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1 INTRODUCTION

This document is a proposal by the San Francisco County Transportation Authority (the Authority) for a grant from FHWA under the Value Pricing Pilot Program to conduct a conceptual planning and design study for an area road charging project in the downtown San Francisco area as well as a feasibility study and initial pilot of a parking assessment program to be implemented citywide.

San Francisco's colorful neighborhoods, walkable streets, and dramatic landscape make the city one of the world's top destinations to live, work and visit. Home to over 770,000 residents, the city has long been a magnet for business, culture, retailing, tourism and education. Its rich 150-year history reflects the cultures of the world and gives energetic diversity to its neighborhoods. San Francisco serves as the retail and cultural center of the region, drawing workers and visitors from a wide range of economic and cultural activities including jobs, restaurants, theaters and other nightlife, museums, shopping, special events and festivals, historical sites, and other attractions. At any time of the day, a distinctive combination of cars, buses, streetcars, cable cars, bicyclists and pedestrians can be found moving up, over and under the city's many streets and hills.

As a world-class city, San Francisco requires a transportation system to match – one that moves people and goods efficiently and reliably in an integrated way. The 2004 Countywide Transportation Plan's (CWTP) goal of economic vitality is best captured through strategies that comprehensively manage system efficiency (mode shares) and mobility (vehicle miles travelled, automobile vehicle speeds, transit speeds), through the regulation of the various modes (allocation of right of way, signal time, etc.) and pricing signals (incentives, fees and taxes).

The early 2000's saw unprecedented demands placed on the city's transportation network, and although those pressures have largely abated for now, they will return in the future. In the meantime, the trends of regional through commuting and slow but steady decline of internal San Francisco transit mode shares has continued to erode system performance. The growth of 3+ car households and insatiable demand for parking is also a constant challenge. Finally, the city's transit operator – San Francisco Municipal Railway (MUNI) – service, though extensive in its coverage, and effective in meeting the most basic transportation needs, has inadequate funding to build and operate priority bus treatments that are needed to needed to raise transit performance so that transit can compete effectively with the automobile for choice riders.

The pricing of road and parking space – in combination with the use of generated funds for transit, pedestrian and streetscape enhancements – offers a comprehensive and ambitious new approach to integrated demand management for San Francisco. The time is now to explore effective and appropriate ways to add this innovative strategy to the City's transportation system and congestion management toolbox.



2 OVERVIEW OF THE AUTHORITY

The San Francisco County Transportation Authority was created in 1989 by the voters of the City and County of San Francisco (the City) to impose a voter-approved transaction and use tax (i.e., sales tax) of one-half of one percent to fund essential traffic and transportation projects as set forth in the San Francisco County Transportation Expenditure Plan (the Plan) for a period not to exceed twenty years (Prop B). Beginning in April of 1990, the State of California Board of Equalization started collecting the sales tax revenues for the Authority. In November 2003, San Francisco voters approved a new Expenditure Plan (Prop K) that superceded Prop B and continued the ½ cent sales tax for 30 years.

The members of the Authority (the Board of Commissioners) are the eleven members of the Board of Supervisors of the City and County of San Francisco; however pursuant to State Code Section 131.000, the Authority is governed by a separate administrative code from that of the City's and operates as a special purpose government, independent of the City.

The Authority is designated under State law as the Congestion Management Agency (CMA) for San Francisco. In this capacity, the Authority has a wide range of responsibilities, including prioritizing state and federal transportation funds for San Francisco, preparing the long-range Countywide Transportation Plan, and developing a computerized travel demand forecasting model and supporting databases. The Authority is also the designated local Program Manager for the Transportation Fund for Clear Air (TFCA) Program, which collects a vehicle registration surcharge and earmarks the funds for transportation projects that improve air quality.

Appendix A further describes the roles and capabilities of the Authority.



3 PROPOSAL

3.1 Congestion Problem to be Addressed

There are several ways in which vehicular congestion hinders mobility and accessibility in San Francisco:

3.1.1 Vehicular Congestion

The automobile is the predominant mode of travel on San Francisco's transportation network, accounting for over 60% of all trips. Automobile users experience slow and unreliable trip-making, particularly in peak times and directions. Average speeds documented during the Authority's most recent Congestion Management Program Network monitoring cycle in April 2004 show a worsening of travel conditions over the past decade, including the recent period from 2001 to 2004.ⁱ As shown in **Appendix B** Table 1, twelve (12) of the arterial segments and five (5) freeway segments studied during the AM peak period were measured to operate at Level of Service (LOS) F. As shown in **Appendix B** Table 2, twenty (20) of the arterial segments and seven (7) freeway segments studied during the PM peak period were measured to operate at LOS F. These results indicate that traffic conditions on the CMP network have worsened since the 2001 monitoring cycle, particularly in the downtown and South of Market area. Travel speed decreased for approximately 41% of the segments studied in the a.m. peak period and 33% of segments in the p.m. peak period.

Indeed the 2004 Urban Mobility Report confirms these trends over time. In fact, in 2002 (the latest year reported in the 2004 Urban Mobility Report) **San Francisco ranked second amongst the nation's most congested urban areas**, both in terms of annual hours of delay per traveler (73 hours) and the ratio of travel time in the peak period to free flow conditions (travel time index = 1.55)ⁱⁱ

Moreover, **congestion is projected to worsen in the future.** Transportation demand analysis in the 2004 Countywide Transportation Plan found that, even with the implementation of the 30-year sales tax investment program (known as the Prop K Expenditure Plan), total vehicle miles traveled at level of service F are expected to more than double (117.4%) from 920,900 in 2000 to 2,002,500 by 2025.ⁱⁱⁱ

As a result, society's **costs related to congestion continue to increase.** These include: 1) direct costs borne by automobile users such as fuel consumption and other vehicle operating costs, and by the highway system manager/operator for traffic management or enforcement (to the extent these are not fully covered by user fees; 2) costs to the economy, such as the value of uncertain or longer travel times for road users (including freight users); and 3) environmental costs such as of energy dependency and degradation of air quality through emissions of numerous vehicular pollutants resulting from congested conditions (these also contribute to public health damage).

3.1.2 Transit

Transit passengers, accounting for over 17% of all trips, experience much slower and unreliable travel times than automobile users, due in large part to the effects of traveling



in mixed traffic and right-hand lanes where parking and right-turn conflicts exist. As noted in the 2004 Countywide Transportation Plan, on average, transit travel times are three times longer than automobile times – or conversely, transit speeds are one-third that of automobile (6.2 mph for transit and 8.1 mph for cars).^{iv}

While bus travel will always be expected to take longer than automobile travel due to the need to pick up and drop off passengers, a recent bus speed and delay study conducted as part of the Caltrans-funded Van Ness Corridor Bus Rapid Transit Study found that, **net of dwell times, buses are still 9%-35% slower than cars**, depending on the time of day and direction of travel measured. Headway variability and bus bunching also were found to worsen as transit vehicles proceeded south from the northern terminus toward Market Street, where freeway-related congestion predominates.

Congestion hinders bus productivity, and this translates into significant additional transit-related costs. For example, adding just a minute of delay due to traffic congestion to every MUNI bus run along Mission St. increases MUNI's costs by an estimated \$43,000 a year.^v Among them are the direct costs borne by transit operators for fuel and other operating costs; the costs to the economy, such as the value of travel time for transit users (it has been argued that transit delays place unfair burdens on the transit dependent and the poor); and the environmental opportunity costs of not attracting more users to transit (this is the same cost as cited above for automobile congestion, just stated differently).

3.1.3 Parking

Parking-related congestion describes the **neighborhood circulation phenomenon** that results when car users circle their destination looking for unregulated or metered parking. This phenomenon occurs when curb parking is under-priced relative to demand and the market prices of off-street supply. Shoup reports that a 1997 parking study found that the average search time for a parking space in San Francisco was 6.5 minutes.^{vi} This parking-related circling contributes significantly to vehicle miles traveled and congested speeds on city streets.

Shoup further cites research explaining the economic rationale behind this type of behavior: a 50% savings in the first hour of parking at an on-street meter, as compared to an off-street garage, during the weekday noon hour, near City Hall. A recent article in the S[an] F[rancisco] Weekly, a major citywide paper, documented an even greater 400%-500% gap in the downtown area: \$2/hour meter rates vs. \$7.50 to \$10/hour in garages, and called for a significant increase in meter rates to close this gap.^{vii}

3.2 Nature of Proposed Pricing Project

3.2.1 Overall Project Goals and Objectives

The overall project goal of this proposed Value Pricing Study and Parking Management Pilot is to conceptualize and develop for feasibility testing a method to manage demand in an integrated and comprehensive way, in order to reduce system-wide person-delay through the pricing of road use and enhancement of alternative modes, particularly transit.

The two main objectives of the Value Pricing Study and Parking Management Pilot are to:



1. Produce procurement documents (Request for Qualifications and Request for Proposals Documents) that reflect the functional and operational requirements of an area-facilit(ies) road pricing and enhanced mobility pilot program which is both technically feasible and politically acceptable; and
2. Implement a pilot parking assessment district program and evaluate preliminary effectiveness within six months of the launch.

The rationale for linking the area-facilit(ies) pricing concept with a study and initial pilot of parking assessment districts is threefold:

- First, by reducing the gap between publicly managed parking meter rates with market-rate off-street garages, the pilot will reduce the incentive to cruise, and related vehicular congestion;
- Second, the inclusion of non-downtown commercial districts demonstrates the applicability of value pricing beyond downtown, helping to blunt outcries from downtown businesses that they are being unfairly targeted. Conversely, it also enables neighborhoods to benefit from the streetscape and other enhancements that are made possible by the incremental parking charges.
- Finally, the parking assessment district pilots will give agencies experience in deploying an integrated charging/mobility enhancement program, and will demonstrate the benefits of such a program to the public, leading to more awareness and acceptance of the area-facilit(ies) charging program.

3.2.2 Description of Tasks

Specific tasks for the Value Pricing Study and Parking Management Pilot are described further as follows:

Task 1: Startup Activities. Refine overall study scope, schedule and budget; establish and staff a Management Steering Committee with a specific work program; establish and staff a Technical Advisory Committee with a specific work program; periodically brief the Authority's Citizens Advisory Committee; procure technical consultant services. *Deliverables: study Workplan, establishment of Committees and procurement of Consultants.*

Task 2: Policy, Institutional and Legal Framework. Establish a policy basis for the value pricing initiative in the context of the 2004 General Plan, Countywide Transportation Plan, 2003 Congestion Management Program Update; Identify legal barriers at the federal, state or local level to carrying out road charging on selected facilities and to use revenues for mobility enhancements (e.g. nexus requirements, environmental clearance); institutional roles and responsibilities for implementation of the road pricing/mobility enhancement and parking assessment/mobility enhancement pilots including setting regulatory policies (e.g. safety, pricing, and privacy), procurement of services and equipment (see Task 7), operations and management of the charging system and provision of mobility enhancements, revenue collection, administration and distribution. *Deliverables: Memo on Policy Framework and Legal Barriers, Memo on Institutional and Regulatory Options for Implementation and Management of Charging/Mobility Enhancement Systems.*

Task 3: Travel Demand Model. The Authority has developed and maintains one of the nation's most sophisticated travel demand forecasting models – the Chained Activity Model



Process (CHAMP) (see a description of the Authority's model in **Appendix C**). This task will identify needed enhancements to this tour-based model, which recently incorporated model the Metropolitan Transportation Commission's Regional Travel Demand Forecasting Model. The Authority is also working with FHWA to refine it's time-of-day forecasting capabilities (from 5 time periods to the ½ hour). Activities in this task include: collect of traffic, transit and parking data at various times of day and locations; conduct demand elasticity studies with respect to price and levels of service for automobile use, parking and transit use (willingness to pay; ranked choice/conjoint analysis studies); calibrate model parameters; conduct model runs of alternatives to be evaluated in Task 6. *Deliverables: Demand Studies, Model Enhancement Summary, Modeling Results.*

Task 4: Public Involvement. Conduct public education and awareness campaign through a combination of public outreach, education and involvement activities (print and web). Develop marketing messages and educational materials. Hold a minimum of four citywide and regional forums (with multi-language access) and conduct focus groups and stakeholder interviews to gather public input on design of the pricing and mobility enhancement program; Hold a minimum of 2 neighborhood workshops and consult periodically with neighborhood stakeholders to gather input on the design, implementation and evaluation of the parking assessment and mobility enhancement programs in each pilot area. Staff a Management Steering Committee, Technical Advisory Committee and Authority Citizens Advisory Committee. *Deliverables: Public Outreach Plan, Newsletters, Workshop Summaries.*

Task 5: San Francisco's ITS System Architecture Review and Development. Conduct a review of the Municipal Transportation Agency's (MTA) SFGo!™ Program (traffic management and area control systems) including transit priority systems; real time traffic and transit information systems; status of Translink – the regional universal farecard system; and related transit vehicle-based data and communications systems (see further descriptions of current MTA ITS projects in **Appendix D**). Review Federal Intelligent Transportation System Architecture requirements and also Caltrans and Metropolitan Transportation Commission ITS systems and standards^{viii}, and incorporate these as necessary into MTA systems design concepts to ensure compliance and interoperability. *Deliverables: San Francisco Charging and Mobility Enhancement ITS Concept Plan.*

Task 6a: Road Pricing and Mobility Enhancement System Concepts and Evaluation (area-facilit(ies) pricing program only).

- 1) Establish criteria for identifying facilities to be charged (level of congestion, transit availability, technical feasibility)
- 2) Identify several alternative charging and mobility enhancement package options that are technically feasible and effective in meeting the overall goals of maximizing person-throughput and minimizing person-delay, cost-effective and affordable to implement and operate initially and over time, and politically acceptable;

Included in this task is designing the technology systems and operational parameters for the pricing scheme, which at a minimum should reflect variable pricing principles if not dynamic^{ix} pricing principles in order to address the congestion management goals of San Francisco^x, as well as estimate costs of the proposed design under different implementation arrangements as developed under **Task 6a** below, (e.g. turnkey integrator operator options such as design-build; design-build-operate).



