



Metro

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.2000 tel
metro.net

REVISED
FINANCE, BUDGET AND AUDIT COMMITTEE
SEPTEMBER 17, 2014
SYSTEM SAFETY, SECURITY & OPERATIONS COMMITTEE
SEPTEMBER 18, 2014

SUBJECT: FARE COLLECTION IMPROVEMENT STRATEGIES

**ACTION: RECEIVE AND FILE REPORT ON STATUS AND
ACTIONS TO IMPROVE FARE COLLECTION**

RECOMMENDATION

Receive and File a report on Metro's fare collection and enforcement efforts, and recommended actions to improve fare revenue collection.

ISSUE

Metro's Long Range Transportation Plan (LRTP) and full funding grant agreements assume an increase in farebox recovery from the current 26% to 33% which would ensure fiscal solvency of Metro's bus and rail system. As a result, the Metro Board adopted a fare change in May 2014. To ensure that Metro is collecting the maximum amount of fares due from customers, Board members have requested that staff assess the reasons for and extent of customer nonpayment of fares. This report outlines the efforts made to date to improve fare collection, analysis of issues in fare collection and data, and next steps towards identifying and developing solutions for the specific areas of concern.

DISCUSSION

In May 2014, the Metro Board adopted changes to the bus and rail fare structure, including increases to cash and pass fares, as well as introduction of a 120-minute directional timed transfer for customers paying for a one way trip using TAP stored value. The goals of the fare change were to ensure the fiscal solvency of Metro as it continues to expand bus and rail services, and to improve network connectivity for Metro's customers. The fare changes are expected to improve the farebox recovery ratio towards the Long Range Transportation Plan (LRTP) assumption of 33%.

Increased Efforts to Improve Fare Collection

In order to achieve the fare revenue increases expected from the fare change, Metro must maximize the fares collected from customers. Several actions have been implemented to improve fare collection, including:

Improved TAP Customer Convenience – Providing a positive experience when using the TAP system is the first step in ensuring that customers pay their fares. Significant effort has been made to improve the customer's convenience with accessing and using TAP cards. Attachment A outlines recent efforts to improve TAP customer convenience. These actions improve access to TAP cards, simplify and encourage the use of TAP, educate customers on where and when to tap their cards and leverage new technology to provide more convenient payment options.

Gate Latching – Over the past two years, staff has undergone a program to fully latch fare gates at all stations on the Red and Green Lines, as well as select stations along the Blue and Gold Lines. As of July 2014, half of the Metro Rail stations are equipped with latched gates. The Red Line gates have been fully latched for 10 months while the Green Line has been fully latched for one month.

As a result of gate latching, Ticket Vending Machine (TVM) revenues at Red Line stations have increased by \$4.7M while revenues from the Green Line have increased by \$907K. Overall Metro Rail TVM revenues have increased by \$9M.

A feasibility study on gating other stations is currently being conducted. Gating schemes have been developed for three aerial stations on Expo Phase I at La Cienega, La Brea, and Culver City. In addition virtual gates for the Gold Line Union Station entrance and Blue Line Willowbrook station platform are proposed to encourage TAP card validation by placing Stand Alone Validators in the customer's path of travel to station platforms.

Stand Alone Validator (SAV) Relocation – SAVs for TAP card validation are installed at stations where gates currently do not exist, and at major transfer points such as 7th/Metro Center, Willowbrook, and Pico Stations. The original locations of many SAVs were inconsistent with customer flows through the station, as they were away from the path of travel and inconvenient and non-intuitive for customer use. As a result, some customers were bypassing the SAVs on their way to the platforms.

SAVs at 25 stations were recently relocated to more visible and convenient locations. As a result, TAP validations at these stations have nearly doubled. Attachment B presents details of the SAV relocation efforts.

Bus Boarding Camera – Studies, including a recent report published by the Urban Institute, show that public surveillance cameras can have a dramatic

impact on crime. In June 2014, video monitors were installed in three New Flyer buses above and behind the operator's cab displaying the customers' image as they boarded and walked through the bus. Interviews with operators indicate that this program not only helps to address fare evasion, but improves the operators' feeling of safety. In mid-August, the three buses were assigned to Line 51 (Avalon Blvd), which continuously ranks as one of the highest fare evasion bus lines in the system. The remaining New Flyer buses on order are expected to be delivered with these monitors starting in mid-November.

