



**Updated Scope of Work – Parking Pilot Projects
Urban Partnership Program**



SFMTA

Municipal Transportation Agency

Document Overview

This statement of work describes the *SFpark* parking management pilot projects to be completed as part of the August 6, 2007 San Francisco Urban Partnership Agreement (UPA) between the U.S. Department of Transportation and the San Francisco Bay Area Urban Partner.

The SFMTA will complete the demonstration projects described in this document using Value Pricing Pilot Program (VPP) and Transportation, Community, and System Preservation (TCSP) funding authorization from the Federal Highway Administration (FHWA), as well as 20 percent match from local sources.

This document contains a scope of work with an overview of the pilot project deliverables, schedule, budget, and funding plan for those *SFpark* pilot parking projects funded by the UPA. As *SFpark* pilot projects are still in the planning phase, project information in this document will be refined by the development of a Concept of Operations and System Engineering Management Plan (SEMP).

The implementation and evaluation details in this scope may necessarily change in response to unforeseen constraints. In addition, changes to the implementation and evaluation details may result from lessons learned in the early phases of implementation.

The *SFpark Mission, Vision, and Goals* document outlines the framework *SFpark* will use as it develops and implements projects and programs, including the parking pilot projects described in this document. Any potential changes during the planning, implementation, or evaluation of the pilot projects will be guided by the *SFpark Vision, Goals, and Principles* document.

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Introduction to SF*park*

Goals of SF*park* pilot projects

To address parking issues in San Francisco, the SFMTA initiated SF*park*, its new approach to parking management. The overall goal of SF*park* is to use new parking management approaches and technology to manage San Francisco's parking supply and demand in ways that support the SFMTA's overall goals for the transportation system.

The primary goal of the UPA-funded SF*park* pilot projects is to use intelligent parking management technology and techniques, in particular demand-responsive pricing, to manage the City's on-street and off-street parking supply and demand for this limited and valuable public asset in a way that reduces the number and duration of automobile trips and therefore congestion. This is particularly important in San Francisco's major employment, commercial, and tourist centers as parking management affects congestion, economic vitality, and quality of life.

UPA funding will accelerate SF*park* efforts to develop new strategies to manage parking more effectively in San Francisco, enabling larger pilot projects on an accelerated timeline. The evaluation of the UPA-funded pilot projects will guide the development of SFMTA policy proposals for how to manage parking more effectively citywide by 2010.

The parking technologies to be pilot tested include networked parking meters, parking occupancy sensors, and parking information systems. Together, these technologies will enable more sophisticated and effective meter maintenance, enforcement, and parking management. Parking information systems will provide motorists with better information about parking location, availability, and price both *before* and *during* their trips, helping people to make more informed travel choices.

The pilot projects, along with thorough before/after analysis, will enable the SFMTA to:

1. Evaluate how well a new approach to parking management, in particular demand-responsive pricing, helps manage congestion and achieve overall goals for the transportation system.
2. Develop effective approaches to providing information about parking location, availability, and price to drivers to help manage congestion and improve customer service.
3. Increase the cost-effectiveness of parking enforcement. Without proper enforcement, the tools of parking management are much less effective.
4. Evaluate the appropriate technology that enables more intelligent parking management. SFMTA plans to replace all parking meters in 2010, and experience during the pilot period to inform its RFP for new meters and parking management services.
5. Refine new approaches to parking management in pilot areas before proposing a new parking management framework for the City.

Main strategies

The SF*park* pilot projects will use three main strategies to achieve the goal of reducing the number and duration of automobile trips and related congestion. These are:

1. Demand-responsive pricing to manage parking demand towards specific availability targets.
2. Rate structures to manage on- and off-street parking as a means to help manage congestion.

3. Real-time information to drivers on the location, availability, and price of parking before and during trips to inform trip decisions and help drivers find a parking place more quickly.

These strategies are expected to reduce traffic congestion in San Francisco in several ways:

1. **Reduce number of automobile trips.** Parking pricing is a potent transportation demand management (TDM) tool for managing trip demand. Demand-responsive pricing and rate structures that discourage long-term commute parking or travel during peak times will help to: 1) shift travel demand to off-peak times; 2) reduce overall automobile trip demand, and 3) shift travelers to other modes of travel, such as public transit. In San Francisco, this mode shift will be further facilitated by the implementation of the Transit Effectiveness Project (TEP), a concurrent effort to improve Muni's attractiveness as a travel choice.
2. **Reduce duration of automobile trips.** Drivers often circle or drive around blocks while searching for parking. Studies suggest that drivers searching for parking account for roughly 30% of cars on the road in urban areas.¹ Improving parking availability and information will help reduce this source of congestion by making it easier for drivers to quickly find an available on-street or desirable off-street parking space.
3. **Reduce double parking.** When parking is not available near destinations, especially for quick errands (e.g., coffee, corner store, or dry cleaner), people often double park. Similarly, commercial drivers making deliveries often double park because metered on-street commercial loading zones are occupied. Double parking contributes to congestion, especially at peak times when roadway capacity is strained. Using demand-responsive pricing to improve the availability of all types of metered parking will reduce double parking and, with it, congestion.

Related strategies

Although demand-responsive pricing, new parking pricing structures, and better parking information dissemination will be the primary strategies for achieving the goals of *SFpark*, the SFMTA will also employ a number of related strategies, including:

- Adjusting prices to establish an appropriate relationship between the prices of on- and off-street parking in order to eliminate the financial incentive to circle for on-street parking.
- Using new meters that make paying for parking convenient.
- Instituting a higher level of consistent parking enforcement using a combination of low- and high-tech strategies that will improve enforcement's cost-effectiveness.
- Changing when parking is managed with pricing (i.e., when parking is priced).
- Relaxing parking time limits to emphasize the use of parking price rather than time limits as the way to achieve availability targets.
- Testing new approaches to residential parking management to help address spillover parking.

Benefits

Reducing congestion via intelligent parking management is expected to produce a number of benefits, including, but not limited to:

¹ Shoup, Donald. *The High Cost of Free Parking*. p. 290

- Reduce overall transportation-related greenhouse gas emissions by reducing vehicle miles travelled caused by unnecessary circling for parking, reducing overall parking demand in the longer term, and making public transit more attractive.
- Improve reliability of public transit by reducing congestion at peak times and areas, precisely when and where reliable transit service is most critical.
- Increase the number of trips made by transit, bicycle, and foot.
- Improve transit, pedestrian, bicyclist, and motorist safety.
- Improve the economic vitality of pilot areas.
- Make driving a more predictable travel choice.
- Increase the value of parking (i.e., its convenience and usefulness).

The pilot projects are expected to deliver a number of secondary benefits, including:

- Reduce the number of parking meter-related citations.
- Improve enforcement deployment strategies.

