CAR SHARING

Introduction

Car sharing is to automobiles what time-sharing is to resort properties—an arrangement whereby a group of people share a resource. Many people do not need a car at all times, and their household's first or second vehicle may not be used much. Being able to use a car "part-time" may meet their mobility needs at a lower cost to themselves and society. Further, some may occasionally need access to non-standard vehicles such as minivans or pickup trucks. Car sharing is a mobility option that might be considered a means to reduce car ownership and improve transportation options.

Car sharing might also be considered something like hourly car rental for pre-approved customers with cars close to the customers' homes, and the benefits of membership. The reserving, using, and returning of vehicles are all simple operations. Insurance, fuel, licensing, maintenance, and car payments are handled by the car share organization, and members pay only for what they use.

Car sharing is well established in Canada's biggest cities and gaining momentum in smaller centers. The advantage of car sharing is that it reverses the relationship between fixed and variable vehicle costs. In conventional vehicle ownership, most of the costs are fixed (vehicle purchase, finance, insurance, license, etc.), while the per-kilometer costs of fuel, lubrication, tires and incremental maintenance are fairly low (about 10 or 15 cents per km for most vehicles in Canada today). In other words, the more you drive, the less each kilometer costs on average. A car sharer's costs, by contrast, are directly proportional to usage.

For some, car sharing may be attractive due to assigned parking. Vehicles are newer and carefully maintained, so reliability is an asset. For those driving less than the average number of miles a year, car sharing will be significantly less expensive than owning a car. Members in a car sharing organization also tend to use transit, walk, or bicycle for a significant share of their transportation needs. Car sharing allows the added option of a car to these transportation choices.

Car sharing works this way: A member wants to use a car. They contact the car share organization. They either confirm a vehicle is currently available or they can schedule one for a future time. Car share vehicles are not kept at a central site, but are located throughout neighborhoods where members live, typically no more than two to four blocks away. Specialty vehicles, such as minivans or pickup trucks, may be available at locations in nearby neighborhoods.

Cars are accessed using a keyless entry system with vehicle keys kept in secure key-boxes inside the vehicles. The member unlocks the door using the keyless entry system, opens the key-box to get the key, and drives away. All aspects of the trip are recorded and communicated automatically to car sharing headquarters. When the reserved time is over, the car is returned. At the end of each month, the member receives a bill for hours and miles used.

Pilot Project Description

As part of an overall municipal transportation strategy, the city of Futureville has decided to implement a car sharing system. A central part of the proposed operation is a computer-based information system to manage reservations, memberships, and the vehicle inventory; monitor and record vehicle usage; and support related activities such as billing, marketing, and communications.

The immediate goals of the car sharing pilot project are
- to provide members with a high level of service,
- develop the infrastructure to support car sharing, and
- understand how members use the service.

The profitability of a car share organization is a function of its size. The minimum size needed to cover administrative costs, as determined through research on other projects, is

approximately 43 vehicles and 480 members. As the pilot project is substantially smaller—starting at 25 vehicles and 250 members—it will operate at a loss during the initial operating period.

The pilot project's term is three years. The pilot intends to serve approximately 150 members in the first year, 250 members at the end of the second year, and reach cost-recovery levels at the end of the third year. After one year the car share organization may expand the service or restructure the pilot to improve its service or financial characteristics.

The initial members of a car sharing organization (the "early adopters") can set the stage for its success or failure, depending on how they perceive its value and how they are served. This pilot project's scale was selected to allow a full-time manager about twice the time needed for his or her job. This way, a high service level can be maintained and will allow the manager sufficient time to create the infrastructure necessary to expand the service.

The pilot project will have two "spare" vehicles that can be used in case of problems with other vehicles or when a member uses a vehicle for an extended period of time. For the pilot, all vehicles will be new, compact to mid-sized sedans or station wagons. The expanded operation will consider adding specialty vehicles, such as minivans or pickup trucks to meet members' needs.

The rate structure for the Futureville pilot project is patterned after other car sharing organizations. These fees include a non-refundable application fee, a refundable membership deposit (returnable when the member leaves the organization), and a first-hour charge, a per hour fee, and a per mile fee. Members will be billed monthly. Car sharing membership will be offered to individuals only for their private use. Commercial or business use of vehicles will not be considered in the pilot project.

Organizational Goals

The business plan for the Futureville car sharing pilot project was commissioned by an oversight committee of local and provincial organizations and citizen participants. The goals include business viability, quality of service provided to members, and fulfillment of the interests of society at large.

