

## 2. Proof of Payment Staffing Needs

- **The San Francisco Municipal Transportation Agency (SFMTA) has greatly increased the budgeted and actual front-line staffing for the Proof of Payment (POP) program since FY 2005-06. The goals of this expansion were to curtail fare evasion, increase fare revenue, and expand POP to the bus fleet. Although the SFMTA has not developed criteria for identifying POP staffing needs, a federal study has looked at transit agency POP staffing in the U.S. and abroad. The study utilized a number of metrics to compare staffing across agencies, including the ratio of inspectors to riders, inspector productivity, and the inspection rate.**
- **Currently, the POP program's April 2009 practice of staffing the equivalent of 42 Transit Fare Inspectors (TFIs) on light rail is comparable to other transit systems inspector-to-rider ratios. However, TFI productivity and inspection rates lag those recommended by the Federal Transit Administration's Transit Cooperative Research Program. TFIs are not conducting as many daily inspections as their counterparts in other transit systems. Furthermore, after citation revenue, each additional TFI costs the SFMTA \$68,493 annually in net salary and fringe benefit costs. Despite an inability to effectively measure productivity and inspection rates, the SFMTA is in the process of hiring 14 additional TFIs pursuant to authorization received from the SFMTA Board of Directors.**
- **The SFMTA needs to establish criteria for appropriate POP program staffing levels. Until the SFMTA has established these criteria, it should suspend TFI hiring—including hiring currently underway. POP program managers should develop tactics for regularly monitoring, reporting, and improving individual and team productivity and inspection rates. Implementing these changes will hold down costs and increase efficiency and citation revenue.**

### Fare Enforcement Staffing

A study by the Federal Transit Administration's Transit Cooperative Research Program (TCRP) analyzed staffing and efficiency among Proof of Payment (POP) programs in the U.S. and abroad. From its research, the TCRP developed basic issues, principles, and measures that transit agencies should consider when developing POP staffing plans. The Budget Analyst also surveyed seven transit programs in the U.S. and Canada on POP staffing and other metrics.

## **Basic Issues**

The TCRP identified certain program characteristics that transit agencies need to consider when evaluating staffing levels for POP programs, as follows:

- The number of full-time inspection personnel to be patrolling the system;
- The availability of supplementary personnel; and
- The target inspection rate (i.e., the number of passenger contacts ÷ ridership).

The study found that in determining appropriate POP staffing levels, transit agencies also need to consider the transit system size and configuration, ridership, inspection strategy, type and cost of personnel, and available budget. Although the TCRP advises that the target rate ought to be the driving factor, it acknowledges that budget constraints determine staff size in most agencies.

## **Basic Staffing Principles**

The TCRP found that while optimum levels are difficult to define, two basic principles tend to apply to POP systems:

1. Past a certain point, adding inspection personnel yields diminishing returns.
2. Without meeting appropriate personnel levels based on inspection rates, increasing evasion can overwhelm inspection and lead to increased evasion.

In other words, a transit agency needs to find a balance between a stable level of fare evasion and cost effective staffing levels.

## **SFMTA POP Program Staffing**

The SFMTA has increased the number of TFI positions in the POP program in the past three fiscal years in order to reduce light rail fare evasion, increase revenue, and expand POP to the bus system. Nonetheless, POP management have not developed methods to calculate staffing needs or appropriate staffing levels. As shown in Table 2.1 below, budgeted 8121 Supervisor/Investigator and 9132 Transit Fare Inspector staffing increased by 325 percent from FY 2005-06 through FY 2009-10 even though there was not clear analysis supporting these needs.

The SFMTA's stated purpose for requesting increased funding for POP inspectors in its FY 2006-07 budget was to reduce fare evasion and increase fare revenue by \$14 million. The SFMTA aimed to more than double the TFI and Supervisor staffing. The SFMTA assumed that with this staffing increase, a substantially improved TFI efficiency, and a deployment strategy that focused on the busiest light rail lines and bus routes, would achieve the \$14 million fare revenue increase.

