



# Memorandum

**Date:** 07.13.16 **RE:** Plans and Programs Committee  
July 19, 2016

**To:** Plans and Programs Committee: Commissioners Tang (Chair), Farrell (Vice Chair), Avalos, Breed, Peskin and Wiener (Ex Officio)

**From:** Jeff Hobson – Deputy Director for Planning *JH*

**Through:** Tilly Chang – Executive Director *TC*

**Subject:** **ACTION** – Recommend Adoption of the San Francisco Parking Supply and Utilization Study Summary Report

## Summary

Congestion is an ongoing issue in San Francisco, affecting its goals of Livability, Economic Competitiveness, and Healthy Environment, as defined in the San Francisco Transportation Plan. At the time of adoption of the Mobility, Access, and Pricing Study (MAPS) in 2010, the Transportation Authority Board and other stakeholders requested that staff examine policies that address parking demand and supply to see if these policies could serve as an alternative or complement to cordon based pricing. The Parking Supply and Utilization Study (PSUS) evaluated the feasibility of several parking-related strategies for congestion reduction through shifting trips from auto to non-auto modes (mode shift) or shifting trips to less congested time periods (peak spreading). PSUS found that the evaluated parking strategies perform modestly in mitigating area-wide congestion, and were less effective than the preferred cordon pricing scenario examined in MAPS. Rather than further pursue any of the strategies analyzed in the Study, PSUS recommends that agencies pursue current parking related initiatives, including the Residential Parking Permit Evaluation and Reform Project and implementation of the city's proposed Transportation Demand Management Ordinance. PSUS also recommends that the Transportation Authority evaluate the outcome of its ongoing pricing and demand management initiatives, including the Treasure Island Mobility Management Program and the Freeway Corridor Management Study, before further pursuing cordon based pricing initiatives in downtown San Francisco. The enclosure is a summary report for the Study.

## BACKGROUND

Improving mobility and managing congestion are important elements in sustaining San Francisco's role as a growing social and economic center. According to the Texas Transportation Institute's 2015 Urban Mobility Scorecard, the San Francisco-Oakland urban area experienced the country's third-highest yearly hours of delay per auto commuter in 2014. The most recent Congestion Management Program Update in 2015 indicated increased congestion on the arterial roadway and freeway network in San Francisco. With high projected housing and job growth in northeastern San Francisco, travel demand will continue to increase. The core network can only accommodate approximately half of the motorized vehicle demand increase forecasted for 2040 before reaching perpetual gridlock during peak periods.<sup>1</sup> In addition

<sup>1</sup> San Francisco Transportation Plan 2040 – Appendix C: Core Circulation Study. The "core" refers to the Downtown, South of Market (SoMa), and Mission Bay neighborhoods.

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Given these critical challenges, the Transportation Authority Board and stakeholders requested that staff explore how policies that address parking demand and supply could help manage congestion. The Study was funded by the Federal Highway Administration through the Value Pricing Pilot Program, the Metropolitan Transportation Commission, and the Proposition K Half-Cent Sales Tax for Transportation. The enclosed Parking Supply and Utilization (PSUS) Summary Report provides an overview of the study, its methodology, and findings.

An earlier Transportation Authority effort, the Mobility, Access and Pricing Study (MAPS), examined the feasibility of cordon-based pricing, which involves charging drivers a user fee to drive into or out of specific congested areas or corridors during certain times of day, and using the revenue generated to fund transportation improvements. MAPS found that congestion pricing would be a feasible way to meet San Francisco's goals for sustainable growth.

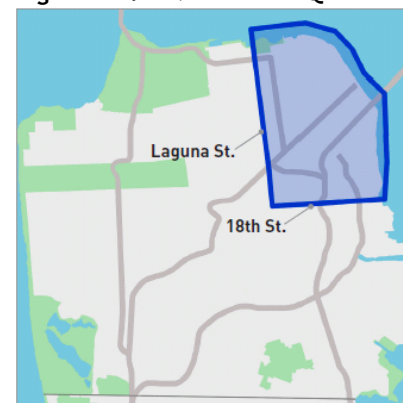
More recently, the San Francisco Municipal Transportation Agency (SFMTA) conducted the SFpark pilot program, which tested a new parking management system at many of San Francisco's metered on-street spaces and City-owned parking garages. The SFpark evaluation demonstrated that demand-responsive pricing can improve parking availability and yield secondary benefits, including reduced local congestion and mobile emissions.

