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FINAL SAR 08/09-2

STRATEGIC ANALYSIS REPORT

The Role of Shuttle Services in San Francisco's Transportation System

Initiated by Commissioner Dufty

APPROVED BY THE AUTHORITY BOARD JUNE 28, 2011

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ABOUT SARS: PURPOSE OF DOCUMENT

Strategic Analysis Reports (SARs) are carried out at the request of the Authority Board, to frame current issues of concern and to inform policy development regarding specific transportation issues which may not be adequately addressed by existing regulations or policy. This SAR, initiated at the request of Commissioner Dufty, analyzes the topic of shuttle services in San Francisco, and seeks to determine how best to integrate the growth of shuttles into the overall transportation system, and to manage their operations, in a way that continues to realize their benefits while addressing their impacts. Data for this SAR was gathered through literature review, field observations, and extensive outreach to various stakeholders involved in the shuttle landscape including providers, operators, users, public agencies, and the general public. The study finds that, while shuttles play a valuable role in the overall San Francisco transportation system, policy guidance and improved management are needed and warranted in order to improve operations and minimize impacts. Recommendations for establishment of a Muni Partners Program are provided.



INTRODUCTION

The public transportation system in San Francisco has been increasingly complemented by the proliferation of various types of shuttle services. Shuttle services are provided for a range of reasons, including as a means to address growing traffic congestion and the inadequacy of local and regional transit services in effectively meeting demands for certain types of trips. The term “shuttle” can refer to a broad range of transportation services that are both publicly and privately provided; which serve entities including community organizations, private employers, and academic or cultural institutions; which operate within specific geographical areas or to/from transit hubs within particular times; and which utilize vehicles ranging from mini-vans to full-sized motor coaches. Shuttle services can be regularly scheduled, or on-

In recent years, there has been significant growth of shuttle operations in San Francisco, especially private employer-provided regional shuttles.

demand.¹ Unlike taxis, tour buses, and jitneys, they are not commercial operations (e.g. airport “super shuttle”). Throughout this report, we will be considering more regularly scheduled shuttle service with fixed routes and stops.

In recent years, there has been significant growth of shuttle operations in San Francisco, especially private employer-provided regional shuttles which provide direct service to employment sites from either residential neighborhood stops, or from major transit hubs (e.g. BART, Muni, or Caltrain station). Major employers providing such services include Google, Yahoo!, Apple, Genentech, LinkedIn, Facebook, eBay, and others from the Peninsula and South Bay (Silicon Valley), and local employers such as Adobe, Advent, Levi’s Plaza, Gap, and others concentrated within the greater downtown area.

¹ Throughout this report, we will be considering more regularly scheduled shuttle service with regular planning, relatively fixed routes and stops (whether or not they are officially designated stops). On-demand services such as airport shuttles, and varying services such as tour buses, are not examined in detail in this report as they were not mentioned as frequently in stakeholder outreach surveys, and because their services vary in both schedule and ridership. Findings of this report may be relevant to regulation and management of these other shuttles, however.

Employers provide shuttle services for a range of reasons, including:

- to address rising commute times due to increased traffic congestion by promoting transit use as a more productive and “green” mode of transportation;
- to fill service gaps and other inadequacies in the local and regional transit systems;
- to recruit and retain a highly skilled workforce who may value living in an urban center and thus be attracted by an easy commute to a distant employment site away from the urban core;
- to discourage driving due to a shortage of on-site parking spaces; and
- in some cases as a response to mandatory planning stipulations as a condition of original site development.²

The rise in shuttles in the Bay Area has been seen for some time as having widespread benefits, including desirable environmental effects.³ At the same time, the growth of shuttle operations within San Francisco has been accompanied by certain local impacts. In particular, public input regarding these impacts has focused on:

- the use of motorcoach vehicles, which are often anonymized and perceived to be more of a nuisance than typical buses;
- conflicts with Muni buses, general traffic, pedestrians, and cyclists, especially at passenger loading areas (shuttle stops); and
- double parking and idling.

Some operators, themselves, also identify the issue of overlapping and redundant shuttle services (either with other shuttles or with Muni services) and suggest the consideration of consolidation of services as a matter of operating efficiency.

In consideration of the above, the primary issues explored in this SAR include the following:

- What are the types of benefits and impacts of regional and local shuttles?
- To what extent should shuttles be more actively managed to optimize their value to the overall transportation system in San Francisco?
- What models exist for shuttle management locally and nationwide?

Research and analysis methods for this report included: literature search; fieldwork; stakeholder outreach, and interviews; public meetings; surveys; and agency consultations.

I. BACKGROUND

SHUTTLE GROWTH TRENDS AND INVENTORY. The growth of shuttles in San Francisco mirrors that of the region, as well as

² Phone interviews with regional shuttle providers, conducted in January-February 2009.

³ A 2004 Bay Area Air Quality Management District study documented the proliferation of shuttles in the region, and MTC’s Regional Transportation Plans have long listed shuttles as transportation control measure (TCMs).

trends elsewhere. Two relatively recent shuttle inventories served as a starting point for understanding the current shuttle landscape in San Francisco. The 2004 Bay Area Clean Air Partnership (BayCAP) Shuttle Network Inventory⁴ documented six categories of shuttle operations, based on their sponsors (e.g., employers, City, institutions, or a mix), functions, and funding sources. A 2008 Existing Shuttle Service Inventory for San Francisco compiled by the San Francisco Municipal Transportation Agency (SFMTA)⁵ further detailed shuttle operations within San Francisco using similar categories of service (employer, institutional, private, public) within the city (see Appendix A). It found 30 shuttles in operation within the city limits. Both inventories generally reflect four main categories of shuttles:

- local employer shuttles offering a circulator type of service between transit hubs and employer destinations;
- regional private shuttles, which typically travel longer distances and focus on the daily commute with larger vehicles;
- institutional shuttles offered by universities, hospitals, parks, and retail associations to and from transit hubs and/or within a network of campuses; and
- community-based organization (CBO) shuttles, which may reach further into local neighborhoods and offer specialized services to bring users directly to their destinations from as close to home as possible.

Employer and CBO shuttles are privately operated, and as such, offer restricted access only (e.g., with identification required to prove affiliation with the shuttle provider). Institutional shuttles vary in their funding and accessibility by the public.

EXISTING REGULATORY FRAMEWORK. Shuttle providers are licensed and regulated by the California Public Utilities Commission (CPUC). As a city, San Francisco currently has a limited capability to manage shuttle operations. Both aspects of the regulatory framework for shuttles in San Francisco are discussed below.

The CPUC grants shuttle operators the authority to operate within the State of California on the specific routes that the applicant proposes. Every private for-hire carrier of passengers which operates motor vehicles within California is required to register with the CPUC.⁶ Shuttles may fall under one of two passenger carrier license categories, depending on whether the service is provided to the general public or not: a “passenger stage corporation” (PSC) provides generally fixed route, individual-fare service which may be scheduled or on-call (for example, airport shuttles), and a “transportation charter party” (TCP) carrier is generally pre-arranged for an exclusive group (for example, employers). For the issues studied in this report, the shuttle sponsors would apply for TCP permits. Applicants need to indicate the type of transportation service, areas (or routes) between which services will be provided, the proposed fares (if any), schedules, vehicle types, rules, and regulations.

⁴ Riordan, Bruce. Bay Area Clean Air Partnership (BayCAP) Shuttle Network Inventory, Bay Area Air Quality Management District, 2004.

⁵ Compiled by SFMTA planner S. Fielding, focuses on four main categories of shuttle services (employer, institutional, private, public) within mostly the downtown area.

⁶ Exceptions exist including taxicabs (regulated locally) and medical transportation vehicles. See also <http://www.cpuc.ca.gov/PUC/transportation/FAQs/psgfaqs.htm>

The CPUC takes various measures to monitor and investigate carrier compliance with safety and licensing requirements. For example, one requirement for obtaining a permit is to participate in the Employer Pull-Notice (EPN) system administered by the California Department of Motor Vehicles. The EPN allows the CPUC to receive regular updates on driver safety records. Furthermore, the public may also lodge complaints through the CPUC’s Complaint Intake Unit. The CPUC may investigate complaints in cooperation with police agencies, and recent enforcement actions have included fines or vehicle impoundment.^{7,8}

The San Francisco Police Department has responsibility to enforce the traffic code and SFMTA has jurisdiction over parking with the city. The main ways that San Francisco agencies currently regulate shuttles are as follows:

1. Police:

» *Weight restrictions:* In accordance with the San Francisco Transportation Code,⁹ some residential and arterial streets are weight restricted for less than 3 tons or 9 tons. Enforcement is limited and necessarily based on manual enforcement (primarily on field observations by police officer on duty, or via public complaints). The criteria for establishment of a weight restriction has to date been case-by-case depending on conditions and traffic patterns specific to that location. The current fine for a weight restriction violation is \$103.

» *Idling:* In accordance with the California Vehicle Code and the City Transportation Code, privately-owned motor coaches in City right-of-way are allowed to idle for a maximum of five minutes only, unless actively loading or unloading passengers. Enforcement has been limited. SFMTA guidelines stipulate a three-minute idling maximum for Muni vehicles, reflecting the agency’s desire to balance emissions impacts with operational needs.¹⁰ The current fine for idling is \$103.

2. SFMTA—*Curb Priority:* In accordance with the California Vehicle Code and the City Transportation Code, no vehicles other than Muni vehicles may stop in bus zones for passenger loading and unloading, unless express permission has been granted by SFMTA through an ordinance. Enforcement by either police or SFMTA Parking Control Officers has been limited. The current fine for illegal usage of a bus zone is \$253.

