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Carlink II: Research Approach and Early Findings

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The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California. This report does not constitute a standard, specification, or regulation.

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CARLINK II: RESEARCH APPROACH AND EARLY FINDINGS

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EXECUTIVE SUMMARY

CarLink II is a commuter-based carsharing pilot project administered by the Institute of Transportation Studies at the University of California, Davis (ITS-Davis) in conjunction with Caltrans, American Honda Motor Company, and Caltrain. Partners for Advanced Transit and Highways (PATH) researchers are conducting the evaluation. Launched in Summer 2001, CarLink II continues the investigation of commuter-based carsharing that was originally explored in the 1998 CarLink longitudinal survey (Shaheen, 1999) and the 1999 CarLink I field test (Shaheen *et al.*, 2000). Lessons learned during the CarLink I field test helped guide the project team's design of the CarLink II project, resulting in several differences and improvements.

The original CarLink I field test ran from January to November, 1999 and featured 54 individuals sharing 12 natural gas powered Honda Civics. The vehicles were based at the Bay Area Rapid Transit (BART) station in Dublin/Pleasanton, the eastern terminus of the BART system. The shared cars were equipped with smart technologies including tracking, communication, and reservation systems to facilitate access and logistics. The model incorporated transit-based carsharing for traditional and reverse commute travel patterns, as well as a day-use fleet application, tested at a major employment center—the Lawrence Livermore National Laboratory (LLNL). The CarLink model includes three separate user groups (Homebased Users, Workbased Commuters, and Workbased Day Users), each of which used the vehicles differently and paid fees accordingly. Key CarLink I study findings include:

- Even though CarLink users' commutes took approximately 10 minutes longer on average, they found them less stressful;
- The combination of CarLink, BART, and carpooling resulted in a net commute reduction of approximately 20 vehicle miles (or 32.2 kilometers) per commuter per day (on average) across the fleet;
- CarLink resulted in at least 20 new BART trips each day; and,
- Several Homebased Users stated that if CarLink became a permanent service, they would sell one of their personal cars, which would greatly reduce their transportation costs (Shaheen *et al.*, 2000).

Building upon the knowledge and experience gained in CarLink I, the CarLink II program reflects several changes to the initial model. Chief among these differences were the decisions to transition the program to an ongoing service at the end of the pilot phase and to test it in a different location with a new transit provider and business partners. CarLink II launched in Palo Alto with Caltrain and several businesses located in the Stanford Research Park in Summer 2001. The main CarLink II user components are:

- **Homebased Users:** This group pays \$300 per month to have access to vehicles on evenings and weekends. They drive a CarLink vehicle to the California Avenue Caltrain station each weekday morning and drive one home each evening.

- **Workbased Commuters:** Members of this group are employees of Stanford Research Park businesses, who subscribe to CarLink, and drive the vehicles between the Caltrain station and their worksites as part of their daily commute. Their employers pay \$50 per month per vehicle for this service.
- **Workbased Day Use:** Businesses pay \$300 per vehicle per month to give their registered employees access to the vehicles during the day for personal and company trips.
- **Vehicles:** Twenty-seven 2001 Ultra Low Emission Honda Civics.
- **Technology:** CarLink II employs a seamless, customized system that coordinates vehicle tracking, data collection, and reservations. Users reserve vehicles over the Internet and access vehicles using smart key fobs.

The PATH evaluation team, building upon the research of the CarLink longitudinal market research survey and the CarLink I field test (Shaheen, 1999; Shaheen *et al.*, 2000), is investigating changes in the perceptions, attitudes, and travel behavior of participants over time. While the principal goal of the CarLink I field test was to examine response to commuter carsharing, the present study also focuses on CarLink commercial potential and technology assessment. The primary tools used to investigate these topics are focus groups, questionnaires, travel diaries, data collected automatically by in-vehicle technology, operational data, and feedback from the CarLink management staff and project partners.

At the time of this report, researchers had already conducted two focus groups, several months preceding the CarLink II launch. Focus group results were used to assess CarLink response and to gather input on final design details (e.g., refueling logistics and brochure development). Attendees were mostly from the Palo Alto area, and many transit commuters were recruited to attend. The participants reacted positively to the CarLink concept overall. They had many questions, comments, and suggestions and expressed a willingness-to-pay for the CarLink service of approximately \$300 to \$350 per month for Homebased Use.

This PATH research will provide valuable information to aid in the design of future carsharing systems, as well as helping to improve and transition the on-going CarLink II pilot project to a permanent enterprise. At the conclusion of the evaluation period, researchers will prepare an overall program and economic assessment, based on cost and revenue records (i.e., both monetary and in-kind). These data will be used to predict CarLink II's economic forecast, under various scenarios, and user behavior and satisfaction. This analysis will be essential in advising the CarLink partners in the appropriate directions to take the program at the conclusion of its "pilot" status.

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SECTION ONE: INTRODUCTION

The CarLink II project continues the investigation of commuter-based carsharing that was originally developed in the CarLink longitudinal survey (Shaheen, 1999) and the CarLink I field test (Shaheen *et al.*, 2000). The understanding gained during the CarLink I field test helped guide the design of CarLink II, particularly the decision to make it a pilot project with plans to transfer its operations to an on-going service provider. This report begins with a brief summary of the CarLink I field test. Next is a description of the CarLink II project and how it differs from CarLink I. This section is followed by an overview of the CarLink II research methodology and a discussion of the initial focus group results from October 2000.

SECTION TWO: CARLINK I SUMMARY

The CarLink I field test ran from January to November 1999, and featured 54 individuals sharing twelve natural gas powered Honda Civics. The vehicles were based from premium parking spaces at the BART station in Dublin/Pleasanton, the eastern terminus of the BART system. The vehicles were equipped with smart technologies including tracking, communication, and reservation systems to facilitate access and logistics. The model incorporated transit-based carsharing for traditional and reverse commute travel patterns, as well as a day-use fleet application, tested at a major employer (Lawrence Livermore National Laboratory (LLNL)). The field test was implemented and researched by two teams at the Institute of Transportation Studies-Davis (ITS-Davis) at the University of California, Davis. Project partners included American Honda Motor Company, California Department of Transportation (Caltrans), the BART District, Partners for Advanced Transit and Highways (PATH), and LLNL. INVERS (a German smart carsharing technology company) and Teletrac provided the advanced carsharing and vehicle tracking technologies.