The *SFpark* parking pilot projects will have unique value as a demonstration project for other cities. The planned pilot projects will make San Francisco the first city to test a full array of parking management techniques and technology in a carefully managed environment. They also leverage the SFMTA's unique mandate to effectively manage movement on City streets and status as the operator of San Francisco's public transit system (Muni), on-street parking, and a significant portion of the off-street (garages and lots) parking supply. If the pilot projects prove successful, the SFMTA expects that this parking-based approach to congestion management will set a powerful example for other cities as an effective, low cost, and easy to replicate approach to congestion management.

Scope of parking pilot projects

The parking pilot projects will include approximately 6,000 on-street metered parking spaces (approximately 25% of total) and 11,500 parking spaces in 14 of 21 SFMTA-managed parking garages as well as one SFMTA-managed parking lot.

SFpark non-pilot projects

Independent of the UPA-funded parking pilot projects, *SFpark* will also pursue several projects through FY2010 to help address some of San Francisco's most important parking management issues. Possible non-pilot projects include:

- Trial of in-vehicle metering for commercial fleets.
- Address disabled placard abuse.
- Promote parking cash out (a scheme that provides more incentives for people to use sustainable transportation).
- Clarify SFMTA policies to manage and promote car sharing.

Overview of the Parking Pilot Projects

Context for parking pilot projects

Two related SFMTA projects are moving forward concurrently that affect or will be affected by the *SFpark*: implementation of the Transit Effectiveness Program (TEP) recommendations to improve Muni performance, and an upcoming procurement process for new parking meters.

The TEP and *SFpark* are complementary. The TEP is a multi-year, multi-million dollar study of Muni operations and routing, and two of its primary goals are to improve Muni speed and reliability. By reducing congestion, *SFpark* parking pilot projects (and subsequent improvements to parking management citywide) will support those goals for Muni. TEP-related improvements to Muni promise to make Muni even more attractive as a travel option for more people and more trips.

In addition to the TEP, the SFMTA also has an upcoming procurement for new parking meters as well as parking management services. In 2009, the SFMTA plans to release a request for proposal (RFP) to buy new parking meters after completion of the pilot projects as well as parking management services, such as coin counting and collecting. As part of the parking pilot projects, SFMTA will be testing new and different types of parking meters as well as management approaches. The experienced gained during the pilots will inform the specifications needed for the City's new parking meters and related parking management services.

Schedule for parking pilot projects

The SFMTA plans to pursue an aggressive schedule for these pilot projects that will allow the parking pilots to operate through at least one full annual cycle before evaluation. Below is a summary of the planned schedule for the parking pilot projects.

- Fall 2008 Finish planning of *SFpark* parking pilot projects
- Fall 2008/Spring 2009 Collect "before" data; begin implementation of pilot projects;
- Spring 2009 Institute new approaches to parking enforcement in pilot areas
- Spring/Summer 2010 Evaluation of parking pilot projects
- Spring/Summer 2010 SFMTA Board approves new city wide parking management approach
- Summer/Fall 2010 Install additional new (SFMTA-purchased) parking meters

Partners in *SFpark* pilot projects

The *SFpark* pilot projects are being led by the SFMTA with the involvement of several partners. Within the SFMTA, many Divisions are deeply involved, including Finance and Information Technology, Enforcement, Parking and Traffic, and Off-Street Parking. The SFMTA has also partnered with the Port of San Francisco, which will install new parking meters for the 1,000 metered parking spaces along the City's northeastern waterfront that it controls. *SFpark* is coordinating with the Port on the specification for their new meters, as well as the pricing, management, maintenance, and enforcement of its on-street parking.

During the planning, implementation, and evaluation of the *SFpark* pilot projects, SFMTA will also coordinate with its local UPP partners, including the Metropolitan Transportation Commission (MTC) and the San Francisco County Transportation Authority (SFCTA).

The SFMTA has also partnered with a team of four transportation academics, including Dr. Donald Shoup, an internationally-recognized expert in the area of parking management, to advise *SFpark* on study design, serve

as a technical advisory committee, and assist with pilot project evaluation. The other academics include Adam Millard-Ball of Stanford, Rachel Weinberger of Penn State, and Robert Hampshire of Carnegie Mellon.

Summary of what SFpark pilot projects will test

The following table provides an overview of how the pilot projects will help to evaluate different aspects of on- and off-street parking management.

Parking Management Approaches – Metered On-Street Parking and SFMTA Metered Parking Lots
Test the effectiveness of different pricing structures and demand-responsive pricing for managing congestion.
Test relaxing time limits to test the effectiveness of using both pricing and time limits to achieve availability goals.
Test when parking is priced – test metering parking in at least some pilot areas during expanded hours on weekday evenings, Friday and Saturday evenings, and Sundays.
Test strategies for managing spillover parking in residential areas.
Parking Management Approaches – SFMTA Parking Garages
Test the effectiveness of different pricing structures for achieving availability and congestion management goals.
Establish the right relationship between the price of metered on-street parking and parking garages/lots.
Parking Information and Guidance System
Test providing information about parking location, availability, and price to drivers before and during their trip.
Install 19 variable-message parking guidance signs with complementary static way finding directional signage to more effectively direct drivers to parking garages with available spaces.
Parking Management Technology
Test parking meters that can be networked, allowing remote price changes, real time meter status and usage data (for example, meter status, battery, coin box, etc.) for analysis to main server, and send service alerts when meter is out of service.
Test increasing convenience of parking by offering drivers many more payment methods (such as credit/debit cards).
Test usefulness and accuracy of in-street parking and roadway sensors.
Test how improved parking data can enable better parking management and improve efficiency of parking enforcement.
Enforcement
Test different low- and high-tech approaches to enforcement to see how enforcement can become more efficient and cost-effective.

Pricing of parking

This section outlines how *SFpark* plans to use new rate structures and demand responsive pricing to achieve the goals of the pilot projects.

Price structures

Currently, SFMTA parking garages typically have a length of stay pricing structure whereby the hourly rate of parking increases with duration of stay. On-street, the SFMTA has a flat parking rate structure that varies by zone. The current on-street rate structure is summarized in the following table:

Current SFMTA on-street parking rates

Zone	Price per hour
Downtown	\$3.00
Downtown periphery	\$2.50
Fisherman's Wharf	\$2.50
Neighborhood commercial district	\$1.50

Parking pricing can be structured based on length of stay, time of day, or both. Prices may also vary by day of week, or by weekdays and weekends. The following tables use hypothetical values and time periods to illustrate the pricing structures that will be used and evaluated during the parking pilot projects.

Time of day

Time when parked	Price per hour
8am-10am	\$3.50
10am-4pm	\$2.00
4pm-7pm	\$3.00
7pm-9pm	\$1.00
9pm-8am	TBD

Hybrid: Time of day AND length of stay

Price of 1st hour varies by time of day	
1 st hour of parking begins	Price per hour of first hour
8am-10am	\$3.50
10am-4pm	\$2.00
4pm-7pm	\$3.00
7pm-9pm	\$1.00
9pm-8am	TBD
Price for each successive hour of parking	
2 nd hour	\$2.00
3 rd hour	\$2.50
4 th hour (and successive hours)	\$3.50

The pilot projects will emphasize time of day pricing because it is expected to have a greater impact than strict “length of stay” pricing on whether or not people choose to drive and, if they do, when they choose to drive. For this reason, “time of day” pricing is expected to have the greatest impact on congestion.

