EV Carshare Planning, Pricing and Parking:
Findings and Recommendations for the City of Los Angeles’ Electric Vehicle Carsharing Pilot Project

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Author: Betty Barberena
About the Los Angeles Sustainability Collaborative

The Los Angeles Sustainability Collaborative (LASC) is dedicated to creating a more sustainable Los Angeles by facilitating collaborative research, providing solutions to emerging environmental challenges and educating stakeholders. LASC seeks to achieve this mission by 1) collaborating with other non-profit organizations and academic institutions to identify research needs on key environmental issues, 2) funding research projects conducted by emerging environmental leaders at the university level and 3) sharing research findings to community, policy and business stakeholders.

About the Author

The lead author for this report is Betty Barberena, UCLA Luskin School of Public Affairs, Master of Urban and Regional Planning, Class of 2016.

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Disclaimer

While the author appreciates the support and advice from the aforementioned individuals, the primary author is solely responsible for the content. This document does not necessarily reflect the opinions of the Los Angeles Sustainability Collaborative, project partners, or any member of the project’s Technical Advisory Council. Any errors should be attributed to the primary author.
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Executive Summary

A review of the literature surrounding carshare shows that this service is predominantly used by middle to upper-middle class individuals, and as such most of the carshare vehicles are located in well-served neighborhoods. However, findings from our study of CarShare Vermont, Ithaca Carshare, eGo CarShare and Buffalo CarShare show that carshare models can indeed service low-income neighborhoods, which is the goal of the City of Los Angeles' Electric Vehicle (EV) Carsharing Pilot Project (Pilot Project). The main factors that can potentially increase service accessibility for residents of underserved neighborhoods are pricing structuring and affordability, and vehicle placement in the community determined by the carshare dedicated-parking selection process. This segment of the report provides literature findings on who the typical carshare member is, and the existing demand for carshare services in low-income urban areas. The methodology section provides a brief description of the carshare models used in this report, and a description of the representatives and analysts who were interviewed. The section on pricing structuring provides details on what has worked for the carshare companies in their efforts to make carshare accessible to low-income residents, and it also provides a list of recommendations based on these findings. The final section presents vital information on how the parking selection strategy can increase access and reliability of EV carshare service for low-income communities.
Carshare Literature on Demographics and Demand for Service

Typical Carshare User Demographics

Transportation researchers, Jon Burkhardt and Adam Millard-Ball, conducted online surveys and formed focus groups in 2006 to better understand the characteristics of carshare members, such as their demographics, travel behavior and shared attitudes. The researchers published their findings in an article titled “Who Is Attracted to Carsharing?” They found that most of the respondents had the following characteristics: high levels of education, middle- to upper-income, small households, generally in their 30s and 40s, low-mileage travelers, highly concerned about environmental and equity issues, do not like expenses associated with vehicle ownership, interested in the pragmatic aspects of vehicles and sensitivity to the costs of transportation (Burkhardt and Millard-Ball, 2006). In total, the authors analyzed 1,340 voluntary responses. Still, these responses may not necessarily shed light on the diversity of current and potential carshare users due to survey undercoverage (the pool of respondents is too small), and voluntary response bias (survey sample was self-selected volunteers). This is why survey results such as these should not dissuade carshare models from focusing on low-income users. This also shows that the relationship between carshare and low-income communities is not yet deeply explored—especially as it relates to price structuring.

Evidence of Carshare Demand in Underserved Urban Areas

Kyeongsu Kim, the author of “Can Carsharing Meet the Mobility Needs for Low-Income Neighborhoods,” conducted an observational study of ZipCar in New York City. The purpose was to assess whether having carshare-dedicated parking in low-income neighborhoods led to significant usage of the service by low-income residents. Kim found that usage of these vehicles was relatively high, but there were not enough vehicles stationed in these areas. Kim’s findings indicate demand for carshare can be generated in low-income neighborhoods. Kim also briefly points out that the pricing of the services appears to be one of the main factors in determining the rate of usage among the low-income residents (2015); however, he explains that he was unable to deeply explore the pricing points that ZipCar was using in the study area. This highlights the need for extensive research on the effects of carshare service pricing on low-income community use of service. In addition, carshare-dedicated parking spaces assigned within close proximity to potential users can make the service physically accessible and further encourage use.

