

# City of San Antonio Car-Sharing Feasibility Study

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## **Executive Summary**

Given the positive environmental benefits of car sharing, and its increased adoption by municipalities throughout the Country, the City of San Antonio engaged Public Financial Management, Inc. (PFM) to perform a car-sharing feasibility study in 2010. PFM reviewed numerous demographic indicators to identify neighborhoods where car sharing might take hold; canvassed multiple comparison jurisdictions and car-sharing operators for trends and best practices; modeled the costs of operating a car-sharing program in San Antonio; quantified potential reductions in carbon emissions and vehicle miles traveled; and met with community stakeholders to identify potential partners should a car-sharing operation be deemed viable.

The following bullets highlight key findings of PFM's analysis:

- Car sharing offers numerous economic, environmental, and community benefits to San Antonio residents and employers. Multiple jurisdictions have successfully incorporated car sharing into their municipal operations, and car-sharing operators are well-versed in partnering with public sector entities to launch and manage car-sharing programs. The prospective growth in car-sharing – in existing and new markets – is forecast to be strong over the next decade.
- No San Antonio neighborhoods are currently served by a car-sharing operator. The only car-sharing presence within the City is located at the corporate campus of USAA, where vehicles are exclusively used by USAA employees. Though car sharing has yet to spread to San Antonio neighborhoods, data suggest that car sharing may be viable in some communities.
- Downtown San Antonio possesses the most promising mix of neighborhood characteristics that can support a viable car-sharing program. Despite the City's relatively low population density, which will serve as a headwind to the successful implementation of car sharing, PFM identified multiple contiguous census tracts in the downtown where a small-scale car-sharing program can take hold, and potentially thrive over time.
- Multiple jurisdictions throughout the Country, including the City of Austin, have played a proactive role in supporting and promoting the development of a car-sharing operation within their city limits. If car-sharing is to succeed in downtown San Antonio, the City will most likely need to take an active role in its promotion. This may include incorporating car sharing into existing municipal operations, as well as promoting the practice to employees, downtown residents, and area businesses. Without successful integration of car sharing into existing municipal operations, the likelihood of success diminishes considerably.
- If the City of San Antonio decides to actively support car sharing, the City should consider launching a five-car pilot program in close proximity to municipal buildings in the downtown. There is sufficient market demand to support at least five vehicles, and potentially more, depending on the willingness of the City to integrate car sharing into its fleet operations, effectiveness of community outreach, and the market penetration rate of area residents and employers.
- To maximize the potential reductions in greenhouse gas emissions and vehicle miles traveled, vehicles should be shared with downtown residents and other area employers. Multiple jurisdictions have used this approach to test and successfully launch car-sharing programs,

while minimizing potential financial risk to the City in the event of failure. As part of the pilot program, the geographic location of large downtown employers near municipal-owned properties should be taken into consideration. These employers include Bexar County, CPS Energy, VIA, and the University of Texas San Antonio downtown campus.

- If the City decides to implement a car-sharing program, it should consider issuing a Request for Information (RFI) to existing car-sharing operators. The “open-ended” nature of an RFI will be particularly valuable in evaluating car-sharing programs, given the potential for service providers to propose alternate business models that mix both public and private market vehicle use (and revenue streams) in varying configurations. Contracting directly with an existing car-sharing operator will allow the City to leverage the firm’s expertise in vehicle placement and marketing; result in the shortest timeline for implementation; and represent the least amount of financial risk to the City in the event that a car-sharing pilot program does not successfully take hold.
- If successfully integrated into the City’s operations, car sharing may be revenue neutral or generate net cost savings to the City. This report outlines a scenario where car sharing, in concert with a reduction of 14 city-owned passenger vehicles, generates in excess of \$160,000 in net savings over a five-year time horizon. Additional savings would be realized if additional vehicles were replaced by car-sharing vehicles.
- A five-car pilot car-sharing program will reduce net greenhouse emissions by an estimated 55.8 tons annually. A five-car pilot program will also generate an estimated net reduction in vehicle miles traveled between 227,959 and 312,778 miles. Each additional car-sharing vehicle will generate an additional net reduction between 40,820, and 57,783 vehicle miles traveled.
- Constant communication with internal partners (e.g., city departments) and external partners (e.g., community groups and employers) will be critical to the success of a car-sharing program in San Antonio. As such, the City should create a regular standing body – such as an interagency implementation committee or task force – to coordinate efforts leading up to the public launch of a car-sharing program, and monitor its progress during the first year of operation.

In sum, despite the current lack of a citywide car sharing program, the City of San Antonio has the potential to support a successful and self-sustaining car-sharing program. Moreover, the probability of a car-sharing program’s success in San Antonio will increase substantially if the City can actively support and promote the program.

## **Methodology**

In the crafting of this report, PFM reviewed multiple data sources, both quantitative and qualitative. Wherever appropriate and possible, PFM used conservative assumptions in performing calculations as to not overstate the market potential for car sharing in San Antonio. A summary of principal data sources and methodological approaches includes:

- In the “Assessment of Car-Sharing Operations” chapter, PFM identified public sector trends in car sharing as well as the details around pricing structures offered by car-sharing operators through a review available open source material, and direct contact multiple jurisdictions and car-sharing operators. Wherever possible, PFM attempted to obtain details of individual arrangements, as well insights into best practices and lessons learned from car-sharing engagements in other jurisdictions. These discussions also informed some of the underlying cost assumptions used in the “Cost of Service” chapter of this report.
- During the course of preparing the analyses contained within this report, PFM performed a literature review of academic research done in the field of car sharing. In developing the criteria to identify San Antonio neighborhoods with characteristics conducive to car sharing in the “San Antonio Market Analysis” chapter, PFM relied heavily on research performed by the Transportation Research Board of the National Academies, as well as the input of successful car-sharing practitioners. In the chapter “Environmental Impacts of Pilot Car-Sharing Program,” assumptions used, and the sensitivity analysis performed, were based upon research by Susan Sheehan of the Transportation Sustainability Research Center at the University of California, Berkeley.
- In the “San Antonio Market Analysis” chapter, PFM used 2010 demographic data for the City of San Antonio prepared by the market research firm Nielsen Claritas. The 2010 projections developed by Nielsen Claritas use U.S. Census data as a base, with the 2010 forecast based on a proprietary mix of data from local government sources, household consumer databases, and postal delivery counts.
- Calculations pertaining to the City’s municipal fleet costs and mileage were performed by PFM based on data provided by the Fleet Maintenance and Operations Department.
- Included at the conclusion of this report is an appendix that provides additional detail on the principal calculations performed in this report, as well as supplementary information on the price structures of some of the largest car-sharing operators in the country.

## Car Sharing Overview

Car-sharing programs allow members to use vehicles for short periods of time. Members can access vehicles anytime through online or phone-based reservation systems, and are typically charged for use of the vehicle by the hour, and in some programs, per mile driven. Car-sharing programs typically have the following characteristics:

- **Short-Term Rentals to Members.** Car-sharing programs usually charge by the hour and/or include a fee on a per mile basis, though day-rates are often available as well
- **Neighborhood-Based Vehicles.** Cars of various sizes and models are kept at one or more parking lots or “pods” strategically located in residential neighborhoods and in close proximity to businesses
- **Streamlined Reservation Systems.** Vehicle reservations are made by website, wireless device (e.g., iPhone), or telephone
- **Personalized Vehicle Access.** Members have access to vehicles through electronic keys or cards; this approach reduces the need for administrative staff to manage a vehicle inventory
- **Inclusive Service.** Car-sharing programs typically include all fuel, insurance, and maintenance costs in a per-hour and per-mile cost structure

Convenience is another hallmark of a well-functioning car sharing program. Vehicles are available 24 hours, and pods are strategically located to facilitate easy access. Members also receive monthly itemized reports that track usage. For government agencies and businesses, these invoices serve as useful management tools to monitor vehicle use by individual drivers and foster accountability.

## **Economics of Car Sharing**

Because members of car-sharing programs only pay for the time that they use a vehicle, in many instances, car sharing is more cost effective than private vehicle ownership. For many drivers, the cost of using a car-sharing vehicle is a fraction of the cost of ownership. In San Francisco, for example, members of the car-sharing organization City CarShare pay, on average, \$6.75 per hour of use.<sup>1</sup> A recent paper by Innovative Mobility Research at the University of California, Berkley finds that car-sharing organizations typically charge within a range of \$4.00 to \$11.00 per hour, with an additional per-mile fee ranging from \$0.09 to

***City CarShare Vehicle  
San Francisco, CA***



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<sup>1</sup> City CarShare, available online at [www.citycarshare.org](http://www.citycarshare.org)

\$0.40.<sup>2</sup> As a result of this pay-per use cost structure, individuals and organizations with low or infrequent vehicle use have an economic incentive to use car sharing in place of privately-owned vehicles.

Car sharing can provide a low cost of service by converting the fixed costs of private vehicle ownership into variable costs. An individual or institution uses vehicles on a “per-use” basis. No single user – whether it is an individual resident, business, or government agency – bears the full cost of vehicle ownership. The fixed costs are spread across a large number of users.

Car sharing is more expensive than ownership on a per-mile basis, but since fixed costs are distributed among many users, there is a minimal upfront cost. Instead of paying a down payment, car-sharing users pay a one-time application fee and annual membership fee – less than \$100 for both fees, in most membership plans. In place of monthly car payments, insurance payments, and regular visits to a mechanic and gas station, car-sharing users generally pay an all-inclusive hourly rate, sometimes accompanied by an additional mileage charge. As a result, car-sharing proves to be more cost-effective for users who drive fewer miles.

According to the American Automobile Association (AAA), the average fixed costs associated with owning a car in 2010 totaled \$5,876. This represents a composite figure covering a mix of small, medium, and large sedans, and includes the following cost components:

**Fixed Vehicle Costs: Car-Ownership vs. Car-Sharing<sup>3</sup>**

	<b>Car-Ownership</b>	<b>Car-Sharing<sup>5</sup></b>
Depreciation	\$3,554	Application Fee of \$25 + Annual Fee of \$50
Finance Charges	\$806	
Insurance	\$1,031	
License Registration and Taxes	\$585	
<b>Total Fixed Costs</b>	<b>\$5,876</b>	<b>\$75</b>

**Notes**

Depreciation: Difference between new vehicle purchase price and trade in value after five years; 15,000 miles driven per year

Finance Charges: Five-year loan with 10% down at a 6% interest rate

Insurance: Based on 47-year old married male with good driving record, living in small city, and commuting 3 to 10 miles to work

License Registration and Taxes: Fees due at time of purchase and annually, based on national average

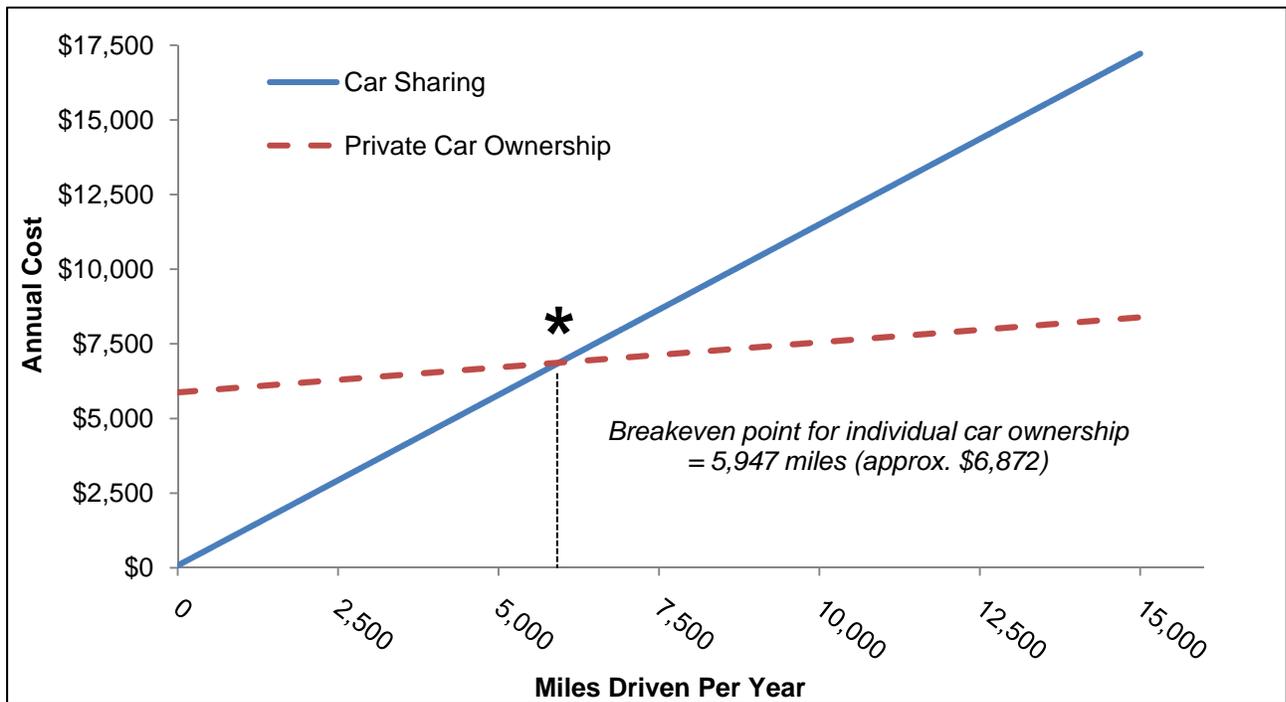
Car-Sharing: Rates from Connect by Hertz “Connect Plan” offered at University of Texas at Arlington

The figure on the following page underscores the cost dynamics between car ownership and car sharing. On a cost-per-mile basis car sharing is the preferred driving alternative for a user driving fewer than 5,947 miles annually. For someone driving more than 5,947 miles annually, car ownership represents the preferred alternative.

<sup>2</sup> “Car-Sharing: A Guide for Local Planners,” July 2008. Innovative Mobility Research, based at the Transportation Sustainability Research Center (TSRC) at the University of California, Berkeley. Accessed online, [www.innovativemobility.org](http://www.innovativemobility.org)

<sup>3</sup> American Automobile Association. “Your Driving Costs, 2010 Edition,” available online, [www.aaanewsroom.net/Assets/Files/200844921220.DrivingCosts2010.pdf](http://www.aaanewsroom.net/Assets/Files/200844921220.DrivingCosts2010.pdf)

## Costs of Car Sharing vs. the Costs of Car Ownership



Since car sharing converts fixed costs into variable costs, on a cost per mile basis, car-sharing is more expensive than vehicle ownership. When accounting for variable costs (gas, maintenance, and tires), the average cost per mile driven for a privately-owned sedan driven 15,000 miles annually totals \$0.566 according to AAA. Assuming that a Hertz Connect member at the University of Texas at Arlington drives 7 miles during each hour of use, the cost per mile driven for car-sharing totals \$1.143 ( $\$8 \text{ per hour} \div 7 \text{ miles}$ , assuming fewer than 180 miles driven in one day). Using these assumptions, car sharing represents the more cost effective option if driving fewer than 5,947 miles per year.

### Benefits of Car Sharing

In addition to providing a lower cost alternative to private vehicle ownership, car sharing offers a host of environmental benefits, including:

- **Fewer Cars on the Road.** Each car-sharing vehicle removes between 4.6 and 20.0 cars from circulation. Between 15 and 32 percent of car-sharing members sold their personal vehicles, and between 25 and 71 percent of members avoided the purchase of an vehicle because of car sharing<sup>4</sup>
- **Fewer Miles Driven.** On average, each residential car-sharing household experiences a 44 percent reduction in vehicle miles traveled<sup>5</sup>

<sup>4</sup> Sheehan, Susan et al. "North American Carsharing: a Ten-Year Retrospective," November 15, 2008. Available [www.carsharing.net](http://www.carsharing.net)

<sup>5</sup> *Ibid.*

- **Reduced Carbon Emissions.** On average, each household that adopts car-sharing reduces carbon emissions by 0.84 tons per year<sup>6</sup>
- **Increased Use of Non-Automotive Modes of Travel:** Between 12.0 and 54.0 percent of car-sharing members walk more often, 13.5 to 54 percent take public transit more frequently, 10.1 percent bike more often<sup>7</sup>

Consider the example of the City of Philadelphia, where the non-profit operator Philly CarShare has enrolled more than 50,000 individual members. From its inception in 2002 through 2008, PhillyCarShare has been responsible for the removal of 21,090 cars from the Philadelphia region’s streets, 50.6 million fewer miles driven, 2.7 million gallons of gas saved through reduced driving and improved fuel efficiency, and 67.8 million pounds of CO<sup>2</sup> saved (equivalent to the impact of planting a forest of 1.35 million trees).<sup>8</sup>

Car sharing also encourages sustainable development patterns and smart growth. Car sharing encourages the use of other modes of travel, especially public transit, but also bicycling and walking. In Philadelphia, for example, PhillyCarShare reported increased use of non-automotive transportation options among members who gave up a car. Forty percent of members who gave up a car reported that they walked more, while 34 percent reported an increased use of public transportation, 18 percent reported more frequent bicycling, and 13 percent reported taking more taxis.<sup>9</sup>

Building managers also enjoy the benefits of car sharing and occasionally present it as an amenity to tenants. In some instances, managers provide free parking for car-sharing operators or offset membership costs to the residents. This practice is especially common in developments with long waitlists for parking, and where building managers find it difficult to otherwise accommodate requests for parking.

### Cost Savings to Governments

Aside from the multiple environmental and community benefits of car sharing, many jurisdictions have embraced car sharing as a means to reduce fleet costs while preserving service levels. Car-sharing vehicles can replace a citywide motor pool or “reserve” vehicles, as well as low-mileage vehicles in individual departmental fleets. City employees reserve vehicles through an online reservation system, and enjoy the convenience that full-service car-sharing outfits provide.

When coupled with a thoughtful vehicle reduction process, cities that incorporate car sharing into their daily operations realize recurring cost savings across the following areas:

### *I-Phone Zipcar Application*



<sup>6</sup> Martin E, and S. Shaheen. Greenhouse Gas Emission Impacts of Carsharing in North America. Final Report. Mineta Transportation Institute. San Jose, CA. 2010.

<sup>7</sup> Sheehan, Susan et al. “North American Carsharing: a Ten-Year Retrospective,” November 15, 2008. Available [www.carsharing.net](http://www.carsharing.net)

<sup>8</sup> “Environmental Achievement Award Winners 2008,” U.S. Environmental Protection Agency. Available online, [www.epa.gov/region3/2008EnvironmentalAwards/index.html](http://www.epa.gov/region3/2008EnvironmentalAwards/index.html)

<sup>9</sup> PhillyCarShare, membership surveys.

- Lower acquisition costs
- Reduced fuel expenses
- Lower parking charges
- Improved efficiency as city-run fleet operations process a smaller number of vehicles and older, more-expensive-to-maintain vehicles are culled from the municipal fleet

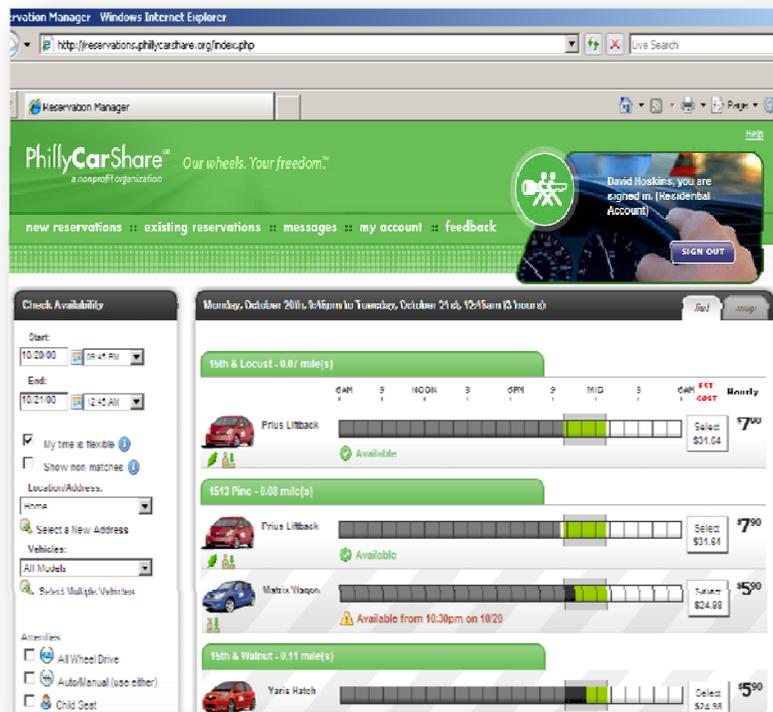
Additional cost savings to governments associated with car sharing include:

- One-time injection of auction revenue generated by the sale of relinquished vehicles
- Automated tracking systems reduce personal/unauthorized vehicle use
- Online reservation systems reduce administrative overhead required to run a motor pool

To return to the example of Philadelphia, following the City’s elimination of 330 fleet vehicles through a planned vehicle reduction process, Philadelphia partnered with PhillyCarShare, to provide car-sharing vehicles to city employees. PhillyCarShare enabled employees to reserve cars from nearby parking garages and on-street parking spots on a first come, first served basis. Vehicles could be reserved online or over the telephone for as little as 15 minutes of use, and all acquisition and operational costs – including fuel, maintenance and repairs, and insurance – were included in an hourly rate plus per-mile fee cost structure.

