

# REPORT ON SAN FRANCISCO'S CABLE CARS

Prepared by:  
*San Francisco Beautiful*  
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## I. Introduction

Many think of San Francisco's famed cable cars, one of the country's only moving historic landmarks, more as a tourist attraction than as a regular means of public transportation. This may be understandable given that it now costs a family of four \$40 roundtrip, and that is without transfers (each leg of a cable car ride costs \$5). But cable cars have always been an integral part of the city's transportation system, and, despite the rising cost to ride them, continue to be for many people who live or work in San Francisco.

Over time San Francisco has come close to losing the cable cars, due to fiscal challenges brought on by pressures to update and modernize our public transit capabilities. With each threatened shut down, citizen activists have rallied to save what is arguably San Francisco's signature asset.

The San Francisco Beautiful (SFB) feels a special responsibility for the ongoing viability of the cable car system because of the exceptional advocacy of SFB's founder, Friedel Klussmann. In 1947, she organized the Citizens Committee to Save the Cable Cars, fought back many threats through the years to curtail or abolish the system and finally in 1971 led the successful Proposition Q ballot initiative for the City Charter amendment freezing the minimum cable car service at the levels provided for as of July of that year.

In the spring of 2005, SFB began to explore the current challenges facing the cable car system and its operation. The discussion arose in response to concerns about the increase in fares to \$5.00 as part of the annual budget of the Municipal Transportation Agency (MTA). We became concerned that the fare increase could have an adverse effect on ridership and turn the cable cars into a purely tourist attraction that would ultimately reduce overall public support for cable car service. There were also concerns about the productivity of the system; including concerns about schedule unreliability and apparent long layovers at terminal points while patrons wait to board. In addition, we questioned whether the riding public and taxpayer would see any improvement as a result of the additional fare box income. In summary, all of these symptoms reflected a general concern about whether and how the cable car system would continue to be a viable component of the city's transportation system.

SFB representatives met with MTA management, transit professionals and union officials to discuss cable car issues and reviewed cable car data and audited reports. This report presents SFB's findings and recommendations and is presented in the following three sections: 1) a description of the existing cable car system, 2) a description of cable car system problems and a summary of possible causes for these symptoms, and 3) SFB recommendations for action by MTA/MUNI.

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## **II. Cable Car System Description**

The San Francisco Municipal Railway division of the SFMTA operates three cable car lines in San Francisco. All three of the lines operate out of the Cable Car Barn at Washington & Mason Streets. Both the Powell-Mason and Powell-Hyde lines originate at Powell and Market Streets. The Powell-Mason line takes you to the terminal at Bay Street and the Powell-Hyde line takes you to the terminal at Beach Street, and both lines return to Powell and Market. At either end of these two lines there are turntables built into the street to turn the cable cars around.

The California line runs on California Street from Market/Drumm Street to Van Ness Ave. California line cable cars are equipped with a set of control levers at each end, thus eliminating the need for a turntable at each end of the line.

Each car requires a two-person crew, consisting of a grip (person) and a conductor. The grip-person operates the grip, which grabs the continually moving cable under the street as well as the three brake systems on the car. The conductor collects fares and operates additional brakes on steep grades on the system. The conductor also assists with operation of track switches and “taking rope” or using levers to pick up the cable.

Attachment 1 provides a detailed description of the current cable car system including line, equipment and schedule descriptions. The attachment also includes the City Charter Section 16.100 that was adopted by the voters as Proposition Q in November 1971. Prop. Q froze cable car service at July 1971 levels preserving the existing service on the three cable car lines. It is our understanding that the cable car lines were adhering to a 6-minute headway in 1971.