3. San Francisco Planning Department—*Impact Mitigation:* The Planning Department may include the provision of shuttle services as a condition of approval for development rights.¹¹ Depending on their particular approval agreement, properties who are subject to this condition may be required to provide shuttle service during specified times as a supplement

⁷ <http://www.cpuc.ca.gov/PUC/transportation/Passengers/CarrierInvestigations/>

⁸ Conversations with W. Lewis, California Public Utilities Commission, 10/09

⁹ http://ftp.resource.org/codes.gov/ca.local/ca_sf_transportation.pdf

¹⁰ Conversation with T. Papandreou, SFMTA, 11/09

¹¹ Conversations with S. Puccioni, 350 Rhode Island Development, 3/25/10, and G. Phillips, China Basin Landing, 11/9/09

to transit service, as well as to assist in periodic monitoring of the service. Developers would typically offer these shuttle services through a third party shuttle provider either directly or through a Transportation Management Association (TMA). For example, in the case of Mission Bay, the City requires both residents and business to pay monthly fees toward the Mission Bay TMA, a separate private entity which plans and operates several successful shuttle routes through the neighborhood connecting with rail transit stations.¹²

4. San Francisco Department of the Environment—For employers with more than 20 employees in San Francisco, one of the possible transportation alternatives as mandated by the San Francisco Commuter Benefits Ordinance (effective January 2009) is a shuttle service.

Shuttles operating on a regional level, but serving or passing through San Francisco, may be required to operate by jurisdictions outside of San Francisco, as part of a mandated travel demand management (TDM) strategy. For example, as cited in the recent report by the California Center for Innovative Transportation, employer shuttle providers may be required by the city in which they are located to achieve a minimum percentage of alternative mode use rate by their employees.¹³

II. EXISTING CONDITIONS AND NEEDS ANALYSIS

STAKEHOLDER OUTREACH AND FIELD OBSERVATIONS

To assess current shuttle issues and conditions, Authority staff conducted initial data collection and extensive stakeholder outreach in representative locations. These activities centered on the two types of service that are the primary focus of the study:

The large motorcoaches utilized by some providers can take longer to board than Muni buses of the same size due to their single doors, high floors, and large size.

- Regional Employer Shuttles: Based on direction from the Authority Board, representative neighborhoods selected were the Marina, Glen Park, and Noe Valley.

- Local Employer/Downtown Circulator Shuttles: Representative transit hub locations included the Embarcadero Station area and the Caltrain Station at

4th and King streets..

STAKEHOLDER MEETINGS. Outreach for the study included interviews and meetings with shuttle providers including a consortium of large regional employers (Genentech, Apple, Yahoo!, and Google); local employers in the downtown area represented through the Embarcadero Task Force and Neighborhood Business

Watch; shuttle operators Bauer and Compass; institutional providers (UCSF, Academy of Art University); local neighborhood associations including the Marina Community Association (MCA), Upper Noe Neighbors, and the Glen Park Association; and various SFMTA staff.

PROVIDERS AND OPERATORS. Regional employers provided extensive data about their San Francisco operations, including routes, stops, trips, and ridership. Data was provided by the four major regional employers (Genentech, Apple, Yahoo!, and Google) on an aggregate basis (to protect proprietary and privacy concerns). Routes operate during AM and PM peak periods from Monday to Friday. (An aggregate representation of routes, stops, and trips is included in Appendix B.) In addition, the regional employers provided aggregate responses to questions regarding their service and operations planning; reasons for service; funding; coordination; and other questions. This data indicated that, at the time of data collection, these four large employers were collectively transporting 2,000 employees per day from San Francisco to their respective campuses. Activity is particularly concentrated in Glen Park, Noe Valley, and along the Van Ness Avenue corridor; the employers have approximately 50 stops within the city. Vehicle types are split between large motorcoaches (with capacity for approximately 50 passengers) and van-type/smaller bus shuttles (with approximately 25-passenger capacity). Almost all vehicles operate bio-diesel (B20) engines.

Local employer operations in the downtown area in general were similar to those documented in the 2008 SFMTA survey. Their routes provide service from BART or Caltrain to respective employer locations, operating during AM and PM peak periods from Monday to Friday. The vehicles in use are all van-type/smaller bus shuttles (25-passenger capacity). A sample of detailed ridership figures was provided by Adobe, one of the larger employers in the group at the time of this report (1,000 employees in the San Francisco office on Townsend), to show the highest-point load factors for their Caltrain and BART shuttles. At the most congested times and points, loads peak at 54% for AM and 100% full for PM (for runs near 5:00 PM). However, peak period loads average between 18%–42% indicating that there is currently still additional capacity.

In addition to employers, there are a number of institutional shuttles operating in the downtown area and citywide. The largest of these include shuttles provided by: UCSF, the Academy of Art University (AAU), and various hospitals/medical institutions. The study team met with staff from the Academy of Art University (AAU), in response to a letter from the San Francisco Planning Commission expressing concern regarding duplicative service with Muni, low load factors, the number and location of curbside bus zones, vehicle idling, and vehicle storage.¹⁴ AAU officials acknowledged having lower-than-desired load factors and the need to improve the emissions profile of their fleet. They are undertaking transportation planning studies as part of their overall master planning effort and are keen to work with the City to address these needs.

FIELD OBSERVATIONS. The study team made peak hour ob-

¹² <http://www.sfxaminer.com/local/Shuttle-plugs-holes-in-Mission-Bay-transit-93164654.html>

¹³ CCIT, Privately-Provided Commuter Bus Service, March 2010. The example provided was Genentech which was required by the City of South San Francisco to achieve a 30 percent alternative mode use rate (which incorporates future projected growth). In conjunction with other TDM strategies and marketing, Genentech achieved a 35 percent alternative mode use rate.

¹⁴ Planning Commission letter, November 2009.

servations of general shuttle activities in February and March 2009 at high use locations. Staff noted fairly smooth and orderly boarding activity and relatively few conflicts with Muni bus operations. Idling took up to 5 minutes at some locations. It was observed that the large motorcoaches could take longer to load and unload than Muni buses of the same size, due to their single doors, high floors and large size.

In March 2010, the study team conducted further fieldwork to investigate the extent of regional shuttle conflicts with transit services. Two locations were chosen, for both high shuttle activity and frequent Muni service: Van Ness Avenue at Pine Street, and 24th Street at Castro Street. Golden Gate Transit (GGT) also operates buses on Van Ness Avenue.¹⁵ The study documented some additional impacts to transit and traffic including:

- two observed conflicts (where Muni buses were delayed) out of 30 observations at Van Ness and Pine;
- one conflict with a Muni bus out of 42 observations at 24th and Castro;
- four instances of shuttles blocking the outside mixed traffic lane due to the shuttle not pulling in entirely to the curb.

Field work also captured conflicts at Market near 8th Street and several instances of shuttles parking in red color curb zones along Market Street and in the South of Market area. These limited observations were not sufficient to reveal extensive conflicts at Muni bus zones. However, as discussed below, the frequency of public comment and complaints regarding bus zone conflicts

¹⁵ GGT operates public transit service with approximately 20 routes between San Francisco and Marin and Sonoma Counties. Overall throughout San Francisco, GGT shares approximately 80 bus stops with MTA.

(particularly along the 24th Street and 30th Street corridors) and traffic impacts associated with shuttle stop activity may indicate a more problematic situation than these limited data imply. A subsequent phase of study and evaluation, including more extensive data collection and analysis in partnership with shuttle providers, is necessary to inform the need for, and nature of, management strategies and physical improvements that should be initiated at specific locations or on a system-wide basis.

NEIGHBORHOOD ASSOCIATION MEETINGS AND SURVEYS.

The study team attended community meetings in Upper Noe Valley (March and June 2009) and Glen Park (April 2009) to gather feedback from local residents. Community members, including from the Marina District, also submitted more detailed written comments in response to a request for input that was circulated in coordination with the neighborhood associations.

Opinions vary widely regarding shuttle operations, benefits, and impacts. Many residents (including non-shuttle riders) expressed support for shuttles, citing reduced auto usage by shuttle patrons and improved neighborhood parking availability; increased attractiveness of the city as a residential location (by facilitating a long commute); shuttle riders’ patronage of local retail shops; and increased perceptions of safety associated with increased foot traffic. Many residents strongly raised concerns regarding the local impacts of shuttle operations, citing conflicts with Muni buses at stops, which may delay transit service and/or cause Muni passengers to alight away from the curb; the relative size of shuttles compared to the scale of local streets and sidewalks, leading to pavement wear and safety concerns for cyclists and pedestrians; and issues of noise, idling, and pollution. Marina residents were particularly concerned about parking spillover problems that ex-

TABLE 1 – HIGH-LEVEL SHUTTLE BENEFITS AND IMPACTS

	CATEGORY	MEASURE	PUBLIC	PRIVATE
Benefits				
(Broad in scope, highly regionalized)	Congestion	Vehicle Trips Avoided	X	
		Vehicle Miles Traveled (VMT) Avoided	X	
		Load Factor	X	
	Environmental	Emissions Reduced (CO ₂)	X	
		Emissions Reduced (Non-CO ₂ Emissions—ROG, NOx, PM)	X	
	Economic	Local Spending Induced	X	
		Employee Retention and Recruitment		X
		Productive Time Gained		X
		Accessibility		X
	Quality of Life	Car Ownership Reduced	X	X
Leisure or Personal Time Gained			X	
Impacts				
(More detailed Operations-level, localized)	Congestion	Displacement of other vehicles (cars, bikes) when parked or idling	X	X
		Displacement of Muni vehicles when parked or idling	X	
	Environmental	Emissions Produced (due to larger vehicle size, or when idling)	X	
	Quality of Life	Noise/Vibrations	X	X
	Safety	Unsafe sightlines if double parked or in Muni zone	X	
		Unsafe sightlines at certain locations if moving (e.g., turning corners)	X	X
		Collisions	X	X
	Pavement Condition	Wear and tear on pavement	X	
		Wear and tear on curb bulbs (e.g., turning corners)	X	

TABLE 2. TYPICAL SHUTTLE CHARACTERISTICS

	LENGTH	WIDTH	HEIGHT	WEIGHT	PASSENGER CAPACITY
Typical large motorcoach shuttle	40'+	8-8.5'	10'+	18-20 tons	45-50 passengers
Typical medium-size van shuttle	20-22'	6.5-8'	8'	7-8 tons	20-25 passengers

SOURCE: Inudstry interviews

acerbate already constrained parking conditions. Many residents suggested limiting shuttle operations to particular times of day or particular locations. Appendix D illustrates a summary of input regarding shuttle impacts that the study team received via community meetings and written/email comments.