As of 2007, 312 employees from 16 City departments, including the Health Department, the Capital Program Office, the Planning Office, and the Law Department, use a car-sharing service as part of daily operations.<sup>10</sup> In some departments where vehicle use was mainly administrative, car-sharing vehicles satisfied 100 percent of the department’s vehicular needs.

### PhillyCarShare Online Reservation System



Car sharing cannot replace an entire municipal passenger fleet. For high-usage vehicles, private ownership represents the more cost effective operating strategy. Nonetheless, car sharing can supplement a city’s passenger fleet operation, and provide an alternative means of transportation that replaces low-usage vehicles.

Car sharing also creates incentives for governments to reduce vehicle use. In a municipal fleet where individual departments each “own” their vehicles, departments usually do not pay the full incremental cost

<sup>10</sup> Figures maintained by the City of Philadelphia and PhillyCarShare. In 2008, the City of Philadelphia chose Zipcar as its car sharing provider.

associated with driving more miles. In fact, there are incentives to maximize the amount each vehicle is driven, especially if high usage – determined by mileage – enables a department to justify keeping a vehicle. Because car sharing converts the fixed costs associated with vehicle use into variable costs, departments have an incentive to budget vehicle use. Departments receive itemized statements that illustrate who were driving, on what days, and for how long. The detailed invoices – tracking vehicle use and who was driving a vehicle at a particular point in time – act as a powerful management tool that fosters accountability. Not coincidentally, when employees know that their driving patterns are monitored, the amount of unauthorized miles driven drop considerably. Additionally, the detailed invoicing enables governments to budget more precisely for vehicle use. Managers can evaluate and refine the number of trips that employees take and more accurately quantify vehicle demand, as opposed to simply slashing the number of vehicles driven.

When the City of Philadelphia implemented a car-sharing operation, it charged each department for its own car-sharing trips. When individual employees knew that their vehicle use was monitored and departmental managers were held accountable for vehicle use by their employees, department vehicle usage dropped 50 percent.<sup>11</sup>

**Sample Invoice from PhillyCarShare**

<b>Driving</b>				
Reservation	Trip Details	Usage	Rate	Cost
<b>David</b>				
Broad & Pine - Prius Liftback	Sat Feb 2, 3:15pm to Sat Feb 2, 6:30pm			
Reservation: #961629	Weekend Hours	3.25 hour(s)	\$7.90	\$25.68
	Distance (first 200 miles per day)	26 mile(s)	\$0.09	\$2.34
	Tax			\$2.52
	<i>Subtotal</i>			\$30.54
<b>Total Driving Costs</b>				<b>\$30.54</b>
<b>Fees and Credits</b>				
Reference	Description	Date	Cost	
<b>Total Fee and Credit Costs</b>				<b>\$0.00</b>
<b>February Account Activity</b>				
Posting Date	Description	Amount		
02/10/08	Opening Available Balance	\$0.00		
	Pending Trips (prepaid from last invoice)	\$30.25		
	<i>Subtotal: All Payments</i>	\$30.25		
	Pending Trips (after 02/29/08) on hold for next invoice	\$0.00		
03/09/08	Total: Your Prepayments & Credits Available to Pay This Invoice	\$30.25		

Car sharing is also compatible with risk management practices of self-insured municipalities. Cities that are self-insured typically pay a lower per-hour rate relative to individual drivers. In exchange, the City agrees to reimburse or pay the car-sharing organization for damages incurred to the vehicle while the vehicle is being driven by a city employee for government-related business.

Commonly, the municipality drafts internal policies regarding personal use of car-sharing vehicles. For trips made under a city account, the assumption is that the trip is solely for work purposes, and the driver receives the same insurance coverage as if she or he were driving a city-owned vehicle.

<sup>11</sup> To generate a baseline for comparison, the City of Philadelphia’s Fleet Department paid 100% of costs during the first three months of the car-sharing program’s operation. After three months, city departments were billed individually.

Finally, municipalities that are not self-insured can request that a minimum level of insurance be provided by the car-sharing organization. If this insurance requirement is higher than what the car-sharing organization holds for general members, the city can pay a slighter higher per hour rate to account for the higher level of insurance coverage.

## **Assessment of Existing Car-Sharing Operations**

Over the course of the past fifteen years, car sharing in the United States has evolved from a handful of small-scale cooperatives to multi-million dollar operations run by international conglomerates, publicly-owned companies, and cutting-edge non-profit organizations. Prospectively, the growth of car-sharing among individuals, businesses, government, and universities is likely to continue. According to the market research firm Frost & Sullivan, car-sharing membership in North America is expected to reach 4.4 million individual members by 2016.<sup>12</sup>

Zipcar, the world's largest car-sharing operator, projects dramatic expansion in the North American car-sharing market. According to the company's recent initial public offering (IPO) prospectus, the company estimates a potential market of 10 million customers who live or work within a short walk of existing Zipcar locations. This does not include potential expansion into new markets, or introduction of additional vehicles in existing markets. Looking across all car-sharing operators in the North American market, Zipcar forecasts that revenues from car sharing will increase from \$253 million in 2009 to \$3.3 billion by 2020.<sup>13</sup>

### **National and Regional Car-Sharing Trends**

Car-sharing services are provided by multiple car-sharing organizations throughout the country. In the early 2000s, most car-sharing operators in the United States were founded as independent non-profits, often with the assistance of government grant funding. While many of these operators have since ceased operations, those that remain in operation have carved out a sizable presence in some of the country's largest markets – Chicago, the San Francisco Bay Area, and Philadelphia, to name a few. These non-profit operators generally retain a regional market presence, competing side-by-side with for-profit car-sharing operators.

The for-profit operators, by contrast, compete in multiple national and international markets. Over the course of the past five years, the largest two for-profit car-sharing operators in North America – Zipcar and Flexcar – merged into one company, with the new company retaining the “Zipcar” name. Additionally, multiple car-rental companies: Hertz, Enterprise, and U-haul, have created separate car-sharing subsidiaries, providing additional market competition. In the past year, automotive manufacturers have entered the car-sharing space as well. Car2go – a subsidiary of German-based Daimler AG – launched in Austin, Texas and General Motors' capital venture unit has publicly announced its intention to invest in a car-sharing operator.<sup>14</sup>

The table on the following page provides an overview of some of the largest for profit and non-profit car-sharing organizations in the United States.

**"Between 2007 and 2009  
car sharing membership  
rose by 117% in North  
America."**

*- Frost & Sullivan Automotive  
Practice  
January 28, 2010*

<sup>12</sup> “Carsharing: A Sustainable and Innovative Personal Transport Solution with Great Potential and Huge Opportunities,” Frost & Sullivan Market Insight, January 28, 2010.

<sup>13</sup> Form S-1 Registration Statement Under the Securities Act of 1933, Zipcar Inc., filed June 1, 2010.

<sup>14</sup> “GM's \$100 M Venture Fund on the Hunt for Car Sharing Play,” [www.gigaom.com](http://www.gigaom.com), July 28, 2010.

### Large U.S. Car-Sharing Organizations

<b>For-Profit Operators</b>	
Zipcar	Largest car-sharing operator in the world with operations in three countries, 13 major metropolitan areas, 150 university campuses, and fleet of more than 7,000 vehicles. Municipal clients include: the cities of New York, Philadelphia, Baltimore, and Seattle
Connect by Hertz	Serving multiple large U.S. cities and college campuses, including University of Texas at Arlington. Also serves USAA corporate campus in San Antonio
Car2go	Subsidiary of Daimler AG, with North American operations in Austin, Texas and plans for further expansion in 2011. Fleet comprised of 200 “Smart” cars and uses operational model based on one-way trips
WeCar	Owned by Enterprise Rent-a-Car principally servicing select corporate and university campuses, as well as some medium-sized U.S. markets
U Car Share	Operated by U-haul, operations in Salt Lake City, UT; Portland, ME; Portland, OR, and select university campuses
<b>Non-Profit Operators</b>	
City CarShare	One of the longest-running, largest, and most successful non-profit car-sharing operators with vehicles serving San Francisco and the greater Bay Area. City CarShare vehicles are used by employees in municipal operations at the cities of San Francisco, Oakland, and Berkley
PhillyCarShare	A fleet with multiple vehicle models serving the Philadelphia metro area, including multiple suburban communities and local university campuses
I-GO Car Sharing	One of the largest non-profit car-sharing operators serving the Chicago metro area

Texas represents a largely underserved car-sharing market. This is the result, in part, of the State’s low population density, underdeveloped public transit system, and high levels of vehicle ownership. With the exception of Austin and a handful of university campuses, car-sharing operators have largely eschewed Texas’ largest cities (population greater than 250,000):

- **Houston:** Connect by Hertz operates three vehicles at the University of Houston and Zipcar operates four vehicles at Rice University; otherwise, no additional car-sharing presence in the region
- **San Antonio:** Connect by Hertz serves the USAA corporate campus, no program available to city residents, university students, or employees of other business
- **Dallas:** No for-profit car-sharing operator has entered the market, though an Oak Cliff resident is exploring the possibility of setting up his own small-scale non-profit venture
- **Austin:** Non-profit car-sharing organization operated between 2006 and 2010, before ceasing operations. Market currently served by 200 car2go Smart cars
- **Fort Worth:** No car-sharing organizations in operation
- **El Paso:** No car-sharing organization is currently in operation, though the City is in the process of developing a Comprehensive Plan to encourage smart growth and sustainable development
- **Arlington:** Connect by Hertz operates two vehicles at the University of Texas Arlington; otherwise, no car-sharing presence in the City

- **Corpus Christi:** No car-sharing organizations in operation
- **Plano:** No car-sharing organizations in operation

Despite the lack of widespread adoption of car sharing in Texas, private car-sharing operators have entered into select markets. Car2go, the car-sharing outfit financed by Daimler A.G., has established itself as the principal car-sharing operator in Austin, Texas. Publicly launched in May of 2010, car2go operates approximately 200 “Smart” vehicles and has enrolled more than 10,000 members. Approximately 50 percent of members are between 18 and 35 years of age, and multiple businesses have signed up for the service, including Lance Armstrong’s LIVESTRONG Foundation, creative firm GSD&M, and real estate firm Urbanspace.<sup>15</sup>

Car2go represents a distinctive concept in the U.S. car-sharing market. It operates a fleet exclusively comprised of “Fortwo” Smart vehicles. Smart cars are small gasoline-powered vehicles that seat two passengers and have fuel efficiency standards that rival hybrid vehicles. Car2go members use vehicles one-way, without returning them to a central location or “pod” – a stark difference from most car-sharing operators, where members must use vehicles for roundtrips, returning vehicles to a parking spot where they picked up the vehicle. Members can leave vehicles, however, only within a designated geographic area. Further, car2go is an “on demand” model of car-sharing, meaning that members can use a vehicle for as long as desired without committing to a specific time. The only limitation is that vehicles be picked up and returned within a defined geographical area, but again, not necessarily the same parking spot where the vehicle was picked up in the first place.<sup>16</sup>

### ***Car2go Smart Car – Austin, TX***

Car2go’s position in Austin has been solidified since the City’s local non-profit car-sharing organization, Austin CarShare, ceased operations in July of 2010. Austin CarShare entered the Austin market in 2006 but did not achieve sufficient membership growth to cover the costs of ongoing operations. Both organizations have facilitated the transfer of Austin CarShare members to car2go.

In addition to Austin, car-sharing operators are active at five Texas universities. Universities tend to support car-sharing because of higher population densities of educated individuals, restrictions on parking (cost and/or availability), and levels of use for non-automotive mode of transportation (e.g., mass



<sup>15</sup> “Car2go Mobility Program Reaches 10,000 Member Milestone,” Press Release car2go, September 30, 2010.

<sup>16</sup> Information accessed from [www.car2go.com](http://www.car2go.com)

transit, bicycling, and walking).

The following table details the car-sharing operator, number of vehicles and type, and rate structure for each university:

**Car-Sharing Operations at Texas Universities<sup>17</sup>**

Operator	Number of Vehicles	Rate Structure
Baylor University	Zipcar	2 sedans Application Fee: none Annual Fee: \$35 Hourly: \$8 (weekday), \$9 (weekend) Daily: \$66 (weekday), \$72 (weekend) No mileage charge for 180 miles
University of Houston*	Connect by Hertz	2 sedans + 1 SUV Application Fee: \$25 Annual Fee: \$50 Hourly: from \$8 Daily: from \$62 No mileage charge for 180 miles
University of North Texas*	Connect by Hertz	3 sedans + 1 SUV Application Fee: \$25 Annual Fee: \$50 Hourly: from \$8 Daily: from \$62 No mileage charge for 180 miles
University of Texas at Arlington*	Connect by Hertz	1 sedan + 1 SUV Application Fee: \$25 Annual Fee: \$50 Hourly: from \$8 Daily: from \$62 No mileage charge for 180 miles
Rice University	Zipcar	3 sedans + 1 SUV Application Fee: none Annual Fee: \$35 Hourly: \$7 or \$8 (depending on model) Daily: \$60 or \$65 (depending on model) No mileage charge for 180 miles

\* - Rates shown for Connect by Hertz for "Connect" plan. Connect by Hertz also offers "Connect 50" and "Connect 125" plans with no annual membership fee; \$50 and \$125 monthly fees, respectively; and rates from \$7.20 and \$6.80 per hour, respectively

In San Antonio, Connect by Hertz placed three Toyota Prius hybrids at the USAA headquarters. These vehicles are available to USAA employees 24 hours/seven days a week, but cannot be used by other San Antonio residents.<sup>18</sup> Discussions for implementing a car-sharing program have been ongoing between a car-sharing operator and local universities, but as of November 2010, no formal agreement between the two parties has been reached. No other car-sharing operators are active within the San Antonio market.

## Public Sector Car-Sharing Trends

Reflecting the growth in car sharing in the residential and business markets, local governments throughout the Country have adopted car sharing as a tool to support sustainability, lower fleet costs, and reduce carbon emissions. Many local governments throughout the country use car sharing to supplement

<sup>17</sup> Tables reflect car sharing campus fleets listed at [www.zipcar.com](http://www.zipcar.com) and [www.connectbyhertz.com](http://www.connectbyhertz.com) as of October 20, 2010

<sup>18</sup> "Connect by Hertz' Signs USAA as First Corporate Customer in Texas," Connect by Hertz Press Release, August 25, 2009

their municipal fleets. In these arrangements, city employees – while on the clock – use car-sharing vehicles to perform government-related work.

In Austin, local government played an active role in launching the car2go program. The City of Austin struck a revenue-neutral barter agreement with car2go where city employees received free use of vehicles during a six-month pilot phase. In exchange, car2go obtained consumer testing data in a large North American market. As part of the agreement, car2go vehicles were exempt from a series of parking fees and received a mix of parking benefits – including dedicated on-street and off-street spaces, as well as reimbursing meter fees. While the City of Austin did not provide a direct subsidization to car2go, it valued the parking benefits granted to car2go at \$85,000.

When the pilot phase expired in April of 2010, the City and car2go extended their agreement for an additional six months. City employees will continue to use Car2go Smart cars for city business free of charge, while the company will continue to have access to free on and off-street parking.

In addition to Austin city government, a number of Texas State agencies have signed up for the car2go program as well. In a six-month pilot program that mirrors the City of Austin's arrangement, employees of the State Preservation Board and the Texas Council on Competitive Government can use car2go vehicles free of charge. In exchange, the company receives free parking around the Capitol Complex. Additionally, any State agency can sign up for the car-sharing program, with standard usage rates applying (\$0.35 per minute, \$12.99 per hour).<sup>19</sup>

While the car2go program has been well received by community members and used by local government employees, it is not without its limitations. The car2go model is based on one-way trips – without a guaranteed return – which may not prove cost effective for government or business operations. One could imagine the inconvenience of taking a vehicle to a meeting, only to find the vehicle in use and unavailable for the return trip. This feature of the car2go program may create incentives for employees to reserve vehicles for longer periods of time than would otherwise be necessary, which may not be cost-effective given the programs comparatively higher hourly rate of \$12.99.

Looking beyond Austin, there is long track record of local governments playing an active role in launching car-sharing operations within their communities. The support offered by governments typically entails direct contracting of service and/or the provision of parking spaces. In some jurisdictions, local governments have even used general funds to purchase or finance car-sharing vehicles.

Additional examples of local governments actively supporting car-sharing engagements in their communities include:

- **New York City, NY:** In October of 2010, Mayor Michael Bloomberg announced that 300 Department of Transportation employees will share 25 Zipcars in a one-year pilot program. The vehicles will be available exclusively to city employees between 7:00 AM and 6:00 PM during weekdays, and residents during evenings and weekends. The City estimates that the program will save \$500,000 over four years and, depending on the pilot program's results, may expand car-sharing operations to other city agencies. Approximately 60 percent of the City's 26,000 vehicles are considered passenger vehicles.<sup>20</sup>

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<sup>19</sup> "State of Texas Partnering with Car2Go Program," Texas Tribune, April 9, 2010.

<sup>20</sup> "Mayor Bloomberg, Deputy Mayor Goldsmith, Commissioner Sadik-Khan Announce Start of City's First Car Share Program," Press Release, City of New York, October 12, 2010.

- **Hoboken, NJ:** In June of 2010, the City of Hoboken and Connect by Hertz launched the “Corner Car Program.” The City of Hoboken has provided on-street parking for use of vehicles by members of the public; Connect by Hertz charges between \$5 and \$10 per hour of use. As of September 2010, the program enrolled 400 members and achieved projected rates of utilization.<sup>21</sup>
- **Los Angeles, CA:** In September of 2009, the Mayor and City Council implemented a one-year pilot program dedicating a total of 40 on-street parking spots to Zipcar. Parking spots were located near the USC and UCLA campuses. Citing the success of the pilot phase, in September of 2010, the program has been extended for another year and expanded into an additional neighborhood.<sup>22</sup>
- **San Francisco, CA:** In July of 2010, the City signed a formal agreement with City CarShare to expand car-sharing services to city employees. As the City retires its older vehicles, City of San Francisco employees will be directed to use City CarShare vehicles as part of their daily operations.<sup>23</sup>
- **Baltimore, MD:** In June of 2010, the City executed a formal agreement with Zipcar to expand car-sharing services within the city limits (RFP issued in May of 2009). The City and the City Parking Authority dedicated 22 on-street parking spaces for Zipcars, and city employees will be encouraged to use Zipcars as part of city business.<sup>24</sup>
- **Seattle, WA:** To help launch a car-sharing operation, the City of Seattle contributed \$60,000 in general fund revenues to provide off-street parking over a two-year period, and partnered with Zipcar (then Flexcar) to identify and provide dedicated on-street parking.<sup>25</sup> In February of 2009, the City extended car-sharing membership to all 10,500 employees.<sup>26</sup>

### ***New York City Mayor Michael Bloomberg***



<sup>21</sup> “Corner Cars Surpasses 400 Members,” Press Release, City of Hoboken, September 7, 2010.

<sup>22</sup> “Council File No. 08-1798,” September 14, 2010, City of Los Angeles; and “Year-End Status Report on the On-Street Car Sharing Pilot Program,” September 1, 2010, City of Los Angeles Department of Transportation.

<sup>23</sup> “City CarShare Enhances City and County of San Francisco Fleet,” Press Release, City CarShare, July 12, 2010.