- 3) Analyze various charging scenarios, in light of their congestion management or revenue generation benefits by examining travel patterns and shifts in response to changes in travel time, and other level of service attributes, and price as well as demand for key Origin-Destination pairs within and to San Francisco;

Included in this task is development of financial models^{xi} to estimate expected revenues from different charging structures (what facilities are charged?), who is charged (and who is exempt), how the charge is levied (what is the level, are there FAIR lanes?), when is the charge applicable (e.g. variable by time of day), and different economic and demand scenarios (San Francisco economic growth; diversion scenarios).

- 4) Develop mobility enhancement packages, particularly transit and parking and traffic management projects that can be implemented using revenues from road charges (this is an iterative exercise with the first two steps above). In keeping with the City's Transit First policies, and consistent with the successful approach of London's Quality Bus Initiative that accompanied the congestion pricing scheme there in 2003, establish mechanisms for the use of revenues to support transit development. Study appropriate transit policy or service changes to support and identify required or desired transit capacity increases or fare changes (e.g. explore the idea of a free transit use zone in the downtown where all users pay before alighting^{xii}, which could be subsidized by road charging revenues and has its own transit dwell congestion benefits);
- 5) Estimate financial (capital and operating) costs of all components of each charging/mobility enhancement package;
- 6) Examine the economic benefits and costs to the city (and region), including likely revenue generated and potential effects on downtown industries and businesses in the short and long terms; Estimate the economic and societal benefits of each package, including congestion reduction/travel time savings, mode shift, environmental and energy benefits;
- 7) Analyze the distribution of benefits and impacts across socio-economic groups such as low-income and zero-automobile households as was recently done in the Countywide Transportation Plan. This task will also incorporate input from policy forums and outreach meetings to discuss the equity-related implications and explain project design features of the proposed charging design, such as the use of revenues to fund transit and other modal improvements;
- 8) Consider the most (cost-)effective institutional arrangements for implementation and subsequent management and operation of the road pricing demonstration as well as administration of project revenues. Consider alternative implementation mechanisms (based on Task 2 above) and estimate costs of each e.g. turnkey integrator operator options such as design-build; design-build-operate).^{xiii}
- 9) Define and apply measures of effectiveness to represent each of the above considerations (costs and benefits) and to evaluate the charging/mobility enhancement options.
- 10) Identify a preferred alternative package of charging strategies/investments and develop an overall implementation and funding plan. *Deliverables: Alternatives Analysis of Charging*



Concepts including Associated Mobility Enhancements, Financial Model, Equity Analysis of Proposed Concept, and Recommended Implementation Mechanisms.

Task 6b: Parking Assessment District and Mobility Enhancement System Concepts and Evaluation (parking pricing only).

The goal of the parking management pilot – to be implemented in parallel with the value pricing study during the grant period – is to conduct a feasibility study and two initial pilot parking assessment district pilots that can be replicated citywide^{xiv}, including to:

- 1) Design the technological and operational parameters for the variable pricing scheme which should encompass all on-street metered parking spaces at a minimum and may additionally include off-street facilities as well; and estimate costs of the proposed design;
- 2) Analyze various charging scenarios, including varying pricing rates by location and time of day or time of week (e.g. consider expansion to nights and weekends) at high-demand locations (typically neighborhood commercial districts, in light of the potential to increase utilization (turnover) of parking spaces, close the gap with market-rate off-street parking to reduce cruising-related congestion, and to generate revenues;
- 3) Identify and recommend parking policy or technology changes needed to support the demonstration project, such as reforms of the city’s Residential Parking Permit program and/or potential to increase metering of unregulated spaces in neighborhoods. Among the technology possibilities is the expansion of pay-and-display equipment that has remote control and credit-card acceptance capabilities, reduces the need for sidewalk space, and allows pay-and-go operation, whereby parkers can transfer unused paid time to the next parking space, instead of leaving it on a meter for someone else to use.
- 4) In keeping with the City’s Transit First policies, establish mechanisms for the use of revenues to support local area streetscape enhancements and citywide transit development.
- 5) Examine the financial and economic benefits and costs to the city, including likely revenue generated and potential effects on local industries and businesses in the short and long terms^{xv};
- 6) Consider the most effective institutional arrangements for implementation and subsequent management and operation of the parking pricing demonstration as well as administration of project revenues.
- 7) Conduct “before” studies of parking area occupancy and turnover rates under existing conditions. *Deliverables: Alternatives Analysis of Parking District Concepts including Associated Mobility Enhancements, Financial Model, Before Studies of Parking Use, and Recommended Implementation Mechanisms.*

Task 7a: Pre-Implementation of the Preferred Road Pricing/Mobility Enhancement Alternative. This task includes developing procurement documents for design and integration (or design-integrate-build) of hardware and software systems based on identified system functional and business requirements. Also included are development of detailed plans and designs for enhanced transit and traffic management capital requirements and services. The task will clearly identify institutional roles in the collection, administration and



distribution of charging revenues. *Deliverables: Procurement Documents, Functional Specifications including Performance Targets, Institutional Roles for Implementation and Management of Concept.*

Task 7b: Implementation of two Parking Assessment Districts with Mobility Enhancements. This task includes developing procurement documents for design and integration (or design-integrate-build) of hardware and software systems based on identified system functional and business requirements. Also included are development of plans to fund the pilot and streetscape enhancements. The task will clearly identify institutional roles in the collection, administration and distribution of revenues. Additionally, it will include an evaluation of the pilot, after 6 months, including conducting “after” studies and outreach surveys. *Deliverables: Procurement Documents, Procurement of Services, Equipment and Civil Works, and Evaluation of Concept.*

3.2.3 Facilities to be Included

The facilities which would be impacted by an area road charging project would include:

- 1) Roads in the downtown area of San Francisco that fall inside the charging area. The detailed boundary for the charging area has not yet been determined and would be investigated as part of the feasibility study. Likely areas and facilities to be considered are (see **Figure 1: Likely Areas and Facilities to be Considered**):
 - Financial District and North Waterfront Area, Union Square and Civic Center Area, South of Market Area (to be further detailed through the study)
 - State Route 101 through the City (Van Ness Avenue and Lombard Street leading to Doyle Drive (South Access to the Golden Gate Bridge);
 - Highway 1 through the City (19th Avenue and Park Presidio leading to Doyle Drive)
 - And potentially other facilities, to be determined through the study’s review of criteria for charging (average speeds, transit availability, technical feasibility, etc.).

Figure 1: Likely Areas and Facilities to be Considered



- 2) Other minor roads in the areas surrounding the charging zone. These could be affected by diverted traffic, flow improvement projects, transit service, re-timing of traffic signals, and additional signage.



- 3) Parking assessment districts, including the main neighborhood commercial street and surrounding areas (streets, transit services and facilities). These may correspond to local Business Improvement Districts as they are formed.^{xvi}

3.2.4 Expected Pricing Schedules, Technology to be Used and Enforcement Programs

The specific pricing schedules, technology to be used, and enforcement programs would be determined as part of the study.

Pricing. Pricing studies conducted for the study will support transportation demand and revenue forecasting model development. The charging study will require consultant services to conduct willingness to pay survey design and analysis, and to advise on charging options. Consultations with key stakeholders and other regulatory agencies will also inform decision-making in this area.

Technology. It is anticipated that a review of international examples and best practice in ITS charging applications will help to inform the design of a state of the art system which can meet San Francisco's needs and expectations in terms of functionality and performance. This proposal anticipates utilizing the services of several consultant teams with knowledge and capabilities in:

- Vehicle monitoring and control
- Electronic payment services
- Traffic and parking management
- Management of emergency services
- Commercial vehicle management
- Transit management
- System integration and deployment

Enforcement. Several agencies share responsibility for enforcing various traffic codes in San Francisco, including the Department of Parking and Traffic, MUNI, the San Francisco Police Department and Caltrans. Enforcement policies, technologies and methods will be a focus of the alternatives design within the study.

3.2.5 Role of Alternative Transportation Modes in the Project and Enhancements Proposed to be Included in the Pricing Program

As described above, alternative transportation modes are an integral part of the concept to be studied and demonstrated in this project. Charging of vehicle roadway use and parking enables provision of better transit, traffic management, and pedestrian, bicycle and streetscape conditions through the revenue generated, and these additional mobility enhancements in turn make the demonstration feasible by enabling and encouraging mode shift to occur and vehicle miles of travel to be reduced. This integrated approach is integral to the political acceptability of charging, given the severe equity impacts that would otherwise exist.

This proposal will build on several current **transit initiatives** in San Francisco, including development of **Bus Rapid Transit (BRT) Network and Transit Preferential Streets System**, one of the signature projects of the Authority's 30-year Prop K Transportation Sales Tax Expenditure Plan, passed by voters in November 2003 (see **Appendix E**).^{xvii} The



Expenditure Plan also identifies significantly increased funding for bicycle network and pedestrian projects.

3.3 Timeline for the Pre-Project Study and Implementation Phases

The overall schedule for completion of the tasks identified in this proposal is 3 years.

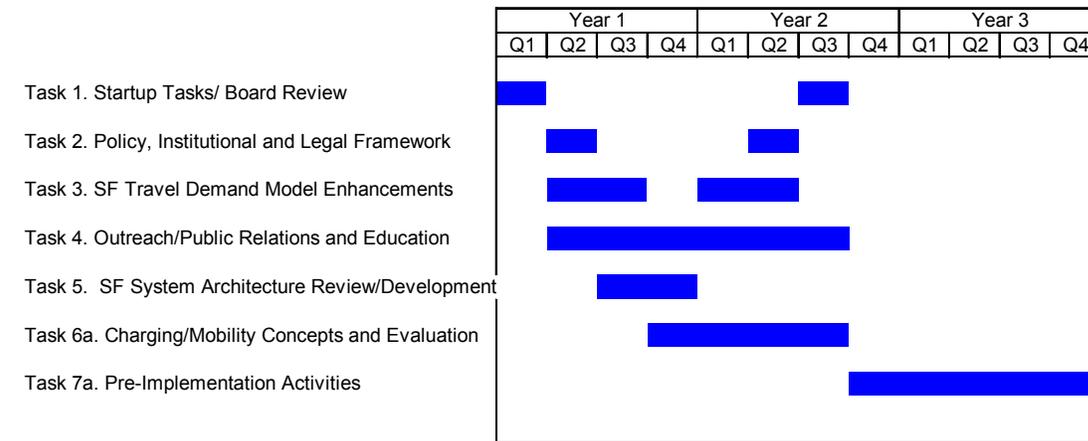
3.3.1 Area and/or Facility Road Charging/Mobility Enhancement Study

The expected duration of the main charging/mobility enhancement study is approximately 18 months. This would be followed by a detailed design and procurement planning phase, where the major deliverable is a set of procurement documents (RFQs and RFPs) for civil works, services and equipment to support the project as designed.

Depending on the success of the study and degree of public support and consensus (2 months for presentation and approvals to proceed), this detailed design and procurement study could take place in month 21 through 30 (9 months) followed by procurement activities for an initial Phase 1 of the project over the next 6 months (month 31 –36).

Realistically, we anticipate that the timeline for a full implementation of a road pricing scheme in downtown San Francisco could be up to four years from the inception of the feasibility study. **Figure 2a: Project Schedule for Charging/Mobility Enhancement Study** illustrates one potential breakdown of this period into key tasks.

Figure 2a: Project Schedule for Charging/Mobility Study

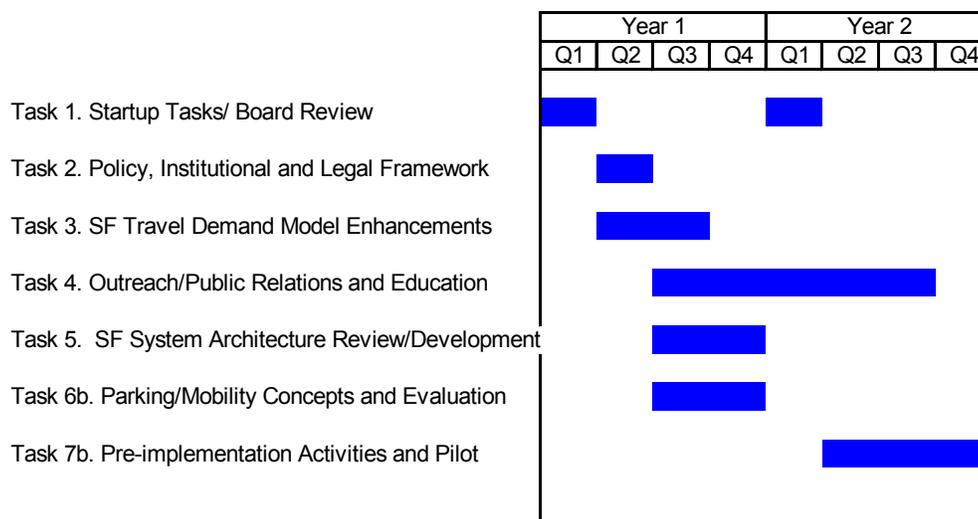


3.3.2 Parking Assessment District Study and Pilot

The expected duration of the parking management pilot is 24 months. The study would be conducted over 12 months, with presentation and approvals taking 2 months. This would be followed by a 4 month procurement period and 6 month launch and evaluation period. **Figure 2b: Project Schedule for Parking/Mobility Enhancement Study** illustrates one potential breakdown of this period into key tasks.



Figure 2b: Project Schedule for Parking/Mobility Enhancement Study



3.4 Potential Signatories to Cooperative Agreement

In addition to the Transportation Authority, we anticipate signatories to include: the Municipal Transportation Agency (MTA), Transportation Commission (the regional Metropolitan Planning Organization) and Caltrans (state DOT).

We have been in contact with all three agencies and hope to provide a letter of support from each shortly.