Fare Evasion Task Force – A multi-departmental task force, including Metro Operations, TAP, Communications, and Los Angeles Metro Protective Services (LAMPS), has been established to help address immediate issues with fare collection on buses. Some of the issues reviewed recently include: average number of faulty fareboxes in service (estimated to be about 1.3%), operator feedback on time and location of the most prevalent fare evasion, ideas to encourage customers to pay their fare without jeopardizing the safety of operators (e.g. automated announcements, video monitor above the operator cab displaying image of customers boarding the bus, and need for additional analysis of fare evasion “hot spots” to target monitoring and enforcement).

Fare Enforcement Efforts – The Los Angeles Metro Protective Services Fare Enforcement Strategic Plan encompasses a three-prong approach to fare enforcement on Metro's bus and rail system: 1) to educate the public on the use of fare through law enforcement presence; 2) to prevent and reduce misuse of fare through law enforcement special units and special fare enforcement operations, and 3) to change the behavior of fare evaders through the implementation of Metro Transit Court. Attachment C details efforts made in each of these areas along with key statistics and trends illustrating enforcement.

Future Plans to Improve Fare Collection

Developing a more comprehensive understanding of fare evasion on the bus and rail system will help staff to better quantify fare evasion and target time and route based solutions. One key component to this analysis is the availability of more granular and complete boarding and revenue data sets. Metro is currently working on augmenting existing data with TAP and fare gate entry information to develop a more robust data set for analysis.

Rail Boarding Data – Recent fare assessments by the LA County Sheriffs indicate that fare evasion on rail and Orange Line is estimated between 4%-26% of boardings, depending on line. To more accurately understand the revenue impact of these evasion rates, rail boarding data must be improved.

Metro's methodology for estimating rail boardings is certified by Federal Transit Administration (FTA) guidelines to continue federal funding. Unlike the bus system that is equipped with Automatic Passengers Counters (APC), information

used to estimate rail boardings is compiled by manual counts from a sampling of rail cars. To achieve a statistically valid sample size, six months of data is used to develop each month's boarding estimate. Therefore, the data does not reflect immediate changes in ridership trends or fare collection measures such as gate latching or TAP card introduction. In addition, since the boarding estimate is based on a rolling six months, it cannot be compared to month-specific TVM revenue information to calculate average fare per boarding.

With the full latching of the Red and Green Lines, there is an opportunity to use gate entries to augment the manual counts, providing a more accurate and timely estimate of boardings. By using gate entry data for the Red and Green Lines, which represents about 40% of the manual boarding count effort, schedule checker resources can be focused on the Blue, Expo, and Gold Lines, resulting in more timely and accurate information.

Bus Revenue Data –There are some legitimate reasons why customers do not pay fares on buses, such as faulty fareboxes (about 1.3% average per day) and TAP card failures. However, statistics indicate that only .003% of TAP cards are faulty and the TAP component of the farebox operates an average of 8,500 hours without a failure. Therefore, the vast majority of customers who do not pay their fares are fare evaders. To help target the fare evasion issue by line, location, and time of day, operators are instructed to log incidents of “no fare” customers via a button on the farebox. Sheriffs are reviewing this data on a monthly basis, and assigning fare enforcement officers to ride and check bus lines targeting the ones with the most occurrence of “no fare”. Attachment D provides an analysis of problem “hot spots” based on this data. While a trend analysis of this data can provide a good indication of where and when fare evasion occurs most significantly, it relies on manual inputs by each operator, which may result in inconsistencies and incompleteness in the data. Therefore, to better quantify the magnitude of fare evasion on buses, Metro is exploring methods to validate and augment this data with farebox revenue information and APC boarding counts.

Improving boarding and revenue data will allow staff to better assess the magnitude of fare evasion, and pinpoint times and locations of greatest concern. This information will provide a foundation for redeploying existing resources and developing new strategies to maximize fare revenues collected from Metro customers.

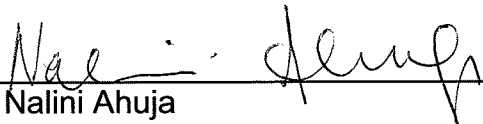
NEXT STEPS

As discussed above, the first step in addressing fare evasion is to understand the extent of and pinpoint the problem by improving existing data on boardings and revenue. Once the issue is quantified, strategies can be developed to target where and when the issue is most prevalent. Staff expects to present an implementation plan and schedule for such strategies to the Board by third quarter of FY 15.