Adjusting parking prices

Purpose of availability standards and targets

The pilot projects plan to use demand-responsive pricing to manage parking demand towards availability targets. The purpose of availability standards and targets is to create a particular driver experience that reduces automobile trip duration by reducing the amount of time that drivers circle looking for on- or off-street parking. SFpark seeks to create a driver experience in which drivers either:

1. Go directly to a parking garage with available spaces, or;
2. Are, most of the time, able to find an on-street parking space as near to their destination as possible, preferably within a block or two of their destination.

Managing towards availability targets will help to balance parking demand with our limited parking supply, helping to ensure that motorists can readily find a parking space and thereby reducing congestion.

On-street parking

Prices will be adjusted gradually and periodically based on parking availability targets. Prices will be adjusted up or down in increments of \$0.25/hour every four to six weeks for a certain geographical unit (whether block-to-block, two-block units, or other appropriate area) using availability data from parking sensors.

The SFMTA will pursue this approach to the frequency, magnitude, and granularity of price adjustment for several reasons:

- Gradual and periodic adjustments give people time to learn new parking prices and adjust their travel and modal choices. The alternative of more dynamic pricing would likely frustrate drivers and not allow them to learn prices over time and adjust modal choices accordingly;
- Price adjustments can be subtle, responsive, and targeted. This approach allows parking pricing to match the complex geography (spatial and temporal) of parking demand in San Francisco, and to evolve as parking demand evolves;
- Small, gradual price changes are expected to be more acceptable to communities than large and sudden price changes; and
- This relatively simple approach requires less technical complexity and will require a more sustainable level of administrative overhead and oversight.

Also, special event pricing will be tested in specific areas (e.g., around the baseball stadium). Pricing for these events will be established by market forces including rates charged by private garages and pricing premium based on distance from event.

Off-street parking

As part of the pilot projects, the SFMTA will test new pricing approaches in 14 of its 21 parking garages and one parking lot. Adjustments to parking in these off-street spaces will be made with the following in mind:

- Use price to achieve availability targets;
- Make pricing changes gradually and periodically, for the same reasons and with the same frequency as on-street metered parking;
- Adjust pricing of off-street parking to make off-street parking financially more attractive when compared to neighboring on-street metered parking;
- Adjust pricing structures to discourage commuting by car (via, for example, reducing the monthly and early bird discounts);
- Investigate how SFMTA can encourage privately-operated public parking facilities to collaborate with *SFpark* pricing approaches;
- Test special event pricing so that SFMTA can have more flexibility in adjusting prices during special events; and

Parking payment

Currently, parking payment at parking meters is an issue in San Francisco. The City’s current parking meters only accept coins and the SFMTA pre-paid stored value parking card, which has very low usage. Given that on-street parking can cost as much as \$3.00 per hour, drivers often do not have enough coins to pay for parking, and therefore often do not pay, risking a ticket instead. In short, the lack of convenient ways to pay reduces the potential effectiveness of demand-responsive pricing as a strategy to manage on-street parking.

That is why using new parking meters that support more payment options is a critical piece of the pilot projects. Only when most people can pay for parking (and know that, because of a higher level of consistent enforcement, they are likely to get a ticket if they do not) will demand-responsive pricing be effectively tested. The following table summarizes what parking payment methods will be supported during the pilot projects:

	Pilot area meters	All other meters	Pilot garages	All garages
Cash/coins	**	**	**	**
Credit card/ debit card	**		**	**
SFMTA parking smart card	**	**	**	
Pay by cell phone <i>if feasible</i>	**	**		

The feasibility of pay by cell depends on the technical feasibility of adding communications equipment to the SFMTA’s existing handheld equipment and related warranty issues. The SFMTA is actively investigating these issues.

As part of the pilot project evaluation, *SFpark* will evaluate whether or not payment by credit, debit, and smart cards, as well as coins and cell phone (if feasible) provide enough payment convenience to remove payment convenience as an issue or barrier for parking in San Francisco. It is conceivable that TransLink, the region’s new smart card for transit payment, could be used for parking payments as well. If SFMTA determines that TransLink would offer a significant additional benefit, it may pursue the possibility of adding TransLink as a

payment method for on-street parking. This is an optional project in this scope of work that is unfunded. After thorough evaluation of the potential usefulness of TransLink, and an appropriate cost/benefit analysis using sound cost estimates, adding TransLink to on-street parking may be pursued if other funds are available and if it is determined to be technically and financially feasible.

Apart from identifying funding and determining the technical and financial feasibility of adding TransLink as a payment method, the feasibility of using TransLink also depends on the TransLink vendor's ability to deliver the necessary software development kit, make and test changes to its overall software, and to develop a separate "e-purse" for parking-related charges (as mandated by the Internal Revenue Service). It is also dependent on several factors that are out of the SFMTA's control, such as the ability and willingness of parking meter manufacturers to make necessary software and, potentially, hardware changes. The capacity of the TransLink vendor (as well as parking meter vendors) to deliver and implement this payment option before the September 30, 2009 UPP implementation deadline is also a potential issue, given that the current TransLink vendor is rolling out TransLink on Muni, BART, and Caltrain in the same time period.

SFpark Pilot Projects and Areas

The parking pilot projects will take place in areas that are major trip generators, focusing on major employment, commercial, tourist, and/or neighborhood commercial centers. Each area has a unique mix of land uses and therefore parking supply and demand. This diversity allows the evaluation of a rich variety of areas and conditions. The pilot project areas and implementation details will be refined during the detailed planning phase.

As noted, the implementation and evaluation details for some of the pilot projects may change in response to unforeseen technical or financial constraints. In addition, implementation plans may change from lessons learned in the early phases of implementation. The appendix at the end of this document contains maps that describe the extent of the pilot project areas.