COMMUNITY AND SHUTTLE PASSENGER SURVEYS. In addition to direct outreach at community meetings, Authority staff administered three email/mail surveys in coordination with the Marina Community Association, Upper Noe Neighbors, and the Glen Park Association in February and March 2009, in order to further our understanding of the range of shuttle benefits and concerns. These short surveys inquired about resident usage of shuttles (if any) and their perceptions of shuttles, including specific areas of concerns and/or benefit. A general online survey was also conducted to seek citywide input from the public. Over 600 responses were received from this round of outreach; feedback was generally more positive than the range of input provided during neighborhood outreach meetings. The majority (approximately 70%) of neighborhood survey respondents had positive views of shuttles, with the balance expressing mixed or negative views. (Input at neighborhood meetings was more evenly split.) Areas of concern varied somewhat by neighborhood. Noe residents expressed concerns most frequently regarding transit conflicts and noise, while Glen Park residents' top issues related to traffic impacts and the size of shuttle vehicles.

Many online shuttle survey respondents who were shuttle users said that the provision of shuttle services by their employer was key to their employment and residential location choice. Many respondents also felt that the shuttles have alleviated congestion and traffic in their neighborhoods. After the introduction of shuttle services, some residents noticed that parking on the street became easier and during the commute there were fewer cars on the road. They attributed this to the likelihood that some of the people riding the shuttle buses

Rider survey results indicate that 63% of regional shuttle passengers would otherwise have driven alone and thus avoid 327,000 vehicle round trips per year.

may have given up their cars or used vehicles much less frequently. Many respondents felt strongly about environmental protection issues and felt that shuttle service is environmentally beneficial.

Further, some residents commented that pedestrian activity and community cohesion in their neighborhood had increased due to the presence of shuttle stops. Some respondents reported that small local businesses, such as coffee shops and clothing stores, also benefit from shuttle riders' foot traffic. Residents also suggested that shuttles could be limited to routes on main streets, which may also be used by transit vehicles, in order to minimize their impacts.

Top shuttle concerns expressed by respondents in the representative study areas and at neighborhood meetings included the following:

- Vehicle size. Concern that shuttles are visually obtrusive and have difficulty making turns due to their large size.
- Vehicle anonymity. Frustration that unlabeled buses make it difficult to report complaints.
- Congestion. Respondents felt that shuttles caused additional traffic (e.g. via park-and-ride or kiss-and-ride activity) and/or slowed existing traffic due to conflicts (e.g. double parking).
- Noise. Residents, especially those who live in highly residential areas, felt that shuttles are noisy.
- Pollution. Respondents were concerned about the pollutants that shuttles might emit while idling or traversing the neighborhood.
- Transit delays. Residents reported that they have seen shuttles double-park and load/unload in Muni stops.

Following the neighborhood outreach, a more detailed and targeted online survey was developed and administered in May 2009 with the help of the major regional employers to regional shuttle passengers to obtain rider information. The 15-question survey yielded over 1,000 responses from regional shuttle passengers divided among two large shuttle operators and among the four regional employer providers.¹⁶ The survey questions inquired about reasons for shuttle usage, shuttle alternatives, car ownership, stop access modes and times, and economic impacts (through induced spending). Responses to the survey supported the analysis of shuttle benefits and impacts (see below section).

It should be noted that as this SAR was in process, shuttle usage grew rapidly. Google reports doubling its ridership in this period, and the Mission Bay Transportation Management Association's shuttle services grew from 4000 monthly riders at launch in May 2010 to four times this ridership a year later. During this same period there was not a significant increase in recorded public complaints.

BENEFITS AND IMPACTS

Authority staff assessed a range of benefits and impacts associated with the regional employer-sponsored shuttles in order to investigate the role and value of shuttles in the overall transportation system. The range of high-level benefits and impacts generated through public outreach is summarized in Table 1. These benefits and impacts may be considered as public or private benefits. The classification of benefits as public or private is for discus-

¹⁶ The survey responses were found to be representative of the larger population of regional shuttle riders, based on a comparison of the geographic distribution of known boarding figures (reported by the regional employers) to the geographic distribution of survey responses by self-reported boarding locations.

sion/illustrative purposes only; these factors may be considered differently from the point of view of various stakeholders (shuttle passengers, neighborhood residents, employers, shuttle operators, and transit agencies). Certain areas of benefit or impact may be quantifiable in an objective fashion, while others may be only perceived or reported (i.e. dependent on stakeholder input).

ANALYSIS APPROACH. The study team assessed multiple areas of benefits and impact using data and information collected from passenger surveys, employer and stakeholder consultations, and qualitative input from public feedback. Emissions estimates were calculated using Bay Area Air Quality Management District (BAAQMD) guidelines. Where detailed vehicle data was not available or provided, Authority staff based estimates on assumptions as described below.

For the analysis below, it is useful to review some basic physical characteristics of typical shuttles currently in use in San Francisco as shown in Table 2.¹⁷

BENEFITS ANALYSIS. Benefits identified include the congestion, environmental, economic, and quality of life measures described below.

- *Efficiency (Load Factor):* Load factors (percentage of vehicle seats that are occupied during a typical trip) are an indication of operating efficiency. As a form of high-occupancy vehicles, shuttles compare positively against automobiles. However, having vehicle load factors which are consistently low may point to an opportunity to eliminate or consolidate that trip or route, or to perhaps use smaller vehicles.
 - » Load factors for regional shuttles were self-reported to range greatly from 20% to 70%. Lower ridership was generally reported in outlying routes or newer routes which have recently been established. Shuttle providers reported a general flexibility to their service, which allows adjustments to be made over time as demand shifts. Field observations at major transit hubs verified that vehicles are close to capacity at hub locations during peak periods. Stakeholder comments during outreach cited instances where vehicles are not at or near capacity.
 - » Load factors for local circulator shuttles were calculated from the detailed ridership figures of Adobe Systems for illustrative purposes. Load factors climb as high as 100% during some weekday peaks, but average between 18%–42% depending on seasonal factors. This indicates an opportunity exists to increase operating efficiencies.

Given time and resource constraints, more detailed benefit/impact analysis across areas other than load factor was conducted for regional shuttle operations only. The following findings relate to regional shuttle operations and not downtown circulator shuttles:

- *Vehicle Trips Avoided:* A shuttle passenger commuting to work may otherwise have chosen (or been limited to) driving alone to commute to work, if the shuttle were not available. The

passenger survey found that 63% of regional shuttle passengers would otherwise have driven alone. The shuttle services provided by the group of major employers thus avoids 327,000 solo vehicle round trips per year. For comparison, the San Francisco Climate Action Plan calls for reducing 1.6 million intraregional solo vehicle round trips per year through employer-based programs: the shuttles surveyed represent 20% of the target for intraregional trip reduction from this category of strategies.¹⁸ The “employer-based programs” category comprises approximately 3% of the overall targeted emissions reductions from transportation; other transportation action categories (such as improved transit, increased bicycling and walking, etc.) account for the remainder.

The regional shuttle programs surveyed reduce CO₂ emissions by approximately 8,000 to 9,500 tons per year compared to the scenario where some passengers would have driven instead.

- *Vehicle Miles Traveled (VMT) Avoided:* Congestion is also eased by the magnitude of trips that shuttle riders are avoiding, as generally long auto commute distances result in more pollution, more vehicles taking space on roadways, and more wear and tear on pavement. Multiplying the number of passengers by commute distances to their respective workplaces, the shuttle programs surveyed yield congestion benefits of 20 million VMT avoided per year.
- *CO₂ Emissions Reduced:* An important indicator of environmental benefit is the reduction in carbon dioxide (CO₂) emissions, as CO₂ is known to be one of the primary greenhouse gases responsible for climate change. Applying the BAAQMD methodology to survey data and fleet characteristics from the shuttle providers, and assuming the following: a range of years the vehicles were manufactured (from 1994 onward); a range of in-vehicle emissions control systems (categorized based on the percentage of particulate matter they filter, from 25% to 85% corresponding to various emissions levels verified by the California Air Resources Board); and the presence of a nitrous oxide filter following conversations with the shuttle operators regarding their green fleets,¹⁹ the analysis indicates that the shuttle programs surveyed reduce CO₂ emissions by approximately 8,000 to 9,500 tons per year over the scenario where some passengers would have driven instead.
- *Non-CO₂ Emissions Reduced:* Other important components of vehicle exhaust emissions include nitrogen oxides (NO_x), reactive organic gases (ROG), and particulate matter (PM). The analysis indicates that shuttle usage yields a reduction in non-CO₂ emissions ranging from 1 to 17 tons per year (compared to the case where passengers would have driven alone instead).
- *Local Spending Induced:* The presence of commuter shuttles

¹⁷ Sources: Information drawn from the specifications of typical shuttle vehicles for example, by Ford Motor company. See: https://www.fleet.ford.com/showroom/specialty_vehicles/Qualified_Vehicle_Mod_Shuttle.asp

¹⁸ SF DOE and SF PUC, *Climate Action Plan for San Francisco*, September 2004.

¹⁹ Conversation with L. Baylor, Bauer, 9/28/09

in local neighborhoods may contribute to increased economic activity, due to passenger patronage of retail locations between their residence and shuttle stop, which they may not otherwise have patronized. Of the survey respondents, 63% report that they patronize shops, restaurants, or other business due to their route to/from the shuttle stop. This estimated total spending (as directed locally near shuttle stop locations) is valued at over \$1.8 million per year.