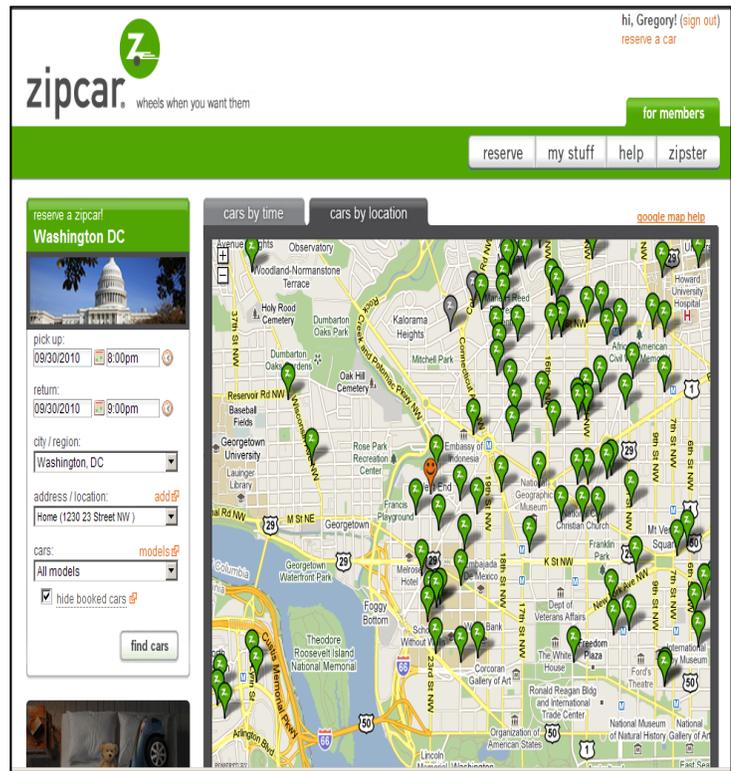
<sup>24</sup> “Zipcar Partners with the City of Baltimore To Launch Car Sharing,” Press Release, City of Baltimore, June 29, 2010.

<sup>25</sup> Transportation Research Board of the National Academies. *Transit Cooperative Research Program Report 108, Car-Sharing: Where and How It Succeeds*, Sponsored by the Federal Transit Administration, 2005.

<sup>26</sup> “Zipcar Partners with City of Seattle to Extend Benefits of Car Sharing to City Employees,” Press Release February 5, 2009.

- Washington, DC:** During the summer of 2008, the District of Columbia embarked on a comprehensive fleet reduction program. In total, 360 vehicles were replaced by a shared fleet of 71 passenger vehicles operated by Zipcar technology through the “Fast Fleet” program. In the Fast Fleet program, city-owned vehicles are retrofitted with Zipcar technology, and the District pays a monthly fee per vehicle to Zipcar.<sup>27</sup>

### Zipcar Vehicle Location – Washington, DC



- Pittsburgh, PA:** In 2008, the City of Pittsburgh signed a contract with Zipcar with vehicles to be used by city employees. According to the public media reports, the City received a rate of \$800 for each 100 hours of usage purchased.<sup>29</sup>
- Philadelphia, PA:** In 2004, the City of Philadelphia implemented a fleet reduction resulting in the elimination of more than 200 vehicles. To offset the reduced availability of City-owned vehicles, the City contracted with PhillyCarShare to provide car-sharing vehicles for city employees to perform government-related business.<sup>30</sup> The City Parking Authority provided a mix of off-street and on-street parking to facilitate the adoption of car-sharing. Currently, the City’s car-sharing contract is maintained by Zipcar.
- Portland, OR:** Beginning in June of 2004, Portland, Oregon contracted with Flexcar to provide fleet management services. As part of a pilot program, Flexcar managed 12 of 25 vehicles in the City’s central motor pool. Employees registered individually with Flexcar, and each bureau was billed directly for vehicle use. In total, the program has saved Portland roughly \$30,000 annually (25 percent) in the motor pool’s annual operating, maintenance, and fuel costs. Moreover, the City saved approximately \$150,000 in asset reductions while reducing the need for future capital

<sup>27</sup> “City Hall’s Cars by Day, and Yours by Night,” New York Times, September 30, 2009.

<sup>28</sup> City of Minneapolis, Environmental Coordinating Team Meeting Minutes, May 13, 2008.

<sup>29</sup> “Zipcar Makes New Inroads In a Car-Share Market,” Pittsburgh Tribune-Review, March 26, 2008.

<sup>30</sup> Transportation Research Board of the National Academies. *Transit Cooperative Research Program Report 108, Car-Sharing: Where and How It Succeeds*, Sponsored by the Federal Transit Administration, 2005.

outlays according to former head of Portland's fleet.<sup>31</sup> Since the summer of 2004, the City of Portland has contracted its entire fleet of 25 motor pool cars to Flexcar. According to a Flexcar business development manager, Flexcar's tracking technology will be used to help the City identify underused vehicles. In March of 2006, *Governing Magazine* characterized the usage of car sharing by government employees as far exceeding projected demand – "While city officials expected they wouldn't see even 300 hours a month of total usage in the first year, they were surpassing 600 hours a month by October."<sup>32</sup> Since Flexcar's merger with Zipcar, Zipcar manages the City of Portland's car sharing program.

- **Berkley, CA:** In July of 2004, the City signed its first formalized agreement with City CarShare. The agreement provided the City with a semi-dedicated fleet where city employees had exclusive use of vehicles during the day, but vehicles were available to general public during evening and weekend hours.

The City estimated that five City CarShare vehicles would be needed to replace 15 city-owned vehicles. The contract between the parties, however granted the City flexibility in increasing or decreasing the number vehicles in use. The three-year contract amount was capped at \$413,000, which would have provided the City with access up to 30 City CarShare vehicles.<sup>33</sup>

Car sharing among local governments, however, has not been universally successfully. In April of 2010, **Montgomery County, Maryland**, ceased operations of a pilot car-sharing program with WeCar. Under the arrangement with WeCar, the County provided \$1,100 per month in guaranteed revenue for 18 to 28 vehicles placed on county property.<sup>34</sup> In April of 2010, the County reported that usage in the program had increased, but the number of vehicles in use declined to seven. Despite the elimination of the program, county leaders characterized the program as a success, citing approximately \$500,000 in savings generated from not replacing multiple vehicles within its fleet.<sup>35</sup>

The table on the following page summarizes the known details of cost sharing arrangements between municipal governments and car-sharing operators in the abovementioned jurisdictions. Note, most successful programs employ an open car-sharing system where vehicles can be used by both city employees and the general public:

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<sup>31</sup> Knight, Cheryl. "Portland Outsources Motor Pool Without Sacrificing Mobility," *Government Fleet*. January/February 2006, online at [http://www.fleet-central.com/gf/t\\_print.cfm?action=article\\_pick&storyID=828](http://www.fleet-central.com/gf/t_print.cfm?action=article_pick&storyID=828).

<sup>32</sup> Enos, Gary. "Outlook on Fleet Management: Feeding the Fleet, The Gas Bill," *Governing Magazine*. March, 2006. Online, <http://66.23.131.98/archive/2006/mar/fleet.txt>.

<sup>33</sup> "Incorporating Carsharing into Municipal Policy: Fleets, Development Planning, Parking" Berkley, CA, June 2005. Available at [www.mayorsinnovation.org](http://www.mayorsinnovation.org)

<sup>34</sup> "Montgomery County Car-Sharing Program Still Not Attracting Users," *Washington Examiner*, June 30, 2009.

<sup>35</sup> "Montgomery County, Maryland, Ends Car Sharing Program," *Associated Press*, June 27, 2010.

### Summary of Public Sector Car-Sharing Trends

Jurisdiction	Operator	Vehicle Use		Program Details
		<i>Municipal Operations</i>	<i>General Public</i>	
Berkley, CA	City CarShare	Yes. Exclusive use by city employees during normal business hours	Yes. Residents may use cars during weekday evening and weekend hours	City had option to increase number of car-sharing vehicles in use through flexible contract vehicle
Austin, TX	Car2go	Yes	Yes	City partnered with company for consumer testing in United States. City received free use of vehicles; car2go received consumer testing data and parking subsidy
Baltimore, MD	Zipcar	Yes	Yes	City provided 22 parking spaces to Zipcar; employees encouraged to use vehicles for municipal use
Hoboken, NJ	Connect by Hertz	Yes	Yes	City provides on-street parking to Connect by Hertz
New York City, NY	Zipcar	Yes. Exclusive use by Department of Transportation employees from 7:00 AM to 6:00 PM	Yes. Residents may use cars during weekday evening and weekend hours	One-year pilot program for 25 cars – dedicated fleet exclusively for city operations during business hours; city providing free off-street parking
Los Angeles, CA	Zipcar	No	Yes. Targeted predominantly in university neighborhoods	One-year pilot program extended for a second year – City provides free on-street parking spaces
Montgomery County, MD	WeCar	Yes	No	City paid a guaranteed rate of \$1,100 per vehicle per month, regardless of use. Pilot program end in 2010 due to insufficient use
Philadelphia, PA	Zipcar	Yes	Yes	City provides two on-street parking spaces; rates for city employees are \$4.95 per hour (including gas, insurance, and \$180 miles)
Pittsburgh, PA	Zipcar	Yes	Yes	City provided no subsidy to operator (parking or otherwise), received \$8/hour rate and is not charged membership fees
Portland, OR	Zipcar	Yes	Unknown	City contracted with Flexcar to manage part of City's motor pool; now program expanded to entire motor pool and available to all employees
San Francisco, CA	City CarShare	Yes	Yes	City employees have full access to City CarShare fleet, prospectively, as City retires passenger vehicles, they will be replaced by CityCarShare vehicles
Seattle, WA	Zipcar	Yes	Yes	City helped seed car-sharing with on-street parking subsidy, program currently widespread and used in City operations
Washington, DC	Zipcar	Yes	No	City uses Zipcar registration and tracking technology on municipal fleet vehicles; vehicles not available for use by general public

## Car-Sharing Arrangements

Car-sharing programs can take multiple forms. Arrangements available for consideration by the City of San Antonio include:

- Contracting directly with an existing car-sharing operator
- Using car-sharing technology to manage an existing municipal fleet
- Supporting the formation of an independent non-profit car-sharing organization

Each arrangement provides a distinct set of advantages and disadvantages, which are explored in greater depth in the pages that follow. Generally, however, it is assumed that the City of San Antonio will require that a car-sharing program reduce vehicle miles traveled and greenhouse emissions, as well as be revenue neutral if such a program is incorporated into municipal operations.

The most common car-sharing arrangement for local governments is to contract directly with an existing car-sharing operator (e.g. Zipcar, car2go, or an existing non-profit). Under this approach, city employees will join the car-sharing program and use car-sharing vehicles for city-related business. This approach has been used in multiple jurisdictions, can be implemented on a relatively short timeline, has comparatively lower costs, and encourages the use of car-sharing among other city residents and businesses – generating additional reductions in greenhouse emissions and reductions in vehicle miles traveled.

### Contracting with Existing Car-Sharing Operator Advantages and Disadvantages

Advantages	Disadvantages
<p><b>Track of Record of Success:</b> Multiple jurisdictions, including the City of Austin and State of Texas, have successfully contracted with private vendors. The City of San Antonio can draw on past experience of these operators in negotiating an agreement with a for-profit car-sharing operator.</p>	<p><b>Risk of Failure:</b> Success rates among local jurisdictions are not 100% (e.g., Montgomery County, MD).</p>
<p><b>Lower Costs &amp; Quick Timeframe for Implementation:</b> For profit operators possess the existing infrastructure and expertise to leverage economies of scale and quickly set up a car-sharing operation. Additionally, the costs of operation are generally lower than maintaining an internal motor pool or subsidizing the start-up of a car-sharing non-profit organization.</p>	<p><b>Financial Risk:</b> The City of San Antonio will be expected to provide some financial commitment to a car-sharing organization. If car-sharing does not take root, City will not be able to recoup foregone revenue from providing dedicated parking or guaranteed revenue.</p>
<p><b>Flexibility in Approach:</b> Multiple pricing options available (e.g., guaranteed revenue, dedicated fleet, or parking subsidy). Cities may use a variety of incentives to partner with a for-profit car-sharing organization.</p>	<p><b>Comparatively Low-Level of Control:</b> As with any contracted service, the City of San Antonio will not have full control over car-sharing services. This may include location of vehicles, vehicle type, and rate structure.</p>
<p><b>Catalyst for Growth:</b> City employees sign up for car sharing for city business, but as members of the car-sharing organization, they can also use vehicles for personal use. Vehicles may also be placed in communities with strong demand from residents, further encouraging adoption.</p>	<p><b>Lack of Competition:</b> The car-sharing market in San Antonio is underdeveloped. The City may inadvertently create market conditions conducive to the emergence of a monopoly, resulting in higher prices and sub-optimal service, and lower membership growth.</p>

The second option available to the City of San Antonio is to modernize the City's motor pool with a sophisticated, but easy-to-use on-line reservation system. Zipcar currently provides these services to a handful of local jurisdictions through its "Fast Fleet" program. Under the Fast Fleet program, Zipcar will retrofit city-owned vehicles with the same technology available in a car-sharing fleet, but create a customized on-line vehicle tracking system to be used by City of San Antonio fleet employees. This type of arrangement offers state-of-the-art technology and leverages some benefits of car sharing – mainly, the capacity to reduce vehicle miles traveled through enhanced monitoring of employee driving habits, and reducing the number of vehicles in the City's fleet.

From the City of San Antonio's perspective, however, the principal drawback of the "Fast Fleet" model is that it does not encourage the adoption of car-sharing among city residents or other businesses. The Fast Fleet arrangement is a "closed system," with vehicles only available to city employees while on-duty. Accordingly, the City in the "Fast Fleet" model does not serve as a catalyst for growth of a car-sharing program in the wider community.

The third option available to the City of San Antonio would be support the creation of a non-profit car-sharing organization, and contract car sharing services through this organization. Under this approach, city employees would also join the car-sharing program and use vehicles for city-related business. Multiple U.S. cities, including San Francisco and Philadelphia, have executed car-sharing agreements with non-profit operators. Because no car-sharing organization is currently in existence in San Antonio, however, the City would face a longer-time for implementation of a car-sharing program and may need to finance some of the start-up costs.

## **Car-Sharing Pricing Structures**

Pricing structures for car-sharing programs can vary considerably. Typically, car-sharing programs charge hourly rates for the use of vehicles, and most programs will include the costs of fuel, insurance, maintenance, and cleaning in their rates. Depending on the car-sharing operator, additional fees can be levied by mile driven, the day of the week the vehicle is used, the time of day the vehicle is used, and the type of vehicle reserved. Most operators charge a one-time application or registration fee, as well as annual or monthly membership fees. These fees may be waived or reduced during the program's launch,

### ***Common Car-Sharing Fees***

#### **Application Fee**

One-time fee that cover the costs of background checks

#### **Membership Fee**

Can be monthly or annual. May be waived or reduced in more high-use plans

#### **Hourly Rates**

Charged per hour of use. Rates may vary depending on vehicle model, day of the week, or time of day. High-use plans generally have lower hourly rates

#### **Day Rates**

Covers the cost of 24-hours of consecutive use at a lower per-hour cost

#### **Mileage Fee**

Charge for each mile of use. Some programs charge a mile fee when a certain threshold is reached in a given day (e.g., 200 miles)

#### **Deductible Coverage**

A fee that covers the cost of the car insurance deductible; can be annual or per hour fee

or to entice certain demographics to sign up (e.g., university students). Additionally, fees are usually levied if a car is returned late to its home location or “pod.”

Car-sharing operators may offer different types of plans in the same market. Frequently, they will offer discounted hourly rates and adjust membership fees for members who sign up for programs with higher vehicle use. Additionally, operators may offer different plans for individuals, businesses, and government entities. Rates may also vary across geographic markets. Localized parking and labor costs, for example, may drive up car-sharing rates. Demand levels from consumers and businesses may be another factor that influences car-sharing prices in a given market as well.

For most individual users – those with periodic use of a car-sharing vehicle – the total costs of a car-sharing program include a one-time application fee (approx. \$25, depending on car-sharing organization), annual membership fee (approx. \$50, depending on car-sharing organization), and an hourly rate around \$10 per hour.

For business and government users, fee structures can vary considerably. Often, car-sharing organizations set up custom programs for local government operators or corporate clients with discounted rates. Where standard packages are available, businesses typically pay an account registration fee, and an annual fee per driver. Organizations with a larger amount of drivers may be able to negotiate lower hourly rates.

To provide additional context for evaluating car-sharing price structures, the first section on the Appendix summarizes of the pricing structures for three for-profit car-sharing companies and two of the largest non-profit car-sharing organizations in the country. All operators charge differential rates according to vehicle model, with exception of car2go, which only offers one vehicle model. Note that each car-sharing provider uses a different mix of fees, and most offer some form of discount to high-frequency users.

## **San Antonio Market Analysis**

Among academics and practitioners, there is debate concerning the demographic factors positively correlated with a successful car-sharing program. Some report that the mode of transportation for residential commuters represents the best predictor of car-sharing success in a community, while others place a greater emphasis on socio-economic factors such as education and income. Further, additional variables – e.g., the presence of a large organization willing to serve as an anchor client – also contribute to success or failure of a car-sharing program.

Generally, however, successful car sharing programs have a mix of residential and business members. Accordingly, PFM performed a two-part analysis to assess the viability of car-sharing in San Antonio – the potential for car sharing from the residential market, and the prospects for adoption of car-sharing by local businesses and employers.

In assessing the viability of a car-sharing program in San Antonio, PFM first reviewed commuting patterns by employed residents in each of the City's census tracts. Determining the percentage of workers who commute to work using non-automotive modes of transportation – walking, biking, carpooling, and public transportation – was one of the principal techniques used to identify residential car-sharing markets in Philadelphia by PhillyCarShare, as well as by Zipcar in Los Angeles. This analysis identified a contiguous swath of 24 census tracts in central San Antonio where more than 20 percent of workers commuted to work using non-automotive modes of transportation.

Next, PFM reviewed a series of guidelines for where car-sharing is most likely to succeed developed by the Transportation Research Board of the National Academies in a report sponsored by the Federal Transit Administration. In deriving these guidelines, the Transportation Research Board performed a comprehensive literature review, interviewed car-sharing operators across the globe, and engaged independent statistical analysis. The purpose of the guidelines, as explained by the Transportation Research Board, is to identify communities where car sharing can be viable and flourish:

How can a current or would-be car-sharing operator, or a transit agency or other partner organization, assess the types of neighborhoods where car-sharing may be viable? [These] guidelines...show two sets of thresholds: low service, where car-sharing may be viable but where limited growth can be expected, and high service, where car-sharing is likely to flourish.

These thresholds are not precise requirements. Rather, they are intended as guidelines to show the approximate neighborhood characteristics that help to sustain car-sharing. There are certainly examples of successful car sharing operations that do not meet these thresholds...However, these guidelines can assess the extent to which neighborhoods do have supportive characteristics. Combined with the other considerations...such as support from partner organizations, they can help determine the likelihood of success.<sup>36</sup>

As summarized on the following page, the guidelines identified by the Transportation Research Board for low and high level of service include measures of a community's demographics, commuting patterns, vehicle ownership, and neighborhood housing characteristics:

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<sup>36</sup> Transportation Research Board of the National Academies. *Transit Cooperative Research Program Report 108, Car-Sharing: Where and How It Succeeds*, Sponsored by the Federal Transit Administration, 2005.

**Guidelines for Where Car-Sharing Succeeds**  
(Transportation Research Board of the National Academies)<sup>37</sup>

Variable	Level of Service	
	Low	High *
<b>Demographics</b>		
% 1-person households	30%	40%-50%
<b>Commute Mode Share</b>		
% drive alone to work	55%	35%-40%
% walk to work	5%	15%-20%
<b>Vehicle Ownership</b>		
% households with no vehicle	10%-15%	35%-40%
% households with 0 or 1 vehicle	60%	70-80%
<b>Neighborhood Characteristics</b>		
Housing units per acre	5	5

**Notes**

\* - High service roughly equates 10 or more car-sharing vehicles within a half-mile radius

Note: For most variables, the values are the suggested minimums that are needed to achieve a given level of car-sharing service. For the “% drive alone to work” variable, the values are suggested maximums

PFM analyzed the number of employees by place of work in multiple census tracts that met many of the Transportation Research Board's guidelines for where car-sharing succeeds. Generally, a successful car-sharing program should strive for a mix of both residential and business members. Peak hours of use for residents (weekday evenings and weekends) tend to be complimentary to business users (weekdays during normal business hours). If a car-sharing program can leverage both residents and business users, it will achieve a higher utilization rate per vehicle, and will support the placement of additional vehicles or pods in a community.