The CarLink model includes three separate user groups, each of which used the vehicles differently and paid distinct fees. The three groups were:

1. **Homebased Users** drove a CarLink vehicle between their homes and the Dublin/Pleasanton BART station each workday, using the car over night and on weekends. They were charged \$200 per month for this package.
2. **Workbased Commuters** rode BART to the Dublin/Pleasanton station from their home stations and drove CarLink vehicles to and from work at LLNL. There was a fee of \$60/month per car, which was shared with a co-worker by carpooling.
3. **Workbased Day Users** used CarLink vehicles for business trips or personal errands during the day. An initial fee was determined, through focus groups and questionnaires, of \$1.50 per hour and \$0.10 per mile for personal trips. However, participants did not pay for work trips because LLNL donated the compressed natural gas (CNG) fuel for this program. The Workbased Commuters were a subset of this group.

All user fees included fuel, insurance, registration fees, and maintenance costs. Roadside assistance and an emergency taxi service were also provided. In addition to vehicle support services, CarLink I implementation staff supported the program by cleaning and occasionally refueling the vehicles, as well as maintaining e-mail and phone contact with users.

The research team employed questionnaires, household interviews, and focus groups to explore CarLink attitudes and use over time. Although the CarLink I participant sample was not statistically significant (i.e., only 54 enrolled), valuable lessons may still be drawn from these survey, interview, and vehicle data results. CarLink I findings include operational understanding, participant profiles, behavioral findings, cost and revenue data, and directions for future research (Shaheen *et al.*, 2000). Key study findings are:

- Even though many CarLink users' commutes took longer (on average, approximately 10 minutes longer), they found them less stressful.
- CarLink users drove personal vehicles less than before joining the study. Workbased Commuters also increased their use of BART for recreational travel, perhaps because they became more familiar with the transit system and had easier access to it (e.g., preferred parking at the BART station).
- The combination of CarLink, BART, and carpooling resulted in a net commute reduction of approximately 20 vehicle miles (or 32.2 kilometers) per commuter per day (on average) across the fleet. This reduction was primarily due to increased Workbased Commuters BART use, since most Homebased Users already commuted with transit prior to CarLink. Furthermore, CarLink resulted in at least 20 new BART trips each day.
- Several Homebased Users said that if CarLink became a permanent service, they would sell one of their personal cars, which would greatly reduce their transportation costs. Workbased Commuters were more hesitant about selling a private vehicle until transit services improved, and CarLink could supply more lot locations and vehicle variety (e.g., minivans and pickup trucks).
- Most Workbased Commuters interviewed said that they would return to solo driving during their commutes after CarLink ended, but would try to carpool more frequently than they had previously.
- Principal CarLink program costs included vehicle depreciation, fuel, insurance, registration, maintenance and administration, and the COCOS and Teletrac technologies (i.e., smart carsharing systems). Approximately 20 percent of program costs were covered by the field test. This is not surprising since the study's main objective was focused on gauging participant response rather than on optimizing costs and revenues. Given the small sample size, the results should not be considered necessarily indicative of commuter carsharing in general.

SECTION THREE: CARLINK II PILOT PROGRAM

The CarLink II pilot program is based on the same general model as CarLink I. However, lessons gleaned from user feedback and recommendations from the CarLink management and the project partners suggested several changes to improve the model and research focus. Overall, it was decided that more could be learned by adapting the model to a new setting and creating a permanent enterprise. This section describes the CarLink II project components and how they differ from CarLink I. Table 1 (below) summarizes the major differences between CarLink I and II.

Table 1: Differences Between CarLink I and II		
Study Characteristics	CarLink I	CarLink II
Number of Vehicles	12 Vehicles	27 Vehicles
Primary Transit Partner	BART	Caltrain
Transit Station Location	Dublin/Pleasanton	Palo Alto
Vehicle Type	Compressed natural gas Honda Civics	Ultra low emission Honda Civics
Homebased Users	Up to 10 households, paying \$200 per month.	Up to 25 households, paying \$300 per month.
Workbased Users	Up to 20 employees of LLNL, paying \$60 per carpool (\$30 each).	Up to 50 employees of businesses at Stanford Research Park (primarily). The businesses pay \$50 per month per vehicle for employee commuters.
Day Users	Employees of LLNL pay \$1.50 per hour and \$.10 per mile	Employees at Stanford Research Park businesses have access to vehicles for business and personal use. Employers pay \$300 per vehicle per month to subscribe to the Day Use service.
Employer	One: LLNL	Many: Several private companies at research park
Technology	In-vehicle tracking, smart key kiosk at transit station, smart cards, manual key boxes at LLNL, and on-line scheduling system at LLNL	In-vehicle tracking, smart key fob entry, on-line reservations, and in-vehicle navigation system
Program Length	Field test designed for limited 10-month duration	Pilot program with planned transition to on-going shared-vehicle service
Research Goals	Document demand for commuter-based carsharing systems and gauge user satisfaction and needs	Continued analysis of commuter carsharing (in a new setting) with greater statistical confidence (i.e., a greater sample size) and emphasis on economic viability

3.1 Homebased Users

Homebased Users have access to the vehicles on evenings and weekends and pay \$300 per month. These members live in or near Palo Alto and drive a CarLink vehicle to the Caltrain California Avenue station on weekday mornings, before taking a train to work (generally to San Francisco or San Jose). Upon returning from work, they access one of the fleet of vehicles waiting at the station and drive it home. Thereafter, participants

essentially use a CarLink vehicle as a personal car before returning it to the station the next weekday morning.

All user fees for every group include maintenance, registration, insurance, and fuel costs, with users performing the bulk of the actual refueling (households have a mileage limit of 1,000 miles per month, after which they are charged \$.25 per mile). Roadside assistance and emergency taxi services are also provided. The CarLink operations staff also supports the program by cleaning and occasionally refueling the vehicles, as well as maintaining e-mail and phone contact with users.

3.2 Workbased Commuters

Workbased Commuters are employees of Stanford Research Park businesses, who use CarLink vehicles that Homebased Users park at the Caltrain station, to commute to and from the California Avenue station and their work sites. Employers pay \$50 per month per vehicle for employee access for commuting. While each business has its own contract with CarLink II, all encourage carpooling among their users. This represents a significant change from the CarLink I model, where Workbased Commuters paid for their own commute subscription.

3.3 Workbased Day Users

Workbased Day Users are employed by business subscribers of the Stanford Research Park (i.e., the same companies as for Workbased Commuters) and use the vehicles for personal and business trips throughout the day. Employers pay \$300 per month per vehicle for Day Use. Day Users reserve vehicles over the Internet. This represents a noticeable difference from CarLink I where Day Users were nominally charged for their trips, based on mileage and time. Thus, employer subscribers pay a total of \$350 per vehicle per month for Day Use and workbased commuting.