Social Goals

Car sharing is expected to result in lower vehicle ownership rates and lower overall vehicle distance traveled. In neighborhoods where public parking is severely limited, fewer vehicles on the street will improve the parking situation. Lower overall vehicle distance traveled will result in reduced road congestion and in lower overall vehicle emissions. As the car share organization vehicles will be new and well maintained, they should also have lower emissions over the long run than vehicles they replace. Vehicles scrupulously maintained according to manufacturer recommendations are likely to have lower emissions than vehicles under average care.

Business Goals

The pilot project is not expected to be profitable, as it includes startup expenses and operates on a scale smaller than that necessary for financial profit. Operating on a small scale will allow time to learn how to manage and operate this new mobility service. Car sharing, like other businesses, will require time to grow beyond an initial pilot size.

Customer Service Goals

Service levels provided to car share members should result in high rates of satisfaction, especially in the pilot project. Car sharing should result in lower transportation costs for members and will be easy for members to use while encouraging cooperative behaviors that benefit all users. The organization will actively work to retain members and to keep insurance claims low through member communication. Vehicles will be clean, well maintained, and reliable. There should be performance goals for vehicle availability to members.

Success Factors

Elements contributing to a successful car share operation include

- an easy-to-use 24/7/365 scheduling service,

- new and reliable vehicles,

- an easy-to-use vehicle and key access system, and

- professional management.

These should all be part of a pilot project.

Membership

Recruitment

The goals for recruiting or sales for the pilot project are to move interested potential members in the desired geographic areas to actual membership. The marketing activities will lead to interest by potential members. Current members will recommend potential new members. A database of interested contacts will be maintained.

Periodically triage by postal code is performed on the database. Those outside of the use areas are sent information about car sharing and retained as potential members for future expansion. Those with zip codes where service will likely not be offered are sent more general information making it clear that service will not be available to them in the immediate future.

For prospective members living in areas already being served, a complete application package is sent. The application packages are completed by potential members and submitted with the application fee. The application packages include the car share member agreement that is to be signed as well as drivers license, insurance, and credit information.

The database is purged on a regular basis to remove "stale" contacts (those who have not expressed further interest) or those outside the geographical areas targeted for expansion of the service.

Membership Application Screening

The membership application must be accompanied by an application fee based on the organization's costs incurred in bringing in new members. This is nonrefundable. For the car share organization, it is intended to cover part of the setup costs and initial training, including driver and credit screening. For the member, it shows sincerity of interest and should not be a barrier to membership. The license transfer costs and loan fees for buying a car might be considered analogous to the application fee. The recommended application fee is $50.

Membership applications are reviewed by the manager. Those complete, apparently qualified, and meeting geographic criteria of the pilot project are retained, and a credit and driving record check is performed.

Potential members meeting all the credit, driving history, and geographic criteria are enlisted as pilot project members. Otherwise the applications are returned with an explanation. Newly enrolled members will be called and asked to attend a compulsory introductory training and information meeting.

The application process is completed with the payment of a membership deposit. The deposit represents the capitalization of the car share organization; in effect it represents the purchase of a "fractional car." The deposit is fully refundable (without interest) to members who choose to leave the organization. The deposit may be useful as a screen for serious car share members. It can be used as a hedge against non-payment, and has been recommended by an insurance carrier as a deductible for member-caused damage. The recommended membership deposit is $600.

Once these formalities have been completed, a member record and account is set up and a SmartCard and PIN issued. Because of the costs associated with activating SmartCards and deactivating lost ones, a deposit of $25 is charged when a card is issued (or re-issued).

Member Profiles

Members create and maintain profiles indicating various preferences:
- Type of vehicle (compact, full size, etc.)
- Preferred vehicle location (near home, office, etc.)
- Preferred means of payment (e.g., cheque, automatic bank or credit card payment)
- Preferred means of receiving news and other communications such as account statements (e.g., mail, email)
- Password for Web access

Member can change any of these preferences either online or by telephone through the car sharing organization's staff.

Member Rights and Responsibilities

Towing charges for improper parking, parking tickets, and citations for moving violations will be the responsibility of the member using the vehicle at the time of the infraction. Failure to comply with the car share organization's rules could result in the member's termination. In an accident where the member is at fault or where a member damages a car share vehicle, the insurance deductible shall be paid by the member. Car share members will be responsible for moving violations. The car share organization records will show who used the vehicle at the time of the infraction, and citations will be forwarded to that member.