Methodology

In addition to the literature reviewed, this report also relies on information acquired from expert interviews of analysts working on carshare-related projects and representatives of carshare companies that share characteristics of the envisioned EV Carsharing Pilot Project in Los Angeles. Their insight provides themes and factors that can help inform the development of the Pilot Project geared towards low-income communities. The set of questions asked during the nine interviews conducted between February and April 2016 was designed to collect information
on how to make carsharing accessible to low-income communities. The major factors related to low-income accessibility are the pricing structuring and parking selection. The interviewees underscored notable common themes surrounding pricing and parking, and highlighted the important role marketing and education play in promoting low-income residents’ access to carshare services. The following section briefly describes the interviewees and their expertise:

- Sylvia Nguyen-Dong is a former Program Coordinator at City CarShare in the San Francisco Bay Area. She provides information on the Bay Area’s City CarShare model, now known as Carma—the result of a business acquisition that occurred in 2015. According to the new website, the company will still be known as City CarShare and will continue to act as a nonprofit to provide programs for low- and moderate-income members. For the purposes of this report, this model will be referred to as City CarShare.

- CC Song is a former fellow of the Greenlining Institute, a nonprofit advocacy organization focused on a wide range of policy and research. Song’s work at the Institute focused on projects related to EV inclusion in low-income communities. She is currently working on projects related to EV market adoption and infrastructure deployment with J.R. DeShazo, a notable proponent of EV proliferation at UCLA’s Luskin Center for Innovation. CC’s experience includes work on EV-related policies, with a focus on how EVs and related technology can be accessible to low-income communities in the context of a carsharing model.

- Greenlining Fellows who currently work directly on projects that promote EV carsharing in low-income communities provided information on how such a project can work in an urban setting. Sekita Grant (Environmental Equity Legal Counsel), Joel Espino (Environmental Equity Legal Counsel and author of “Electric Carsharing in Underserved Communities”), and Carmelita Miller (Energy Legal Counsel) partook in a group informational interview.

- Roman Partida-Lopez is the Project Manager for the Center for Sustainable Energy’s Clean Transportation Equity program. He provided insight on how EV carsharing models can reach low-income communities and provide accessible and effective service, based on his work as a Greenlining Fellow on EV carshare-related studies.

- Annie Bourdon is the Executive Director and founder of CarShare Vermont. She provided information on how this particular model has serviced low-income residents since 2008. CarShare Vermont is a non-profit organization that focuses on providing automobile service at affordable rates as an alternative to car ownership for those who do not or cannot afford to own a vehicle. CarShare Vermont’s model targets reducing vehicle emissions and associated health impacts by minimizing vehicle miles traveled (VMT) through their carsharing services. The reduction in VMT is associated with the reduction in car ownership rates observed among carshare members in the U.S., which tends to lead to less driving overall (Shaheen, 2006).

- Jennifer Dotson is the Executive Director of Ithaca Carshare, and also provided insight and information for this report on how carshare programs service low-income residents. This nonprofit’s model provides carsharing services with the mission of increasing mobility, reducing car ownership and decreasing the environmental impact of driving. This particular model has included servicing low-income communities since 2008.
Michael Galligano is the former Executive Director of Buffalo CarShare. This company operated from 2008 to 2015—when it was acquired by ZipCar. This model, established in 2008, operated with the goal of providing affordable prices to all of its members regardless of income level. Mr. Galligano provided information on how carshare can operate when the target members are low-income. The main focus of this program was to increase mobility for underserved communities in Buffalo, New York.

Jacques Chirazi, a Program Manager with the City of San Diego, and Marisa Mangan, a regional planner with the San Diego Association of Governments, worked on the development of a small scale version of the envisioned Pilot Project program with the for-profit electric carshare company, Car2Go. This model was eventually adjusted after operational issues with inadequate charging stations forced the company to switch over to a combustion-engine vehicle fleet.

Kyeongsu Kim, the author of “Can Carsharing Meet the Mobility Need for Low-Income Neighborhoods?” found that the location of carshare parking spots in low-income neighborhoods could indeed encourage residents from these neighborhoods to utilize carshare. Mr. Kim is also a senior planner at the Louis Berger Group, Inc. in New York City, and studies various aspects of transportation planning.

Originally called Boulder CarShare, the nonprofit carshare organization eGo CarShare was formally established in 2009 after being awarded a Congestion Mitigation and Air Quality (CMAQ) grant to help it expand beyond Boulder, Colorado, to core Denver neighborhoods. The organization’s mission is to provide affordable carsharing service to improve mobility and provide transportation options. eGo CarShare Executive Director Karen Worminghaus provided information about the company.