As a result of these analyses, PFM concludes that San Antonio can support a car-sharing operation in the downtown area of the City – particularly in the following four census tracts: 1101, 1106, 1107, and 1108. These census tracts are contiguous to one another, have high a proportion of residents who commute to work using non-automotive transportation, and meet many of the Transportation Research Board's thresholds for “viable” and “flourishing” service.

A major challenge for car sharing in San Antonio, however, is the City's comparatively low population density. For car sharing to take hold, vehicles must be in close proximity to users. For this reason, a successful car-sharing program in San Antonio will require the support of local employers. With a large number of employees located in the downtown, the City of San Antonio – in particular – will be well positioned to serve as an anchor client for a car-sharing program.

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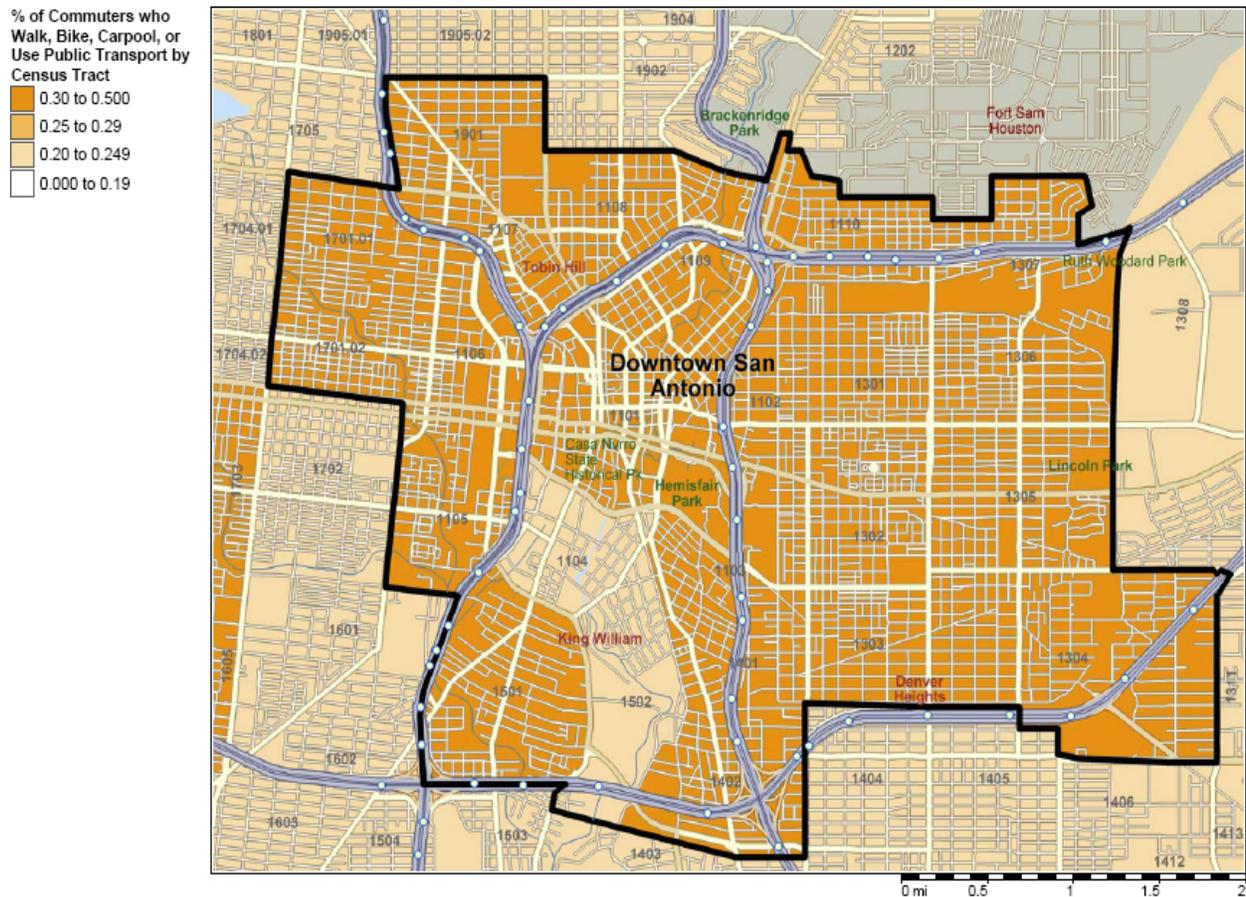
<sup>37</sup> *Ibid*



estimates provided by Nielsen Claritas, these 24 census tracts contain 78,687 residents, of which, 23,978 are classified as workers. In 22 of 24 census tracts, more than 30 percent of employed residents commute to work via walking, biking, carpooling or use of public transportation.

**Figure 2: Central San Antonio (24 Census Tracts)**

Percent of Workers who Commute to Work Using Non-Auto Modes of Transportation by Census Tract (2010 Forecast Data Prepared by Nielsen Claritas)



To further evaluate the likelihood that these communities would support car sharing, PFM layered the car-sharing guidelines identified by the Transportation Research Board on top of these 24 census tracts. For each criterion, the Transportation Research Board created a threshold for “low service,” where car sharing may be considered “viable, but limited growth can be expected” and “high service,” where car sharing is “likely to flourish.”

Overall, the 24-census tract area received a series of mixed scores, as summarized below:

- **Percent of One-Person Households:** 10 of 24 census tracts meet the threshold for “low service” (more than 30 percent) and 6 of 24 meet the threshold for “high service” (more than 40 percent)
- **Percent of Workers who Drive Alone to Work:** 7 of 24 census tracts meet the threshold for “low service” (less than 55 percent) no census tracts reach the threshold for “high service.” 9 of

24 census tracts, however, have between 55 percent and 60 percent of workers who drive alone to work, which is within five percentage points of the recommended threshold for “low service”

- **Percent of Workers who Walk to Work:** 9 of 24 census tracts meet the threshold for “low service” (more than 5 percent) and one tract meets the threshold for “high service” (more than 15 percent)
- **Percent of Households with No Vehicle:** 23 of 24 census tracts meet the threshold for “low service” (more than 10 percent) and 6 census tracts meet the threshold for “high service” (more than 35 percent)
- **Percent of Households with 0 or 1 Vehicle:** 20 of 24 census tracts meet the threshold for “low service” (more than 60 percent) and 11 census tracts meet the threshold for “high service” (more than 70 percent)
- **Housing Units per Acre:** No census tract met the recommended threshold of five units per acre (same threshold used for “low” and “high service”)

The table below details the findings of this exercise. Cells highlighted blue represent a “low service” score, while cells highlighted green represent a “high service” score. If the census tract did not meet the threshold for low service, the appropriate cell in the table was not highlighted.

**Central San Antonio – 24 Census Tracts with High Rates of Non-Auto Commuting**  
Compared Against Car-Sharing Guidelines Developed by Transportation Research Board

Census Tract	% of One-Person Households (>30%; 40%)	% of Workers Who Drive Alone to Work (<55%; <40%)	% of Workers Who Walk to Work (>5%; >15%)	% of Household with No Vehicle (>10%; >35%)	% of Household with 0 or 1 Vehicle (>60%; >70%)	Housing Units Per Acre (> 5 per acre)
1101	72.7%	45.2%	18.3%	54.8%	89.3%	1.94
1102	34.0%	53.6%	9.0%	27.9%	80.1%	1.32
1103	36.9%	57.8%	6.3%	37.0%	74.1%	2.72
1104	51.8%	68.9%	11.4%	30.9%	65.1%	1.26
1105	18.6%	46.3%	6.3%	54.7%	84.1%	2.31
1106	41.5%	46.2%	7.9%	46.5%	78.5%	2.34
1107	46.2%	59.9%	4.6%	45.7%	76.2%	2.83
1108	50.5%	54.9%	3.8%	41.7%	80.3%	3.33
1109	45.1%	57.9%	1.5%	22.2%	87.3%	1.04
1110	29.5%	42.9%	3.0%	33.9%	72.8%	2.21
1301	29.4%	62.2%	3.3%	25.4%	69.1%	2.01
1302	26.5%	59.5%	3.0%	21.9%	66.0%	2.64
1303	24.7%	57.5%	0.7%	14.9%	55.6%	3.59
1304	19.9%	55.2%	1.3%	20.5%	63.6%	2.51
1305	30.4%	58.3%	5.2%	23.6%	68.4%	2.02
1306	29.3%	57.2%	0.0%	33.9%	73.4%	3.14
1307	19.7%	62.7%	4.2%	29.7%	69.0%	2.16
1401	24.8%	55.3%	4.6%	18.9%	65.3%	2.47
1402	23.3%	64.7%	5.3%	26.6%	59.4%	2.23
1501	19.4%	56.8%	3.3%	18.4%	56.9%	2.78
1502	39.4%	61.6%	4.1%	7.7%	58.8%	1.49
1701.01	17.0%	50.3%	4.3%	22.2%	63.6%	3.89
1701.02	19.0%	62.2%	1.4%	24.5%	72.6%	4.22
1901	29.6%	49.1%	6.9%	21.4%	61.9%	3.32

**Notes**

**Green Shading** – census tract meets “high” service” threshold where car-sharing is “likely to flourish.”

**Blue Shading** – census tract meets “low service” threshold where car-sharing may be considered “viable, but limited growth can be expected”

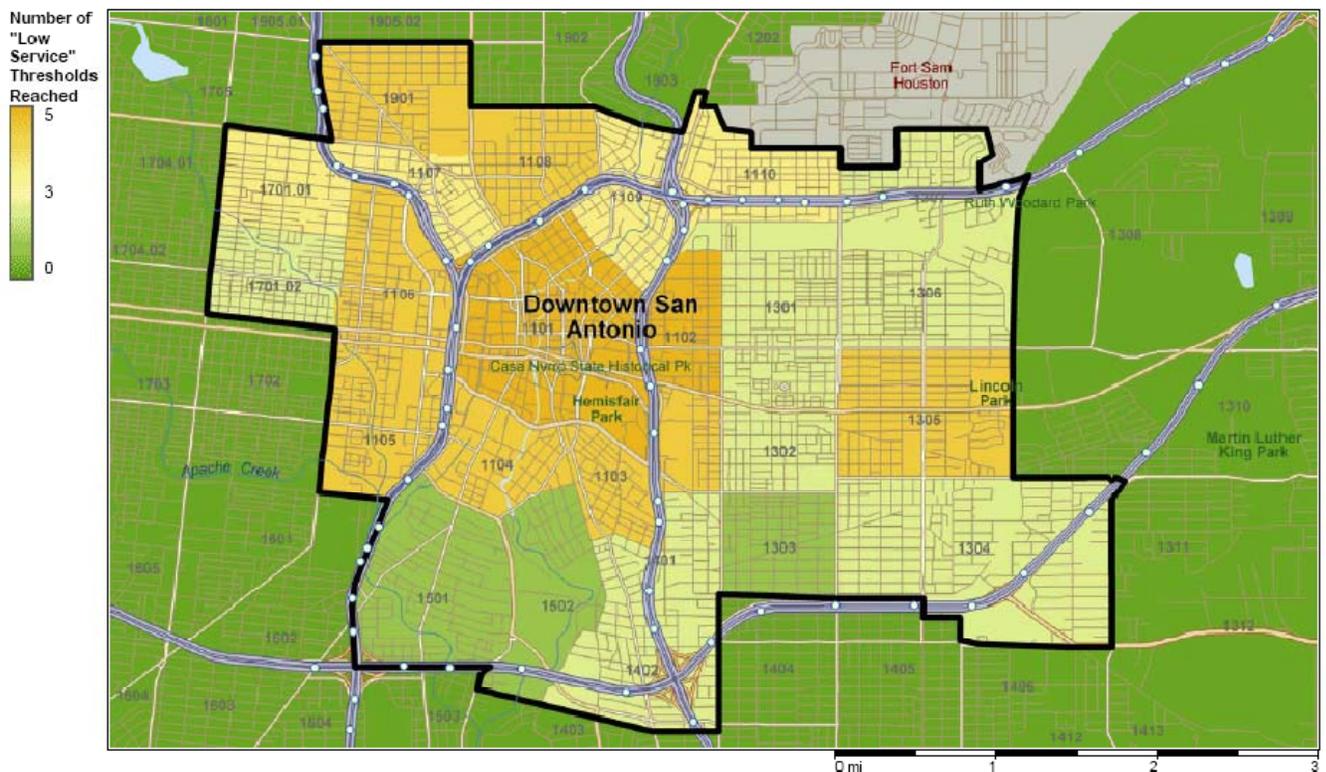
**No Shading** – falls below recommended threshold for “low service”

Data for “housing units” reflect 2010 occupied housing units, as projected by Nielsen Claritas

This more detailed analysis suggests that multiple communities within central San Antonio have appropriate levels of vehicle ownership (percentage of households with one or fewer vehicles) to support a residential car-sharing program. In terms of population density, however, none of the 24 census tracts analyzed met the recommended criteria of five housing units per acre, which represents a significant obstacle to the success of a residential car-sharing program. On the measures of housing demographics (percent of one-person households) and commute mode share (percent of workers who walk and drive to work), multiple census tracts meet or just fall short of the threshold for “low service.”

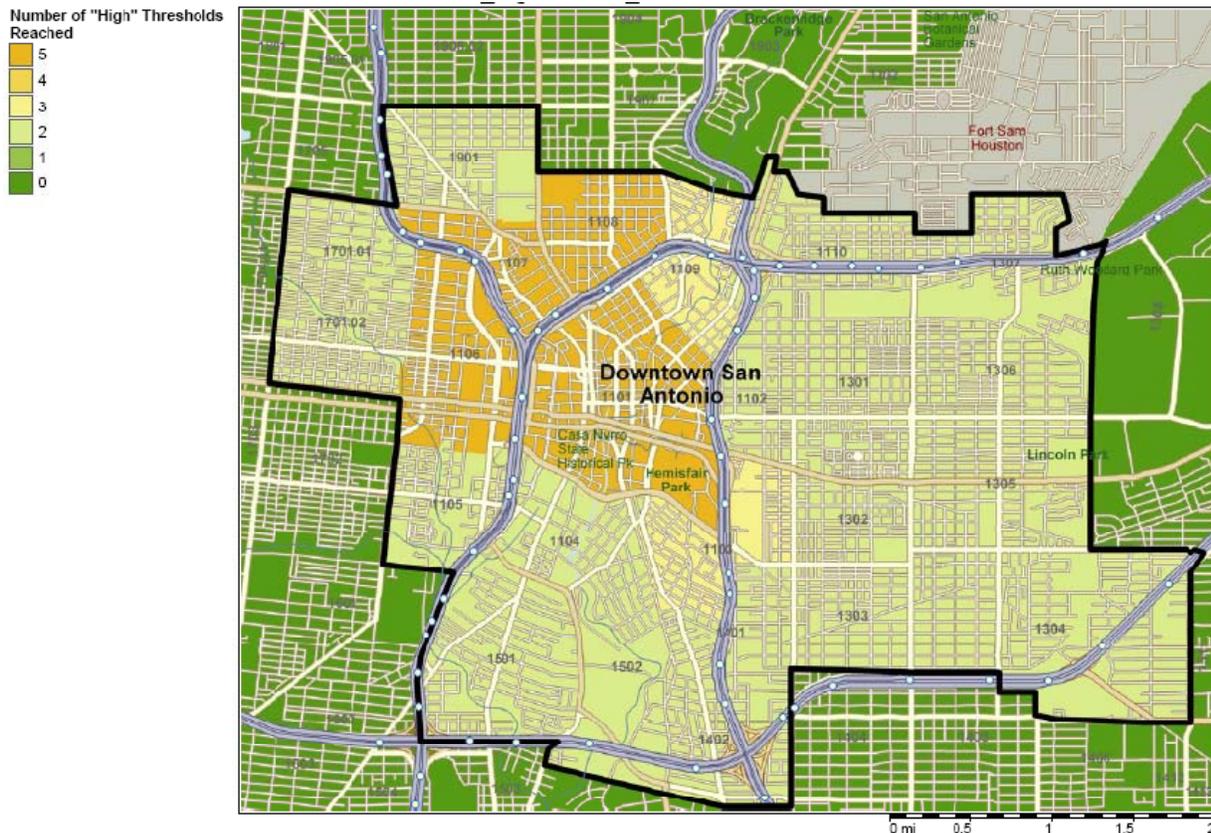
When mapping the results of these findings, a distinct cluster of census tracts in downtown around tract 1101 with demographics conducive to car sharing emerge. The subsequent map (figure 3) provides a spatial representation of the census tracts that reach the “low service” thresholds – that is, neighborhoods where car sharing is viable, but limited growth can be expected. The orange shading represents a higher number of thresholds reached, while the yellow and green shading represent a smaller number of “low service” thresholds reached.

**Figure 3: Central San Antonio (24 Census Tracts)**  
Number of “Low Service” Car-Sharing Threshold Reached, by Census Tract  
(2010 Forecast Data Prepared by Nielsen Claritas)



The following map (figure 4) provides a spatial representation of the census tracts that reach the “high service” thresholds where car sharing is likely to flourish. As with the previous map (figure 3), orange shading represents a higher number of thresholds reached, while the yellow and green shading represent a smaller number of “high service” thresholds reached.

**Figure 4: Central San Antonio (24 Census Tracts)**  
 Number of “High Service” Car-Sharing Threshold Reached, by Census Tract  
 (2010 Forecast Data Prepared by Nielsen Claritas)



These refined analyses identify the cluster of census tracts where car sharing will have the greatest chances of success among San Antonio residents. While the relatively low level of population density (as measured by housing units per acre) represents an obstacle to car-sharing, these tracts otherwise have characteristics favorable to car-sharing – a higher proportion of workers who use non-automotive modes of transportation to commute to work, low levels of vehicle ownership, and high percentage of single-person households.

The most promising area of San Antonio for car sharing is the downtown, specifically, census tract 1101 in the neighborhood bounded by Durango Boulevard to the south, Highway 35 to the west, Brooklyn Avenue to north and Interstate 37 to the east. This census tract meets the “low service” threshold on five of six measures (the lone exception being residential density), and “high service” threshold on four of six measures.

Census tract 1101, along with the three adjacent tracts that meet three or more of the Transportation Research Board’s “high service” threshold (1106, 1107, and 1108) contain an estimated residential population of 15,452. Not all residents, however, will be eligible for a car-sharing program. Many will be

too young, too old, or will not possess drivers' licenses. When restricting the potential market of residential car-sharing users to residents age 21 to 55, the universe of potential residential car-sharing customers in this four-tract area falls to 10,248. While some residents over the age of 55 and under the age of 21 (depending on the car-share operator) will join the program, this narrower range provides a conservative estimate of the number of residents who may be eligible to join a car-sharing program.

The size of the car-sharing program (e.g., number of car-sharing vehicles placed) will vary according to a number of factors – most notably, the market penetration rate and ratio of car-sharing members to car-sharing vehicles. The market penetration rate represents the percent of residential population that participates in the car-sharing program. At the low end, a car-sharing operation can expect 0.5 percent of a residential program to join a program. If 0.5 percent of residents ages 21 to 55 sign up for a car-sharing program within census tracts 1101, 1106, 1107, and 1108, for example, this translates to 51 car-sharing members ( $10,258 \times 0.005 = 51$ ).

The member to vehicle ratio can vary dramatically according to the type of car-sharing program and its fee structure. Programs with higher fees per mile tend to have a lower member-to-car ratio, while programs with no membership fees tend to have higher numbers of members who use vehicles less frequently, thus increasing the member to vehicle ratio. Globally, Zipcar reports more than 400,000 members and more than 7,000 vehicles in operation. This translates to a member to vehicle ratio of approximately 57:1. Excluding five largest car-sharing operators in the United States, however, the ratio member to vehicle ratio declines to 20:1 (data as of July 2005).<sup>38</sup>

Assuming a ratio of 20 members for each car-sharing vehicle yields a total of 2.6 vehicles ( $51 \div 20 = 2.6$ ). The interplay between changes in the market penetration rate (from growth of the program, for example) as well as the number car-sharing vehicles in operation (from increased service demand, for example) will shape the overall structure of the car-sharing program. The following table provides an estimate of the residential market for car sharing in downtown San Antonio, using member to vehicle ratios of 20: 1 as the lower bound, 38.5: 1 as the midpoint, and 57:1 as the upper bound.

