



*Final Report*

**BUSINESS PLANNING STUDY:  
CAR SHARING IN PORTLAND, OREGON**

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## **APPENDICES**

### **Portland Car Sharing Business Plan Contact List**

The following are not included in the HTML version:

APPENDIX A: References, Acknowledgments, and Contacts

APPENDIX B: Stakeholder Surveys

APPENDIX C: Co-operative Auto Network Agreement and Manual

APPENDIX D: VPSI Application and Agreement

APPENDIX E: Vendor Materials

## EXECUTIVE SUMMARY

In January 1997, the Oregon Department of Environmental Quality contracted with the Bicycle Transportation Alliance and its subcontractors (Scott Engineering and Research Into Action) to conduct a Market Feasibility and Business Planning Study for Car Sharing Mobility Services in Portland, Oregon.

This work was guided by an oversight committee of local and state organizations and citizen representatives composed of:

- ◆ The City of Portland
- ◆ Oregon Office of Energy
- ◆ Oregon Department of Transportation
- ◆ Tri-Met (regional transit provider)
- ◆ Metro (regional government authority)
- ◆ Oregon Environmental Council (transportation advocates)
- ◆ Oregon State University Energy Extension Service
- ◆ Public Policy Research (private consulting firm with interest in car sharing)
- ◆ VPSI Commuter Vanpools (private company offering van leasing)

The Car Sharing Mobility Services study was divided into two major components: a market feasibility study and a business planning study. The Market Feasibility Study has been described in a separate report. Section 6 of this report summarizes the Market Study's results and explains how the results can be used for business planning. This document details the results of the business planning study.

The business planning study examined a car sharing pilot project of approximately 20 vehicles and 150 members. The pilot project was designed to test the operational and financial attributes of car sharing in the Portland market. The plan described necessary elements for a successful pilot operation and options for expanding it into a full-fledged business. Both the market feasibility study and the business plan focused on close-in, urban neighborhoods as the basis for the surveying and planning.

The business plan encompassed an introduction to car sharing, description of the car sharing organization's goals, the business's potential structure, marketing and sales, competition, operations, rates, a financial analysis, a plan for expansion beyond the pilot, and an outline for pilot project evaluation.

Concrete data were used to prepare the operational and financial characteristics of the car sharing pilot business plan. The market feasibility study was used extensively to shape the features and rates of the car share organization plan. Information on vehicle and insurance costs, reservation system costs, and operation and maintenance costs were based upon data presented by the vehicle fleet industry and by other sources.

The business plan's results suggest a car sharing organization in Portland is very feasible, and can eventually operate on a sufficient scale to return a profit. Of the drivers over 21 years of age surveyed in the study area, an estimated 4,800 (11.7%) would be very likely to join a car sharing organization. The market size in Southeast Portland alone is substantially larger than that of the pilot project, and it is two and one-half times larger than the break-even organization scale.

The best opportunities for locating the car share pilot project are in the Southeast Portland neighborhoods of Buckman, Hosford-Abernathy, and Sunnyside, as determined from segmentation

analysis of the market survey, the density of interest, and existing infrastructure in the area. For demonstration of car sharing, a focus in one of these Southeast neighborhoods is recommended for an initial offering. Other neighborhoods in Portland including Northwest, Downtown, and some neighborhoods in northeast are also very attractive for car sharing. Car sharing can be as successful in these areas as in the Southeast neighborhoods.

Marketing activities for the pilot project should be well focused in the interest areas. This includes addressing neighborhood associations, local newspapers, and utilizing targeted mailings. Initial sales and vehicle locations will have to be carefully coordinated to best serve members and achieve high vehicle utilization. Post-pilot marketing can be more broadly based, using somewhat different messages to reach those with different educational background.

Scheduling member use of the car share vehicles can best be performed through a contract service, as can regular vehicle maintenance (such as oil changes). Members can access vehicles using a combination of a keyless entry system and a keybox in the passenger compartment for the vehicle key.

The proposed rate structure includes two one-time costs of an application fee and a membership deposit. Ongoing usage charges include a first hour charge, a per hour fee, and a per mile fee. To balance an expected higher vehicle use on weekends, a higher rate per hour is recommended for this period. The rates were set using the results of the market study and the financial analysis based on break-even organization size.

The pilot project's scale allows the manager sufficient time to ensure member satisfaction and build the necessary infrastructure for car share organization expansion. After a successful demonstration of the operational and financial aspects of car sharing through the pilot project, a long-term plan in this report outlines the means for offering car sharing to potential members throughout Portland.

## **1. INTRODUCTION**

In January 1997, the Oregon Department of Environmental Quality contracted with the Bicycle Transportation Alliance and its subcontractors (Scott Engineering and Research Into Action) to conduct a Market Feasibility and Business Planning Study for Car Sharing Mobility Services in Portland, Oregon. The two major components of the study were a market feasibility study and a business planning study. This document reports on the business planning study. A summary of the market study results is included in Section 5.

### **CAR SHARING — AN INTRODUCTION**

Car sharing is to automobiles what time-sharing is to resort properties—a group of people that 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 need access to a minivan or a pick-up truck at times. Car sharing is a mobility option that might be considered a means to own a fraction of many cars, something that is not possible for most people.

Car sharing might be considered something like hourly car rental for preapproved customers with cars close to the customers' homes. Reserving, using, and returning the cars is simple. Insurance, fuel, licensing, maintenance, and car payments are handled by the car share organization, and members pay only for what they use.

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

Cars may be accessed using a keyless entry system with vehicle keys kept in secure keyboxes inside the vehicles. A member would unlock the door, open the keybox, get the key, record member number and mileage information, and drive away. When the reserved time is over, the car would be returned. At the end of each month, the member receives a bill for hours and miles used.

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

### **Car Sharing History and Current Offerings**

Europe has well-established car sharing programs. In 1988, Stattauto began providing car sharing services in Berlin. It now has over 1,000 members using a fleet of 60 motor vehicles. In total, Germany has over 3,000 active car sharers.

The largest and most successful car share organization is in Switzerland. Car Share Switzerland started in 1987 and now has over 1,000 vehicles and 18,000 members, offering service throughout the country.

Car co-ops have spread to over 100 cities throughout Europe. The European Car Sharing network (ECS), based in Berlin, has member organizations in Switzerland, Germany, Holland and Austria, and is now starting in Sweden and England. Through ECS, car share members can use other car sharing groups' vehicles.

Historically, large-scale car sharing has been slow to develop in the United States. To date, the country's largest car share effort was STAR (Short-Term Automobile Rental), located in a San Francisco apartment complex. During its 18-month life beginning in 1983, STAR had an average of 50 vehicles available to 300 members.

Locally, a car sharing organization has been founded in Corvallis, Oregon. Although not yet offering services, this is a co-op type organization looking to grow slowly through self-funding. Elsewhere in North America viable car share enterprises are now operating in Victoria and Vancouver, British Columbia, and in Montreal and Quebec City, Quebec.

## **BUSINESS PLAN DESCRIPTION**

A business plan for car sharing like this one should describe elements for a successful organization and enterprise. A short list of what would need to be researched, analyzed, and recommended follows.

- car share fleet size, vehicle types, costs, maintenance and operations
- membership characteristics and usage patterns
- services provided
- member screening and member management criteria
- deposits, fees, billing, and accounting requirements
- member use scheduling, including providing location and time options
- locations of vehicles and parking arrangements
- mobility partners and information
- usage policies for members
- vehicle and organization insurance

## **STRUCTURE OF THE REPORT**

This report includes fourteen sections. Section 1 provides an introduction to the business plan as well as an introduction to car sharing. The pilot project is described in Section 2 and the goals of a car sharing organization are outlined in Section 3. Considerations of business structure are described in Section 4.

Sections 5 through 8 describe respectively the market study results, the marketing outline, member recruitment and car sharing competition. Sections 9 and 10 describe car share operations and other options for mobility.

Sections 11 and 12 present the recommended car share fee structure and the financial analysis for the enterprise. Section 13 provides some insights into long-term planning for car sharing in Portland, and, finally, Section 14 provides an outline for evaluation of car sharing.

An appendix includes references, vendor information, and examples of member agreements from other organizations.



## **2. PILOT PROJECT DESCRIPTION**

The 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 pilot project's term is envisioned as one year. The pilot is intended to serve approximately 150 members and have a relatively stable membership for the first few months while service aspects are refined. After one year it may be that the car share organization may undertake plans for expanding the service or restructuring 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 would allow the manager sufficient time to create the infrastructure necessary to expand the service.

The pilot project is envisioned to have one 'spare' vehicle that can be used in case of problems with another vehicle, 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 would consider adding specialty vehicles, such as minivans or pick-up trucks to meet members' needs.

The rate structure for the Portland pilot project has been 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.

### **CAVEATS**

Car sharing's financial viability largely depends on the organization's scale. This pilot project is smaller than the minimum size required for break-even cash flow. It is important, however, to test and refine the car sharing organization's infrastructure on a small scale to ensure success at a larger scale.

This business plan is based on the best data available. However, many assumptions were used to prepare the plan. Some of the most important assumptions describe how members will use the service. The driving behavior of car share members are different from their behavior with their own vehicle. The evaluation plan includes an assessment of these behavior differences.

Elements of the car sharing pilot project presented in this business plan have been selected as preferred options. Other car sharing organizations have made different choices. It is

possible that other combinations of elements can lead to success. In the best judgment of the car sharing consulting team, these elements are the best choices for a successful pilot project. The opinions of the oversight committee were taken into consideration to develop this business plan to best represent the interests of Portland in car sharing.

### **3. CAR SHARING ORGANIZATIONAL GOALS**

This business plan for the Portland, Oregon car sharing pilot project was commissioned by the Oregon Department of Environmental Quality in concert with an oversight committee of local and state organizations and citizen participants. As such, the work reflects the committee's goals for a car sharing organization. These goals include business viability, quality of service provided to members, and fulfillment of the interests of society at large.

#### **Business Goals**

A car share enterprise is expected to provide a profit to its owners or shareholders, if operated and managed appropriately. Profit margins for car sharing will be small. Indeed, 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.

#### **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.

## 4. CAR SHARING BUSINESS STRUCTURE

In nearly every case, successful car sharing organizations have grown out of very small initial efforts with only a few members and fewer vehicles. Growth was very slow at the outset (often taking many years) as capital was not available for vehicle acquisition.

A small organization with low growth will not conclusively demonstrate car sharing for a number of years. Being able to put 20 vehicles on the street at one time would allow a meaningful evaluation of business viability and achievement of social goals. Thus, the ability to capitalize or lease this number of vehicles at once will be an advantage.

Further, the profitability of a car share organization is a function of its size. The minimum size needed to cover administrative costs, as shown in Section 12 of this business plan, is approximately 43 vehicles and 480 members. As the pilot project is substantially smaller at 20 vehicles and 150 members, the business operating the pilot must be capable of operating at a loss during the demonstration period.

Two basic business structures were considered: co-operative and private, for profit. Many car share organizations are co-operatives with members being actual shareholders. Shareholder status may provide greater involvement and commitment to the behaviors necessary to share vehicles. A private, for-profit structure will likely have more focus on business success and may be able to make decisions more quickly. The option used to develop this business plan for the Portland car share pilot project is a private, for-profit business. In general, the recommendations in this business plan are readily applied to either business structure.