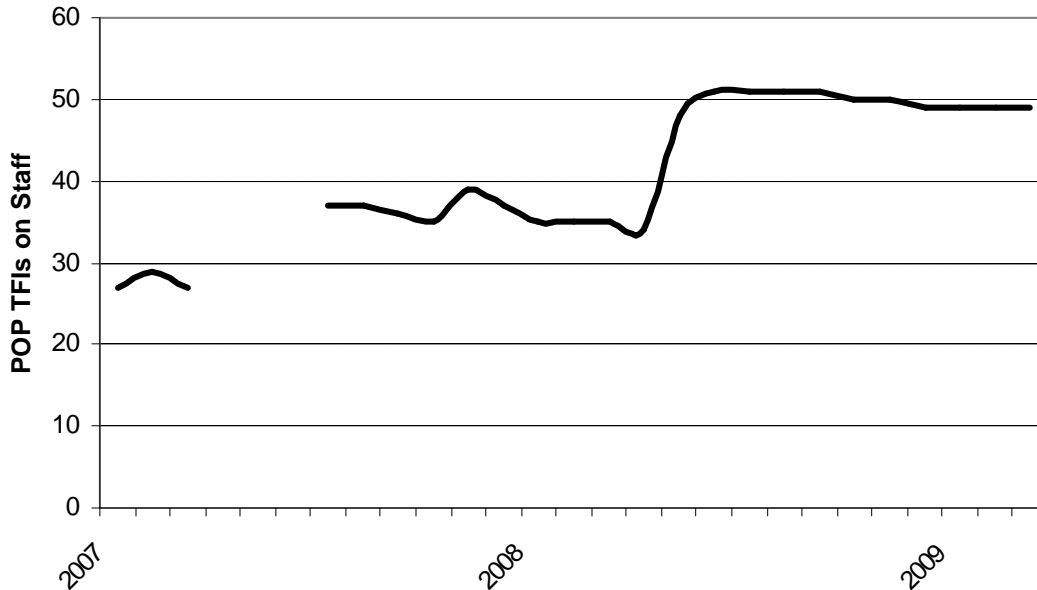
**Table 2.1**  
**Budgeted POP Program Positions**  
**FY 2005-06 through FY 2009-10**

Position	FY 2005-2006		FY 2006-2007		FY 2007-2008		FY 2008-2009		FY 2009-2010		% Increase, FY 2005-06 to FY 2009-10	
	FTE	Total Salaries and Fringe Benefits	FTE	Total Salaries and Fringe Benefits	FTE	Total Salaries and Fringe Benefits	FTE	Total Salaries and Fringe Benefits	FTE	Total Salaries and Fringe Benefits	FTE	Total Salaries and Fringe Benefits
8121 Supervisor/ Investigator	3	\$259,409	7.5	\$750,706	9	\$944,403	9	\$977,600	9	\$1,011,816	200%	290%
9132 Transit Fare Inspector	21	1,436,993	55.5	4,312,559	60	4,787,428	86.1	7,211,673	93	8,062,248	343%	461%
<b>Total</b>	<b>24</b>	<b>\$1,696,402</b>	<b>63</b>	<b>\$5,063,265</b>	<b>69</b>	<b>\$5,731,831</b>	<b>95.1</b>	<b>\$8,189,273</b>	<b>102</b>	<b>\$9,074,064</b>	<b>325%</b>	<b>435%</b>

Sources: Budget Analyst calculations based on data from the SFMTA, City and County of San Francisco Annual Salary Ordinances, and the Department of Human Resources.

Actual staffing varies from the budgeted amount. As noted above, as of April 2009 the SFMTA had 6 Supervisor and 46 TFI actual positions compared to 9 Supervisor and 86.1 TFI budgeted positions. On May 12, 2009, the SFMTA reduced the number of TFI positions in the FY 2009-10 budget from 93 to 60, with the intention of filling 14 vacant positions, increasing actual TFI staffing from 46 to 60. As shown in Figure 2.1 below, the SFMTA increased the number of actual TFIs in January 2007, from approximately 21 actual TFI positions to a program-high of 52 actual TFI positions.

**Figure 2.1**  
**SFMTA Actual Transit Fare Inspector Staffing,**  
**January 2007 to March 2009**



Note: Staffing data was not available for April, May, and June 2007. Summary data table available in the Appendix to this report.