Pilot project areas

- **Downtown.** With a high concentration of employment, SFMTA parking garages, and on-street commercial loading, the central business district is an optimal location to evaluate strategies to achieve congestion and parking availability goals using the pricing of off-street parking.
- **Civic Center/Hayes Valley.** Like Downtown, the Civic Center/Hayes Valley area is a major employment center, but differs in that it has more on-street metered parking, fewer off-street parking facilities, and less on-street parking for commercial loading. Parking demand in the area comes from both people with short-term business in the Civic Center and Hayes Valley area, as well as commuters looking for all-day parking.
- **Fillmore.** The Fillmore is a thriving neighborhood commercial district with significant off-street parking facilities and variable parking demand, which is often high in the evenings because of special events at several music venues.
- **Fisherman's Wharf.** This tourist center is a large trip generator, especially on weekends and holidays, which can cause congestion on the Doyle Drive corridor.
- **Southern Embarcadero.** As an extension of Downtown and centered around the baseball stadium, the unique conditions in Southern Embarcadero will allow SFMTA to evaluate pricing for special events to determine how to best manage limited parking supply when there is very high demand.
- **Chestnut/Lombard.** With high and varied demand, this neighborhood commercial area is closely linked to the Doyle Drive corridor. As a neighborhood commercial center, Chestnut/Lombard has a high volume of restaurants, bars, and retail shops.
- **Mission/Valencia.** A thriving commercial district, Mission/Valencia has significant off-street parking facilities and variable parking demand, with especially high parking demand during the evenings that is often driven by special events.
- **Control areas: Union Street, Clement/ Geary, and West Portal (with sensors).** These are busy neighborhood commercial areas. In these areas, sensors will be installed to evaluate parking demand in a "no change" control environment.

Related pilot projects

- **Improved Enforcement.** Active management of parking resources requires consistent levels of adequate enforcement. Without enforcement, changes to parking regulations are not as meaningful. As part of the *SFpark* pilot projects, SFMTA Enforcement will provide a dedicated group of PCOs for parking enforcement in pilot and control areas, and will test new approaches to enforcement that will allow the same number of PCOs to provide a higher level of more responsive enforcement.
- **Parking Guidance and Traveler Information Systems.** In addition to using new parking rate structures and demand-responsive pricing to manage parking supply and demand towards availability targets. *SFpark* will gather data in real-time about parking location, availability, and price. This information will be made available to people in several ways, including variable message signs (viewable from freeways and major approaches to downtown San Francisco and complemented by a bevy of directional or way finding signage), dynamic maps via the web or PDAs (via several websites including SFMTA.com and 511.com), and text message. This information will help reduce the number and duration of car trips in two ways:
 - By providing more information about parking before trips are made, people can make more informed trip decisions about whether or not to drive or use another mode of transportation
 - When people do decide to drive, better information will help drivers find a parking place more quickly.
- **Residential Parking Management.** In residential areas adjacent to the pilot projects, *SFpark* is likely to need to address the possibility of additional spillover of parking demand into residential areas. As in many cities, in San Francisco commercial and residential areas often blend into one another. As a first possibility, *SFpark* will carefully monitor changes in parking demand and may work with neighboring communities to adjust the time period when RPP is enforced, helping to protect residents from any potential changes in parking demand.

In addition, the pilot period is an opportunity for *SFpark* to test new approaches to residential parking management that complement parking management in commercial areas. These tests could result in tools that can be added to the *SFpark* parking management “tool box” that could be available to complement more widespread changes in parking management in the future. Better parking management in commercial areas may require a complementary improvement to parking management in surrounding areas. At present, the SFMTA has a limited number of tools to manage residential and, in particular, spillover parking demand in residential areas.

During the pilot period, *SFpark* will seek to identify at least two communities that are willing to test one of two new approaches to managing residential parking as a coherent whole in areas that are near major trip generators. This approach to parking management may offer even larger congestion management benefits, while at the same time helping to address parking management issues on a community and/or neighborhood level, and enabling communities to welcome a new approach to parking management.

SFpark is developing the concepts or approaches to coherent parking management of residential parking near major trip generators that may be tested. One concept would work within the parameters of the current residential parking permit (RPP) program, while another concept would be a “blank slate” approach to parking management based on best practices.

Summary of SFpark pilot project areas (with possible implementation details)

	Parking spaces	Better enforcement	In-street sensors	New parking meters	Meter longer into evening	Meter on Sundays	Test residential solutions	Demand responsive pricing	Minimize long-term parking discount	Reduce early bird discounts	Provide alternative to monthly pass	Special event pricing
Downtown												
On-street metered parking	1,500	•	•	•	•	•		•				
Garages												
Sutter / Stockton	1,865							•	•	NA	•	
5th & Mission	2,585							•	•	NA	•	
Moscone	732							•	•	•	•	
Golden Gate	1,095							•	•	•	•	
Union Square	985							•	•	NA	•	
St. Mary's	639							•	•	•	•	
Portsmouth	504							•				
Ellis/ O'Farrell	925							•				
Civic Center/ Hayes Valley												
On-street metered parking	800	•	•	•	•	•	TBD	•				
Garages												
Civic Center	843							•		NA		•
Performing Arts	618							•	•	•	•	•
Fillmore												
On-street metered parking (+ metered lot)	680	•	•	•	•	•		•				•
Lot -- California/Steiner	52	•	•	•	•	•		•				
Garage -- Japantown Annex	175							•	•	•	•	•
Chestnut/ Lombard												
On-street metered parking	335	•	•	•	•	•		•				
Garage -- Lombard	205							•	•	•		
Fisherman's Wharf												
On-street metered parking	500	•	•	•	•	•		•				
S. Embarcadero												
On-street metered parking	750	•	•	•	•	•		•				•
Mission/ Valencia												
On-street metered parking	810	•	•	•	•	•	TBD	•				
Garages												
16th & Hoff	98							•		NA		
Mission/ Barlett	250							•		NA		
Union Street (control)												
On-street metered parking	280	•	•									
Clement/ Geary (control)												
On-street metered parking	525	•	•									
West Portal (control)												
On-street metered parking	100	•	•									

Summary of Pilot Areas

Total on-street metered parking spaces	6,000	(approximate)
Total parking garage spaces	11,570	(approximate)

Summary of SFpark Pilot Project Schedule



Evaluation of the Pilot Projects

As a demonstration project, it is crucial that the SF*park* pilot projects are carefully planned, monitored, and evaluated. This evaluation will prepare the SFMTA for citywide adoption of new parking management approaches, and will provide empirical data to other cities interested in the same kind of parking management.

Key aspects of the parking pilot project study design

- **Control areas** – Several strategies will be employed to provide necessary “controls” that can be used to determine what changes to parking behavior are due to changes in parking management rather than broader changes in travel behavior, parking demand, congestion caused by rising gas prices, economic trends, and easier payment methods.

In addition to the pilot areas, other commercial areas will be used as controls. The control areas will receive dedicated enforcement to provide the same consistent level of enforcement as the other pilot areas. In some control areas, only sensors will be installed to provide “no change” control areas. In other control areas, sensors and new parking meters will be installed, but no other changes will be made. In another control area, sensors and new meter technology will be installed, and changes will be made to price and time limits.