**Carshare Pricing Structuring and Accessibility**

The four carsharing models included in this report (CarShare Vermont, Ithaca Carshare, eGo Carshare and Buffalo CarShare) offer pricing structures with the aim of making it as affordable as possible for potential members. Both CarShare Vermont and Ithaca Carshare developed their pricing structures based partially on other models in the country, such as nonprofit City CarShare in the Bay Area and for-profit companies like ZipCar. They incorporated specific programs for low-income members to make their services more affordable and accessible. As a result, “different programs were developed specifically for different types of users” (Dotson).

**SUMMARY OF FINDINGS**

*Pricing Structuring and Model Sustainability:* The pricing structures for all but one of the models included in this section (Buffalo CarShare) are a combination of general prices and programs specifically for low-income members. Their general prices were set as low as company operational costs would allow. Because offering very low prices to every member is
economically stressful, CarShare Vermont, Ithaca Carshare and eGo CarShare provide low-income programs only for those who qualify.

- Ithaca Carshare developed their pricing structure by “copying” the competition in order to avoid undervaluing their services. However, the focus was on user affordability. Their tiered pricing structure, which offers different rates based on income, appears to be sustainable. Ithaca Carshare’s website reports that as of now, its finances are stable, with 97 percent of expenses covered by program income and in-kind donations (Ithaca CarShare). The Easy Access program is dedicated to making the service more affordable to very low-income members (residents of target areas with a gross income at or below 150 percent of the Federal Poverty Level). Thus far, 129 low-income residents have made use of the program reporting that it has led to “more self-sufficiency and easier access to grocery stores and medical appointments” (Ithaca Carshare).

- CarShare Vermont’s pricing structure is also focused on user affordability to attract as many participants as possible. The nonprofit looked at the density of the proposed areas of service and determined that if prices were set too low, usage of the service would be high and the costs of operating the service would not be recovered. The goal was to develop a pricing structure that would sustain the company, allowing it to operate in the future. The pricing structured is consequently tailored to the specific communities Vermont CarShare services.

- Buffalo CarShare was unique in that it had a uniform pricing structure for all users, and did not use subsidies. Their prices were set low enough to increase membership among low-income communities in particular. This pricing structure increased the program’s access for low-income residents because it offered very low rates to all residents of underserved and targeted neighborhoods.

- eGo CarShare, has the lowest fees and rates of the currently operational carshare models (eGo CarShare, CarShare Vermont and Ithaca Carshare) analyzed in this section. This model also has a combination of general prices and low-income programs in order to reach as many members of the community as possible.

The Price Structure Comparison Chart (next page) shows the differences between the currently operational models’ prices and low-income programs. These nonprofit carshare companies charge an hourly rate and a rate per mile in order to make the service fairer for its members and prevent those who drive less from subsidizing those who drive more. Buffalo CarShare charged members an average of $100 per month to cover both membership and usage. Buffalo CarShare is not included in the Price Structure Comparison Chart because it is no longer in operation (acquired by ZipCar in 2015).
**Offering low prices to all users is challenging:** Offering low rates to every member of the service may not be sustainable for the company and may affect services. The total costs of operating and maintaining the Pilot Project must be covered by the revenue generated from fees as well as by secured grants. Depending on the scale of the Pilot Project, operational (i.e. EV fleet and maintenance) and overhead (i.e. office space rent, fleet insurance and employee wages) costs could exceed the revenue generated if the Pilot Project’s service is priced too low. It is also important to note that the models in this report operate in cities and towns with relatively small populations compared to the City of L.A.

- After two years of operation, Buffalo CarShare’s model extended low fares to every member because the company wanted to service as many residents of underserved neighborhoods as possible. The company did not rely on grants to cover the costs of the company’s operations. The company suspended services in 2015 due to challenges in securing insurance, and was ultimately acquired by ZipCar. Suspension of services was not directly linked to the company’s business model. However, the revenue generated through its pricing structure stressed the company despite operating as a cooperative and relying on volunteers to staff the office.

