

**CITY AND COUNTY OF SAN FRANCISCO
BOARD OF SUPERVISORS**

BUDGET AND LEGISLATIVE ANALYST

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POLICY ANALYSIS REPORT

To: Supervisor Mar
From: Budget and Legislative Analyst
Date: March 31, 2014
Re: Impact of Private Shuttles



SUMMARY OF REQUESTED ACTION

Pursuant to your request, the Budget and Legislative Analyst has analyzed the impact of private shuttles on the City and County of San Francisco's infrastructure costs, traffic and traffic delays in San Francisco, pedestrian safety, and housing costs along the shuttles' routes.

EXECUTIVE SUMMARY

- Private shuttle buses have been operating in San Francisco for approximately 30 years providing intra-city transportation services for hospitals, academic institutions, service organizations and private employers. These type shuttles tend to be smaller vans.
- Starting in 2004, private employers began offering regional commuter shuttle services to their employees who live in San Francisco and work in locations outside San Francisco, particularly in Silicon Valley. In 2004, one employer transported 155 passengers on shuttle buses; as of August 2012, a Metropolitan Transportation Commission study identified at least seven employers sponsoring 131 regional shuttle buses and transporting an estimated 4,015 passengers to job sites outside the City each work day. These regional shuttles tend to be larger 45-foot long buses.
- No comprehensive assessment has been completed by San Francisco Municipal Transportation Agency (SFMTA) or other City or other public agencies on the full impacts of private shuttles on City infrastructure costs, traffic and traffic delays, pedestrian and bicyclist safety or housing costs along the shuttles' routes. The Budget and Legislative Analyst has reviewed a number of surveys, studies and estimates prepared by or for SFMTA, the San Francisco County Transportation Authority, the Metropolitan Transportation Commission and graduate students and worked with the Department of Public Works to collect and prepare some initial estimates of impacts, including the following:
 - The Department of Public Works and a Metropolitan Transportation Commission study both show that the large regional shuttle vehicles have significantly more impact on street repair costs than regular passenger vehicles, smaller shuttles such as vans and semi-trailer trucks ("big rigs").
 - Observations by a Metropolitan Transportation Commission (MTC) consultant at 15 bus zones used by shuttles and Muni vehicles found an average of .48

conflicts that occurred every hour in which either a Muni vehicle or a shuttle couldn't access a bus zone because they were blocked by the other. This average rate of conflict was spread over six hours of observed commute hours so the conflicts may be occurring more frequently during peak periods such as between 7:45 a.m. and 8 a.m. and less frequently than the average at the tail ends of the commute hours.

- The consultant also observed shuttles blocking traffic by loading and unloading passengers from traffic lanes, or blocking traffic lanes by not pulling fully into a bus zone. The greatest number of observations of a shuttle not pulling fully into a bus zone was six times per hour at Lombard and Fillmore Streets; the greatest number of observations of a shuttle loading or unloading passengers in a traffic lane was three and one-half times per hour at Glen Park BART.
- Safety impacts on pedestrians, bicyclists and disabled passengers have not been comprehensively assessed by any City agency but members of the public have submitted observations to SFMTA including: shuttles blocking Muni buses and causing passengers to board in the traffic lane; shuttles not yielding to pedestrians; shuttles turning into multiple lanes of traffic to make a turn; shuttles speeding; shuttles making noise in quiet neighborhoods; shuttles blocking bicycle lanes, and others.
- The MTC study cited above reported that 23 percent of observed shuttle stops at 4th and Townsend Streets blocked the bike lane at that location; no bike lane blockings were observed during observations of shuttle stops at 8th and Market Streets. Correlations between higher rents and higher property appreciation rates in areas adjacent to regional shuttle stops have been found in two recent studies.

Neither study proved that shuttle stops were the sole cause of these cost differentials as the studies did not control for other amenities that may make the neighborhoods more desirable. Despite the studies' limitations, it appears that neighborhoods and areas with shuttle stops are in demand, are commanding higher rents than adjacent areas, and that at least some shuttle passengers are living in those areas. In fact, 57 percent of respondents to a survey of shuttle riders reported living less than a 10-minute walk from their shuttle stop.

- The City and County of San Francisco ("the City") has limited legal authority over shuttles. Shuttles are regulated and licensed by the California Public Utilities Commission (CPUC). Neither the CPUC nor any City agencies require shuttle providers to report the number of buses they operate, the number of stops they make or the number of passengers they transport.
- To pick up and drop off their passengers, intra-city and regional shuttles typically use a combination of white-curbed passenger loading zones and red-curbed bus zones operated by the San Francisco Municipal Transportation Agency primarily for Muni buses and trolleys.

Statistics for Shuttle Operations:	
# Years Intra-City Shuttles Operating in SF	30 years
# Years <i>Regional Commuter</i> Shuttles Operating in SF	10 years
# Companies Sponsoring Regional Shuttles	17+
# Regional Shuttle Vehicles Operating in SF	131+
Estimated # Weekday Passengers Using Regional Shuttles	4,015+
Street Maintenance Impacts: Pavement Stress Index per Trip Caused by...	
Sport Utility Vehicle	1
Delivery Truck	442
Bus or Regional Shuttle	7,774
Shuttle Operations Observed by Consultant at 15 bus zones:	
Average # Conflicts between Muni & Shuttles Accessing Bus Zones	.48/hour
Highest Observed Rate of Shuttles not Fully Pulling in to Bus Zone	6/hour
% Shuttles Observed Blocking Bike Lanes @ 4 th & Townsend	23%
% Shuttles Observed Blocking Bike Lanes @ 8 th & Market	0%
Housing Impacts	
Frequency of higher rents within ½ mile of shuttle stops	70% areas surveyed
% surveyed shuttle riders who would move closer to workplace if no regional shuttles	40%
Regional Shuttle Benefits:	
Reduction: Vehicle Miles Travelled	43 million/year
Reduction: Greenhouse Gas Emissions	8,500 metric tons/year

Sources: San Francisco Municipal Transportation Agency, San Francisco County Transportation Authority, Metropolitan Transportation Commission, UC Berkeley City and Regional Planning Department Graduate Students, Budget and Legislative Analyst.

- Use of white-curbed zones for passenger loading and unloading by private shuttles is legal; use of red-curbed bus zones for that purpose is not. The practice has been allowed for many years with only a small number of citations issued by SFMTA and the Police Department for these infractions. SFMTA policy has been to monitor bus zones as resources allow and issue citations if a shuttle is causing particular problems such as blocking a Muni bus.
- To address coordination of Muni vehicles and shuttles using City bus zones, SFMTA is initiating a Commuter Shuttle Policy and Pilot Program in 2014. The program will allow shuttle providers that provide certain services such as transport from home to work to share 200 bus zones under specific conditions. The Program will be in effect for 18-months during which time shuttle providers will need to receive a permit from SFMTA

and agree to certain conditions to use the stops including reporting the number of shuttle vehicles they will be using and number of stops anticipated. Results will be monitored by SFMTA to determine if all shuttle providers are complying with the terms of the permits and if the program is having negative effects on Muni operations and traffic flow.

POLICY OPTIONS

- The Budget and Legislative Analyst has prepared a number of policy options for consideration by the Board of Supervisors regarding shuttle operations and the Pilot Program. Detailed at the end of this report, they include the following potential actions for the Board of Supervisors:
 - Provide input on additions or deletions to SFMTA's proposed performance metrics for the Pilot Program to address issues such as: impact on Muni bus operations and traffic flow; shuttle impact on bike lanes; shuttle impacts on disabled passengers and pedestrians; and collisions involving shuttles.
 - Prior to commencement of the Pilot Program, provide input to SFMTA on acceptable threshold amounts for each Pilot Program performance metric such as what rate of shuttle-Muni bus conflict is acceptable.
 - Request that SFMTA consider alternative approaches to shuttle operations if the Pilot Program does not result in successful coordination with Muni operations including:
 - Prohibiting shuttles from using City bus zones by allowing them to only use white-curbed loading zones.
 - Requiring or encouraging shuttle providers to only use a limited number of centralized locations in the City for passenger loading and unloading, with passengers getting to those locations by means other than shuttles.
- 4. Request that SFMTA incorporate size, weight, safety feature and vehicle design requirements into the Pilot Program, either before the Program commences or after it commences and performance metric data is collected and reported that documents the need for such restrictions.
- 5. Request that SFMTA limit Pilot Program shared bus zones only to those on streets without bike lanes.
- 6. Request that SFMTA require that all shuttle providers that participate in the Pilot Program receive specific training on bicyclist and pedestrian safety issues.
- 7. Request that SFMTA require shuttle providers to enter into Community Benefits Agreements with the City to mitigate adverse impacts of the shuttles if there is evidence of such demonstrated during the Pilot Program.
- 8. Consider submitting to the voters a ballot measure to impose a special tax on some or all shuttle providers to raise funds to improve local public transportation, street repair, affordable housing or other impacts of the shuttles.

For further information about this report, contact Fred Brousseau at the Budget and Legislative Analyst's Office.

BACKGROUND

Private shuttles have been operating in the City and County of San Francisco (“the City”) for at least 30 years. One of the oldest running private shuttle fleets is operated by the University of California, San Francisco which transports students and faculty to, from and between its multiple campuses.

There are four major types of privately provided shuttles that operate in the City:¹

1. Local employer shuttles that provide circulation services between transit hubs and employer locations in San Francisco;
2. Institutional shuttles provided by hospitals, academic institutions, parks, and retail associations that provide transportation to and from transit hubs or within their own campuses;
3. Community based organization shuttles, which offer services that pick up their clients at or close to their homes and take them directly to a service location; and
4. Employer-provided regional shuttles which travel longer distances between San Francisco and locations outside the City, mostly for daily commutes.

The private shuttles referred to in this report are shuttles that are privately operated, hired by an employer or institution, and offer restricted access; they do not offer service to the public. The first three shuttle types are intra-city shuttles, meaning they transport people within the borders of the City while the fourth type of shuttle listed, the regional shuttle, transports people between San Francisco and various other cities, mostly in Silicon Valley. The size of private shuttles vary depending on the service being provided and range from smaller mini-vans to 45-foot, double-decker motor coaches. The shuttles used for regional commuting are typically larger motor-coaches that seat 52 to 81 passengers.