- **Pilot areas of sufficient size** – Pilot project areas must be defined broadly enough so that the effect of parking management changes in metered areas can be measured and to determine whether parkers are just parking in different locations or actually changing trip patterns. This will, for example, require gathering occupancy data in surrounding non-metered areas.
- **Sufficient duration** – The pilot projects must be of adequate duration in order to evaluate behavioral changes and to gather “before” data.
- **Sufficient “before” data** – To ensure the evaluation has sufficient “before” data, approximately eight weeks of data about parking demand will be collected from in-street sensors before significant changes are made in pilot areas. Adjustments to this may be necessary based on holiday schedules.
- **Appropriate phasing of changes** – In each pilot area, changes to parking management will be phased and timed so that the effect of each change can be distinguished from other changes.
- **Appropriate frequency of changes** – When changes are made to parking management, they will be made periodically and gradually so that motorists can absorb new information and have the opportunity to change travel behavior.
- **Consistent level of enforcement** – The SFMTA will use a dedicated squad of Parking Control Officers (PCOs) to enforce parking regulations in the pilot areas to provide a consistent and higher level of enforcement for the life of the pilot projects. This will help to normalize before and after data.
- **Excellent data collection** – The evaluation will only be as good as the data collected. This will require:
 - Parking occupancy monitoring sensors – These sensors provide the rich data necessary to monitor demand and manage parking.
 - Professional customer intercept surveys – In order to understand the impact of changes to parking management on travel behavior, retail activity, and motorists’ perception, intercept surveys will need to be administered.

- Cooperation from other City departments – Evaluating several key aspects of parking policy management will require data from other City departments, such as the Treasurer and Tax Collector.
- **Data analysis** – The final step is data analysis. The SFMTA will supplement the DOT's evaluation team with its own extensive analysis.

The level of data collection and analysis planned for the parking pilot projects is unprecedented, and will enable SFMTA and San Francisco policy makers to understand the costs and benefits of a new approach to parking management.

To facilitate this level of data collection, analysis, and evaluation, *SFpark* is preparing a data warehouse. This system will allow *SFpark* to continue to sustain a high level of data collection and evaluation in the future by automating, to the extent possible, data collection, reporting, and basic analysis. This data system will underpin more active and effective parking management during the pilot projects and beyond.

Summary of data collection plan

The following table outlines the data that SFpark plans to collect and use in its evaluation of all pilot project areas and control areas. Financial feasibility or unforeseen technical issues may limit SFpark’s ability to collect some of this data.

<i>Manually collected data</i>	<i>Source</i>	<i>When collected by SFpark</i>
Driver surveys	Intercept surveys	Start and end of pilot period
Merchant surveys	Intercept surveys	Start and end of pilot period
Shopper surveys	Intercept surveys	Start and end of pilot period
Parking search time surveys	Method TBD	Start and end of pilot period
Level of enforcement (measure TBD)	SFMTA Enforcement	TBD
Disabled placard use	Manual surveys	TBD
Motorcycle occupancy	Manual surveys	TBD
SFMTA parking garage/lot revenue (gross and net)	Garage operators/ SFMTA	Monthly
Inventory (GIS) of non-MTA parking supply (ie, commercial garages/lots)	SFMTA and Treasurer	Updated yearly

Automatically collected data (i.e., flow automatically into data warehouse)

Parking garages	Parking and Revenue Control Systems	24/7
Parking sensors	Vendor sensors	24/7
Roadway traffic sensors	Vendor sensors	24/7
Parking meters	SFPM	24/7
Citations (i.e., parking tickets)	ACS	Monthly
Automatic passenger counter (APC)	SFMTA APCs	24/7
Sales tax (by category)	Controller (contractor -- Muni Services)	Quarterly
Parking tax	Tax Collector	Bi-annually
Police collision data (for auto, transit, bicycle, and pedestrians)	SWITIRS	Quarterly

Budget and Funding

Downtown

Meters and sensors	\$2,531,521
Parking garage costs	\$54,800
Signage, pole removal, space markings, etc.	\$276,000
Total (plus 5% contingency)	\$3,005,437

Civic Center/ Hayes Valley

Meters and sensors	\$1,749,941
Parking garage costs	\$14,700
Signage, pole removal, space markings, etc.	\$147,200
Total (plus 5% contingency)	\$2,007,433

Fillmore

Meters and sensors	\$1,517,554
Parking garage costs	\$7,867
Signage, pole removal, space markings, etc.	\$125,120
Total (plus 5% contingency)	\$1,733,068

Fisherman's Wharf

Meters and sensors	\$868,011
Signage, pole removal, space markings, etc.	\$92,000
Total (plus 5% contingency)	\$1,008,011

Southern Embarcadero

Meters and sensors	\$1,297,653
Signage, pole removal, space markings, etc.	\$138,000
Total (plus 5% contingency)	\$1,507,436

Chestnut/ Lombard

Meters and sensors	\$500,865
Parking garage costs	\$8,850
Total (plus 5% contingency)	\$535,201

Embarcadero sensors

Sensors -- purchase/install	\$170,625
Sensors -- Total monthly fees	\$144,300
Total (plus 5% contingency)	\$330,671

Residential meters around pilot areas

Meters and sensors	\$667,993
Signage	\$48,333
Total (plus 5% contingency)	\$752,143

Parking Guidance Signage

Planning	\$100,000
Procurement, installation, and integration -- Downtown	\$2,900,000
Procurement, installation, and integration -- Civic Center	\$2,014,000
Total (including contingency)	\$5,014,000

Mission/ Valencia

Meters and sensors	\$887,291
Parking garage costs	\$17,133
Total (plus 5% contingency)	\$949,646

Control: Union Street

Sensors	\$127,655
Total (plus 5% contingency)	\$134,038

Control: Clement/ Geary

Sensors	\$228,126
Total (plus 5% contingency)	\$239,532

Control: West Portal

Sensors	\$43,453
Total (plus 5% contingency)	\$45,625

Other Pilot Project Costs

Services: Project planning	\$200,000
Services: Data collection and evaluation	\$350,000
Services: Communications, PR, marketing, outreach, website	\$450,000
Services: IT support/ data integration/ presentation/ warehouse	\$650,000
Services: Staging area	\$40,000
Services: Call center/ help desk	\$150,000
Staff time: SFMTA (including overhead)	\$2,009,000
Staff time: Other City departments (e.g., City Attorney)	\$100,000
Equipment: Enforcement vehicles	\$924,000
Equipment: Enforcement handhelds + monthly fees	\$447,000
Equipment: Meter pole contingency	\$150,000
Contingency	\$274,000
Total (including contingency)	\$5,744,000

Total: all pilot project costs \$23,000,000

Budget notes

- Budget will be refined after more detailed implementation planning and negotiations with vendors.
- Budget funds pilot projects through June 30, 2010.

Funding Sources and Schedule

Federal	FFY 2008 6/1/08 -- 9/31/08	FFY 2009 10/1/08 -- 9/30/09	Total
FHWA VPP	\$8.4	\$0.0	\$8.4
FHWA TCSP	\$10.0	\$0.0	\$10.0
Total Federal Funds	\$18.4	\$0.0	\$18.4
Local Match = 20%			
SFMTA Operating	\$3.1	\$0.0	\$3.1
Developer Fees	\$1.5	\$0.0	\$1.5
Total Local Match	\$4.6	\$0.0	\$4.6
Total Pilot Project Funding	\$23.0	\$0.0	\$23.0

Pilot Project Planning, Management, and Reporting

During the pre-implementation phase, the SFMTA will complete a certain level of project planning for the SF*park* pilot parking projects to satisfy FHWA requirements for funding obligation. Because these parking pilot projects are considered a major intelligent transportation system (ITS) project that connects multiple operations functions across different systems, this preliminary level of project planning includes a System Engineering Report Form (SERF) and, subsequently, a Concept of Operations and System Engineering Management Plan (SEMP). The SFMTA will use UPP pre-implementation funding to complete these tasks.