3.5 Local Support for the Project

Congestion pricing is a hot-button issue in the Bay Area as it is elsewhere in the world. The issues are complex and examples of real-world successes of comprehensive road pricing/transit development schemes are limited and recent.

However, in recent weeks, Transportation Authority Chairman Jake McGoldrick has lead the charge to study the possibility of an area road pricing demonstration project for San Francisco, primarily as a congestion management and air quality strategy, but also as an opportunity to provide support to MUNI, the city’s main transit operator, which is facing yet another annual budget deficit.

"The key issue here is if we can kill three birds with one stone -- relieve congestion, clean up the air, and give money to MUNI – we would have hit a home run,"

Chair Jake McGoldrick, February 15, 2005^{xviii}

Chair McGoldrick’s proposal comes at an opportune time, when MUNI is considering a controversial 25-cent raise in fares, and transit activists are mounting an increasingly vocal campaign to shift MUNI's budget difficulties away from the people who ride the buses.



Shortly thereafter, the **San Francisco Examiner** newspaper recently published an **editorial supporting the study of a congestion pricing scheme for downtown San Francisco:**

“The San Francisco Transportation Authority should explore the possibility of charging for automobile access to a special zone in a downtown sector of The City, says Supervisor Jake McGoldrick, who as chairman of the Authority on Tuesday asked its staff to pursue federal grant funding for a study. A downtown traffic toll is, at the least, a fresh and fascinating idea.”

San Francisco Examiner, February 16, 2005^{xix}

Subsequent reaction on the part of City leaders was more circumspect, but most indicate a willingness to “keep an open mind”, including San Francisco Mayor Gavin Newsom.^{xx} Other local media, stakeholder and advocacy groups have also voiced support for the study and concept of congestion pricing of roadway and parking space, including:

- SAN FRANCISCO EXAMINER articles and editorials quoting Chair McGoldrick, Mayor Newsom and the Bay Area Council, a coalition of regional business and policy leaders **(Appendix F)**
- SF WEEKLY article on downtown parking charges being too low **(Appendix G)**
- RESCUE MUNI – Chronicle editorial **(Appendix H)**
- SAN FRANCISCO PLANNING AND URBAN RESEARCH – Parking Paper **(Appendix I)**

Other stakeholders, such as transportation and non-transportation agencies with a stake in San Francisco, include regional transit operators Caltrain (San Francisco is one of the three members of the Joint Powers Board for Caltrain), Bay Area Rapid Transit District (BART), Alameda County Transit, Golden Gate Transit, SamTrans (San Mateo Transit), emergency services, and others. These groups will be consulted during the study through the study Technical Advisory Committee.

3.6 Extent of Public Participation Proposed and Plan for Involving Key Parties

Continuous effective engagement of the stakeholders in the project design and decision-making process will be crucial to the success of the feasibility study and parking pilot. As described above, the proposed public participation approach has three main parts:

- 1) Conduct a public education and awareness campaign to educate the public about the features and benefits of the proposed project;
- 2) Hold citywide and regional policy forums, workshops, surveys and focus groups – and conduct periodic briefings to the Authority’s Citizens Advisory Committee – to solicit early and continuous input and feedback about the proposed project; and
- 3) Establish and staff several policy and technical committees in order to coordinate with public agency partners.



This program is designed to gain support and build coalitions (among civic and opinion leaders, media and advocates) for carrying out the feasibility study, to elicit active participation when the study is underway, and to secure support for the area road pricing pilot program after completion of the study.

The elements below are an initial overview of the likely contents of the first stakeholder marketing materials (to be distributed in print and over the Authority's website at www.sfcta.org). We envision a newsletter or brochure similar to the one used for the 2004 Countywide Plan (see **Appendix J**), with several issues produced as the study progresses.

Purpose of initial marketing. The purpose of the first newsletter is to communicate the value of carrying out a feasibility study, and to educate stakeholders about ongoing applications in other parts of the world and about the likely benefits of a potential pilot implementation. The importance of this initial opinion-shaping step cannot be overstated, since there are compelling dollars-and-cents reasons for establishing a pricing program, particularly at a time when transportation resources are scarce at the state and federal levels and likely to remain so for some time.

Key messages. "Congestion in San Francisco is a significant and increasing problem, and there are very limited opportunities for changing the road infrastructure to address it. There is a case, however, for using demand management, as can be seen working successfully in other cities, such as London, to mitigate congestion. We believe that San Francisco could benefit from a demand management program, and therefore propose to examine it as an option for the city's wider transportation system management strategy. The FHWA, in support of this, has provided a grant for a study to examine the feasibility of road pricing options in downtown San Francisco. In carrying out this study, we will actively involve all key stakeholders. The results of the study, conducted with ongoing input from all stakeholders, will determine whether and how a pilot pricing program will be conducted in San Francisco."

3.7 Discussion of Potential Equity Impacts of the Proposal and Preliminary Plans to Respond to Such Issues if They Should Arise

Since the main proposed area-facilit(ies) pricing/enhanced mobility project is a feasibility study of a road pricing scheme rather than a pilot program, it does not pose any immediate equity consequences. However, it is acknowledged that implementation of such a scheme may have equity consequences for different user groups: e.g. businesses inside the proposed area, drivers, residents, low-income users and zero-car households, emergency service providers, etc. Thus, the area charging study tasks include a distributional analysis of benefits and impacts as part of the evaluation methodology of alternative charging scenarios/mobility enhancements.

It is also acknowledged that, even at the feasibility study stage, the public will be keen to express its concerns on the equity issues associated with potential pricing schemes. The proposed concerted public information and consultation campaign will reassure the public that equity concerns and public input will be taken into account when considering pricing structure and mobility enhancement package options.



3.8 Proposed Budget and Funding Plan

3.8.1 Proposed Budget by Task

The proposed budget for this proposal is \$1.3 million and is shown below in **Figure 4: Proposed Study Budget by Task.**^{xxi}



Figure 4: Proposed Study Budget by Task

	<u>Budget</u>		
Task 1. Startup Tasks	\$ 15,000		
Refine Scope, Schedule, Budget			
Establish Advisory Committees			
Procure Consultants			
Task 2. Policy, Institutional and Legal Framework	\$ 150,000		
Policy Basis for Pricing Program			
Legislative Changes and Administrative Approvals			
Institutional Roles and Responsibilities			
Compliance with Federal Aid Process			
Task 3. SF Travel Demand Model Enhancements	\$ 250,000		
Data Collection (traffic, transit, parking)			
Demand Elasticity Surveys			
Model Development, Calibration and Application			
Task 4. Outreach/Public Relations and Education	\$ 150,000		
Education and Marketing Campaign			
Citywide and Regional Forums, Citizens Advisory Committee			
Facilitate Management Steering and Technical Advisory Committees			
Task 5. SF System Architecture Review and Development	\$ 25,000		
Review of MTA System (SF Go!)			
Federal ITS System Architecture			
State and Regional Operations Standards			
Task 6a/b. Pricing/Mobility Concepts and Evaluation	\$ 400,000	<u>Parking</u>	\$ 50,000
Pricing Program and Mobility Improvement Package Options			
Technical Feasibility			
Revenue Estimation (iterative)			
Use of Funds (Pilot, Mobility Improvements, Enforcement)			
Alternatives Analysis			
Cost and Benefit Estimation			
Distribution/Equity Analysis (of Costs and Benefits)			
Implementation Mechanism (Iterative with Task 2)			
Develop and Apply Measures of Evaluation			
Identify Preferred Alternative and Funding Plan			
Task 7a. Pre-Implementation/Implementation	\$ 60,000	\$ 200,000	
Develop System RFQs/ RFPs			
Capital Hardware and Software			
Operations			
Procurement			
Revenue Collection, Administration, and Distribution			
Launch Pilot (Parking Assessment District Pilots at 2 locations)			
Evaluation (Parking Assessment District Pilot only)			
Subtotal	\$ 1,050,000	\$ 250,000	
TOTAL	\$1,300,000		



3.8.2 Description of all funding sources

A 20% local match of \$260,000 would be required if this proposal is accepted for funding by the FHWA. The anticipated main funding source for the local match is Prop K ½ cent transportation local transportation sales tax revenues. We will also be working with our State and regional partners such as Caltrans, MTC, and the Bay Area Air Quality Management District to identify other potential sources of funds.

3.8.3 Planned expenditures

Planned expenditures under the grant are outlined above in Figure 4.

3.8.4 Monitoring and Evaluation

The parking assessment district study and pilot will include study of “before” and “after” conditions in order to document the effect of the pilot. In addition, we note that enabling Federal legislation includes a reporting requirement related to driver behavior, traffic volume, transit ridership, air quality, and availability of funds for transit every other year for 10 years.^{xxii}

3.8.5 Plan for projects to become financially self-sustaining within 3 years

The parking assessment district programs will be designed to be self-sustaining from the start. The area-facilit(ies) pricing program will require a substantial initial capital investment but should thereafter be self-sustaining from road charging revenues.

3.9 Identification of the Legal and Administrative Authority Needed to Carry out the Proposal

The importance of addressing the legal, institutional, regulatory and administrative issues associated with the implementation of a congestion pricing program, especially in a location like San Francisco, cannot be overstated. In addition to the needed legislative authority, because of San Francisco’s position as the most important transit hub and densest employment center of the region, there will be an imperative to anticipate and address issues of jurisdiction, affecting multiple City agencies, regional carriers and state and federal agencies. These include meeting the requirements of the Federal aid planning and environmental requirements.

The Authority is ideally positioned to manage this process. As Congestion Management Agency for San Francisco, the Authority already prepares the city’s long-range transportation plan and serves as overall strategist for transportation investment, policy (in close coordination with the Mayor’s office and the legislative delegations in Sacramento and Washington, DC), and project implementation. The Authority also leads and oversees many projects seeking Federal approvals (Doyle Drive, 3rd Street Light Rail and New Central Subway). Moreover, the membership of the Authority’s governing Board is comprised of all 11 members of the Board of Supervisors of the City and County of San Francisco, and it provides membership overlap with the governing boards of the Metropolitan Transportation Commission, the Golden Gate Bridge Highway and Transportation District, the Caltrain Joint Powers Board and other public agencies which will have a stake in the outcome of the



study and in the development of a base of support for legislative or other initiatives related to the implementation of a pricing program.

The Authority has extensive experience in identifying legal issues affecting transportation programs and questions of agency jurisdiction, and it has at its disposal considerable legal acumen on City Charter issues through the San Francisco City Attorney's Office, and on state transportation policy issues through its independent general counsel.

3.10 Findings from Pre-Project Studies or Plans

Discussion and thought leadership have been developing globally in this arena for many years now. In California, this grant application has been preceded by a symposium held by the MTC in January 2004, entitled 'Roadway Pricing as Demand Management Tool'. This event witnessed a panel of experts in this field addressing a group of MTC, Authority and other government officials on the wide variety of demand management strategies available, and their positive effects in dealing with congestion. This symposium also included discussions on the application of pricing strategies in the Bay Area, including bridge tolls. At the recent International Bridge Tunnel and Turnpike Association (IBTTA) funding conference much discussion centered on the applicability of charging schemes to the US in general and to urban congestion problems in particular.

There are existing schemes in urban areas, such as London and Singapore, which provide useful models, lessons and case studies for such a feasibility study. Also in Europe, Stockholm and Edinburgh are undertaking the implementation of urban schemes, due to go live in 2006. Each of these four schemes demonstrate different technologies and pricing strategies which will prove invaluable in conducting a feasibility study into road pricing options for San Francisco.

Similarly, there have been numerous studies conducted into High Occupancy Toll (HOT) lanes and toll bridges in the State of California, and elsewhere in the United States. These also underpin the case for pricing as an option for reducing congestion, improving environmental conditions, improving transit and structuring an overall transportation system management strategy.



4 AUTHORITY CONTACT INFORMATION

San Francisco County Transportation Authority
100 Van Ness Avenue, 25th Floor
San Francisco, CA 94043
Phone: 415.522.4800
Fax: 415.522.4829
Website: sfcta.org

Tilly Chang, Deputy Director for Planning
415.522.4832
Tilly_Chang@sfcta.org



APPENDICES

- A Overview of Authority Functions**
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A OVERVIEW OF AUTHORITY FUNCTIONS

Planning

The Authority has long-range, strategic and project planning capabilities that stem from its multiple roles, as described above. As Congestion Management Agency, the Authority produces the long-range Countywide Transportation Plan. It must also develop the travel demand model and database of transportation impacts for San Francisco. The Authority also prepares Strategic Analysis Reports on emerging policy issues. As sales tax administrator, the Authority conducts planning studies to advance Prop K projects and supports other citywide transportation planning efforts.

1. Countywide Transportation Plan: The Authority adopted a long-range Countywide Transportation Plan (CWTP) in 2004 that serves as the city's blueprint for transportation system development and investment over the next 30 years. The CWTP identifies key transportation needs through an analysis of future trends and aligns these needs with projected available funding through a \$12 billion investment and funding plan.
2. Strategic Analysis Reports: These are brief reports requested by the Authority Board to help evaluate and develop policy recommendations on specific transportation issues. We prepare between three and five reports per year. Copies of the reports are available upon request, or through the Authority's website www.sfcta.org.
3. Travel Demand Forecasting: The Authority maintains a travel demand model that has been adopted by the Authority Board for use in San Francisco, to forecast the impacts of land use changes and transportation projects on the performance of the city's transportation system. The model has been certified by MTC for conformance with the regional model.
4. Corridor and other Planning Studies: The Authority prepares and reviews corridor and planning studies. For example, the Authority is leading several transit studies (Geary and Van Ness Corridor BRT Studies, Transit Origin-Destination Study) as well as neighborhood transportation planning studies (Outer Mission and Civic Center).

The Authority's modeling group is part of the Planning section. The model is used in two manners: as an internal tool for project planning and analysis, and under the auspices of the Model Service Bureau which performs model runs for external city departments and third parties. In addition, model development is continuously being performed to keep the model up-to-date with the latest data and methods available.