## DISCUSSION

PSUS evaluated the feasibility of several parking-related strategies for congestion reduction through shifting trips from auto to non-auto modes (mode shift) or shifting trips to less congested time periods (peak spreading). Key performance metrics for the study included a reduction in single occupancy vehicle mode share along with a reduction in vehicle miles traveled (VMT) and vehicle hours of delay (VHD) during the peak periods. To better inform the evaluation, the Study also performed data collection and estimated the total supply of off-street nonresidential parking spaces.

PSUS examined results for the city as a whole and a downtown focused area called the Northeast Quadrant. The Northeast Quadrant was defined based on the cordon boundaries that the MAPS study identified in its top-performing scenario. This area is bounded by Guerrero Street/Laguna Street to the west, 18th Street to the south, and San Francisco Bay to the north and east. Using the same geographic boundaries

**Figure 1: Northeast Quadrant**



<sup>2</sup> San Francisco Transportation Plan 2040 – Appendix C: Core Circulation Study. The “core” refers to the Downtown, South of Market (SoMa), and Mission Bay neighborhoods.

here in this study offers the opportunity to examine selected differences in transportation performance outcomes between cordon pricing and parking strategies.

**Parking Supply:** PSUS developed a parking supply model to estimate the amount of off-street, nonresidential parking. The model estimated undocumented parking supply that might not be reflected within existing data sets, focusing particularly on privately accessible parking. The existing Off-Street Census collected as part of SFpark extensively documents publically accessible parking lots and garages plus some privately accessible lots and garages. Additional data sources, including parking garage operator surveys, were collected as part of PSUS.

The supply model predicted a relatively low number of nonresidential, off-street parking spaces and locations beyond what the extensive SFpark Off-Street Census and parking operator survey already documents in the Study Area. This parking is likely to exist at parking garages or lots that are not readily advertised as publically available parking, such as permit holder only or customer only parking. Table 1 shows that the model estimated 172,000 non-residential off-street spaces citywide.

**Table 1: Estimated Number of Off-Street, Nonresidential Parking Spaces by Geography and Census Status, Median Supply Model Result**

	CENSUS	MEDIAN UNDOCUMENTED ESTIMATE	TOTAL
Study Area	84,100	3,300	87,400
Outside Study Area (extrapolated)	81,500	3,100	84,600
Citywide (extrapolated)	165,600	6,400	172,000

**Strategy Evaluation:** At its onset, PSUS compiled a list of candidate parking strategies through literature review, discussions with San Francisco stakeholders and other City agencies. The team then screened the strategies based on 1) effectiveness – i.e., a strategy’s potential to meaningfully reduce drive-alone mode share and congestion, and 2) ability to evaluate – i.e., the availability of tools (e.g., travel demand model, analytical best practices) and data to sufficiently measure a strategy’s impact. Table 2 below lists the 13 strategies carried forward for evaluation, grouped into four categories discussed in the remainder of this section: Fee-Based, Bulk Discount Elimination, Supply, and Cashout. The PSUS Technical Report contains a more extensive list and more detailed description of all candidate strategies considered and the screening process.

**Table 2: Evaluated Parking Strategies**

CATEGORY	STRATEGY	TRIPS AFFECTED	TIME PERIOD
Fee-Based	Annual parking space fee: fee passed onto driver	Unsubsidized work, Nonwork trips that park in NE zone	24-Hour
Fee-Based	Flat all-day fee	Unsubsidized work, Nonwork trips that park in NE zone	All-Day
Fee-Based	Flat peak fee	Unsubsidized work, Nonwork trips that park in NE zone	AM/PM Peak
Fee-Based	Universal parking access fee	All non residential trips that park in NE zone	AM/PM Peak or All-Day <sup>3</sup>
Bulk Discount Elimination	Monthly discount elimination	Unsubsidized work, Nonwork (all of SF)	24-Hour
Bulk Discount Elimination	Monthly and hourly discount elimination	Unsubsidized work, Nonwork (all of SF)	24-Hour

<sup>3</sup> The all-day timeframe spans the AM Peak, Midday, and PM Peak (6:00 a.m.-6:30 p.m.).