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### Price Structure Comparison Chart

<table>
<thead>
<tr>
<th></th>
<th>Ithaca CarShare’s Low-Income Pricing (Easy Access Program)</th>
<th>CarShare Vermont’s Low-Income Pricing (MobilityShare Program)</th>
<th>eGo CarShare Low-Income Pricing (50% off Program)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regular Plan Pricing</td>
<td>Discounted Plan Pricing</td>
<td>Pricing Discount</td>
</tr>
<tr>
<td>Monthly Membership Rates</td>
<td>$30.00</td>
<td>$10.00</td>
<td>67%</td>
</tr>
<tr>
<td>Rate per Mile</td>
<td>$0.30</td>
<td>$0.30</td>
<td>0%</td>
</tr>
<tr>
<td>Hourly Rate/Weekend</td>
<td>$5.95</td>
<td>$5.95</td>
<td>0%</td>
</tr>
<tr>
<td>Hourly Rate/Night</td>
<td>$4.95</td>
<td>$4.95</td>
<td>0%</td>
</tr>
<tr>
<td>Application Fee</td>
<td>$2.50</td>
<td>$2.50</td>
<td>0%</td>
</tr>
<tr>
<td>Credit (monthly - unused amount rolls over to following months)</td>
<td>$0</td>
<td>$15.00</td>
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Popularity of low-income programs is high: Low-income pricing options are critical for program participation in disadvantaged populations. Carshare program price structures must include affordable options for low-income communities in order to increase accessibility and participation. Both Carshare Vermont and Ithaca CarShare’s low-income programs run at full or near full capacity.

- Over 50 percent of all Ithaca Carshare members have an annual household income of less than $30,000. Their 2015 member survey showed that 23% of all members earn less than $25,000 per year, indicating low-income earners are attracted to carshare services.

- Half of Buffalo CarShare’s members made less than $25,000 per year and used the program to increase their mobility. The program was promoted as being part, or an ally, of the community to increase the residents’ comfort and familiarity with the service. Outreach was tailored to each specific neighborhood in which the program operated (Galligano).

Low-income programs’ reach is affected by funding availability: Availability of funding affects how many people low-income programs can serve. It is important to acknowledge the participant capacity of these programs because if the limit is ignored, it can jeopardize the program and the company.

- For Ithaca CarShare, operating its low-income program (the Easy Access program) with 50 to 52 members proved to be unsustainable. The company decided to operate this program at the range of 40 to 45 members because it was more manageable. There is no limit on participation length, as long as the member continues to qualify.

- For Carshare Vermont’s first two years in operation, all low-income individuals were provided with lower rates. However, there was not enough funding to cover the expense so the lower rates were subsequently stopped. The program did retain the membership fee waivers for those who qualify because many low-income users do not use the service every month, and this way they can allocate the money saved towards the actual use of the service. People who have limited incomes can see the monthly membership fees as a burden, which can dissuade them from using the service.

The Low Income Program Description Chart (next page) shows how each of the companies’ programs are funded, their range of participants and other characteristics.
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<tbody>
<tr>
<td>Lhaca</td>
<td>Yes - Easy Access Program</td>
<td>50 percent of the program is funded through a federal grant administered through their local metropolitan planning organization (MPO). The current grant is a legacy grant from the Job Access and Reverse Commute (JARC) program, which ended in 2012. JARC was created to provide funding for transportation projects meant to address the unique transportation challenges faced by welfare recipients and low-income persons seeking to obtain and maintain employment (The federal Transit Administration). The other 50 percent is subsidized by the company.</td>
<td>Ranges between 40 to 45 members.</td>
<td>Yes. The fluctuation is dependent on available funding.</td>
<td>Verification is facilitated by referrals from social services providers (conduct rigorous income verification), W-2, and proof of reduced or free-lunch child participation.</td>
<td>Income should be at or below 150 percent of the national poverty level. For example, $1,400 per month for a single person household, $1,900 for a two person household, $2,440 for a three person household, or $2,940 for a four person household.</td>
<td>It has positively affected the program in terms of enrollment, however, it is a very small percentage.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Burlington</td>
<td>Yes - Mobilityshare Program</td>
<td>This program is funded by private grants meant to address mobility needs for underserved populations. The number of people who can sign up for this program is limited because the program’s funding is dependent on grants.</td>
<td>Capacity is limited to 25 households due to available resources.</td>
<td>Yes</td>
<td>Applicants have multiple choices as to how to do this, such as proof that they are receiving government assistance, W-2 forms.</td>
<td>BCHA explains that households qualifying for the affordable housing program have income of 80% or less of the area median income (AMI).</td>
<td>Largely positive</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Go</td>
<td>CarShare</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Largely positive</td>
<td>No</td>
</tr>
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Note: For specific information on each program’s fares and fare-reduction programs, please see corresponding tables.
Eligibility and verification: Eligibility for these low-income programs tends to rely on household incomes, developed according to average income levels for the areas being served.

- Income verification is crucial to maintain manageable membership numbers and to ensure that those with very low incomes are being served.