Fund Programming

The Authority is the administrator of San Francisco's half-cent sales tax for transportation. The program is known as Prop K. Allocations to projects and programs are made according to the specifications and priorities established in the Prop K Expenditure Plan. The plan establishes four broad categories of investment: transit, streets and roads, paratransit, and strategic initiatives. The Authority biennially updates a



Strategic Plan for the use of Prop K, intended to establish investment priorities, and to incorporate cash flow and other strategic considerations about the management of Prop K revenues, to maximize their leverage potential.

As Congestion Management Agency for San Francisco, the Authority also programs state and federal funds for transportation projects, developing in coordination with City departments the San Francisco portion of the State Transportation Improvement Program, advocating for discretionary funds from both the state and federal governments, acting as sponsoring agency, lead agency or funding advocacy lead agency on projects of regional scope, like the Caltrain Downtown Extension and Transbay Terminal and the Doyle Drive replacement project, and representing the interests of San Francisco's transportation program before the California Transportation Commission and other governmental bodies. The Authority also receives and programs the San Francisco share (40% funds Program Manager) portion of the funds from the Transportation Fund for Clean Air, which helps local jurisdictions fund transportation projects that contribute to cleaning up the air. The Authority's funding role is inextricably connected to its long range planning and project implementation support functions, since all three are part of a strategic continuum of project delivery, from planning, to funding advocacy, to programming of funds, to project development, to tracking of grant funds, to oversight of project delivery.

Project Implementation Support and Oversight

Beyond its role as a funding agency, the Authority provides project implementation support to City departments, and it must exercise an adequate level of management oversight of all projects funded by Prop K. The Authority also has project management oversight responsibilities under SB45, for project funded with state dollars. This function includes the provision or facilitation of professional service contracts to help expedite project delivery, as well as assisting sponsoring departments in negotiating multiple-party agreements for joint delivery of projects. It also includes reviewing supporting documentation for change orders or other reimbursement requests involving complex cost allocation mechanisms or technical issues. The Authority funds recurring maintenance and rehabilitation activities in addition to the construction of new projects. Our project monitoring role includes the development, maintenance and periodic update of database management tools and project control guidelines.

In some instances the Authority, as CMA, also acts as lead agency for project development and implementation. Such is the case for the Doyle Drive Replacement Project, where the Authority is in the process of completing the environmental clearances, in preparation for the engineering design phase. The Authority also plays the fiscal agent role for non-Prop K projects being implemented by the City through specific project offices, like the Octavia Blvd. project.



B 2004 Congestion Management Network Segments at LOS F

Table 1 – AM Peak Period LOS F Segments

CMP Route	From	To	Dir.	Status	Study Results
3 rd Street	China Basin	Market	N	1 st Cycle LOS F	1991: 12.1 mph (D) 2001: 9.2 mph (D) 2004: 6.3 mph (F)
6 th Street	Brannan	Market	N	2 nd Cycle LOS F	1991: C or better 2001: 4.7 mph (F) 2004: 5.5 mph (F)
7 th Street	Brannan	Market	N	1 st Cycle LOS F	1991: 8.9 mph (E) 1999: 14.2 mph (C) 2004: 6.8 mph (F)
Broadway	Montgomery	Embarcadero	E	1 st Cycle LOS F	1991: C or better 2001: 11.6 mph (D) 2004: 8.8 mph (F)
Duboce/ Division	Market	Mission	E	2 nd Cycle LOS F	1991: C or better 2001: 5.5 mph (F) 2004: 5.8 mph (F)
Duboce/ Division	Potrero	Mission	W	1 st Cycle LOS F	1991: 9.9 mph (D) 2001: 11.3 mph (D) 2004: 5.8 mph (F)
Fell	Gough	Market	E	1 st Cycle LOS F	1991: C or better 2001: 7.6 mph (E) 2004: 6.1 mph (F)
Fulton	10 th Avenue	Park Presidio	W	1 st Cycle LOS F	1991: C or better 2001: 10.4 mph (D) 2004: 6.4 mph (F)
Kearny	Market	Columbus	N	Exempt	1991: 6.3 mph (F) 2001: 12.9 mph (D) 2004: 5.4 mph (F)
Mission/Otis	9th Street	14th Street	S	Construction Activity	1991: 9.7 mph (D) 2001: 8.7 mph (E) 2004: 5.8 mph (F)
Van Ness	Washington	Lombard	N	1 st Cycle LOS F	1991: C or better 2001: 12.6 mph (D) 2004: 6.9 mph (F)
Van Ness	Golden Gate	Washington	N	1 st Cycle LOS F	1991: C or better 2001: 10.4 mph (D) 2004: 6.9 mph (F)
US-101	I-280	I-80	N	Exempt	1991: 21.4 mph (F) 2001: 28.1 mph (F) 2004: 27.8 mph (F)
I-80	Treasure Island	Fremont Exit	S	Exempt	1991: 17.5 mph (F) 2001: 28.8 mph (F) 2004: 22.3 mph (F)
I-80	Fremont Exit	US-101	SW	2 nd Cycle LOS F	1991: 48.1 mph (D) 2001: 25.9 mph (F) 2004: 24.0 mph (F)
I-80	US-101	Fremont Exit	N	Exempt	1991: 18.6 mph (F) 2001: 16.3 mph (F) 2004: 24.9 mph (F)
I-80	Fremont Exit	Treasure Island	NE	1 st Cycle LOS F	1991: 50.6 mph (D) 2001: 36.5 mph (E) 2004: 20.2 mph (F)



Table 2 – PM Peak Period LOS F Segments

CMP Route	From	To	Dir.	Status	Study Results
1 st Street	Market	Harrison	S	Exempt	1991: 1.2 mph (F) 2001: 2.1 mph (F) 2004: 2.6 mph (F)
5 th Street	Market	Brannan	S	2 nd Cycle LOS F	1991: 7.0 mph (E) 2001: 5.2 mph (F) 2004: 6.3 mph (F)
6 th Street	Market	Brannan	S	Exempt	1991: 6.7 mph (F) 2001: 6.8 mph (F) 2004: 4.4 mph (F)
6 th Street	Brannan	Market	N	2 nd Cycle LOS F	1991: C or better 2001: 6.4 mph (F) 2004: 6.6 mph (F)
Brannan	Division	9 th Street	E	2 nd Cycle LOS F	1991: C or better 2001: 4.5 mph (F) 2004: 5.4 mph (F)
Brannan	9 th Street	Division	W	2 nd Cycle LOS F	1991: C or better 2001: 1.8 mph (F) 2004: 5.0 mph (F)
Broadway	Larkin	Powell	E	2 nd Cycle LOS F	1991: C or better 2001: 11.0 mph (F) 2004: 12.7 mph (F)
Broadway	Powell	Larkin	W	2 nd Cycle LOS F	1991: C or better 2001: 11.0 mph (F) 2004: 10.6 mph (F)
Broadway	Embarcadero	Montgomery	W	2 nd Cycle LOS F	1991: C or better 2001: 4.4 mph (F) 2004: 6.9 mph (F)
Clay	Kearny	Davis	E	1 st Cycle LOS F	1991: 11.7 mph (D) 2001: 9.4 mph (D) 2004: 6.5 mph (F)
Duboce/ Division	Market	Mission	E	1 st Cycle LOS F	1991: C or better 2001: 7.5 mph (E) 2004: 6.3 mph (F)
Duboce/ Division	Mission	Market	W	Exempt	1991: 6.3 mph (F) 2001: 7.4 mph (E) 2004: 6.0 mph (F)
Fremont	Harrison	Market	N	2 nd Cycle LOS F	1991: C or better 2001: 3.2 mph (F) 2004: 5.2 mph (F)
Gough	Pine	Geary	S	2 nd Cycle LOS F	1991: 9.5 mph (D) 2001: 6.5 mph (F) 2004: 6.3 mph (F)
Gough	Golden Gate	Market	S	1 st Cycle LOS F	1991: 8.3 mph (E) 2001: 7.6 mph (E) 2004: 6.4 mph (F)
O'Farrell	Mason	Market	E	Exempt	1991: 6.9 mph (F) 2001: 4.2 mph (E) 2004: 6.7 mph (F)
Pine	Market	Kearny	W	Exempt	1991: 4.6 mph (F) 2001: 8.0 mph (E) 2004: 4.3 mph (F)
Pine	Leavenworth	Franklin	W	Exempt	1991: 4.8 mph (F) 2001: 9.4 mph (D) 2004: 6.5 mph (F)



CMP Route	From	To	Dir.	Status	Study Results
Van Ness	Golden Gate	13th	S	Exempt	1991: 4.6 mph (F) 1999: 23.1 mph (B) 2004: 5.0 mph (F)
Van Ness	13 th	Golden Gate	N	1 st Cycle LOS F	1991: C or better 2001: 18.3 mph (C) 2004: 6.6 mph (F)
US-101	I-280	I-80	N	Exempt	1991: 24.6 mph (F) 2001: 24.0 mph (F) 2004: 17.8 mph (F)
I-80	Treasure Island	Fremont Exit	S	Exempt	1991: 27.5 mph (F) 2001: 31.6 mph (E) 2004: 21.7 mph (F)
I-80	Fremont Exit	US-101	SW	Exempt	1991: 18.6 mph (F) 2001: 24.9 mph (F) 2004: 13.8 mph (F)
I-280	6 th /Brannan	US-101	E	1 st Cycle LOS F	1991: section closed 2001: 30.9 mph (E) 2004: 28.5 mph (F)
US-101	I-80	I-280	S	1 st Cycle LOS F	1991: 31.6 mph (E) 2001: 44.4 mph (D) 2004: 21.4 mph (F)
I-80	US-101	Fremont Exit	N	Exempt	1991: 19.0 mph (F) 2001: 14.8 mph (F) 2004: 10.0 mph (F)
I-80	Fremont Exit	Treasure Island	NE	Exempt	1991: 29.3 mph (F) 2001: 21.6 mph (F) 2004: 14.6 mph (F)

Source: 2004 Spring Level of Service Monitoring Report, San Francisco County Transportation Authority.



C Overview of San Francisco Travel Demand Forecasting Model

The San Francisco Model incorporates a state of the art approach to forecasting travel demand. This activity-based model is more sensitive than traditional four-step models to a broader array of conditions that influence travelers' choices. One of the fundamental differences between the San Francisco Model and traditional models is that it is *tour*-based not *trip*-based. A tour is a sequence of trips made by an individual that begins and ends at home without any intermediate stops at home, whereas a trip is a single movement from an origin to a destination. As such the model structure is more complex than the traditional four-step process. See Attachment 1, "San Francisco Travel Demand Model Development – Executive Summary" for a fuller description of the model.

The model system was designed to use the "full day pattern" activity modeling approach. Key features of this approach are:

- The use of tours as a key unit of travel.
- Joint modeling of various tours made within a person's day.
- Breaking down each tour into a chain of linked trips.
- Microsimulation of the travel for each individual in the population.

MODEL COMPONENTS

The following subsections provide very brief descriptions of some San Francisco Model components, in order to illuminate the types of information required for recalibration.

Workplace Location Choice

Each tour leaving home (home-based) or work (work-based) is modeled to have a number of stops ranging from one to nine – the primary destination and a maximum of four stops on each half tour. Following the hierarchy of trip purposes, and depending upon the time or distance traveled, one of these stops is classified as the primary destination. All other stops on the tour are considered to be intermediate stops made on the way to or from the primary destination. Two types of destination choice models are estimated – tour or primary destination choice models, that predict the location of the primary destination; and intermediate stop location choice models, that predict the locations of the intermediate stops on the tour. The traffic analysis zones are the potential alternatives of choice for these models.

The work location choice model is at the "top" of the decision tree. Therefore, this model is conditional on the variables in the Census Public Use Microsample (PUMS)-based sample, including residence location, household characteristics, and person characteristics, and origin-destination level of service. The primary destination choice models for the other purposes come further down the decision tree, and are conditional on the predicted vehicle availability, tour type (number of intermediate stops), and times of day (the time periods of the forward and backward half tours) for the tour.

The trip level intermediate stop location models are applied after all tour level models are applied. In addition, information on the number of intermediate stops on each half leg of



the tour and the specific time periods during which these trips are made are obtained by applying pertinent models prior to applying the trip destination models.

Full Day Tour Pattern Choice

The “full day tour pattern” model predicts the key inputs to the subsequent models. This model predicts:

- The purpose class of the primary tour (work, education, other, or none)
- The trip chain type of the primary tour (extra stops before, after, neither, or both)
- The frequency of home-based secondary tours (0, 1, or 2+)
- The frequency of work-based subtours (0 or 1+)

The second type of model is the time of day model for primary home-based tours. This model is conditional on the type of pattern predicted by the full day pattern model. It predicts the period when the traveler leaves home to begin the primary tour, simultaneously with the period when the traveler leaves the primary destination to return home. The time periods used for the models are defined as:

- Early (3:00 AM to 5:59 AM)
- AM peak (6:00 AM to 8:59 AM)
- Midday (9:00 AM to 3:29 PM)
- PM peak (3:30 PM to 6:29 PM)
- Late (6:30 PM to 2:59 AM)

Work-Based and Secondary Tour Type and Tour Time Period

Several models fill in the details for the secondary tours and work-based subtours, if any. These details include:

- The exact number of such tours in the day (up to 4 of each type are possible)
- The trip chain type of each tour (extra stops before, after, neither, or both)
- The departure time period combination for each tour (the same 15 categories as described above).

For tours that contain intermediate stops, models then predict:

- The exact number of intermediate stops on each tour leg (up to 4 are possible)
- The departure time period from each intermediate stop (the 5 periods above)

These models predict the structure of the activity pattern, and are estimated using full logit choice models. The remaining tour models fill in the details of the activity pattern, conditional on the predicted structure. These are simple classification models, based on observed distributions in the survey data.

Mode Choice

The mode choice models differ from traditional “trip-based” mode choice models in that there are two distinct sets of mode choice models. The tour mode choice model determines the primary mode for the tour, while the trip mode choice models determine the mode for each individual trip made on that tour, based on the mode chosen for the tour. There is one



of each model (tour and trip) for each tour purpose (Work, School, Other, and Work-Based).