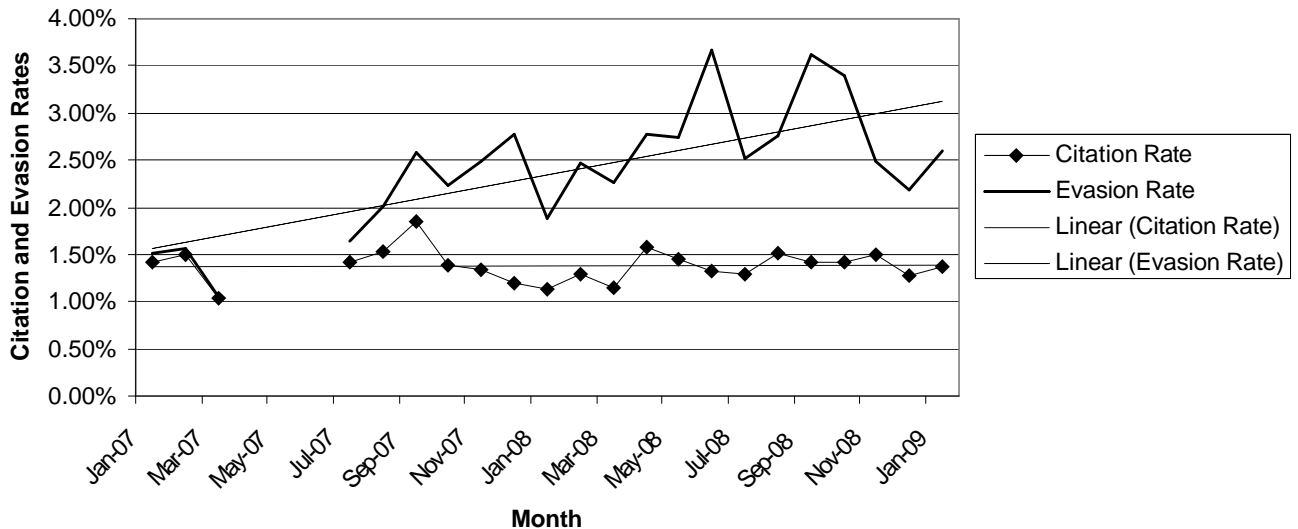
Source: SFMTA.

### Expected Impact of Staffing on POP Program Performance

In order to measure its progress, the SFMTA's FY 2006-07 Annual Budget Plan established a key performance measure to reduce "instances of non-paying passenger boarding." However, as noted in Section 1, *Proof of Payment Performance Management*, POP management has not regularly tracked fare evasion rates. As shown in Figure 2.2 below, based on the Budget Analyst's calculations, while the citation rate has stayed relatively flat, the fare evasion rate (citations plus warnings) has increased since January 2007, suggesting that a greater percentage of riders are riding Muni light rail vehicles without paying. Furthermore, as noted in Section 9, *Proof of Payment on Buses*, POP management has not developed a long term implementation plan for expanding POP to buses, beyond the current Phase III pilot.

Figure 2.2

### POP Citation and Fare Evasion Rates, January 2007 - January 2009



Source: Budget Analyst calculations based on SFMTA POP program data.

## SFMTA's Proof of Payment Staffing Levels Are Comparable to Other Programs, but Productivity Rates Lag

The SFMTA does not measure its staffing or productivity to determine if staffing levels are efficient. However, the Budget Analyst found that while the SFMTA POP staffing levels are comparable to other transit agencies, inspector productivity is significantly less.

### Staffing Metrics

The TCRP utilized a number of measures to compare staffing across agencies, including the number of inspectors, inspector productivity, and the inspection rate.

#### Inspector Staffing Levels

The TCRP found inspector/rider ratios to be preferable to inspector counts for evaluating and comparing enforcement staffing efforts. Its study found that the ratio of inspectors per 1,000 daily riders ranged from 0.15 to 0.36 inspectors, with an average of 0.28. The Budget Analyst surveyed five light rail POP systems and found the ratio of inspectors per 1,000 daily riders ranged from 0.06 in Denver to 0.68 in Portland, with an average of 0.44 inspectors per 1,000 daily riders.