Employers and other organizations provide shuttles for a variety of reasons which include: discouraging driving due to a lack of on-site parking capacity, providing an additional benefit to their employees, filling service gaps in local or regional transportation systems, reducing employee commute times, helping recruit and retain skilled workers who live in cities that are relatively far from their job sites, complying with the City’s Commuter Benefits Ordinance, or complying with mandatory planning stipulations as a condition of their original site development approval as required by the city in which the company is located.²

¹ The San Francisco County Transportation Authority’s (SFCTA), *Strategic Analysis Report: The Role of Shuttle Services in San Francisco’s Transportation System*, Final SAR 08/09-2, Approved June 28, 2011.

² Ibid.

Currently, centralized regulation or reporting requirements for shuttles are not in place in the City so San Francisco Municipal Transportation Agency (SFMTA) staff does not have a precise count of the number of shuttles in operation, number of employers offering shuttles, number of stops used, number of runs per shuttle, or number of daily passenger boardings onto shuttles. However, SFMTA staff report that they know of 17 employers or institutions that sponsor regional shuttle service and 20 employers or institutions that sponsor intra-city shuttle service. However, there are likely more as shuttle service providers are not required to register or report their activities with SFMTA. Some shuttle providers have confidentiality agreements with certain clients that prohibit them from sharing their clients' identity.

In most cases, employers or institutions sponsoring transportation services contract with a transportation company that owns and operates the bus or other vehicle used for the service. However, at least one employer, Google, owns their own shuttle buses.

Combined information from a 2012 survey conducted by ICF International for the Metropolitan Transportation Commission (MTC) and information collected from certain employers by the Budget and Legislative Analyst in March 2014 found that seven of the companies that provide regional shuttles for their employees, shown in Exhibit 1 below, are responsible for approximately 131 regional shuttles in the City each weekday. These shuttles make at least 273 runs and account for approximately 8,030 passenger boardings each weekday, or an estimated 4,105 individuals, assuming each boarding is for a round trip commute.³ The actual number of shuttles and boardings is probably higher since not all shuttle providers have been willing to provide this information to public agencies.

³ ICF International is the Metropolitan Transportation Commission's (MTC) consultant that developed, conducted and analyzed a shuttle rider survey in 2012 and collected information from shuttle service providers.

Exhibit 1: Number of Vehicles, Boardings and Runs on Select Regional Shuttles per Weekday in San Francisco

Company Name	Number of Shuttle Vehicles	Total Number of Boardings¹	Shuttle Runs⁴
Google	57	4,400	180
Apple	15	1,568 ⁵	57
Genentech	40	1,332	n/a
Facebook	9	400	12
Yahoo!	5	200	14
Netflix	3	130	6
Electronic Arts	2	n/a	4
Total	131	8,030	273

Source: ICF International Survey on Commuter Shuttle Services in San Francisco, 2012, and data collected by the Budget & Legislative Analyst's Office in March of 2014 from Netflix and Electronic Arts.

¹ Boardings are one-way trips that either begin or end in San Francisco. If each boarding is by commuters making a daily round trip from San Francisco to their place of employment, the 8,030 boardings would represent approximately 4,015 individuals.

Current SFMTA data about all known shuttle service, including both regional and intra-city shuttles, shows that there are about 35,000 passenger boardings on shuttles on an average weekday.

Private shuttle service in San Francisco has grown quickly in recent years according to SFMTA. In 2004, Google was the first company to provide a regional, private shuttle service to its employees that made two stops in San Francisco and transported 155 passengers each day to work sites outside the City.⁶ Today, Google operates approximately 57 buses, makes 180 runs and stops in multiple locations in the City each day.⁷ ⁸ Shortly thereafter, Yahoo! began shuttle service in 2005, Genentech in 2006, Apple in 2007, Facebook in 2009, and Netflix in 2012. Electronic Arts, eBay and LinkedIn began sponsoring shuttle service from the City to their Silicon Valley locations in the last decade as well. Several of these employers also sponsor shuttles to provide services to Peninsula and South Bay locations for employees from the East Bay, Santa Clara County, the Peninsula and from Caltrain stations.

Though precise shuttle routes, timing and stops are not recorded or known by SFMTA, Stamen, a San Francisco based technology and design firm, developed the map in Exhibit 2 which graphically shows routes and trip volumes for a sample of runs made by

⁴ This includes both morning and evening shuttle runs.

⁵ ICF International estimated this amount based on the number of seats per shuttle as Apple would not provide boarding information, stating it was confidential.

⁶ Danielle Dai and David Weinzimmer. Riding First Class: Impacts of Silicon Valley Shuttles on Commute & Residential Location Choice. University of California, Berkeley- Department of City and Regional Planning. Working Paper UCB-IT-WP-2014-01, Last updated February 2014.

⁷ A run is the completion of one trip, with a beginning and end point along a pre-defined route.

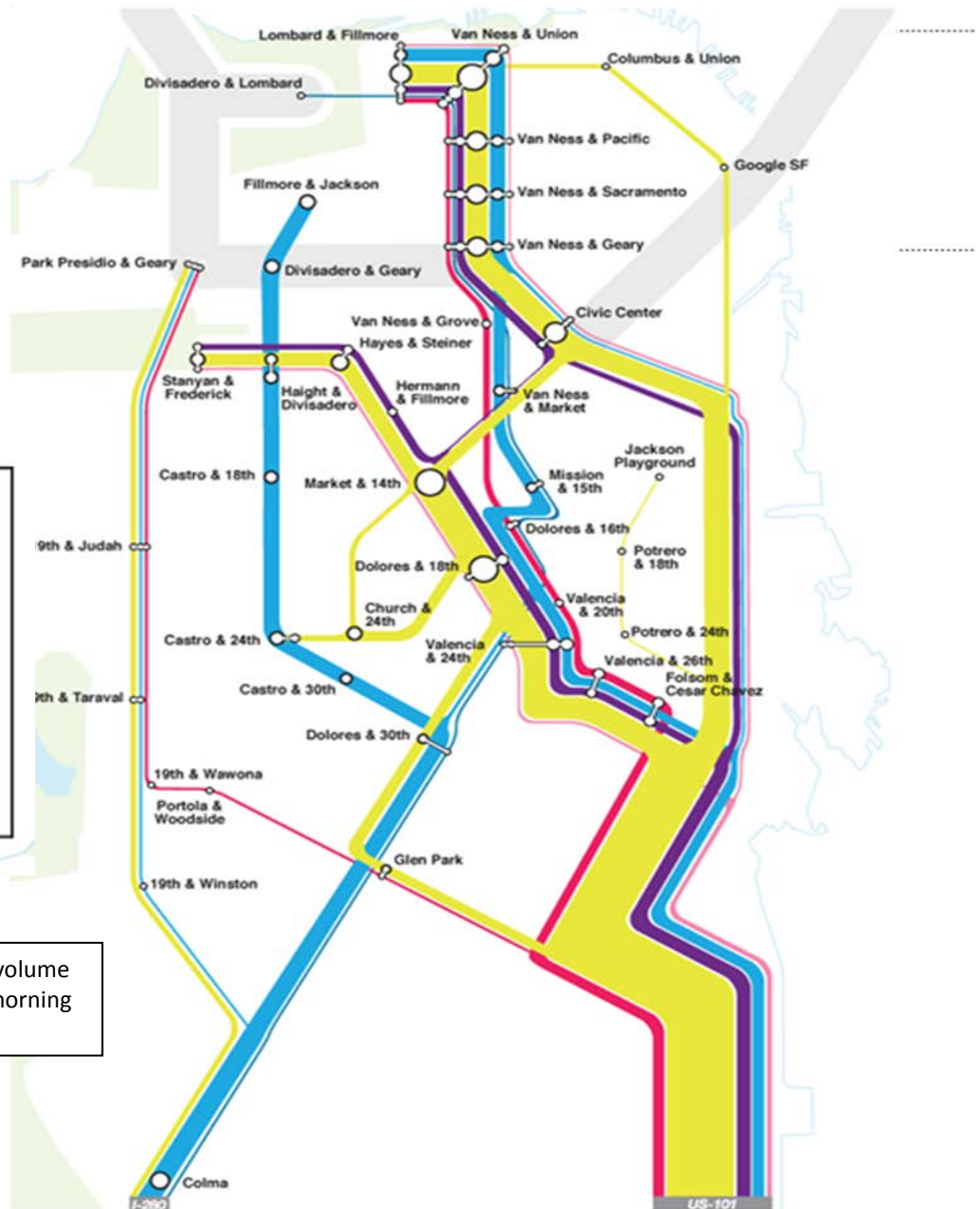
⁸ ICF International Survey on Commute Shuttle Service in San Francisco, 2012.

shuttles transporting employees of Apple, eBay, Electronic Arts, Facebook, Google, and Yahoo!'s. Stamen staff collected information about private regional shuttle operations at various stops and followed shuttles on bicycles to determine specific shuttle routes to create the map.

Exhibit 2: Map of
Employer Provided
Private Shuttle
Stops, Volume and
Estimated Route



Note: Line thicknesses represent volume of regional shuttle traffic during morning and afternoon commute hours



Source: Stamen, *The City from the Valley*, 2012

Stamen staff cautions that the map in Exhibit 2 is not a literal representation. Though, Stamen observed 91 stop events made by the private regional shuttles at various stop locations throughout the City, which can be seen in Exhibit 3 below, the map in Exhibit 2 only shows a portion of the stops to make the map more visually understandable. Stamen staff noted that some of the locations where they observed private shuttles stop to load or unload passengers were in bus zones and some were not.

Exhibit 3: 91 Stop Events Observed by Stamen, 2012



Source: Stamen, *The City from the Valley*, 2012.

Two graduate students from the University of California, Berkeley, collected data on shuttle volume along the Van Ness Avenue corridor as part of their graduate research at the Department of City and Regional Planning.⁹ The graduate students report that there are approximately 26 shuttles per weekday morning (defined as the period between 7:00 a.m. and 9:00 a.m.) making stops along Van Ness Avenue between Union and Market Streets (shown in Exhibit 2 as separately captured by Stamen based on their observations). The graduate students noted that the distribution of arrival times tends to have a strong peak between 7:45 a.m. and 8:00 a.m., with a shuttle arriving about once every one to two minutes during that time period.