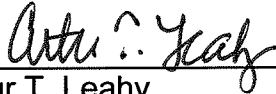
ATTACHMENT

- A. TAP Customer Convenience Improvements
- B. Stand Alone Validator (SAV) Relocation
- C. Fare Enforcement Strategic Plan
- D. "No Fare" Button Activations

Prepared by: Conan Cheung, DEO



Nalini Ahuja
Executive Director, Finance & Budget



Arthur T. Leahy
Chief Executive Officer

TAP CUSTOMER CONVENIENCE IMPROVEMENTS

TAP has made many improvements and has plans for new enhancements to customer convenience, as listed below:

Improved Access to TAP Cards

- Expanded Muni TAP Network to 14 municipal operators with most recent additions of Long Beach Transit (June) and Pasadena (August).
- Expect 13 additional municipal operators to be TAP-enabled by end of 2014.
- Converting TAP interagency transfers by early 2015.
- Supporting fare change implementation.
 - Working with senior centers and pass sales vendors to provide Seniors with temporary reduced fare TAP cards so they can benefit from stored value and 2-hour transfers.
 - Placing roving TAP card sales units near major bus stops to ensure cash customers can obtain TAP cards and stored value.
 - Working with Communications to implement marketing programs such as Rider Relief Program for most vulnerable groups and outreach for Reduced Fare customers such as Seniors and Students.
- Recruiting additional pass sales vendors near bus stops and transfer points with limited access to sales outlets.
- Developing plans to redeploy ticket vending machines at stations along heavily used stations such as the Silver Line.

Simplifying and Encouraging the Use of TAP

- Latched gates at 80 stations to increase fare payment and enhance safety.
- Relocated station validators at 26 rail stations including 7th Metro, Willowbrook, and Pico Stations.

- Bringing TAP Service Center in-house (September, 2014).
- Simplifying TAP vending machines screens (November 2014).
- Implementing *taptogo.net* improvements (now in Phase 3), including more bandwidth and over 20 other enhancements.
- New website planning to begin once TAP Service Center is fully in-house.

New Payment Option Technology

- Created mobile fare payment technology to assist event goers with paying and validating fares (mobile validators, fare boxes and sales devices).
- Pilot testing a text-based (for all phones) mobile application for purchasing Metro fares.
- Preparing a Request for Proposal (RFP) for Near Field Communications (NFC) mobile phone application.
- Preparing a Request for Proposal (RFP) to develop Bluetooth low energy application to enable wheelchair customers to enter gates without using the Gate Help phone.

STAND ALONE VALIDATOR (SAV) RELOCATION

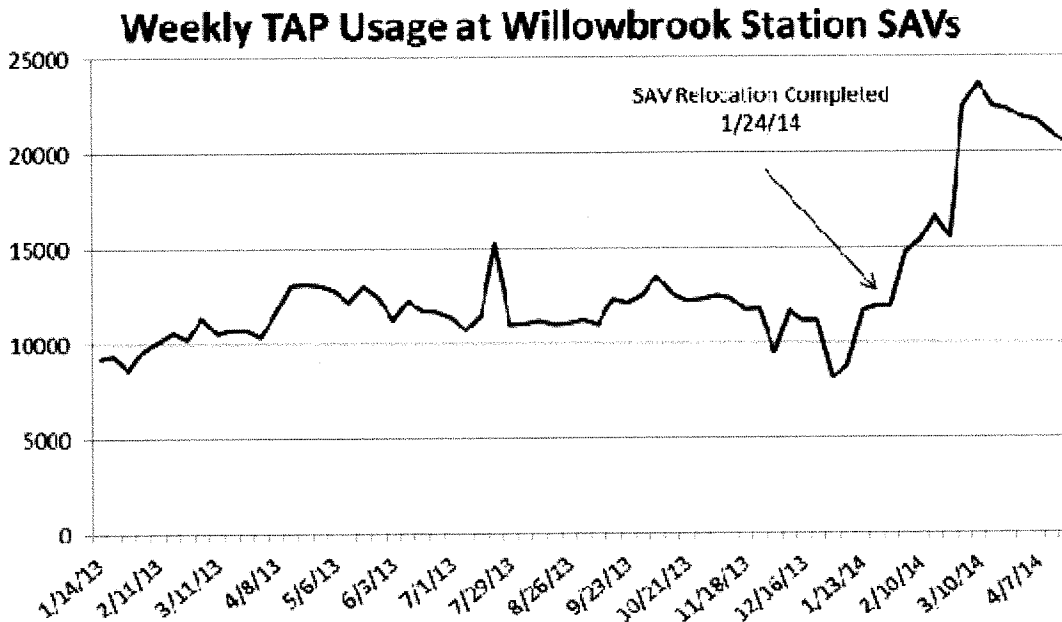
The SAV relocation project started in January 2014 and was completed in June 2014 to reduce customer confusion and encourage tapping by provide visibility and uniformity of SAV locations. The project included relocating existing and installing new SAVs into a virtual gating configuration, and providing infrastructure for future installations.