Any organization looking to develop car sharing in Portland should be asked to commit to implementing the pilot project under a set of guidelines. These guidelines include: a minimum term for the pilot, reasonable efforts to achieve membership levels, and that there be a commitment to minimum levels of customer service, such as vehicle availability. This organization must also disclose financial and member data for use in the evaluating the pilot project.

Elements contributing to a successful car share operation include a 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. A successful demonstration of car sharing through a pilot project would benefit from a business with the ability to fully fund these critical elements.

In addition to operational and capitalization capabilities, it is likely that an organization with some experience in vehicle leasing or rental would provide a more positive impression to potential members. Such an organization would offer potential members greater comfort that the services would be delivered as committed, and membership deposits would be returned should they elect to leave the organization.

## 5. RESULTS FROM THE MARKET STUDY

A car sharing market study preceded the development of this business plan. That market study included a preliminary assessment of the preferred neighborhoods for consumer research on car sharing, followed by focus groups designed to obtain an initial assessment of consumer interest in car sharing, and, finally a telephone survey of drivers to assess the market's potential. Though the results of the market study are described in detail in a separate report, they are summarized below.

The preliminary assessment used socio-demographic variables including household density, non-auto commute mode, and the number of vehicles per household to determine preferred neighborhoods for consumer research on car sharing. Target neighborhoods are shown in Figure 1 and are listed in Table 1. Southeast neighborhoods are those highlighted at lower right.

FIGURE 1  
NEIGHBORHOODS RECOMMENDED FOR STUDY FOCUS

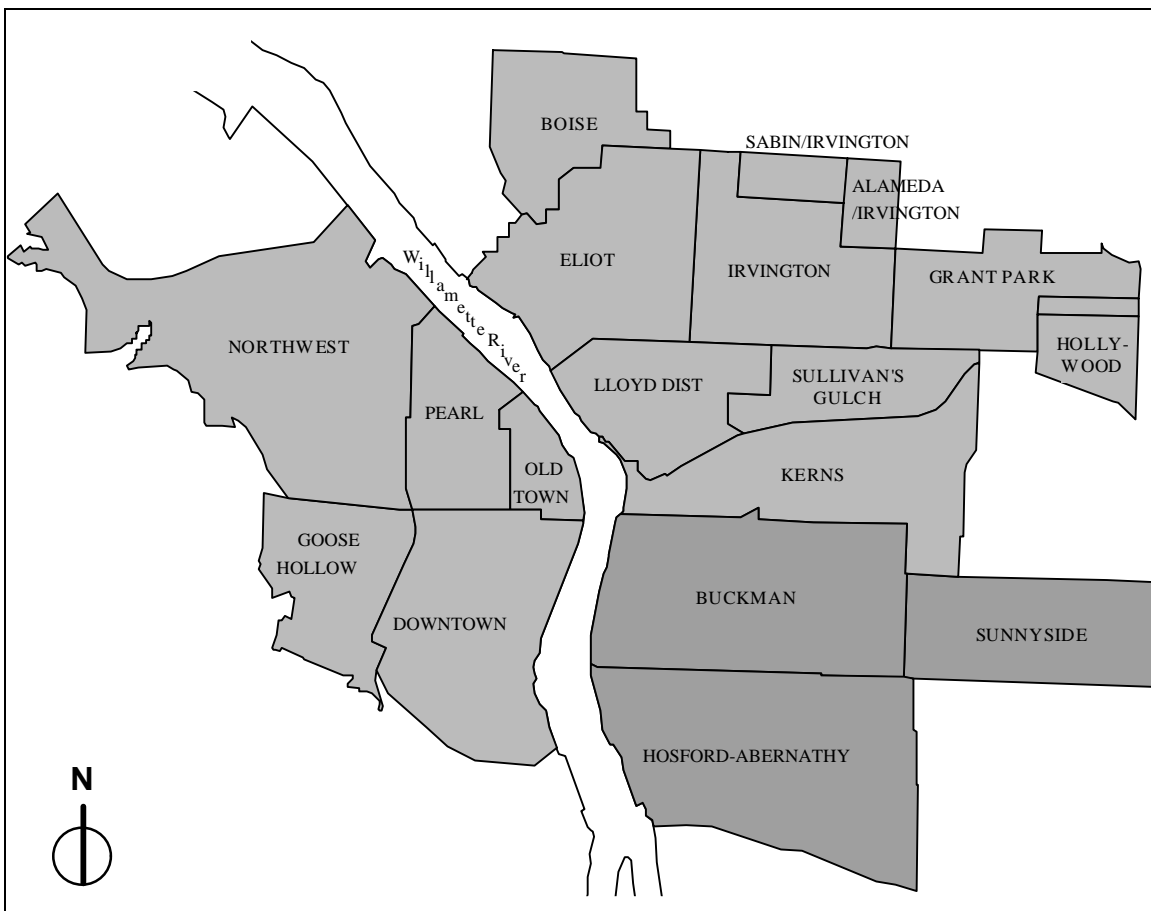


TABLE 1

## INCLUDED STUDY AREAS BY QUADRANT

Northeast	Northwest	Southeast	Southwest
Alameda/Irvington	Northwest	Buckman	Downtown
Boise	Old Town	Hosford-Abernathy	Goose Hollow
Eliot	Pearl District	Sunnyside	
Grant			
Park/Hollywood			
Grant Park			
Hollywood			
Irvington			
Kerns			
Lloyd District			
Sabin/Irvington			
Sullivan's Gulch			

The market study's next step was to conduct focus groups that assessed an initial consumer interest in car sharing and provided a preliminary look at consumer response. The focus groups were also used to develop a survey from which to measure market potential.

The final market study step was to conduct a survey of licensed drivers over 21 years of age living in the study area. The survey was conducted by telephone and sampled 385 drivers in the target neighborhoods. The survey sought to:

- Estimate market potential for car sharing;
- Determine responses to different features of a car sharing organization; and
- Identify the characteristics of those "very likely" to join.

### **CAR SHARE MARKET SIZE**

A summary of market study results are shown in Table 2. Of 40,930 licensed drivers in the study area, a total of 4,804 (11.7%) are estimated to be very likely to join a car sharing organization. The Southeast Portland quadrant has the highest interest level at 15.5%. Although there are differences in the average level of interest by quadrant, an analysis suggests no statistical significance in those differences.

TABLE 2  
SUMMARY OF MARKET STUDY RESULTS

<b>Quadrant</b>	<b>Base Estimate Total Population</b>	<b>Potential Very Likely to Join</b>	<b>Percent Very Likely to Join</b>
Northwest	7,958	872	11.0%
Southwest	7,875	796	10.1%
Southeast	11,612	1,798	15.5%
Northeast	13,485	1,373	10.2%
Total	40,930	4,804	11.7%

In the 19 Portland neighborhoods studied, there are many more potential members very likely to join, 4,804, than the size of the pilot project at 150 members.

### **FEASIBILITY BY DENSITY**

The market results shown in Table 2 and data from the Portland Neighborhood Information Profiles were used to determine potential feasibility by calculating the density potential for car sharing. The greater the potential density when measured against the required ratio of members to vehicles, the more feasible car sharing will be.

For financial feasibility, car sharing typically requires a ratio of 8 to 12 members per vehicle. In addition, there is a maximum acceptable distance that most members would walk to the closest shared vehicle parking space.

The market study showed that 100% of those very likely to join considers a five-minute walk to be an acceptable distance to travel to a shared vehicle. For all respondents, 92% would find a five-minute walk acceptable. A five-minute walk was used to make the density calculations.

A number of assumptions were made to arrive at the conclusions concerning car share density of particular neighborhoods. One was that neighborhoods were uniformly settled without significant nonresidential segments. Others were a block size of 275 feet and a walking speed of three miles per hour.

A further assumption was used to correct for walking in urban areas being constrained to a grid system. This precludes walking in a straight line, except toward the cardinal compass points. The average distance walked in five minutes inside an urban grid (for all directions) is about 80% of the straight-line distance.

Table 3 shows the number of potential members within a five-minute walk from any particular point. The five neighborhoods with the highest potential density are shown in bold. These neighborhoods average 86 potential members per vehicle. This density is 7 times greater than the necessary density of 12 members per vehicle. This suggests car

sharing is very likely feasible in Portland, based upon the level of interest shown in the telephone survey and the characteristics of these Portland neighborhoods.

TABLE 3  
POTENTIAL MEMBERS WITHIN A FIVE MINUTE WALK<sup>1</sup>

Northeast		Northwest		Southeast		Southwest	
Alameda/Irvington	35	<b>Northwest</b>	<b>78</b>	<b>Buckman</b>	<b>75</b>	<b>Downtown</b>	<b>77</b>
Boise	22	Old Town	29	Hosford-Abernathy	45	<b>Goose Hollow</b>	<b>102</b>
Eliot*	17	Pearl District*	5	<b>Sunnyside</b>	<b>97</b>		
Grant Park/Hllywd	27						
Grant Park	30						
Hollywood	45						
Irvington	55						
Kerns	43						
Lloyd District*	14						
Sabin/Irvington	41						
Sullivan's Gulch	62						

## MARKET DEMOGRAPHICS

The market study did not find significant differences in car sharing market potential as a function of gender, income, or education level. However, reasons for car sharing appeal were differ by education. These differences can be summarized by segregating respondents into two different groups.

Drivers with a college degree and most likely to express interest in joining a car sharing organization were:

- more likely to be cost-conscious about car ownership,
- more likely to want to live a simpler lifestyle, more likely to ride the bus regularly, and
- more likely to drive their secondary car more than 10,000 miles per year.

Drivers without a college degree and most likely to express interest in joining a car sharing organization were:

- more likely to be 35 to 44,
- less likely to love their car and the activities associated with it,
- more likely to have an income of \$40,000 to \$50,000, and
- less likely to need a car to run errands for children and other household members.

<sup>1</sup>Neighborhoods marked with an asterisk have large areas of industrial or commercial businesses. As no correction was made for actual residential area, calculated housing density and the values in this table are lower than actual.



## 6. MARKETING OUTLINE

### MARKETING GOALS

The Portland car sharing pilot project is planned to include 20 vehicles and 150 members. This pilot project's marketing goals are to reach an appropriate number of qualified potential members in a selected geographic area. Expansion of the car share pilot is assumed to wait until additional members can be properly served. This suggests initial marketing should be very selective and targeted, so that potential members in other areas are reached only when car sharing services can be provided to them.

### PILOT PROJECT TARGET

Car sharing can be most successful if the vehicles are close together, providing alternatives for members if the closest vehicle to them is already scheduled or in use. Because of its size at 20 vehicles, the car sharing pilot project could be located in just one Portland neighborhood. Criteria for selection of a particular neighborhood include:

- high level of interest and car share density;
- inexpensive off-street parking for car sharing; and
- commuting, shopping, and services accessed by transit, bike, or walking.

From the market study, geographic differences in car sharing interest levels emerged. Although the differences are not statistically significant, the Southeast Portland quadrant had the highest average number of drivers that said they would be very likely to participate in car sharing.