Once the project funding is obligated, the SFMTA will develop more detailed implementation plans for each pilot project and/or area, finalize the design of the data management system that will enable the evaluation of the pilot project data, and begin the implementation of the pilot projects. As part of the ongoing project management, the SFMTA will provide quarterly reports for the project and for the overall UPA quarterly report.

Note: The first three tasks listed below will be completed using separate pre-implementation funding.

Tasks and Deliverables

1. **Finalize scope of work for parking pilot projects.** SFMTA will develop a scope of work for parking pilot projects.

Deliverable: *SFpark Parking Pilot Project Scope of Work*

2. **Complete System Engineering Report Form.** SFMTA will develop a SERF that provides a high level overview of the ITS aspects of the parking pilot projects.

Deliverable: System Engineering Report Form

3. **Develop Concept of Operations and System Engineering Management Plan (SEMP).** A Concept of Operations is a conceptualization of day-to-day conditions and operation of the SF*park* pilot parking projects, including how the system will be used and operated, for both SFMTA personnel and drivers. The SEMP identifies how SFMTA will undertake and manage the technical tasks. Among the several technical documents required as part of the SEMP, the full SEMP includes and Data Collection and Evaluation Plan.

Deliverable: Concept of Operations and SEMP

4. **Develop detailed implementation plan for each pilot project area.** For each pilot project area, the SFMTA will develop detailed implementation plans for each project.

Deliverable: Technical Memorandum for each project area describing the implementation for that area

- 5. Procure goods and services.** The SFMTA must procure the necessary goods and services for the pilot projects.

Deliverable: Necessary approvals, selection, and contracting/purchase

- 6. Develop SFpark data management system.** The SFMTA will use new and existing data sources to evaluate pilot projects, including data from parking meters and sensors. The SFMTA will develop a data warehouse that will allow data from multiple sources to be automatically uploaded and easily evaluated.

Deliverable: Scope for database architecture; build, test, and deliver data warehouse

- 7. Provide quarterly reports for the project.** As part of its project management duties and to fulfill an obligation of Federal partners, the SFMTA will provide quarterly reports for the project and for the overall UPA quarterly report

Deliverables: Quarterly reports on project status

Schedule

Project planning	
April 2008	Finalize scope of work
May 2008	Complete SERF
May – August 2008	Complete Concept of Operations and SEMP
May — September 2008	Complete detailed installation plan for each pilot project area
July — December 2008	Develop SFpark data warehouse
August – December 2008	Procurement of goods and services
Project management and reporting	
Ongoing	Provide quarterly reports

Parking Information System

Overview

Data from off-street parking facilities, new parking meters, and on-street occupancy sensors will be used to complement demand-responsive parking pricing with better information about parking location, availability, and price so motorists can make more informed travel choices. These information systems will provide motorists with information *during* their trip to help them quickly find a parking space near their destination. The systems will also provide information *before* trips, helping people to make more informed decisions about how to travel.

The SFMTA will use various strategies to disseminate this parking price and/or availability information to help travelers efficiently find a place to park in the UPA pilot areas. These strategies to disseminate this parking information include:

- **Variable message parking guidance signs** with real-time information about availability in parking garages. These signs will be strategically located on corridors that do not serve as transit preferential streets between the freeway off-ramps and garages, and will be complemented by supplemental static guidance or directional way finding signs.
- **Web** for access to parking information either via computer or PDA. *SFpark* will pay a vendor to develop a web application that uses a map to display real-time parking information. Using this web application, *SFpark* can then make this parking information available via the SFMTA website, PDAs, as well as to the region's 511 website (if 511 chooses to use that web application). SFMTA can also make available parking data if 511 chooses to develop its own method of displaying that information.
- **Text message (SMS)** to allow drivers the ability to use a text message interface to learn about parking availability and price.

During the pilot project period, *SFpark* may also explore the feasibility and/or desirability of additional means to disseminate parking information, in ways such as in-vehicle navigation systems or low-cost variable message signs near parking garages.

By providing information about parking location, availability, and price, the pilot parking information system will minimize unnecessary circulation of vehicles and therefore congestion. This parking information system is also expected to help optimize utilization of the existing parking resources and help improve garage operations.

The variable message signs will also be connected to the SFgo Transportation Management Center (TMC), the City's intelligent transportation management center. During special events or in emergencies, the variable message signs will also be used to display messages relating to street closures, incidents, construction activities, and travel time.

Note: SFMTA will plan the parking information system elements as part of the Concept of Operations and SEMP (see preceding two pages).

Tasks and Deliverables

1. **Integrate on-street parking data.** Using plans developed in the SEMP, *SFpark* will do the necessary software integration and technical coordination to enable making parking information from on-street parking available to motorists.

Deliverable:

- Do necessary integration to enable passing parking information to drivers
- 2. Make parking data available.** SFpark will develop the web application and other data feeds necessary to make parking information available via several channels, including websites, PDAs, and text message.

Deliverables:

- Make parking information available via the SFMTA website and, potentially, other possible channels.
 - Provide 511 with a web application for it to use to display San Francisco parking information (if the 511 service chooses to display this information)
- 3. Install parking guidance infrastructure.** During this task, all necessary infrastructure for the parking guidance system will be installed. This infrastructure includes installation of: variable message signs and static guide signs; communications links including fiber optic cables, conduits, and pull boxes; and replacement of traffic signal controllers and cabinets in order to interface the communications links and variable message sign controllers.

Deliverable

- Installation of all parking guidance infrastructure
- 4. Integrate off-street data sources via SFgo and with variable message signage.** Once the variable message signage is installed, it must be integrated with the parking garages' revenue system in order to acquire real-time space availability information. Parking availability information from parking garages will also be interfaced with the SFgo Transportation Management Center (TMC) to monitor, maintain, and display other real-time traffic information (such as street closures, incidents, construction activities and travel time) when appropriate. This off-street parking data will then also be available for distribution via other channels, such as website.

Deliverable

- Integration of variable message signs with garage revenue systems and SFgo.