Virtual gate infrastructure was established at 26 stations as follows:

- 49 SAVs added to 18 stations
- 55 SAVs relocated at 22 stations
- 119 SAV provisions added at 26 stations for future SAVs (Virtual Gate Configuration)
- 17 TVMs relocated at 13 stations

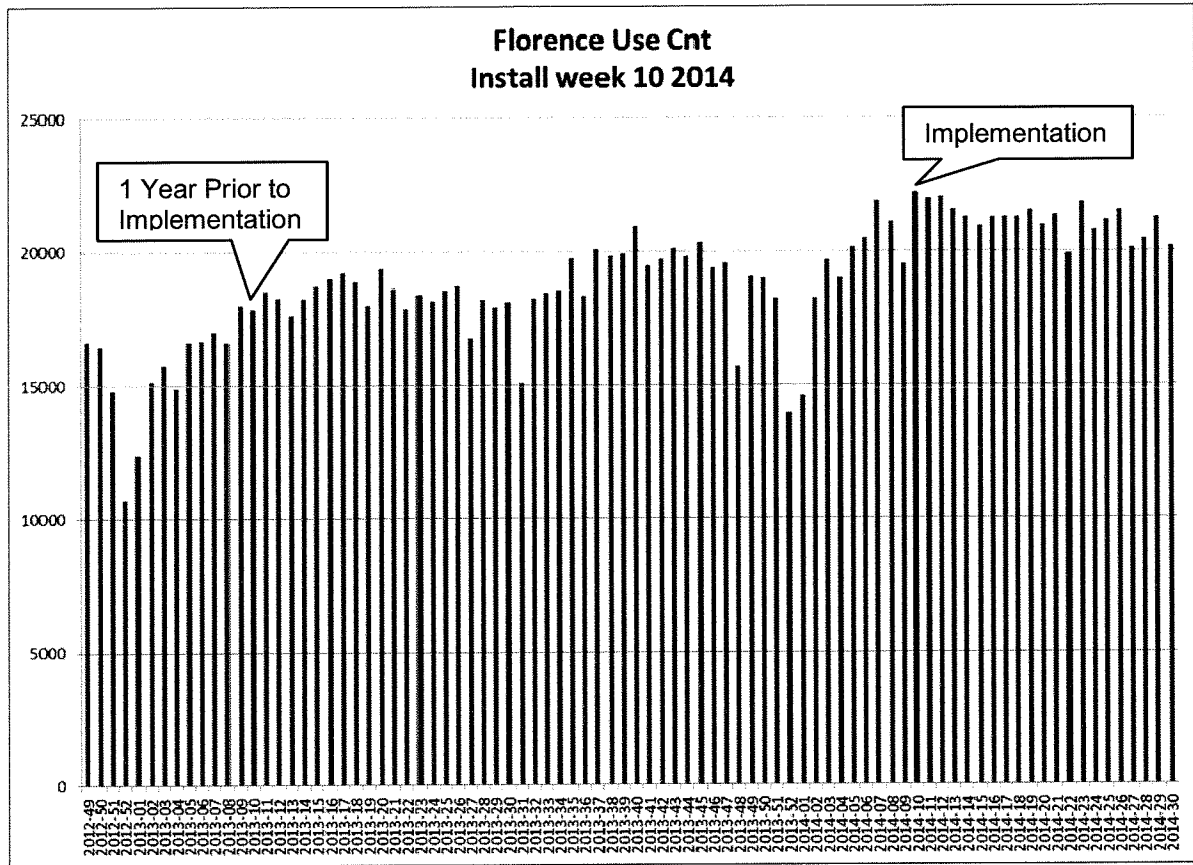
The most notable increase in SAV usage was at Willowbrook Station. Prior to the relocation, the main SAV was not in line with the customer’s path of travel. The relocation effort included an additional SAV placed within the customer’s travel flow, as well as two new SAV at the transfer point from Green Line to Blue Line. Chart 1 shows that SAV usage doubled as a result of this effort.