Car sharing feasibility by density suggested that 5 of Portland's study area of 19 neighborhoods had a particularly high number of potential participants within a five-minute walk. Areas with the highest potential car share member densities included neighborhoods in the Southwest, Southeast, and Northwest quadrants. The Northwest and Southwest quadrants include the Downtown, Goose Hollow, and Northwest neighborhoods.

All of the westside areas have parking limitations. These locations would likely require a car share organization pay for vehicle parking, whereas this would be much less likely in the Southeast quadrant. In Southeast, it should be possible to more often use parking provided by members at no or very low cost. A survey of parking prices suggest an average in Northwest of \$98 per month while parking costs are about \$22 per month in Southeast Portland.

All the neighborhoods mentioned above have similar infrastructure features. Transit service is good and shopping and services can be accessed by walking or biking. Thus the only significant differences between the potential target neighborhoods are parking and level of interest. In Southeast it should be easier to locate vehicles because of more

readily available parking. Also, the level of interest in Southeast is higher. In considering both the level of interest in car sharing and the infrastructure, Southeast Portland is the most attractive target location for a car share pilot project. The neighborhoods included in Southeast are Buckman, Sunnyside, and Hosford-Abernathy.

### **Southeast Portland Infrastructure**

Southeast Portland's infrastructure has some attractive features for a car sharing pilot project. Southeast Portland has five major east-west bus routes. There are approximately eight formal bike routes through this area that connect with Downtown and other destinations. The Hawthorne Bridge, most used by pedestrians and bicyclists for access to Downtown, lands near the middle of the Southeast Portland quadrant. (It is not known how a 12 month closure of the Hawthorne Bridge scheduled for 1998 might affect participation in these neighborhoods.) The topography has a slight slope to the Willamette River and streets are in a grid system. There are sidewalks throughout the area, as well as retail and business services located conveniently in most of the neighborhoods. Most of Southeast Portland does not have problems with on-street parking, and the vast majority of apartments and homes have off-street parking of some kind.

### **PILOT PROJECT MARKETING**

With Southeast Portland's potential member densities, the 20 pilot project vehicles could be located within just one of the three neighborhoods. Consequently, it is recommended the marketing approach focus just on one of the three neighborhoods. If this is done, then several means are available to reach potential members.

Focused marketing would include local newspapers, neighborhood associations and their neighborhood newsletters, and targeted mailings. All can be used to reach potential pilot project members. These ideas are discussed below.

#### **Newspapers**

Two local newspapers serve Southeast Portland. These newspapers often cover transportation and planning issues. A feature article or an advertisement in these papers could reach potential members throughout Southeast Portland. Both the papers are distributed free to homes and can be picked up at neighborhood businesses. The papers are: Goodneighbor News, primarily serving the inner Southeast area (telephone 771-3390), and the Southeast Examiner, serving all of Southeast Portland (telephone 234-1770).

#### **Neighborhood Associations**

Neighborhood associations and their newsletters are another means for reaching potential pilot project members. The formally recognized neighborhood associations representing the three Southeast neighborhoods meet monthly, and each has a board member with land use or transportation interests. They would likely welcome a presentation on the car sharing pilot project, and would provide recommendations on how to approach their

constituents (as well as an endorsement). Two of the neighborhood associations publish a newsletter delivered to each household in their neighborhoods (Sunnyside and Hosford-Abernathy). A notice in these newsletters could reach potential members. There is also an umbrella organization—Southeast Uplift—representing the inner Southeast Portland neighborhoods, which should be included for full community support.

### **Targeted Mailings**

The most specific means of reaching potential car sharing participants would be a targeted mailing. A mailing list could be generated from a database of vehicle owners or licensed drivers, selected by neighborhood by zip code and GIS geocoding. If the results of the telephone survey allow it, those respondents indicating they were “very likely” to participate in car sharing could also be contacted.

### **Other Means**

Even though car sharing is a new mobility concept to Portland, word of mouth will be effective in recruiting new members. Specific reminders and incentives for members to recruit new members could be used to promote this marketing avenue.

Offering car sharing services in apartment buildings (of five units or more) may be a market avenue. Such apartments would have a garage or potential for reserved parking. A number of apartment management firms are responsible for many such units in Portland, and a contact with one of these firms may yield an attractive location.

## **MARKET CHARACTERISTICS OF CAR SHARE SERVICES**

A guarantee of future service may be an important element in the initial offering. This is especially true for a startup program not yet proven. Clarifying that the car share organization is involved for the long run, and making a guarantee of a minimum operating period (one year), may overcome some objections.

A clearly stated organization goal of vehicle availability is also appropriate. For the pilot project, providing a car at a time or location suitable to the member should be achieved 95% of the time. Note that this might mean that the member would use a vehicle at a different time than they originally desired, or that they would not be able to use the closest vehicle to them. As the pilot project will begin with a conservative member-to-vehicle ratio of 7.5 to 1, this level of availability should be easily achievable. As vehicle availability proves to be adequate, this ratio can be moved upward as long as vehicle availability remains satisfactory.

## **FUTURE MARKETING ACTIVITIES**

Some marketing contacts will be handled by the scheduling service using the scheduling service toll-free number. Members can provide the toll-free number to anyone interested, and the cars themselves may have the phone number displayed on them. Ongoing inquiries

may also be answered by the local manager. In any case, a database of interest contacts would be created. Periodically (perhaps daily or twice weekly), triage will be performed on the database by zip code. For those interested in areas already being served, a complete application package would be sent. Those outside of these areas would be sent information about car sharing, and would be retained as potential members for future expansion. Those with zip codes where service will likely not be offered could receive more general information making it clear that service would not be available to them.

Bicycling organizations and businesses can provide marketing for recruitment of members to the car share organization. These include the Bicycle Transportation Alliance, which could feature car sharing in their newsletter dedicated to promoting bicycling in Portland. As commuting cyclists are a likely target market for car sharing, Portland bike shops may be a means of reaching a portion of the market.

For marketing on an ongoing basis, word of mouth from members about car sharing will likely be the most effective means for recruiting new members. This makes it especially important that car sharing deliver a high satisfaction level. Specific reminders and incentives to recruit new members could be used to promote this marketing avenue.

Marketing materials may describe the economic benefits of car sharing or the reduction in time spent maintaining cars. These are certainly attractive attributes. Additionally, the materials may suggest that members will “own” or have access to many cars—not just one car or a fraction of one. This may be especially meaningful when pick-up trucks, minivans, sport utility vehicles, or even sport cars are added to the car share fleet.

Potential members with a strong interest in having car sharing available to them might ‘recruit’ a cadre of 8 to 12 nearby neighbors. These submitted as a package could justify the placement of a vehicle close to them.

## **7. MEMBER RECRUITMENT**

### **RECRUITING GOALS**

The goals for recruiting or sales for the pilot project will be to move interested potential members in the desired geographic areas to actual membership. The marketing activities described earlier will lead to interest by potential members.

### **USER CONTACT SCENARIO**

The targeted marketing materials will include a contact phone number, a mail reply card, and an email address. The interested potential member will use one of the contact means to indicate their interest.

For the pilot project, the manager will receive inquiries by interested members. A description of the pilot could be provided by phone for those calling, and an application package could be sent to those appearing to be qualified. Application packages would be completed by potential members, then submitted with the Application Fee. The application packages would include the car share member agreement that is to be signed as well as driver license, insurance, and credit information.

An effective way to combine marketing and recruiting would be to hold introductory meetings. These could be advertised by the neighborhood association or in one of the local newspapers. The presentation could describe in detail car sharing, hand out and receive applications, and show a car share vehicle to prospective members. Car share vehicles should be available before any members are recruited.

### **SCREENING**

Submitted applications would be reviewed by the manager. Those complete, apparently qualified, and meeting geographic criteria of the pilot project would be retained, and a credit and driving record check would be performed. Otherwise the applications would be returned with explanation.

Potential members meeting all the credit, driving history, and geographic criteria would be enlisted as pilot project members. They would be called and asked to attend a compulsory introduction meeting.

The introductory meeting is intended to inform new members on how car sharing works, what it is, what it is not, and how members should care for the shared vehicles. The fee structure would be explained with examples of how it would work for various trips. The scheduling service will be explained and a demonstration provided. If potential members are still interested after this in-person meeting, they would submit the Membership Deposit and receive vehicle access information. A survey for evaluating the pilot project will also be completed at this time. This survey will include gathering a baseline of member travel

patterns to compare with patterns under car sharing. Ideally, the new member would be provided a user's manual or set of the car share organization rules to further instruct them and as a reference.

Members will be provided a map of vehicle locations (updated as needed), a keyless entry device, and the combination to the vehicle key box. They will be instructed in how to maintain the vehicle log of miles used. A car share vehicle will be available for hands-on use by these new members.

## **MEMBER CAR SHARE USE SCENARIO AND POLICIES**

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

When wanting to use a car share vehicle, the member calls the scheduling system, identifies herself, the desired vehicle location, and the desired time and date of vehicle use. There are no restrictions on scheduling vehicles except that dates can only be reserved for one year in advance.

The scheduling system contracted to the car share organization will feature a toll-free number staffed by trained operators, and customized software for leading operators and members through the scheduling process. If a vehicle is not available at the desired time and location, alternatives would be offered. Other car share locations may be nearly as convenient and a different start time may be acceptable to the member.

When the scheduled time arrives, the member would walk, bus, or bike to the vehicle location. Typically, the closest location will be within a five-minute walk. The member will unlock the car with the keyless entry device and get inside.

Once in the vehicle, the member will enter a combination on a keybox bolted to the vehicle floor. Inside this keybox is the key to the vehicle. The member then uses the car for the time scheduled.

At the end of the scheduled use, the member records the time used, the miles traveled, and the date in a logbook left in the vehicle. The car is returned to the assigned parking space, the key is put back in the keybox, and the vehicle is locked.

Members will have responsibility for fueling. If while using a vehicle the fuel goes below one-quarter tank, the member is expected to fill it. With proper documentation and receipts, fuel costs are refundable. To compensate a member for the time needed to fuel the vehicle a small rebate could be provided (fraction of an hour). In addition to the ability to reimburse members directly for fueling expenses, an option would be to obtain a fleet gas credit card that would be placed in each vehicle. These cards can have restrictions to fuel only, and could require that a vehicle number, odometer reading, or PIN be entered.

There are a number of organization policies that make it possible for members to be accommodated and yet satisfied with the car share service. These would be covered in the introductory meeting and reinforced in member communications. One of the most likely will be that members will be responsible for basic vehicle tidiness. Some other policy decisions that may be made by a car share organization would be regarding:

- smoking in vehicles (often a total prohibition);
- carrying pets in the cars (perhaps in a closed carrier);
- use of member-owned ski and bike racks;
- installation of bumper stickers;
- child car seats (members may provide their own), and
- traction devices (chains may be provided).

In the vehicle will be: the member logbook, information on insurance, information on what to do in case of an accident, and contact telephone numbers. An ice scraper should be put in the vehicles during winter months.

## **BILLING AND PAYMENT**

Car share members will received 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 would include some member communications such as a newsletter.