Members are able at any time, by telephone or through the Web interface, to

- update their personal information.
- change their preferences.
- check their pending reservations.
- check their trips completed.
- check their accounts.

Member Penalties

Penalties are not proposed for member noncompliance during the pilot project.

Non-compliance can include failure to return vehicles on time, failure to leave the vehicle in a tidy condition, neglecting to fill the fuel tank at the proper time, or unauthorized usage. Failure to return on time results in a significant inconvenience for the next member using the vehicle. They may miss an event, have to cancel an appointment, or pay for a taxi. There will also be administrative costs to deal with unavailable vehicles. The penalty for late returns should be used primarily to compensate the next member and thus should be based on lost time and costs of alternatives such as a taxi. Member retraining should be considered if the problem reoccurs during a set period—perhaps a month. Excessive failure to return may eventually result in termination of membership. Failure to leave a vehicle tidy has a clear cost—that of vehicle cleaning, usually by the manager. There may be questions about which member created the problem. A cleaning fee and member retraining may be adequate to deal with this issue. Neglecting to fill the fuel tank at the proper time may cause hardship for the next member using the vehicle. It may, however, be difficult to assess a monetary penalty for this. The significance of these problems will be assessed during the pilot and potential for monetary penalties to improve behavior will be considered in the evaluation.

Member Termination

If a member in good standing (without an outstanding account balance) wishes to end their membership, they must execute a written termination notice, return their SmartCard, and complete an exit survey for evaluation purposes. The membership deposit will be returned without interest within one month.

Membership may also be terminated at the discretion of the car share organization. Reasons for termination may include

- failure to keep accounts current (more than 90 days overdue).
- failure to meet the member agreement obligations.
- operation of the vehicle in conflict with the member agreement (for example, DUI or certain other moving violations).
- exceeding a certain number of moving traffic violations (for example, four speeding tickets).

Under discretionary termination, the car share organization will require that the member return the SmartCard and execute a written termination agreement. If charges are pending against the member's account, they will be deducted from the membership deposit before it is returned. The balance of the deposit will be returned without interest within one month (deposit returns will follow the billing cycle).

Operations

The Fleet

Recommended vehicles for the car share pilot project are compact to mid-sized four-door sedans. The fleet mix might also include some station wagons in the same makes and models to meet a broader range of members' needs. The market study suggested that 86% of those likely to join would find compact vehicles would most often meet their needs. By comparison, mid-size or full-size cars would be needed only by 31% of those likely to join. Recommendations are based on lowest overall costs for vehicle operation and ownership cited in *Money Magazine*'s annual car buyer's guide. These costs included price, depreciation, maintenance, repairs, and fuel. Focus groups indicated some interest in other vehicle types such as pickup trucks and minivans. Determining the vehicle selection will be an issue after the pilot project.

When vehicles are acquired, they are added to the database and assigned to a vehicle location as required by the operational plan. The vehicle record in the database includes the warranty maintenance schedule that can be searched to identify warranty service checkpoints.

Vehicle Maintenance and Repair

Scheduled (warranty) maintenance is best performed by a contract service. This may not necessarily be through a dealership. As a variety of different vehicle makes will eventually be part of the car share fleet, selected contract services should be authorized to work on vehicles and not void warranties.

Routine or scheduled maintenance (such as warranty services) will be a scheduled activity based on warranty requirements or vehicle usage statistics (time or mileage). As every member vehicle use is completed, the system checks whether warranty or other schedule checkpoints are imminent. If so, an email notification is generated for the appropriate service contractor who will then schedule a reservation for maintenance purposes. If repairs or other non-routine maintenance are required, the manager will contact the contract maintenance service, which will reserve the vehicle for the time required to service the vehicle. When possible, the contractor will pick up vehicles and

return them when serviced. If necessary, the manager delivers vehicles to repair locations. All maintenance and repairs are entered in the vehicle's maintenance record by the contract maintenance service.

Maintenance and tidiness check of vehicles will be performed on a regular basis, or as required. Fueling, vacuuming, and washing may be conducted at this time, or during other times when the vehicle can be scheduled for service. If the vehicle is moved away from its designated location for this basic service, its use will be scheduled through the reservations service. At the onset of the pilot program the maintenance and tidiness checks of vehicles should be more frequent, perhaps weekly.