Payment methods and process: Most of the models in this report strive to make the payment process as easy and accessible as possible. Most allow for in-person payments, which tend to be used by older members.

- Buffalo CarShare set up a payment structure that allowed users to pay in-person and online using cash cards, money orders and debit cards. Cash and check payments are not allowed due to both physical and payment security concerns. A storefront was set up to facilitate in-person payment for users who preferred it and for those who do not have credit cards or access to the internet. The storefront was very successful in facilitating payments.

- For Ithaca Carshare, Dotson says that payment can be made using a credit card online. Members can also make payments using credit cards, cash and checks at Ithaca Carshare’s office. In addition, this model allows members to make payments at the credit union affiliated with community economic development organizations. These groups are dedicated to improving financial literacy in disadvantaged communities. An account set up at the credit union allows members to deposit payment directly (Dotson).

- For payment making, Vermont CarShare requires the use of a credit or debit card. The payment is automatically deducted after the trip has been completed. Members are not required to pay in advance.

Addressing unpaid fees: Some of the companies included in this report have an unpaid fee collection process in addition to also having a fund to handle situations of non-payment. Not having one can present financial challenges.

- CarShare Vermont’s participants do not exhibit high rates of non-payment issues, but the company does have a payment collection process. In the end, if payment is unable to be collected, then the member’s account is dropped. Executive Director Bourdon stated low-income members are not necessarily going to default on payments. The company does not see many payment problems with lower-income members. She added that the members that are most likely to have bounced-payments are college students and that assumptions should not be made about a potential member based solely on income or area of residence.

- In the case of Buffalo CarShare, a lack of a payment collection process and a lack of a non-payment absorption mechanism prevented the company from addressing these situations in a form that could prevent an economic loss. However, if the member still wanted to continue as a member, he or she would be offered the opportunity to work off the amount in the company’s office.
Pricing Structure Recommendations for the EV Carsharing Pilot Project

Develop a sustainable pricing structure. The Pilot Project should develop a sustainable pricing structure that sets general fees and rates as low as possible after accounting for operational and overhead costs. It should also have specific programs geared to low- or very low-income residents. This approach has proved to be economically sustainable for eGo CarShare, Ithaca Carshare and CarShare Vermont. This combinational approach may also be able to capture the different levels of payment-ability among members. Payment ability should be determined based on household income levels found in the target neighborhoods. The programs can be fully or partially funded by both private and government grants. This approach can help the Pilot Project generate stable revenue, which can also help it expand service in the future.

- As Mr. Espino, from the Greenlining Institute, emphasizes, in order for carsharing to be accessible to low-income individuals, the Pilot Project should utilize subsidization of service fees and rates. This subsidization can be addressed through specific low-income programs.

- The case of Buffalo CarShare shows that offering low prices to every member can economically stress a company, which could compromise a firm’s ability to continue to provide services. Low revenue can also hinder the Pilot Project’s ability to expand its services into more underserved neighborhoods in the future.

- Ithaca CarShare, CarShare Vermont, and eGo CarShare successfully service low-income members from underserved communities using a pricing structure that is either fully or partially funded by grants for low-income programs. Their general fees still leave the service within reach of members with moderate incomes.

- The Low Income Program Descriptions Chart shows how Ithaca CarShare, CarShare Vermont, and eGo CarShare fund and operate their respective low-income programs. These low-income programs rely on both private and public grants, which are distributed by charitable foundations and local and state agencies. Enrollment in these programs is capped due to funding availability, and income verification is conducted to ensure that the members who are most in need are the ones who benefit from lower rates and fees.

Acknowledge program limitations. Due to funding limits, placing a maximum capacity on the low-income program(s) of the Pilot Project should be considered after an assessment of funding and operational costs is conducted. This capacity limit should be adjustable from year to year according to the company’s financial stability and on how much funding is secured for this program.

Utilize income eligibility and verification. Income verification for the low-income programs or for the general eligibility of participating in the service should be streamlined by
having potential members referred by social services providers (such as the offices of the County Department of Public Social Services (DPSS)), by accepting W-2 forms or accepting proof of participation in the free-lunch for school children programs. Most of the carsharing models addressed income verification by looking at their areas’ median household incomes and then making decisions based on this number.

- CarShare Vermont decided to place the income limit at 60 percent of the median household income in the company’s service area to accommodate its region’s specific income levels. The Federal definition of low-income was considered to be too low for this model’s focus areas. The term low-income is often defined differently from state to state and from city to city. The Pilot Project should base eligibility for its membership and low-income programs on an assessment of the unique income levels found in its target areas and the rest of the City.