PRIVATE SHUTTLE SECTOR REGULATION

The California Public Utilities Commission (CPUC) Regulations

The City has limited authority over private shuttle operations as charter-party carriers are regulated and licensed to operate by the California Public Utilities Commission (CPUC).¹⁰ The CPUC grants shuttle providers the authority to operate within the State of California and requires that shuttle providers comply with certain safety, training and vehicle inspection regulations. All of the private shuttle companies discussed in this report should be licensed by the CPUC. The CPUC does not require, and the City does not have the authority to require, that shuttle providers report to them how many buses they operate in San Francisco, their number of passengers, how many stops they are making or the locations of those stops. As a result, comprehensive data about all shuttle operations in San Francisco is not collected or available from either the CPUC or SFMTA.

SFMTA Regulation

Although the CPUC rather than the City has regulatory authority over private shuttle operations, the City Attorney reports that the SFMTA has authority to regulate the use City bus zones and what buses can stop in them. The authority for permitted shuttle buses to utilize City bus zones was exercised through amendments to the City's Transportation Code in January 2014 establishing the Commuter Shuttle Pilot Program, discussed further below. Prior to that, private shuttles were prohibited by State law from using City bus zones. The City also has authority to regulate the types of vehicles allowed on individual City streets.

⁹ Dan Howard and Mark Dreger.

¹⁰ A charter-party carrier (TCP) charters a vehicle, on a prearranged basis, for the exclusive use of an individual or group. Charges are based on mileage or time of use, or a combination of both. Also falling under the TCP category are round-trip sightseeing services, and certain specialized services not offered to the general public, such as transportation incidental to another business and transportation under contract to a governmental agency, an industrial or business firm, or a private school.

On January 21, 2014, the SFMTA Board of Directors approved the Commuter Shuttle Policy and Pilot Program (Pilot Program) which authorizes permitted private shuttles to share bus zones with Muni buses and provides operating guidelines to minimize impacts on Muni and other transportation modes. Prior to this Pilot Program, the use of bus zones by private shuttles was unregulated by the City. SFMTA staff report that issues with commuter shuttles to date have been addressed on an ad-hoc basis instead of according to a City-wide policy. Despite the lack of City regulations specific to private shuttles, there are several policies currently in place that apply to private shuttles. These policies, as well as the City's enforcement practices, are discussed below.

The California Vehicle Code

Private intra-city and regional shuttles typically load or unload passengers at white curbed zones or red curbed bus zones. Section 7.2.27 of the San Francisco Transportation Code authorizes all types of vehicles to stop in white zones to load or unload passengers for a period not to exceed five-minutes. Until Pilot Program permits are issued to shuttle providers, stopping and loading or unloading passengers in a bus zone is illegal for any buses other than those operated by Muni or other transit systems so authorized by SFMTA, according to Deputy City Attorney Mr. David Greenburg. The Pilot Program will authorize permitted shuttles to use certain City bus zones.

The prohibition against private shuttles and vehicles stopping in bus zones is codified in Division 11, Chapter 9, Section 22500(i) of the California Vehicle Code:

“No person shall stop, park, or leave standing any vehicle whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or official traffic control device, in any of the following places:

- (i) *Except as provided under Section 22500.5,¹¹ alongside curb space authorized for the loading and unloading of passengers of a bus engaged as a common carrier in local transportation when indicated by a sign or red paint on the curb erected or painted by local authorities pursuant to an ordinance.*

“Common carriers in local transportation”, as cited in the California Vehicle Code section above, are not defined in the California Vehicle Code. However, the Public Utilities Code defines “common carriers” as entities that provide transportation to the public or any

¹¹ 22500.5. Upon agreement between a transit system operating buses engaged as common carriers in local transportation and a public school district or private school, local authorities may, by ordinance, permit school buses owned by, or operated under contract for, that public school district or private school to stop for the loading or unloading of passengers alongside any or all curb spaces designated for the loading or unloading of passengers of the transit system buses.

portion thereof for compensation”.¹² This definition appears to exclude private shuttles as they are not available to the public for compensation but are restricted to private groups such as a company’s employees in the case of regional and intra-city commuter shuttles.

Mr. Greenburg noted that SFMTA currently allows other carriers such as SamTrans, Golden Gate Transit and AC Transit to use certain bus zones. The Budget and Legislative Analyst concludes that this is consistent with the California Vehicle Code as these other transit agencies appear to meet the definition of “common carriers in local transportation”.

As stated above, Mr. Greenburg of the City Attorney’s Office advises that prior to adoption of SFMTA’s Commuter Shuttle Policy and Pilot Program in January 2014, there was no explicit legislative authorization for shuttles to use City bus zones. In other words, all use of City bus zones by private shuttles to date has been in violation of the California Vehicle Code.

The penalty for violating the California Vehicle Code section cited above is an infraction and a \$271 fine according to Section 303 of the San Francisco Transportation Code. Citations can be issued by San Francisco Police Department (SFPD) police officers, SFMTA Parking Control Officers, Transit Supervisors and Taxi Inspectors, California Highway Patrol officers, City College, University of California and Recreation and Park Department enforcement agents.¹³

Despite the fact that shuttles have not been given authorization by ordinance to stop in bus zones, SFMTA staff report that regional and intra-city private shuttles make an estimated 4,121 stops in over 200 bus zones each weekday. If Section 22500(i) of the California Vehicle Code was enforced for every single private shuttle stop that occurs each day, it would amount to \$1,116,791 in fine revenue each day (4,121 stops x \$271). This assumes that there would be enough authorized agents to issue all of these citations and that the behavior of shuttle bus drivers would not change after receiving their first citation.

Based on data provided by SFMTA staff, from January 1, 2011 to February 25, 2014 there were 13,385 citations issued for illegally stopping in a bus zone. An estimated 45, or 0.3 percent, were issued to shuttle bus providers or companies that owned their own shuttle fleet and provide either intra-city or regional transportation service. Two of the 45 citations were issued by the SFPD, 38 were issued by SFMTA enforcement agents and five by video enforcement.

¹² California Public Utilities Code Sect. 211.

¹³ City College, University of California and Recreation and Park Department enforcement agents can only issue citations in City parks, University of California and City College campuses.

SFMTA staff report that Agency management has never directed its Parking Control Officer staff not to cite shuttles that illegally stop in bus zones. However, according to SFMTA's Enforcement Manager, it is the Enforcement division's practice to *not* cite shuttles stopped in bus zones if they are actively loading or unloading passengers. The Enforcement Manager noted that if a shuttle is stopped in a bus zone and is not actively loading or unloading passengers and is interfering with a Muni bus attempting to use the zone, impeding the flow of traffic and creating a safety hazard for other vehicles, pedestrians and bicyclists, they risk receiving a citation. The Enforcement Manager advises that due to limited enforcement resources to monitor every bus zone and other responsibilities such as on-street parking enforcement, SFMTA Parking Control Officers use their discretion to determine whether to cite for bus zone violations, based on the criteria outlined above.

SFPD representatives also state that there has been no specific direction from management to officers regarding citing shuttles that stop in bus zones. An officer has the discretion to cite for any violation which is personally witnessed taking into consideration the totality of the situation. As such, if an officer on duty views a shuttle bus, limousine, or private vehicle stopped in a bus zone in violation of the Section 22500(i) of the California Vehicle Code, officers have the discretion to cite or admonish the violation. That said, the SFPD representatives noted that bus zone violations have to be placed in priority order. SFPD has a Traffic Unit with officers that focus more on traffic enforcement; however, these officers also respond to other types of calls for service.

The San Francisco Transportation Code

Another way that the City has authority over private shuttle operations is through Section 501 of the San Francisco Transportation Code, which can be amended to restrict certain types of vehicles on City streets. Currently, the Transportation Code restricts vehicles that weigh over 6,000 pounds (three tons) and vehicles that weigh over 18,000 pounds (nine tons) from driving on certain streets in the City with the exception of emergency vehicles and some other vehicles. Section 503 of the San Francisco Transportation Code restricts commercial passenger vehicles that seat more than nine persons (including the driver) used for the transportation of people for profit upon certain streets as well. Regional shuttles currently in operation typically weigh anywhere from 54,000 pounds (27 tons) to 62,000 pounds (31 tons) when fully loaded with passengers and have 52 to 81 seats so they are currently precluded from use of certain streets identified in the City's Transportation Code.

According to SFMTA staff, the purpose of the three ton restriction is to prohibit trucks and buses from driving on quiet, low-volume streets while the nine on restriction allows smaller trucks and buses to use certain streets, but not large trucks. The nine person commercial vehicle restriction allows trucks on certain streets but does not allow tourist

oriented buses and vans. Typically, these types of restrictions are imposed after a request is made to SFMTA by local residents. SFMTA staff will review the request and recommend amendments to the Transportation Code to impose such restrictions when they find that certain vehicle types are creating disturbances such as noise on certain streets.

Seven City residents voluntarily submitted complaints to SFMTA between FY 2011-12 and March 2014 reporting that private shuttles were driving on restricted streets. The San Francisco County Transportation Authority (SFCTA) reported in a 2011 study that there were six weight-restricted streets that large shuttles may have been traversing.¹⁴ Though this information suggests that some private shuttle buses have been unlawfully driving on restricted streets, there is no comprehensive data available from City agencies on the frequency of such occurrences Citywide. SFMTA staff report that incidents of using restricted streets has decreased since FY 2010-11 as staff has been working with private shuttle providers to make them aware of the street restrictions and with SFPD's Commercial Vehicle Unit to enforce compliance with restricted streets.

The San Francisco Planning Department and the Department of the Environment

Another form of City regulation over private shuttles is through the San Francisco Planning Department, which may require developers to provide shuttle service as a condition of approval for a development project. Depending on the development, the developer may be required to provide shuttle service during specific times to supplement existing transit services.¹⁵ Other cities' planning departments, such as those in the cities in which companies who provide private shuttle service are located, may also have these type of requirements. However, the requirements of other cities for companies in their jurisdictions to reduce the number of trips generated by their employees may not consider any negative impacts of their requirements on other jurisdictions such as the City and County of San Francisco.