Vehicle Locations

The majority of car share cars will be parked in single-vehicle locations. Off-street, assigned parking is needed for car sharing so that members can always find a car by location—they will not necessarily be able to recognize it. There may eventually be some situations in permit parking areas where reserved on-street parking may be available for car share vehicles. This would be negotiated with the City of Futureville.

The car sharing database maintains information on all vehicle locations. Locations, and the number of vehicles assigned to each location, may change as membership numbers and addresses change. As vehicles should be within a five-minute walk of any member, locations should be chosen to meet that characteristic. As assigned off-street parking is necessary for car share vehicles, potential members will be asked if they can provide such a parking space. They may not be compensated for the use of their parking at market rates, as they will have the advantage of being closest to the car.

Car Share Fee Structure

The fees the car share organization charges to its members provide the operation's only income. Fees must cover all operating expenses, capitalization, interest, depreciation, and insurance. Operating expenses include the reservation system and management, plus fuel, maintenance, parking, cleaning, and repair of vehicles. This myriad of expenses represents significant costs these fees must support. For the pilot project the fees structure only offers an individual membership category. The entire fee structure for the pilot project will be reviewed and assessed in the evaluation. Revisions will be made as needed.

The fee structure should not only cover costs, but do so in such a way that reflects the costs incurred. For a car share organization or a car owner, there are several cost categories: acquisition, capitalization, operation, and usage. The fees proposed cover each of these categories. Fees for the car share pilot project will consist of the following:

First-hour charge

Some car share organizations have annual fees or monthly fees. These fees address the costs associated with providing service to members. A significant portion of these service costs are associated with member scheduling. Each reservation is estimated to cost $3.00 to make. For the pilot project, a fee per vehicle use is proposed. This is similar to a taxi's meter drop charge. A first-hour charge also sends a message to members to consolidate

trips. The recommended first-hour charge is $3.00, and it will be presented to members as part of the per hour fee. If the member does not actually use the vehicle during the scheduled time and does not cancel the reservation within six hours of usage, they will be assessed the first-hour charge.

Per hour fee

For the pilot project, an hourly fee for usage is also proposed. A per hour fee will encourage members to use their time wisely. The recommended weekday per hour fee is $1.50 per hour. This is not high enough to discourage reasonable time use, but will be considered by members using the vehicle.

Weekend use of car share vehicles is expected to be higher than weekday use. A per hour fee for weekends of $2.00 per hour is recommended.

Per kilometer fee

A fee for distance driven is also assessed. A per km fee represents the vehicle's operating cost. The recommended per km fee is currently set at $0.40 per km. This fee may be adjusted on a monthly basis to reflect operating costs (such as fuel costs). If the member does not actually use the vehicle during the scheduled hours, no per km fee is charged.

Vehicle Access and Data Collection

The *COCOS StandAlone* system is designed for the complete electronic management of decentralized fleet locations. The main components are the member's SmartCard and the on-board computer for the vehicle with an integrated GSM cellular communication module.

The intuitive handling is a key feature. The member's identification is the SmartCard. After successful identification and verification of the member's reservation, the central locking of the car unlocks, the customer gets in, uses his/her PIN to access the vehicle's key, starts the car and drives away.

During the trip, the on-board computer records all drive times and distances, and optionally the vehicle position. Upon return of the car, all data is automatically sent to the central service office.

The *COCOS StandAlone* system is well suited for decentralized locations with few vehicles, like car sharing locations outside of the downtown area or decentralized company fleets. It is reliable, simple, secure and fully automated from booking to billing.

Reservation System

The attributes desired for a scheduling service include offering vehicle scheduling up to one year in advance, quick processing through the reservation system, offering vehicles at different times or different locations when desired times/locations are not available, toll-free telephone access, and 24-hour availability.

Members must understand a vehicle may not always be available. The availability rate for vehicles at all locations will be monitored and reported to members monthly in member communications. Vehicles and locations will be adjusted as required to optimize

availability. The reservations service will offer alternative vehicles and times of use if a desired location does not have a preferred vehicle available at the requested time.

A number of member reservation system arrangements were considered for the pilot project. Among these were reservation scheduling offered by the car share organization manager, an office assistant to the manager, or by a contract scheduling service. Reservation calls are estimated to average 40 per day, requiring several hours to complete. If the manager is to deliver a high service level as anticipated, handling reservation services would prove to be a major distraction. Having an office assistant perform scheduling is the least expensive option. However, since this would clearly be restricted to office hours, this may be a limitation for some members.