- Carshare Vermont assumes applicants are honest. Conducting verification would be time consuming and incur costs. In addition, the company does not conduct credit checks on any member. This is because doing so would be time consuming, costly and could also be seen as off-putting to potential members. The Pilot Project should partially rely on W-2s and also on proof of eligibility for government benefits and free school lunch participation to allow members to participate in the service or in the lowest rates program.

**Facilitate different payment methods.** Acknowledging that low-income communities might not have access to internet and smart-phones is important. Payments methods should include: online, by phone, and in-person at a company office or kiosk. Payments should also be accepted through special accounts at credit unions within the Pilot Project’s target areas. Payments in the form of credit cards, cash, checks, and prepaid cards should also be accepted. Employee safety considerations should be taken into account if cash payments are to be accepted because they could potentially be exposed to the risk of robbery.

- Mr. Espino emphasizes that the Pilot Project should have kiosk availability for in-person payments in the form of cash, prepaid accounts and cash-cards. This relates to the need for providing “hands-on in-person support to customers.” It is important to note that ZipCar and other for-profit operators are not very attracted to the methods that can address the possible lack of credit that can affect low-income individuals. Nonprofit carshare services tend to be more amenable to these types of payment options.

- Ms. Bourdon adds that conducting market research of the targeted population can help determine the likelihood that the Pilot Project’s target areas will either have or not have high levels of credit or debit card usage. It is important to not make assumptions about low-income communities because it can be offensive.

**Develop a mechanism to handle issues of nonpayment.** A mechanism for absorbing losses incurred as a result of members defaulting on any payments should be developed by the Pilot Project—especially for major costs (i.e. vehicle damage). This mechanism can be funded by grants. Or, as Mr. Espino explains, it can be a pooled-risk fund that requires an up-front fee from members when they sign up for the service. Careful exploration or experimentation should be conducted on the target areas’ populations to gauge
the level of appeal associated with these funding approaches in order for the Pilot Project to decide how this mechanism will be funded.

- Ithaca Carshare sets money from their grants aside to cover any issues related to their “Easy Access” members. This is something that helps the program remain sustainable in cases of non-payment (whether it is fee or incident related).

**Carshare-Dedicated Parking and Physical Accessibility**

Transportation planners and researchers (i.e. Susan Shaheen from UC Berkeley) find that parking acquisition highly affects carshare companies’ operations and expansion plans. Parking selection for the Pilot Project is very important and will play a major role in the ultimate development of the project. However, the Pilot Project has an advantage that most carshare models (either profit or nonprofit) do not have—the support of the City of L.A.’s Department of Transportation (LADOT). The LADOT is the agency that plans for parking and has the ultimate say in anything affecting on-street and other forms of public parking in the City. The location of carshare parking spots in low-income neighborhoods can encourage local residents to utilize this service because it increases the physical accessibility of the vehicles. “Making convenient and visible parking spaces for the carsharing vehicles is one of the most useful actions” a carshare company can make (Millard-Ball, 2006). The Pilot Project should develop a carshare service for the focus areas’ residents that is about convenience and reliability. A carefully planned parking selection strategy can be part of the Pilot Project’s overall strategy to help generate carshare demand and physical accessibility in its focus areas. Securing parking is often one of the most major challenges for carsharing companies. However, having the official support of a city can minimize this challenge as is the case for the City of L.A. This section contains findings and recommendations derived from literature, and interviews with experts and carshare model representatives—as they relate to both on-street (parking on the actual street) and off-street parking (i.e. parking lots and garages).

**SUMMARY OF FINDINGS**

The authors of “Carsharing Parking Policy: Review of North American Practices and San Francisco, California, Bay Area Case Study,” found that supportive parking policies and local support (i.e. local political support and funding) “are considered integral to carsharing’s success in many regions” (Shaheen, 2011). The EV Carsharing Pilot Project has this support and as a result the City of Los Angeles’ Department of Transportation (LADOT) and Department of Water and Power (DWP) will provide vital assistance with the infrastructural component of the Pilot Project. LADOT will facilitate the parking selection and acquisition process and DWP will assist in the deployment of the EV infrastructure that will accompany the acquired parking spaces. This multi-agency collaboration can help the Pilot Project select parking spots to make accessing the vehicles more convenient and reliable. Having the support of the City will help the Pilot Project’s vendor secure parking spaces that will maximize the level of service and the usage-rate of service—especially in the targeted neighborhoods. Just as importantly, LADOT’s
support gives the Pilot Project an advantage over its potential competitors, such as ZipCar, and can experiment with a pricing structure that is more accessible to low-income residents.