3.4 Location

CarLink II is based out of the California Avenue Caltrain station in Palo Alto, while CarLink I operated from the Dublin/Pleasanton BART station in eastern Contra Costa County. Palo Alto was considered an appropriate choice for CarLink II because of its congestion and relative jobs/housing balance (i.e., there are large potential pools for Homebased Users and Workbased Commuters).

Furthermore, many of the businesses in the Silicon Valley area have innovative recruitment and employment benefit packages. The companies most interested and suited to CarLink II participation include those with regular work schedules (in contrast to “dot coms”) and range in size between 100 to 600 employees. Since the number of subsidized shuttle services deployed in this region each year is limited, it is not uncommon that many employers are unable to secure a shuttle service. In addition, many smaller employers (the predominant model in this area) are unable to support a shuttle service. CarLink can serve employers of almost any size (by scaling the number of vehicles

contracted) without the same level of local subsidy required by a traditional feeder shuttle service.

3.5 Transit Partner

CarLink II is partnered with Caltrain, a commuter rail system that runs for approximately 75 miles between Gilroy (south of San Jose) and San Francisco. The decision to partner with Caltrain was primarily dictated by location, as BART ends in Daly City.

3.6 Vehicle Fleet

The size of the CarLink fleet has increased from 12 to 27 vehicles, consisting entirely of 2001 Ultra Low Emission Vehicle (ULEV) Honda Civics. CarLink II's larger size enables researchers to gain a more sophisticated understanding of carsharing's niche potential with greater statistical significance.

3.7 Employers

A major difference from CarLink I is the present program's focus on providing commuter feeder and day use services to *many* companies in the region rather than a single employer. Working with multiple employers will test CarLink's ability to administer a more logistically difficult program.

During site selection, the CarLink II team chose to work primarily with one group—the Stanford Research Park—in recruiting five to six employer participants. As its name suggests, the Stanford Research Park primarily houses research companies, whose type and size vary widely. High-tech law firms, software companies, pharmaceutical research companies, and several “dot coms” are housed at the park on over 700 acres. There are 10 million square feet of developed facilities, 162 buildings, 150 companies, and 23,000 employees.

3.8 Technology

In CarLink II, multiple employer and employee participation required the development of integrated carsharing technologies to coordinate vehicle tracking, data collection, and reservations. Smart key fobs enable instant vehicle access and eliminate the need for multiple “key boxes” at transit stations and work locations as in CarLink I. Users can reserve vehicles over the Internet. The potential of these technologies to enhance service capabilities and reduce program costs is central to the CarLink II program and to realizing the economic potential of this shared-vehicle model.

3.9 Economic Viability

In the CarLink I field test it was very difficult to assess the economic viability given the small sample size and unique partnership with LLNL (i.e., the Lab donated fuel and did

not pay for Day Use). CarLink II includes a business model evaluation, enhanced through partnership with a commercial employment center.

Homebased Users are paying more for the service in CarLink II—\$300 versus \$200 per month. The revised CarLink II model also includes a monthly subscription for Workbased Day Use (i.e., \$300 per month) instead of a fee for individual Day Use trips. Because of these and other factors, CarLink II resembles a commercial venture more than CarLink I did.

SECTION 4: CARLINK II STUDY GOALS AND RESEARCH METHODOLOGY

As mentioned earlier, CarLink II builds upon the research of the CarLink longitudinal survey and the CarLink I field test. The current research investigates the perceptions and attitudes of carsharing participants through focus groups, questionnaires, travel diaries, household interviews, and automatically collected in-vehicle data. The present study expands upon the previous work by examining the new CarLink model and focusing on CarLink's commercial potential and technology assessment. This research will provide valuable information to aid in the design of future carsharing systems, as well as helping to improve and transition the CarLink II pilot project to an on-going permanent enterprise. The primary study instruments and methodology are outlined below.

The overall hypothesis is that the CarLink II model can successfully meet the transportation needs of its members (i.e., commute, personal, and business trips depending on the user group) with commercial potential. This study employs a longitudinal survey design. This design recognizes that attitudes are shaped and develop over time and will be affected by CarLink participation. The research methodology employed can be characterized as a longitudinal or panel design because the same sets of households are examined over time.

4.1 Focus Groups

Focus groups were the first research instrument employed. Two were conducted several months preceding the CarLink II launch to investigate carsharing perceptions and gather feedback on final design details (e.g., costs and recruitment techniques). These focus groups were used to collect rich qualitative data from participant and moderator interactions. They also allowed researchers to monitor the level of emotion or enthusiasm for a subject; these data proved invaluable to the CarLink system design. The focus groups consisted of individuals living in the Palo Alto area (i.e., primarily potential Homebased Users), recruited at Caltrain stations and through "cold call" telephone recruitment. Researchers told potential participants little about carsharing before the focus groups to avoid over-enrollment of individuals, who might wish to join CarLink, and might understate their true willingness-to-pay to affect CarLink rates. The complete focus group protocol is included in the appendix to this report. Focus groups are also planned with program participants mid-way and at the end of the evaluation period, as appropriate. During pre-program focus groups, reaction to the CarLink concept was

generally favorable (full summaries are included in the appendices).

Summaries from the two initial focus groups follow.

4.1.1 First Homebased User Focus Group

The first focus group was held on October 4, 2000, and consisted of six men and four women, all from the Palo Alto area. Two of the individuals had recently retired and one was a full-time student. Three of the participants used Caltrain to commute at least half the time, three seldom or never used public transportation, and the remaining attendees used transit sporadically. Each participant's household had at least two individuals and two cars. Four individuals were 24 to 40 and four were 41 to 64 years of age. Seven participants had college degrees, and the remaining three had some college education. Seven of the individuals had household incomes of \$80,000 or more.

The focus group began with a transit discussion. Overall, attendees were positive about public transportation but often find it inconvenient. Their main concerns in order of importance included:

- 1) Connectivity (schedules should be better coordinated with other transit services);
- 2) Accessibility (stop locations are often inconvenient, and it is difficult to park at BART or bring bikes on Caltrain);
- 3) Transfers (often too many are needed for short trips); and
- 4) BART should be extended further south. Participants said that they enjoyed taking public transportation for longer rail trips (i.e., BART, Caltrain, and European systems), but generally do not enjoy taking transit for short, local trips.