Possibly, members could receive their statements and newsletters by email. This could 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. Billing data are gathered from schedule information prepared by the scheduling contractor, and from the vehicle logbooks picked up during the manager's monthly visit to the vehicles.

At the same time billing data are collected, a maintenance and tidiness check of vehicles will be performed. 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. At the onset of the pilot program the maintenance and tidiness checks of vehicles should be more frequent, perhaps weekly.

## **MEMBER COMMUNICATIONS**

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

For example, the back of the billing statement could feature the monthly newsletter about the car sharing organization. It will remind members of important issues regarding car sharing and some of the responsibilities they undertaken 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 could be included in early winter newsletters. Proper use of bike and ski racks could be part of seasonal reminders.

The newsletter could 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 could offer any additional features or benefits, or 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 in the newsletter, or members could be invited to a member forum on bike commuting.

## **VEHICLE LOCATIONS AND PARKING**

The vast 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 Portland.

Vehicles can be located as potential members submit applications. As vehicles should be within a five-minute walk of any member, locations should be chosen to meet that characteristic. In addition, 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. A separate parking agreement would be executed between the car share organization and the member providing parking.

In situations where assigned parking is needed for a car share vehicle, a suitable location will be identified by a drive-through of the neighborhood. Such a location may be in an apartment building lot or garage, a business parking lot, or other private parking. A monthly fee would be negotiated at market rates (in Portland, this may be \$22 to \$98 per month). A sign will be posted that the space is for the exclusive use of a car share vehicle. The parking lease agreement (for a suggested one year term) should also stipulate the space cannot be used for other parking.



Some vehicles will undoubtedly be located before a complete set of eight members is identified in the vicinity. This presents something of a chicken-and-egg problem in finding members and serving them while concurrently identifying central locations for vehicles. As membership increases, locations for vehicles may also need to change. Some locations may end up requiring multiple vehicles, and some may have to be moved.

If possible, secure bike parking where vehicles are parked and proximity to transit should be a consideration in locating vehicles. In cases where parking is in a secured garage, such as an apartment building, it might be possible to access the secure area using the same keyless system as that used in the vehicles. This would eliminate providing building keys to members.

## **MEMBER TERMINATION**

If a member in good standing (without an outstanding account balance) wishes to end their membership, they must first return their keyless entry device, complete an exit survey for the evaluation, and execute a written termination notice. Their Membership Deposit will be returned without interest within one month (Membership Deposit returns could follow the billing cycle).

Membership may also be terminated at the discretion of the car share organization.

Reasons for termination can include:

- failure to keep accounts current;
- failure to meet the member agreement obligations;
- operation vehicle in conflict with the member agreement (for example, DUII or some other moving violations); or
- exceeding a certain number of moving traffic violations (for example, four speeding tickets).

Under discretionary termination, the car share organization will request the member return their keyless entry device 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 Membership Deposit will be returned without interest within one month (deposit returns will follow the billing cycle).

## 8. COMPETITIVE ASSESSMENT

The significant competitors to car sharing will be privately owned automobiles and existing car rental agencies. Although private autos will be the only practical competition to car sharing, car rental agencies will be perceived as competition, and many comparisons will be made between these companies and car sharing. The ensuing discussion is intended as one approach to examining competition to car sharing. In addition, Table 4 describes two trip scenarios for private auto of two vintages, a rental car, and car share. It also compares costs for private auto vs. car share under three annual usage scenarios.

For some, transit would be considered an additional mobility category for town errands. Under that trip scenario, transit would cost most users \$2.10.

TABLE 4  
COMPETITIVE COMPARISON ESTIMATES<sup>2</sup>

Trip	Private Auto, 8 years old	Private Auto, new '97	Rental Car (daily rates)	Car Share
Town Errands 2 hours, 15 miles	\$6	\$13	\$38	\$5
Weekend Beach Trip 36 hours, 200 miles	\$23	\$43	\$85	\$95
Annual Use of 250 hours, 2,500 mi. 170 trips	\$2,037	\$4,575	not applicable	\$955
Annual Use of 500 hours, 5,000 mi. 340 trips	\$2,189	\$4,812	not applicable	\$1,910
Annual Use of 1,000 hours, 10,000 mi. 680 trips	\$2,494	\$5,287	not applicable	\$3,820

### PRIVATE AUTO

The primary competition for car sharing will be what most people are currently using—the private automobile. The market of those that do not currently own or have access to automobiles is small. Most potential members of a car share organization will compare their private automobiles cost to those of car sharing.

<sup>2</sup>Competitive comparison estimates cannot be compared directly to the member comparison in the financial analysis. National average new car costs from “Your Driving Costs, 1997 Edition,” American Automobile Association. These are \$4,337 annual standing cost plus 9.5 cents per mile.

According to Oregon DEQ, the median vehicle vintage in the Portland Metro area is a 1989 vehicle driven 12,000 miles per year. Assuming this indicates a typical, modest four-door such as the Chevrolet Cavalier, the “standing” expenses are 15.7 cents per mile, while variable expenses are 6.1 cents per mile for a total of 21.8 cents per mile.<sup>3</sup>

Notwithstanding the figures above, most owners probably are not aware or able to estimate actual costs to operate their vehicles. For some owners, variable costs of fuel and maintenance will be the only deciding factors, and car sharing will not appear financially attractive. Those in this market will be difficult to reach with a car share message of lower transportation costs.

If an owner of a median vintage vehicle were to compare their total operating costs to car sharing, costs would appear to be similar. However, car sharing can still be attractive without a cost advantage. Car share vehicles will be new, and the comprehensive care of car share vehicles and all-inclusive costs will be very attractive to those not interested in undertaking the “hassle-factor” of owning and caring for their own car.

The market study drew this conclusion from the telephone survey data. Those very likely to join a car share organization mentioned a dislike of the activities associated with owning a car and were cost conscious about car ownership.

## **RENTAL CARS**

Car rentals are used mostly for business and holiday travel and occasionally by those who do not wish to use their own cars for long trips. The per day costs for rental cars seem attractively low, especially for weekend use. Based on interviews with Budget and Enterprise locations in Portland, daily rates range from \$16 to \$30 per day, depending on whether a compact or mid-sized car is rented. These rates are often used for comparing to car sharing. There are, however, other costs in car rental. For example, there is a 10% Multnomah county tax, daily insurance at an additional \$9 to \$14 per day, and fuel costs.

Although rentals have similar total costs as compared to car sharing for some trips, the service offered by car rental is not as convenient. This would include transportation to a central vehicle site, even when pick-up service is available. The paperwork requirements associated with renting a car are also usually time consuming.

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<sup>3</sup>Kelley Blue Book Automobile Pricing, “How Much Does it Cost to Maintain High-Mileage Vehicles?,” Automotive Fleet, March 1997.

## **9. CAR SHARE OPERATIONS**

### **RESERVATION SYSTEM**

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. For each of these, it has been assumed that reservations would be hourly on the hour.

The attributes desired for a scheduling service are: 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. Additionally, it would be desirable for the reservation service to be easily expandable beyond the scope of the pilot project. Any of the reservation arrangements would need to provide data necessary for monthly billing of member hours of use.

#### **Reservations by Manager**

As memberships are not expected to be high for the pilot, the manager could likely perform reservations. This way the manager would have the advantage of becoming familiar with many of the car share members. However, reservation calls are estimated to average 70 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.

#### **Reservations by Assistant**

Having an office assistant perform scheduling is probably the least expensive option. If reservation calls are “live” on line, the scheduling would be restricted to office hours, which may be a limitation for some members. Additionally, some sort of scheduling tracking system would be required, even if it were only paper records. Some software for small car rental operations is priced at about \$1,500. However, expansion beyond the pilot project would very likely require the development or purchase of customized software for car share reservations.

#### **Reservations by Contract Scheduler**

A contract scheduling service can also provide reservation services. Such a system has all the attributes desired, and is the recommended option. It would be available 24-hours a day, 7 days a week, and also offers toll-free access to members.

The contractor would have a computer system that recognizes the incoming call and brings up a screen appropriate for answering the call. The operator would be prompted at each event by computer screens, from initial greeting to close. It could include a final reminder to the member to record the reservation time and date.

The contract scheduler's database would have a list of members and a complete list of vehicles (with vehicle type, schedule of use, and exact directions for locating the cars).

Note that a significant effort will be required by the car share organization to establish this contract reservation system. A database for members and vehicles would need to be created and filled. Another requirement would be to establish scenarios for how operators would handle calls, including types of calls and possible call segment alternatives. It is estimated the car share organization would spend no less time than the contract firm, a minimum of 16 to 24 hours of effort.

To control reservation costs, the car share organization may negotiate some type of performance incentive with a scheduling service. For example, billings for the scheduling service will be based on elapsed time. Serving the average reservation request in two minutes or less (or some agreed upon time) would qualify the contractor for an incentive payment.

The contract reservation service would provide a weekly report of calls taken and elapsed time spent with an operator. Reservations made could be communicated to the manager by fax, by text file on a dial-in computer bulletin board system, or by email.

The initial cost for setting up the contract reservation service would be \$1,250, plus an estimated \$1,000 for programming all operator instructions, scheduling options, and the member and vehicle databases. The contract service's cost on an ongoing basis would be a monthly service fee of \$95 with \$0.95 for each minute of operator time for scheduling or other services (not including hold times).

Scheduling activities other than member use could also be done by the contract maintenance firm or by the manager. Different kinds of scheduled activity would then become apparent to the scheduling operator. Member, organization, maintenance, and long-term usage should be differentiated. Activities scheduled by car share management could be usurped by a member wishing to use the vehicle at that time. Under some situations, scheduled maintenance activities could also be usurped by a member.

## **OTHER CONTRACT SCHEDULING SERVICES**

In addition to reservation services, the contract scheduler could be used as an emergency contact for members and for receiving marketing calls.

In the case of an emergency or some other type of member problem (such as a vehicle not being returned, a key not available, or an accident), the manager could be paged by the contract scheduler with a text message. The manager could then call or respond in person to the member's problem. The member could also be given a local cell-phone number to call if the member chooses. It may also be possible for the manager to return this call to the scheduler, and be connected directly to the member.

The toll-free number and the contract scheduling service could also be used to receive marketing calls. This is described in detail in Section 6.

## **VEHICLE ACCESS AND DATA COLLECTION OPTIONS**

An onboard computer system concept was compared to a keybox used in conjunction with a keyless remote entry system. Although the costs and savings for this analysis are based on rough estimates and a number of assumptions, it provides an insight into implementation for this pilot project.

The keyless entry system would use remote transmitters with identical code settings. If two vehicles (or more) were adjacent to each other, the unused vehicles would relock the door after thirty seconds if the car was not entered. It would also be possible to specify a transmitter with a short (about ten foot) range for this adjacent vehicle problem. The keyless entry system would include a starter disabling feature and a flashing LED for theft prevention.

Inside the car, a mechanical combination push-button keybox would be mounted (on the floor in front of the driver's seat), and the member would enter a combination to open the box and access the vehicle key. Upon sale of the vehicle, this equipment could be removed, although it is assumed to have no salvage value.