Bulk Discount Elimination	Parking sales tax bulk discount elimination incentive	Unsubsidized work, Nonwork (all of SF)	24-Hour
Bulk Discount Elimination	Parking fee bulk discount elimination incentive	Unsubsidized work, Nonwork (all of SF)	24-Hour
Supply	SFMTA garage redevelopment	All trips that park in SF	24-Hour
Supply	Parking supply cap	All trips that park in SF	24-Hour
Supply	Parking supply cap and trade	All trips that park in SF	24-Hour
Cashout	Increased cashout enforcement	All trips that park in SF	24-hour
Cashout	Expanded cashout law	All trips that park in SF	24-hour

**Findings:** Across the different strategy types, the parking scenario model results showed modest performance improvement of a relatively similar amount. Figure 2 depicts the overall mode splits for each scenario, including the baseline, during the AM Peak in the Northeast Quadrant. The bars show how reduced drive-alone trips redistribute among remaining modes. In the \$6 peak fee scenario, for instance, drive-alone and carpool trips decreased by 2.5 and 0.7 percentage points whereas transit and nonmotorized trips increased by 2.2 and 1.0 percentage points.

**Figure 2: AM Peak, To/From/Within Northeast Quadrant Trip Mode Share by Scenario**

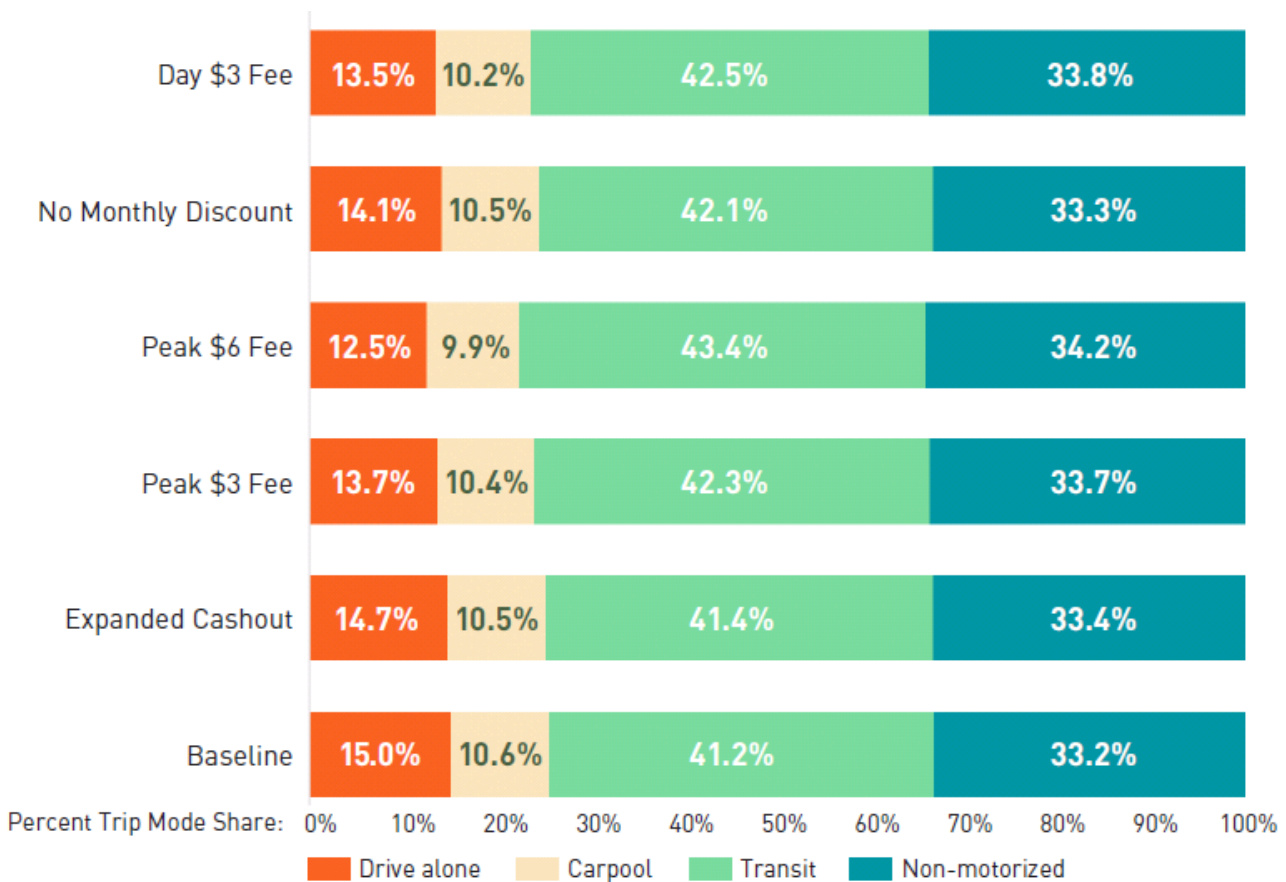
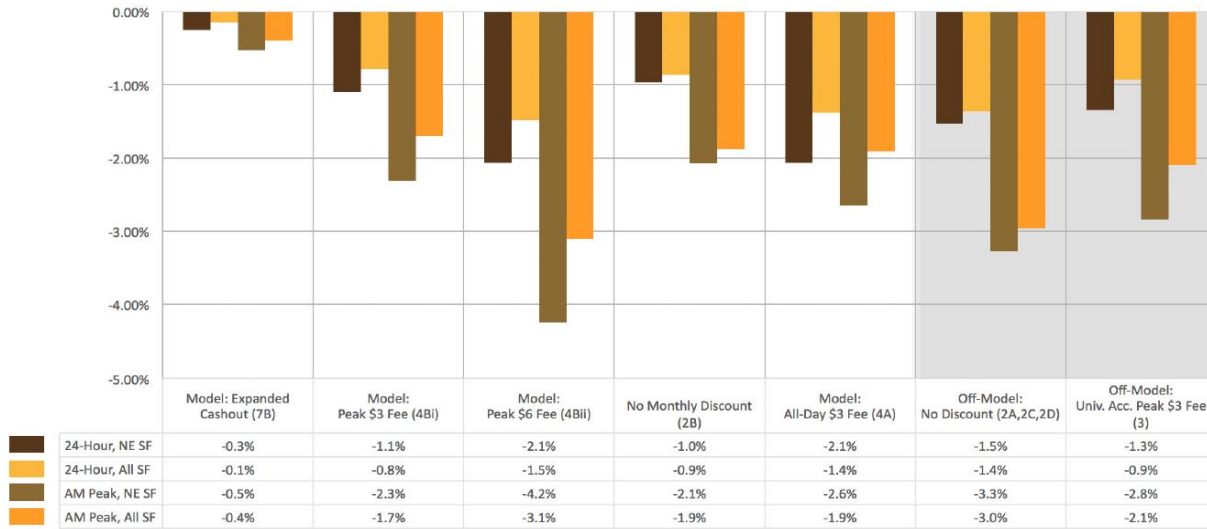