The following modes are defined in the trip mode choice models:

Non-Transit Modes:

- Drive-Alone
- Shared-Ride 2
- Shared-Ride 3+
- Walk
- Bike

Transit Modes (access/egress mode – transit mode):

- Walk-Local
- Walk-MUNI Metro
- Walk-Premium *(Premium is defined as Caltrain, Ferry, and Regional Express Bus)*
- Walk-BART
- Auto-Premium
- Auto-BART

Note that each transit mode maintains the access and egress mode observed in the data, because the trip mode choice models are estimated using origin-destination trip records, as opposed to the traditional trip-based models that use production-attraction trip records.

There are almost no drive access or egress transit trips made by San Francisco residents for transit modes other than “Premium” (CalTrain, Ferries, Regional Express Buses) or BART. This is logical given the transit-rich environment in San Francisco that allows most residents walk-access to transit, and the relatively high cost and limited supply of parking.

The following modes are defined in the tour mode choice models:

Non-Transit Modes:

- Driver
- Passenger
- Walk
- Bike

Transit Modes:

- Walk-Transit
- Drive-Transit

Tour modes are defined based on the combinations of modes used for trips on tours, and reflect the fact that travelers often switch between modes on a single tour. Tour modes were coded according to the following rules:

Walk-Transit: This mode describes tours that consist of trips made by transit passengers or combinations of transit and automobile passengers. Walk trips on Walk-Transit tours are maintained.

Drive-Transit: This mode describes tours that consist of trips made by transit passengers where the access mode or egress mode is automobile, or combinations of drive-transit, walk-transit, and Automobile Passenger trips. Walk trips on Drive-Transit tours are maintained.

Automobile Driver: This mode describes tours that consist of trips primarily made by the driver of an automobile. If any trip on a tour is automobile driver, the tour



mode is coded as Auto Driver. Walk trips on Auto Driver tours are maintained. Transit trips on Auto Driver tours are recoded as the appropriate drive-transit mode.

Auto Passenger: This mode describes tours that consist of trips made entirely by passengers of automobiles. Walk trips on Auto Passenger tours are maintained.

Walk: This mode describes tours that consist entirely of trips whose mode is walk.

Bike: This mode describes tours that consist entirely of trips whose mode is either walk or bike.

The tour mode definitions listed above allow the traveler to utilize walk as a mode for trips on any tour, and allow the traveler to switch between transit modes and auto-passenger modes for trips on transit tours.

Visitor Models

The visitor models were developed by estimating destination choice and trip generation from the visitor surveys that were available for San Francisco. The mode choice model structure and coefficients were based on the Honolulu, Hawaii model development effort, since these tourist markets are somewhat similar and because the Honolulu model is one of the only visitor models estimated from visitor survey data. The visitor survey data in San Francisco did not have the available data needed to estimate mode choice models.

Time of day factors were estimated from available traffic count data at select tourist destinations in San Francisco. These were applied to generate trip tables for each of the five time periods: early AM, AM peak, midday, PM peak and evening.

Transit Services in San Francisco

Fixed route transit services in San Francisco are provided by a number of operators, including MUNI, BART, Golden Gate Transit and other ferry operators, AC Transit, Samtrans, and Caltrain.

MUNI

MUNI provides local bus, trolleybus, modern LRT, subway, historic streetcar, and cable car services throughout San Francisco. MUNI provides 24 hour service on many lines, and has over 700,000 boardings on an average weekday.

The Authority recently completed a full transit onboard survey for all scheduled MUNI lines. This rich dataset will be used in the near future for recalibrating the travel demand model, and for various planning studies. The onboard survey included origin/destination information, access and egress mode, trip purpose, fare, frequency of transit use, demographics and reason for using transit. Approximately 15,000 completed surveys are in the dataset.

The final report from the onboard survey will be available soon.

BART

Bay Area Rapid Transit (BART) provides heavy rail service for the Bay Area and San Francisco, including eight stations within the city limits. East Bay counties are connected to San Francisco via BART's Transbay Tube, and service south of the city has recently been



extended to the San Francisco International Airport and Millbrae. BART does not operate late-night service.

BART carries approximately 175,000 commuter trips to and from San Francisco on an average weekday, and many of these passengers transfer to MUNI. BART also carries more than 60,000 internal San Francisco trips.

In the San Francisco travel model, BART service is modeled as a separate, unique transit mode.

Other Transit Modes

Samtrans and Caltrain provide transit services along the Peninsula and into San Francisco. Samtrans provides commuter bus services to the Transbay Terminal, and Caltrain has four rail stations in the city: Bayshore, Paul Avenue, 22nd Street, and the Caltrain Terminal at 4th/Townsend Street. Caltrain and Samtrans do not operate late-night service to or from San Francisco. Combined, these operators carry approximately 30,000 trips to and from San Francisco on a typical weekday. However, it is expected that the recent opening of the BART extension to Millbrae and the airport will significantly alter transit ridership patterns for all three peninsula operators.

Golden Gate Transit provides bus and ferry services between San Francisco, Marin and Sonoma Counties. Golden Gate buses do not provide local services within San Francisco; rather, they only provide commuter-type services to and from the city. Average daily ridership is 30,000 passengers, over 16,000 of which are in the Golden Gate Bridge corridor. Key transfer points are the Golden Gate Bridge toll plaza and the Transbay Terminal.

AC Transit provides 104 local East Bay routes and 37 commuter bus routes from the East Bay to the Transbay Terminal in downtown San Francisco. Daily ridership on AC Transit is approximately 230,000 trips, 14,000 of which are in the Bay Bridge transbay corridor. AC Transit does not provide late-night service to or from San Francisco.

MTC Model

The Metropolitan Transportation Commission (MTC) maintains a regional travel demand forecasting model, which has been brought in-house to the Authority. To maintain consistency with MTC regional forecasts, the San Francisco model is only used to forecast trips inside the city. All intercounty movements are forecast using the MTC Model.

MTC has recently updated their model for the 2005 Regional Transportation Plan and these updates are currently being incorporated into the San Francisco Model.



D MTA Intelligent Transportation Systems Projects

The Municipal Transportation Agency (MTA) has initiated an number of technology efforts to improve quality of service and system management.^{xxiii}

SFgo Traffic Management and Transit Signal Priority Systems. SFgo is a Department of Parking and Traffic project to build a Transportation Management Center (TMC) and link it with traffic devices at key locations over a high-speed, high capacity data network.

There are approximately 1200 traffic signals within the City and County of San Francisco. The SFgo program will upgrade all the traffic signal controllers and connect them via fiber optics to the TMC. From the TMC, DPT will have the ability to implement enhanced real-time signal operations and to facilitate intelligent transit signal priority at all signalized locations. The SFgo Initial Phase consists of a model deployment in the South of Market Area (SOMA).

Phases of the program will be implemented over the next 30 years, with one of the goals being to improve MUNI's on-time performance. The new Third Street light rail route includes the traffic signal infrastructure and communications network to provide transit signal priority along the entire corridor. Transit signal priority has also been implemented along portions of the Mission St. and Geary Blvd. corridors, and will be implemented citywide in phases along with the expansion of the SFgo program and Bus Rapid Transit/Transit Preferential Streets Program.

Automated Vehicle Locator System (AVL). AVL systems are primarily used to provide real-time vehicle location information and arrival schedules to transit patrons. AVL systems are also used to assist operations managers in recovery from service disruptions, providing line managers continuous updates of vehicle locations. In addition, archived AVL data provides the basis for performance and schedule adherence analysis and reporting.

MUNI's AVL project currently provides real-time information on the MUNI metro (rail) lines and a portion of one trolleybus line (22-Fillmore). Real-time passenger information systems and reporting are key features of San Francisco's Bus Rapid Transit system. Prop K Expenditure Plan identifies a total expected investment of \$500 million in the MUNI Metro Rapid Network and Real Time Information Systems category, including \$110 million from Prop K sales tax revenues.

Wireless Radio System. MUNI has embarked on a program to replace its obsolete radio system with a state-of -the art wireless communications system. The new system will provide the wireless "backbone" to support a variety of ITS applications dependent upon reliable and high capacity communications between MUNI's Central Control and its revenue fleet. MUNI has secured a federal ITS grant for the development of procurement specifications for an ITS backbone" voice and data radio system, and is seeking funding for procurement of the replacement radio system by 2010.

ITS Vehicle projects. MUNI's new motorcoaches and electric trolleys, purchased with transportation sales tax revenues administered by the Authority, are equipped with automatic



announcements and displays of the next scheduled stop based on a GPS locator. MUNI has a project to retrofit the entire fleet with this system. In addition, MUNI is implementing a project to install automatic passenger counters (APC's) and maintenance yard wireless networking. The project installs APC's on a subset of the fleet, and the wireless network is used to acquire data from the APC equipment and other on-board systems, such as closed circuit television (CCTV) and vehicle conditions.

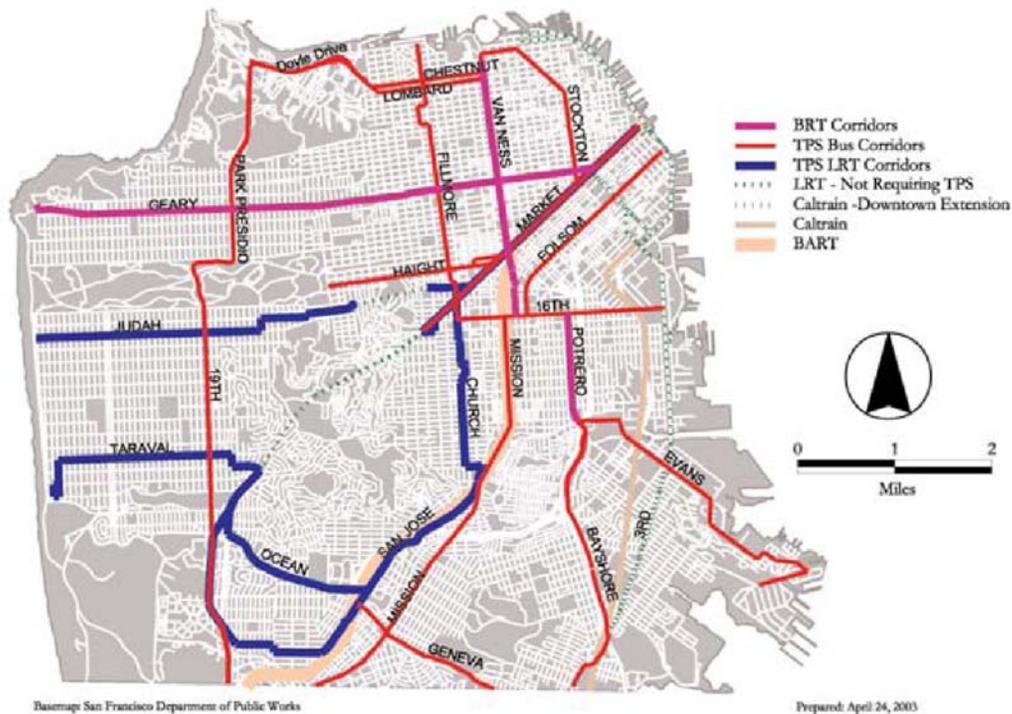
TransLink Regional Fare Card Program. TransLink is a regional fare coordination program, designed to develop a single fare instrument that can be used on all of the region's public transportation services. The goal of the program is to make transferring between operators easier for riders through the use of a single fare instrument for multiple operators. At the regional level, procurement is proceeding for a contactless "smart card" system, which the user will simply place in proximity to a card reader either on board a vehicle or at rail station.

A demonstration project using the smart card technology was completed in the fall of 2002, and was installed only on the N-Judah line. Fare equipment to read the smart cards was placed at all MUNI Metro stations and on board all Light Rail Vehicles (LRV)s. MTC and MUNI are now analyzing the demonstration project results and the planned system-wide roll-out is scheduled for Fall 2005.



E San Francisco Bus Rapid Transit Network and Transit Preferential Streets System

This proposal integrates road charging with mobility enhancements, particularly transit improvements in order to enable provision of alternatives to driving. The Prop K Sales Tax Expenditure Plan identifies development of a Bus Rapid Network and Transit Priority Corridors as a signature project. Below is a map of the Transit Priority Network:



Below is a possible vision for BRT on Van Ness Avenue, one of the facilities to be studied in this proposal. For more information about Authority’s Van Ness Corridor Bus Rapid Transit Study, please visit: <http://www.sfcta.org/vanness/index.htm>





F San Francisco Examiner Articles and Editorial

1. Published Tuesday, February 15, 2005, in the San Francisco Examiner

Toll to drive downtown? Supe suggests fee to drive in congested area.

By Justin Nyberg

San Francisco would become the first city in the nation to charge drivers just for driving in its chronically congested downtown under a sure-to-be controversial proposal being aired today.

Supervisor Jake McGoldrick, chair of the San Francisco Transportation Authority, will ask the agency to study a downtown toll zone -- whereby drivers would need to purchase a daily pass to drive in The City's most congested streets -- as a potential solution to the Municipal Transportation Agency's woeful budget problems.

"The key issue here is if we can kill three birds with one stone -- relieve congestion, clean up the air, and give money to Muni -- we would have hit a home run," McGoldrick said.

Modeled on similar "congestion charging" zones in London, cameras would record license plates and tickets would be issued for motorists who failed to purchase a pass. The intent is for drivers to pick other routes, avoid coming downtown or switch to MUNI, which would travel more efficiently in the faster flowing streets.

"When you have a situation where traffic is not moving, Muni is not moving," McGoldrick said. "If we are ever going to get Muni to move, we are going to have to get those cars out of there."

Traffic in downtown San Francisco streets has been an intractable problem since the day the Bay Bridge opened in 1936. **Several downtown streets are consistently rated "F" by the Department of Parking and Traffic for low travel speeds at rush hour.**

The study would determine the size of the toll zone, how much money it would generate and how much congestion it could eliminate.