Using the keybox/keyless entry system, the member is required to record times and dates of use and beginning and ending mileage. The car share organization would collect the records periodically and manually enter data for billing purposes.

An onboard computer would combine the features of discrete keybox/keyless entry systems along with a system for tracking vehicle access and use. The keyless entry transmitters would each have a unique code assigned to a particular member. A list of current members would be resident in each onboard computer so only authorized users would be allowed access. Once a member is inside the vehicle the onboard computer would electronically open a keybox for access to the vehicle key.

With the onboard computer system, all vehicle access, vehicle usage hours, and vehicle mileage would be recorded automatically. The manager would electronically download the data for billing purposes.

The only concrete costs avoided with an onboard computer system would be in data entry costs and for printing forms used to report usage. This system would also provide fraud prevention benefits but cost savings are not easily quantifiable. Payback under a two-year installation cycle is about three years. The additional investment required for an onboard computer system is estimated at approximately \$15,000 for 20 vehicles.

A significant problem with the onboard computer system is that no system with a complete set of features is currently being offered. Because of this it must be deemed an unproven technology. For a pilot project, the keybox/keyless entry system is more attractive.

## **CAR SHARE INSURANCE**

Car sharing is perceived as being a unique insurance application. Costs for car share insurance will be significantly higher than it would be for individuals. After three years of demonstrated risk experience by the car sharing organization, these rates should be renegotiated.

The limitations for age of car share members is between 21 and 75 years. The insurance companies also require five years of U.S. driving experience. Some type of member training is recommended. The car share vehicles will be for private passenger use, no commercial use whatsoever would be permitted under this coverage. Because of the complexity and variations in policies, it is not likely that member obtained insurance will be factored into modifying member fees or rates, especially for the pilot project. In addition, this coverage will be for members using car share vehicles only.

Insurance companies will want a driver screening program in place and also system for scoring of moving violations. Fleeing an accident scene and drug or alcohol use connected with driving would result in immediate termination of membership.

Non-authorized use is a significant concern for insurance companies. Unauthorized drivers may be cause for denial of coverage. Some type of vehicle security system would be desirable and records of member use must be carefully maintained.

The rate quoted under the above scenario was \$175 per month per vehicle for \$5 million of liability coverage. A member to vehicle ratio of less than 10:1 was used to price this insurance. At these rates there would be a minimum \$500 deductible for member caused damage.

## **VEHICLE MAINTENANCE AND REPAIR**

Scheduled maintenance would best be 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. The contractor would pick up vehicles and return them on completion of maintenance. Maintenance time would be a scheduled activity through the contract scheduler by the maintenance service directly.

Any vehicle repair required would also be done by a contract service to simplify arrangements by the car share organization manager. Of course, this service must be done by an authorized warranty service center. When possible, the contractor would pick up vehicles and return them when repaired. If necessary, the manager could deliver vehicles to repair locations. Repair time would be a scheduled activity, with scheduling done by the manager.

## **CAR SHARE FLEET RECOMMENDATIONS**

Recommended vehicles for the car share pilot project would be 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. Vehicles spanning the compact to mid-size range thus were included. Recommendations are based on lowest overall costs for vehicle operation and ownership cited in Money Magazine's 6th 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 pick-up trucks and minivans. Larger car share organizations typically offer vans or convertibles as part of their fleets. For the market study, a pick-up was used as a proxy for other vehicle types. Although some contacted in the market survey expressed an interest in having pick-up trucks available, 81% would need to use one six times a year or less.

For the pilot project, vehicles other than sedans may add complications to rates and scheduling. Different rates may be required for minivans (due to higher operating costs) and the lower utility of a pick-up truck (in terms of passenger carrying) may not make these vehicles useful as part of the regular fleet. Minivans and pick-up trucks can be added as member demand is indicated.

Similarly, alternative fuel vehicles (such as natural gas or electric powered) were not included in the pilot project. Some interest arose from the focus group participants concerning alternative fueled cars, but concerns about reliability and unfamiliarity with the fueling systems were also expressed. Again, these vehicles could be added as member demand requires.

As shown by the Money Magazine article, vehicles with some of the lowest overall maintenance and total costs include the Nissan Sentra four-door, the Nissan Sentra GLE four-door, the Saturn SL four-door, and the Honda Accord DX four-door. All of these makes provide positive impressions of quality and reliability to potential members.

Recommended equipment for these cars (as configured for use for car sharing) includes most basic factory equipment, such as an AM/FM cassette stereo, air conditioning, automatic transmission, and power steering. To make it easier for members to recognize the cars, all should be ordered in the same color. White may be the best color for this as it would be readily available from any manufacturer. White vehicles are also cooler in the summer.

Each car share vehicle should have an obvious but tasteful decal indicating it is a part of the car share fleet. It would not have the appearance of a company car, and would feature the toll-free reservation number. Not only would this provide a marketing opportunity, but it would allow members to be certain they were accessing the right vehicle (as they may not have seen it before). As described previously, vehicles would have a keyless entry system and keybox installed for vehicle access.



Fleet size should include surplus vehicles for occasional long-term use, extended maintenance activities, and service expansion. As mentioned, the pilot program operation does not include specialty vehicles, such as pickups or vans. However, the surplus vehicles could possibly include such models. The surplus vehicle might be used regularly by the organization manager until a need arises for it.

## **MEMBER RESPONSIBILITIES**

Members must understand a vehicle may not always be available. The availability rate will be monitored and reported to members monthly in member communications. Members may be offered a rebate if availability falls below a certain rate, perhaps 95%. The scheduling service will offer alternative vehicles and times of use if a desired location does not have a vehicle available at the requested time. Resolution of these member/scheduler negotiations could be tracked by the scheduling contractor.

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.

Photo radar is currently used in Portland's and Beaverton's school and neighborhood zones. Car share members will be responsible for such 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.

## **10. MOBILITY OPTIONS**

Car sharing is expected to result in lower overall vehicle distance traveled. Member's behavior may be changed in two ways. Economics will be affected when members pay the full price for each use of a car. Car sharing will also make the variety of mobility options readily apparent to members.

### **ECONOMIC CHOICE**

Car sharing allows a member to own a “fractional” car. Those with a “whole” car will more likely use it for all trips, as the standing costs of interest, depreciation, and insurance must always be paid. Variable costs (or fuel alone) are considered by many as the entire trip cost. Standing costs may be in the order of 70% or more of the cost of vehicle ownership. When car sharing is used, each trip includes the total vehicle costs; if no trip is made, there will be no costs. Thus, there are significant advantages to “leaving the car at home” for a car share member.

### **MOBILITY OPTIONS**

As the car share organization has an ongoing relationship with its members, opportunities will arise to provide mobility information and offer organized support for alternative mobility choices. For the pilot project, support options are available through Tri-Met, the Bicycle Transportation Alliance, Metro, City of Portland Bike Program, and bike shops such as the Bike Gallery. In situations where a need emerges for extended car use such as vacations, a relationship with a car rental company might better meet member's needs.

The newsletter included with each member billing statement will provide an avenue for presenting mobility options on a monthly basis. The car share introductory session also can offer members information on the potential for mobility choices. There will be additional opportunities for providing specific mobility information at member forums.

### **Transit**

In regards to transit choices, Tri-Met has offered to provide support in both the introduction to car share and on an ongoing basis for transit options, including route maps, timetables, trip planning assistance, and possibly discounted monthly or annual passes for members. For example, it may be possible for a \$5,000 grant to be offered to support the purchase of transit tickets for pilot project members. Tri-Met could also provide some time, materials, and support to “bus shop and commute” forums for car share members.

### **Bicycling**

In supporting bicycle commuting and bicycle shopping options, the Bicycle Transportation Alliance, Metro, City of Portland Bike Program, and bike shops such the Bike Gallery all

potentially have information and services to offer. The BTA has suggested that memberships in their organization and packages of bike commuting information could be offered to car share members. The Bike Gallery may offer discount coupons for commuting bicycle accessories. Metro might possibly offer discounted regional bike route maps (to be offered to members at no cost), and the City of Portland might provide discounted Bike Central memberships (secure bike parking, lockers, and showers), or discounted bike locker rentals for commuters. Each of these organizations could also provide time, materials, and support to “bike commute” forums for car share members.

### **Rental for Extended Use**

Occasionally members will be interested in rentals extending over several days or longer. These would most often occur during weekends, when higher hourly rates are in place. For a member driving a vehicle to a destination and staying there for several days, accumulated hourly charges would be unattractive. For the car share organization, extended member use may also create problems with vehicle availability. An arrangement for extended period rentals through a major rental car company would solve this dilemma for both members and the organization.

It should be possible for a rental company to provide a premium service to car share members. For example, all car share members should be able to pick-up and drop off vehicles with a minimum of paperwork. Special low rates, which may be the same or better than corporate rates, should be part of the package. Arrangements for coordinating insurance policies to lower costs would also be beneficial. Some rental car companies may provide member pick-up services as well. All these features should be negotiated when the car share organization selects the company to provide this service.

## 11. CAR SHARE FEE STRUCTURE

The fees the car share organization charges to its members provide the operations 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. When weighted against this myriad of expenses, there are significant costs these fees must support.

For the pilot project the fees structure only offers an individual membership category. Other categories are discussed in the Long Term Plan. Although having fewer fees is possible, recovery of costs and desired behavioral responses from members likely require the fee structure proposed below.

### PROPOSED FEE STRUCTURE

A wide variety of fees and rates are possible to recover costs. The rates proposed here are structurally similar to those used in other car share organizations. For the pilot project, only one membership class is being considered. Eventually there may be value in having multiple membership classes with differentiated rates. These could be directed at second car users, infrequent users, or family memberships. A more complete understanding of car sharing behaviors will be necessary before differentiated rate structures can be justified.

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:

- Application Fee
- Membership Deposit
- First Hour Charge
- Per Hour Fee
- Per Mile Fee

Other fees that are being used by car share organizations include:

- Charges for each reservation
- Differentiated membership levels
- Annual membership fees
- Monthly membership fees
- Family membership rates

The entire fee structure for the pilot project would be reviewed and assessed in the evaluation. Revisions would be made as needed.

#### **Application Fee**

The Application Fee represents the cost of identifying and selecting of a transportation option. This is nonrefundable. For the car share organization, it is intended to cover part of the set up 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 \$25. The market study did not include questions concerning an Application Fee.

### **Membership Deposit**

The Membership Deposit represents the capitalization of the car share organization; in effect it represents the purchase of a “fractional car.” The Membership Deposit is fully refundable (without interest) to members who choosing to leave the organization. The Membership 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.

In the market study, 59% of those surveyed were willing to pay a Membership Deposit of \$500 or less, 24% were willing to pay between \$500 and \$750, and the remaining 17% were willing to pay more than \$750.

### **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 \$2 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 \$1.00 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 (without cancellation within one hour of usage), they will be charged for the First Hour Charge.

Assuming 14 member uses per month, the monthly First Hour Charges would be \$14. The market study asked survey participants about the payment of a monthly fee, somewhat analogous to the First Hour Charge. Market study results show that 12% were willing to pay \$10 or less, 7% were willing to pay \$10 to \$15, 42% were willing to pay \$15 to \$35, and 38% were willing to pay more than \$25 per month.