- *Employee Recruitment and Retention:* Offering commuter shuttle service as a benefit was cited by the shuttle providing employers in interviews as a key component of their benefits package offered to existing employees and potential hires. Survey results indicate that 14% of employees would leave their current employment if the shuttle service were unavailable.
- *Productivity or Productive Time Gained:* Riding a shuttle may free time for doing work-related activities, if the shuttle is equipped with work-related amenities such as wireless connectivity. 92% of respondents indicated that they gain productive work time by riding the shuttle, which they reported totals at least 322,000 person-hours per year.
- *Accessibility:* 62% of survey respondents indicated that their decision to live at their current residence in San Francisco was influenced by the availability of the employee shuttle service. One respondent pointed out that proximity to shuttle service is used in real estate listings (which was confirmed by another respondent, a real estate broker himself). During outreach, a landlord stated that the proximity of his/her property to a shuttle stop was a deciding location factor for the past two tenants. Several other members of the public contend that shuttles are a nuisance and detract from house values.
- *Car Ownership Reduced:* 28% of survey respondents do not own personal vehicles; thus, the availability of the commuter shuttle may enable or at least further help employees to live without a car. Many employers maintain corporate partnerships with carsharing organizations such as Zipcar or Enterprise WeCar (through either on-site company vehicles, or supporting costs for personal memberships) to compliment the shuttle service and provide further mobility for those without cars. At least one employer also provides bicycles on site to provide mobility.
- *Leisure or Personal Time Gained:* Riding the shuttle may free time for personal activities (such as sleeping, personal emails)



or may reduce travel time compared to one's travel time driving alone, due to the High-Occupancy Vehicle (HOV) lanes available along the route. 86% of respondents said they gain personal time, which they reported totals at least 246,000 person-hours per year.

IMPACTS ANALYSIS. While benefits are widespread, impacts are localized. These impacts may be categorized as environmental impacts, safety impacts, pavement condition impacts, or quality of life impacts.

- *Emissions produced:* A large motorcoach would emit additional pollutants when operating, when compared to one automobile. However, as shown under the "Benefits" section using BAAQMD factors, the primary pollutants emitted by one motorcoach are overall less than those which may be emitted by the autos which that shuttle is now keeping off the roadway. Of the data collected, large motorcoaches were found to emit approximately 1,800 to 2,200 tons per year of CO₂, or 20% of the approximately 10,800 tons per year of CO₂ which would have been produced by the reduction in auto trips. A large motorcoach also emits pollutants while idling. Although idling was only infrequently observed by the study team during a limited number of field observations, cases of vehicle idling were frequently cited by members of the public and SFMTA service planning staff during outreach.
- *Noise/vibrations:* Input from outreach participants and survey respondents regarding noise and vibrations caused by large shuttles when operating or idling near their residences included comments such as: "The shuttles can be noisy, especially late at night when there isn't much other traffic or when they are the kind with diesel engines" and "Large coach shuttles

TABLE 3: VEHICLE GUIDELINES FOR SPECIFIC STREET CATEGORIES

CATEGORY	STREET TYPES	DESIGN VEHICLES	ACCOMMODATION VEHICLE
Local	Alley, neighborhood residential, local lanes of boulevard	Passenger car	SU-30
Pedestrian Activity	Neighborhood commercial, downtown commercial, downtown residential	SU-30	WB-40
Throughway	Commercial throughway, residential throughway, urban mixed use, parkway, through lanes of boulevard	SU-30	WB-40
Industrial	Industrial	WB-40	WB-50
Varies	Park edge, ceremonial	Varies	Varies

Source: SFMTA and SF Planning, Better Streets Plan (2010)

are noisy on small neighborhood streets.” Other comments pointed out similar noise patterns caused by non-shuttle vehicles (such as Muni vehicles).

- *Conflicts with cars and bicycles when parked or idling:* In field-work, the study team observed some traffic impacts by parked or idling shuttles on traffic operations. Traffic impacts also occur when shuttles double park or do not pull in entirely to the curb during loading. Members of the public frequently expressed concern about shuttles blocking cars (for example on 30th Street between Noe Street and Sanchez Street²⁰) and causing bicyclists to have to weave into traffic to avoid parked shuttles (for example on Market Street). SFMTA staff reported that problems at Glen Park eased following discussions with each employer/operator and follow-up actions.
- *Conflicts with Muni vehicles when loading or idling:* The large majority (approximately 90%) of shuttle stops occur at Muni bus zones; some stops and layovers also occur at non-Muni stop red-curb zones. SFMTA planning staff report this has been a general problem at several locations. This concern was echoed by both SFMTA field supervision staff and in resident outreach surveys and meetings. SFMTA staff noted that shuttle dwell times can be lengthy, even compared with Muni dwell times, due to the large size of motor coaches, their high floor configuration, and use of a single door for boarding and alighting. Dwell times were observed by the study team tended to be in the range of three to six minutes during peak times. SFMTA field staff also cited stress reported by Muni drivers if Muni boarding occurs outside of the Muni zone or at some distance from the curb due to the presence of a shuttle in the bus zone. Muni drivers are instructed not to pick up passengers outside the bus zone for safety reasons, yet passengers often insist on boarding or alighting in these areas. In limited field observations and studies, Authority staff witnessed only a few instances of shuttles blocking Muni vehicles in Muni zones. Some instances at Glen Park and on Van Ness Avenue, however, were significantly troublesome.²¹ During the preparation of this SAR, SFMTA staff expanded a Muni bus zone at 8th and Market in response to over-crowded conditions and impacts to Muni service at that location. Staff also have heard continuing concerns about tour bus operations in the Chinatown/North Beach/Fisherman’s Wharf area. As noted above, public comments and complaints frequently cited instances of shuttle/Muni bus conflicts at stops. This SAR recommends that SFMTA conduct a more comprehensive study to further quantify the extent of this impact and to inform development of operat-

²⁰ The location in question was observed on 3/23/10 by the study team. The short segment on 30th Street between Noe Street and Harper Street (west of Sanchez Street) is very narrow and is impassable for cars when large vehicles (buses and trucks along with regional shuttles) travel on it; the SFMTA should consider a weight restriction at this location.

²¹ A shuttle in the process of boarding passengers at Glen Park on Bosworth Street in a Muni zone blocked an incoming Muni bus, thus causing a conflict and even secondary queuing along Diamond Street where another Muni bus waited for both vehicles to move forward before proceeding onto Bosworth Street. On Van Ness Avenue, shuttles were observed to be partially pulled in to the Muni zone and partially stopped in the mixed traffic lane, causing traffic conflicts.

ing guidance for shuttle providers.

- *Safety:* As noted above, many shuttles were observed to stop or layover at red curb zones, particularly in the south of Market area and even along upper Market Street. To the extent that red zones are kept clear for visibility purposes, this could present a safety hazard for other road users, especially pedestrians. In fact, many outreach comments related to perceived safety impacts of large shuttles blocking sightlines; for example if they were to block motorists from seeing pedestrians. Outreach comments included the following: “This is only a residential street and these buses are enormous” thus reflecting the disproportionate size of the vehicles compared to the neighborhood facilities. In addition, another respondent stated “People expect traffic and buses [on major arterials]; but not on the side roads where people walk their dogs and kids.” Such concerns, raised repeatedly, further emphasize the issues associated with the large size of the vehicles. In the SAR’s development, the shuttle providers self-reported their collisions to be zero. The study team examined publicly available collision data from the Federal Motor Carrier Safety Administration database (SafeStat) for the shuttle operators for the three year period of 2006–2008. No records were found in the carriers’ safety records which could be attributed to shuttle-related collisions.²²
- *Weight Restriction Violations:* The San Francisco Transportation Code restricts vehicles above certain weights from driving on pre-specified routes. A comparison of the current shuttle routes provided by selected private corporate shuttles, and the existing San Francisco weight restrictions (for 3-ton vehicles (Code 501b, 2008) and 9-ton vehicles (Code 501a)), identified six roadway segments where large shuttle motorcoaches weighing over 14 tons may be traversing these weight-restricted streets.
- *Wear and tear on curb bulbs:* Outreach comments included the mention of large shuttles on residential streets being too large and disproportionate to the streets particularly when trying to negotiate the narrow turns. The City currently designs corner sidewalk bulbs using standard guidelines and turn templates which incorporate the size of “design” vehicles (which should be able to comfortably make turns within the lanes provided) and “accommodation” vehicles (which may be able to make turns by straddling lanes or using adjacent lanes)²³ as shown in Table 3. These are also referenced in the San Francisco Better Streets Plan. A typical motorcoach would correspond to classification WB-40 (the number referencing the vehicle length of 40’). The suggested maximum size of

²² <http://ai.fmcsa.dot.gov/safestat/disclaimer.asp?RedirectedURL=/safestat/safestatmain.asp>. Although records were found for three crashes reported between April 2007 and November 2008, it cannot be determined without more formal investigation whether these crashes involved commuter shuttle trips such as the ones under consideration in this report, or whether they occurred during the provision of other types of commercial transportation services.

²³ Conversation with J. Fleck, SFMTA, 10/28/09. New designs are always context specific, depending on the likelihood of large-vehicle traffic; however, older designs would not have accommodated the unforeseen size of large motorcoach-type shuttles.

BOX 1. UNION SQUARE TOUR BUS ZONE. In 2009, six tour companies led by Gray Line contributed funds for the Union Square zone which required the payment of standard SFMTA charges for a white zone longer than 66 feet (\$1,460 at the time of application).¹ The establishment of the zone was subject to a review process consisting of a public hearing and then approval by the SFMTA Board. Ongoing SFMTA observations of this zone during the trial include: issues with tour bus volume spilling over outside the zone; bus parking over the designated 10 minutes and the difficulty of enforcement; large size of the buses; solicitation on the sidewalk; and, more tour companies entering the market during the trial period. This trial led to modifications to the design and allowed use of the westernmost portion of the zone in January 2010 to enhance safety. Some issues related to Central Subway construction activities still remain indicating a need for continued monitoring and management.² It should also be noted that the tour bus function is different from the shuttles function as tour buses may dwell for an extended period to attract more customers.