Chart 1



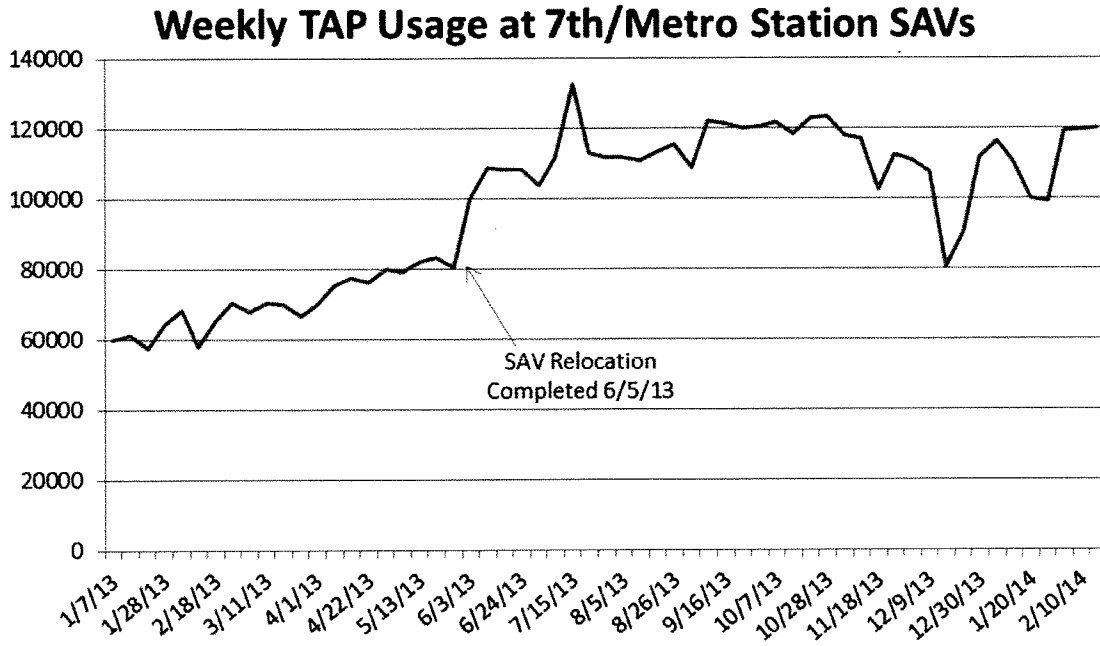
Full Virtual Gate Configuration (4 SAV in line) was implemented at Florence Station. Chart 2 shows Florence station SAV usage before and after the implementation. As illustrated, SAV usage increased by about 4,000 taps, or about 20%, between virtual gate installation and the year prior.

Chart 2



In addition to SAV relocation, SAVs were added at 7th and Metro to establish virtual gates to better capture transfers between Red/Purple and Blue/Expo Lines. Chart 3 shows before and after weekly SAV use. Again, SAV usage increased significantly after the virtual gate configuration was installed.

Chart 3



FARE ENFORCEMENT STRATEGIC PLAN

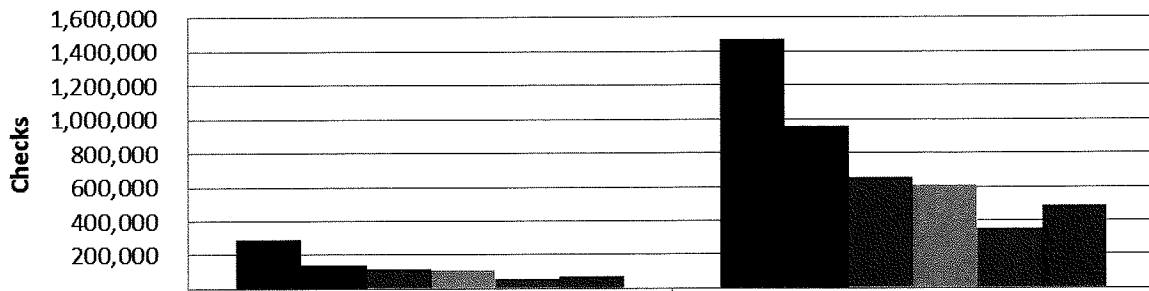
The Los Angeles Metro Protective Services (LAMPS) Fare Enforcement Strategic Plan encompasses a three prong approach to fare enforcement on the bus and rail system: 1) To educate the public on the use of fare through law enforcement presence; 2) To prevent and reduce misuse of fare through law enforcement special units and special fare enforcement operations, and 3) To change the behavior of fare evaders through the implementation of Metro Transit Court.