Schedule

Data integration for on-street parking	
October 2008– January 2009	Integration for on-street parking data
Make parking information available via web	
January – March 2009	Make parking information available via the web using a web application
Design and installation of parking guidance infrastructure	
April 2008 – September 2009	Design, procure, and install parking guidance infrastructure
Data and software integration between garage revenue system and SFgo	
September 2008 – September 2009	Design and implement the software integration for off-street data

Enforcement

Pilot overview

Active management of parking resources requires consistent levels of adequate enforcement. As part of the *SFpark* pilot projects, SFMTA Enforcement has agreed to provide a dedicated group of Parking Control Officers (PCOs) for parking enforcement in pilot and control areas to provide a consistent level of enforcement throughout the pilots. This is a crucial part of the before/after data analysis, both of the changes to parking management as well as cost-benefit analysis of the net costs and benefits of changes to enforcement levels and strategies.

In addition to a consistent level of dedicated enforcement, SFMTA plans to test new approaches to enforcement during the pilots, which may include:

- **Aligning enforcement staffing to better correspond to actual parking demand patterns** – Installation of the parking occupancy sensors will provide the SFMTA with the data that could be used to tailor parking enforcement beats and hours to provide an appropriate level of enforcement to match variable parking demand in different areas of the City at different days of the week and times of day. For pilot projects that extend metering into the evening and weekends, resources will be shifted and more resources provided to enforce parking regulations during this time as well.
- **Predictive enforcement** – Using data from in-street sensors, systems can be put in place to provide SFMTA Enforcement with patterns of past violations to help direct PCOs to areas where and when they are most likely to find the highest number of violations, either within existing enforcement beats or newly defined enforcement areas and/or strategies.
- **Different methods of prioritizing enforcement** – The pilots may be an opportunity to test allocating PCO resources to high priority parking violations and or areas that impact the efficiency of the total transportation system. For example, enforcing parking regulations on primary transit corridors as a way to reduce parking-related delays to Muni may be a higher priority than other kinds of violations in other locations.
- **Use of handhelds that allow PCOs to utilize real-time enforcement data in the field** – Networked sensors and meters will provide a new level of real-time information about violations. This information can be provided to PCOs in the field, helping to make their enforcement efforts more targeted and efficient.

Tasks and Deliverables

1. **Finalize enforcement implementation plan.** SFMTA will develop a final enforcement implementation plan that includes more detail about what approaches and strategies will be tested where.

Deliverable: *SFpark Pilot Project Enforcement Plan*

2. **Implement enforcement implementation plan.** Improved enforcement will be implemented according to the timing specified in the *SFpark Pilot Project Enforcement Plan*.

Deliverables: Implement activities specified in *SFpark Pilot Project Enforcement Plan*

- 3. Procure new enforcement equipment.** The pilot projects will purchase necessary equipment to enable SFMTA Enforcement to effectively provide a higher level of enforcement and evaluate the feasibility effectiveness new methods of enforcement that leverage investments in parking technology.

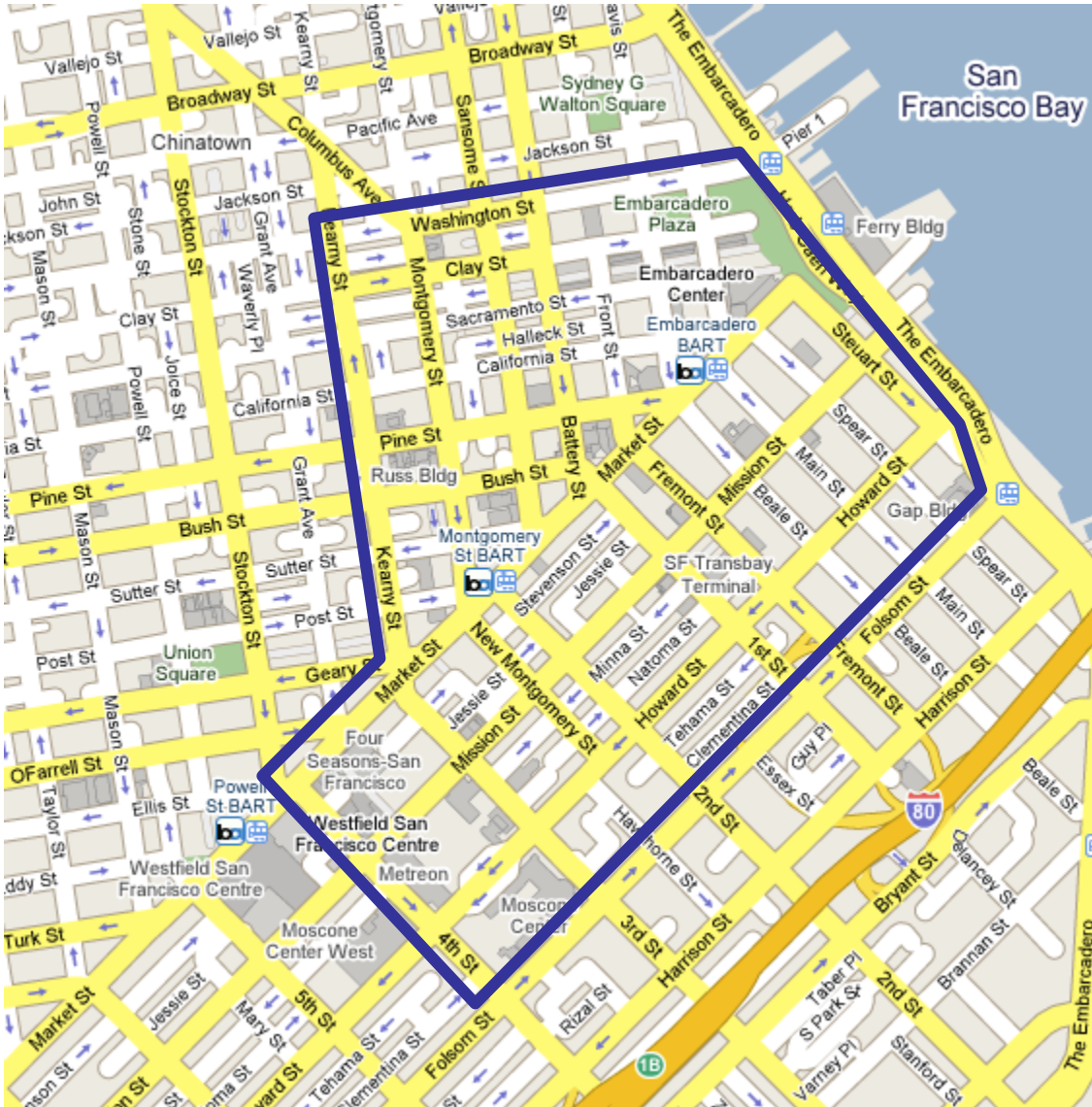
Deliverables:

- Necessary procurement documents for enforcement handhelds and vehicles
- Implement the use of new enforcement techniques in pilot and control areas that utilize the new technology