¹ <http://www.sfmta.com/cms/pcurb/curbfces.htm#business>

² Conversations and emails with J. Robbins, SFMTA

a vehicle on local residential streets is classification SU-30, which is smaller than a typical motorcoach. The suggested accommodation vehicle for a neighborhood commercial street or a local arterial (“residential throughway”) is WB-40, corresponding to a typical 40' long motorcoach.

The benefit/impact analysis demonstrates that shuttles are providing a useful and beneficial service to many San Francisco residents and local and regional employers and institutions. Yet, significant concerns regarding shuttle-related impacts, particularly perceived local neighborhood impacts, warrant further analysis, data collections, and policy development (e.g. operating guidelines) as discussed below. Key findings from the regional shuttles benefit/impact assessment show that:

- Benefits are significant and widespread, particularly regional congestion and air quality benefits.

- Impacts are localized, with the major issues appearing to be related to visibility, use of Muni stops and red color curbs for loading/unloading and idling,

More active and responsive management options should address curb usage issues and provide for improved communications and collaboration.

- There is evidence that motor coach vehicle size and weighting are not ideal for some streets.

- The public would benefit from a dedicated point of contact for inquiries and feedback.

- The extent of issues and growth of shuttles indicates

long-term need for shuttle planning, coordination, and management.

Conclusion: Shuttles play a valuable role in the overall San Francisco transportation system. More active and responsive management is needed and warranted in order to: address local impacts and neighborhood concerns; improve shuttle operations

within the broader multimodal system; support transparency and certainty for both the public and providers; and encourage and support provision of shuttles to help meet transportation needs and support related policy goals.

III. POLICY ANALYSIS

This section investigates possible directions for planning and management approaches to retain, leverage, and grow shuttle benefits while fairly and more consistently mitigating or minimizing the impacts of shuttle operations.

REGIONAL EMPLOYER SHUTTLES

As described in Section II, while benefits of regional shuttles are significant, and progress has been made to improve their operations, some impacts remain. These impacts are generally highly localized, and typically relate to the size of the vehicle and the interaction of the vehicle with the rest of the transportation system, including Muni, motorists, cyclists, and pedestrians. More active and responsive management options should address curb usage issues (and coordination with parking policies/strategies) and provide for improved communications and collaboration:

CURB USAGE AND OTHER PARKING SOLUTIONS. The City’s best opportunity to manage shuttle operations lies with the SFMTA’s jurisdiction over curb zones (e.g. parking and bus stops). Research indicates that other cities are working through similar shuttle concerns and the allocation of scarce curb space (see Appendix C). A few possible approaches are discussed below:

- *Shared Stops.* The San Francisco Transportation Code states that the SFMTA must provide explicit permission for other vehicles to use Muni bus stops. Regional shuttles have been using Muni zones informally without such permission. In response to complaints by the public and enforcement action by SFMTA, shuttle providers initiated a pilot policy in May 2009 to reduce shuttle-Muni conflicts. Dubbed the “Muni First” approach, these safety-related and operational guidelines were developed by regional operators in good faith, but without the input of SFMTA planners and operators. While these guidelines appear to have been somewhat effective, and subsequent communications between SFMTA Parking Control Officers (PCOs) and shuttle providers have yielded good results, problems still remain. A more collaborative and comprehensive approach to development of the “Muni First” approach is warranted. Jointly-developed guidelines should cover all aspects of operations in San Francisco, to address questions such as, but not limited to: where and when to stop; minimum space requirements (including for multiple vehicles, as necessary); and locations/guidelines for vehicle layovers. SFMTA planners should determine the feasibility and desirability of stops shared with transit, with safe Muni operations taking top priority, using transparent technical criteria such as safety, number of routes served at a stop, route frequencies, and transit performance and reliability considerations. We note that any policy should be equitable and scalable to adapt and respond to the potential future entry of new providers to

Box 2. MUNI EMISSIONS NOISE AND IDLING. Currently, Muni strives to prioritize low-emission vehicles (such as electric trolley-coach and diesel hybrid) continuing towards the SFMTA goal of zero emissions by 2020. Muni’s hybrid and trolley buses are up to 10 times quieter than conventional buses: hybrid vehicles operate at about 70–75 decibels (dBA).¹ Muni also does not allow its own vehicles to idle for longer than three minutes, which is less than the maximum of five minutes prescribed by the City’s Transportation Code for privately owned motor coaches.²

¹ Conversation with T. Papandreou, SFMTA, 11/09/09

² San Francisco Transportation Code, SEC. 10.2.21.

the regional shuttle market. Development of these stop-level rules should be developed as part of a broader set of operating guidelines as discusses below in the Service Planning Criteria subsection.

- *Dedicated shuttle zones.* SFMTA currently operates its color curb program under which an entity may establish a curb zone following payment of applicable fees and a public approval process. The color curb program one-time application fees are based on the length of curb requested (about \$28/linear foot). To make room for shuttle zones, passenger parking spaces could be converted on a part- or full-time basis, and foregone revenue could be replaced by shuttle sponsors or operators. To the extent that regional shuttles are more impactful than Muni vehicles due to weight, size or engine type, additional impact fees may also be warranted. Dif-

ferential permitting or pricing for the purposes of demand management may also be warranted. These policies should be coordinated with the work currently in progress to more rationally and equitably manage scarce curb space. Chief among these efforts is the SFpark program, which is piloting demand-based variable pricing at meters to support parking availability in high demand areas. In addition, the City’s parklet program is a public-private partnership model under which local business may establish an extended sidewalk area (e.g. for cafe seating provided by the business but open to the public) in the parking lane. The SFMTA has established an interim parklet fee of \$1,220 primarily to recoup costs of planning, design, and parking meter removal. Future revisions to this policy may consider recovery of foregone parking meter revenue. Finally, establishment of new shuttle zones should be informed by the recent example of a six-month trial tour bus zone at Union Square which has not gone as smoothly as originally anticipated (see inset Box 1). A subsequent extension of the Muni zone on 8th Street (in the South of Market) appears to be working well; although SFMTA Staff report that shuttle operators using the new zone have balked at the suggestion that they should help pay for the \$1,500 improvement.

- *Shared parking.* As is being considered by New York, shared parking may be a strategy to improve shuttle operations, particularly for layovers. This may be a solution involving private arrangements between shuttle operators and private

TABLE 4: BAY AREA SHUTTLE COORDINATION MODELS

TYPE OF MODEL	EXISTING SHUTTLE SERVICE PARTNERSHIP	DESCRIPTION	SERVICE PLANNING/OPERATION/FUNDING
Public-Private Partnership (Public Lead)	DASH (VTA’s San Jose Downtown Area Shuttle)	Free circulator shuttle One-way loop to/from Caltrain’s San Jose Diridon Station Ridership approx. 1000/day	PLANNING: VTA FUNDING: San Jose Downtown Association (from city or directly from employers) plus TFCA grant plus VTA
	Golden Gate Transit Club Bus	Commuter Shuttle from Marin and Sonoma counties to SF Approx. 30 pax to establish a “club” Each pax pays a monthly fee (comparable to current GGT fares)	PLANNING: Clubs FUNDING: GGT handles procurement, pays 30% of costs, and Contractor bills commuter club directly for remaining 70% • GGT provides service support (e.g. late service or breakdowns)—“middle person” • GGT leases old vehicles to contractor
Business Improvement District (Non-Profit Lead)	Emery Go Round	Free circulator shuttle 7 routes—various services to/from MacArthur BART, Amtrak Ridership approx. 3000/day Peak Frequency 10–12 min	PLANNING: Emeryville TMA FUNDING: Originally Caltrans grant plus employers, then became fully privately funded based on property square footage
Public-Private Partnership (Non-Profit Lead)	Peninsula Traffic Congestion Relief Alliance	Various pass/free shuttles (24 vehicles, 7 cities)	PLANNING: Alliance FUNDING: (various models) • 50% congestion relief funding plus 50% local match (from city or directly from employers) • 75% Samtrans/Caltrain plus 25% local match from employers

owners of parking or potentially a public-private solution. For example, where capacity exists, SFMTA could share its own terminal facilities or yards with regional shuttles during daytime hours when Muni buses are operating their routes. Bus loop facilities at the Glen Park BART Station present an interesting opportunity for allowing cooperating shuttles to use excess capacity, easing competition for space between Muni buses, shuttles, and kiss-and-ride trips on Diamond and Bosworth streets.

REGULAR COMMUNICATIONS AND COLLABORATION. Aside from curb space management, shuttle operations can be managed through enforcement by the SFPD traffic detail or through weight restrictions on various streets. Neither approach is ideal, however, due to the reliance on manual enforcement. A preferred method of engagement is the collaboration model as practiced in Seattle by the Seattle Department of Transportation (DOT) and Microsoft. From the inception of its shuttle program in 2007, Microsoft collaborated closely with various transportation agencies (including Seattle DOT and Metro Transit) to plan routes and stops for their regional service, including the designation of shuttle zones.

This collaboration model is ideal for San Francisco, as a means to build upon and streamline the already improved communications between SFMTA and the regional shuttle sponsors. In taking the lead on setting operating standards and guidelines, SFMTA should focus on two areas in particular.

Service Planning Criteria. Based on a study of operations at Muni bus zones and extent of shuttle/bus conflicts, SFMTA should set service planning criteria or guidelines, working collaboratively with shuttle sponsors to re-draft the Muni First Shuttle Policy, which was first developed by shuttle sponsors themselves without consultation with SFMTA planners. The guidelines should address use of stops (who may use, when, for how long, and under what terms—e.g. display of unique identifier number), street restrictions (through weight restriction policies), and other operating rules (e.g. layovers). Development of these guidelines should be led by SFMTA professional planners and transportation engineers and be consistent with, and deferential to, regular Muni service planning policies. In some cases, it may be possible for shuttles to share bus zones with Muni (due to less frequent Muni service), while in other cases, it may be necessary to change the routing, to develop a new stop, or to extend an existing stop to create a shuttle zone, or find alternative (potentially shared) parking or lay-over areas. Operations in accordance with these criteria could be supported on an ongoing basis through a Muni Partners capacity at the SFMTA as discussed below, with inappropriate operations being reportable and enforceable via ticketing by the Police Department and/or Parking Control Officers.