## **III. Cable Car System Problems & Possible Causes**

After review of MUNI performance data, recommendations from the audit of MUNI Service Standards, and discussions with knowledgeable persons, the cable car system problems and possible causes for those problems are listed below:

- *Personnel Availability* – As of April 4, 2007 the cable car division was staffed with a total of 159 operators (77 grip persons and 82 conductors). MUNI states that the current recommended staffing level is 184 operators (this includes regular staff and “extra board” operators to fill in for those out sick, on vacation, etc.), which translates into a 14% staffing shortage. This is an improvement over previous years where the staffing shortage was closer to 23% and a hiring freeze was in place. Overall budget constraints at MUNI continue to play a part in the failure to fully staff the cable car division. There is the added complication of keeping balanced pairs of grip persons and conductors. Budget cuts have also affected training programs that have to keep pace with attrition in the workforce.
- *Ridership Decline* – Attachment 2 shows a downward trend in cable car ridership over the last ten years. From a total of 8.8 million in 1995, ridership reached as high as 9.9 million in 1998, but has been declining since that time to the 2005 level of 7.0 million – a 30% decrease in ridership. Cable car ridership was already declining when the economic

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boom of 2000-2002 meant temporary increased ridership levels for the whole MUNI system. 2006 ridership numbers have increased to 7.5 million, however this ridership increase could reverse itself in the future if other issues with the cable car system remain unaddressed. Additionally, system wide MUNI ridership continues to decline so the increase in ridership on the cable car system may be a result of a strong tourist market in 2006 rather than an overall ridership increase.

The documented decline in schedule adherence is a definite contributor to the decline in ridership. Other contributing factors are the availability of parallel service, other modal options, and the discretionary nature of a majority of the trips. There is not enough data to make a determination about whether the fare increase has led to an increase or decrease in ridership. (Cable car ridership decreased 11.5% in 2005 but rose by 8% in 2006 while system wide MUNI ridership decreased during the same period). The real effects may not be apparent until more ridership data is collected and analyzed.

- *Overall Unreliability of Schedule Adherence* – MUNI reports service reliability performance in the Service Standards Report produced by MUNI staff and required by Proposition E. System reliability performance is measured there by two indicators:
  - 1) On-time performance defined as the percentage of vehicles that run on time according to published schedules (no more than 4 minutes late or 1 minute early).
  - 2) Vehicle and operator availability defined as the percentage of scheduled service hours that are delivered and percentage of scheduled vehicles that begin service at the scheduled time.

Attachment 3 provides information on cable car and MUNI system on-time performance from FY 2004 through the first quarter of FY 2007. MUNI's goal for on-time performance is 85%. During the 1½-year period through the first quarter of FY 2006, the entire MUNI system achieved about 70%, while the cable cars averaged 69.3%. Additionally, for the first quarter of FY 2006, cable car performance declined nearly 3% from the average. However, the next year (from second quarter of FY 2006 to first quarter of FY 2007) the trend reversed with the cable car out performing the entire MUNI system in three of the four quarters. Although the trend indicates that the cable car has increased its on-time performance, it still falls short of the 85% on-time performance goal.

Attachment 3 also presents a summary of performance on service hours delivered on time (as a function of operator and vehicles deployed) for both the cable car operation and the total system. The performance goal for this activity is 98.5% system-wide. The data show that the cable car division began 2005 with a performance near the goal (97.7% operator availability & 99.5% vehicle availability), but then operator availability declined in reliability through the first quarter of FY 2006 to 90.6%, and then rose close to the performance goal as of the first quarter of FY 2007 to 98.1%. The primary problem appeared to be operator availability (down from 97.7% to 90.6%), with equipment availability exceeding system performance and more than meeting the goal with the exception of the second quarter of FY 2005. If operator availability continues to increase

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the cable car service may be able to meet or exceed this performance goal in 2007. Further, if the number of operators increases the cable car system would not have to rely on operator overtime to meet this performance goal.

Schedule adherence will continue to be a problem, even if there are adequate personnel and equipment, where there is insufficient or ineffective line management. Cable cars operate in the busiest part of the city with the least flexibility of any of the modes. Without supervision at checkpoints along the line, minor line delays can become major and no schedule catch up occurs because an inspector is unable deal with delays immediately. Two supervisor vehicles are now equipped with Next Bus GPS equipment but the data is not available in real time to all on-street inspectors because they do not have access to the data. Currently, there are only nine inspectors responsible for the line management of the entire system. MUNI states that an increase to fourteen inspectors or staffing a chief inspector could allow for improved oversight and problem solving in the field. MUNI management did state that it is now fully staffing the fare booths at the terminal points to assist cable car conductors with fare collection to ease passenger and terminal crowding. However, we have heard and witnessed that the fare booths at terminal points are not fully staffed.