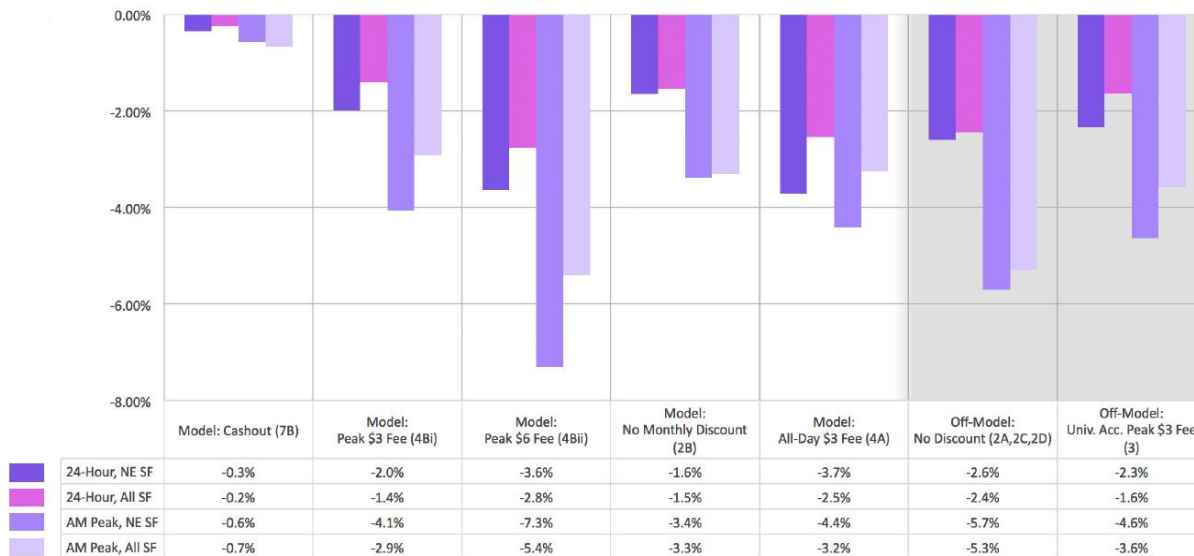
Figure 3 shows percent change in VMT, and Figure 4 shows percent change in VHD. Most of the strategies had a similar effect on the key congestion metrics. The \$6 peak fee showed the strongest effect, reducing VMT by 4.2% and VHD by 7.3% in the Northeast Quadrant during the AM peak. Eliminating employer-paid parking had lower VMT and VHD reductions in the SF-CHAMP output than most of the

other scenarios.