Sheriffs and Metro Security routinely conduct fare inspections on bus and rail by deploying dedicated fare enforcement teams to targeted peak periods and top ten noted fare evasion areas on the Metro system. Fare inspection is performed by a team of 106 Sheriff's Assistants, 8 Metro Security officers (during the evenings), and 75-80 Sheriff Deputies per shift. Fare inspection times and locations are scheduled randomly as well as specifically based on high incident rates.

From January to July 2014, 4,521,077 fare checks have been performed on the rail and Orange Lines, or an average of 645,868 per month, representing a 6.4% saturation rate. In July 2014, inspection rates increased with 781,024 fare checks conducted, or 7.6% of monthly boardings. Chart 1 shows the breakdown of fare checks by line. The number of checks generally corresponds to the average daily ridership of the lines.

Chart 1

Checks July 2014, YTD



	Jul-14	YTD Jan 14-July 14
■ Red Line	293,869	1,468,733
■ Blue Line	135,986	955,832
■ Green Line	113,540	650,946
■ Gold Line	109,476	610,734
■ Expo Line	59,416	350,418
■ Orange Line	68,737	484,414

July 2014	Red	Blue	Green	Gold	Expo	Orange	Total
Boardings	4,120,243	2,389,132	1,082,600	1,172,924	863,910	677,608	10,306,417
Fare Checks	293,869	135,986	113,540	109,476	59,416	68,737	781,024
% Boardings Inspected	7.1%	5.7%	10.5%	9.3%	6.9%	10.1%	7.6%

YTD	Red	Blue	Green	Gold	Expo	Orange	Total
Boardings	28,200,687	15,818,173	7,587,410	7,877,566	5,595,009	5,113,063	70,191,908
Fare Checks	1,468,733	955,832	650,946	610,734	350,418	484,414	4,521,077
% Boardings Inspected	5.2%	6.0%	8.6%	7.8%	6.3%	9.5%	6.4%

Another strategic approach for fare enforcement is to reduce fare evasion and misuse through deployment of specialized law enforcement units to conduct special fare enforcement operations. These "Crime Impact Teams" (CITs) consist of 8 Deputies and 1 Sergeant. They focus on quality of life issues based on information from the "Intelligence-Led-Policing" meetings, perform uniformed patrol and saturate specific areas to abate problems utilizing zero tolerance enforcement of all Metro rules and regulations, perform bus rides, and bus boarding and plain clothes rides. The CIT advise customers about fare evasion during their bus boarding and plain clothes rides, and issue fare evasion citations by asking fare evaders to de-board the bus. Fare checks on board buses target the bus lines and locations demonstrating the most occurrences of fare evasion based on operator input via a "No Fare" button on the farebox.

The second component of the strategic approach to preventing and reducing the misuse of fares are the special fare enforcement operations. Sheriffs have conducted 5, one hundred percent, 11-hour (typically 5:30-11:30 am and 2:00-8:00 pm) fare check operations on de-boarding rail and Orange Line customers. The operations that have been conducted are shown in Table 2.

Table 2
100% Fare Check Operations

Line	Date	Day	Stations	Green Checks	Red Checks	Fare Evasion	Misuse	Comment
Orange	12/3/2013	Tuesday	North Hollywood, Van Nuys, Sherman Way	7128	2178	22%	9%	Uniformed operation at North Hollywood
Orange	12/17/2013	Tuesday	North Hollywood, Reseda, Canoga	6577	1420	16%	6%	Uniformed operation at North Hollywood
Orange	2/11/2014	Tuesday	North Hollywood, Van Nuys, Canoga	9755	1154	7%	5%	Uniformed operation at North Hollywood
Blue	3/12/2014	Wednesday	103rd Street/Watts Towers, Compton, Willow St.	3988	1161	26%	3%	No uniformed operations
Gold	3/19/2014	Wednesday	Atlantic, Highland Park, Lake	5391	464	4%	4%	Uniformed operation at Atlantic
Expo	4/2/2014	Wednesday	Expo/Western, Expo/Crenshaw, Culver City	4247	685	11%	4%	Uniformed operation at Culver City

These checks were conducted using mobile-phone validators (MPV), which are phone devices that check TAP cards by placing the individual's card on the face of the phone reader. Currently, MPVs only record green checks, when a rider has made a valid tap before boarding. All other taps that are not valid will show on the screen display as red (fare evasion or misuse of an active pass).