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<sup>38</sup> Shaheen, Susan et al. "Carsharing in North America: Market Growth, Current Developments, and Future Potential," November 15, 2005. Available at [www.carsharing.net](http://www.carsharing.net)

**Residential Car-Sharing Market Penetration  
Downtown San Antonio – 4 Census Tracts**  
(2010 Forecast Data Prepared by Nielsen Claritas)

<b>Estimated Market of 10,258 Residents</b>		<b>Number of Car-Sharing Vehicles</b>		
<i>Residents Who Join Car-Sharing Program</i>	<i>Number of Residents Ages (21 – 55)</i>	<i>20 Members per Vehicle</i>	<i>38.5 Members per Vehicle</i>	<i>57 Members per Vehicle</i>
0.5% of residents	51.2	2.6	1.3	0.9
1.0% of residents	102.5	5.1	2.7	1.8
2.0% of residents	205.0	10.2	5.3	3.6
3.0% of residents	307.4	15.4	8.0	5.4
4.0% of residents	409.9	20.5	10.6	7.2
5.0% of residents	512.4	25.6	13.3	9.0

### **Employer Market Analysis**

Most successful car-sharing systems engage a mix of residential and business users. Because the peak demand for each of these groups tend to be complementary (business users tend to use vehicles during weekdays, while residents use vehicles weeknights and weekends), car-sharing programs in neighborhoods with a mix of potential residential and business users are more likely to succeed. In the case of San Antonio, leveraging public-sector employers and the business community with operations in the downtown is especially important, given the area’s relatively low residential density levels.

According to 2000 U.S. Census data (most recent available) on workers by place of employment, 68,360 individuals worked in census tracts 1101, 1106, 1107, and 1108. This figure includes workers who live in these census tracts, as well as workers who commute to these tracts from other parts of the City. Of these 68,360 employees, nearly 24 percent (16,198) reported commuting to work through carpooling (9,950), mass transit (4,747) or other means (1,500).

**Class of Worker by Place-of-Work – Downtown San Antonio (4 Census Tracts)**  
(Census Transportation Planning Package, 2000)

<b>Class of Worker</b>	<b>Total Workers</b>	<b>Percent of Total</b>
Private for-profit wage and salary	42,965	62.9%
Local government workers	9,060	13.3%
Private not-for-profit wage and salary	5,545	8.1%
Self-employed not incorporated	4,315	6.3%
Federal government workers	4,160	6.1%
State government workers	2,225	3.3%
Unpaid family workers	85	0.1%
<b>Total</b>	<b>68,360</b>	<b>100.0%</b>

Most of the employees in downtown San Antonio work for the private sector. Outreach and collaboration with these area employers will be critical if a successful car-sharing program is to take hold in the City. Additionally, more than 16 percent of employees in this area work for local or state government, with more than 11,000 classified as employees of local government. These data suggest that if the City of San Antonio can integrate car sharing into its existing operations, the City can serve as an anchor client for a car-sharing operator in the downtown. Collaboration with other public sector employers in the area – such as Bexar County, CPS Energy, University of Texas San Antonio, and the San Antonio Independent School District – may further bolster demand for car sharing, increase the number of car-sharing vehicles in service, and further reduce carbon emissions and the number of vehicle miles traveled.

The following table provides an overview of the market penetration within the four-tract area of downtown San Antonio when accounting for employees by place of work. To provide a conservative estimate for the potential market, the table shows 2000 U.S. Census place-of-work data, and nets out all employed residents of each of the four census tracts – even if their place of work is outside the four-census tract area of downtown. When accounting for these factors, the potential car-sharing market in these four census tracts totals 74,587 individuals.<sup>39</sup>

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<sup>39</sup> See appendix for additional detail

**Residential & Business Car-Sharing Market Penetration  
Downtown San Antonio – 4 Census Tracts**  
(2010 Forecast Data Prepared by Nielsen Claritas & 2000 U.S. Census Data)

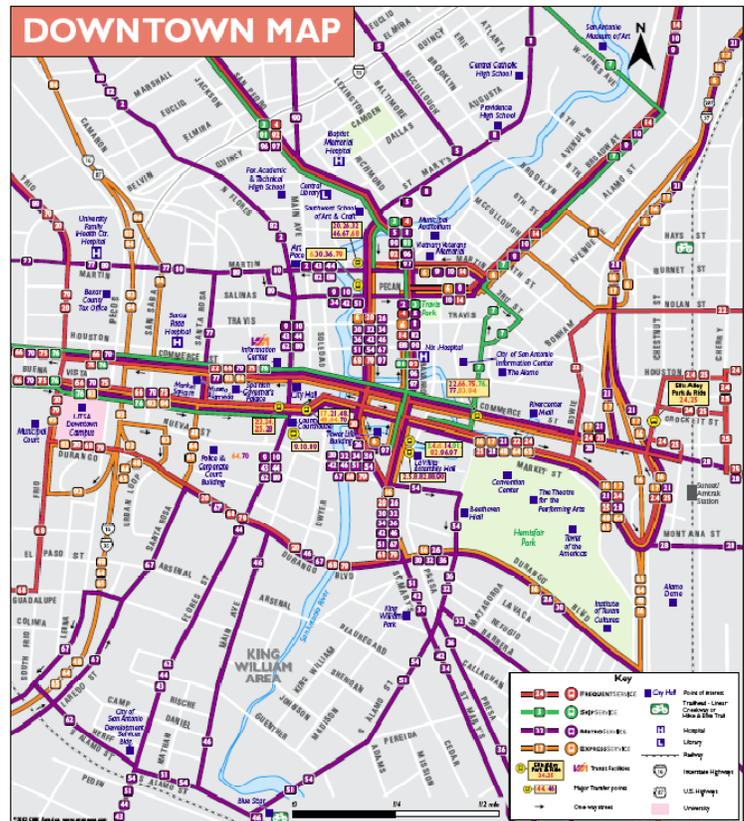
Estimated Market of 74,587 Residents + Employees		Number of Car-Sharing Vehicles		
Residents + Employees Who Join Car-Sharing Program	Number of Residents Ages (21 – 55)+ Employees	20 Members per Vehicle	38.5 Members per Vehicle	57 Members per Vehicle
0.5% of Residents + Employees	372.9	18.6	9.7	6.5
1.0% of Residents + Employees	745.9	37.3	19.4	13.1
2.0% of Residents + Employees	1,491.7	74.6	38.7	26.2
3.0% of Residents + Employees	2,237.6	111.9	58.1	39.3
4.0% of Residents + Employees	2,983.5	149.2	77.5	52.3
5.0% of Residents + Employees	3,729.4	186.5	96.9	65.4

When accounting for employees, the potential market for car-sharing in downtown San Antonio expands dramatically. Assuming a vehicle to member ratio of 57:1, reflective of a car-sharing program with low entry costs, downtown San Antonio may support more than six vehicles – a figure that may increase materially depending on the program’s market penetration.

As the transportation hub of San Antonio and Bexar County, the presence of mass transit services can provide additional support for a car-sharing program in the downtown. Car sharing has a greater likelihood of success in communities that offer an array of transportation alternatives, such as walking, biking, taxis, and mass transit. As individuals forego use of their individual vehicles, they require alternative means of transportation, thereby increasing the demand of mass transit.

VIA Metropolitan Transit offers a host of programs that reduce vehicle demand for residents and commuters. These include

**VIA Metropolitan Transit Downtown Service  
(Census Tract 1101)**

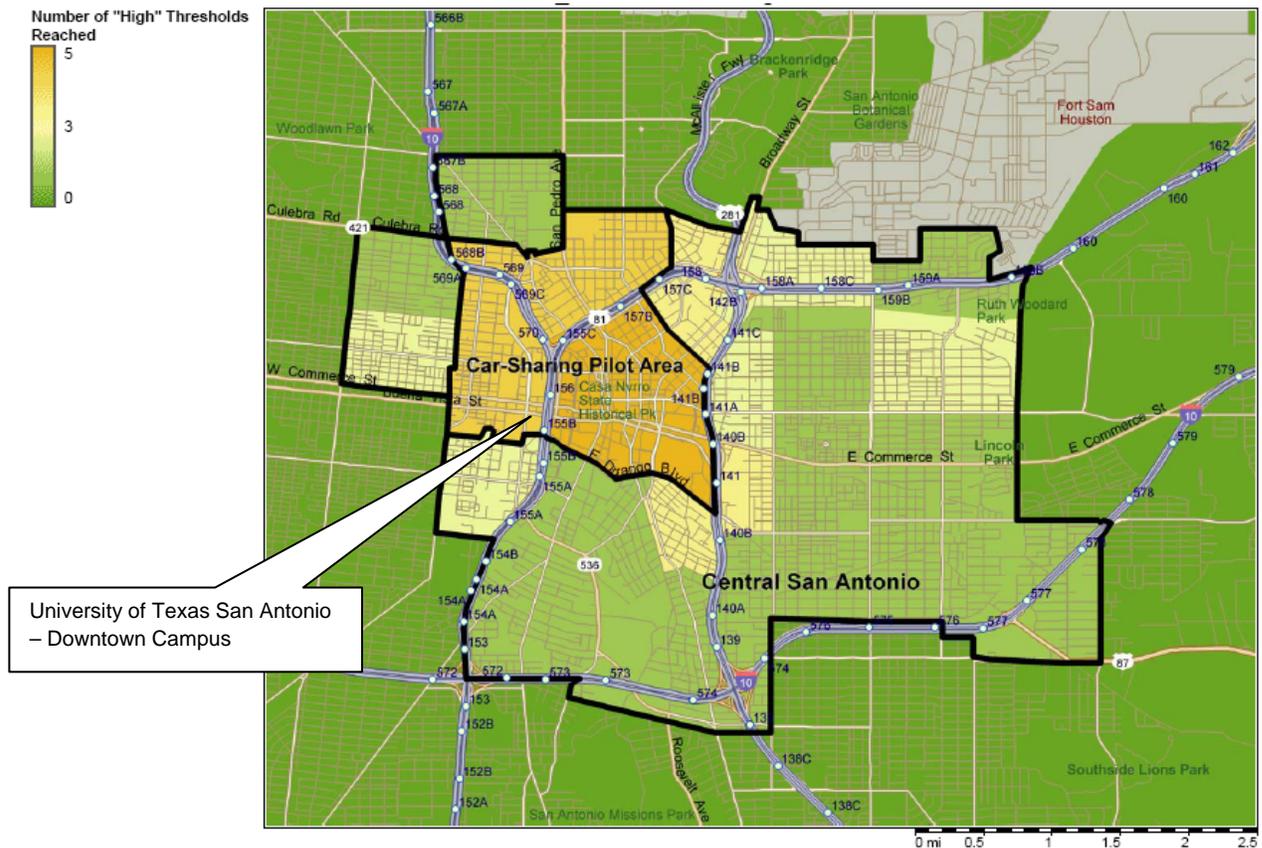


multiple bus and metro routes running through census tract 1101, and two routes of streetcars that exclusively serve downtown points of interest. For commuters, VIA also provides multiple programs that complement car sharing, including Park and Ride, vanpooling, and express service beyond downtown.

### Car-Sharing Pilot Program

With a mix of supportive residential demographics, a large daytime commuter population, and a high degree of transit access, the four-census tract area of downtown San Antonio is the most promising area of San Antonio to launch a pilot car-sharing program. Further, the campus of the University of Texas San Antonio (UTSA) is located within the Southwest quadrant of this area in census tract 1106. With approximately 6,700 students – and more faculty and staff – UTSA may be capable of supporting a viable car-sharing program in its own right. The campus's location adjacent to census tract 1101, also allows the possibility for the university to be incorporated into a pilot car-sharing program involving businesses and residents in a wider part of the community.

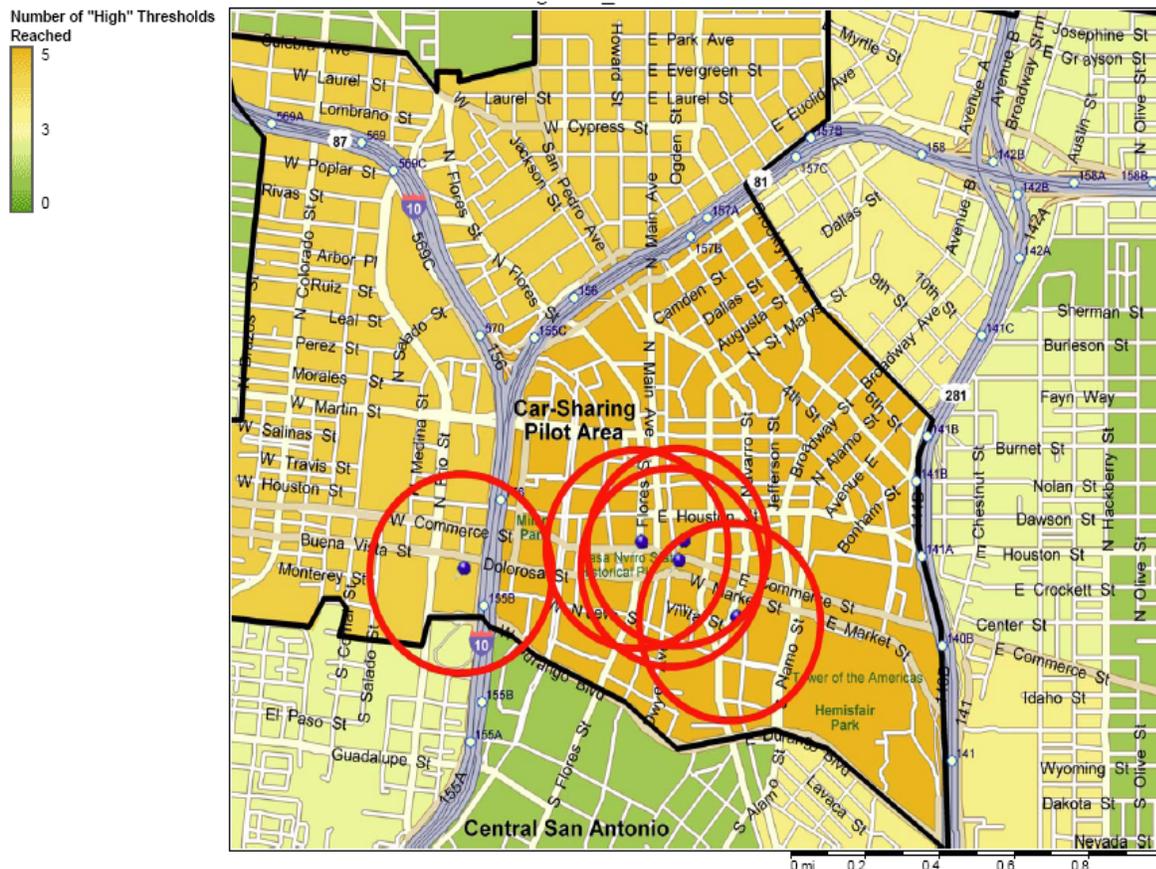
**Figure 5: Downtown San Antonio – Car-Sharing Pilot Area (4 Census Tracts)**  
(2010 Forecast Data Prepared by Nielsen Claritas)



The following map (figure 6) provides additional detail on potential car-sharing vehicle locations in downtown San Antonio. Each of the red circles represents a quarter-mile radius to approximate a five minute walk from the vehicle location. For the purposes of this exercise, vehicles are placed at the buildings of large public sector employers clustered within the southwestern region of the car-sharing pilot area – UTSA downtown campus, San Antonio City Hall, City of San Antonio administrative building at 111

Soledad, Bexar County Courthouse at 100 Dolorosa Street, and CPS Energy building at 145 Navarro Street.

**Figure 6: Downtown San Antonio – Potential Vehicle Locations in Car-Sharing Pilot Area**  
**Each Circle Represents a Five-Minute Walk (One-Quarter of a Mile)**  
(2010 Forecast Data Prepared by Nielsen Claritas)



From an employer's perspective, this clustering of vehicles would provide solid vehicle availability for employees in City Hall, 111 Soledad, 100 Dolorosa, and 145 Navarro Streets. Employees in each building would have access to three vehicles within a five minute walk.

From a residential perspective, the clustering of vehicles would provide vehicle access to residents within the two most populous census block groups within census tract 1101 as well as block group four within census tract 1106 – more than 2,000 residents as of the 2000 Census (most recent data available).

From the perspective of mass transit, Commerce and Market Streets are two major transportation arteries within the downtown. VIA runs multiple bus routes along Commerce and Market Streets both around downtown and to other parts of the City.

The precise location of car-sharing vehicles will depend on multiple variables (parking availability, willingness of organizations to become anchor clients, residential demand, etc.), as well as proprietary analysis performed by the individual car-sharing organization. Nonetheless, data suggest that a multi-vehicle car-sharing program will be viable for downtown San Antonio, and perhaps even serve as a platform for further growth in other parts of the City.

## **Cost of Service Analysis**

Demographic analyses suggest that the multiple census tracts in downtown San Antonio possess favorable residential characteristics for car sharing. The presence of increased population density, multiple large employers, and transportation hubs bode well for car sharing as well. These factors suggest that within downtown San Antonio, there is sufficient demand to create a self-sustaining car-sharing pilot program. When a sufficient critical mass of members is reached, and demand levels warrant additional vehicles, the car-sharing program can then expand to additional locations within in the downtown and other parts of the City.

This section outlines the potential costs associated with two car-sharing arrangements – contracting directly with an existing car-sharing operator and supporting the formation of an independent non-profit car-sharing organization.<sup>40</sup> From an operational and cost perspective, contracting with an existing car-sharing operator represents the most advantageous proposition for the City of San Antonio. The City would be able to initiate a small-scale pilot program that could potentially be revenue neutral within the first year of operation, and serve as a catalyst for expansion of car sharing into the San Antonio community at large. By comparison, supporting the formation of an independent car-sharing non-profit may provide the City of San Antonio with similar benefits, but at potentially much greater cost and longer timeline for implementation.

### **Contract with Existing Car-Sharing Operator**

When contracting with an existing car-sharing operator, the City incorporates car-sharing into its day-to-day operations. In other words, city employees use car-sharing vehicles in place of individually assigned or motor pool vehicles.

In jurisdictions where car-sharing has yet to take hold – such as San Antonio – the City may also act as an “anchor” client. The presence of one large client can make the market more attractive to car-sharing operators, allowing the car-sharing program to expand enrollment to members of the general public. Further, employees who join the car-sharing program for work also use vehicles during their personal time. Over time, as membership among residents and local businesses grows, a self-sustaining car-sharing program can emerge with the capacity to expand to adjacent neighborhoods and other parts of the City.

In most car-sharing arrangements with local jurisdictions, the local government can be expected to provide some sort of financial support to the car-sharing operator. Most commonly, this takes the form of subsidized parking (e.g., dedicated on-street parking spaces, off-street parking, free use of metered spots, or some combination of all three) or a guarantee of a certain amount of revenue per vehicle in operation.

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<sup>40</sup> Of note, the option of using car-sharing technology to manage the City’s existing municipal fleet is not considered. While this arrangement has the potential to generate cost savings to municipal fleet operations and reduce carbon emissions, it will not stimulate the adoption of car sharing among the general public, and can be expected to have a muted impact in encouraging the adoption of car sharing among other San Antonio employers.

In a guaranteed revenue arrangement, the City absorbs a portion of the risk associated with a car-sharing program. The amount of risk – or financial commitment – assumed by the City will vary according to vehicle availability. In some jurisdictions (e.g., New York City), this arrangement takes the form of a semi-dedicated fleet – where the City has exclusive access to vehicles during working hours, and the general public has access to vehicles on weekday evenings and weekends. The City has guaranteed use of vehicles during a specific time-frame and pays accordingly for this guaranteed availability. Alternatively, other cities use an “open system” where city employees and the general public have equal access to vehicles throughout the day, and vehicle availability is determined on a first come, first reserved basis. Under these arrangements, the guaranteed financial commitment is less. The cities of Philadelphia and Pittsburgh, for example, use open car-sharing systems and do not guarantee revenue per vehicle to the car share operator (Zipcar).