After this discussion, the moderator introduced the CarLink concept and participants shared their questions, reactions, and suggestions. Participants had questions regarding insurance, smoking, vehicle cleaning, contract details, fuel costs, CarLink use not linked to Caltrain, and how CarLink use could be adapted to atypical commute days. These questions were answered in as much detail as time allowed to the group's general satisfaction. A draft of the CarLink II recruitment brochure was then shown to participants, who provided numerous comments and suggestions about the layout and content.

Attendees suggested an introductory package be instituted to allow users to try the system before pledging a long-term commitment. Participants were also concerned that it might be difficult to use Caltrain to commute every day and that the CarLink system needed to make allowances for this (perhaps with extra vehicles at the Caltrain station). While most focus group members felt that Homebased CarLink use might not work for them, all offered suggestions and thought that it had potential. Foremost concerns addressed system costs (especially since CarLink must be proven reliable before most would be

willing to give up a personal car) and emergency procedures (i.e., how personal and vehicle emergencies would be handled).

Next, participants discussed what they liked and disliked about automobiles and how much they spend per month (attendees estimated individual components that added up to between \$550 - \$1,250). Attendees also explored their willingness-to-pay for different CarLink II packages. The preferred package for Homebased membership included exclusive use on evenings and weekends, 1,000 miles per month allowance (which was considered higher than necessary), and guaranteed free parking. Everyone insisted on free parking at the Caltrain station, and a few thought that premium parking was significantly better. Participants stated that \$300 per month was reasonable, and \$350 might also be reasonable once CarLink had proven itself as a reliable, convenient service. There was some interest in a commute-week *only* package (i.e., no weekend use), but the willingness-to-pay for this package dropped to \$150 per month due to logistical concerns (e.g., how would participants exchange and retrieve vehicles on weekends).

4.1.2 Second Homebased User Focus Group

The second focus group was conducted on October 25, 2000, and consisted of four men and four women, again from Palo Alto and surrounding areas. One participant was a full-time student while the rest were employed full- or part-time. Five of the participants take a combination of Caltrain to San Francisco each day and a shuttle downtown, while the rest use Caltrain only occasionally. Six of the households had two vehicles, and all had four or fewer individuals in their households. Six of the participants were 24 to 40 and the remaining two were 41 to 64 years of age. Six had college degrees, and three had incomes of \$80,000 or more.

Everyone in the focus group was at least an occasional Caltrain user, and most were frequent users. All participants were generally positive about transit. Due to their familiarity with transit, many had very specific transit issues to discuss, particularly with respect to their commute. Most felt that their commute satisfaction would improve significantly, if their commute were one-half hour shorter. This might be addressed through a combination of faster trains and shorter headways. Key transit issues identified were:

- 1) Connectivity (Muni is not well timed with Caltrain in San Francisco);
- 2) Headway (poor Muni connectivity occasionally leads to missed trains and long wait times); and
- 3) Transit Benefits (transit has many positive attributes, particularly the ability to read or relax during a commute and to save gasoline).

Next, the moderator explained the CarLink concept, and the participants offered questions and comments. Participants raised questions about items left in the cars, maintenance, contract details, program management, vehicle availability, and refueling. Some of the attendees felt that the vehicles should be environmentally-friendly cars, and most stated that the vehicle quality was important. Participants thought that users should

be responsible for keeping the vehicles neat and should be expected to refuel vehicles a couple of times a month, depending on usage.

The moderator next directed the conversation towards participant attitudes about automobiles in general and their monthly costs (estimated between \$250 - \$1,200). The moderator also presented a range of possible CarLink II packages. As with the first focus group, attendees preferred exclusive Homebased Use on evenings and weekends, 1,000 miles allowed per month, and guaranteed free parking. Once again, a 1,000 mile limit was considered higher than necessary and free parking was deemed essential. While premium parking was not considered vital, it was felt that it would provide good advertising. Willingness-to-pay among participants varied more than in the first group (i.e., from \$100 to \$650 per month), but most stated that \$300 to \$325 per month for Homebased Use was reasonable. Some participants, who were wary of leases, thought CarLink should provide a “buy-in” program in which membership costs decrease the longer an individual is in the program. Many felt that an exclusive commute-week service could work, but they did not explore an estimated fee for this service (due to focus group time limitations).

4.1.3 Operationalization of Focus Group Lessons

PATH researchers, the CarLink II operations staff, and project partners used the findings from the two initial focus groups to refine various aspects of the project, both for marketing and logistics. The participants gave direct feedback on the brochure design, but the implementation staff also noted what initial questions and concerns they had. Subsequent recruitment materials endeavored to better answer these concerns (e.g., by promoting how CarLink increases accessibility and how it is prepared adequately for emergencies). An extensive discussion on how often CarLink users should be expected to refuel the vehicles helped inform the management’s decision on that issue. Finally, a key goal of the focus groups was to gather participant preferences for a range of usage packages and their willingness-to-pay for these services. Overall, the preferred package for Homebased membership included exclusive use on evenings and weekends, up to 1,000 miles per month allowance, and guaranteed free parking at the Caltrain station. Both focus groups decided that a range of \$300 to \$325 per month was reasonable for homebased use; this was a strong influence on the CarLink management’s pricing decisions.

4.2 Questionnaires

The second research instrument consists of a series of three questionnaires. Participants take the first after they join CarLink II and before they start using the vehicles, the second mid-way through their first year, and the final at the conclusion of the 12-month pilot or when they leave the program. To complement the advanced nature of CarLink II, questionnaires are conducted on-line. While Internet surveys are becoming more commonplace in marketing fields, few transportation projects have used computers (exceptions include the REACT! web-based Computer Assisted Self-Administered Interview project at UC Irvine and the Computerized Household Activity Scheduling

Elicitor (CHASE) software program at the University of Toronto) (Ming and McNally, 2001; Doherty and Miller, 2000). Through Internet questionnaires, data entry and analysis are streamlined and less prone to investigator error. Ideally, an on-line questionnaire combines the best features of mailback surveys, which often have low return rates but are completed accurately, and telephone interviews that have better completion rates but suffer from respondents wishing to end interviews quickly (Stopher, 1992; Richardson *et al.*, 1995; Goldenberg, 1998). As with a mailback survey, respondents are able to complete computerized questionnaires when their schedule permits, but they avoid mailing hassles.