The San Francisco Department of the Environment enforces the Commuter Benefits Ordinance which requires employers with more than 20 employees in San Francisco to offer their employees commuter benefits which could include providing transportation to employees such as a company-funded bus or van service.

¹⁴ The San Francisco County Transportation Authority's (SFCTA), *Strategic Analysis Report: The Role of Shuttle Services in San Francisco's Transportation System*, Final SAR 08/09-2, Approved June 28, 2011.

¹⁵ Ibid.

IMPACTS OF PRIVATE SHUTTLES

Although there may be multiple positive and negative impacts caused by private shuttles operating in the City, this analysis focuses on the private shuttles' impacts on the following: (1) City infrastructure, (2) traffic congestion, (3) pedestrian and bicyclist safety, (4) neighborhood quality of life conditions, and (5) housing costs.

City Infrastructure

Street Damage

According to a report conducted by the Metropolitan Transportation Commission (MTC) on the condition of streets and roads in the Bay Area, heavier vehicles such as buses and trucks put significantly more stress on pavement than regular vehicles.¹⁶ The larger 45-foot shuttles that are typically used for regional commuting weigh anywhere from 54,000 pounds (27 tons) to 62,000 pounds (31 tons) when fully loaded with passengers,¹⁷ while smaller shuttles typically used for intra-city trips weigh about 14,000 (7 tons) to 20,000 pounds (10 tons) when fully loaded with passengers. According to SFMTA, fully loaded Muni buses and trolleys range from 40,000 pounds (20 tons) to 63,000 pounds (31.5 tons).

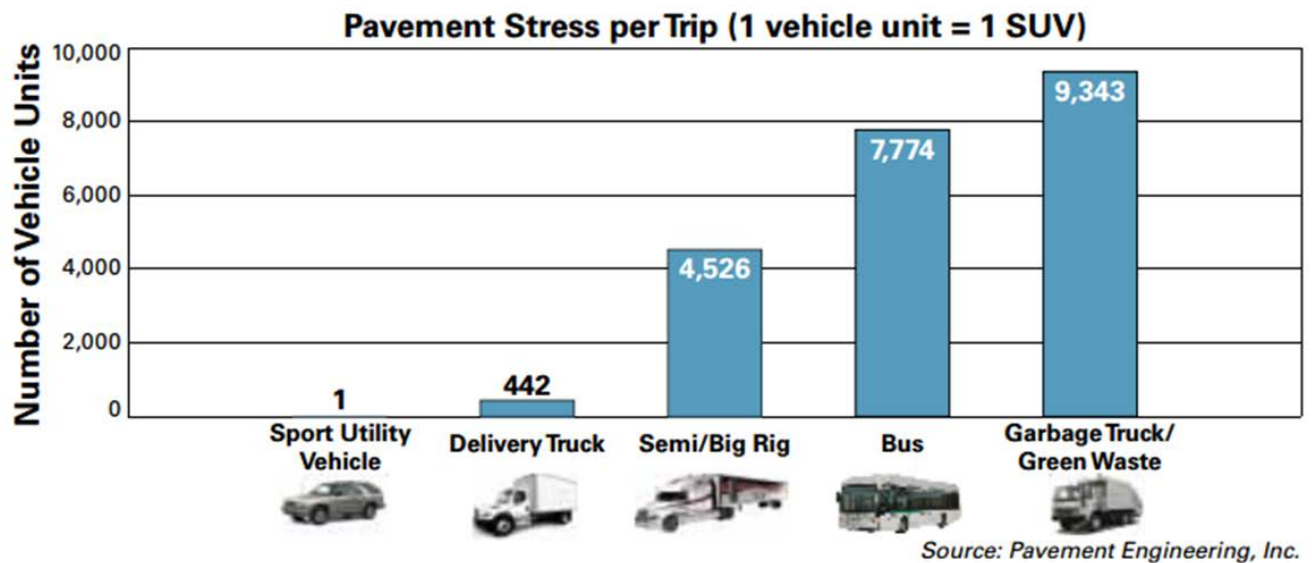
The MTC compared the relative stress caused by different sized vehicles on streets using a sport utility vehicle (SUV) as the baseline. The MTC found that a semi-trailer truck (big rig) exerts 4,526 times more stress on pavement than an SUV, while a bus such as a Muni bus or large shuttle bus exerts 7,774 times more stress on pavement than a SUV, as shown in Exhibit 4 below.¹⁸

¹⁶ Metropolitan Transportation Commission. The Pothole Report: Can the Bay Area Have Better Roads? June 2011.

¹⁷ Apple charters 45 foot MCI-E series shuttles that weigh 54,000 pounds fully loaded. Facebook currently charters at least one double-decker bus. The VanHool TD925 double decker bus weighs 62,000 pounds fully loaded.

¹⁸ Metropolitan Transportation Commission. The Pothole Report: Can the Bay Area Have Better Roads? June 2011.

Exhibit 4: Relative Impact of Vehicle Types on Pavement Conditions



Source: Metropolitan Transportation Commission. The Pothole Report: Can the Bay Area Have Better Roads? June 2011, prepared by Pavement Engineering, Inc.

The Department of Public Works (DPW) staff concur that heavier vehicles contribute to faster roadway deterioration and explain that the lifetime of a roadway is influenced by several factors which include:

- The size and weight of the vehicle;
- The repetition of the vehicle using the roadway;
- The structure of the roadway; and
- The soil condition under the roadway.

According to a theoretical analysis conducted by DPW's Infrastructure Design & Construction Division, the cost impact that one, large shuttle bus has on the lifetime of a one-mile long, 11 foot-wide segment of pavement is \$1.08 per lane mile in FY 2013-14 dollars (analysis can be found in Appendix A). This assumes that it costs \$1,045,000 to reconstruct a one-mile long, 11 foot-wide lane.¹⁹ In other words, every time a large shuttle bus drives over this hypothetical lane mile, the impact on the pavement accounts for \$1.08 out of the \$1,045,000 it will ultimately cost to reconstruct the lane. In comparison, the cost impact that a typical passenger vehicle has on the lifetime of pavement is \$0.00023 every time it drives on the same hypothetical one-mile long lane mile. This means that the damage caused by one, large shuttle bus driving over the hypothetical one-mile long lane is equivalent to 4,700 passenger vehicles driving over

¹⁹ Reconstructing means to demolish the 8 inch concrete base of the road and the 2 inches of asphalt topping and replace it with new concrete base and new asphalt as opposed to repaving which is grinding off the asphalt concrete and replacing it with new asphalt concrete.

the same lane. Of course, adding more vehicles to the streets in lieu of shuttle buses would have negative impacts on traffic flow and emissions.

The implication of the DPW analysis are that streets on which the larger private shuttle buses repeatedly drive on, such as the regional shuttles, will deteriorate faster than similar streets with the same traffic mix and volume that are not used by regional shuttles. The frequencies with which streets need to be reconstructed are also affected by the City's standards for street condition and the use by other buses and trucks.

It should be noted that full reconstruction of a street is not a frequent occurrence as it is very costly and time consuming. Instead, less costly preventive maintenance resurfacing such as pothole repairs and crack sealing occur more regularly to defer the need for full reconstruction. As with reconstruction, more frequent resurfacing will be needed on streets used by regional shuttles compared to the same streets without regional shuttle use.

Although large, private shuttles impose significantly more damage to the roads than passenger vehicles, SFMTA is precluded from charging a fee for the proportional cost of such damage pursuant to Section 9400.8 of the California Vehicle Code, which restricts the ability of a local jurisdiction to impose a tax, permit or fee for use of City streets.

Bus Zones

SFMTA staff report that in FY 2013-14, the cost to paint a bus box and red zone is \$300 which must be completed about every two years. When asked if large shuttles increase SFMTA's maintenance costs due to more frequent use, SFMTA staff advised that the amount of wear on a bus zone is based more on its location (commercial, sunlight, sidewalk soiling) than on the number or weight of vehicles that pull into it. SFMTA staff could not quantify the additional damage caused to bus zones by shuttles but suggest that it is minimal, if any.

Conflicts with Muni and Localized Traffic Congestion

SFMTA reports that about half of the known stops for all types of private shuttles take place in bus zones; the other half take place at white zones or in off-street parking lots. SFMTA advises that there are approximately 200 Muni bus zones that are used for private shuttle loading and unloading.²⁰ This practice can lead to conflicts between shuttles and Muni buses including: Muni delay caused by a Muni bus not being able to pull into a bus zone because a shuttle is stopping there.

In 2012, the San Francisco County Transportation Authority (SFCTA) contracted with Nelson/Nygaard Consulting Associates Inc., a transportation planning consulting firm, to

²⁰ SFMTA, Private Commuter Shuttles Policy Draft Proposal, Presentation to SFMTA Board of Directors, January 21, 2014.

conduct a field investigation assessing the impacts of private shuttle operations in a variety of locations where shuttles were known to be stopping at bus zones.

The assessment study found that at 15 bus zones observed, there was an average of 0.48 conflicts per hour of instances when either a Muni bus could not access the bus zone or when a shuttle could not access the zone, as shown in Exhibit 5. The bus zone at 4th and Townsend Streets had the most conflicts with an average of one conflict per hour.

Since the study reports averages spread over six hours (three hours for the morning commute and three hours for the evening), it is possible that more conflicts are occurring during certain periods of the commute hours. For example, the University of California, Berkeley graduate students observing shuttle buses on Van Ness Avenue during the morning commute, and cited above, reported that shuttles arrived every one to two minutes between 7:45 and 8:00 a.m. Likewise, it would stand to reason that fewer conflicts may be occurring during the commute hours when fewer shuttles are arriving.

Exhibit 5: Muni Bus and Shuttle Conflict Rates, 2012 Study

	Average Hourly Muni Frequency	Average Hourly Shuttle Frequency	Average Hourly Instances of "Muni Can't Access Stop	Average Hourly Instances of "Shuttle Can't Access Stop	Total Conflicts Per Hour
All Site Locations	10.6 vehicles per hour	4.7 vehicles per hour	0.31 conflicts per hour	0.17 conflicts per hour	0.48 conflicts per hour
Sites with Most Conflicts- 4th & Townsend	13.6 vehicles per hour	12.3 vehicles per hour	1.0 conflict per hour	0.67 conflicts per hour	1.67 conflicts per hour

Source: Nelson/Nygaard Consulting Associates Inc., Muni Partner-Shuttle Field Data Collection. July 2012.