- *Overall System Reliability & Revenue* - The cable car operation can never be as productive as other modes in the system since it has limited flexibility, low scheduled speed, and requires two operators for each car. MTA and union representatives have asserted to SFB that the cable cars are adhering to an 8-minute headway, which could address the issue of overall system reliability. Cable car management asserts that they strive to adhere to an 8-minute headway on a regular basis but complying with that is difficult without enough operators. Further, the levels required by 1971's Prop. Q indicate that a 6-minute headway is required. Adhering to a 6-minute headway would mean there would be 10 cable cars on the line per hour. If the headway is set at 8 minutes or longer there are fewer cable cars on the line and less cable car service. Less cable car service means the possibility of less revenue for the system. If MUNI adhered to a 6-minute headway as mandated by Prop. Q rather than an 8-minute headway as currently reported it could be possible for the cable car to generate more revenue because more cable cars would run each hour. It has also been reported that every cable car fare is not being collected due to crowding on the cars and that anonymous checks on fare collection and an improved cable car fare collection policy would alleviate this problem.
- *Crowding and Delay at Terminal Points* – While the MTA does not collect data to measure this problem it is most acute and visible on the Powell Street lines. What is most troubling to many passengers and passersby is the sight of cable car crews sitting at the end of the line and passengers waiting to board.

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**IV. San Francisco Beautiful Cable Car System Recommendations**

In order to maintain and improve the cable car system for all users and based on the available information detailed above, San Francisco Beautiful makes the following recommendations to the MTA:

- Increase cable car operating personnel to the number specified by MTA management (currently 184 operators) required to maintain cable car level of service, or develop a plan for getting there. If cable car headway is decreased the number of operators would have to be increased accordingly.
- Increase inspectors to number specified by MTA management (currently 14 inspectors) (with possible use of Parking Control Officers) and/or staff an inspector manager/deputy superintendent position in the cable car division as requested by MTA management.
- Make Next MUNI available to all cable car inspectors and use data to report continuously on schedule adherence.
- Complete travel demand study for the cable car and revise cable car schedules in response to demand.
- Survey cable car riders to determine what type of rider is taking the cable car, i.e. tourists, residents, regular riders, occasional riders, and what type of fare they are paying, i.e. cash, Fast Pass, Passport. The Transit Effectiveness Project currently underway at MUNI could be a vehicle for this.
- Include headway as a cable car performance measure in addition to schedule adherence to increase the data available to measure cable car level of service.
- Decrease cable car headways to Prop. Q mandated 6-minute headway levels or maintain 8-minute headways on all three cable car lines while planning for decreasing headway to 6 minutes when staffing numbers reach recommended levels. In the alternative, use the recommended travel demand study results to determine what headway is appropriate given the demand.
- Allow for a free cable car transfer between Powell lines and California line at the California Street & Powell Street intersection.
- Fully staff cable car terminal fare booths to assist with the issue of fare collection on the cable cars.
- Implement a formal fare collection policy for the cable car system including provisions for more anonymous checks on cable car fare collection and review alternatives to the current fare collection system.

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**ATTACHMENT I**

**A SUMMARY OF  
CABLE CAR OPERATIONS**

The San Francisco Municipal Railway division of the SFMTA operates three (3) cable car lines in the city. All three of the lines operate out of the Cable Car Barn at Washington & Mason Streets.

**LINE DESCRIPTIONS**

The Powell-Mason and Powell Hyde lines originate at Powell and Market Streets.

The Powell-Hyde line runs north on Powell, west on Jackson and north on Hyde to Beach St. It returns to downtown via the same route, except that it uses Washington Street rather than Jackson for the eastbound trip.

The Powell-Mason line also operates north on Powell, goes one block west on Jackson, then turns north on Mason, Columbus and Taylor Streets to a terminal at Bay St. It returns downtown over the same route, except it uses Washington St. rather than Jackson for the eastbound leg between Mason and Powell.

The California Street line runs on California between Market/Drumm and Van Ness Ave. Cars enter and leave the Cable Car Barn using trackage on Jackson, Washington, Powell and Hyde Streets. Track switches allow for the movement of California St. cars over these portions of the Powell lines.