McGoldrick's proposal comes at a politically opportune time, with MUNI considering a controversial 25 cent raise in fares, and transit activists mounting an increasingly vocal campaign to shift MUNI's budget difficulties away from the people who ride the buses.

Several long-term solutions to MUNI's budget deficit have also been floated over the past few months, including the creation of a downtown "assessment district," which would essentially impose an additional tax on property owners. But that would have to be approved by two-thirds of the voters in that district and, if it were to pass, the money would not be seen for at least a year.

Additional longer term options include other taxes -- including an environmental impact fee for vehicles driving in The City; a local vehicle registration fee; an increase in the parking tax; a special parcel tax on properties within The City; and a local gas tax. All of those options would require approval by San Francisco voters, the Board of Supervisors or the California Legislature.



Sean Comey, spokesman for the American Automobile Association in San Francisco, said a downtown toll zone would unfairly punish commuters who can't take public transit. "I don't think its going to get too much further than concept," he said.

Lee Blitch, president of the San Francisco Chamber of Commerce, worried the extra expense and hassle to get to downtown could hurt business. "We are trying to get out of the recession, but go back into it," Blitch said.

Staff writer Marisa Lagos contributed to this report.
Email: jnyberg@examiner.com

Street	Average evening speeds	Congestion Rating
First Street between Market and Harrison streets	2.6 mph	F
Fourth Street between Market and Harrison streets	9.8 mph	D
Fifth Street between Market and Brannan streets	6.3 mph	F
Sixth Street between Market and Brannan streets	4.4 mph	F
Third Street between China Basin and Market Street	7.3 mph	E

Source: Department of Parking and Transportation



2. Published Wednesday, February 16, 2005, in the San Francisco Examiner

**Toll proposal draws strong reactions
Many feel plan would relieve downtown traffic.**

By Justin Nyberg <jnyberg@examiner.com>
Staff Writer

"Making drivers pay to motor through downtown at rush hour is either a "win-win" solution to traffic congestion or a yet another hare-brained San Francisco scheme to raise its own cost of living, depending on whom you ask.

City officials, advocacy groups and commuters offered mixed reactions Tuesday to a proposed downtown toll zone -- an area where drivers would pay for the right to use chronically congested city streets.

"That's crazy," said Angelo Ibenez, 19, a student advisor at Golden Gate University and occasional downtown driver. "It's bad enough to pay for parking. But it seems plausible."

Tuesday, Supervisor Jake McGoldrick asked the San Francisco Transportation Authority to study the idea, which would be the first of its kind in the nation. The details -- such as how large the toll zone would be, how much the toll would cost -- remain to be worked out.

"I think it's a good idea. It captures fees from people who don't live in The City but use its streets on a regular basis," said Mike McMahon, 47, an investment banker from Alameda who occasionally drives downtown.

While the San Francisco Chamber of Commerce and some commuters are worried the tolls may drive business away from The City, **the Bay Area Council -- coalition of large employers -- is open to the idea.**

"It could greatly relieve congestion in the central San Francisco area, so it makes sense to study how that would work and study what the revenue would be used for," said Michael Cunningham, the council's vice president for transportation.

McGoldrick has suggested using it for public transit, bicycle and pedestrian projects, which drew the support of transit advocates. City officials were slow to take a stand on the controversial idea before a more concrete plan can be developed.

"The devil is in the details," said Board of Supervisors President Aaron Peskin, echoing comments by others, including the mayor. A similar "congestion-charging zone" in London has dramatically reduced congestion and increased transit usage.

"I'm open to exploring creative ways to raise revenues," Mayor Gavin Newsom said. "But London's not San Francisco and San Francisco's not London."

DRIVING COSTS

- Average driving cost: 49.9 to 68.9 cents per mile
- Bridge tolls: \$3 to \$5
- Monthly parking spot downtown: \$250 to \$400 (est.)
- Day parking: \$12-\$25 (est.)
- Downtown parking meters: \$2 per hour

Source: Examiner research, AAA. Reporter Jo Stanley contributed to this report.



3. Published: Wednesday, February 16, 2005 10:50 AM PST

Downtown toll zone?

Examiner View

THE SAN FRANCISCO Transportation Authority should explore the possibility of charging for automobile access to a special zone in a downtown sector of The City, says Supervisor Jake McGoldrick, who as chairman of the authority on Tuesday asked its staff to pursue federal grant funding for a study.

Drivers in such a zone would have to buy a pass, with cameras monitoring compliance. The system would be aimed at discouraging the use of cars downtown, and money from fees would be directed to The City's MUNI transit system.

It sounds farfetched, and it is unprecedented in the United States. But London, Rome and Singapore all have their own toll zones. Some smaller European cities have them as well. **And San Francisco's downtown congestion is so bad that any idea with potential to alleviate it is worth serious consideration.** As The Examiner reported Tuesday, a number of city streets have average evening commute speeds from just less than 10 mph to only 2.6 mph.

That's **not to say there are no potential drawbacks to a downtown toll zone.** While such zones are intended in part to encourage people to use public transportation, would such a zone here discourage people from going downtown at all? Downtown businesses might derive some benefit from lighter automobile traffic, but if that goes too far it might mean fewer shoppers. And what of workers who commute from places where public transportation into The City is not an option? Should some commuters get exemptions or discounts? Should shoppers be allowed free entry if they park in a city-owned garage? It also would require oversight to ensure that the money generated from the toll would not be used for other purposes, as money for the upkeep of the Hetch Hetchy water system was diverted for many years.

A downtown traffic toll is, at the least, a fresh and fascinating idea. If a study can be done with federal grant money at little or no cost to San Francisco, it should by all means be pursued. But no one should expect this idea to be easy to implement, even if it proves to be feasible. If nothing else, it would likely take a considerable effort to convince skeptical residents and businesses, along with elected officials, of the merit of such a plan before pushing it forward.

Still, transportation is one of the core challenges of life and business in San Francisco, and the people who live and work here should expect that every possible resolution will be explored. The only option that should be off the table is to do nothing.



G SF Weekly Article Calling for Raising Downtown Parking Charges

From sfweekly.com

Originally published by *SF Weekly* Feb 16, 2005

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Unbalanced Budgeting

The city's proposed parking-rate increases are a scandal. They aren't nearly large enough.

BY MATT SMITH

The San Francisco Municipal Transportation Agency -- the bureaucracy that runs our bus and light-rail systems, city-owned parking garages, and street-parking enforcement operations -- plans to raise parking fees at garages and parking meters citywide by 50 cents per hour, while raising bus and rail fares by 25 cents to \$1.50. To help patch a \$55 million budget shortfall for the Municipal Railway, the fines for illegal parking will also go up as much as \$25, depending on the infraction.

But as policy, it's the parking-fee hike that's ridiculous. It discriminates against the little guy, and it's an abuse of the powers of the commonweal.

The parking-fee increase is not nearly large enough. It should be perhaps 20 times as much. The reasons? Arithmetic and economics.

The city's proposed rate hike will take downtown metered street-parking fees from \$2 up to \$2.50 per hour. **That's an increase of 25 percent, but the rate still constitutes a subsidy of between \$5 and \$7.50 per hour to downtown streetside parkers.** That's right, California Parking Co., a private garage operator, charges \$7.50 to \$10 an hour to park in its various Financial District facilities. By definition, what those private garages charge is what the Financial District parking market will bear. The city has chosen to offer up to a 75 percent discount on that market rate at its 2,707 downtown parking meters. We're talking millions of dollars in unnecessary subsidies here.

Before you choke on the idea that charging \$2.50 per hour for downtown parking is a misguided government subsidy, contemplate the obvious (but rarely contemplated, at least in California) idea that parking spaces aren't free.

Every 150 square feet the city uses to provide a parking space at the curb rather than a wider sidewalk, a transit lane, or a greenway that reduces runoff into the bay is a piece of city property that doesn't provide space for people to walk, ride bikes, take transit, or simply enjoy. **And every time the city rents that space at a below-market rate for car parking, people are encouraged to drive, rather than move about in other ways.** Even with the meter increases, at \$2.50 per hour for convenient streetside parking the official city policy will lure motorists into our congested downtown area, which happens to be one of the most mass transit-rich neighborhoods in western North America. That's simply stupid.

"We're looking at a balanced way to share the solution," is how Stuart Sunshine, deputy executive director at the MTA, described this madly lopsided budget fix to the *San Francisco Chronicle*.

If maintaining huge downtown parking subsidies is dumb, the other half of this supposedly balanced plan -- an increase in transit fares -- is plain loony.



The picayune hike in meter fees will only make up \$13.5 million of the \$55 million MUNI budget shortfall. MUNI plans to close the rest of the gap by hiking San Francisco's current \$1.25 bus and rail fare to \$1.50, raising an additional \$24 million. The agency proposes to save another \$15 million by reducing service.

Need I mention that making it that much less attractive to ride the train and bus -- and therefore a better option to drive -- will further increase congestion downtown and anywhere else buses and trains go frequently and affordably? Transit subsidies improve our quality of life by reducing traffic and increasing access. Parking subsidies in congested, transit-served areas make that quality worse.

Rincon Hill, a neighborhood just southeast of Market and the Embarcadero, is experiencing a high-rise housing boom. The adjoining South of Market area is transforming from a derelict industrial area into a mixed-use, high-rise neighborhood with thousands of new residents.

The MTA's "balanced solution" is a budget-year fix that pays no apparent attention to what's best, long-term, for the city: reduced congestion, increased access, and better quality of life. By discouraging transit use while leaving in place incentives to drive, it sets in motion a scenario in which downtown neighborhoods, old and new, will be incrementally more choked with smelly, loud, ugly, dangerous, space-hogging automobile traffic.

That's not balanced.



H Rescue MUNI Opinion Piece

San Francisco Chronicle

OPEN FORUM

How to Make the Trains and Buses Run Rescuing MUNI's finances

Andrew Sullivan

Thursday, March 10, 2005

Another year, another MUNI budget crisis. Each year, it seems, San Francisco's Municipal Railway is stuck with hard choices on service cuts and increases in parking fees and fares, all to deal with the increasing costs of providing public transit in San Francisco.

Last week, the Municipal Transportation Agency proposed raising fares and parking fees again, for the second time in three years, to address a \$57 million budget gap -- and it is almost certain that the exact same issues will come back in the next year or two. The MUNI's operating costs, particularly labor costs such as wages, health care and retirement benefits, are rising much faster than are MUNI's revenues, and the dedicated general fund subsidy established in 1999 (Proposition E) is not sufficient to cover these cost increases.

More than in previous years, MUNI's board has taken a transit-first approach toward the budget this year, raising more (\$20 million) from projected increases in parking fees and fines as from fares (\$13 million), while cutting service less than would be required otherwise. In doing so, the board followed the voters' guidance, as expressed in Prop. E, to provide incentives to switch to the MUNI from driving.

This budget isn't ideal by any means -- transit advocates like Rescue MUNI would prefer that more come from parking and less from the riders -- but at least it keeps fares relatively low at \$1.50 -- much less than in New York City, for example, where the fare is \$2. However, this rate of increase in fares, fees and fines is not sustainable over the long haul. Unless riders want to pay \$2 or more per trip, and auto drivers can afford \$100 per parking ticket, there is a real need to find alternative sources of revenue for MUNI.

San Franciscans have repeatedly voted to fund public-transit capital projects in recent years, voting for Proposition K in 2003 to extend the half-cent sales tax for transportation, and also approving BART seismic-retrofit bonds last year. But operating funds have been historically more difficult: Voters rejected a proposed downtown transit-assessment district (Proposition O) in 1994.

So it is important that any proposal for MUNI funding have broad public support. And -- because voters have repeatedly approved the transit-first policy -- it is critical that any new source provide incentives for people to use transit instead of driving.

Two proposals that would both raise money for the MTA and encourage transit use are a vehicle environmental-impact fee (in essence, a local vehicle license fee) and an increase in the commercial parking tax. Both of these would make driving somewhat more expensive and less desirable, helping to reduce MUNI delays by reducing congestion.

According to the MUNI's own projections, a 10 percent increase in the parking tax (to 35 percent) would raise \$4.3 million for the MUNI (and \$4.3 million for the general fund, as required by the city charter), but would require approval by two-thirds of voters.



A local vehicle fee would require a change in state law, which San Mateo County recently negotiated. The revenue from this fee could be substantial: a \$100-per-vehicle fee would raise approximately \$40 million annually for MUNI, based on the Department of Motor Vehicle's tally of more than 450,000 cars in San Francisco. It would also be possible to charge larger vehicles, such as the overweight SUVs that cause excessive damage to our streets, more under such a fee; this would help improve traffic safety as well as encouraging transit ridership.

A more conventional proposal for funding the MUNI is to increase the city sales tax by another quarter percent, from 8.25 percent to 8.5 percent, with the money dedicated to MUNI operations. This would generate approximately \$32 million per year. By state law, San Francisco's sales tax is capped at 8.75 percent, so if this increase is adopted, there will be no option to increase it in the future. This is attractive for the MUNI, however, because it generates a substantial amount of revenue, and because the sales tax excludes food and rent, it is not as regressive as other taxes. The MTA could put a sales tax for the MUNI on the ballot; it, too, would require a two-thirds vote to be approved.

A final proposal that merits consideration is congestion charging, recently proposed by Supervisor Jake McGoldrick for downtown San Francisco. London, Singapore, Rome and other major cities issue paid permits to all motorists traveling downtown during business hours on weekdays, both to raise money for transit and to reduce delays. This has been a huge success in London, reducing congestion by 30 percent and bus delays by 20 percent in the downtown area, according to Transport for London.

While it would require a change in state law, congestion charging is a terrific idea for San Francisco. Even if it didn't raise a penny for the MUNI, the improvement in reliability would be huge, and the MUNI would be able to save millions in operating costs by running buses faster and more reliably.