As shown in the table above, fare evasion on rail and Orange Line range between 4% (Gold Line) and 26% (Blue Line). In addition, misuse of fare media (customers who have value but do not TAP), range from 3% (Blue Line) to 9% (Orange Line). Of note is the significant decrease in fare evasion and misuse on the Orange Line as more 100% checks were conducted. Orange Line fare evasion decreased from 22% to 7%, while misuse decreased from 9% to 5%. Additional 100% checks are scheduled for the rail and Orange Lines.

The third strategic approach for fare enforcement is to change the behavior of fare evaders through the implementation of Metro Transit Court. In January 2013, at the directions of the Metro Board, an administrative processing and hearings transit court was established to educate and change the behaviors of fare evaders through the issuance of fines, system exclusion notices for those who received three or more citations, and transit school and community services for violators who are unable to pay. From January 2014 to July 2014, Transit Court has processed 38,245 administrative citations as shown in Table 3.

Table 3
Administrative Citations Processed Through Transit Court

	JAN	FEB	MAR	APR	MAY	JUN	JUL
Red/Purple	3,063	2,634	2,051	1,762	1,884	1,589	1,620
Blue	1,664	1,363	1,075	940	1,237	1,665	1,668
Green	702	569	682	398	557	705	640
Gold	1,318	961	967	698	725	1,042	927
Expo	779	569	413	458	494	483	614
Orange	1,451	1,083	713	442	288	432	361
Bus	53	58	45	71	97	65	56
TOTAL	9,030	7,237	5,946	4,769	5,282	5,981	5,886

LAMPS will continue to improve upon the current fare enforcement strategies through the continuation of Intelligence-Led-Policing (data gathering and analysis derived from bus operators reporting-“No Fare” button, fare evasion citations, crime data, and monthly meetings with Metro stakeholders). In addition, LAMPS will be exploring and testing new capabilities to assist in further enhancing fare enforcement abilities, including:

- Video Analytics to manage fare evasion tracking and patterns
- Develop specialize law enforcement Bus Riding Team
- Increase presence of fare enforcement team between law enforcement and Metro Security Officers
- Enhance our current mobile phone validators to increase tracking capabilities
- Enhancing on-board video monitoring for bus and rail
- Seek to enhance legislation for administrative citations
- Enhance recovery of bus and rail video for investigations

“NO FARE” BUTTON ACTIVATIONS

Since January 2013, bus operators are instructed to log incidents of “no fare” customers via a button on the farebox. This data is collected and analyzed on a monthly basis to identify time of day, day of week, line, and location of occurrences. Scanning data from several months reveals that the trends in occurrences by time of day and location have been consistent.

Data is collected via manual activation of the “no fare” button by bus operators, so information can be inconsistent and incomplete based on behaviors of individual bus operators. Therefore, it is difficult to quantify the magnitude of fare evasion on buses strictly using this information. However, the data presents a good understanding of when and where fare evasion occurs most prevalently, and is used to better focus enforcement and education activities.

Chart 1 illustrates the daily trend in “no fare” occurrences based on July 2014 data. As indicated, the majority of button activation centers on the 3:00 pm time period, likely right after school dismissal.