## **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 \$1.00 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. One way to accommodate this would be to decrease the ratio of members to vehicles. This would yield a surplus of vehicles during weekdays, and create extra interest, depreciation, and insurance expenses. Another method would be to move weekend demands for vehicles to weekdays with an appropriate pricing structure. The latter method is recommended, and a surcharge for the hourly weekend rate has been included in the rate scenario. A Per Hour Fee for weekends of \$1.50 per hour is recommended.

If the member does not actually use the vehicle during the scheduled hours (without cancellation within one hour of usage), they will be charged for the Per Hour Fee. However, if another member is able to use the vehicle during the unused time, no charge would occur.

In the market study, 23% of those surveyed were willing to pay an Hourly Fee of \$0.50 or less, 12% were willing to pay \$0.50 to \$0.75, 21% would pay \$0.75 to \$1.00, 20% would pay \$1.00 to \$1.25, and the remaining 23% were willing to pay more than \$1.25 per hour.

## **Per Mile Fee**

For the pilot project, a mileage fee is proposed for distance driven. A Per Mile Fee represents the vehicle's driven operating cost. The recommended Per Mile Fee is \$0.20 per mile. If the member does not actually use the vehicle during the scheduled hours, no Per Mile Fee will be charged.

In the market study 24% of those surveyed were willing to pay an Mileage Fee of 10 cents per mile or less, 17% were willing to pay 10 to 15 cents per mile, 11% would pay 15 to 20 cents, 20% would pay 20 to 25 cents, and the remaining 9% were willing to pay more than 25 per mile.

## **FEE STRUCTURE SIMPLIFICATION**

A simplification of the rate structure from hourly and mileage to hourly alone was considered. Under the recommended rate scenario and assumptions about member usage, hourly rates and mileage rates yield about the same revenue (see Figure 3). This would mean a doubling of the hourly rate would be necessary to compensate for forgone mileage charges. The market survey suggested rates over \$1.00 per hour would not be well accepted. Additionally, embedding all revenue requirements in an hourly rate would penalize those using car sharing for short distances, and would subsidize those that driving

longer distances. Thus, a combination of hourly and mileage fees were recommended in the rate structure.

## **MEMBER NONCOMPLIANCE**

Explicit penalties are not proposed under the pilot project for member noncompliance. However, the potential for such penalties would be outlined in any member agreements. Such penalties could be levied for failure to return vehicles on time, failure to leave a vehicle in a tidy condition, or unauthorized use. Even neglecting to fill the fuel tank at the proper time causes hardship for members using the vehicle next. Under the pilot project, it is recommended that any problems be handled on a case-by-case basis.

## 12. FINANCIAL ANALYSIS

Car sharing can be a viable business enterprise. If the operational characteristics of this business plan are followed, car sharing can eventually have operating income, notwithstanding significant start-up expenses. Additionally, the financial returns of a car share organization are quite sensitive to the scale of the enterprise. The pilot project is planned to have 150 members using 20 vehicles and operate at a loss. However, under the pilot, the manager will have roughly twice the time available to deliver member satisfaction, build the necessary infrastructure, and ensure the success of the organization.

The rates described in the Fee Structure were developed with a full scale operation in mind. With the administrative costs of the manager, office operations, and scheduling services, there will be an operating loss under the pilot project. The car share organization “breaks even” once it enrolls about 480 members using 43 vehicles.

The pilot project has a lower member-to-vehicle ratio to ensure that vehicles are always available as members become familiar with car sharing and learn new mobility habits. When it is clear that members can be well served with fewer vehicles, the ratio can be moved upward by adding members.

The following page shows a four-year pro forma income statement and cash flow for the car share organization as it has been described in this document. Following that are descriptions of the assumptions and data sources for the income statement.



**PORTLAND CAR SHARE ORGANIZATION  
PRO FORMA INCOME STATEMENT & CASH FLOW**

<b>RATES AND ASSUMPTIONS</b>	
Application fee (nonrefundable)	\$ 25
Membership deposit (refundable)	\$ 600
First hour charge	\$ 1.00
Hourly fee (weighted weekday/weekend)	\$ 1.14
Per mile fee	\$ 0.20
Vehicle lease cost, per vehicle	\$ 1,993
Vehicle access equipment, per vehicle	\$ 260
Cash interest rate	5%
Annual license and insurance per vehicle	\$ 2,115
Fuel cost per mile	\$ 0.0365

<b>AVERAGE MEMBER PROFILE</b>		
	<u>Units</u>	<u>Cost</u>
Number of hours used annually	346	\$ 396
Number of miles driven	2,439	\$ 488
First hour charge	168	\$ 168
		\$ 1,051
<b>Comparison to cost of new, private automobile</b>		
(Using same miles driven and operating costs per vehicle, except that license and insurance are \$1,000 per vehicle.)		
Fuel		\$ 89
Interest & depreciation		\$ 1,993
License and insurance		\$ 1,000
Maintenance		\$ 571
Repairs		\$ 111
		<u>\$ 3,764</u>

**OPERATION SCALE**

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Number of Members	150	250	480	600
Fleet size	20	29	43	48
Annual hours per vehicle	2,596	2,983	3,863	4,326
Annual miles per vehicle	18,295	21,029	27,230	30,492
Members per vehicle	7.5	8.6	11.2	12.5

**REVENUE**

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Application fees - nonrefundable	3,750	2,500	5,750	3,000
Interest income on cash beginning	0	2,576	226	6,925
Usage fees - first hour charge	25,200	42,000	80,640	100,800
Usage fees - hourly	59,328	98,880	189,850	237,312
Usage fees - per mile	73,181	121,968	234,179	292,723
ODEQ Grant	42,500			
	<u>203,959</u>	<u>267,924</u>	<u>510,644</u>	<u>640,760</u>

**EXPENSES**

Management costs	50,000	50,000	50,000	50,000
Administrative costs	25,980	22,930	39,270	44,360
Vehicle leases	39,854	57,788	85,686	95,650
Fuel	13,351	22,251	42,722	53,402
Vehicle access equipment	5,200	2,340	3,640	1,300
License and insurance	42,300	61,335	90,945	101,520
Maintenance	11,426	16,568	24,566	27,422
Repairs	2,223	2,223	2,223	2,223
Reservations	51,300	84,740	161,652	201,780
Vehicle storage and parking	797	3,236	9,441	15,503
	<u>242,430</u>	<u>323,411</u>	<u>510,145</u>	<u>593,161</u>

**OPERATING INCOME**

	(38,471)	(55,487)	499	47,600
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**CASH FLOW**

Membership deposit - refundable	90,000	60,000	138,000	72,000
Cash in from Revenues	203,959	267,924	510,644	640,760
<b>TOTAL CASH IN AVAILABLE</b>	<u>293,959</u>	<u>327,924</u>	<u>648,644</u>	<u>712,760</u>
Cash out to Expenses	(242,430)	(323,411)	(510,145)	(593,161)
<b>CASH, BEGINNING</b>	0	51,529	4,513	138,499
<b>CASH, ENDING</b>	<u>51,529</u>	<u>4,513</u>	<u>138,499</u>	<u>119,600</u>

This pro forma is based on work by Guy Dauncey of Victoria, B.C.

## FINANCIAL ASSUMPTIONS

The financial analysis of a car share organization requires a substantial number of assumptions and estimates. Some of these can be based on real numbers, while others can at best be a reasonable quantification. We have endeavored to include as many “real” numbers as possible in this analysis based on a documented sources.

### Membership

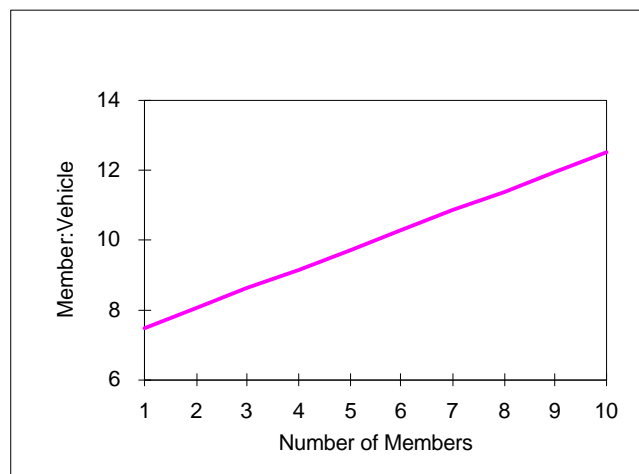
The pro forma income statement and cash flow uses a growth over time scenario. The first year the membership levels are assumed to be at the pilot project level, growing over four years to 600 members. Under the pilot project, the car share organization is expected to have an operating deficit of \$38,471. At a size of 600 members and 48 vehicles, the car share organization will have an operating income of \$47,600.

The proposed growth scenario was also chosen to show the financial characteristics of a car share organization at different membership levels. It would be entirely reasonable for a car share organization to consider a much higher rate of membership growth. This would reduce operating losses considerably. However, growth in membership should not compromise service to members or the demonstration of a successful pilot project.

### Fleet Size

An assumption was made regarding the change in the ratio of members to vehicles. It was assumed that the pilot project would have a member to vehicle ratio of 7.5:1, while a large-scale organization would have a 12.5:1 member-to-vehicle ratio at a membership level of 600. Figure 2 below describes the ratios used. At 150 members there will be 20 vehicles, and at 600 members, 48 vehicles.

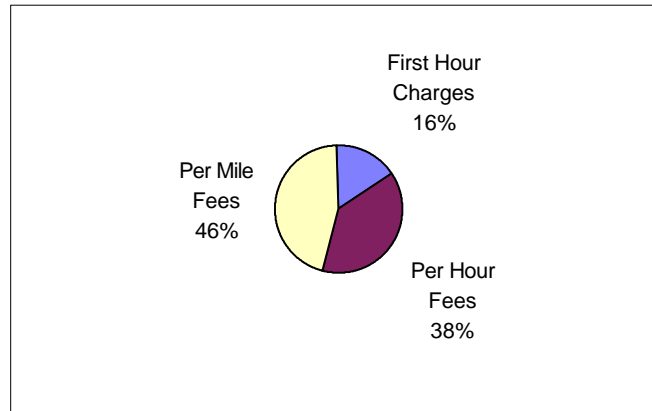
FIGURE 2  
MEMBER TO VEHICLE RATIOS



## Revenues

Revenues are from Application Fees, interest, usage fees, and grants. The grants are assumed to be one time cash to support the car share pilot project. The revenue share for the car share pilot project with the rates described below and the assumptions of member activity made in the financial analysis are described in Figure 3.

FIGURE 3  
REVENUE SHARE BY FEE TYPE



## Expenses

Expenses include management, administration, vehicle leasing and operations, license and insurance, reservations, and parking. The costs for a full-time manager, including benefits, are assumed to be \$50,000 annually. The administrative costs are described in Table 5.