The article “Carsharing: Where and How it Succeeds” describes parking-selection criteria that maximizes access to the vehicles and effectiveness of the service. “Urban neighborhoods that are dense, with mixed-use development, scarce parking, and good transit offer the best potential for carsharing” (Millard-Ball, 2006). The Pilot Project’s focus areas meet most, if not all, of these criteria. For example, the Westlake-MacArthur Park neighborhood has high density, affordable multi-family housing complexes, multiple major bus line stops and a subway Metro transit hub. Proximity to transit hubs or popular bus stops is important, especially if the carshare program is to be utilized to improve first last mile access to transit (Millard-Ball, 2006). Most transit users in the City are low-income residents. Providing carshare dedicated-parking within close proximity to transit can help improve the overall mobility for those who rely mostly on transit as their main transportation mode. Close proximity to a carshare vehicle could also increase the likelihood that a resident will use the service. Carshare is about convenience and reliability. The following points cited by the carshare companies’ representatives included in this report highlight what has proven to work for them in terms of carshare-dedicated parking. They cover the criteria laid out by Millard-Ball, and include new points as well.

- The most popular cars are those available in walkable and dense neighborhoods, and are also very close to highly utilized transit stops. To select parking, think about this: “Where would you put a bus stop?” This is very important because carshare should be part of the overall transit system (Dotson). Additionally, bus stops and lines are planned along routes that lead to popular destinations, such as employment hubs, hospitals and schools (Taylor, 2016). Carshare parking spaces (both on-street and off-street) should be selected along, or very close to, these routes because they tend to lead to popular destinations, which can help ensure people are able to access these destinations.

- CarShare Vermont looked at density and proximity to transit hubs. The company also looked at the places people were likely to want to travel to, such as big-box stores and hospitals, and placed parking near those amenities (Bourdon).

- It is imperative to select parking that maximizes visibility! This allows for easy access and a form of free advertising. Ithaca CarShare makes sure to place educational and advertising material, such as signs and brochures, next to the parking spots. The material is meant to inform passersby about the service and show it works. This has proven to be a great way to obtain new members (Dotson).

- In the case of City CarShare, the company was allowed to have dedicated-parking on site at Bay Area Rapid Transit (BART) stations. The cars that are parked in these spots are highly utilized vehicles and are almost always booked up to capacity. On average there are about 3 to 4 City Carshare-dedicated parking spots at select BART station lots (Nguyen-Dong).

- One major factor in parking selection is safety. The members must feel that they can access and drop off a car in a safe spot. This is very important. A sense of safety must accompany a carsharing-dedicated parking spot (Galligano).

- CarShare Vermont listens to members’ request for further parking locations. The company has placed parking spaces in new areas based on which areas are receiving...
more demands. It is a form of listening to and addressing the community’s need (Bourdon).

- In terms of accessibility, it is important to underscore Point-to-Point (also known as One-Way) functionality in order to increase flexibility and not stress the users. Point-to-point allows drivers to pick up a vehicle in one spot and drop it off at another without having to worry about returning the vehicle back to the original spot. Otherwise, members could feel rushed and be deterred from using the service in the future (Lopez-Partida).

Additionally, Carshare-dedicated parking can be either on-street or off-street. Off-street parking can be both in public (those owned by cities) and private garages or lots. Off-street parking can help enhance the selection and availability of carsharing-dedicated parking because on-street parking is usually limited in dense neighborhoods. The authors of “Cumulative Impacts of Carsharing and Unbundled Parking on Vehicle Ownership and Mode Choice” argue that the use-rate of carsharing services is strengthened when carshare-dedicated parking is provided in apartment complexes’ parking lots. The concept of having carshare-dedicated spaces in affordable housing complexes was lightly addressed during the first and second EV Carsharing Pilot Project’s stakeholder meetings. Concerns over lack of public access to these carshare spaces were expressed. The authors describe how carshare-dedicated spaces can be reserved just for tenants or also be made accessible to carshare members that do not live in the complex—though exact details on how best to achieve this was not explained. Of particular importance, the authors also note how the City of San Francisco addressed public and residential carshare-dedicated parking spaces in 2008 by including language that addresses this type of parking in their planning code (also known as a General Plan). A city’s General Plan acts as a city’s constitution and determines how land (including parking lots and garages) can be used. Off-street parking in multi-family complexes can strengthen service usage-rate overall (Napolitan et al, 2012). It increases the convenience of the service because members are very close to the vehicles.