The questionnaires (administered at different times) are almost identical between groups, allowing PATH researchers to monitor and explore changes attributable to CarLink II. The two heads of participant households (if appropriate) will each complete similar questionnaires. The first-phase questionnaire consists of the following sections:

- **Current Travel Patterns:** Mileage and time used for each commute mode, commute costs, and workplace parking issues.
- **Travel and Work:** Number and trip types made during the workday, modes used during the workday, and trips made on the way to or from work.
- **Household Vehicles:** Number of household vehicles and plans for household vehicles while using CarLink.
- **Attitudes and Opinions:** Opinions of current (i.e., pre-CarLink) transportation modes, psychographic scale questions (e.g., Vehicle Hassle, Transportation/Environmental Scale, Experimental Scale, and Transit Scale)¹, and strengths and weaknesses of CarLink II.
- **Costs:** Importance of different CarLink services, willingness-to-pay for different vehicles, general willingness-to-pay, and willingness to sell a personal vehicle.
- **Demographics:** Gender, household composition, education, employment, age, income, and ethnic background.

Researchers will compare the responses from these questionnaires to other phases and participant travel diaries and automatically recorded vehicle data.

4.3 Travel Diaries

Researchers also employ a three-day travel diary (i.e., two consecutive weekdays and a weekend day), which is the third research instrument. To evaluate CarLink's

¹ The respondents answer a series of questions related to their opinions and attitudes about transportation and other items. Their answers are combined to create different scales, allowing each individual to be scored, for example, on their satisfaction with their current modes, perceived vehicle hassle, and early adopter tendencies. Respondents answer questions on a scale of one to five. Then researchers weight the related questions, sum them, and divide them by the total number of questions in each group to provide a "scale score" between one and five for each respondent. Transportation researchers have found that attitudinal scales are an efficient way to reduce data and capture attitudes that individual questions can overlook (Richardson et al., 1995; Babbie, 1990).

effectiveness in decreasing congestion, reducing air pollution, lowering parking space needs, and increasing transit ridership, researchers need to know how members traveled before and during the program. Before joining CarLink II, all participants are required to complete an on-line travel diary, assisted by a small “memory jogger,” which they carry with them over the three days and reference while submitting their diary. Subsequently, researchers compare the pre-CarLink travel data to CarLink vehicle usage data collected automatically, as well as travel diaries completed during the evaluation.

4.4 In-Vehicle Data Collection Technology

Finally, the CarLink in-vehicle technology provides the fourth study instrument, collecting usage data automatically. Researchers can view these data real-time (i.e., the fleet manager can monitor vehicles at any time) and archive them. Data collected include:

- User ID,
- Start and end times,
- Start and end locations (street locations), and
- Fuel level (to an eighth of a tank).

CarLink researchers use these data to calculate total vehicle miles traveled, number of trips, amount of fuel used, time of use, and other statistics.

At the end of the evaluation period, researchers will prepare an overall program and economic assessment, based on cost and revenue records (i.e., both monetary and in-kind). These data will be used to predict CarLink II’s economic forecast, under various scenarios, as well as user behavior and satisfaction. The final report will also consist of the CarLink operations team’s lessons learned from the program design phase, recruitment, and implementation. As CarLink II develops from an experimental pilot project into a stand-alone operation, this analysis will aid in deciding its future directions and economic promise.

SECTION FIVE: SUMMARY

The CarLink II program, building upon lessons learned from CarLink I and the CarLink longitudinal survey, will provide a significant step in understanding the potential for transit-based commuter carsharing in the United States. CarLink II incorporates considerable changes from the earlier incarnation, particularly in terms of the business model and the goal to run CarLink II as a permanent enterprise.

Launched in Palo Alto in July 2001 and operated by ITS-Davis, CarLink II provides mobility options for households living or working in the region. While giving participants much of the flexibility of a private automobile, CarLink II shifts people from congested highways to public transportation. The three user groups, Homebased, Workbased Commuters, and Workbased Day Users, drive the 27 vehicles at different times during

the day. Each vehicle is utilized by multiple individuals during the day, reducing costs for the consumer, decreasing the need for parking spaces, and facilitating the shift to transit.

The PATH research team is using a variety of tools to investigate changes in the perceptions, attitudes, and travel behavior of the participants over time. While the principal goal of the original CarLink I field test was to examine response to commuter carsharing, the present study also focuses on the commercial potential of CarLink and a technology assessment. For this purpose, the PATH research team is employing focus groups, questionnaires, travel diaries, data collected automatically by in-vehicle technology, operational data, and feedback from the CarLink operations staff and project partners.

At the time of this report, two focus groups had been conducted and the participants had begun completing the initial phase of questionnaires. The focus groups were used to gather feedback on final design details and to fine-tune marketing techniques. Participants were mostly from the Palo Alto area and were a mix of regular and infrequent Caltrain users. The focus groups began with discussions about participant views on their current transportation modes and options and then proceeded to an explanation of the CarLink concept. Various marketing aspects were discussed (e.g., the CarLink brochure), as well as logistical issues (e.g., what incentives would be necessary to encourage users to refuel the vehicles) and users' willingness to pay for the service. The findings from these focus groups were used by the CarLink management to decide various program details.

This PATH research will provide valuable input to improve CarLink II and to aid in the design of future shared vehicle systems. At the conclusion of the evaluation period, researchers will prepare an overall program and economic assessment, based on cost and revenue records. These data will be used to predict CarLink II's economic forecast, under various scenarios, and user behavior and satisfaction. This analysis will be essential in determining the appropriate directions to take the program at the conclusion of its "pilot" status and the potential for future shared vehicle programs in California and the nation.

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APPENDIX

FOCUS GROUP PROTOCOL AND SUMMARIES

**Focus Group Protocol
Homebased Users
Palo Alto, California**

October 4, 2000/October 25, 2000

Part I: Introduction (10 minutes)

- Moderator introduction and focus group purpose
- Permission to record (i.e., video and audio)
- Focus group overview
- Participant introductions
 - Transit ridership
 - Auto ownership
- Transit attitudes
- Congestion attitudes

Part II: What is CarLink (20 minutes)

- CarLink system explanation (Susan Shaheen)
- Possible CarLink deployment plan (Bay Area), asking for input as Homebased Users
- Questions & Answers

Part III: CarLink Marketing and Response (20 minutes)

- What do you like and dislike about CarLink?
- Why or why not participate in the program?
- Ideas for marketing CarLink to Homebased Users in Palo Alto
- Show brochure (Focus Group Number One)
- Discuss brochure reactions
 - What impression does brochure give?
 - Response to logos and layout
 - Anything unclear?