The tables that follow present two scenarios for a pilot car-sharing program in downtown San Antonio – one assuming a car-sharing program with no use by the general public, and another assuming six-hours of vehicle use per day, split between the City of San Antonio and the general public, once fully operational. In each scenario, the gross costs of a car-sharing program and the net costs to the City of San Antonio are presented. The underlying assumptions of each scenario include:

- Five hybrid vehicles retrofitted with automated vehicle tracking and billing systems
- Vehicle locations in downtown San Antonio, in close proximity to the municipal and county buildings
- Vehicles will be available to city employees, employees of downtown businesses, and residents, although each scenario assumes a different utilization rate by non-city employees
- Car-sharing operator requires \$1,500 in guaranteed revenue per vehicle, per month to cover all operational costs – vehicle leasing, maintenance, fuel, insurance, cleaning, etc. – as well as profit margin<sup>41</sup>
- The car-sharing operator will charge a rate of \$10 per hour; no additional fees
- No additional subsidy for parking, aside from monthly guaranteed revenue per vehicle
- Once fully operational – six months from launch – each vehicle will generate six hours of revenue daily

In the first scenario illustrated on the following page (Scenario 1), the City of San Antonio guarantees monthly revenue of \$1,500 per car-sharing vehicle, but no members of the general public use the vehicles. Under an arrangement with a \$1,500 per vehicle per month revenue guarantee, the maximum gross cost to the City of San Antonio would be \$90,000 annually (5 vehicles x \$1,500 guaranteed revenue x 12 months). Again, this assumes no vehicle use by any residents, businesses, or public sector employees. In this worst case scenario, the vehicles would be used only by City of San Antonio employees, and otherwise sit idle. The City of San Antonio would be required to pay 100 percent of the \$1,500 per vehicle per month fee.

Even in this worst case scenario – where there is no uptake from city residents – the City still may realize cost savings and a reduced carbon footprint if car sharing became successfully integrated into the City’s fleet operations, and coupled with a corresponding fleet reduction.

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<sup>41</sup> Where data are available, guaranteed revenue arrangements have been \$1,500 per vehicle or less. Accordingly, the figures below use a figure of \$1,500 as a conservative, upper-bound figure for forecasting the estimated costs of a car-sharing operation. Actual proposals from car-sharing vendors for a guaranteed revenue cost-sharing framework may vary.

Based on data from the City of San Antonio Fleet and Operations Department, PFM calculated the annual cost of a passenger vehicle with the City of San Antonio fleet at \$6,702.<sup>42</sup> Since the City principally purchases hybrid vehicles for its passenger fleet, this figure includes the annualized acquisition, operational, and fuel costs of a 2010 Toyota Prius spread out over a five-year replacement cycle. Assuming an annual cost of \$6,702 for each hybrid vehicle in the City's fleet, if the City of San Antonio could replace 14 passenger vehicles with a five-car pilot car-sharing program – i.e., one car-sharing vehicle would replace approximately three city passenger vehicles – then a \$90,000 car-sharing program would be revenue neutral to the City. The table below summarizes the annual gross and net costs of a five-car sharing program, assuming no use of the car-sharing program by the general public:

**Scenario 1: Five-Vehicle Car-Sharing Program with No Use by Residents  
Annual Gross and Net Costs to City of San Antonio**

<b>Gross Costs of Car-Sharing Program</b>	
Monthly Cost Per Vehicle	\$1,500
Number of Vehicles	5
Monthly Cost	\$7,500
<i>Annual Gross Cost of Car-Sharing Program</i>	<i>\$90,000</i>
<b>Additional Costs to City of San Antonio</b>	
Vehicle Stipends and Mileage Reimbursement	\$10,000
Parking Subsidy	\$0
<b><u>Subtotal</u></b>	<b>\$100,000</b>
<b>Offsetting Cost Savings</b>	
Annual Savings per Vehicle	\$6,702
<i>Cost Savings from Reduction of 14 Vehicles</i>	<i>\$93,828</i>
One-time Auction Revenue from Sale of 14 Vehicles	\$14,000
Vehicle Use by Non-City Employees	\$0
<b><u>Subtotal</u></b>	<b>\$107,828</b>
<b><u>Net Savings/(Costs) to City of San Antonio</u></b>	<b><u>\$7,828</u></b>

It should be noted, that is in this worst case scenario, the program generates cost savings in the first year totally \$7,828. In the second year of a program, however, the City would incur a net cost because of the absence of auction revenue from the sale of relinquished vehicles.

The second scenario (scenario 2) assumes that city residents and employers aside from the City of San Antonio will use the car-sharing program. As with the first scenario, the second scenario assumes that the City will enter into a guaranteed revenue arrangement of \$1,500 per vehicle per month. Any revenue generated by the car-sharing program, however, offsets the \$1,500 monthly per vehicle obligation by the City. Applying some “real life” assumptions around usage show the gross costs to the City of San Antonio for supporting a car-sharing program may be considerably lower than the \$90,000 worst-case scenario.

<sup>42</sup> See appendix for more detail concerning the calculation of estimated City of San Antonio vehicle costs.

The table on the following page (Scenario 2) presents a twelve-month cash flow statement of the gross costs associated with a five-car car-sharing program in San Antonio. Assuming a three-month testing period of exclusive use by city employees, followed by a coordinated and sustained marketing push to the general public in Month 4, followed by a gradual ramp-up of vehicle utilization by residents and local employers – the monthly subsidy from the City of San Antonio decreases from \$7,500 in Month 1 (\$1,500 per month for each of the five vehicles) to \$0 after Month 6. Once fully operational, it is assumed that each vehicle will be utilized six hours each day, with City of San Antonio vehicle use accounting for four hours during each work day (excludes holidays and weekends). As the car-sharing program enrolls more users, each vehicle generates more than \$1,500 per month in revenue after five months. The program breaks even after six months and the total net subsidy equals approximately \$27,000.

**Scenario 2: Monthly Cash Flows for Five-Vehicle Pilot Program (Gross Costs Only)**  
 Gradual Ramp-Up to Six Hours of Use per Vehicle per Day after Six Months

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
<b>Utilization</b>												
Vehicles	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Utilization (Hours per Vehicle per Day)	0	0	0	3	4	5	6	6	6	6	6	6
<b>Revenue</b>												
Hourly Fees	\$0	\$0	\$0	\$4,563	\$6,083	\$7,604	\$9,125	\$9,125	\$9,125	\$9,125	\$9,125	\$9,125
Miscellaneous Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Costs</b>												
Guaranteed Revenue	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500
Parking Subsidization	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Additional Subsidization	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Net Gain/Loss</b>	<b>-\$7,500</b>	<b>-\$7,500</b>	<b>-\$7,500</b>	<b>-\$2,938</b>	<b>-\$1,417</b>	<b>\$104</b>	<b>\$1,625</b>	<b>\$1,625</b>	<b>\$1,625</b>	<b>\$1,625</b>	<b>\$1,625</b>	<b>\$1,625</b>
<b>Cash Flow (Investment Needed)</b>	<b>-\$7,500</b>	<b>-\$15,000</b>	<b>-\$22,500</b>	<b>-\$25,438</b>	<b>-\$26,854</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Multiple variables may influence the break-even point for a City-subsidized car-sharing program. Implicit in this scenario is that each vehicle can generate at least six hours of revenue per day after six months. To achieve this level of utilization, the City will not only need to incorporate car sharing into existing operations, it will need to partner with the car-sharing organization on a concerted marketing and outreach strategy to attract membership. The car-sharing operator may also decide to implement a different cost structure than assumed – one with membership fees, mileage charges, tiered membership packages, or other ancillary fees and rate structures, all of which may influence membership growth and utilization.

Depending on the fee schedule adopted by the car-sharing operator (e.g., a simple flat hourly fee, or hourly fee + mileage fee, or inclusion of annual membership fee) and utilization figures, a self-sustaining car-sharing program will need between 20 and 57 members per vehicle. Therefore, the target enrollment for the five-car pilot program should total between 100 and 285 users, assuming a mix of residents, municipal employees, and business users. Since utilization rates may fluctuate according to the type of user enrolled (e.g., resident versus employee) and the extent to which each member utilizes the car-sharing vehicle, regular monitoring and evaluation of vehicle utilization will be critical to the success of the City of San Antonio's car-sharing program.

Over a multi-year time frame, a well-functioning car-sharing program has the potential to generate net cost savings to the City of San Antonio when accounting for the savings generated from maintaining a smaller-sized fleet. The table on the following page provides an example of this principle at work. Using the same assumptions in scenario 2 – a five-vehicle car-sharing program coupled with the 14-vehicle reduction in the City's fleet – a successful five-car car-sharing program will generate nearly \$21,000 in net cost savings in the first year. This figure accounts for approximately \$27,000 in one-time subsidization costs in year one and additional costs incurred from increased rates of mileage reimbursement and/or issuing of vehicle stipends. Over a five-year period, the net savings to the City of San Antonio in this scenario approach \$164,000.

The greater the number of vehicles that can be replaced from the City's fleet with car sharing, the larger the cost-savings to the City. For each additional vehicle removed from City's fleet, the City will realize additional estimated five-year net savings of \$14,861.

Realized savings may also vary according to changes in underlying assumptions. For example, if the City can negotiate an hourly rate lower than \$10, the City will experience greater cost savings. Further, if utilization by City employees exceeds or trails an average of four hours per work day, realized savings may increase or decrease accordingly.

**Scenario 2: Five-Year Net Cost Savings of Five-Vehicle Car Sharing Program**

Assumes Reduction of 14 Passenger Vehicles in City of San Antonio Fleet

	<b>Per Vehicle</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
<b><u>Operating Cost Savings</u></b>						
Maintenance	\$681	\$9,534	\$9,772	\$10,017	\$10,267	\$10,524
Repairs	\$657	\$9,198	\$9,428	\$9,664	\$9,905	\$10,153
Accidents	\$232	\$3,248	\$3,329	\$3,412	\$3,498	\$3,585
Fuel (\$3 / gallon)	\$825	\$11,550	\$11,839	\$12,135	\$12,438	\$12,749
<b><u>Sub-Total</u></b>	<b>\$2,395</b>	<b>\$33,530</b>	<b>\$34,368</b>	<b>\$35,227</b>	<b>\$36,108</b>	<b>\$37,011</b>
<b><u>Acquisition Cost Savings</u></b>	<b>\$21,535</b>	<b>\$60,298</b>	<b>\$61,805</b>	<b>\$63,351</b>	<b>\$64,934</b>	<b>\$66,558</b>
<b><u>Auction Revenue</u></b>	<b>\$1,000</b>	<b>\$14,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b><u>Sub-Total</u></b>	<b>\$24,930</b>	<b>\$74,298</b>	<b>\$96,174</b>	<b>\$98,578</b>	<b>\$101,042</b>	<b>\$103,569</b>
<b><u>New Alternative Transportation Costs</u></b>						
Car Sharing		\$77,054	\$51,455	\$52,741	\$54,060	\$55,411
Vehicle Stipends & Mileage Reimbursement		\$10,000	\$10,250	\$10,506	\$10,769	\$11,038
Parking Subsidy		\$0	\$0	\$0	\$0	\$0
<b><u>Sub-Total</u></b>		<b>\$87,054</b>	<b>\$61,705</b>	<b>\$63,248</b>	<b>\$64,829</b>	<b>\$66,450</b>
<b><u>Net Savings</u></b>		<b>\$20,774</b>	<b>\$34,469</b>	<b>\$35,330</b>	<b>\$36,214</b>	<b>\$37,119</b>
<b><u>Cumulative 5-Year Gross Savings:</u></b>			<b><u>\$473,661</u></b>			
<b><u>Cumulative 5-Year Net Savings:</u></b>			<b><u>\$163,906</u></b>			

**Notes**

Assumes 4 hours of use by City employees per workday (assuming 251 workdays) per vehicle at \$10 per hour. Year 1 includes subsidization of \$26,854 from previous table. See appendix for calculation of cost per vehicle in San Antonio fleet. \$10,000 assumed to offset net savings from increase in mileage reimbursement and/or vehicle stipends. All figures are adjusted by factor of 2.5% in years 2-5 to account for inflation.

## City Support of Car-Sharing Non-Profit

In the event that the City of San Antonio decided not to contract with an existing car-sharing operator – the City could contract with a non-profit car-sharing organization. The principal drawback of this approach, however, is that since there is no non-profit car-sharing organization in existence in the San Antonio metro area, the City would likely have to subsidize a large portion of the organization's start-up costs.

The analysis that follows provides a rough approximation of the costs associated with creating and running a non-profit car-sharing organization in San Antonio. Actual costs may differ considerably from the figures that follow because of variations in multiple cost inputs, e.g., labor, rent, materials, marketing outreach, and available funding from non-City resources. Nonetheless, the costing analysis provides some useful insight into the scope of resources required to create and run a non-profit organization, as well as the potential risk to the City (and/or other partners) that may provide financial backing to such an organization.

Because of the overhead costs associated with starting an organization, the assumed size of the car-sharing program is 20 car-sharing vehicles – considerably larger than the pilot program referenced in the previous section. While the City of San Antonio may be capable of supporting a car-sharing program of this size with the appropriate market penetration rate, assuming a larger number of vehicles reduces the margin for error in the implementation of car-sharing program.

In estimating the potential costs of a non-profit car-sharing organization, PFM made the following assumptions:

- Rates and usage: \$10 per hour, no additional mileage or membership fees. Each vehicle generates six hours of usage per day
- Membership Growth: 125 members join each quarter (every three months); five new vehicles added when the ratio of vehicles to members reaches 50:1
- Costs: Vehicle leases (\$4,200 per vehicle); insurance (\$2,400 per vehicle); maintenance and repair (\$600 per vehicle), parking (\$1,200 per vehicle), cleaning (\$600 per vehicle), technological retrofitting of vehicles (\$1,200; one-time cost) and subscription for vehicle tracking systems (\$1,200); utilities and phone (\$4,800); rent (\$18,000); salary and benefits for a staff of three individuals (director, \$60,000; customer service representative, \$42,000; fleet manager, \$42,000); fuel (\$3 per gallon); marketing (\$12,000); and supplies (\$6,000)

As the table on the following page illustrates, a non-profit car-sharing organization with the rate structure, usage, growth rates, and cost inputs assumed above would require nearly \$200,000 gross subsidization costs, and have revenues exceed expenditures (i.e., “break even”) late in the second year of operation. As additional point of reference, a policy group that reports to Mayor Mark Mallory in Cincinnati, Ohio is seeking funding for a 20-vehicle car-sharing non-profit organization. The project price tag in start-up capital is \$250,000.<sup>43</sup>

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<sup>43</sup> “Car Sharing Program May Soon Get Rolling in Cincinnati,” *Cincinnati Business Journal*, October 20, 2010.

**Estimated Quarterly Cash Flows for Twenty-Vehicle Non-Profit Car Sharing Organization (Gross Costs Only)**

	Pre-Launch	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8
New Vehicles Added	5	0	0	5	0	5	0	5	0
New Members Added	0	125	125	125	125	125	125	125	125
Total Members	0	125	250	375	500	625	750	875	1000
Total Vehicles	5	5	5	10	10	15	15	20	20
<b>Vehicle Utilization</b>									
Hours	0	2,738	2,738	5,475	5,475	8,213	8,213	10,950	10,950
Miles	0	10,950	10,950	21,900	21,900	32,850	32,850	43,800	43,800
<b>Revenue</b>									
Per Hour Fees	\$0	\$27,375	\$27,375	\$54,750	\$54,750	\$82,125	\$82,125	\$109,500	\$109,500
Mileage Charge	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Membership Fee	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Revenue</b>	<b>\$0</b>	<b>\$27,375</b>	<b>\$27,375</b>	<b>\$54,750</b>	<b>\$54,750</b>	<b>\$82,125</b>	<b>\$82,125</b>	<b>\$109,500</b>	<b>\$109,500</b>
<b>Costs</b>									
Vehicle Cost (Lease)	\$5,250	\$5,250	\$5,250	\$10,500	\$10,500	\$15,750	\$15,750	\$21,000	\$21,000
Insurance	\$3,000	\$3,000	\$3,000	\$6,000	\$6,000	\$9,000	\$9,000	\$12,000	\$12,000
Maintenance and Repair	\$750	\$750	\$750	\$1,500	\$1,500	\$2,250	\$2,250	\$3,000	\$3,000
Cleaning	\$750	\$750	\$750	\$1,500	\$1,500	\$2,250	\$2,250	\$3,000	\$3,000
Parking	\$1,500	\$1,500	\$1,500	\$3,000	\$3,000	\$4,500	\$4,500	\$6,000	\$6,000
Technological Retrofitting	\$6,000	\$0	\$0	\$6,000	\$0	\$6,000	\$0	\$6,000	\$0
Billing/Registration System	\$1,500	\$1,500	\$1,500	\$3,000	\$3,000	\$4,500	\$4,500	\$6,000	\$6,000
Utilities	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200
Rent	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500
Staff	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000
Marketing	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Fuel	\$0	\$939	\$939	\$1,877	\$1,877	\$2,816	\$2,816	\$3,754	\$3,754
Supplies	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
<b>Total Costs</b>	<b>\$63,950</b>	<b>\$58,889</b>	<b>\$58,889</b>	<b>\$78,577</b>	<b>\$72,577</b>	<b>\$92,266</b>	<b>\$86,266</b>	<b>\$105,954</b>	<b>\$99,954</b>
<b>Net Profit/Loss</b>	<b>(\$63,950)</b>	<b>(\$31,514)</b>	<b>(\$31,514)</b>	<b>(\$23,827)</b>	<b>(\$17,827)</b>	<b>(\$10,141)</b>	<b>(\$4,141)</b>	<b>\$3,546</b>	<b>\$9,546</b>
<b>Cash Flow (Investment Needed)</b>	<b>(\$63,950)</b>	<b>(\$95,464)</b>	<b>(\$126,977)</b>	<b>(\$150,804)</b>	<b>(\$168,631)</b>	<b>(\$178,772)</b>	<b>(\$182,913)</b>	<b>(\$179,367)</b>	<b>(\$169,821)</b>

## **Environmental Impacts of Pilot Car-Sharing Program**

Car sharing promotes multiple practices that reduce Greenhouse Gas (GHG) emissions and Vehicle Miles Traveled (VMT). Car-sharing members purchase fewer vehicles for personal use; relinquish unnecessary, usually less fuel-efficient vehicles; increase use of public transportation and other modes of non-automotive travel; and travel more miles with fuel-efficient vehicles, such as hybrids.

The following section estimates the reductions in GHG emissions and VMT of a five-car pilot car-sharing program in downtown San Antonio.<sup>44</sup> To generate these estimates, PFM reviewed the latest academic research evaluating the environmental impacts of car sharing, and where necessary, made assumptions about projected usage to generate conservative estimates of potential GHG and VMT reductions.

In terms of GHG reduction, it is estimated that a pilot car-sharing program will result in the net reduction of 38.5 tons of GHG emissions annually on an observed basis (emission reductions as a direct result of car sharing), and 55.8 tons annually on a full impact basis (inclusive of vehicle purchases postponed or foregone as a result of car sharing). Further, each additional half percent of market penetration into the four-census tract area of downtown San Antonio will result an additional reduction of 19.3 tons of GHG on an observed basis, and 27.9 tons on a full impact basis.

Methodologies for calculating VMT reductions resulting from car sharing are less robust. Nonetheless, using the best available data, PFM estimates that a five-car pilot program will result in a net reduction of 227,959 to 312,778 vehicle miles traveled. Each additional car-sharing vehicle will generate an additional net reduction between 40,820, and 57,783 vehicle miles traveled.

### **Estimated Reduction in Greenhouse Gas Emissions (GHG)**

The available empirical evidence suggests a clear link between car sharing and reductions in GHG emissions and VMT, yet until recently, no standard methodology existed to quantify the precise amount of VMT or GHG reduction attributed to each car sharing vehicle. Susan A. Shaheen, co-director of the Transportation Sustainability Research Center at University of California, Berkeley, summarizes the current state of research in this area:

While past research suggests a link between carsharing and vehicle miles/kilometers traveled (VMT/VKT) and/or GHG emission reduction, many of the studies have evaluated this association using different methodologies and metrics that are difficult to compare. Defining a consistent system boundary that characterizes the bulk of measureable environmental impacts from carsharing remains a challenge. Furthermore, most studies have focused their evaluations on a single organization. While these past efforts are extremely valuable in contributing to the public knowledge, no study has applied a standard methodology for assessing the impacts of members across organizations or metropolitan regions. Past research exhibits a general consensus that

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<sup>44</sup> GHG emission reduction estimates are computed using the U.S. Environmental Protection Agency's standard methodology, which accounts for carbon-dioxide emissions generated from carbon dioxide emissions, as well as emissions from other GHG emissions – methane, nitrous oxide, and hydrofluorocarbons.

carsharing results in lower VMT/VKT, private auto ownership, and lower emissions, but there is little agreement regarding the magnitude of those impacts.<sup>45</sup>

In a June 2010 report, Susan Shaheen and Elliot Martin present a standard methodology for estimating the environmental impacts of car-sharing on GHG emissions. Shaheen and Martin analyzed survey data of 6,281 car sharing members in North America about travel and vehicle use patterns to estimate the changes in GHG that result from individual households joining a car sharing program.<sup>46</sup> Business and university users were not included in the analysis.