- Ms. Sylvia Nguyen-Dong explained that San Francisco’s City CarShare (now partnered with Carma) collaborated with economic development organizations to help secure parking spaces at select affordable housing complexes.

The City of San Diego and the Center for Sustainable Energy give further unique parking examples that can help the Pilot Project design a parking strategy.

- Parking accompanied by the right type of EV charger is very important. “An uncharged vehicle is an unavailable vehicle” and this can undermine the carshare service on multiple levels from level of service to its reputation within the targeted communities. Mr. Chirazi explained that a carshare model that relies mostly on EVs should equip as many parking spaces with DC fast chargers in order to reduce range-anxiety and uphold the service’s reputation. Range-anxiety refers to the fear drivers have about being stranded on the road if the vehicle runs out of energy. According to the U.S. Department of Energy (DoE), DC fast chargers can give an EV a range between 50 to 70 miles per 20-minute charge. The DoE also explains that AC level chargers (which are the slower chargers used by consumers, often used for home charging) can give an EV a range between 2 to 20 miles per one hour of charging—considerably slower charging infrastructure.
• The City of San Diego’s model, Car2Go, constantly experienced complaints of uncharged or undercharged vehicles, which is why the company decided to switch over to combustion engine vehicles. As a result, a project of similar scope to the EV Carshare Pilot Project has been stalled because it no longer complies with the grant stipulations laid out by the California Air Resources Board, which require that these carshare programs rely predominantly on low to zero emissions vehicles.

**Parking-Selection Recommendations for the EV Carsharing Pilot Project**

Parking selection has a direct impact on accessibility and participation in the EV Carsharing Pilot Project. The author recommends all or as many of the following criteria should be incorporated into the parking selection process for both on- and off-street spaces to help ensure project success:

• The Pilot Project should conduct community surveys through community-based organizations to obtain a sense of where the focus area residents would like to see carshare-dedicated parking. For example, community members might want to also see carshare spaces near recreational and educational sites.

• Secure as many parking spaces as possible in popular areas, such as employment centers and shopping centers, to help ensure constant availability of vehicles. The reputation of the carshare service can be hindered if members find that vehicles’ availability is not consistent. Popular neighborhoods or sites can benefit from having carshare vehicles parked both on-street and off-street to maximize vehicle availability. The vendor (the carshare company) that the Pilot Project ultimately selects can then find it less challenging to provide the maximum number of cars in popular locations.

• Spaces should be highly visible and contain educational material on how to use both carshare and EVs. This can serve as free and effective advertising. The material should emphasize how easy it is to use carshare and EVs.

• Spaces should be as close to transit hubs as possible. This can aid in closing the first last mile connectivity issues affecting L.A. Metro.

• Select parking spaces based on where it would be best to place a bus stop or line. This type of parking planning can help the Pilot Project select parking along routes that already lead to vital destinations (i.e. employment centers).

• Spaces should be very close to or in affordable housing apartment complexes. The Pilot Project should work with economic development and affordable housing agencies and organizations to secure these crucial parking spaces. This makes physical access of the vehicles highly convenient to a large pool of potential users. Additionally, opportunities to work with private apartment complex owners should be considered. Not every low-income resident of the target area lives in affordable housing apartment complexes.
• Dedicated parking spaces should be very close to or in lots at hospitals, big box stores, and employment centers – this can help members of the Pilot Project access vital services that augment quality of life.

• The Pilot Project should try to secure carshare-dedicated parking at L.A. Metro transit hubs’ parking lots or garages. This is very much worth looking into due to the high popularity of carshare vehicles stationed at transit stations and hubs in places like the Bay Area.

• In complying with the Air Resources Board’s stipulations, the Pilot Project’s fleet will be made up of at least 80 percent EVs. It is imperative that the right type of charger accompanies popular carshare parking sites in order to have fully powered and available vehicles at all time. DC chargers should accompany as many of the parking spaces dedicated to the fleet’s EVs to minimize the charge-time amount.

  o Uncharged EVs are basically unavailable vehicles and this can undermine the Pilot Project’s reputation and increase range-anxiety.

• To address the Pilot Project’s future expansion plans, the existing support of the City’s Departments of Transportation and Water and Power should be leveraged to help the vendor secure dedicated-parking spots in other underserved neighborhoods.

• In the future, the City should also use parking incentives to encourage the vendor to expand into other areas in case the vendor is hesitant to enter other underserved neighborhoods.
Bibliography

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