Break (10 minutes)

Part IV: Auto Likes/Dislikes and Car Costs

- What do you like about autos?
- What do you dislike about autos?
- What costs do you pay each year to support auto use (generate list)?
- Generate range of costs for each item
- Sum costs for year and divide by twelve for monthly costs (Post these totals on wall for reference)

Part V: WTP for Homebased Use

- Present range of scenario packages:
 - Base package: exclusive use on evenings and weekends, mileage (1,000 per month)
 - Base package, plus guaranteed parking
 - Base package, plus guaranteed and preferred parking
 - Base package, plus unlimited mileage
 - Weekly use only (i.e., commute package)
 - Change over time (and if permanent service)
- Rank packages
- Assign values for each scenario (and over time and if permanent service)

Part VI: Program Logistics

- Billing
 - How do you prefer to pay (e.g., invoice, check, credit card, etc.)?
- Fueling
 - Willing to refuel?
 - What incentive to refuel?
 - Prefer reimbursement?
 - Prefer credit card in CarLink vehicle?
- Cleaning
 - If cleaning not included, incentives to clean vehicle?
- Parking
 - How close do you want the parking at transit site?
 - Willing to walk 100 yards?
- Technology
 - Interest in navigational system, concierge service, cell phone, panic button?

Adjourn and Disperse Incentives

CARLINK II FOCUS GROUP ONE: HOMEBASED USERS

Cubberley Community Center, Palo Alto, CA

7:00 PM, October 4th, 2000

Moderator: Susan Shaheen

Notetakers: John Wright and Nihar Gupta

Participants: 10

Visitors: Linda Novick (CarLink II Field Test Manager) and two visitors from Honda R&D

Recruitment Process:

- **Initial Recruitment:** The first recruitment technique involved a PATH researcher greeting trains returning to the Palo Alto and Atherton Caltrain stations in the evening. This technique was abandoned for two reasons. First, it was difficult to approach more than one person departing a train at one time. Second, it was thought that Caltrain passengers from only two stations would present a biased sample for the initial focus group. While some Caltrain passengers were desired participants, it was decided that transit users and non-users should be represented. Four of the final 10 attendees were recruited through this process.
- **Final Recruitment Method:** To provide a more representative participant population, random phone recruiting was conducted. A web-based telephone book was used (i.e., where residences are listed by telephone number rather than alphabetically). Four different Palo Alto telephone exchanges were chosen, and the first 100 telephone numbers for each prefix were contacted. Each person or answering machine was invited to participate in a focus group that would explore transportation options and the carsharing concept in particular. Faxes, modems, busy signals, and no answer households were not re-contacted due to time restraints. A relative balance between genders, ages, and transit users/non-users was sought; after the first 50 calls, the screening process was refined to exclude non-commuters. Out of a total of 394 numbers called, six focus group participants were recruited.

Participant Demographics (10 Attendees):

- Four women
- Two recently retired individuals; one full-time student
- Every household has two to five vehicles
- Three use Caltrain to commute at least half the week; three don't use public transportation; and others use transit occasionally.
- **Household Size:** Four participants had two people in their households; four had three; one had four; and one had five.
- **Commute Characteristics:** One household had no commuters; two had one commuter; four had two commuters; one had three; one had four; and one had five. Two participants no longer commuted; four generally drove alone; two used a combination of driving alone and Caltrain; and one used Caltrain primarily.

- Marital Status: Four participants were single, and six were married.
- Age: One was 23 or younger; three were 24 to 40; four were 41 to 64; and one was 65-74.
- Education: Three participants had some college; one had an Associate's degree; one had a Bachelor's degree; three had Master's degrees; and one had a PhD.
- Employment Status: Four were employed full time; one was self-employed, two were employed less than full time; and three were retired or unemployed.
- Occupations: Two participants were Manager/Administrators; two were Professional/Technical; one was Clerical/Administrative; one was a Writer/Musician; one was a College Professor; and three did not list a profession.
- Income: One participant had a household income of \$10,000 to \$19,999; one of \$20,000 to \$49,000; two of \$80,000 to \$109,000; five of over \$110,000; and one of none.

Agenda:

- I. Introduction
- II. What is CarLink?
- III. CarLink Marketing & Response
Break
- IV. Automobile Likes/Dislikes & Costs
- V. Willingness to Pay for Homebased CarLink Use

Summary:

Ranked Transit Issues

1. Connectivity—Even when stops are convenient, schedules are often poorly matched with other transit services or unreliable.
2. Accessibility—While some participants had access to convenient bus stops, most felt that stops were often inconvenient (at least on one end). There is not enough parking at BART (not declared as a problem at Caltrain) and limited room for bikes on rail transit.
3. Transfers—Need to transfer too many times to go short distances.
4. Extending BART would be helpful.

Overall, the participants liked the idea of public transportation, but they often find it inconvenient to use. Their main suggestions were to align schedules better between different bus lines and Caltrain, put stops closer to activity centers, and reduce the number of transfers. Many people said they enjoyed riding public transportation in Europe, and it was useful for going into San Francisco. For local trips, however, it was not worth it (i.e., too big a hassle and time consuming). Because they like the line-haul portions of public transportation best (e.g., Caltrain and BART), CarLink II could presumably facilitate connectivity.

Questions Raised about CarLink (in order of discussion)

1. How is insurance covered?
2. Are the vehicles smoke free?
3. How are they cleaned?
4. What is the term of the contract (daily, monthly, yearly)?
5. Who pays for fuel?
6. What if you don't use Caltrain daily?
7. Are cars specifically assigned to individuals or is there a different vehicle each time?
8. Wouldn't shuttles be cheaper or more environmentally sound?
9. Will there be advertising?
10. What if I want to take a car for a week?
11. What if I want to take a car for the entire day (rather than leaving it a rail station)?

After a few questions, the participants seemed to understand the concept adequately, if not perfectly.

Suggestions

- A try-before-you-buy discount for the first three or six months. Since CarLink is a new concept, participants felt that it should be easier and cheaper at first to reduce member risk.
- Allow members who do not use Caltrain every day. As most participants used Caltrain less than five days a week, this was a logical reaction.
- Provide a variety of vehicles, including pickups and minivans. Include low-emission vehicles (i.e., electric vehicles) in part of the fleet and allow individuals to reserve whatever vehicle they need.

Even participants who were poor candidates for CarLink (e.g., do not commute) were able to step back from their specific situation to offer suggestions to improve it for others. Participants felt that most people would be hesitant at first and would like an introductory period. Vehicle choice would be useful. Finally, they could imagine it working for someone they knew (even if it did not fit into their lifestyle).