But why should nonriders pay higher taxes and fees to support the MUNI? The answer is that reliable transit service is critical for everyone to get around San Francisco, transit riders and nonriders alike. And, of course, most auto drivers also take transit from time to time. When transit riders are driven off the MUNI by higher fares or lengthy delays, traffic increases substantially, and everyone is delayed as a result. So it just makes sense for everyone to contribute to a reliable and low-cost Municipal Railway.

A higher sales tax, an annual vehicle fee or a small congestion charge is well worth it for reliable public transportation -- and the reduced automobile traffic it brings. San Francisco voters have repeatedly voted to make San Francisco a transit-first city. It's time to put our money where our mouth is.

Andrew Sullivan is chairman of Rescue MUNI (www.rescuemuni.org), a nonprofit made up transit riders in San Francisco.



I San Francisco Planning and Urban Research on Parking

[The following are excerpts from the report. Please see the full report at http://www.spur.org/documents/050101_report_01.shtml]

PARKING AND LIVABILITY IN DOWNTOWN SAN FRANCISCO

PARKING POLICIES TO DISCOURAGE CONGESTION AND IMPROVE THE URBAN ENVIRONMENT IN THE NEW, MIXED-USE DOWNTOWN

This report was written by the SPUR Transportation Committee, Dave Snyder, committee chairman and principal author. Kearstin Dischinger, as an intern for Transportation for a Livable City, researched and wrote portions of the paper. The paper was studied, debated, and edited by the entire SPUR Board, and adopted as official SPUR policy on October 20, 2004.

THE IMPACT OF PARKING ON CONGESTION

The cost of parking and its availability, most transportation analyses agree, have the most significant impacts on travelers' mode choice.¹¹ A 1987 study that compared nearly identical buildings with different parking supplies found that solo driving occurred where parking supply was more than ample.¹² According to the Citywide Transportation Behavior Study the availability of parking is one of the three most crucial factors cited by automobile users when making travel mode decisions.¹³ **An older study of transit use for San Francisco hospitals found that the availability of parking was the second most important determinant in mode split, preceded only by parking price.**¹⁴

Numerous cities have somewhat mitigated congestion by limiting the over-development of parking spaces by instituting parking maximums instead of traditional parking minimums. Eugene and Portland, Oregon; Cambridge and Boston, Massachusetts; Seattle, Redmond, and Bellevue, Washington are among the first cities to apply parking maximums.¹⁵ Data indicate that parking maximums result in a slight increase in public transportation use and slight decreases in traffic congestion.¹⁶

Another effective parking policy to limit peak hour congestion is to eliminate subsidies for employee parking. In May 2002 the State of California adopted the "parking cash-out" law that prohibits employers from offering free parking for their employees unless they offer those employees the option to accept cash in lieu of the cost of parking. The law applies to companies in counties that do not meet California air quality standards (all but two) and that do not own their employee parking spaces, but lease them from another owner on behalf of their employees. This program is very effective. In one study of eight companies (ranging in size from 120 to 300 employees with 1,694 employees total), after employees were given the option to accept cash in lieu of free parking, solo driving to work fell by 17 percent. Carpooling increased by 64 percent. Transit ridership increased by 50 percent. Walking and bicycling increased by 33 percent. Commuter parking demand fell by 11 percent.

Through adjustments in price and supply of parking, we can reduce the commuter parking demand, and reduce peak hour traffic enough to implement the variety of transit, pedestrian, and bicycle improvements that will help downtown San Francisco to continue to flourish as it evolves into a vital 24-hour district.



RECOMMENDATIONS

Implementation of the following recommendations will help reduce automobile travel demand, by providing the right amount of parking. Implementation and enforcement of most of these measures is the responsibility of the Planning Department. However, the Mayor's Office, the Municipal Transportation Agency, and the SFCTA should also review and consider these recommendations.

1. Determine the Optimal Number of Commuter, Residential, and Short-Term Parking Spaces Relative to the Streets' Capacity to Carry Traffic

2. Implement Measures to Restrict Supply Of Parking to Optimum Limits to Prevent Peak-Hour Congestion

3. Institute Pricing Measures to Reduce Demand for Parking, Especially Commuter Parking

3a. Implement parking cash-out programs at subject employers. The state's "parking cash-out" law, which eliminated hidden subsidies for employee parking, is not being enforced. The Board of Supervisors should pass a local ordinance clarifying the law in San Francisco and insisting on its enforcement. The City of Santa Monica requires proof of conformance with the cash-out law as a condition of issuance of a building permit. The San Francisco Assessor could require proof of compliance as part of annual property tax collections.

3b. Unbundle parking costs from housing costs for housing projects of a certain minimum size. The lease or sale of housing should be legally mandated to exclude a parking space as a part of the purchase price. Parking spaces should be priced separately. This will increase the affordability of housing, reveal to consumers the true cost of parking, and allow households who do not own cars to avoid hidden parking costs. Smaller developments of fewer than 10 or 20 units should be exempt from this provision.

3c. Institute a surcharge for entering and exiting a parking facility at times of peak congestion. A surcharge that applies to the parking fee when the vehicle leaves or enters a parking garage at a peak hour would have the most direct effect on discouraging peak hour commuter traffic. Many cities are experimenting with mechanisms to tax commuters who contribute to peakhour congestion. Most recently London has applied a fee to driving within a central area cordonline during peak hours. In the 1970s Singapore first required a downtown-driving permit for automobiles that drove or parked downtown during peak periods.

3d. Increase the parking levy. Increasing the parking tax would be a more general disincentive to driving, and perhaps equally importantly, generate much needed revenue to the city. San Francisco's current tax rate of 25 percent generated \$50 million during FY 2002–03. The Charter distributes 40 percent of the revenue to the Municipal Railway, 40 percent to the General Fund, and 20 percent to the General Fund dedicated to senior services.

These mechanisms aim to charge commuters for their contribution to peak period congestion. They could be levied as a tax which would require approval by two-thirds of the voters in a ballot measure (unlike when the tax was originally imposed in 1981). Another alternative is to levy these charges as a fee, like San Francisco's transit assessment, which is a fee on developers for a development's demonstrable impact on transit operating costs. To levy a parking fee, the Board of Supervisors would have to conduct a study to determine the impact on the transportation system's operating costs imposed on by each parked car, and limit the fee to that amount.



3e. Apply a parking impact development fee in addition to the transit impact development fee. Currently, the City applies a transit impact development fee to new development in the downtown area to recoup some of the costs of providing transit service. There is no “parking impact development fee,” although the provision of parking impacts the city with costs related to congestion. As for recommendations 3c and 3d, imposition of such a fee requires a study to assess the correct amount. The City of Palo Alto is currently conducting a multi-modal transportation impact study to determine the level at which they should set their transportation impact development fee.

3f. Price all on-street parking. Much of the on-street parking in SOMA is still unregulated, and therefore provided free to users. SOMA streets should be brought in line with basic parking management strategies elsewhere in the City. Meters should replace free spaces. The Department and Parking and Traffic will have to allot funds from their budget to finance the placement of more meters on these streets. The meters, however, will quickly generate income to more than compensate for their costs. In addition, each Parking Control Officer generates a net revenue for the City.

3g. Offer reduced parking rates for carpool commuters. This measure is already happening and should be increased.

3h. Exempt City CarShare parking spaces from fees and taxes. Many San Francisco parking garages currently offer a reduced rate for commuters who participate in a carpool. Additionally drivers who participate in car sharing programs are often offered similar discounts. Car-sharing pods should be given a set number of free parking spaces at City-owned garages.

4. Change Planning Procedures to Reflect Better Understanding of Parking’s Impact on Our Transportation System

5. Implement Other Management Tools to Ease the Parking Situation and Reduce Parking Demand



J COUNTYWIDE TRANSPORTATION PLAN OUTREACH NEWSLETTER

4 SAN FRANCISCO COUNTYWIDE TRANSPORTATION PLAN

Prop B Leveraging Power (continued from p.2)
Approximately \$31 million of the project's \$180 million capital cost came from Prop B.
Complete Muni Fleet Replacement
Prop B funds leveraged 10 times their value in state and federal grants to make possible the replacement of Muni's aging fleet.

(In Millions)	Total Cost	Prop B
151 Breda Light Rail Vehicles	\$472	\$64
455 Metro Coaches	\$272	\$39
750 Trolley Coaches	\$207	\$27

Muni Metro Accessibility Improvements
 Prop B has paid for improvements to ADA-designated key stations, as well as to new stations that are not currently accessible. This includes accessible boarding platforms at 14 stations.

San Francisco County Transportation Authority
 Phone 415.522.4800 FAX 415.522.4829
 www.sfccta.org

Questions? Call
 Fred Ridel, MANAGER OF PLANNING
 415.522.4832 fred_ridel@sfccta.org



Geary Corridor
 Light rail and bus rapid transit service are being considered

Photomontage by David Vasquez

San Francisco County Transportation Authority
 100 Van Ness Avenue, 25th Floor
 San Francisco, California 94102



SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

WINTER 2003

San Francisco County Transportation Authority

Newsletter

SAN FRANCISCO COUNTYWIDE TRANSPORTATION PLAN

San Francisco County Transportation Authority
 100 Van Ness Avenue, 25th Floor
 San Francisco, California 94102
 415.522.4800
 415.522.4829
 info@sfccta.org
 www.sfccta.org

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 Maria Lombardo
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Manager of Capital Projects
 Paul Ward
 MANAGER OF CAPITAL PROJECTS
Manager of Planning
 Fred Ridel
 MANAGER OF PLANNING
Manager - Accounting & Finance
 Anil Paul
 MANAGER - ACCOUNTING & FINANCE

A Time of Opportunity
 Self-Help and the State Budget Crisis

The current State Budget deficit makes every transportation funding crisis we've seen in the past 25 years pale by comparison. As the Legislature makes ready to consider the bitter medicine proposed by the Governor to cope with the revenue shortfall, transportation will be expected to offer up substantial cuts. This crisis affords San Francisco a golden opportunity to keep its transportation program on track and to capture new federal funding. How? By reauthorizing Prop IV, the local sales tax for transportation. At the heart of the current transportation funding crisis is the Governor's Traffic Congestion Relief Program (TCRP). The TCRP gave Santa Clara County \$770 million for the BART extension to San Jose, and it gave San Francisco a \$140 million downpayment on the Central Subway and \$15 million to kick start the replacement of Doyle Drive (our access to the Golden Gate Bridge). The TCRP promised only 15 to 20% of the funding needed to actually pay for the large rail transit projects it supported, but the amounts were big enough to generate local excitement, and to ultimately make the TCRP the catalyst for the Metropolitan Transportation Commission's decision to develop the Regional Transit Expansion Plan (RTEP) adopted in December 2001. Memorializing agreements about the local, state, and federal funding shares that would be assumed for each project, the RTEP became the region's new transit expansion blueprint for the next 20 years. Thanks to a coordinated strategy by the Authority, Muni, our representatives on the MTC, and the Mayor's Office, San Francisco fared quite well in the RTEP. We secured over \$3 billion worth of projects, including the

see p.3, col.3

Bus Rapid Transit Corridors

- Muni Bus Routes
- Rail Transit Lines
- Possible BRT Routes



Bus Rapid Transit
 Cost-Conscious Approach
 Packs Performance Punch

The Countywide Transportation Plan will be the City's blueprint for delivery of transportation projects over the next three decades. While the potential projects identified to date already add up to many times the expected resources, the Authority is focusing on projects that will give San Francisco the biggest performance bang for the transportation buck. We are also focusing on deliverability issues, to make sure the projects we propose will make it through the City's tough

see p.7, col.1

Expenditure Plan Advisory Committee

The Authority Board has approved a public outreach strategy which includes the formation of an Expenditure Plan Advisory Committee (EPAC). EPAC will provide advice specific to the development of the Expenditure Plan for the reauthorization of the Proposition B local sales tax for transportation. The Committee will include members of the current Citizens Advisory Committee, the Business Advisory, and the Authority's Technical Working Group. In addition, the Board will consider applications for appointment to the EPAC during January - February. If you are interested in serving, please contact the Authority at 415.522.4800 or obtain a form from our website at www.sfccta.org.

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY



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SAN FRANCISCO COUNTYWIDE TRANSPORTATION PLAN

Bus Rapid Transit...

Performance at a fraction of the cost

environmental and design hurdles expeditiously and essentially intact. While rail expansion projects continue to be favored by the public, bus rapid transit, or BRT, provides an excellent alternative that can deliver the performance of light rail transit for a fraction of the cost. Where BRT is not warranted, the Transit Preferential Streets program provides an even cheaper, yet effective alternative.

While the cost savings are compelling, BRT is beginning to look like the right choice in a number of corridors for some commensurate reasons. It is more flexible than rail services can be implemented in stages and combined with existing bus service. It requires little infrastructure, causes little or no disruption to under-

ground utilities, and can be implemented relatively quickly, and it is a good fit with the relatively low-density neighborhoods outside of downtown, which will generate only moderate transit volumes. With permanent stations, dedicated lanes, and timed traffic signals, BRT promises to shorten transit commute times significantly. We envision the BRT network as a seamless overlay on the existing rail transit services provided by Muni, BART, and Caltrain, fully integrated with other bus routes.

As proven by similar systems in Brisbane (Australia), Ottawa (Canada), and Pittsburgh, PA, BRT has the potential to completely transform the transit experience, even in transit-rich San Francisco.

Countywide Plan Alternatives

Different Approaches Possible

The Countywide Plan is intended as San Francisco's blueprint for investment in transportation projects and programs over the next three decades. The plan comes at a critical time, as the state grapples with a major financial crisis and Congress begins to consider the reauthorization of the Federal Surface Transportation Act (TEA21) which will provide a substantial portion of the funds in the plan. The plan will also include assumptions about the reauthorization of Prop B, the local sales tax for transportation, which has been delivering improvements to San Francisco for the past 12 years. (See separate articles).