Reservations by Web
It is anticipated that the majority of members will use the Web reservations interface. Such a system has all the attributes desired and is the recommended option. It is available 24 hours a day, 7 days a week, and offers toll-free access to members. Web access features the usual login and password authentication.

Reservations by Contract Scheduler
A contract scheduling service will provide telephone reservation services.

The contractor's interface to the Web reservations system will recognize the incoming call and bring up an appropriate screen. The operator will be prompted at each step by computer screens, from initial greeting to close. It will include such things as a final reminder to the member to record the reservation time and date.

Member Car Share Reservation and Use Scenario

The description below shows how a member might make a reservation and use the car share service, and what policies may be needed to regulate how vehicles are used.

1. When wanting to use a car share vehicle, members contact the scheduling system through one of the available interfaces (telephone or Internet) and identify themselves. Their preferences (preferred vehicle type and location) are then loaded, and the member is asked to confirm the preferences for this reservation, and given the option to change the preferences permanently or for this reservation session only.

2. The member is prompted for the desired date, time and duration of vehicle use. There are no restrictions on scheduling vehicles except that vehicles may be reserved a maximum of 90 days in advance.

3. If a preferred vehicle is not available at the desired time and location, alternative vehicle types and locations are offered. Other car share locations may be nearly as convenient, and a different start time may be acceptable to the member. Typically, the closest location is within a 5-minute walk.

4. When a reservation is successfully completed, it is recorded and an email confirmation is generated and sent to the member. (For telephone reservations the clerk reminds the member of the details).

5. A member may make any number of reservations in a given Web or telephone reservations session.

6. Once at the car, the member places the SmartCard above the detector field on the windshield. The on-board computer verifies first the user card, then the reservation and unlocks the car doors. As an added security measure, once in the car, the member is prompted to enter a personal identification number (PIN code) to access the car's ignition key which is placed in an electronically controlled holder in the glove compartment. During the member's trip the key is used to lock the car as usual.

7. Members are responsible for fueling. If the fuel goes below one-quarter tank, the member is expected to refuel. A fleet gas credit card is placed in each vehicle. These cards are restricted for fuel purchases only and require that a vehicle number, odometer reading and PIN be entered.

8. Other, unforeseen expenses incurred during a trip are paid by the member, who then files an expense claim for reimbursement. If the claim is approved, the member's account is credited.

9. When returning the vehicle, the member puts the ignition key back in the holder in the glove compartment. The on-board computer displays the trip data and automatically sends it to the central office. The member locks the car with the SmartCard.

10. Combining reservation and trip data, the billing software generates an itemized charge that is added to the member's account.

Billing and Payment

Car share members will receive a monthly billing statement, whether or not they have a current balance. This is designed to maintain regular contact with members, even though many of them may not be regular users of car sharing. For example, the statement information will include a newsletter with car sharing news, availability reports, and news about changes to vehicles and locations.

Members may choose to receive their statements and newsletters by email. This can be used to make member communications two-way rather than one-way (as typically occurs).

Automatic billing to a credit card or bank account is a preferred choice, although payment by check will be accepted.

Members failing to keep their accounts current (more than 30 days late) may have their privileges suspended if they do not make satisfactory payment arrangements. This means that they cannot make new reservations, and their pending reservations are cancelled.

Communications

Member communications seek to retain members, present information on other mobility options, and promote safe driving habits.

For example, the back of the billing statement will feature the monthly newsletter that reminds members of important issues regarding car sharing and some of the responsibilities they undertake in sharing vehicles. Some of this information may be

seasonal. Reminders of how to drive carefully during inclement weather and how and when traction devices are to be used can be included in early winter newsletters. Proper use of bike and ski racks can also be seasonal reminders.

The newsletter will inform members about the organization's status such as the number of members, number of vehicles, and the vehicle availability rate for the past month. The newsletter can offer any additional features or benefits and share other important news regarding local car share offerings.

Further, the presentation of mobility options can be announced in the newsletters. For example, information on bus trip planning could be included, or members could be invited to a member forum on bike commuting.

Evaluation

Monitoring and measurement is required because the car share pilot project seeks to meet business, social, and service goals. Every aspect of the operations will require regularly scheduled reports, as well as a facility for on-demand reports as required by management. These reports will include (but are not limited to)

- membership recruitment and retention.
- membership preference trends (vehicle type, preferred locations).
- vehicle availability and usage.
- reservation patterns by member, location, vehicle, day-of-week, time-of-day, duration, etc.
- trip statistics – duration, charges, etc.