Each car requires a two-person crew, consisting of a grip (person) and a conductor. The grip operates the grip, which grabs the continually moving cable under the street as well as the three brake systems on the car. The conductor collects fares and operates additional brakes on steep grades on the system. The conductor also assists with operation of track switches and “taking rope” or using levers to pick up the cable.

**EQUIPMENT**

The Powell lines use single-ended equipment that requires the use of a turntable at the end of the line to enable the car to change direction. There are turntables at Powell and Market, Bay and Taylor and at Hyde and Beach. There is also a turntable at the Cable Car Barn at Washington and Mason.

The California St. line uses double-ended equipment that does not need a turntable. The cars switch from one direction to the other using a track switch.

Currently, the Powell lines require the use of 19 single ended cars for the combined Powell-Mason and Powell-Hyde service out of a total of 27 cars.

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The California requires the use of 7 double-ended cars out of an available fleet of 11.

While the total number of cars is 38 (27 Powell single-ended and 11 California double-ended), at any given point there are cars unavailable for regular service due to breakdowns, maintenance or accident repair.

#### SCHEDULES

The 19 cars used on the Powell lines provide a combined four (4) minute headway (time between cars) on Powell between Market and Jackson Streets. Each branch (Mason or Hyde) then has an (8) eight-minute headway to their northern terminals. Currently, it takes approximately 45 minutes for a car to make a round trip from Powell and Market to either Hyde & Beach or Bay & Taylor and back again. There is approximately 33 minutes of “recovery” time built into the schedules to accommodate delays that occur en route, with most of it being scheduled at the northern terminals.

The California Street line uses 7 cable cars to provide an eight (8) minute headway. This line uses approximately 31 minutes for a round trip, with 13 minutes of “recovery” time. Most of this is scheduled at the east (Market/Drumm) terminal.

The schedules reflected above are those that are printed and distributed by the MUNI. They are also the basis for the crews to “pick” runs, which are pieces of work that are generally 8 hours or more in length. These runs also provide time for the crews to prepare their car for its run, lunch breaks required by law and collective bargaining, recover from lateness caused by accidents, heavy traffic or construction as well as time at the end of the run to turn in cash received as fares. Cable cars, unlike buses or streetcars do not have fare boxes.

It is important to understand that printed schedules are very much like a plan or a budget. They reflect the best wisdom available at the time they were created, and, as such cannot reflect the impact of things unforeseen like a traffic accident that blocks the tracks, a structure fire or medical emergency along the line or just the large numbers of motor vehicles the cable cars have to share city streets with.

While San Francisco has adopted a “Transit First” policy, a lack of enforcement resources results in delays to the cable cars from motorists, delivery trucks, emergency response vehicles and taxis, all of which impact the on-time reliability of not only the cable cars, but every other MUNI vehicle sharing street space in the city. This results in not only late vehicles, but “bunching”, which is caused by a delay along the line allowing following cars to catch up to a late one.

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**Section 16.100. - Cable Cars**

*Section 16 of the Charter of the City and County of San Francisco was adopted by the voters through Proposition Q in November, 1971. It froze minimum cable car service in the city at the levels of 01-Jul-1971. The proposition was a response to threats by Muni management to reduce service.*

In the conduct of the public transportation system there shall be maintained and operated cable car lines as follows:

1. A line commencing at Powell and Market Streets; thence along Powell Street to Jackson Street; thence along Jackson Street to Mason Street; thence along Mason Street to Columbus Avenue; thence along Columbus Avenue to Taylor Street; thence along Taylor Street to a terminal at Bay Street; returning from Bay and Taylor Streets along Taylor Street to Columbus Avenue; thence along Columbus Avenue to Mason Street; thence along Mason Street to Washington Street; thence along Washington Street to Powell Street; and thence along Powell Street to Market Street, the point of commencement.

2. A line commencing at Powell and Market Streets; thence along Powell Street to Jackson Street; thence along Jackson Street to Hyde Street; thence along Hyde Street to a terminal at Beach; returning from Beach and Hyde Streets along Hyde Street to Washington Street; thence along Washington Street to Powell Street; thence along Powell Street to Market Street, the point of commencement.