The results of the work by Shaheen and Martin demonstrate that some individuals who join a car sharing program actually increase their GHG emissions. For individuals in carless households, for example, car sharing provides vehicle access that previously did not exist. When viewed at the aggregate level, however, the increased emissions by these individuals is more than offset by other car-sharing members who relinquish a vehicle, drive fewer miles, use more carbon-efficient forms of transportation (e.g., mass transit), and/or drive more fuel-efficient vehicles as a result of the car-sharing program (e.g., hybrids).

Applying their findings to the North American car-sharing market, Shaheen and Martin estimate that each household joining a car-sharing program experiences an “observed impact” of 0.58 fewer metric tons of GHG per year (t GHG/yr). The “observed impact” reflects net reductions in GHG emissions from the household joining the car-sharing program. This includes the shedding of a privately-owned vehicle, driving fewer miles, as well as the emission increases from households that increase VMT as a result of joining a car-sharing program. When looking at the “full impact” of car sharing – that is, accounting for actions that would have occurred in the absence of car-sharing, such as foregoing or delaying the purchase of a vehicle – car sharing generates an estimated reduction of 0.84 t GHG/yr per household.<sup>47</sup>

The benchmarks developed by Shaheen and Martin provide a useful proxy for estimating the GHG reductions for a car-sharing pilot program in San Antonio. Shaheen and Martin found that 81 percent of respondents were the sole car-sharing members in their household. To provide a household estimate for potential car-sharing users within the proposed four-census tract pilot area, PFM discounted the total residents age 21 to 55 by 19 percent (1 – 0.81). Additionally, Shaheen and Martin account for “inactive” car-sharing members in their analysis, i.e., individuals who join a car-sharing program but do not use their vehicles (often the result of low or minimal membership fees). From the sample collected in their study, Shaheen and Martin find an inactive rate of eight percent, but posit that the actual inactive rate is likely higher across the industry.<sup>48</sup>

To account for variations in the potential share of inactive car-sharing members as well as market penetration rates in the four-census tract area of downtown San Antonio, PFM performed a sensitivity analysis representing inactive shares ranging from 0 to 50 percent, and residential market penetration rates of 0.5 percent, one percent, and two percent.

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<sup>45</sup> Martin E, and S. Shaheen. Greenhouse Gas Emission Impacts of Carsharing in North America. Final Report. Mineta Transportation Institute. San Jose, CA. 2010.

<sup>46</sup> Shaheen and Martin used households as the basis for their study, as opposed to individual members, to account for the effects of travel emissions that one household member may have on others. For example, an individual may relinquish a vehicle and join car sharing program, but other members in the household may retain their vehicles and drive more miles as a result. Using a household unit allows Shaheen and Martin to account for this outcome in estimating net GHG emission due to car sharing.

<sup>47</sup> Martin E, and S. Shaheen. Greenhouse Gas Emission Impacts of Carsharing in North America. Final Report. Mineta Transportation Institute. San Jose, CA. 2010.

<sup>48</sup> *Ibid.*

Assuming an inactive share of 20 percent and a market penetration rate of one percent, a car-sharing pilot program will reduce an estimated 38.5 tons of GHG emissions per year on an observed impact basis, and an estimated 55.8 tons of GHG per year on a full impact basis. Further, actual GHG emission reductions may be greater when accounting for car-sharing use by business users and university resident. The tables that follow provide more a more detailed breakdown of the sensitivity analyses performed by PFM.

Assuming a residential market penetration of 0.5 percent, a car-sharing program in downtown San Antonio is estimated to reduce GHG emissions by 12.0 to 24.1 (t GHG/yr) on an observed impact basis, and 17.4 to 34.9 (t GHG/yr) on a full impact basis.

**Estimated GHG Reductions (t GHG/yr) in Downtown San Antonio  
Assuming 0.5% Market Penetration Rate**

Inactive Share	Active Car-Sharing Household Population	Observed Impact of Total Annual Emissions (t GHG/yr)	Full Impact of Total Annual Emissions (t GHG/yr)
0%	42	-24.1	-34.9
10%	37	-21.7	-31.4
20%	33	-19.3	-27.9
30%	29	-16.9	-24.4
40%	25	-14.4	-20.9
50%	21	-12.0	-17.4

Assuming a residential market penetration of 1.0 percent, a car-sharing program in downtown San Antonio is estimated to reduce GHG emissions by 24.1 to 48.1(t GHG/yr) on an observed impact basis, and 34.9 to 69.7 (t GHG/yr) on a full impact basis.

**Estimated GHG Reductions (t GHG/yr) in Downtown San Antonio  
Assuming 1.0% Market Penetration Rate**

Inactive Share	Active Car-Sharing Household Population	Observed Impact of Total Annual Emissions (t GHG/yr)	Full Impact of Total Annual Emissions (t GHG/yr)
0%	83	-48.1	-69.7
10%	75	-43.3	-62.8
<b>20%</b>	<b>66</b>	<b>-38.5</b>	<b>-55.8</b>
30%	58	-33.7	-48.8
40%	50	-28.9	-41.8
50%	42	-24.1	-34.9

Assuming a residential market penetration of 2.0 percent, a car-sharing program in downtown San Antonio is estimated to reduce GHG emissions by 48.1 to 96.3 (t GHG/yr) on an observed impact basis, and 69.7 to 139.5 (t GHG/yr) on a full impact basis.

**Estimated GHG Reductions (t GHG/yr) in Downtown San Antonio  
Assuming 2.0% Market Penetration Rate**

Inactive Share	Active Car-Sharing Household Population	Observed Impact of Total Annual Emissions (t GHG/yr)	Full Impact of Total Annual Emissions (t GHG/yr)
0%	166	-96.3	-139.5
10%	149	-86.7	-125.5
20%	133	-77.0	-111.6
30%	116	-67.4	-97.6
40%	100	-57.8	-83.7
50%	83	-48.1	-69.7

**Estimated Reduction in Vehicle Miles Traveled (VMT)**

Existing methodologies for measuring VMT reduction as a result of car-sharing are less developed than calculating GHG emission reductions. Nonetheless, the existing body of empirical evidence suggests that car sharing has a demonstrable effect on reducing VMT. Consider the following:

- Zipcar estimates that VMT per member decreased by 80 percent, from 5,295 to 1,068 miles per year according to a 2004 membership survey<sup>49</sup>
- A Transportation Research Board survey in 2005 of more than 1,000 car-sharing members found that self-reported VMT decreased by approximately 37 percent<sup>50</sup>
- A long-term study of City CarShare members in San Francisco found a 67 percent decrease in reported VMT compared to a 24 percent decrease in a control group<sup>51</sup>

While the research to date points to clear reduction in VMT, experiences can vary considerably across jurisdictions. In a review of multiple studies estimating average VMT reduction in North American car-sharing programs, Susan Sheehan found that the U.S. average car-sharing member’s VMT dropped between 7.6 percent and 79.8 percent. This wide range is attributed to differences in location-specific variations, member use, and survey design. On average, Dr. Sheehan and her co-authors calculated a VMT reduction of 44 percent per car-sharing user in the United States.<sup>52</sup>

To calculate reductions in VMT for a five-car San Antonio pilot car-sharing program, PFM developed separate figures for VMT reductions resulting from car-sharing use by city employees, and VMT reductions by car-sharing use from residents. Where appropriate, PFM used the same assumptions of vehicle use as stated in the previous “Cost of Service” section of this report.

For VMT reductions for city employees, PFM assumed that 14 vehicles were removed from the City fleet. Because the vehicles removed from the City’s fleet are likely to be low mileage vehicles, it is assumed that vehicles removed from the City fleet travel 5,303 miles annually – half the average annual mileage of

<sup>49</sup> Transportation Research Board of the National Academies. *Transit Cooperative Research Program Report 108, Car-Sharing: Where and How It Succeeds*, Sponsored by the Federal Transit Administration, 2005.

<sup>50</sup> Ibid.

<sup>51</sup> Martin E, and S. Shaheen. *Greenhouse Gas Emission Impacts of Carsharing in North America*. Final Report. Mineta Transportation Institute. San Jose, CA. 2010.

<sup>52</sup>

all passenger vehicles within the City's fleet. Consequently, a vehicle reduction of 14 vehicles will generate an estimated gross VMT reduction of 74,235 miles (14 vehicles x 5,303 miles x .5). To account for offsetting increases in VMT from city employee use of car sharing, as well as increases in mileage reimbursement, an additional discount factor of 50 percent was applied. Accounting for the discount factor, the net reduction in VMT from the City's adoption of a car sharing program is estimated at 37,118 miles (74,235 miles x .5).

Based on these estimates, each additional vehicle removed from the City fleet and replaced by car sharing would generate an incremental reduction of 2,651 VMT. Additional VMT reductions would be realized should the City shift some of its high-use passenger vehicles to the car sharing program.

To calculate the VMT reductions for residential car-sharing members, PFM used VMT data generated by the San Antonio-Bexar County Metropolitan Planning Organization (MPO). According to the San Antonio-Bexar County MPO, aggregate annual vehicle miles traveled in the San Antonio-Bexar Metro area in 2008 area totaled 16,335,442,505. During the same year there were 1,564,489 vehicles registered in the metro area, yielding 10,441 miles traveled per registered vehicle.<sup>53</sup>

According to Susan Sheehan and Elliot Martin, each car-sharing vehicle replaces between nine and thirteen privately-owned vehicles, when including foregone vehicle purchases as a result of joining a car-sharing program. For a five-car pilot program in San Antonio, this translates to between 469,863 and 678,690 miles traveled annually. Within the pilot program, PFM estimated that approximately 54 percent of each car-sharing vehicle's utilization would come from residents and business users (excluding "on the clock" City of Antonio employees).<sup>54</sup> PFM also accounted for the three-month ramp-up period during the pre-launch phase of the pilot program where there would be minimal use of car-sharing by San Antonio residents.<sup>55</sup>

The result of these calculations is an estimated net reduction in VMT for residential car-sharing members between 190,841 and 275,660 in the first year of a five-car pilot car-sharing program. Based on these estimates, it is estimated that each additional car-sharing vehicle will generate between 38,168 and 55,132 of further VMT reductions.

Combining VMT reductions for San Antonio residents and municipal employees generates a total estimated net reduction in VMT between 227,959 and 312,778 miles. Accordingly, each additional car-sharing vehicle in operation is estimated to yield an incremental reduction in VMT between 40,820 and 57,783 miles.

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<sup>53</sup> San Antonio Bexar County Metropolitan Planning Organization, *2010 Regional Safety Study*, available online at [www.sametroplan.org](http://www.sametroplan.org)

<sup>54</sup> Assumes six hours of daily vehicle use. Four hours of use by municipal employees during 251 work days. Two hours of use by residents and other business users during weekdays and six hours of use on weekends and holidays. Total use by residents and business users =  $1 - (4 \text{ hours} \times 251 \text{ work days}) / (6 \text{ hours} \times 365 \text{ days}) = 54.1\%$

<sup>55</sup> Martin, Elliot et al. "Carsharing's Impact on Household Vehicle Holdings: Results from a North American Shared-Use Vehicle Survey," March 15, 2010. Available on [www.carsharing.net](http://www.carsharing.net)

## **Next Steps**

The data suggest that car sharing is viable, and may potentially thrive, in downtown San Antonio. Transforming this potential into a car-sharing program successfully, however, will require buy-in from multiple partners within the City government and from the surrounding community at large. Integrating car sharing into existing municipal operations will entail building consensus among City departments, providing educational outreach to City employees, and partnering with managers whose operations may lend themselves to car-sharing. Promoting car sharing to area businesses, universities (especially UTSA), and residents as a means to bolster membership growth will also require coordinated and sustained outreach.

As the City of San Antonio decides whether to move forward with a car-sharing program, the City should consider the following issues:

- Is the City prepared to make a concerted effort to integrate car-sharing into its existing operations?
- How much funding, if any at all, is the City willing to commit to support a car-sharing operation?
- What type of funding mix will the City adopt (e.g., parking subsidization vs. guaranteed revenue vs. no subsidy at all)?

Assuming the City determines to advance a car-sharing program, possible next steps for the City to consider in moving towards the building of a successful car sharing program include:

- Create a Car-Sharing Implementation Committee
- Draft a car-sharing Request for Information (RFI) for interested vendors
- Evaluate City of San Antonio vehicle use policies
- Develop a coordinated marketing strategy
- Establish metrics for contract monitoring

## **Car-Sharing Implementation Committee**

Integrating car sharing into the City's operations will require cross-departmental collaboration, cooperation, and sharing of information. For optimal results, the City of San Antonio should consider creating an organizational structure – for example, an implementation committee or task force – capable of incorporating input from city departments, and disseminating information to departments most likely affected by a new car-sharing program.

One model for consideration involves the creation of an inter-departmental Car-Sharing Implementation Committee. The Committee would be chaired by the Office of Environmental Policy, while regular attending members would include departments with high passenger vehicle use, San Antonio Fleet Maintenance & Operations Department, and the City Department of Downtown Operations. Once selected, the car-sharing vendor should regularly attend – if not facilitate – these meetings as well.

Responsibilities of a Car-Sharing Implementation Committee would include:

- Identify departments and municipal functions where car-sharing can be used to complement or replace individual vehicle and motor pool use

- Develop an organization-wide policy for fostering cooperation and sharing of car sharing
- Provide input into the development and selection of an RFI and RFP for car-sharing vendor
- Assist with the coordination of educational outreach to internal partners (e.g., city departments) as well as external partners (businesses, universities, residents, etc.)
- Provide input and guidance pertaining to the most effective marketing strategies for building community support during the public launch of a car-sharing program (to be done in concert with selected car-sharing vendor)
- Choose locations where car sharing vehicles will receive optimal use by city employees (to be done in concert with selected car-sharing vendor)
- Identify low-usage passenger vehicles that may be candidates for removal from the City's vehicular fleet
- Evaluate potential barriers to implementation of car-sharing program and develop mitigation strategies
- Act as forum to receive and process input from city users, and modify program as necessary
- Solicit input from, and network with, additional community partners whom may include USTA, VIA, CPS Energy, Downtown Alliance, and San Antonio Chamber of Commerce
- Monitor enrollment and utilization metrics once car-sharing is operational

## **Request for Information (RFI)**

In concert with forming the Car-Sharing Implementation Committee, the City should begin developing contract requirements for the City's car-sharing operator. A next step in this process may involve constructing and issuing a Request for Information (RFI) to car-sharing vendors. Distinct from a Request for Proposals (RFP) that pre-defines the specific scope of services to be engaged, an RFI asks interested vendors to propose a scope and business model for the delivery of services. The City should issue an RFI to established car-sharing vendors, as well as community groups that may be interested in starting-up a non-profit car-sharing organization. Though non-binding, information from an RFI provides the City with a clearer idea of the services and cost-structures proposed by prospective car-sharing vendors, and will help to focus the development of an RFP. The "open-ended" nature of an RFI as a next step forward will be particularly valuable for a car-sharing program, given the potential for service providers to propose alternative business models that mix both public and private market vehicle use (and revenue streams) in varying configurations.

Car-sharing operators can be asked how they propose to deliver car-sharing services to the City. They can propose the scope of a pilot program (e.g., number of vehicles), pricing arrangements, and any discounts they may be willing to offer. Alternatively, the City may inquire about the amount of direct subsidization – if any – required by the vendor to set up operations in San Antonio. Common forms of direct subsidization for a car-sharing start-up (including, but not limited to, revenue guarantees) include:

- **Revenue Guarantees.** The City of San Antonio may guarantee a specific amount of revenue per car-sharing vehicle per month during the pilot program. This may be linked to City (and related public) operational usage, while also providing a platform for further private investment and involvement.
- **Subsidize Membership Costs.** The City may also consider subsidizing membership costs for new enrollees. Typically, car-sharing organizations charge a one-time fee for new members or businesses that cover the costs associated with performing a background check (usually between \$25 and \$50). The City may opt to cover the costs of these membership fees for a certain number of car-sharing members (e.g., the first 150 members) or for a certain period of time (e.g., the first six months) up to a pre-determined cap.
- **Usage Credits.** Another form of subsidization is to provide a usage credit to new members. New enrollees would receive a credit (e.g., \$50 per enrollee) in their car-sharing account to encourage vehicle use.

The City of San Antonio may also use the provision of parking benefits to encourage the entrance of a car-sharing operator into the local market, and adoption by residents and business. Elements to be considered in an RFI – or may be mentioned in an RFI response – include:

- **On-Street City Parking.** The provision of an on-street parking spot not only creates an economic incentive to car-sharing operators, it increases the visibility of car-sharing, and serves as critical form of marketing. The City may consider a partial or full-subsidization of a parking spot in the downtown as part of or in lieu of a package to attract car-sharing operators.
- **Meter-Free Parking for Car-Sharing Users.** The cost of dedicated parking equals the forgone revenue generated by the parking space. A lower cost option would entail providing meter-free parking for car-sharing vehicles when the vehicle is in use. This approach may require less forgone revenue, while still providing much-needed on-street visibility for the car-sharing program.
- **Discounts in Municipal Lots.** Provide a discounted parking rate in municipal lots for car-sharing users. While incurring lower costs, the drawback of this approach is the reduced visibility of the car-sharing program.
- **Off-street Parking.** Used in combination with other approaches above, subsidizing off-street parking may be a useful approach to expand car-sharing beyond the original pilot program (assuming sufficient demand).

Incidentally, each of these measures can be easily tracked and capped, providing a discrete incentive while minimizing the risk of cost overruns.

## Evaluate City Vehicle Use Policies

To maximize the potential car-sharing participation rate among City employees, the City of San Antonio may consider reevaluating its vehicle use policies. Generally, limits should be place on the use of private passenger vehicles – particularly take-home vehicles – in order to encourage employees to change existing behavior and use car-sharing vehicles. While it is common for jurisdictions who use car-sharing to make exceptions (e.g., for emergency use), employees should meet a very high threshold before a request to use a non-car-sharing vehicle is approved.

Regular utilization reviews of passenger vehicles represent one tool the City can leverage to identify underused passenger vehicles, and in turn, areas of municipal service delivery that would be conducive to car sharing. Commonly, jurisdictions purchase and maintain more vehicles than they need to deliver services. These excess vehicles increase maintenance and acquisition costs, affect turnaround time and vehicle availability, and result in excess carbon emissions and vehicle miles traveled. Generally, utilization reviews show that a substantial percentage of vehicles are underused, and in turn, permit the relinquishment of between five and ten percent of a government's fleet.

The City of San Antonio Fleet Maintenance & Operations Department is consistently ranked among the nation's the top performing public sector fleet operations according to Government Fleet Magazine. As such, it should be assumed that utilizations reviews for the City of San Antonio will generate fewer underused vehicles than in other jurisdictions.

Nonetheless, regular utilization reviews are useful policy approaches to containing municipal fleet costs and greenhouse gas emissions. Within the City of San Antonio, for example, a passenger vehicle averages 10,605 miles annually over the course of its useful life. Yet there are 40 passenger vehicles that average fewer than 5,000 miles annually, which may be candidates for relinquishment from the City fleet, and replacement with a car-sharing vehicle.

Each vehicle identified as underused, however, should not automatically be relinquished from the fleet. In fact, there are multiple reasons why a vehicle should remain in the fleet, even though it has low mileage (for example, the vehicle is used for frequent after-hour calls for service). For this reason, departments should be given an opportunity to explain how the vehicle is used and why the usage is low relative to other vehicles in the City fleet.

If a vehicle has very low mileage and the explanation for its continued issue is insufficient (e.g., it is used as a "reserve" vehicle) or the vehicle regularly appears near the bottom of utilization reviews, then the vehicle should be removed from the City fleet.