CarLink Reactions (in order of discussion)

- Seems a welcome alternative, although I work at home too much to use it.
- Appealing if cheaper than your own car.
- Has to be enough cheaper than a personal vehicle to notice difference and offset inconvenience.
- "I'd worry if emergencies arose" (individuals seemed to think having access to help or "panic" button or telephone would be a good idea).
- Need cars at both origin and destination stations.
- Bikes would be a good modal alternative to supply (as well as cars), e.g., at the Palo Alto transit center or college campuses.

- Works well for commuters but not for neighborhood trips (this comment is likely an artifact of the CarLink model vs. carsharing generally).
- Good instead of a second car.
- Are they similar to rental cars in that people would be able to drive frivolously, e.g., fast driving or careless treatment? Need to get people invested in the system and to foster a sense of community to make system work.

Most participants thought the overall concept was a good one, but that it would require management to run it smoothly. They seemed to have doubts that many of these details could be solved, but they were relieved to hear of CarLink I's success. Participants felt that it would not be a solution for everyone, but that it might replace a second vehicle in some households.

Brochure and Marketing

- Make the CarLink logo red.
- Why CarLink II? What happened to *CarLink I*? No one has heard of CarLink I, so it doesn't make sense to call it CarLink II. Maybe CarLink Bay Area? This name might foster the sense of community desired to invest people in the system.
- The logo needs to be simpler.
- The font is too small and too much like handwriting, too "cheesy."
- The brochure cover is too weak, too much like an inside page. "The cover does not make me want to open it."
- Need a warmer, bolder, and splashier design.
- Need shorter explanations.
- Photo too old-fashioned on cover (i.e., the train); styles vary too much (i.e., between car and train on cover).
- Train photo too oppressive.
- Use photo of the actual car.
- Logo on car should be catchy, but subtle, so it isn't too noticeable.
- Give costs comparisons (e.g., car ownership, rental car, and taxi).
- Likes "Is CarLink for me?," give more examples like this.
- Tell the environmental coalitions and organizations (e.g., Bay Area Action) about CarLink and get them to promote on their email distribution lists.
- Put posters on trains and at stations.
- Have someone hand out information at stations.
- Market through the companies involved for the Workbased components.
- Hand out information to people stuck in traffic (e.g., at busy intersections).
- Have CarLink T-shirts and other items (e.g., coffee mugs).
- Information on Internet. Several people seemed to think Internet information was obviously needed, although not necessarily for advertising (i.e., individuals would log on, once they've heard of CarLink).
- Run ads in newspaper.
- Press releases to get articles in newspaper.

Overall, people felt that the CarLink logo needed work and that the brochure cover was not sufficiently “cover-like.” They also felt that it could be improved with cost comparisons between modes and examples. They did not seem insistent that specific program information be included. They thought that CarLink should be marketed towards current Caltrain users on the platforms and in trains. The brochure was revised significantly based on these comments.

Automobiles

- *Likes:*
 - Convenient
 - Flexible
 - Aesthetic appeal
 - Like privacy
 - Allows time for decompression, “therapy”
- *Dislikes:*
 - Congestion
 - Cost of gasoline
 - Maintenance costs
 - Environmental problems
- *Costs Per Year (high and low ranges noted):*
 - Insurance \$350 to \$600
 - Car Payment (depreciation) \$2400 to \$4800
 - Maintenance (plus time) \$300 to \$1200
 - Opportunity cost for investment \$700 to \$3500
 - Registration (and smog check) \$100 to \$350
 - AAA roadside service \$45 to \$60
 - Parking (and your time) \$50 to \$425
 - Fuel (\$700) \$2000 to \$2500
 - Time in congestion \$500
 - Clean/wash \$120 to \$250
 - Mental/physical and time costs \$500 to \$1,000

CarLink Packages Investigated (Willingness-to-Pay)

- *Initial package:* Exclusive use on evenings and weekends, 1000 miles/month, still have to pay \$25 to park at Caltrain. [This option was not considered reasonable due to parking costs, which should be included in basic service.]
- *Basic package including guaranteed free parking* [\$300 reasonable, perhaps up to \$350 after first 6 months.]
- *Basic package including guaranteed free and preferential parking* [Caltrain parking lots are small already, so this option was not considered to be any better.]
- *Basic package(II above) plus unlimited mileage* [\$400 (highest declared was \$420)]

- *Commute week only (i.e., no weekend use)* [\$150 (25% of overall ownership costs). This was determined partly considering car rentals are approximately \$25/day; gas is \$20/week; overall \$155-\$205 per week; and \$600 to \$820 per month.]

Other Scenarios Explored (and mentioned by participants):

- Take vehicle for week (e.g., vacation) \$100/week
- Take vehicle for day \$20/day

From the scenario and willingness-to-pay exercise:

- No one said they needed more than 1,000 miles a month, since CarLink cars would primarily be commute vehicles. There was, however, some interest when someone mentioned that unlimited mileage would mean that one could drive to Tahoe on weekends.
- Guaranteed free parking was considered a necessity (i.e., people wanted to be sure they knew where the vehicle was expected to be parked). Since the Caltrain parking lots are very large, preferred parking was not necessary.

Many participants thought exclusive weekday use (i.e., Monday morning to Friday evening) might be sufficient (or an option for those who only wanted a commute vehicle). However, when discussing willingness-to-pay for this option, they heavily discounted pricing (in contrast to *Basic Package*, e.g., \$300 to \$350/month).

CARLINK II FOCUS GROUP TWO: HOMEBASED USERS

Cubberley Community Center, Palo Alto, CA

7:00 PM, October 25th, 2000

Moderator: Susan Shaheen

Notetakers: John Wright

Participants: Eight

Visitors: Linda Novick (CarLink II Field Test Manager) and Bob Justice from Caltrans

Recruitment Process:

- **Recruitment Method A:** The main recruitment technique involved leaving a Caltrain-approved flyer on windshields at seven Caltrain stations (Lawrence, Sunnyvale, Mountain View, California Avenue, Palo Alto, Menlo Park, and Atherton) during the workday. One of the lessons learned in the CarLink I Field Test was that current transit commuters represent an initial market for carsharing services. Thus, it was decided to recruit Caltrain users with an interest in carsharing. Furthermore, current Caltrain users would be more familiar with issues concerning the transit commute and would be able to assist with the logistical design. Over 850 flyers were deposited on two separate days (500 one week before and 350 a couple of days before the focus group). Ten of these individuals called or e-mailed PATH and signed up to attend, eight of them actually attended. Participants were screened to provide a gender and age balance.
- **Recruitment Method B:** Researchers also tested a second recruitment method, which entailed mailing a letter to 104 Palo Alto residents who had contacted RIDES for Bay Area Commuters to learn more about commute options. It was thought that this group might have an interest in carsharing, and perhaps in using the CarLink system. However, only one attendee came from this group. This low number may be somewhat attributable to the post office, as some recipients called after the focus group to say they had just received the letter, postmarked over one week earlier.