There is a greater chance of conflict if a shuttle dwells in a bus zone for an extended period of time. SFCTA reports that the amount of time that shuttles dwell at bus zones can be longer compared to Muni dwell times because it takes longer for passengers to board and alight a shuttle bus due to the size of the motor coach, their high floor configuration and the use of a single door.²¹ The Nelson/Nygaard study found that at the 15 observed bus zones, the average dwell time was 1.1 minutes for the shuttles.

The Nelson/Nygaard study observed two types of shuttle activities that caused localized congestion: 1) shuttles blocking traffic by boarding and alighting in a travel lane; and 2)

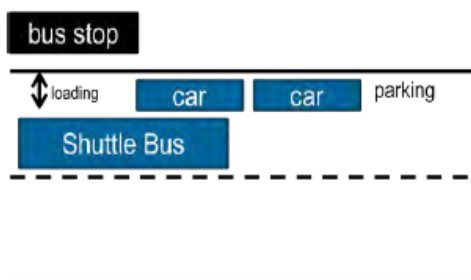
²¹ The San Francisco County Transportation Authority's (SFCTA), *Strategic Analysis Report: The Role of Shuttle Services in San Francisco's Transportation System*, Final SAR 08/09-2, Approved June 28, 2011.

not pulling all the way into a bus zone, which also blocks a travel lane. Both scenarios are shown in Exhibit 6.

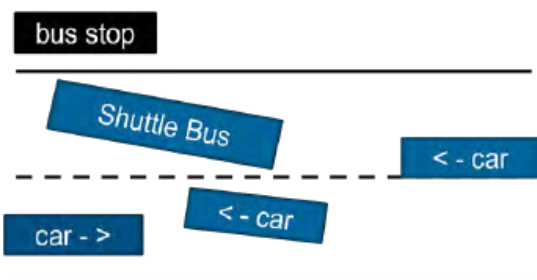
The greatest number of observations of a shuttle not pulling all the way into a bus zone was six times per hour at Lombard and Fillmore Streets and the greatest number of observations for a shuttle either boarding or alighting passengers in the street was 3.5 times per hour at Glen Park BART, according to the study. The study also found that Muni buses pick up and drop off passengers in the travel lane at about the same rate as shuttles with the exception of at Glen Park BART and 4th and Townsend Streets, where shuttles picked up and dropped off passengers in the travel lane seven times more often and a little more than five times more often than Muni buses, respectively. The study did not record data on whether Muni buses partially pulled into bus zones.

Exhibit 6: Shuttle Activities that Cause Localized Traffic Congestion

Example: Boarding/Alighting in Street



Example: Blocked Travel Lane



Source: Nelson/Nygaard Consulting Associates Inc., Muni Partner- Shuttle Field Data Collection. July 2012.

Though existing data shows that shuttle buses are causing some delays in Muni operations, as of the writing of this report, there is no data that demonstrates what proportion of Muni delays overall can be attributed to shuttles using bus zones. However, two graduate students from the University of California, Berkeley are currently collecting data at multiple shuttle stops in the City and using statistical methods to estimate the delay caused to Muni buses by shuttle operations. This research is anticipated to be completed in May of 2014.

Pedestrian and Bicycle Safety and Neighborhood Disruption

Practices such as partially pulling into a bus zone or loading and unloading passengers in a travel lane not only contributes to localized traffic congestion but also creates dangerous conditions for pedestrians, bicyclists and passengers with disabilities. In the last four years, one pedestrian has been hit and killed by a private shuttle.²² Moreover, SFMTA received over 40 unsolicited comments from community members who

²² Danielle Magee. The Private Bus Problem, *San Francisco Bay Guardian Online*, Available at: <http://www.sfbg.com/2012/04/18/private-bus-problem?page=0,1>. [Accessed March 3, 2014]

witnessed various unsafe pedestrian and bicycling conditions caused by shuttle buses. These actions include:

- Blocking Muni buses causing Muni bus passengers to board in the traffic lane;
- Shuttles parking in a bike lane;
- Rounding tight corners on narrow streets, crossing into multiple lanes of traffic to make a turn;
- Not yielding to pedestrians;
- Speeding;
- Blocking street views for residents backing out of driveways; and
- Blocking traffic lanes for ambulance vehicles.

No comprehensive formal study has been performed on the impact of shuttles on pedestrian and bicyclist safety or Muni or shuttle passengers with disabilities. However, the Nelson/Nygaard study did observe two bus zones with bicycle lanes in the bus zone path, one at 4th and Townsend Streets and the other at 8th and Market Streets, to determine whether there were conflicts between shuttles and bicyclists. The report found that 23 percent of all the shuttle observations at 4th and Townsend Streets had instances of a shuttle blocking the bicycle lane leading up to the intersection. There were no reported instances of shuttles blocking the bicycle lane at 8th and Market Streets.

Representatives from the San Francisco Bicycle Coalition and Walk San Francisco provided a number of suggestions that SFMTA could incorporate into the shuttle Pilot Program to improve safety for bicyclists and pedestrians, including:²³

- Discourage shuttles from using bicycle network streets;
- Require shuttles to have enhanced vehicle safety features similar to new Muni buses, such as tire guards and larger, more optimally placed mirrors for better views alongside the side of the bus;²⁴
- Require clear, printed contact information on each vehicle for members of the public to submit shuttle complaints that are easily accessible through City or company channels and consider incentives for or penalties to companies to reduce complaints;
- Increase the amount of protected bikeways, especially on streets that are known to have bicycle-shuttle conflicts (this would be a recommendation for SFMTA in general, and not specific to the Pilot Program); and

²³ San Francisco's non-profit pedestrian advocacy group.

²⁴ A tire guard is a flexible plastic shield placed at the rear duals to deflect a person away from the path of the right rear dual to reduce the severity of injuries resulting from accidents involving a pedestrian coming in contact with the rear right wheels of transit buses.

- Impose a mandatory, uniform and transparent shuttle driver-training program that focuses on pedestrian and cyclist safety.

The California Public Utilities Code requires shuttle providers to have a safety education and training program for their employees and must provide training at least twice a year (California Public Utilities Code Section 5374 (e)). If shuttle providers develop their own training program, they must cover all the topics set forth in the Department of Motor Vehicle's California Commercial Driver Handbook which includes some materials on bicycle and pedestrian awareness.

Bauer's IT, a regional shuttle provider, reported to the Budget and Legislative Analyst that their training program requires a minimum of 80 hours of classroom exercises, 20 hours of behind-the-wheel education and 6 hours of refresher courses each quarter.²⁵ Classroom exercises include a 22 hour course on *Basic Driver Education* which incorporates materials on accident prevention, current laws and regulations, and mirrors and blind spots among 26 other topics in the course. This curriculum is not publically available nor is it the same across all shuttle companies.

SFMTA staff note that they have initiated a "Large Vehicle and Safe Streets Working Group" as part of the City's Vision Zero goal of eliminating traffic fatalities within 10 years. The working group includes stakeholders representing large vehicle drivers, trainers, and fleet operators, including private shuttles. They will be meeting in April 2014 to agree on short- and long-term recommendations for increasing safety for people who walk and bicycle around large vehicles. There is broad support within this working group for developing and implementing driver safety curriculum for large vehicle drivers according to SFMTA staff. Once the curriculum is completed, SFMTA staff advises it will become part of the required training for all commuter shuttles operating with permits.

The SFMTA will be requiring that shuttle providers display an identification placard in visible locations in the front and rear window of their vehicle as part of the Commuter Shuttle Policy and Pilot Program.

With regard to neighborhood disruptions and impacts, from FY 2011-12 to March 2014 SFMTA staff recorded 30 unsolicited complaints received from residents who were concerned with the size and noise of the large shuttles. Based on the comments, it appears that at least some residents have concerns when large shuttles drive down and turn onto narrow, neighborhood streets due to their large size and/or are disrupted by the noise that the shuttles make when driving late at night or when idling. These complaints received are similar to those that in the past have triggered imposition of

²⁵ Training materials provided to Budget and Legislative Analyst by Mike Watson, Vice Presidents of Sales and Marketing, Bauer's Intelligent Transportation.

restrictions of certain types of vehicles on certain streets, as codified in the City's Transportation Code.

Housing Impacts

San Francisco's population has grown significantly in recent years largely due to the high job growth rate in the City and the Bay Area region as a whole.²⁶ From just 2010 to 2012, San Francisco's population increased by approximately 20,600 residents, which is 72.3 percent of the total population growth for the ten years between 2000 and 2010 (28,500 new residents from 2000 to 2010).²⁷ In turn, the demand for housing has increased. The City has only produced approximately 1,500 housing units a year over this same time period (2000-2010).²⁸ As a result of this imbalance, housing costs have been significantly increasing.

Twenty percent of all private shuttle service in San Francisco serves to connect San Francisco residents with jobs that are outside of the City, mostly on the Peninsula or in Santa Clara County. Free, private, regional shuttles enable some individuals who work in Silicon Valley to live in San Francisco by making it more convenient and affordable to commute and thus contributing to the demand on housing. Private shuttles also provide access to jobs that otherwise might be unreachable or reachable only by car for some San Franciscans.

60 percent of surveyed regional shuttle riders stated that the absence of shuttles would not change their residential decision to live in San Francisco and commute to Silicon Valley, according to a survey of 130 shuttle riders conducted in the Spring of 2013 conducted by graduate students from the University of California, Berkeley.^{29 30} However, 40 percent of surveyed shuttle riders reported that they would move somewhere closer to their job if shuttle service were discontinued. This suggests that the shuttles have some implications on the decision to live in San Francisco and on the demand for San Francisco's housing stock. The survey did not ask if "move closer to their job" included closer to regional transit within San Francisco, and/or to another city closer to where the job is located. The Budget and Legislative Analyst assumes that both scenarios are covered by the responses and that at least a portion of the respondents would choose to leave San Francisco if the shuttles were not available.