Vehicle and Emissions Thresholds. Working with the shuttle sponsors and operators, SFMTA should set vehicle operating size and emissions guidelines, which would become standards over time. Shuttles should be operated safely at all times, be of a size that is able to comply with traffic standards (i.e. turning radii), and be generally no more impactful than Muni vehicles in terms of noise, vibration, and idling (see inset Box 2). The California Center for Innovative Transportation (CCIT) released a report in

March 2010 entitled “Privately-Provided Commuter Bus Services”, which, assisted by inputs from this SAR process, examines the role of regional shuttles within the San Francisco Bay Area transportation network. The CCIT recommendations are in line with the potential management options listed above, to provide guidelines for transit agencies, and local, regional, and federal agencies and to help facilitate communication and coordination between the public and private sectors as the regional private shuttle sector continues to grow. (The CCIT report examined categories of regional shuttle transportation, including employer-based—similar to the regional shuttles discussed in this SAR—fee-based, and partnership-based.²⁴

LOCAL EMPLOYER SHUTTLE/ CIRCULATOR CONSOLIDATION

Several employers and institutions in the downtown area have been meeting informally through various groups (two examples include Neighborhood Business Watch and the Embarcadero Task Force led by SFMTA) to discuss transportation issues and possible collaboration opportunities.

The concept of consolidation of South of Market (SoMa) shuttles was originally supported by the results of SFMTA’s 2008 shuttle inventory, which found that, at the time, there were more than 11 private business shuttle systems operating in the area, in many cases providing redundant service. Based on the study team’s conversations with SoMa employers, these redundancies still exist. Employers provided additional details regarding their shuttle consolidation request in July 2009, citing the “need to consolidate the many employer provided shuttles in the Townsend/Business area...to consolidate resources and provide more service to companies and small businesses in the area” and explaining that the employers cannot move forward with shuttle consolidation on their own, as “there is risk associated with being the lead employer” especially pertaining to service and insurance requirements. Member companies are willing to pay for the service. Current average operating costs for a 25-passenger shuttle bus range from approximately \$100,000 to \$170,000 per year.²⁵ Low load factors also show that there are opportunities to increase operating efficiency. Two employers, Adobe and Advent, have already begun to share operations, but there are barriers to further consolidating shuttles due to the complexity of negotiating service parameters, cost-sharing, new entrants, and governance among several firms. For this reason, in other areas, companies tend to create new enti-

ties.

²⁴ CCIT, *Privately-Provided Commuter Bus Service*, March 2010. An example of a fee-based shuttle in the Bay Area is Bauer’s Wi-Drive, a higher-end luxury coach with current fares from \$5.00 to \$10.00. An example of a partnership-based shuttle in the Bay Area is Golden Gate Transit’s Club Bus, described further under the Bay Area Models section of this SAR.

²⁵ Approximate operating costs as provided by NBW, 4/8/09, and as cited in MTA inventory from 4/29/08.

ties to handle the transition from individual service contracts to a shared contract among many employers.

The study team hosted a meeting with downtown shuttle providers, to discuss shuttle operations and the potential for consolidation of service.²⁶ Attendees conveyed the need for last-mile service between transit hubs and workplaces due to: inadequate public transit service levels, over-crowded public transit lines (e.g., F-line), and a negative perception of security. The shuttle providers expressed interest in identifying and establishing partnerships to help fill service gaps and reiterated the need for continuous interface with the appropriate City agencies for guidance on stops and routes. This was especially true for those shuttle sponsors who are mandated to provide service; these stakeholders complained that the City requires shuttle services but does not provide adequate coordination and support for providers regarding operations.

Regarding consolidation, the group expressed interest in this idea, but was interested in taking a measured approach. Private consolidation is not necessarily straightforward financially, due to liability issues (sharing insurance which covers all combinations of passengers from different employers) and due to possible upfront costs in procuring vehicles. The prospect of public participation could also change the service into an open one, negating some perceived benefits of having a “closed” system (e.g. security). In addition, public access could potentially overwhelm the service and otherwise affect employee demand.

BAY AREA MODELS: COORDINATION OF OPERATIONS AND FUNDING MECHANISMS

There currently exist several models in the Bay Area where multiple shuttle providers coordinated resources to provide a circulate shuttle service. These are summarized in Table 4.

In many respects, the desire on the part of downtown employers to consolidate employee shuttles is similar to that of businesses which form a Business Improvement District (BID) to pay for mutually beneficial shared services, such as lighting and maintenance. The potential benefits of consolidation are clear: improved efficiency (higher load factors); lower administrative burden; and lower cost. However, the possible trade-offs for firms and passengers cannot be overlooked.

As noted above, firms must agree on cost-sharing, service planning, governance, and how to integrate newcomers to the group contract. Employee passengers, accustomed to direct hub-to-door service, may experience longer trip times due to the need for more circuitous routes and/or longer walk times. As has been noted by SFMTA service planning staff, because of the premium characteristics of the current service, the further risk is that any degradation of service would result in an impact to this “fragile market” of non-automobile travelers. Service planning therefore must be done carefully, in order to minimize impacts to existing riders, while yielding efficiency benefits overall.

Technical assistance, in the form of professional service planning, may be obtained from transit planning consultants but is best

provided and/or coordinated by SFMTA staff. Whether SFMTA serves as the primary service planner or whether its role is to coordinate with a transit planning consultant, SFMTA’s participation should be compensated in order to ensure the assignment of dedicated staff capacity to this effort. Under this scenario, because operations funding is provided solely by the current employers, the service remains closed to employees of the sponsoring firms.

MIGRATION OF SERVICES FROM PRIVATE TO PUBLIC FUNDING AND ACCESS

If there is a desire to move beyond the provision of a “closed” service to one that is “open” to the public, and assuming the availability of funding as well as market demand, several public/private partnership models exist:

1. SFMTA could directly produce the new service, or
2. SFMTA (or another agency such as the Authority or a new non-profit organization) could procure the service by contracting with a third-party operator, similar to SFMTA’s paratransit service, which is produced by unionized labor.

Key considerations for this choice are the cost and cost-effectiveness of each option, and the availability of funding for the service. Given SFMTA’s current operating deficit, it is not likely that the agency will be able to expand its services in the near future without external funding. Thus, the SFMTA would need private and/or private and public grant funds to provide the desired, newly consolidated transit service.

Even if the cost savings from consolidation were fully needed to pay for SFMTA’s role, the arrangement may still be beneficial to the present employers from an administrative burden perspective. In this “public/private” scenario, it may be advisable or necessary to establish a non-profit corporation with membership that includes SFMTA, the employers, and any other funding partner (see PTCRA and LINKS examples in Table 4).

Another example of public/private partnership may be illustrated by the model followed by the Golden Gate Transit (GGT) “Club Bus” service, a subscription based commuter van service, underwritten by GGT. In addition to regularly scheduled bus service, GGT also operates this shuttle service (the Club Bus), which is a subscription-based commuter club. A minimum of 30 passengers would be required to establish a “club”, with each passenger paying a monthly fee comparable to current GGT fares. GGT handles procurement of services to a third party contractor, and pays 30% of the costs. The contractor bills the commuter clubs directly for the remaining 70% of costs. In this arrangement GGT provides service support (for example, in the case of breakdowns). GGT also leases old GGT vehicles to the contractor.²⁷ Club Bus operates approximately four trips each direction per day, using full-size (40’) buses, including three trips serving UCSF and one trip serving the Financial District/downtown area, with a total daily Club Bus ridership of approximately 200 passengers.²⁸

The prospect of migration of private shuttle services to public management or public/private provision is both intriguing

²⁶ Stakeholder meeting on 4/14/10 hosted by SFCTA, including 11 different providers and operators, Mayor’s Office of Economic and Workforce Development (OEWD) and SFMTA.

²⁷ Comment Letter from Golden Gate Transit dated 3/23/10, and conversation with D. Davenport, 2/25/10

²⁸ Ibid.

and complex. The case for public investment would need to be made through more market research about existing shuttle riders' preferences, as well as potential future new demand. Funding and governance roles would also need to be defined through a new regulatory and "mobility management" role that could arbitrate between direct public production of transit services and provision of publicly and privately produced services. If ultimately deemed desirable, a public/private partnership model would signal a potential new approach to augmenting traditional transit in special markets which could eventually include other parts of the city where service gaps exist.

IV. RECOMMENDATIONS AND NEXT STEPS

In order to better manage shuttle operations and integrate them into the city's transportation system, we recommend the following:

ESTABLISH A "MUNI PARTNERS" PROGRAM AT SFMTA. As a foundation for cooperation and coordination between shuttle providers and City agencies, and to provide a central point of contact for the public regarding shuttle operations, SFMTA should create a "Muni Partners" Program. The program would encourage shuttle operators to register and obtain certification from SFMTA as member participants in the program. The program would formalize and streamline coordination between the shuttle industry and SFMTA and would also provide a mechanism for improved transparency, and more regular monitoring.