### Inspection Rate

The TCRP found the inspection rate—the total number of contacts (riders required to show proof of payment) compared to the system’s daily ridership—is a valuable measure of staffing as well as performance. The TCRP found that most light rail proof of payment systems had inspection rates between 15 percent and 30 percent, and recommended inspection rates between 15 percent and 25 percent for light rail proof of payment systems. Respondents to the Budget Analyst’s survey reported light rail inspection rates ranging from 4 percent to 75 percent, with an average of 28 percent. The TCRP did not find a clear correlation between inspection rates and evasion rates. It also notes that few of the agencies studied could verify the accuracy of inspection rates reported by their inspectors.

### Productivity

The TCRP defines the productivity of inspection personnel as the average number of passengers an inspector checks each day. The rate is calculated by the following equation:

$$\text{inspection rate} \times \text{daily ridership} \div \text{average number of daily inspectors}$$

The TCRP study considered a reasonable productivity range for light rail systems to be 400 to 750 passengers per inspector per day.

The Budget Analyst calculated the POP program’s inspection staff/light rail ridership ratio, inspection rate, and inspector productivity as shown in Table 2.2 below. The Budget Analyst calculations are based on the passenger contact, staffing, and ridership data provided by the SFMTA, including special event contact estimates, recognizing passenger contact data limitations that likely overstate both the inspection rate and inspector productivity.

- TFIs have counted passenger contacts in different ways - utilization of a counter, counting the number of heads on a train, counting the number of empty seats, keeping a running platform tally, or simply estimating.
- The passenger contacts include not only the contacts made by TFIs as part of their daily inspection of the Muni Metro System but the large number of riders contacted during ball games and special events. This definition of passenger contacts is broad, since TFIs check for proof of payment but do not issue citations at San Francisco Giants home games, and may work exclusively to direct passengers to vehicles or to assist with boarding at special events. Furthermore, these special event contact counts are estimates, as TFIs do not currently record actual contacts at sporting and other special events.

**Table 2.2**  
**The SFMTA POP Program’s Inspector Staffing, Inspection Rates, and**  
**Inspector Productivity**  
**December 2007 through November 2008**

<b>Metric</b>	<b>TCRP Study Recommendation</b>	<b>Budget Analyst Survey</b>	<b>SFMTA</b>	<b>Percent SFMTA Above/ (Below) TCRP Study Recommendation</b>	<b>Percent SFMTA Above/ (Below) Budget Analyst Comparison Survey</b>
Inspection Staff per 1,000 daily riders	0.2 to 0.3	0.44	0.30 <sup>1</sup>	0% to 50%	(32%)
Inspector Productivity (contacts per inspector per day)	400 to 750	n/a	331	(17%) to (56%)	n/a
Inspection Rate	15% to 25%	28%	7.4%	(51%) to (70%)	(73%)

<sup>1</sup> SFMTA Transit Fare Inspector staffing levels assume that four TFIs are assigned to the bus pilot as of April 2009.

Sources: TCRP; SFMTA; DART; RTD; Tri-Met; UTA; MTS.

### **POP’s Staffing Levels Are Comparable to Other Systems**

The SFMTA POP program TFI staffing level is comparable to the TCRP recommended staffing levels and the Budget Analyst’s survey. As of April 2009, San Francisco’s POP program deployed 0.30 inspectors per 1,000 light rail riders, placing at the high end of TCRP recommendations, but lower than the average of the five light rail programs that the Budget Analyst surveyed, as shown in Table 2.2 above.

### **POP’s Productivity Falls Below TCRP Recommendations and Levels Reported by Other Transit Systems**

The SFMTA POP program productivity was an estimated 17 percent less than the TCRP’s minimum recommended level, as shown in Table 2.2 above. While the TCRP recommended that light rail POP inspectors should conduct between 400 and 750 inspections per inspector per day, the Budget Analyst calculated that the typical TFI conducts an average of 331 inspections per day, though this includes ball games in which TFIs do not issue citations and special events in which TFIs assist with boarding rather than check for proof of payment.