By providing a strategic context, the Countywide Plan will make it easier to identify the benefits of a reauthorized Prop B. In order to help with this task, we have defined three basic Plan alternatives. The alternatives provide distinct visions of likely transportation outcomes in San Francisco in the next 30 years, and they differ in terms of the investment emphasis they propose. All three recognize the need to maintain and reinforce the City's Transit First policy, but they differ in how the policy is implemented through project priorities.

All three alternatives include certain baseline projects, which already have identified funding commitments. All alternatives include project improvements to transit, automobile, bicycle and pedestrian facilities, and substantial amounts for maintenance and rehabilitation.

All alternatives recognize the fundamental importance of Muni service to nurture the kind of pedestrian-oriented environment that supports commercial life and safety on San Francisco's streets and makes this such a desirable place to live and work. Consequently, all three alternatives provide a response to the basic challenge of presenting Muni from

Performance Evaluation and Needs Analysis

Initial screenline analysis allows evaluation of the effectiveness of different alternatives

The Policies in the Plan

More than just projects

While the projects provide a tangible sense of what the Plan will accomplish, there will be policy recommendations in areas that are critical to the success of the Plan, including:

- > parking management
- > traffic calming
- > transit-oriented development
- > pedestrian safety
- > congestion management
- > transp. system management

Time of Opportunity...

(continued from p.1)

Central Subway, the Transbay Terminal/Caltrain Downtown Extension, and the Doyle Drive Replacement project. A major investment study for Geary Boulevard also made it into the RTEP.

While everyone knows that large transportation projects take decades to deliver, it is even more important to realize that if we suspend work on environmental and engineering studies because of the budget crisis, there will actually be nothing ready to deliver once the economy rebounds. The reauthorization of the sales tax can provide the funds necessary to keep these key projects going. As Congress considers yet another tax cut in the spring, transportation funding is likely to be affected at the federal level, as well. Demand for federal funds to build light rail projects around the country outpaces supply at least 20 to 1. This has prompted the Administration and Congress to warn project sponsors that they should plan on increasing local share to at least 50% or even 60% of the total project cost. Again, by providing that extra financial boost, a reauthorized Prop B can put the Central Subway and other key transit projects in San Francisco ahead of the pack, both in the Bay Area and nationally. A reauthorized Prop B with a well-structured program of transportation projects is the appropriate strategic response to the current crisis.

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WINTER 2001

The Prop B Transportation Sales Tax

Leveraging Federal dollars more than 2 to 1

In November 1989, San Francisco voters approved Prop B, which authorized the collection of a local half-cent sales tax for transportation improvements detailed in an Expenditure Plan. Collection of the tax began in April 1990 and was projected to generate a total of \$900 million by 2010. These funds, and the state and federal dollars they are leveraging, will result in at least \$2.2 billion worth of transportation improvement projects for San Francisco.

The Expenditure Plan, approved as part of the ballot measure, was developed by a committee of citizens, special interest groups, and transportation agencies. It apportioned the funds among four categories:

- Transit 60%
- Street and Traffic Safety 20%
- Pedestrian 1%
- Transportation System Management 19%

In the past 12 years City departments and the Authority have delivered projects that have signifi-

canly improved travel in San Francisco.

Muni F-Line Historic Streetcar Service between Castro Street and the Transbay Terminal started in 1995. In 2001 the line was extended to Fisherman's Wharf. Currently the line carries 20,000 passengers per day, twice the projected number. The \$40 million in Prop B funds leveraged another \$100 million for this project.

Muni Metro Turnback and Muni Metro Extension
The Muni Metro Turnback relieved a major train bottleneck at the Embarcadero Station. In 1998, the Muni Metro Extension (MME) brought the terminus to King and Fourth streets near the Caltrain depot, adding five new stations. Prop B's \$23.4 million leveraged \$180 million in state and federal funds.

Embarcadero Roadway
The highly successful replacement Freeway was completed in conjunction with the Muni F-Line and the Muni Metro Extension.

becoming just a commuter-serving transit system, instead seeking to preserve and enhance transit as a viable and competitive choice for all kinds of trip purposes. Links to complementary modes, such as walking and biking, and seamless connectivity to regional transit are particularly emphasized.

Maintenance and Efficiency (MAE)
This alternative focuses on optimizing the transportation system we have, supporting certain cost effective enhancements, increasing safety for pedestrians and bikers, finding appropriate ways to deal with street congestion and parking demand management, and above all, focusing on providing reliable transit service.

Enhanced Transit Corridors (ETC)
This alternative proposes to aggressively focus on bus rapid transit projects in corridors where the investment is justified by large expected ridership increases, linked to population increases favored by forward-looking changes such as those proposed in the City's Better Neighborhoods program. On a parallel track, we propose operational and capital improvements that, although less glamorous than BRT, would work

in concert to result in a generalized improvement in transit's competitiveness as a transportation mode throughout the city for all trip purposes.

A main feature of this alternative is the focus on less expensive projects, which can be delivered in the first 5 to 10 years of the plan, to jump start transit's ability to capture new ridership and obviate the need for driving in some key travel markets.

Major Rail Transit (MRT)
The MRT alternative envisions an ambitious and optimistic scenario where we focus on major expansion of the city's light rail transit network. This alternative requires major land use and development policy actions to ensure that transit ridership would increase to a level sufficient to justify the high cost of the rail projects. This alternative is the most dependent on the influx of new revenues, beyond the reauthorization of Prop B.

A Point of Departure
The three alternatives are a point of departure for the discussion of transportation investment priorities in general, and of priorities for the use of the additional funds that may result from a reauthorization of Prop B in particular. Both discussions are critical, since the Prop B reauthorization alone does not suffice to address all expected transportation funding needs.

Evaluating Alternatives

Performance-based Approach

When it comes to evaluating possible Plan alternatives, performance is the buzzword. With input from the Citizens Advisory Committee, City departments, and transit carriers, we have developed a number of performance measures, to help with the quantitative and qualitative evaluation. Many of these measures can be obtained from the Authority's travel forecasting model. What are we looking for?

- Travel Time**
Measurable travel time reductions
- Cost Effectiveness**
Reasonable cost per ride
- Person Throughput**
People (not vehicles) moving potential
- Accessibility**
Better access to employment/activity centers
- Connectivity**
Linkages within and between systems
- Equity**
Benefits for all socio-economic groups & areas
- Safety**
Safety improvements for all system users
- Alternative Mode Share**

In a Nutshell

Baseline Projects

All alternatives include projects that already have significant policy-level commitments. In some cases we still need to define the amount of local dollars that will be prioritized to them. Some examples:

- Central Subway - \$700M
- Caltrain Downtown Extension and Transbay Terminal - \$1.8B
- Doyle Drive Replacement - \$500M
- Caltrain Electrification - \$800M

Maintenance and Efficiency Alternative (MAE)

In addition to maintenance and rehabilitation of the existing street and transit infrastructure, this alternative would concentrate investment in performance-enhancing projects such as:

- Street Reinforcing Backlog - \$320M
- Trolley Coach Refresh - \$325M
- BART Seismic Retrofit - \$100M
- Caltrain Rehab - \$130M

Enhanced Transit Corridors Alternative (ETC)

Building on the MAE concept, this alternative includes BRT corridors in addition to TFS treatments on several key streets. Some examples:

- Geary Corridor BRT - \$120M
- Van Ness Ave BRT - \$63M
- Centralized Traffic Signal Control - \$122M
- Transit Preferential Streets - \$110M
- Trolley Bus Replacement - \$100M

Major Rail Transit Alternative (MRT)

This alternative emphasizes rail transit services. Some key projects:

- Geary Subway/Barbosa LRT - \$1.7B
- Van Ness/Mission LRT - \$805M
- Geneva/Ocean LRT - \$150M
- Caltrain RT/ELI Express Service - \$163M
- BART Rail Car Replacement - \$400M



ENDNOTES

ⁱ San Francisco County Transportation Authority (SFCTA), Congestion Management Program Spring 2004 Level of Service Monitoring Report, July, 2004.

ⁱⁱ D. Schrank and T. Lomax, "The 2004 Mobility Report", Texas Transportation Institute, September 2004, p. 12.

ⁱⁱⁱ SFCTA, Expenditure Plan and Sales Tax Reauthorization EIR, p. 3-18

^{iv} SFCTA, 2004 Countywide Transportation Plan, July 2004, p. 40. <http://www.sfcta.org/cwtp.htm>

^v Snyder, D. and San Francisco Planning and Urban Research Transportation Committee, "Parking and Livability in Downtown San Francisco" October, 2004.

^{vi} Shoup, Donald, "The ideal source of local public revenue", Regional Science and Urban Economics 34, October 2003.

^{vii} "By definition, what those private garages charge is what the Financial District parking market will bear. The city has chosen to offer up to a 75 percent discount on that market rate at its 2,707 downtown parking meters. We're talking millions of dollars in unnecessary subsidies here." Matt Smith, "The city's proposed parking-rate increases are a scandal. They aren't nearly large enough." SF Weekly, February 16, 2005.

^{viii} A key resource has been the publication Developing Traveler Information Systems Using the National ITS Architecture. US Department of Transportation, Intelligent Transportation Systems Joint Program Office, August 1998.

^{ix} **Variable pricing** is a subset of value pricing that involves changing the value of the price over time. The most common variable pricing scheme is the one currently implemented by the SR91 Express Lanes: time-of-day pricing. A subset of variable pricing is **dynamic pricing**, in which the pricing changes based on feedback from the system (most commonly real-time feedback). The FHWA and states have funded over 50 demonstration, evaluation, and implementation projects for dynamic pricing across the U.S. since 2000. California, Florida, Minnesota, Oregon, and Washington have been most actively developing dynamic pricing projects and continue to lead the way with an increasing numbers of studies occurring over the next year or two. In the U.S., corridor projects and HOV-HOT lane conversion projects receive the most attention. In California, I-15 is demonstrating dynamic pricing and SR-91 is demonstrating variable pricing by time of day. Cambridge Systematics. 2005.

^x In February 2003, the largest and most extensive road pricing project in the world launched in London. Vehicles are electronically charged a flat fee (now ranging from £5 to £10, depending on time of payment^x) between the hours of 7:00 a.m. and 6:30 p.m. to enter the CBD during weekdays. According to one study (Deloitte & Touche LLP, 2003), traffic speeds have increased 37 percent, congestion has dropped 40 percent during charging hours, and round-trip travel times have reduced 13 percent. These results have led to a flood of interest from other cities (European and some American). Historically, several cities in Europe have had some form of CBD charging or restrictions, including Trondheim (Norway), and Stuttgart (Germany). With the success of the London scheme, several cities are considering converting existing restrictions or initiating new projects, including Edinburgh (United Kingdom) and Stockholm (Sweden). CSI Value Pricing Paper.



^{xi} The Authority has created and maintains complex financial models to support decision-making for managing the Prop K Strategic Plan, a 30-year sales tax program that includes substantial borrowing. The Authority maintains a credit rating of AA-.

^{xii} For example, Seattle has implemented this policy.

^{xiii} The use of public-private models is discussed in DeCorla-Souza and Barker, "Innovative Public Private Partnership Models for Road Pricing/BRT Initiatives", Journal of Public Transport, January 2005.

^{xiv} Discussed in 2004 Countywide Transportation Plan, Chapter 5, based on the work of Shoup, see Kolozsvari and Shoup's documentation of Pasadena's demonstration of the parking assessment district concept in "Turning Small Change into Big Changes", Access No.23, Fall 2003.

^{xv} With 10 mph speeds, London launched its "congestion charging zone" Feb. 17, 2003. Between 7 a.m. and 6:30 p.m., driving into an eight-square-mile section of the city center requires a \$10 pass -- purchased ahead of time online, over the phone or at places throughout the city. A network of more than 700 cameras photograph vehicles' license plates and computers issue violations of at least \$90 for drivers who failed to buy the pass by midnight. Six months after the system went on line, traffic was reduced by 18 percent, with a 30 percent reduction in cars and 20 percent increase in buses and taxis, according to the Commission for Integrated Transport, an advisory body to the British government. An average of 10,000 people now pay the charge each day. An estimated \$1.5 billion in toll revenue it is expected by 2008 and the system is expected to cost London about \$944 million by the same date. Justin Nyberg, "London's experiment a success" SF Examiner, February 15, 2005.

^{xvi} At least 8 San Francisco neighborhoods are considering establishing "community benefit districts" in which property owners vote to tax themselves in order to provide services above and beyond those offered by city government (a parking assessment district overlay could add incremental parking revenue to the sources of funding for desired enhancements). Adriel Hampton, "Community benefit districts catch on" San Francisco Independent, February 26, 2005.

^{xvii} We note that Federal authorizing legislation for the FHWA Value Pricing Program enables funds to be used for transit - provided transit is required to mitigate the impacts on low-income drivers - in which case it is considered a "project cost"Section 1012(b)(7) of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), as amended by 1216(a) of the Transportation Equity Act for the 21st Century (TEA-21).

^{xviii} Justin Nyberg "Toll to drive downtown? Supe suggests fee to drive in congested area," San Francisco Examiner, February 15, 2005.

^{xix} San Francisco Examiner Editorial, "Downtown toll zone?", February 16, 2005.

^{xx} Justin Nyberg "Toll proposal draws strong reactions- Many feel plan would relieve downtown traffic." San Francisco Examiner, February 16, 2005.

^{xxi} The budget amount reflects the fact that the proposed initiative is comprised of a road pricing study plus a parking pricing study/pilot. Consequently, the budget addresses the categories called out in the FHWA application only for those categories that are applicable. For example, it does not address the "after" assessment or "long term monitoring" for the road pricing portion, since those would require that there first be some form of implementation.



^{xxii} Section 1012(b)(5) of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), as amended by 1216(a) of the Transportation Equity Act for the 21st Century (TEA-21).

^{xxiii} Municipal Transportation Agency, Short Range Transportation Plan FY 2004-2023, pg. 43, 48-49. The MTA includes the Department of Parking and Traffic and the Municipal Railway (MUNI), which operates the local transit system within the city limits of San Francisco.