In administering the Muni Partners Program, the SFMTA would undertake the following activities to better coordinate, manage, and grow the shuttle sector:

- set clear policy objectives and requirements to ensure safe shuttle operations, complementary shuttle interactions with transit and other road users, and policy integration with other agency and citywide initiatives;
- provide clear operating guidance to existing shuttle operators to improve certainty in operations and minimize citation risk
- work with potential new entrants to the shuttle market to foster development of the shuttle sector in support of broader transportation sector goals (e.g. congestion management);
- create needed facilities to accommodate existing shuttles (and consider shared use of existing or future facilities) and provide for managed growth of the sector;
- improve the system of enforcement, including how to identify and report non-compliant activity;
- maintain a staff capacity to respond to public inquiries and complaints;
- conduct monitoring to evaluate program effectiveness and support sector planning (including working with Planning Department staff on the opportunity to relieve development projects of operating currently mandated services where resources could be better deployed to supporting Muni operations and/or shared or consolidated shuttle services);
- coordinate within SFMTA and with the San Francisco Police

Department and Planning Department on shuttle TDM policy, operations issues (e.g. coordination with transit service planning staff), and enforcement procedures and activities

- assess program sustainability needs and issues, including staffing and funding requirements; and
- address similar issues that exist with other state-licensed passenger vehicles, such as tour buses.

The above program components would enable SFMTA to respond to service coordination needs and public concerns benefiting all parties. For example, SFMTA planners and shuttle operators should collaborate on a Muni-first policy that reflects service guidelines that SFMTA would develop, taking into account Muni operational needs and public input. Cooperating shuttle service providers could display a Muni Partners logo on their vehicle or in their window, which would indicate that they have actively coordinated directly with the City in planning their operations. A unique vehicle identifier and contact information for the Muni Partners Program would be clearly visible. This would allow a formalized point of coordination and contact for both providers/operators and members of the public.

The program should be supported, at least in part, by a fee structure for member organizations. At a minimum this would provide for cost recovery of the program in a manner consistent with other SFMTA curb management and facility fees. It is anticipated that fees would be charged to shuttle operators, and that these transportation service providers would, in turn, have the option to pass on the charge to their customers (employers, other organizations that contract for shuttle services). Non-participating shuttle operators could be subject to additional enforcement actions at Muni/shuttle stops and red zones and would not be eligible for program benefits such as shared stops, planning support and coordination, etc.

In order to help launch the Muni Partners Program, the Authority and SFMTA, in cooperation with other City agencies, applied in 2010 for a grant from the Metropolitan Transportation Commission's Bay Area Climate Initiative (BACI) to undertake the Integrated TDM Partnership Project. The Authority was awarded the grant in late 2010. Development of the Muni Partners Program in the initial stages through a grant-funded approach will allow the City to demonstrate program need and effectiveness. This program's pilot period will include more detailed analysis and data collection regarding shuttle operations than was possible within the scope of this SAR. This work will inform the development of clear operating guidelines and requirements for the shuttles sector. Importantly, during the pilot period there will be an assessment of how to cover the costs of the program following the approximately 18-month grant period, including whether and how to charge a fee to members and what fee level is appropriate..

DESIGNATED SHUTTLES COORDINATOR. The SFMTA point of contact (TDM Project Manager) will lead the activities described above, and additionally work to integrate the Muni Partners Program with related TDM policy initiatives at the SFMTA and citywide. One of the key roles of this staff position, to be initially funded, in part, through the BACI grant, will be to conduct

ongoing outreach and analysis to develop and then periodically update the structure for program membership fees (and fines, if necessary), in order to ensure fairness, a nexus with benefits to program members, alignment with policy objectives, and sustainability of the program.

It is anticipated that the majority of effort will be needed up front to research shuttle and transit/traffic operations conflicts and establish shuttle facility needs, as well as to work collaboratively with industry stakeholders, other agencies, and the public to develop program features, benefits, and fee structures. Thereafter, a maintenance level of effort will likely be needed to continue tracking and monitoring sector activities and respond to public inquiries, as well as to undertake planning efforts to grow the program appropriately in concert with larger agency and citywide TDM initiatives.

SHUTTLE CONSOLIDATION

As described above, the present proliferation of downtown circulator shuttles plays a beneficial role to the transportation system, but these services could be consolidated to achieve better operating efficiencies. With the establishment of the Muni Partners program, the SFMTA, other City agencies, and the Authority will have the opportunity to work closely with downtown shuttle sponsors and operators to investigate the feasibility of establishing a “virtual” Transportation Management Association (TMA) among interested shuttle sponsors, which could facilitate shared or consolidated shuttle operations among existing private providers. The TMA could also partner with other TMAs and/or the City via a public-private non-profit organization that fosters shuttles and other TDM strategies. The TDM Partnership Project includes grant funds to help major employers and institutions explore the governance, business, and legal parameters for these options and additionally provides resources for City agencies to develop efficient and effective ways to partner with a network of TMAs. One key policy issue for the public sector that will require careful consideration is any proposal for Muni to take over privately operated shuttles. Such a transition from a privately-funded, closed system to one that involves public funding for operations (and is open to the public) would represent a major public policy initiative requiring careful and complete vetting. Many jurisdictions look to public-private models as options to expand provision of shared ride services during periods of funding contraction, to serve markets that are otherwise difficult to serve, and/or as a means of piloting reforms. The Authority’s subsequent Strategic Analysis Report on Alternative Transit Service Delivery Options is exploring these larger sector regulation and mobility management topics.

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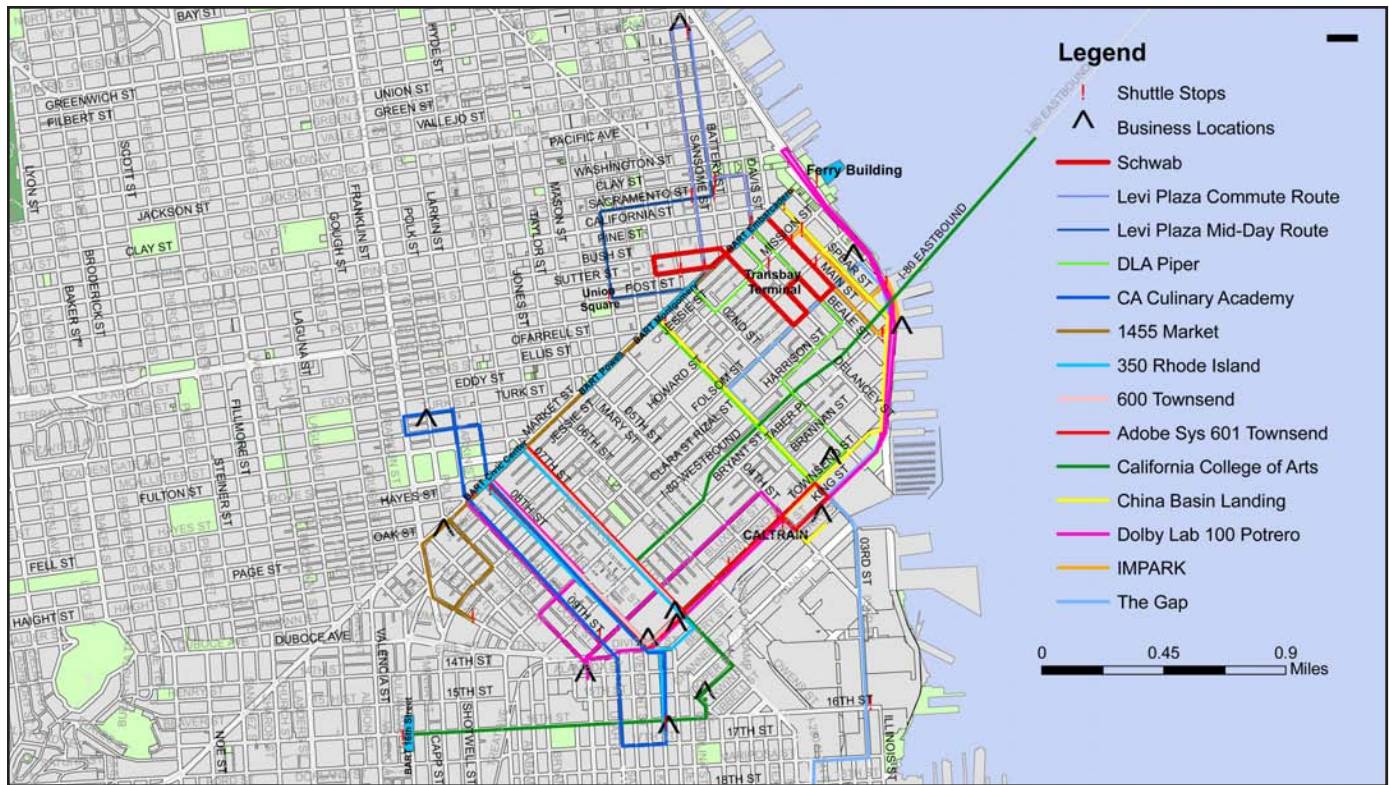
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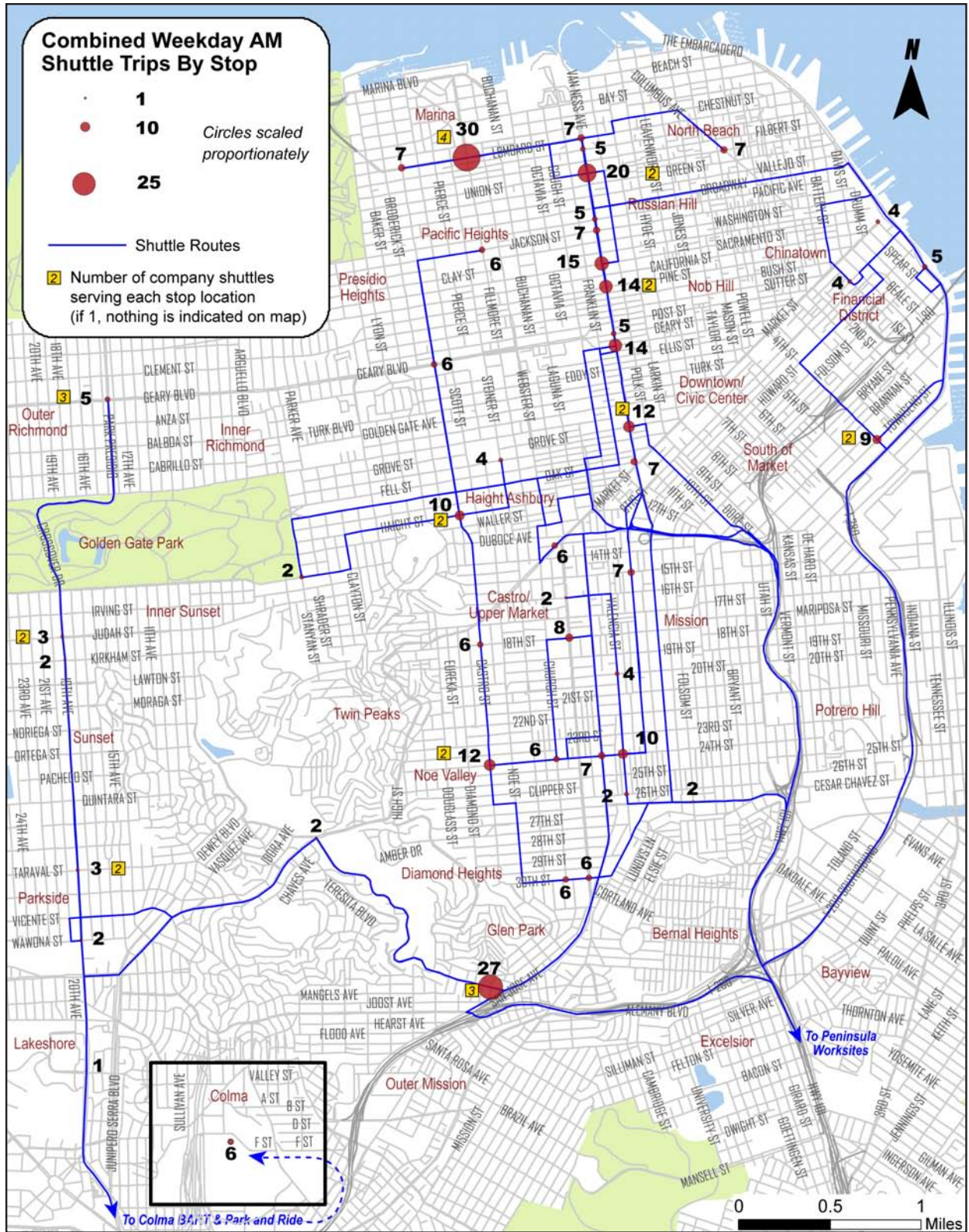
APPENDIX A. SOUTH OF MARKET AND FINANCIAL DISTRICT SHUTTLE PROGRAMS (MTA INVENTORY)