Additional city vehicle use policies that should be reevaluated in the context of a car-sharing program include:

- Eliminate the practice of assigning vehicles to individuals. Instead, assign vehicles to an office or a geographical location
- For senior staff accustomed to having the use of a private vehicle, consider issuing vehicle stipends instead:
  - Employees relinquish use of a City-owned vehicle, but receive a monthly stipend for vehicle use instead. Future hires receive no stipend, and must use mileage reimbursement as necessary
  - In many jurisdictions, the City's insurance policy includes liability coverage for non-owned vehicles, which would cover employees involved in accidents in personal vehicles while on city business
- For low mileage vehicles, consider expanding the use of mileage reimbursement in cases where reimbursement is less costly than owning or leasing a vehicle
- Reevaluate take-home vehicle policies

- Consider the use of vehicle stipends or mileage reimbursement for first responders who are occasionally called out after normal business hours
- If a vehicle is used in this manner fewer than 12 times a quarter or is fueled less than twice monthly, consider using vehicle stipends in place of a city-issued take-home vehicle

It should be noted that even well-run municipal fleets often contain excess and/or underused take-home vehicles. If the City of San Antonio Fleet Maintenance and Operations Department already conducts regular vehicle utilization reviews, it may consider focusing its efforts on tracking use of take-home vehicles. Under the current City vehicle use policy, the Purchasing Department maintains a central list of employees with take-home vehicles.

## **Develop Coordinated Marketing Strategy**

One of the most important components to a successful car-sharing program is the marketing strategy in the months prior and immediately following its launch. This includes crafting an internal strategy to reach city managers and employees involved in operations that will be affected by a city-sponsored car-sharing program, as well as developing a plan to promote car-sharing to the general public. Marketing efforts targeting both audiences should be coordinated with both the selected car-sharing vendor and the Car-Sharing Implementation Committee.

Internally, this will entail holding individual meetings with department heads or senior staff in each of the City's departments that use passenger vehicles. From these individual meetings, a point-person from each department should be identified to act as a liaison with the city department overseeing the implementation of the car-sharing program, as well as the Car-Sharing Steering Committee.

From these individual meetings – coupled with input from the Car-Sharing Steering Committee and the selected car-sharing vendor – a concrete marketing plan should be developed to raise awareness of car-sharing among city employees. At this juncture, city public affairs personnel should review and provide input into the car-sharing marketing plan. Examples of outreach tactics that may increase enrollment of city employees include:

- Website advertising on City of San Antonio intranet and website
- Employee trainings and information sessions
- Departmental and employee newsletters
- Citywide emails from the Mayor and/or City Manager
- Visible participation by senior City officials
- Reminders and updates distributed with paycheck stubs
- Other established venues of employee communications

In addition to laying out a concrete pre-launch strategy, the marketing strategy should also include actions to encourage community enrollment during the months following the launch of the program. Examples of these types of marketing tactics may include:

- Public announcement of program in a press conference with senior city staff, ideally the Mayor and City Manager
- Subsequent milestone announcements releasing updated membership figure and utilization figures

- Coordinated outreach with affected community stakeholders, downtown community groups (e.g., the Downtown Alliance), business associations (e.g., the San Antonio Chamber of Commerce), and appropriate environmental groups
- Hosting community meetings in neighborhoods where car-sharing pods will be located
- Cross-marketing with other public and private sector partners, including employer-sponsored fairs

### **Establish Metrics for Contract Monitoring**

During the pilot phase of the car-sharing program, regularly monitoring of enrollment and usage will be essential to evaluating the program's success. With accurate and regular tracking of data, City leadership may also be able to identify challenges to enrollment early in the process, increasing the chances that these obstacles may be overcome. Further, if the car-sharing program does not take hold in San Antonio, the tracking of enrollment and usage data will allow the City to make this determination quickly, as to minimize potential financial losses to the City.

Metrics for contract monitoring should be developed in concert with the Car-Sharing Implementation Committee, and reviewed with the car-sharing vendor, once one is selected. Some metrics may include the following:

- Gross number of enrollees
- Monthly trend enrollment data
- Average daily utilization per vehicle (i.e., number of hours in use)
- Monthly trend utilization data
- Revenue generation per vehicle
- Revenue generation per City department
- Trends in revenue generation data
- Applicable GHG and VMT measures
- Number of vehicles removed
- Percent of enrollees actually using program

## Appendix

### Detail on Car-Sharing Pricing Structures

#### *Zipcar*

As the largest car-sharing operator in the world, Zipcar offers multiple services with different rate structures to individuals, businesses, governments, and universities throughout the country. For individual members, Zipcar generally charges differentiated rates for weekday and weekend rentals, requires a yearly or monthly membership fee, and levies an excess mileage fee for all miles in excess of 180 driven in a given day.

In cities with sufficient consumer demand, Zipcar offers two broad service plans to individual members – the “Occasional Driving Plan” and “Extra Value Plans.” The “Occasional Driving Plan” has a higher hourly rate and an annual fee, while the “Extra Value Plans” offer discounted hourly rates and no annual fee, but require members to guarantee monthly payments between \$50 and \$250.

The table below provides an overview of Zipcar “Occasional Driving Plan” rates charged in Atlanta, GA (all Zipcar pricing comparisons made for the Atlanta market, to account for price variations across geographies). Note that the table below shows the base hourly and daily rates, and that rates for separate vehicle models (e.g., an SUV) may be higher.

#### **Zipcar Individual Plan: “Occasional Driving Plan” for Atlanta, GA<sup>56</sup>**

<b>Zipcar Occasional Driving Plan</b>	
<b>Application Fee</b>	\$25
<b>Annual Membership Fee</b>	\$60
<b>Monthly Commitment</b>	\$0
<b>Per Hour</b>	\$7
<b>Per Day*</b>	\$66
<b>Per Mile Driven</b>	No charge if daily mileage is less than 180

\* - Day rates for weekend rentals are \$69

Zipcar’s “Extra Value Plans” provide members with rates discounted at 10 percent if they agree to prepay \$50 per month. Members who agree to prepay \$75 and \$125 monthly receive a 10 percent discount plus the ability to rollover unused payments. “Extra Value Plan” members who prepay \$250 monthly receive a discounted rate of 15 percent and the ability to rollover payments up to two months.

<sup>56</sup> Data accessed from [www.zipcar.com](http://www.zipcar.com); data as of October 20, 2010

**Zipcar Individual Plan: “Extra Value Plans (EVP)” for Atlanta, GA<sup>57</sup>**

	EVP \$50	EVP \$75	EVP \$125	EVP \$250
<b>Application Fee</b>	\$25.00	\$25.00	\$25.00	\$25.00
<b>Annual Membership Fee</b>	\$0.00	\$0.00	\$0.00	\$0.00
<b>Monthly Commitment</b>	\$50.00	\$75.00	\$125.00	\$250.00
<b>Rollover</b>	None	1 month	2 month	2 month
<b>Weekday Rates</b>				
<b>Per Hour</b>	\$6.30	\$6.30	\$6.30	\$5.95
<b>Day Rate</b>	\$59.40	\$59.40	\$59.40	\$56.10
<b>Weekend Rates</b>				
<b>Per Hour</b>	\$6.30	\$6.30	\$6.30	\$5.95
<b>Day Rate</b>	\$62.10	\$62.10	\$62.10	\$58.65
<b>Per Mile Driven</b>	No charge if daily mileage is less than 180			

In addition to offering customized packages, Zipcar offers a slightly modified pricing structure for businesses that join its standard program for businesses. In place of the \$25 application fee, the firm charges a one-time “Account Setup Fee” of \$75. The organization then pays an annual fee of \$25 per member, with no monthly commitment. Hourly rates are the same as the “Occasional Driving Plan,” but daily rates are closer to the “EVP \$50” plan. Additionally, businesses have exclusive access to a twelve-hour daily rate of \$40, labeled “7-to-7 Business” in the table below:

**Zipcar Business Plan: Atlanta, GA<sup>58</sup>**

<b>Zipcar for Business</b>	
<b>Account Setup Fee (one-time)</b>	\$75
<b>Annual Membership Fee</b>	\$25 per member
<b>Monthly Commitment</b>	\$0
<b>Per Hour</b>	\$7
<b>7-to-7 Business</b>	\$49
<b>Per Day*</b>	\$60
<b>Per Mile Driven</b>	No charge if daily mileage is less than 180

\* - Day rates for weekend rentals are \$69

Zipcar also offers pricing plans for university campuses, which tend to mirror the “Occasional Driving Plan” in a geographical market with discounted application and annual membership fees. In Atlanta, for example, members of the Emory University community do not pay an application fee and have a lower annual membership fee (\$25 versus \$60) than individuals who are not affiliated with the University.

<sup>57</sup> *Ibid*

<sup>58</sup> *Ibid*

### Zipcar University Plan: Emory University Faculty, Students, and Staff<sup>59</sup>

Zipcar for Universities	
Application Fee	\$0
Annual Membership Fee	\$25
Monthly Commitment	\$0
Per Hour	\$7
Per Day*	\$66
Per Mile Driven	No charge if daily mileage is less than 180

\* - Day rates for weekend rentals are \$69

### Connect by Hertz

Connect by Hertz offers individual members a three-tier pricing plan. Much like Zipcar's "Extra Value Plans," Connect by Hertz waives the annual fee and offers discounted hourly rates if the member commit to spending \$50 or \$125 per month. Unlike Zipcar, Connect by Hertz does not provide differential weekday or weekend rates.

Since Connect by Hertz operates vehicles in multiple geographic markets (New York City, San Francisco, and Little Rock, to name a few), hourly rates and membership fees will vary across jurisdictions. The table below provides the detail of each of Hertz Connect's three plans offered at the University of North Texas in Denton:

### Hertz Connect Individual Pricing Plans: University of North Texas<sup>60</sup>

	"Connect"	"Connect 50"	"Connect 125"
Application Fee	\$25	\$25	\$25
Annual Membership	\$25	\$0	\$0
Monthly Commitment	\$0	\$50	\$125
Per Hour	From \$8.00	From \$7.20	From \$6.80
Per Day			
Per Mile Driven	No charge if daily mileage is less than 180		

Connect by Hertz does not advertise a standard business plan. Instead, the company develops customized packages for large and small organizations that may include no minimum commitments, no membership fees, and dedicated fleets.

### Car2go

Car2go offers one of the simplest pricing plans among car-sharing operators, which is a reflection – in part – of its unique attributes compared to the other car-sharing programs listed (e.g., one-way trips). Aside from a \$35 application fee, all users are charged a flat rate for amount of time the car is in use - \$0.35 per minute, \$12.99 per hour, or \$65.99 per day. There are no mileage fees (if fewer than 150

<sup>59</sup> *Ibid*

<sup>60</sup> Data accessed from [www.connectbyhertz.com](http://www.connectbyhertz.com); data as of October 20, 2010

miles driven in a day), or differentiated rates for vehicle models (car2go offers only one model), day of the week, time of day, or fewer hours of use. Aside from the pilot programs in use by the City of Austin and State of Texas, car2go does not offer separate rates or plans for businesses.

**Car2go Pricing Plan: Austin, TX**

City of Austin, TX	
Application Fee	\$35.00
Annual Membership Fee	\$0.00
Monthly Commitment	\$0.00
Per Minute	\$0.35
Per Hour	\$12.99
Per Day	\$65.99
Per Mile Driven	No charge if daily mileage is less than 150

**City CarShare**

In contrast to car2go, City CarShare pricing structure contains multiple levels and differential payments. The Bay Area car-sharing organization offers three-tier plans to both individuals and businesses. Individual plans contain differentials for weekday versus weekend use, as well as per-mile-driven charges.

The City CarShare pricing model isolates the costs associated with longer trips. While it offers “day rates,” it places limits on the number of day rentals an individual member can make. Once a member exhausts the number of “Extended Freedom Trips” (i.e., day-long rentals) in his/her plan, the member must upgrade to a more expensive plan. Once in the most expensive plan – the “Share Plus” plan – the member can then purchase additional “Extended Freedom Trips” at a rate of \$10 per trip.

Another price differential in City CarShare plan is the “Night Owl Discount.” Members who use vehicles between midnight and 8:00 AM can be eligible for discount rates. Because the overnight hours represent very low periods of utilization, these discounted rates allow the car-sharing organization to recoup additional revenue that would otherwise be foregone.

With multiple rate differentials, City CarShare can maximize revenue during peak periods of demand; create incentives for use during low utilization periods; and recoup marginal costs associated with members who take longer trips or use higher-cost vehicles. When factoring all the different premiums, which are summarized in the table below, City CarShare estimates that the average trip for “Share Local and “Share Plus” plans costs \$6.75 per hour of use.

### City CarShare Individual Pricing Plans: Bay Area, California

	Share a Little	Share Local	Share Plus
Application Fee	\$30.00	\$30.00	\$30.00
Annual Membership Fee	\$45.00	\$0.00	\$0.00
Monthly Fee	\$0.00	\$10.00	\$20.00
Rollover	n/a	n/a	n/a
Extended Freedom Trips*	2/year	4/year	12/year
<u>Weekday</u>			
Per Hour	\$6.50	\$5.50	\$5.50
Day Rate	\$54.00	\$48.00	\$48.00
<u>Weekend</u>			
Per Hour	\$7.50	\$6.00	\$6.00
Day Rate	\$58.00	\$52.00	\$52.00
<u>Per Mile Driven</u>			
Hourly Rental	\$0.40	\$0.35	\$0.35
Day Rental	\$0.10	\$0.10	\$0.10
Night Owl Discount (Midnight – 8:00 AM)	n/a	\$1.50/hr + \$0.35/mile	\$0/hr+\$0.35/mile
<u>Premium Vehicle Rental</u>			
Hourly Rental	\$8.50	\$7.50	\$5.50
Day Rental	\$66.00	\$60.00	\$48.00

In addition to the costs above, City CarShare offers increased car insurance through the “Buck to Deduct” option. For an extra dollar per hour of rental, the user will receive a waiver that will cover the full cost of the \$500 deductible if he/she is involved in an accident.

For businesses, City Carshare offers a similar three-tiered plan with each tier targeting a specific size or type of business:

- **Biz Value:** for businesses with five or fewer employees that use vehicles principally for local trips. While hourly rates for “Biz Value” users are lower than “Share a Little” users, the “Biz Value” does not include a capped day rate.
- **Biz Prime:** for businesses with more than five employees and/or need for long-distance or duration trips. The “Biz Prime” program has a higher annual fee, but provides users with access to a capped day rate, making longer duration trips more economical.
- **Non-Profit Discount:** similar features to the “Biz Prime” plan, but with discounts available only to non-profit organizations.

### City CarShare Business Pricing Plans: Bay Area, California

	Biz Value	Biz Prime	Nonprofit Discount
Application Fee*	\$30	\$30	\$15
Annual Fee	\$90	\$175**	\$40
Annual Fee/Employee	\$15	\$10**	\$10
Monthly Fee	\$0	\$0	\$0
<u>Weekday</u>			
Per Hour	\$5.50	\$5.50	\$5.50
Day Rate (Hourly Cost Cap)	N/A	\$45	\$45
<u>Weekend</u>			
Per Hour	\$6.00	\$6.00	\$6.00
Day Rate (Hourly Cost Cap)	N/A	\$50	\$50
<u>Per Mile Driven</u>			
0 - 40 miles	\$0.40	\$0.40	\$0.40
41 – 199 miles	\$0.10	\$0.10	\$0.10
200 + miles	--	--	--
Night Owl Discount (Midnight – 8:00 AM)	--	--	---
<u>Premium Vehicle Rental</u>			
Hourly Rental	--	\$0	\$0
Day Rental	--	\$0	\$0

\* - Application fee waived during first 30 days

\*\* - \$175 annual fee includes first six employees, all other employees have annual fee of \$10 per employee

In addition to the standardized plans, City CarShare can create customized car-sharing solutions for business, non-profit, and local government fleets as well. Business users are also eligible for the “Buck to Deduct” option.

#### **PhillyCarShare**

PhillyCarShare’s pricing structure combines elements of the for-profit operators’ and City CarShare’s plans. Neither of Philly CarShare’s two plans for individuals contain a mileage fee (unless user drives more than 185 miles), and there is a sharp differential between weekday and weekend rates. Additionally, PhillyCarShare only offers a day rate for members rolled in the more expensive “Philadelphia Plan.”

**PhillyCarShare Individual Pricing Plan: Philadelphia, PA**

	<b>Keystone Plan</b>	<b>Philadelphia Plan</b>
<b>Application Fee</b>	\$25	\$25
<b>Annual Membership Fee</b>	\$35	\$125/year <b>or</b>
<b>Monthly Fee</b>	\$0	\$15 per month
<u><b>Weekday</b></u>		
<b>Per Hour (Standard Vehicle)</b>	\$7	\$3.45
<b>Per Hour (Specialty Vehicle)*</b>	\$8	\$4.45 or \$5.45
<b>Day Rate</b>	N/A	\$39 or \$49
<u><b>Weekend</b></u>		
<b>Per Hour (Standard Vehicle)</b>	\$9	\$5.45
<b>Per Hour (Specialty Vehicle)*</b>	\$11	\$6.45 or \$7.45
<b>Day Rate</b>	N/A	\$69 or \$79
<b>Per Mile Driven</b>	No charge if daily mileage is less than 185; then \$0.35 per mile	
<b>Insomniac Rate (Midnight – 7:00 AM)</b>	N/A	\$2.50/hour

*\* - Keystone Plan groups vehicles into two tiers (standard and specialty) while Philadelphia Plan groups vehicles into three tiers (economy, hybrid, and standard)*

For businesses, PhillyCarShare offers one standard plan. There are no application or membership fees, unlike the individual member plans, however, there is a \$0.25 per mile fee levied on all miles traveled. Further, weekend rates for business plan users are higher than individual members.

**PhillyCarShare Business Pricing Plan: Philadelphia, PA**

	<b>PCS Business Plan</b>
<b>Application Fee</b>	\$0
<b>Annual Membership Fee</b>	\$0
<b>Monthly Fee</b>	\$0
<u><b>Weekday</b></u>	
<b>Per Hour (Economy Vehicle)</b>	\$3.45
<b>Per Hour (Hybrid Vehicle)</b>	\$4.45
<b>Per Hour (Standard Vehicle)</b>	\$5.45
<b>Day Rate</b>	\$39 or \$49
<u><b>Weekend</b></u>	
<b>Per Hour (Economy Vehicle)</b>	\$7.45
<b>Per Hour (Hybrid Vehicle)</b>	\$8.45
<b>Per Hour (Standard Vehicle)</b>	\$9.45
<b>Day Rate</b>	\$79 or \$89
<b>Per Mile Driven</b>	\$0.25
<b>Insomniac Rate (Midnight – 7:00 AM)</b>	\$2.50/hour

For organizations with more than 10 members, PhillyCarShare includes \$0 deductible insurance coverage at no cost.

## Estimated Cost per Vehicle – City of San Antonio Fleet

To estimate the potential net cost savings of integrating car-sharing into existing City operations, PFM reviewed the lifecycle costs of each passenger vehicle within the City of San Antonio fleet.<sup>61</sup> When accounting for operational, acquisition, and fuel costs, PFM estimated the annual cost of each Toyota Prius in the City's fleet at \$6,702. The basis for this estimation is as follows:

- **Operational Costs:** Excluding fuel, the average annual operational cost of a passenger vehicle totaled \$1,569 (\$681 for maintenance, \$657 for repairs, and \$232 for accidents) for each year the vehicle was in service.<sup>62</sup>
- **Acquisition Costs:** The acquisition cost of a 2010 Toyota Prius was \$21,535. Assuming a five-year lifecycle, this generates an annual per vehicle acquisition cost of \$4,307.
- **Fuel Costs:** In a review of actual fuel efficiency (gallons of fuel used / actual miles driven) of all Toyota Prius Hybrids within the City's fleet, the average City of San Antonio hybrid vehicle receive 38.550 miles per gallon. On average, each passenger vehicle is driven 10,605 miles annually each year it is in service. Assuming the price of gasoline at \$3.00 per gallon, the City of San Antonio spends approximately \$825 annually in fuel ( $10,605 / 38.550 \times \$3.00$ ).

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<sup>61</sup> Includes all automobiles, SUVs, and passenger vans, listed in the San Antonio municipal fleet, excluding the following models: E350 Econoline, E350 Super Duty, G 1500 Express, G 2500 Express, and G 3500 Express. Information provided by City of San Antonio, Fleet Maintenance and Operations Department.

<sup>62</sup> Data reflects average annual cost incurred over life of vehicle. Excludes all vehicles owned for less than one year.