TABLE 5  
ADMINISTRATIVE EXPENSES

Administrative Expense Category	Occurrence	4 Year Avg. Expense <sup>4</sup>
Member DMV screening	ongoing	\$ 1,500
Member credit screening	ongoing	1,500
Corporate insurance	ongoing	500
Director insurance	ongoing	200
Business licenses	ongoing	50
Legal assistance	ongoing	750
Office rent	ongoing	2,400
Office furnishings	first year	1,000
Office computer	first year	2,500
Office fax	first year	500
cellular telephone service	ongoing	710
telephone service, two lines	ongoing	1,200
Annual billing services	ongoing	22,200
Marketing materials	ongoing	563
Reservation system setup	first year	2,250

### Vehicle Leases

The vehicle fleet was assumed to include a uniform mix of the recommended vehicles described in Car Share Operations. These were the Honda Accord DX four-door, the Saturn SL four-door, the Nissan Sentra four-door, and the Nissan Sentra GLE four-door. Dealer cost and depreciation cited from Money Magazine were used to calculate a “lease” expense at 8% interest. Average dealer cost for these vehicles is \$12,448. A lease administrative cost of 5% was added.

### Vehicle Operations

Fuel, maintenance, and repair costs were cited from Money Magazine. Vehicle access equipment and insurance costs were from vendor quotes. Table 6 details the assumptions over time for the reservation system expenses. The reservation call length was quoted by Dave Brook based on his observations in Switzerland. “Other” calls are general inquiries that are part of the marketing activity.

Parking costs were based on quotes for Northwest and Southeast Portland. The average parking costs were assumed to be \$22 per month the first year, increasing to \$37, \$52, and \$60 over the next three years as the operation moves to more expensive neighborhoods. The portion of vehicles needing paid parking in the first year was assumed at 15%, increasing to 25%, 35%, and 45% over the next three years.

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<sup>4</sup>First year expenses are not averaged.

TABLE 6  
SUMMARY OF RESERVATION EXPENSES

	Year 1	Year 2	Year 3	Year 4
Number of Members	150	250	480	600
Number of Uses/Mo.	14	14	14	14
Reservation Call Length	2	2	2	2
Number of Other Calls/Mo.	100	167	320	400
Other Call Length	2	2	2	2
Annual System Cost	\$51,300	\$84,740	\$161,652	\$201,780
Net Cost per Reservation	\$2.04	\$2.02	\$2.00	\$2.00

### General Assumptions

It has been assumed that revenues are received in a timely fashion and all expenses are paid in the same way. There is no accounting for expense or revenue inflation, including volatility of fuel costs. No estimate of state or federal tax liabilities was made. A fixed rate of 5% is used to calculate the interest income. Member turnover is assumed to be zero or the same net equivalent. The expenses for management, reporting, or evaluation required to qualify for the ODEQ grant were not estimated.

Some of the start-up costs were not estimated as they are highly variable and would depend on the organization implementing car sharing. These costs would include writing, design, and printing of brochures, application forms, promotional materials, and a member's manual. The production of advertisements and design of a logo could be extremely expensive if professional firms are hired. These also were not included. It was assumed that simple materials prepared by the car share manager would suffice for the pilot project.

### Multnomah County Motor Vehicle Rental Tax

Multnomah County has a motor vehicle rental tax of 10% of gross revenue. The county code is broadly written, so that car sharing would be included in the definitions of motor vehicle rental. Fortunately, it appears that the imposition of the tax is only applied when contracts governing the rental have a duration of 30 days or less. Car sharing contracts signed by members could reasonably have a minimum duration of three to six months. It was recommended that a formal opinion on this matter should be sought before assuming that this tax does not apply to car sharing.

### Member Behavior Assumptions

Assumptions about the number of member uses, the distance traveled, and the hours used are critical to projecting income. The values used in this analysis came from Metro trip diary information. The section below describes the analysis and the results.

### SUMMARY OF METRO DATA ANALYSIS

Member use of shared cars is a critical assumption in the financial analysis. To support the assumption made, the Portland Metropolitan Area Household Activity and Travel Behavior Survey was used. This survey was conducted by Metro (the Portland, Oregon regional governmental agency) in 1994, and included 4,451 completed household surveys. The survey collected demographic data and transportation behavior in a “activity diary.”

The City of Portland Department of Transportation funded an analysis of the data from the 1994 survey by Metro for use in the car share business plan. The analysis used the extensive data from the activity diaries, which described nearly 67,900 trips. The focus of this analysis was to determine:

- The distribution over time of non-commute automobile use; and
- The average distance and time of non-commute automobile trips.

The first step taken by Metro was to focus on the geographic areas already mentioned as the target for the car sharing market study. Metro selected Portland neighborhoods with high levels of mixed use development and intersection density. These criteria are similar to those used in the preliminary assessment of car sharing. The area used by Metro was somewhat larger but similar to that used in the car share market study area. It included seven additional adjacent neighborhoods: Alameda, Arlington Heights, Hillside, Center, Laurelhurst, Montavilla, and Rose City. The Metro analysis target area did not include two disputed areas between the Irvington and Sabin/Alameda neighborhoods nor Boise.

### **Metro Analysis Demographic Summary**

The Metro analysis included only the study area described above. In this analysis, 8% of households had no cars available for use. About 3.6 non-commute auto trips were made each day. The average household size was 1.73 persons and there were 1.31 cars per household on average. The table below describes the household type by percentage of the target area. “Traditional” refers to two adults living in a household and one working outside the home.

TABLE 7  
METRO SURVEY HOUSEHOLD TYPE

Household Type	Percent of Total Households
Single without children	38.1
Single with children	3.4
Two adults without children	4.4
Two adults with children	4.1
Two incomes without children	12.9
Two incomes with children	8.3
No earned income without children	7.7
No earned income with children	3.0
Retired	16.3
Other uncategorized	1.7

### Metro Analysis Result Summary

The distribution over time of non-commute automobile use proves of great interest to planning a car sharing organization. From the trip diaries, the percentage of trips in automobiles with non-work purposes were calculated on an hourly basis. The results were for all days as data for weekends was scarce. Non-work trips were selected as it was assumed work trips (commuting) would be made via transit or modes other than automobile. The table and graph below describe the results of this analysis.

FIGURE 4  
NON-WORK TRIP ORIGINATION TIMES

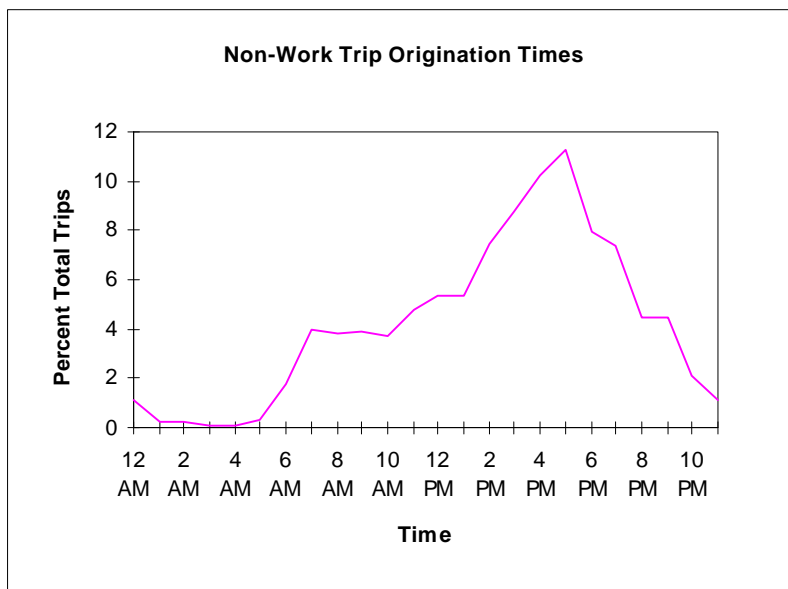


TABLE 8  
METRO NON-WORK TRIP ORIGINATION TIMES

Hour	AM Percent Origination	PM Percent Origination
1	1.1	5.4
2	0.2	5.3
3	0.3	7.5
4	0.1	8.7
5	0.1	10.2
6	0.4	11.3
7	1.8	7.9
8	4.0	7.3
9	3.8	4.5
10	3.9	4.5
11	3.7	2.1
12	4.8	1.1

Over half of the trips began in the 6 hours between 3 p.m. and 8 p.m. (53.9%). The average over these 6 hours is 8.8%. The peak origination hour is 6 p.m., with 11.3% of trips starting at that time. These values can be converted directly to an approximate relationship between members and vehicles in a car sharing organization. The member-to-vehicle ratio is 11.3 for the 6 hour period and 8.8 for the peak hour. Recall that the initial ratio for the pilot project was set at a conservative 7.5 members to one vehicle.

The average distance traveled in the Metro target area for non-work trips in automobiles was 3.6 miles, and the amount of time these trips took was 1.03 hours on average. The average number of non-commute automobile trips per day was 3.6. These numbers could not be used directly in the financial analysis as the number of trips was extremely high.

It was necessary to assume some trip consolidation would take place, that over time car share members would take fewer trips of longer distance and duration. The changes in behavior seen in Switzerland reflects this learning curve. In addition, as some unknown quantity of car share use would be for second vehicles, the usage would be expected to be much lower than that described in the Metro trip diaries.

The car share consulting team assumed members would make use of the car share vehicles on 14 occasions per month on average, while average use of vehicles would be 2.1 hours traveling 14.5 miles. This results in the seemingly low mileage of just over 2,400 miles per year, but should reflect average car share use by a variety of members.



### **13. LONG-TERM PLAN**

This outline for a long-term plan for the car share includes suggestions on accommodating growth beyond the pilot project, evolution of vehicle offerings over time, and potential adjustments in rates, additional services, and technologies to improve service and reduce costs.

#### **GROWTH BEYOND PILOT PROJECT**

The pilot project outlines a targeted marketing approach to limit the number of members initially served. The target may be one or more Southeast Portland neighborhoods. After the project has achieved success, members and vehicles can be added.

Members and vehicles should be added in such a way to maintain a high service level to current members. There may be occasions where new memberships would be delayed due to limited vehicle numbers or parking availability. Membership growth in areas adjacent to those already served will also be easier to accommodate than adding members in new areas. Members in new areas may not be able to access vehicles in other areas readily if the one closest is in use. Also, as a certain density of members is needed to support car sharing, the most suitable location for a new vehicle may not be clear. For example, if five members are signed up, locating a vehicle nearest the center may not be appropriate when later five more members join to one side of the group.

In general, expansion of membership in areas where service is already provided would be based on a calculation of individual vehicle usage. After examination of vehicle availability in areas already served, additional memberships could be solicited in areas where vehicles have less use. Similarly, the potential for adding vehicles to areas where vehicle availability is low should be considered based on vehicle availability. The use of a geographical information system (GIS) may best provide this information by examining distances of members to closest car share vehicles, the availability of member-provided parking, and so on.

To overcome some of these potential problems, marketing for expansion of the car share beyond the pilot project should clarify that car share service is provided only in limited areas of urban Portland. A GIS database of prospective members with information on their interest level (have they made an inquiry or submitted an application or been approved for membership) could perhaps best track and select vehicle locations. Offering service to members outside a five or ten-minute walk is also possible, as long as members can adequately understand that they may not have closer vehicles for sometime.