²⁶ Gabe Metcalf. Housing for All: A Pragmatist's Manifesto, *SPUR's The Urbanist*, Issue 530. February 2014.

²⁷ United States Census Bureau, 2000 and 2010 San Francisco County Total Population; State & County QuickFacts 2012 estimate.

²⁸ Gabe Metcalf, Sarah Karlinsky, and Jennifer Warburg. How to Make San Francisco Affordable Again. *SPUR's The Urbanist*, Issue 530. February 2014.

²⁹ Danielle Dai and David Weinzimmer. Riding First Class: Impacts of Silicon Valley Shuttles on Commute & Residential Location Choice. University of California, Berkeley- Department of City and Regional Planning. Working Paper UCB-IT-WP-2014-01, Last updated February 2014.

³⁰ The survey question was whether shuttle users would change their residential location if service was discontinued.

ICF International also conducted a survey of shuttle riders in 2012 that asked how a shuttle rider would typically travel to work if there were no shuttle. This survey conducted by ICF International found that 31 percent (123 responses) of the 396 shuttle riders surveyed would either not be able to or would choose not to have their job in Silicon Valley if there were no shuttle, suggesting that these passengers would remain in the City and find alternate jobs. Four percent of shuttle riders surveyed choose “Other” and wrote in that they would move out of San Francisco if the shuttle was not provided (15 responses). Although 4 percent wrote in that they would relocate out of San Francisco or closer to their job, the ICF International survey did not provide “relocate closer to work” as an answer option nor did this survey specifically ask about residential choice like the University of California, Berkeley survey cited above.

A graduate student from the University of California, Berkeley’s City and Regional Planning Department collected and analyzed rental values near Google shuttle stops to see if there was an association between Google shuttle stops and increasing rental rates.³¹ The researcher focused the analysis on five Google shuttle stops located in neighborhoods with high percentages of renter-occupied units. The study identified the average rent between 2010 to 2012 for one-bedroom and two-bedroom units within a half-mile radius of the shuttle stops, a distance deemed walkable, and the average rent for the same size units between a half-mile and one-mile radius of the shuttle stops.³²

As shown in Exhibit 7, in most instances (7 out of 10), rental prices within a half-mile radius of Google shuttle stops, represented by the purple circle (the darker circle), increased at a faster rate than rental prices outside of a half-mile radius but within a one-mile radius, represented by the blue ring (the lighter circle), suggesting that Google shuttles are having an effect on rental prices nearby the shuttle stops. The study notes, however, that housing values increased similarly in neighborhoods well-served by transit, or in other areas with “transit oriented development,” regardless of the presence of the shuttles.

This study had several limitations; one was that different properties listed for rent within a half-mile radius of the shuttle stops were compared in the two years reviewed. Differences in the amenities of these properties were not accounted for in the study. The study also did not control for confounding variables such as variations in neighborhoods.³³ Finally, the study did not assess changes in rental prices in other popular neighborhoods that are not served by shuttles to consider whether the increasing rents were specific to shuttle-served neighborhoods or comparable to all popular neighborhoods within the City.

³¹ Ms. Alexandra Goldman

³² Alexandra Goldman, MCP. The “Google Shuttle Effect:” Gentrification and San Francisco’s Dot Com Boom 2.0, *Professional Report*, University of California, Berkeley Department of City & Regional Planning, Spring 2013.

³³ Alexandra Goldman, MCP. The “Google Shuttle Effect:” Gentrification and San Francisco’s Dot Com Boom 2.0, *Professional Report*, University of California, Berkeley Department of City & Regional Planning, Spring 2013.

While the study identified correlation, it did not establish causation that increasing rental rates are unique to neighborhoods with shuttle service. Even with these limitations, assuming that the shuttles are selecting stops for proximity to their passengers, it appears that neighborhoods and areas with shuttle stops are in demand, are now commanding higher rents than adjacent areas, and that some shuttle passengers are living in those areas. In fact, 57 percent of respondents to the survey of 130 shuttle riders cited above reported that they live less than a 10-minute walk from their shuttle stop and 76 percent of shuttle riders said they live within a 15-minute walk.³⁴

³⁴ Danielle Dai and David Weinzimmer. Riding First Class: Impacts of Silicon Valley Shuttles on Commute & Residential Location Choice. University of California, Berkeley- Department of City and Regional Planning. Working Paper UCB-IT-WP-2014-01, Last updated February 2014.

Exhibit 7: Maps of Percent Change in Rental Prices for One and Two Bedroom Units,
Calendar Years 2010-2012

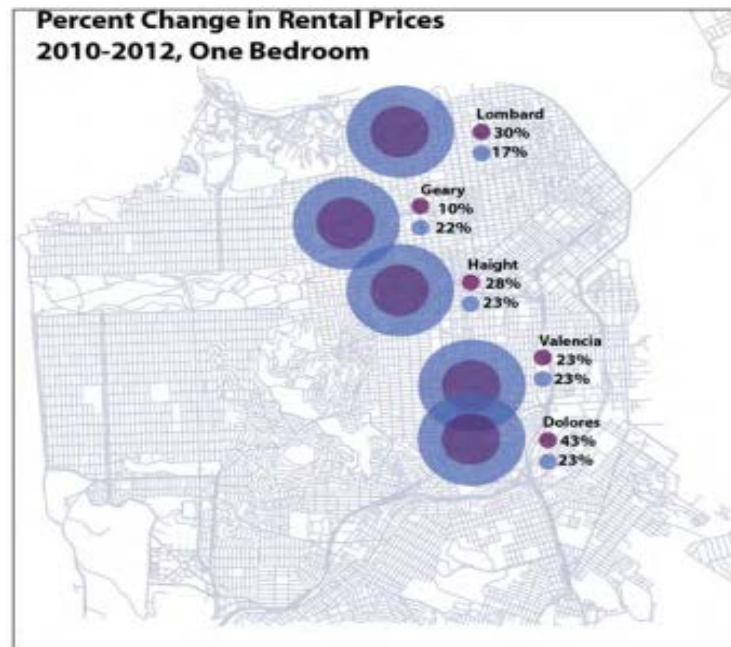


Figure 4

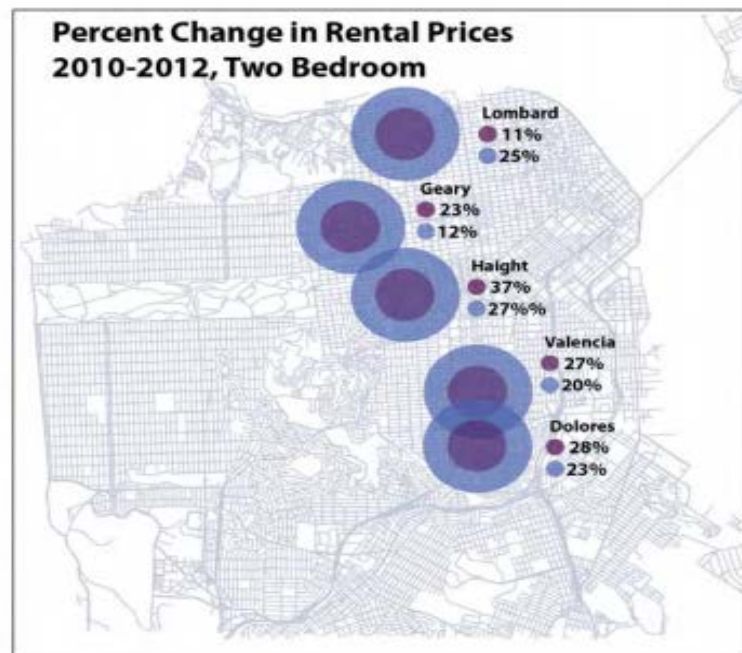


Figure 5

Source: Alexandra Goldman, MCP. The "Google Shuttle Effect:" Gentrification and San Francisco's Dot Com Boom 2.0. Spring 2013.

Another study analyzing how properties near shuttle stops have appreciated relative to other properties in the City was conducted by a data journalist who obtained the assessed values of residential properties for 2011 and 2013 in San Francisco from the San Francisco Office of the Assessor-Recorder. The journalist determined which properties appreciated by at least 70 percent from 2011 to 2013 and mapped them along with known regional shuttle locations. The map showed that there is a higher concentration of properties that appreciated by at least 70 percent in neighborhoods with multiple regional shuttle stops.³⁵

Similar to the University of California Berkeley study cited above, while the data in the data journalist's study shows a correlation between private regional shuttle stop locations and a higher concentration of properties that experienced significant appreciation over the last two years, it does not show causation. Many of the regional shuttle stops are located in neighborhoods that are desirable places to live regardless of the location of private shuttle stops. These neighborhoods may have parks, restaurants, Muni transit stops or other amenities that increase demand for housing in that area; and as previously noted, there is a strong demand for housing overall in San Francisco.

Shuttle riders that were surveyed reported that when determining where to live in the City, their decision is influenced more by factors such as the ease of walking in their neighborhood, proximity to entertainment, culture, amenities, transit and living in an urban neighborhood than on living near a shuttle stop.³⁶

SFMTA'S COMMUTER SHUTTLE POLICY AND PILOT PROGRAM

SFMTA's Commuter Shuttle Policy and Pilot Program (Pilot Program) was developed in response to the growth of unregulated private shuttles. Initial research by the San Francisco County Transportation Authority on shuttles began in 2009 and the final Pilot Program was approved approximately five-years later by the SFMTA Board of Directors on January 21, 2014. The Pilot Program will last 18-months and will authorize permitted shuttle providers, both intra-City and regional, to share approximately 200 bus zones with Muni buses under specific conditions. SFMTA staff estimate that private shuttles are currently stopping at approximately 200 bus zones based on voluntary information provided by private shuttle providers.