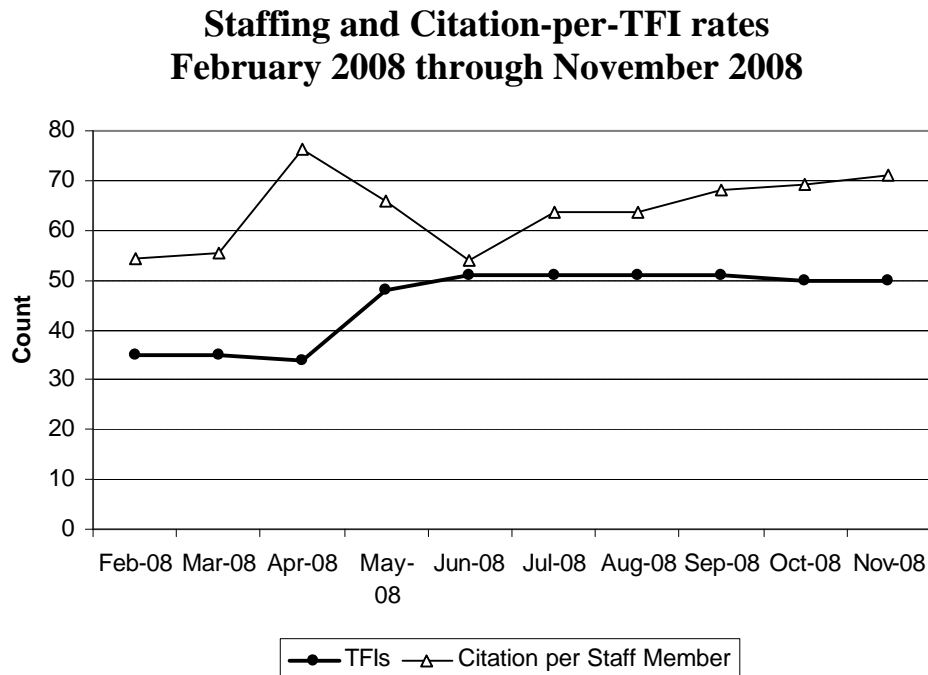
## Additional Light Rail Staffing Is Costly

The SFMTA has increased the number of authorized TFI positions in the budget each year without showing that increased staffing results in decreased fare evasion and increased fare revenues. Currently, the SFMTA is not able to identify the impact of the POP program on ridership and fare revenues, as discussed in the *Introduction*. Although citation revenue is directly attributable to the POP program, the cost of each TFI to conduct inspections in the light rail system exceeds generated citation revenue.

### TFI Costs Exceed Citation Revenue

From February 2008 to November 2008, the POP program staff issued an average of 64.2 citations, per TFI, per month. Changes in the citation average are summarized in Figure 2.3, below.

**Figure 2.3**



Source: Budget Analyst calculations based on SFMTA POP program data.

The POP program does not recover the costs of each TFI through citation revenues. Based on the Budget Analyst's estimate, at the current staffing level of 46 TFIs, annual citation revenues are approximately \$720,000.<sup>1</sup> The citation revenues and salary costs for each TFI and for the POP program's total TFI force are summarized in Table 2.4, below.

<sup>1</sup> The POP program collected approximately \$360,000 in citation revenues for the six-month period from February 2008 through November 2008 (See Section 8 *Citation Processing and Collection*).



**Table 2.4****Incremental and Aggregate TFI Costs and Citation Revenue**

	<b>1 TFI</b>	<b>46 TFIs</b>	<b>60 TFIs</b>	<b>Increased Revenues and Costs for 60 TFIs Compared to 46 TFIs</b>
Total Expected Citation Revenue	\$15,652	\$720,000	\$939,120	\$219,120
Less TFI Salary & Benefits	(84,145)	(3,870,675)	(5,048,706)	(1,178,031)
<b>TFI NET COSTS (citation revenue less TFI salary and fringe benefits)</b>	<b>(\$68,493)</b>	<b>(\$3,150,675)</b>	<b>(\$4,109,586)</b>	<b>(\$958,911)</b>

Source: Budget Analyst calculations based on data from SFMTA, San Francisco Department of Human Resources.

Table 2.4 does not reflect any increase in fare revenue that may result from the POP program's presence on Muni. As is discussed in the *Introduction*, the SFMTA believes that some amount of fare revenue is attributable to the presence of the POP program, but is unable to determine what that amount is. Furthermore, the SFMTA has identified ten factors in addition to increased fare evasion enforcement that may account for recent fare revenue increases. On the margin, however, the Budget Analyst observes that while the addition of a single fare inspector would have a minimal impact on the fare paying habits of Muni's ridership system wide, the SFMTA does incur an expected incremental cost of \$68,493.