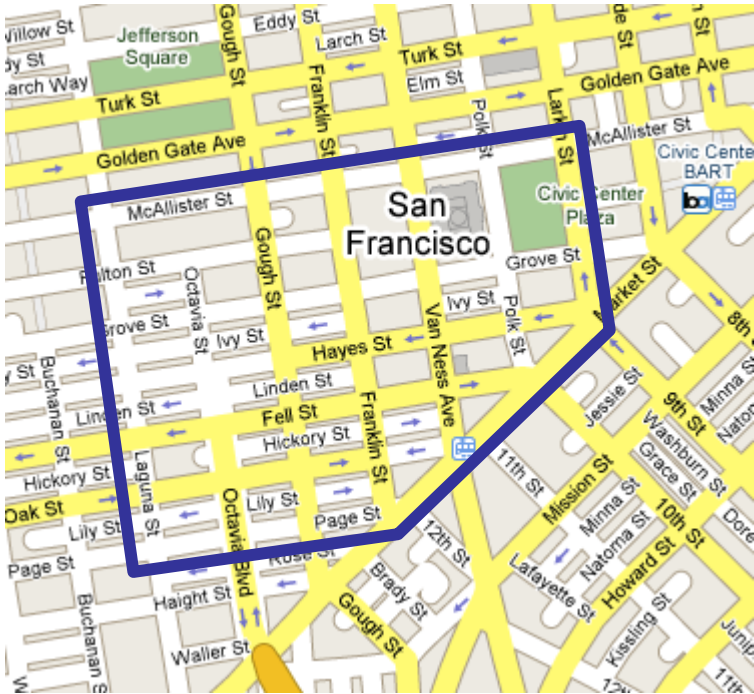
Schedule

Enforcement implementation plan	
March 2009	Finalize <i>SFpark Enforcement Strategic Plan</i>
Implement enforcement plan	
April 2009 – April 2010	Institute improved enforcement in pilot and control areas
Procurement of enforcement equipment	
September 2009 – January 2009	Procure new enforcement handhelds
January – March 2009	Software integration for new enforcement handhelds
September 2008 – March 2009	Procure new enforcement vehicles

Downtown pilot area



Civic Center/ Hayes Valley



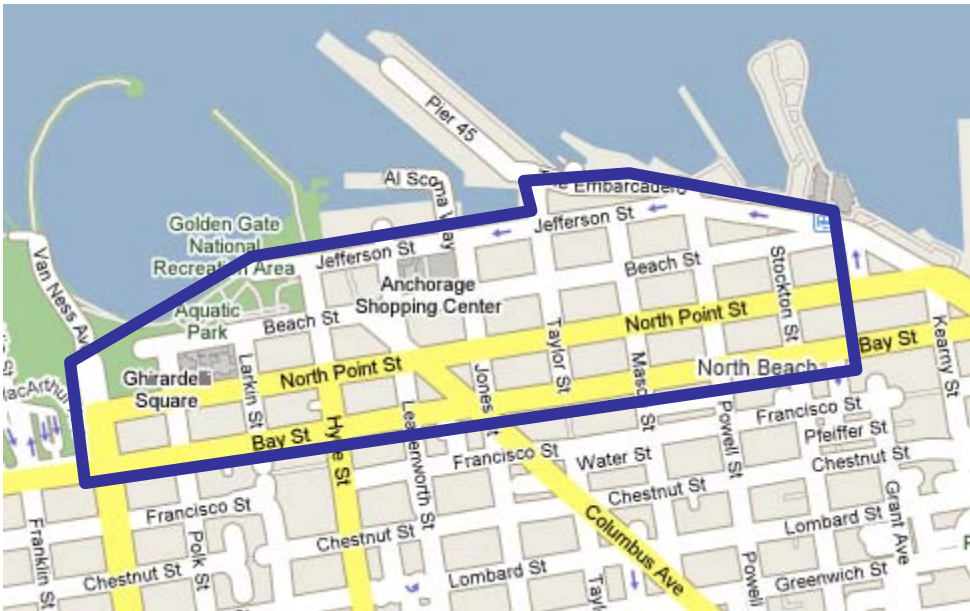
Chestnut/ Lombard



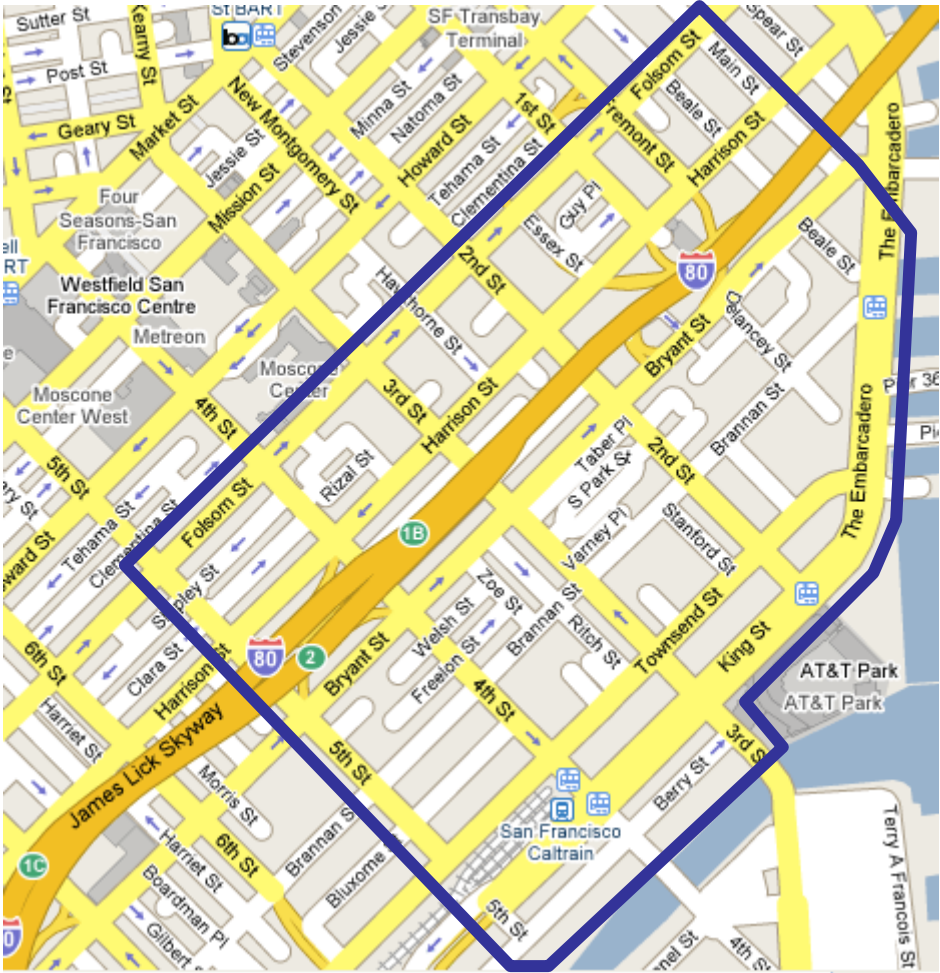
Fillmore



Fisherman's Wharf



South Embarcadero



Mission/ Valencia