As with marketing the pilot project, apartment buildings are attractive sites for car sharing. They have a high density and, for the most part, assigned parking spaces. It may be possible to negotiate discounted parking rates if car sharing is shown to be an amenity that attracts and retains tenants.

There may be potential for corporate participation on behalf of their employees. For example companies with employees that travel extensively and occasionally use a car when assigned to short-term work in Portland could be provided with discounted rates to meet their temporary mobility requirements.

## **EVOLUTION OF VEHICLE OFFERINGS**

The primary function of car share vehicles is to provide low-cost, reliable, long-term transportation. Compact to mid-size four door sedans and station wagons were recommended as meeting the needs of most potential members most of the time. Besides adding the same types of cars to the car share fleet as the organization expands, there should be considerations for other types of vehicles.

The other vehicle types most likely to interest members would be pick-up trucks, minivans, and sport utility vehicles (four-wheel drive). There may also be interest in specialty vehicles, such as convertibles or, perhaps, alternative fuel cars such electric or natural gas powered vehicles.

There is no clear information available to establish exactly which other vehicle types might be appropriate to add to the pilot project fleet. The pilot evaluation will provide some insights, but observations of member behavior over time will prove more useful, as will asking directly for member's comments about vehicles. Other vehicles types can be added as actual member interest is indicated. The first most likely vehicle type would be a pick-up truck, as focus group participants most often mentioned a pick-up truck as a useful vehicle.

## **RATE ADJUSTMENTS**

The financial projections are based on substantial assumptions about member behaviors. Over time, it will undoubtedly be determined that revenues require some adjustment. It would be best if rates remain stable during the pilot project or until costs, operational characteristics, and member behaviors of a full-scale car sharing organization have been established. Stability in rates and justifications for revisions (in either direction) would help member confidence.

## **Application Fee and Membership Deposit**

It is not likely any change in the Application Fee would occur. The Application Fee is roughly based on costs incurred in bringing in new members. If those costs are found to differ then change may be justified. The Application Fee might be modified if it were determined to be an excessive hurdle for new member recruitment. Evaluation of the pilot project will provide insight into the latter concern.

The pilot project's Membership Deposit level is set at a relatively high \$600 to ensure the recruitment of the most serious members and to act as security. The market study has suggested this may be slightly higher than many very likely participants would care to pay. It may be the Membership Deposit could be reduced if lower security was deemed acceptable. Another option is to have different membership classes. Other car sharing organizations have considered this to serve users with varying demands for vehicles. A membership class with a lower Membership Deposit might pay higher hourly and per mile rates.

Another type of membership category to be considered would be family or household members. These individuals could pay a lower Membership Deposit, or there may be different individual deposit amounts for one, two, or three drivers at the same address.

## **First Hour Charge**

The First Hour Charge is intended to support some costs associated with scheduling and general administration of each use by members. The financial estimates suggest it will account for 16% of revenues. If members use a higher-than-expected amount of time with the contract scheduling service, there may be a justification for increasing the First Hour Charge.

## **Per Hour Fee**

The Per Hour Fee was established to encourage members to use their time with vehicles wisely. It is already set at a level that seeks to accommodate most very likely participants. Financial projections estimate that the Per Hour Fee will account for 38% of revenues in the pilot project. The most likely change in Per Hour Fees would be a modification of the relationship between weekday and weekend rates. This should be determined by examining actual member demand and estimating a price elasticity.

## **Per Mile Fee**

The Per Mile Fee represents the vehicle's operating costs. It is already set at a level to accommodate most very likely participants. Financial projections estimate the Per Mile Fee will account for 46% of revenues. Any change in Per Mile Fees should be based on measurement of actual operating costs and member surveys.

## **Member Penalties**

As outlined in Section 11, penalties are not proposed for member noncompliance under the pilot project. However, such penalties may be outlined in any member agreement. These could be for 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. 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.

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 failures 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.

Unauthorized usage will probably not be a problem. Depending on the circumstances (member emergency, incorrectly recording scheduled time or date), some unauthorized usage may result in only a monetary penalty during the first several occurrences. However, it may also be grounds for membership termination if it causes problems for other members.

## **ADDITIONAL SERVICES**

Discounted alternative mobility services, such as taxis and airport shuttles, could be offered if members are interested. Because of the additional effort and complexities in costing and estimating demand for these additional services, they are not part of the pilot project. Discounted airport shuttle service may be easier to arrange than discounted taxi service, as there are fewer providers to negotiate with.

Some car share organizations (in Europe) offer relationships between transit and car share. In one case, the car share membership card is also a bus pass. This type of relationship would have benefits for both transit use and car sharing and should be considered when evaluating potential additional services.

Some car sharing organizations offer bicycles set up to carry larger loads than typical bikes. Usually, these are available at no charge for members wishing to pick up a large purchase or move items.

Emergency roadside assistance may be a desirable additional service. During the pilot project the manager will be providing defacto emergency service. As the scale of the

operation expands, it may become cost effective to secure a contract towing company to perform this service.

## **CAR SHARE TECHNOLOGY**

From an operational point of view, there may be a number of technical considerations for service expansion. The most obvious of these are onboard computers and direct vehicle communications. These technologies can reduce some operating costs and improve the service level. However, currently available equipment may not be “cost effective.” It may not be configured as required for car sharing, or may not yet have a track record of reliable operation.

### **Onboard Computers**

Onboard computers were discussed in Section 9. The onboard computer has some security and management advantages, and relieves members and the car share organization of the responsibility keeping track of and keying usage data by hand. The onboard computer may also help avoid unauthorized use by members. The quantifiable cost savings of eliminating manual data entry offers an estimated payback of about three years.

The onboard computers would feature keyless entry. Instead of the common code proposed in the pilot, these keyless entry transmitters will each have a unique code assigned to a particular member. A list of current members would be resident in each onboard computer, so only those authorized would be allowed access. Once inside, the onboard computer would electronically open a keybox for access to the vehicle key. A member could be ‘restricted’ or terminated without collecting the keyless transmitter.

With the onboard computer system, all vehicle access, vehicle hours of usage, and vehicle mileage would be recorded automatically. The manager would download the data electronically for billing purposes.

### **Direct Vehicle Communication**

Direct vehicle communication could provide member security, immediate notification of theft or unauthorized use, and offer an ability to know when vehicles are returned. The billing system could also use direct vehicle communication, thus always have current information on member activity.

Depending on how the system is configured, there could be provisions for member communication from the vehicle. If a cellular system is used, a cellular phone handset might be provided in the car for emergency calls.

## 14. EVALUATION OUTLINE

The car share pilot project seeks to meet business and social goals. In justifying the effort to start-up a car share organization, some measurement is required. In the same way, some measurement must take place in order to justify promoting this concept to reduce vehicle emissions, vehicle distance traveled, congestion, and parking. This evaluation outline of the car share pilot project provides a comprehensive approach to making these measurements.

The outline presented is a “wish list” that may not be accommodated by available budgets, but shows what may be possible and what may well be worth pursuing. Such an evaluation goes beyond simple inference and provides estimated parameter values with known probabilities and accuracies. In most cases, evaluation planning and data gathering must take place at the proper time order to present supportable conclusions.

For this project, a comprehensive post-project evaluation will not be possible a year or more down the road without understanding member behavior before car sharing. The data must be collected as the pilot project is implemented. Baseline travel behavior can be assessed by member surveys, taken upon application.

The key evaluation issues are:

### I. Market Response

#### A. Customer/Member Satisfaction

- Logistics
- Communication
- Administrative process
- Reasons for joining
- Reasons for leaving

#### B. Public Awareness/Knowledge

- Support
- Interest

### II. Organizational Assessment

#### A. Logistics

#### B. Communication

- Internal
- External

#### C. Administrative processes

### III. Financial Analysis

#### A. Comparisons to pro forma

- B. Review of expenses
- C. Fee structure review
- D. Potential impacts of organization expansion

#### IV. Mobility Behavior Assessment

- A. Vehicle distance traveled/alternative transportation use
- B. Changes in vehicle ownership
- C. Estimates of vehicle distance traveled and emissions reduction
- D. Estimates of energy consumption reduction

#### **Evaluation Details**

The strategy for measurement should include the following:

- Surveys of members/customers, including any who have left
- Interviews with organization staff
- General population survey of neighborhood with pilot

The evaluation has a three-fold goal:

- assess market responses to determine how well the pilot meets members' needs and attracts support from the general marketplace;
- assess the pilot project organization's ability to expand to full-scale and recommend improvements to ensure success; and
- estimate how the social goals of vehicle distance traveled, emissions, and vehicle ownership reduction are met.

#### **Task 1. Work plan.**

#### **Task 2. Survey of members/customers.**

Members/customers will be surveyed twice during the first year of the pilot. The first time will be after the first quarter of project operation. The second time will be during the fourth quarter of project operation. These surveys will be by mail, with two mail follow-ups and a phone follow-up.

- The first survey will provide a view of the member/customer response to the first quarter. This is likely to be a "shakedown" period. Therefore, it will be critical to receive feedback to fine tune the pilot. Additionally, this will offer members/customers an opportunity to voice their concerns in a constructive fashion.
- The second survey will provide a summary picture of member/customer response near the close of the first year.

The key issue addressed in these surveys will be customer/member satisfaction. Components of satisfaction are reactions to:

- Logistics: Were cars available when needed? Were members able to get the keys easily? Were cars close enough to be convenient? Were cars well maintained? How might logistics be improved?
- Communication: Did members feel they were well informed? Did they feel they knew who to call if they had questions or concern? How might they change communications?
- Administrative process: Was the scheduling process satisfactory? Were they able to make reservations easily? Were they able to get the car they wanted? Were bills accurate?
- Reasons for joining.
- Reasons for leaving.
- Demographics/Attitudes: To match with market assessment.
- Automobile use behavior under car sharing vs. owned vehicle.
- Mobility options behavior under car sharing vs. owned vehicle.

### **Task 3. Interviews with car sharing project staff.**

Interviews will be conducted with car sharing project staff at two points during the first year of the pilot project. The first will be just after the first quarter of project operation; and the second will be during the fourth quarter of project operation.

The focus of these interviews will be to develop an organizational assessment of the car sharing pilot. The main issues to be addressed are:

- Logistics: How were cars deployed? Were there any difficulties encountered in ensuring car availability? How did members obtain the car keys? How many cars were required to fulfill member requests? How have problems been resolved?
- Communication: What type of communications were sent to members? How were they informed of their responsibilities? What is the internal staff information dissemination process? How have problems been resolved?
- Administrative processes: How was scheduling organized? Were there any problems in setting up the accounting processes?



#### **Task 4. Survey of the general population in the target neighborhood.**

This optional survey seeks to determine how the participating neighborhoods respond to the car sharing pilot. The survey will be conducted during the later part of the fourth quarter of the pilot. The primary focus of the survey will be to assess public awareness of the project. The key components of this will be:

- Knowledge: Were neighborhood members aware of the project? What was their response to the marketing materials?
- Support: Did they consider joining the car sharing organization? Did the project cause any problems for them?
- Interest: Does car sharing seem practical? Does it seem appealing? Would they consider joining in the future?
- Demographics/Attitudes: Match to market assessment and members/customers.

## Portland Car Sharing Business Plan

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