3. A line commencing at Market and California; thence along California Street to a terminal at Van Ness Avenue; returning from Van Ness Avenue along California Street to Market Street, the point of commencement.

To fully effectuate the intent of this section, these lines shall be maintained and operated at the normal levels of scheduling and service in effect on July 1, 1971; provided, however, that nothing herein contained shall prevent the increasing of the levels of scheduling and service.



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**ATTACHMENT 2\***

Annual Ridership 1995 – 2006  
Cable Car and Total MUNI System  
(Millions)

	<u>Cable Car</u>	<u>MUNI System</u>
1995	8.8	216
1996	9.6	214
1997	9.8	217
1998	9.9	219
1999	9.5	216
2000	9.2	226
2001	8.3	235
2002	7.3	218
2003	7.4	216
2004	7.9	216
2005	7.0	217
2006	7.5	211

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\* Nelson Nygaard Audited MUNI Prop E Report 2003-2004

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**ATTACHMENT 3\***

**CABLE CAR SYSTEM RELIABILITY – SCHEDULE ADHERENCE**

Performance Goal: 85%

	Cable Car %	System-Wide %
FY 2004		
4 <sup>th</sup> Quarter	68.3	70.7
FY 2005		
1 <sup>st</sup> Quarter	66.4	70.9
2 <sup>nd</sup> Quarter	69.3	72.8
3 <sup>rd</sup> Quarter	74.8	69.6
4 <sup>th</sup> Quarter	70.0	70.7
FY 2006		
1 <sup>st</sup> Quarter	67.3	71.3
2 <sup>nd</sup> Quarter	72.5	66.2
3 <sup>rd</sup> Quarter	72.4	69.2
4 <sup>th</sup> Quarter	68.5	69.5
FY 2007		
1 <sup>st</sup> Quarter	70.6	68.7
2 <sup>nd</sup> Quarter	73.9	70.4
3 <sup>rd</sup> Quarter	69.7	73.5

**CABLE CAR SYSTEM RELIABILITY – VEHICLE AND OPERATOR AVAILABILITY**

Performance Goal: 98.5%

	Cable Car %		System-Wide %	
	Vehicle	Operator	Vehicle	Operator
FY 2005				
1 <sup>st</sup> Quarter	99.5	97.7	99.8	97.3
2 <sup>nd</sup> Quarter	91.3	95.5	99.7	96.0
3 <sup>rd</sup> Quarter	99.5	87.5	99.7	94.2
4 <sup>th</sup> Quarter	100	91.5	99.8	94.5
FY2006				
1 <sup>st</sup> Quarter	99.6	90.6	99.9	93.7
2 <sup>nd</sup> Quarter	99.8	92.7	99.9	95.4
3 <sup>rd</sup> Quarter	99.97	97.2	99.9	95.0
4 <sup>th</sup> Quarter	99.8	97.6	99.9	93.0
FY 2007				
1 <sup>st</sup> Quarter	99.96	98.1	99.9	94.3
2 <sup>nd</sup> Quarter	99.97	96.9	99.8	94.8
3 <sup>rd</sup> Quarter	99.96	97.5	99.9	95.7

\*MUNI Service Standards Reports

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**APPENDIX A**

Materials Reviewed and Persons Interviewed

Service Standard Reports, A Measurement of MUNI's Service Goals, published quarterly reporting on progress toward performance goals established as part of Proposition E

San Francisco Municipal Railway, Proposition E Municipal Transportation Quality Review, Final Report, Nelson Nygaard Consulting Associates, April 2004. (An independent audit of MUNI's service standards performance described above.)

MUNI Short Range Transit Plan, FY 2006-2025, MTA Planning Division

MUNI's Downward Spiral, A SPUR Report, September 1, 2005

Nathaniel P. Ford, Sr., Executive Director & CEO, Municipal Transportation Agency

Angelo Figone, transit operations consultant and former Head of Scheduling for MUNI operations

Brendan Scanlan, MTA/MUNI Cable Car Division Chief

Irwin Lum, President, Transport Workers Union of America, AFL-CIO, Local 250-A

Bonnie Nelson, Nelson-Nygaard Associates, lead author of the Prop E Transportation Quality Review