Chart 1

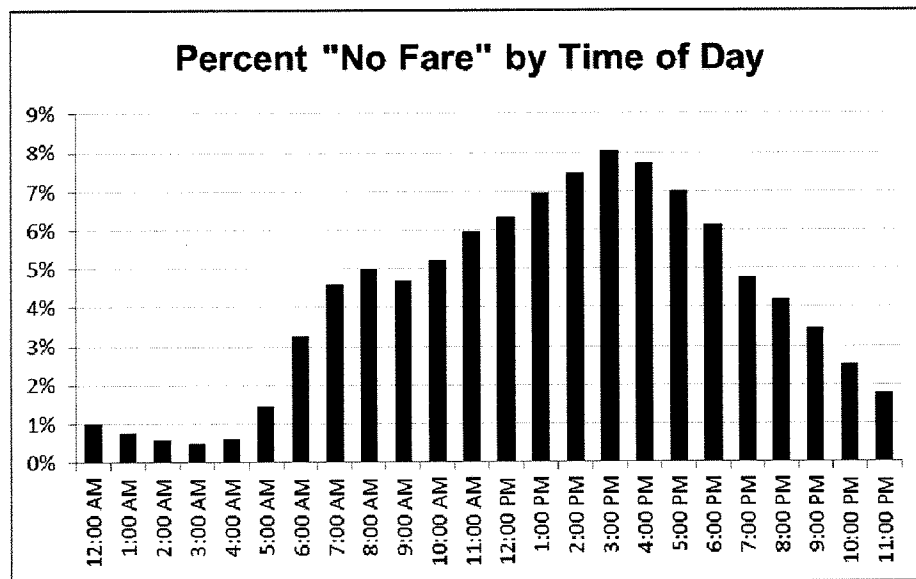
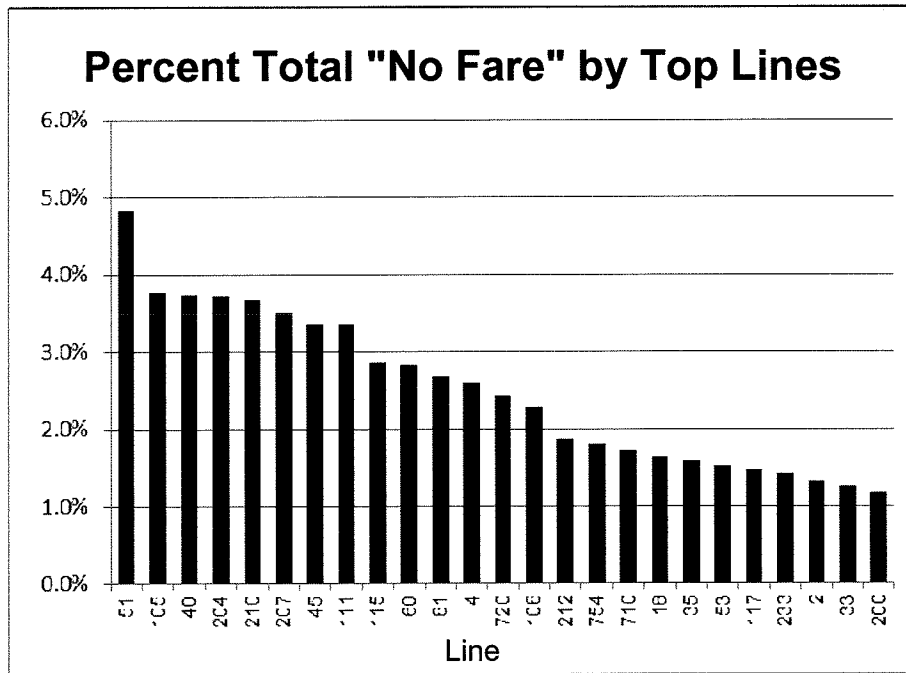


Chart 2 and Map 3 show the bus lines that recorded the most incidents of “no fare” boardings based on July 2014 data. A review of data from other months over the past year confirms that these lines consistently rank high in “no fare” boardings. Map 3 indicates that much of the “No Fare” activity is experienced on lines within the Westside/Central, South Bay, and Gateway service areas.

Chart 2



Map 4 further details the specific stops along the bus lines where the majority of “No Fare” activity is recorded. As indicated, many of the top stops are located in the South Bay service area. This information along with the top lines assists the Sheriffs in targeting deployment of fare enforcement units on buses.

Map 3

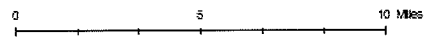


Top No Fare Bus Lines



Prepared by Service Planning & Scheduling (August 2014)

Thomas Bros. Maps
 A SAN FRANCISCO COMPANY
 Thomas Bros. Maps is a registered trademark of S and M Realty & Company.
 Copyright 2014. All rights reserved. S and M Realty & Company.
 3377 Geary Road



Map 4

Date Saved: 8/21/2014

Map Produced by Service Performance Analysis, LACMTA

Bus Stops with a High Proportion of "No Fare" Boardings