Changes following the FY 2009-10 Budget Review

The SFMTA had 93 TFI positions in the FY 2009-10 budget, resulting in total estimated increased net costs of \$3.2 million compared to current actual positions of 46 TFIs. On May 12, 2009, the SFMTA reduced the number of funded TFI positions in FY 2009-10 to 60 due to budget constraints, which will still result in increased net costs of almost \$1 million. According to the SFMTA, these additional positions will provide staffing for the SFMTA's POP pilot on the buses, although as discussed in Section 9 *Proof of Payment on Buses*, the SFMTA has not sufficiently planned for implementing the pilot and should avoid the increased TFI costs until the SFMTA completes a long term implementation plan for the bus pilot.

**Conclusions**

The SFMTA does not have a basis for its current POP program staffing level and does not have a rationale for proposed staffing increases. The SFMTA has more than doubled POP staffing since FY 2005-06 to curtail fare evasion, increase revenues, and expand fare

inspection to buses. However, the POP program has yet to achieve those goals and has not monitored its own progress toward curtailing fare evasion or increasing revenues.

The Federal Transit Administration's Transit Cooperative Research Program devised three metrics by which to measure staffing levels and effectiveness: inspector-to-rider ratios, inspector productivity, and inspection rate. The SFMTA does not monitor these metrics. Although the SFMTA's inspector to rider ratio is comparable to other transit systems, the SFMTA's productivity and inspection rates are low compared to the TCRP's recommendations and other transit systems' productivity and inspection rates.

According to the TCRP, while it is difficult for transit agencies to define optimum staffing levels, transit agencies should follow two principles: without a certain number of inspectors, evasion will increase; and past a certain point, hiring additional inspectors yields diminishing returns. The POP program has not sufficiently evaluated its performance to determine how its staffing levels meet these two principles. Although recent increases in fare evasion suggest that the POP program may lack sufficient staffing, comparative measures suggest that the inspector staffing may be adequate, and it is employee productivity that is lagging.

Because the SFMTA has not shown that additional TFI staffing contributes to increased revenues, and the hiring of 14 additional staff would result in nearly \$1.0 million in net costs, the SFMTA should suspend TFI hiring—including hiring currently underway—until it has established criteria for appropriate POP program staffing levels.

## **Recommendations**

In order to avoid the expense of potentially unnecessary additional staffing, the SFMTA Board of Directors should:

- 2.1. Immediately suspend all POP-related hiring, including hiring currently underway, until the POP program has devised metrics for evaluating the appropriate staffing levels and implemented Budget Analyst recommendations for expanding POP to buses (see Recommendation 9.4).

In order to achieve appropriate staffing levels, the Deputy Director of SFMTA Security and Enforcement should:

- 2.2. Oversee the development of criteria for evaluating appropriate staffing levels in order to achieve established performance goals and objectives within the POP program.

In order to improve fare inspector productivity, the Director and Deputy Directors of SFMTA's Security and Enforcement Division, in coordination with the POP Operations and Investigations Manager, should:

- 2.3. Establish a target contact rate for the POP program as a whole.

- 2.4. Calculate, report, and audit the contact rate monthly, as well as individual and team productivity rates.
- 2.5. Work with Supervisors and TFIs to develop strategies for improving the program's contact rate and achieve established contact rate goals. These strategies should include overall TFI deployment efforts as well as individual work performance.

## **Costs and Benefits**

By delaying hire of 14 new TFI positions until the SFMTA has devised metrics for evaluating the appropriate staffing levels and implemented Budget Analyst recommendations for expanding POP to buses, the SFMTA will avoid nearly \$1.2 million in annual TFI salary and fringe benefit costs for staff that it cannot effectively utilize.

Implementation of these recommendations would improve the POP program's efficiency, and therefore improve adult citation fine revenue, at least until which time that the POP program is able to achieve significant reductions in fare evasion among Muni passengers. Implementation of these recommendations would also increase fare revenues by creating greater disincentives to evasion.