Eligible Pilot Program participants include privately operated transportation services arranged by an employer, building or institution that provides transportation for commuters to, from and within San Francisco, specifically from home to work, work to

³⁵ Chris Walker, Clusters of Affluence in San Francisco, January 27, 2014. Available at: http://www.datawovn.com/#!/San_Francisco_Private_Shuttles. [Accessed on January 30, 2014]

³⁶ Danielle Dai and David Weinzimmer. Riding First Class: Impacts of Silicon Valley Shuttles on Commute & Residential Location Choice. University of California, Berkeley- Department of City and Regional Planning. Working Paper UCB-IT-WP-2014-01, Last updated February 2014.

home, last-mile to work³⁷ or work site to work site are eligible to participate in the Pilot Program. The Pilot Program excludes tour buses, party buses, limousines, airport shuttles, transportation network companies, vanpools, and services that duplicate Muni service.³⁸

SFMTA is currently in the process of determining which 200 bus zones will be used for the program.³⁹ SFMTA notes that as part of this process, lengthening existing bus zones may be considered as well as creating an adjacent shuttle zone or separate white zones in areas where sharing is not practical, which would likely remove some on-street parking. The network of shared zones will be approved at an SFMTA public hearing. SFMTA expects the bus zone selection process to be completed by May 2014.

After the network is approved, private shuttle service providers may apply for a permit to use the shared bus zones and will be required to pay a permit and use fee. The permit and use fee will recover SFMTA's estimated \$1.7 million of program costs. The fee will be assessed based on the number of stop events⁴⁰ shuttle service providers report that they make during the term of the permit. Each permittee will pay \$1 per stop event multiplied by the number of stop events they are making during the course of the permit term.

SFMTA reports that pursuant to California Proposition 218, the cost of the permit fee may not be higher than the cost to provide the permit program service.⁴¹ SFMTA estimates that the cost of the Pilot Program will be approximately \$1,725,688 which includes six-months of preparation work to develop the permits, business processes, data management, and establish the shared bus zone network in advance of the 18-month Pilot Program. The breakdown of costs is shown in Exhibit 8.

³⁷ Last mile refers to getting people from a transport hub to their final destination.

³⁸ SFMTA. Commuter Shuttle Policy and Pilot Program. January 2014.

³⁹ This process has entailed requesting input from shuttle providers, residents and Muni operations staff on preferred zones and then evaluating the proposed zones based on preferences and actual traffic conditions.

⁴⁰ A stop event is defined as an individual instance of stopping at a shared Muni bus zone.

⁴¹ Cal. Const. art. XIII C, § 1, cl. 1

Exhibit 8: Estimated SFMTA Costs of 18-Month Commuter Shuttle Policy Pilot Program

Unit	FY 2014-15	FY 2015-16	Total
Labor*	\$ 496,550	\$265,895	\$762,445
Overhead	244,799	131,086	375,885
City Attorney	4,910	2,455	7,365
Placard & Shuttle Signs (500 pieces at \$630 per vendor)	840	420	1,260
Muni Zone Signs & Materials	53,333	26,666	79,999
Professional Services (IT and Communications consultant)	59,333	29,666	88,999
Data Collection Devices & Transmission	270,000	135,000	405,000
Zone & Sign Maintenance	3,134	1,600	4,734
Total	\$ 1,132,899	\$592,789	\$1,725,688

Source: SFMTA Controller

*This includes enforcement, planning, evaluation, administration, and signage installation.

Ms. Carli Paine, SFMTA's Pilot Program's Project Manager, stated that the SFMTA used estimates of existing stop events to derive the per-stop event cost. Existing estimates are that regional and intra-city shuttles make 4,121 stop events at Muni bus zones daily. This assumption was built into SFMTA's fee calculation and revenue projections shown in Exhibit 9 below. According to Ms. Tess Navarro, SFMTA's Controller, the approximately \$1 permit fee amount, which was approved by the SFMTA Board of Directors in January 2014, was a placeholder amount until more information about the cost of the Pilot Program was collected. Based on current cost estimates, the permit fee for FY 2014-15 will be \$1.06 and will increase to \$1.10 in FY 2015-16. These fees will be approved by the Board of Directors during the annual budget process.

Exhibit 9: Revenue Projections for 18-month Commuter Shuttle Policy and Pilot Program

Projected Revenue	Fee	Stops per day	Weekdays per year	Total Stop Events per Year	Revenue
FY 2014-15	\$1.06	4,121	260	1,071,460	\$ 1,135,748
FY 2015- 2016 (6-months)	\$1.10	4,121	130	535,730	\$ 589,303
Total					1,725,051

Source: SFMTA Controller

The cost of the program is \$637 less than projected revenues. According to Ms. Navarro and as previously noted, the Pilot Program is a cost recovery program; therefore, SFMTA must be careful to not collect more revenue than what it costs to administer and enforce the Pilot Program. The current fee structure will under-recover program costs to be conservative; however, Ms. Paine notes that fees may be increased with approval by the SFMTA Board of Directors, as long as they comply with State cost recovery restrictions.

As part of the Pilot Program permit application, shuttle providers must provide SFMTA with their company information, the number of the stops and shuttles anticipated, their CPUC registration status and they must agree to comply with all the terms to get a permit.⁴² If any of these terms are violated during the Pilot Program, an administrative penalty may be issued or the permit may be revoked. SFMTA staff noted that once the Pilot Program begins, there will be a heightened level of enforcement to ensure that only shuttles with permits use the shared bus zones in the defined network. The cost of this enforcement is included in the program costs that will be recovered through the fee.

Pilot Program Evaluation

To measure the effectiveness of the Pilot Program, SFMTA will: (1) observe shared bus zones *before and during* the 18-month Pilot Program to determine whether the controlled sharing of designated bus zones with private shuttles reduces conflicts for Muni buses and other users; (2) audit GPS data of shuttle operations to evaluate compliance with the terms of the permit by assessing to what extent permittees are only stopping in bus zones that are within the designated network and are making the number of stops they received permit approval to make; (3) conduct a survey of shuttle and Muni bus drivers to gain feedback on the Pilot Program and determine what level of enforcement is needed to regulate shuttles; and (4) develop a cost report to track actual Pilot Program costs and identify what capital improvements may be needed to accommodate the shuttle buses.⁴³

SFMTA's proposed performance metrics for the Pilot Program include observations of the following: (1) double parking to load and unload passengers; (2) Muni buses having delayed access to the curb because of shuttle use; (3) shuttle loading and unloading that blocks crosswalks; (4) shuttle loading that blocks bike lanes; and (5) Muni buses not

⁴² The terms of the agreement which includes are as follows: 1) Indemnify the SFMTA for use of stops. 2) Display the Pilot Program placard on the front and rear of the vehicle which authorizes the use of the shared stop and has a unique identification number so SFMTA can contact the provider. 3) Comply with all operating guidelines which include giving Muni priority, staying within the network of approved stops, actively loading and unloading passengers, pulling forward into bus stops, complying with state and local traffic laws, complying with street and lane restrictions and staying on arterial streets, ensuring that driver training includes these guidelines and following instructions from officials and traffic control devices. 4) Provide data fees per SFMTA's specifications. 5) Pay permit fee and traffic citations. 6) Comply with CPUC regulatory requirements.

⁴³ SFMTA's Memorandum to the Board of Supervisors Re: Appeal of CEQA Determination- SFMTA Commuter Shuttle Pilot. March 21, 2014.

having access to the curb because of shuttles, thus preventing people in wheelchairs or with strollers from boarding or alighting Muni vehicles. SFMTA will also track data on collisions involving shuttle buses and compliance with the permit terms.⁴⁴

SFMTA staff report that other alternatives to the Pilot Program were considered such as prohibiting shuttles from all bus zones and requiring them to apply for new white zones or using only existing white zones. SFMTA staff noted that a formal policy analysis was not conducted on this alternative but there were internal conversations where SFMTA staff discussed that creating a network of white zones would require removal or restriction of on-street parking. SFMTA staff further noted that, at the time, SFMTA's data indicated that sharing bus zones could work, if limited to certain kinds of bus zones, and determined to pursue testing the sharing of bus zones as a first step, knowing that if it does not work, a network of white zones could be created through on-street parking removal or restrictions.

Appeal of the California Environmental Quality Act (CEQA) Pilot Program Exemption

The SFMTA determined that the Pilot Program was categorically exempt from CEQA's environmental review requirements because it consists of information collection, research, experimental management and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource.⁴⁵ The City Planning Department concurred with this determination.

At the time of writing this report, an appeal of the categorical exemption was filed on the grounds that the Pilot Program is not exempt from the requirements of CEQA because there is a reasonable possibility that the Pilot Program will have significant environmental impacts.⁴⁶

The Board of Supervisors will vote on whether to uphold the appeal. If upheld, the Pilot Program will not be implemented until additional environmental review is conducted.

POLICY DISCUSSION

This analysis discussed some of the ways in which private shuttles are affecting the City's infrastructure, Muni operations, traffic, the safety of pedestrians and cyclists, neighborhood quality of life conditions, and the potential effects that shuttles may have on housing prices. As part of the assessment of the City's policy towards private shuttles, the benefits associated with intra-city and regional shuttles should also be considered.

⁴⁴ Ibid.

⁴⁵ SFMTA. Commuter Shuttle Policy and Pilot Program. January 2014.

⁴⁶ Richard Drury. Letter to President David Chiu and the San Francisco Board of Supervisors, Re: Appeal to SFMTA Resolution No.14-023. February 19, 2014.

Shuttle programs have proven to be an effective way to reduce vehicle miles traveled and vehicle ownership and use which, in turn, reduces greenhouse gas emissions, overall congestion and demand for scarce parking spots.⁴⁷ Survey results found that when shuttle riders were asked how they would commute to work if the shuttle were not provided, 48 percent of respondents reported that they would drive alone.⁴⁸ Based on survey results, ICF International reports that shuttles are responsible for a reduction of over 43 million vehicle miles traveled and 8,500 metric tons of greenhouse gas emissions per year.⁴⁹

Caltrain staff report that their system cannot meet existing ridership demand, which has steadily increased over the last five years. The system is currently operating over capacity during peak commute hours and if the regional private shuttles did not exist, it is unlikely that Caltrain would be able to absorb the additional ridership demand, given its current resources and level of service provided. Caltrain staff note that they are the only transit system in the region without a dedicated funding source and were operating in a deficit for the past several years. They do, however; have enough funding to purchase several used railcars which they will be adding to the system in a little over a year.⁵⁰

POLICY OPTIONS

As a result of this analysis, the Budget and Legislative Analyst has developed policy options for the Board of Supervisors to consider to address some of the potential negative impacts of the shuttles, as discussed above. With the exception of Policy Options 2 and 3, implementation of these options could occur in concert with SFMTA's Pilot Program.