**Figure 3 Percent Change in VMT**



**Figure 4 Percent Change in VHD**



**Comparison of Cordon Pricing versus Parking Pricing:** Comparing the parking strategies to the MAPS preferred scenarios is challenging since the modeled cordon pricing scenarios had significant transportation investments, which made alternative modes more attractive than the baseline. However, the study team did analyze the performance of a cordon pricing scenario (\$3 peak fee for autos crossing the cordon during the AM and PM peak periods) without the transportation investments in order to compare the performance of a cordon based approach versus a parking fee based approach. The results indicate that cordon based pricing would likely be significantly more effective (more than 2x) in reducing VMT and VHD as well as having a greater influence over mode shift for fees of similar amount (i.e., the Peak \$3 Fee). The higher effectiveness of cordon based strategies can be explained by the fact that the downtown parking strategies do not apply directly to the approximately 110,000 daily vehicle through trips with origins and destinations outside the pricing or policy area (close to 50,000 of which occur during the AM and PM peak periods; an additional 70,000 vehicle trips – 30,000 during the AM and PM peak periods –

pass through the policy area by traversing freeways). In addition, those pass-through driving trips may be more sensitive to price changes since they are not paying the higher parking costs typical for downtown destinations. Therefore, from a technical standpoint, cordon pricing may be a more effective tool at managing congestion than the parking based approaches and may be easier to implement since all equipment and collection can be done in the public right of way and does not involve the development of equipment in or for private garages.

**Conclusion:** PSUS found that the evaluated parking strategies perform modestly in mitigating area-wide congestion, and were less effective than the preferred cordon pricing scenario examined in MAPS. This may, in part, be a reflection on the off-street parking environment in downtown San Francisco. Parking is already priced high due to market demands, and an existing 25% parking tax. As a result, much of the impact on demand that could be made using off-street parking pricing has already happened. While some of these strategies could be part of a larger congestion management effort within a changed political context, this study recommends development of ongoing parking related initiatives, including the SFMTA's Residential Parking Permit Evaluation and Reform Project<sup>4</sup> and implementation of the Transportation Demand Management (TDM) Ordinance as part of the Transportation Sustainability Program.<sup>5</sup> The latter program requires land use developers to include onsite demand management measure to reduce VMT and project related transportation impacts by offering alternatives to single occupancy driving. The most effective measure (and therefore the most incentivized) is to reduce on-site parking. However, as part of the larger TDM approach, the changes to parking are likely to be even more effective. This Study also recommends continued piloting and evaluation of pricing based approaches to demand management such as the Treasure Island Mobility Management Program,<sup>6</sup> the Freeway Corridor Management Study,<sup>7</sup> and BART Perks<sup>8</sup> pilot program. Based on the results of those programs and the near and long term approaches to congestion, San Francisco agencies could consider further pursuit of other pricing initiatives, including revisiting cordon based pricing.

## ALTERNATIVES

1. Recommend adoption of the San Francisco Parking Supply and Utilization Study Summary Report, as requested.
2. Recommend adoption of the San Francisco Parking Supply and Utilization Study Summary Report, with modifications.
3. Defer action, pending additional information or further staff analysis.

## CAC POSITION

The CAC was briefed on this item at its June 22, 2016 meeting and unanimously adopted a motion of support for the staff recommendation.

## FINANCIAL IMPACTS

There is no financial impact to the Transportation Authority's adopted FY 2015/16 budget or the proposed FY 2016/17 budget from the requested action.

## RECOMMENDATION

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<sup>4</sup> [www.sfmta.com/projects-planning/projects/residential-parking-permit-evaluation-reform-project](http://www.sfmta.com/projects-planning/projects/residential-parking-permit-evaluation-reform-project)

<sup>5</sup> [www.tsp.sfplanning.org](http://www.tsp.sfplanning.org)

<sup>6</sup> [www.sfcta.org/timma](http://www.sfcta.org/timma)

<sup>7</sup> [www.sfcta.org/fcms](http://www.sfcta.org/fcms)

<sup>8</sup> [www.sfcta.org/BART-perks](http://www.sfcta.org/BART-perks)

Recommend adoption of the San Francisco Parking Supply and Utilization Study Summary Report.

Enclosure:

1. San Francisco Parking Supply and Utilization Summary Report