Participant Demographics (Eight Attendees):

- **Gender:** Four women
- **Vehicle Status:** Six households have two vehicles; one household has a single vehicle; and one household has three vehicles
- **Household Size:** Two participants have two member households; three participants have four; and one participant was a single person household (one unknown).
- **Commute Characteristics:** Five participants drive to Caltrain each day, use Caltrain to commute to San Francisco, and then take Muni to a stop nearby business/school. One drives to Caltrain and takes the train approximately five stops, and two work only occasionally and use Caltrain only four or five times a

year. Two households have no commuters; three have one commuter; and three have two commuters.

- Marital Status: Three participants are single, four are married, and one participant's status is unknown.
- Age: Six are 24 to 40; two are 41 to 64.
- Education: One participant had some college, four have a Bachelor's degree, two have Master's degrees, and one participant's educational status is unknown.
- Employment Status: Four participants are employed full time, three are self-employed and/or employed part-time, and one is a full-time student.
- Occupation: Two participants are manager/administrators, five hold professional/technical positions, and one is an artist.
- Income: Two participants have household incomes of \$20,000 to \$49,000; two have incomes of \$50,000 to \$79,000; one has an income of \$80,000 to \$109,000; and two have incomes over \$110,000; and one participant's income status is unknown.

Agenda:

I. Introductions

- Transit Attitudes
- Congestion Attitudes

II. What is CarLink?

III. Auto Likes & Dislikes and Car Costs Break

IV. Willingness-To-Pay for CarLink Use

V. Program Logistics

Summary:

Transit Issues

- Connectivity—Many focus group participants take Caltrain to San Francisco and Muni to commute. While they found the routes convenient, the Muni bus is not timed well with Caltrain, so that they often miss the bus in the morning or the train in the evening. One person takes the early train because the morning express bus waits for the train's arrival.
- Headway—Participants want more frequent train scheduling, during rush hour and on weekends. This is partly because participants often miss their train due to poor connectivity with Muni.
- Transit Benefits—Participants had several positive things to say about Caltrain, particularly that it allows them to relax or read and save on gas.

Everyone in the focus group was at least an occasional Caltrain user, and most were frequent users. All participants were generally positive about transit. Because of their familiarity with transit; however, they had more specific issues to discuss, particularly

with respect to their commute. Most felt that their commute would improve significantly if it were one-half hour shorter, which might be addressed through a combination of faster trains and shorter headways.

Questions Raised About CarLink and General Comments (in order of discussion)

- What happens to lost items?
- How do people react to being unable to leave things in the car?
- How long do the cars hold up with wear and tear?
- Who does maintenance?
- Is this like a group lease?
- Who runs this?
- How do you compare costs to alternative modes?
- What if a car is not available right away? Will I be charged more if I'm late picking up kids from day care?
- Is it possible to put your own car into the program?
- Who does the refueling?
- I choose vehicles especially for me, not one out of a fleet. I do care what the vehicle looks like.
- At what point in their lives do people join the program?
- How does this help parking in San Francisco? Can we have designated drivers to drop us off? (Participant Reply: Isn't that just a shuttle?)
- Environmentally sound cars are a good idea, since they let us try one without the risk of ownership.

Automobiles

- *Likes and Dislikes:*
 - Only want it to be functional
 - Congestion
 - Parking
 - Cost of gasoline, especially for fuel-efficient vehicles
 - Environmental problems
- *Perceived Costs:*

• Monthly payment:	\$0 to \$459/month
• Insurance:	\$50-\$97/month
• Gas:	\$25 to \$200/month
• License/Registration:	\$75 to \$670/year
• Parking (Caltrain is \$10/month):	\$10 to \$50/month
• Fines (speeding, carpool lane, etc.)	\$5/month
• Maintenance (oil, tires):	\$100 to \$500/year
• Repair:	\$400 to \$500/year
• AAA:	\$55/year
• Detailing:	\$0-\$189/month
• Car wash:	\$1 to \$60/month

- Smog (2 yrs): \$25/year
- Accidents deductible: \$500
- Accessories, spoilers: \$0 to \$25/month
- Total \$250 to \$1,200/month

CarLink Packages Investigated and Willingness-to-Pay

- *Initial package:* Exclusive use on evenings and weekends, 1000 miles/month, and \$25 to fee to park at Caltrain.
- *Basic package including guaranteed free parking:* Guaranteed (designated) parking was considered to be a necessity by the participants to avoid people wandering around the parking lot looking for a CarLink vehicle.
- *Basic package including guaranteed free and preferential parking:* This was considered to be the preferred packaged. Proposed prices ranged from \$100 to \$650 per month, although most suggested \$300 to \$325 per month for the Homebased User lease. Preferred parking was not thought to be too much of advantage over guaranteed parking, but participants thought that preferential parking would help to advertise/promote the CarLink program. One individual suggested a buy-in to the program, so that costs come down over time (i.e., making it more like a car purchase and less like a lease).
- *Basic package (II above) plus unlimited mileage:* Unlimited mileage was not considered to be a significant advantage; most people thought 1,000 miles should be more than enough.
- *Commute week only (i.e., no weekend use):* Participants worried about the Friday evening/Monday morning issue of picking up/leaving the vehicle at Caltrain. However, most thought this might work, if most had access to another household vehicle. One person thought it could be left in a local neighborhood lot for weekend use and easily retrieved by Homebased Users on Monday mornings.

CarLink Logistics and Program Attributes

- *Billing:* Participants were not too concerned with the billing method (i.e., they did not express a preference). Both invoices and credit cards were presented as possible means.
- *Refueling:* Participants felt that it was reasonable to refuel two or three times per month. If they had to refuel more often, they would like to be compensated with an incentive—a \$2 -\$3 range per refueling. It was felt that the incentive might be proportional to how low the fuel tank was at the time (i.e., a lower fuel tank requires longer to refuel).

Overall, individuals liked the idea of an incentive, but they also wanted to have a grace period for leaving a fuel tank too low. Participants thought that they should be allowed to leave the tank low a few times each month. They also wanted the CarLink vehicle technology to record how often each individual left a fuel tank low. None of the participants wanted to pay for gasoline and then be reimbursed.

- *Cleaning:* All of the participants thought that program members should keep vehicles neat. However, no one wanted to be responsible for washing vehicles. Participants thought that the CarLink management should hire someone to take care of vehicle cleaning.