SFMTA | Municipal Transportation Agency
SOURCE: SFMTA (2008)

The City and County of San Francisco does not guarantee the accuracy or completeness of any information in this map.

APPENDIX B. PENINSULA EMPLOYEE SHUTTLES | SAN FRANCISCO TRIPS (DATA FROM GENENTECH, APPLE, YAHOO!, AND GOOGLE, WINTER 2009)



SOURCE: Nelson/Nygaard Associates and Regional Employers (2009); GIS Data Source: SFGIS
NOTE: Shuttle routes may not be exact

APPENDIX C. U.S. SHUTTLE COORDINATION MODELS

The City of Seattle currently operates separate shuttle zones throughout the city for which shuttle operators pay a permit-per-vehicle fee. The shuttle landscape in Seattle is similar to that of San Francisco in various ways. There are regional shuttles which serve residential neighborhoods, transporting passengers outside the city. These shuttles belong primarily to the region's largest employer, Microsoft Corporation, and shuttle services transport over 3,000 passengers each day to the Redmond campus (about 20 miles outside Seattle). The fleet consists of both large motor coaches (45'–50' in length, with a capacity of 50+ passengers) and smaller vans (25'–30' in length, with a capacity of 25+ passengers).¹ Curb space is specifically allocated for shuttle use in consultation with the employers providing the shuttle services. The cost of the program is a flat rate of \$300 per year per vehicle. Currently approximately 50 shuttle vehicles per year are issued these one-year permits. The violation fee for non-shuttle vehicles stopping in the shuttle zone is \$40. Program revenue only covers the cost of administration.² Non-permitted shuttles continue to use other curb space throughout the city.³ Thus far the program is considered effective.

Both Washington, DC and New York have also been investigat-

¹ Conversations with: B. Bryant, SDOT, 6/3/09, L. Frosch of Microsoft, 6/5/09

² Conversation with B. Lindsey of SDOT, 11/4/09, <http://www.seattle.gov/transportation/parking/shuttlepermits.htm>

³ <http://www.seattle.gov/transportation/parking/parkingcurb.htm>

ing better ways to address shuttle use of curb space. In Washington DC, regional commuter shuttles have tended to linger after dropping off passengers, taking up valuable curb and parking space. Although fines can be issued to those in violation of parking regulations, DDOT is investigating more formalized regulatory treatment of shuttle issues through a permitting or pricing scheme.

DDOT is also working to identify appropriate parking locations for shuttles and intercity buses and to consolidate stops. At the moment, a heavily used stop is Union Station, which is a quasi-public entity. DDOT is working with Union Station to facilitate the leasing of its property to shuttles for parking use.⁴ SFMTA has similarly suggested identification and pre-approval of suitable layover locations for shuttles in San Francisco.⁵

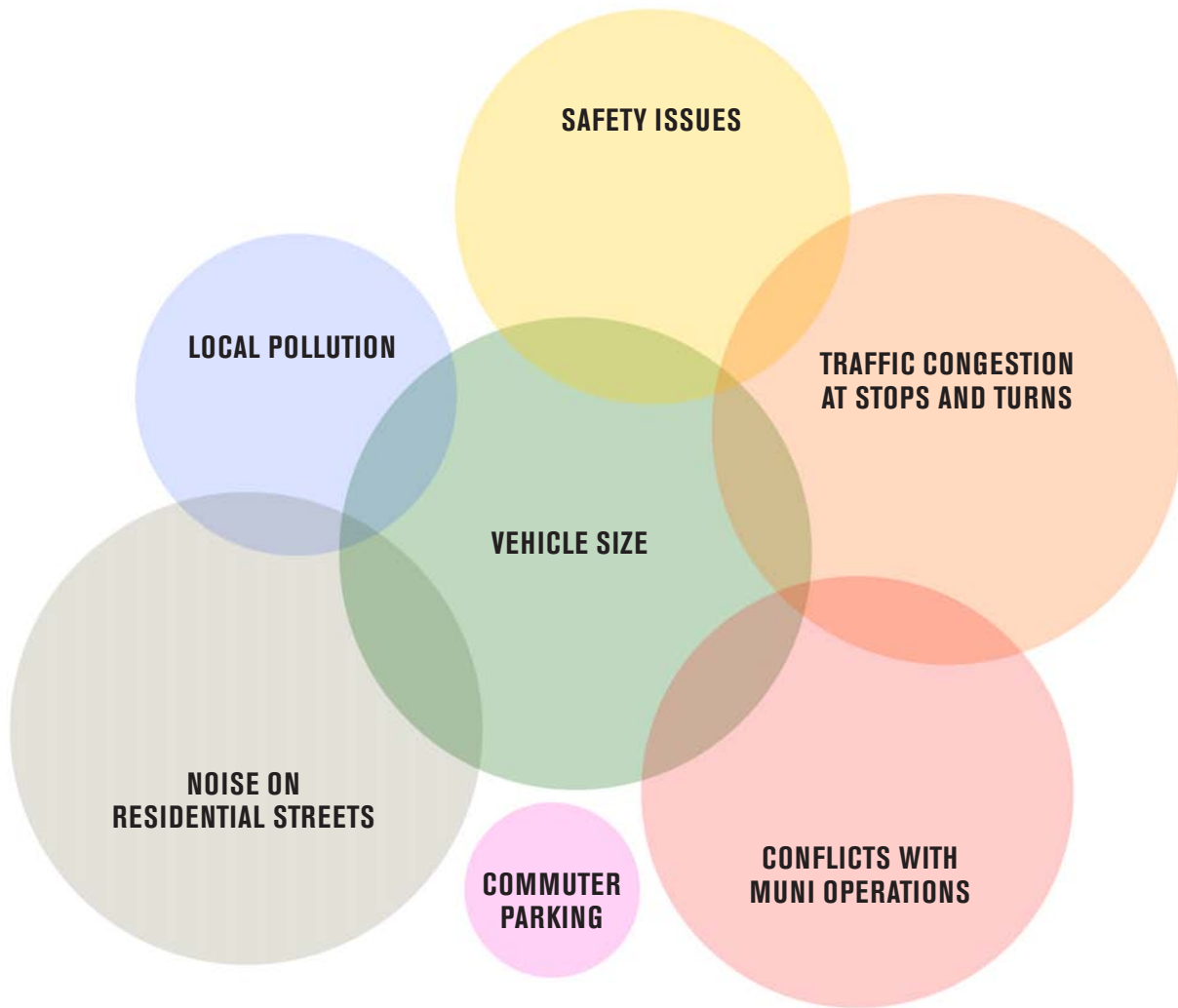
New York City DOT also started studying issues related to shuttles due to the loss of shuttle layover locations. While they are also looking into curb management and transportation demand management through pricing strategies, they are also investigating parking sharing, to encourage businesses such as FedEx and UPS to share their lots with shuttles and buses during commute hours.⁶ San Francisco might similarly have opportunity to seek shared parking opportunities for both stops and layovers in neighborhoods.

⁴ Conversation with E. Cleckley, DDOT, 10/01/09

⁵ Conversation with J. Kirschbaum, SFMTA, 11/06/09

⁶ Conversation with S. Sanagavarapu, NYCDOT, 10/06/09

APPENDIX D. SHUTTLE CONCERNS IN SAN FRANCISCO NEIGHBORHOODS



Source: 2009 survey of residents in the Marina, Noe Valley, and Glen Park, and comments received from the public