If They're Different Than Others'.	Results will be reported in September.				3.58																									
4.2.7 Employee Rating: My Work Gives Me A Feeling of Personal Accomplishment.	Results will be reported in September.				3.68																									
Objective 4.3: Improve Employee Accountability																														
4.3.1 Percentage of Employees With Performance Plans Prepared By Start of Fiscal Year.	Results will be available in FY14.				20.3%	62.5%																								
4.3.1 Percentage of Employees With Annual Appraisals Based On Their Performance Plans.	Results will be available in FY14.				18.8%																									
4.3.2 Percentage of Strategic Plan Metrics Reported.	Results will be reported in September.				73.0%	93.2%																								
4.3.4 Employee Rating: My Manager Holds Me Accountable to Achieve My Written Objectives.	Results will be reported for FY13 Q4.				3.55																									
Objective 4.4: Improve Relationships and Partnerships With Our Stakeholders																														
4.4.1 Stakeholder Rating: Satisfaction With SFMTA Decision-Making Process/Communications; Scale of 1 (Low) to 5 (High)	Survey will be conducted in FY15.																													

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