To have a better understanding of the results and effectiveness of the Pilot Program, the Board of Supervisors should consider the following options:

1) a. Prior to commencement of the Pilot Program, provide SFMTA staff with input on possible additions or deletions to the performance metrics that will be used for SFMTA's shuttle observations.

⁴⁷ SFMTA. Commuter Shuttle Policy and Pilot Program. January 2014.

⁴⁸ Danielle Dai and David Weinzimmer. Riding First Class: Impacts of Silicon Valley Shuttles on Commute & Residential Location Choice. University of California, Berkeley-Department of City and Regional Planning. Working Paper UCB-IT-WP-2014-01, Last updated February 2014.

⁴⁹ Figures based on ICF International's Draft Assessment of GHG Emissions Impacts for the Commuter Shuttle Pilot Program provided to the Budget & Legislative Analyst's Office.

⁵⁰ Additionally, Caltrain is implementing the Caltrain Modernization Program, which will electrify and upgrade the performance, operating efficiency, capacity, safety and reliability of Caltrain's commuter rail service.

b. Following SFMTA's reporting back on baseline data and initial observations of shuttle operations prior to commencement of the Pilot Program, the Board of Supervisors should provide input on acceptable threshold amounts for each performance metric that would be used to determine the success of the Pilot Program, whether certain conditions should be imposed on the shuttles or whether another program or policy should be implemented. Include thresholds for the shuttles' use of restricted streets as GPS data to assess restricted road use will not be collected until after the Pilot Program commences.

c. Request that SFMTA regularly report back to the Board of Supervisors on the performance metrics throughout the 18-month program as well as compliance with permit terms, enforcement results and comments collected from community members.

The Board of Supervisors should consider recommending the following options to SFMTA if the Pilot Program is not deemed successful based on the performance metrics used and reported to the Board of Supervisors throughout the program to measure results:

- 2) **Prohibit the use of Muni bus zones, providing instead existing and/or newly created white curb zones specifically for intra-city and regional shuttles.**

SFMTA has already suggested that if Muni buses and private shuttles are not compatible at any shared bus zones, then they would consider this option. This option will likely require removing parking spaces during certain peak commute periods.

- 3) **Prohibit or limit the use of bus zones and encourage shuttle providers to utilize a limited number of centralized locations in the City where passengers would board and alight from their shuttles.**

This may entail one or more shuttle providers' sponsoring companies leasing or purchasing several parking lots in the City that could be used for loading and unloading passengers. Transportation experts advise that adding trips to an individual's commute could discourage use of the shuttles by some.

To address the potential negative impacts of the private shuttles on the City's streets, bicyclist pedestrian safety, disabled passengers, and neighborhood impacts, the Board of Supervisors should consider requesting that SFMTA incorporate the following into the Pilot Program either prior to its commencement or during the Pilot Program based on reported results:

- 4) **Establish shuttle vehicle size, weight, safety features and other design criteria based on bus zones, streets and/or neighborhoods affected by the Pilot Program and/or establish a cap on the number of shuttles that can access bus zones.**

SFMTA could establish weight limits that could reduce the impact on some or all City streets; or height and length limits to help ensure that shuttles can safely turn corners on all streets being used and reduce visual and other neighborhood impacts; or require two doors on all shuttles to reduce idling time at the bus zones. Requiring that shuttle providers load passengers using two doors may pose security concerns as well as increased costs to shuttle providers that may not have shuttle vehicles with doors in their fleets.

Currently, shuttles' rear views mirrors must meet certain specifications as required by the Federal Motor Vehicle Safety Standards (FMVSS). The FMVSS does not require tire guards. SFMTA System Safety staff cannot comment as of the writing of this report on what safety enhancements should be required on shuttles because they do not know what safety features on various shuttle models already exist or the types of pedestrian or bicycle accidents they may have been involved in.

SFMTA could determine whether there should be a cap on the number of stop events that occur at each bus zone to prevent conflicts with Muni buses and traffic flow while allowing new shuttle providers to participate in the program.

- 5) Authorize shared bus zones only on streets without bike lanes.**
- 6) Require that shuttle providers provide specific training to all drivers on bicyclist, pedestrian and disabled passenger safety as a condition of being permitted to use City bus zones.**

SFMTA staff reports that as part of the Pilot Program, shuttle providers must incorporate certain slides into their training program that explain the permit terms. A driver training program that focuses on bicycle and pedestrian safety is being developed out of the SFMTA's Large Vehicles and Safer Streets Working Group. SFMTA Staff report that shuttle service providers that are granted permits will be required to have their operators trained using this curriculum.

As a means of enhancing City services in consideration of private shuttles' use of City bus zones, the Board of Supervisors should consider the following:

- 7) As the Pilot Program rolls outs and performance metric data is gathered, if there is clear evidence of negative impacts, the Board of Supervisors should work with SFMTA and the City Attorney's Office to explore a requirement that shuttle providers who participate in the Pilot Program and utilize City bus zones enter into a Community Benefits Agreement (CBA) with the City.**

Community Benefit Agreements (CBAs) are project-specific agreements generally between a developer or private enterprise and the City in which the developer makes certain contributions to the community in exchange for support for their development project.⁵¹ Six companies in San Francisco entered into CBAs in 2013 with the City including Twitter, Yammer and One Kings Lanes in order to be eligible for the Central Market Street and Tenderloin Area Payroll Expense Tax Exclusion. Terms of the agreements include seeking to establish a local non-profit grants program, to improve education outcomes for youth, to provide pro-bono legal assistance, to preserve affordable housing and tackle homelessness, to commit to local purchasing, and to support physical neighborhood improvements.

Although, the Pilot Program is not a development project, the CBA framework could potentially be applied to companies who hire or own shuttles for their employees and use City bus zones under authorization by SFMTA. Terms of the agreement could include providing monetary assistance to improve existing local and regional public transportation services, for road repavement, to fund Free Muni-for Youth after Fiscal Year 2015-16,⁵² or to fund affordable housing development.

- 8) Submit to the voters a ballot measure to impose a special tax that could be levied on shuttle bus providers to raise funds to improve existing local and regional public transportation services, for road repavement, to fund Free Muni-for-Youth after Fiscal Year 2015-16, or to fund affordable housing development.**

A special tax would require approval by a two-thirds majority of voters and would require additional research on would be taxed and how.

Exhibit 10 shows which policy option would satisfy various policy goal(s). Policy Option 1 (a) (b) and (c) are not included as those options would assist with measuring the overall effectiveness of the Pilot Program as opposed to a specific policy goal.

⁵¹ <http://www.forworkingfamilies.org/resources/policy-tools-community-benefits-agreements-and-policies>

⁵² Google has donated \$6.8 million to fund Free Muni-For-Youth for the next two-years.

Exhibit 10: Policy Options and Policy Goals

	Objective				
Policy Options	Reduce Impact on Muni	Reduce Impact on the Pavement	Reduce Impact on Bicyclists & Pedestrians	Reduce Neighborhood Impacts	Enhance City Services
2. Prohibit use of bus zone, white zone program	◆				
3. Prohibit use of bus zone, utilize several locations	◆		◆	◆	
4. Establish Shuttle Design Criteria & Shuttle Caps	◆	◆	◆	◆	
5. Authorize Shared Bus Zones on Streets Without Bike Lanes			◆		
6. Require Safety Training			◆		
7. Enter into CBA's					◆
8. Special Tax					◆

Appendix A

Cost and wear impacts of large shuttle buses on San Francisco roadway pavement

The theoretical life of roadway pavement depends on pavement structure; soil condition; size and weight of vehicle; and vehicle repetition.

San Francisco's current roadway infrastructure is primarily comprised of composite pavements consisting of Asphalt Concrete (AC) overlaying Portland Cement Concrete (PCC). Our general guideline for pavement design is 2 inches of AC over 8 inches of 3,000 psi PCC, but may vary dependent on site-specific conditions.

Contributing factors to the pavement life are the traffic characteristics; the vehicle types and weights using the street; and the number of vehicle repetitions the street experiences. The traffic loading on the pavement by a vehicle is measured by the American Association of State Highway and Transportation Officials' *Guide for Design of Pavement Structures* in Equivalent Single Axle Loads (ESALs). An ESAL is defined as the equivalent of a single 18,000-pound axle.

Residential streets experience traffic comprised primarily of passenger vehicles with an ESAL of 0.0004 each, with minimal vehicle repetition. Major arterial streets experience traffic comprised of a variety of vehicles (i.e. passenger vehicles, busses, delivery trucks) and a high number of vehicle repetitions. For a given pavement section, residential streets have a longer pavement life than a major arterial street.

The pavement life of streets can be measured by the number of ESALs that travel over the pavement. Assuming the City's standard roadway pavement structure, and median soil condition, the ESAL pavement life of a street would be 1,800,000 ESALs. A large shuttle bus has an ESAL of 1.86, compared to a passenger vehicle with an ESAL of 0.0004. A large shuttle bus contributes 1.86/1,800,000 to the deterioration of the pavement structure.

The cost impact a large shuttle bus has on the pavement life can be calculated based on the cost to reconstruct the roadway pavement structure. Assuming an 11-foot-wide lane one mile long, the reconstruction cost would be \$1,045,000. The cost impact per ESAL lane-mile that a large shuttle bus would have on the pavement life would be:

$$(1.86 \text{ ESAL}/1,800,000 \text{ ESAL}) \times (\$1,045,000/\text{lane mile}) = \$1.08/\text{lane mile}$$

In December 2003, the United States Department of Transportation Federal Transit Administration published a report titled, *"Study & Report to Congress: Applicability of Maximum Axle Weight Limitation to Over-the-Road and Public Transit Buses"*

(<http://caltransit.org/cta/assets/File/FTA%20Study%20on%20Axle%20Weights.pdf>) to "...study the applicability of federal maximum weight limitations to over-the-road buses and public transit vehicles." Our analysis uses the same methodology to estimate pavement damage. Reference the executive summary section titled Pavement Damage, page ES-2.

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