BOULDER BAY
ALTERNATIVE TRANSPORTATION PROGRAM SUMMARY

DECEMBER 5, 2008

ATTACHMENTS
Boulder Bay Alternative Transportation Study
Boulder Bay Project Trip Reduction Plan (Employee)

OVERVIEW
A key precept of the Boulder Bay project is to reduce the overall transportation “footprint” on the Tahoe environment. Boulder Bay has adopted a three-tiered approach toward improving the mobility of visitors, residents and employees within the Lake Tahoe basin: 1) Strengthen public transportation through strategic funding commitments focused on enhancing level and area of service; 2) Develop resort overlay transportation programs to address gaps in service; and 3) Provide a network of alternative transportation programs to reduce vehicle trips, increase transit ridership and increase use of non-motorized travel modes. A central strategy is to provide a visitor to the Tahoe Region with a well-rounded complete visit without the need to bring a car. The program outlined below was developed in partnership with the Truckee – North Tahoe Transportation Management Association (TNT-TMA) and the individual funding and partnership commitments were developed based on the input of this agency. Figure A, attached, depicts the various program elements.

PUBLIC TRANSPORTATION
The Public Transportation program will be supported via financial commitments made through the TMA:

1. Increase North Lake Tahoe Express Service Between Reno-Tahoe International Airport and Incline Village / Crystal Bay from 7 runs per day to 11 runs per day during peak travel season
   a. Increases the number of flights conveniently served at the airport from 52 to 93 (from 37 percent of total daily arrivals and departures to 66 percent).
   b. $31,500 annual funding commitment (100 percent of estimated annual increase in subsidy).
   c. Getting visitors to the lake via mass transit significantly increases their likelihood of using mass transit options during their visit.
   d. Forecast Daily Impact on Vehicle-Trips = - 24
   e. Daily VMT Impact = -277 total
The Resort overlay programs will be wholly managed and operated by the Boulder Bay Resort. The following programs will be available to guests and the general public:

1. Frequent Crystal Bay – Kings Beach – Tahoe Vista Shuttle Service
   a. Operate an additional trolley shuttle vehicle during summer, scheduled between existing TART runs resulting in service every 15 minutes during the day. Allows convenient travel between Boulder Bay, beaches, and retail areas without the need to consult the transit schedule. Free fare.
   b. $28,500 annual operating costs.
   c. Would serve Boulder Bay guests, Boulder Bay employees, Boulder Bay customers, as well as anyone else traveling along the corridor.
   d. Forecast Daily Impact on Vehicle-Trips = -50
   e. Daily VMT Impact = -75 total

2. Tahoe Connection Service providing on demand shuttle pick-up and drop-off service to recreation and entertainment locations around the lake.
   a. Reduces visitor dependence on the personal automobile without sacrificing mobility. Would provide guests and residents with convenient free transportation to key destinations such as Sand Harbor State Park, Mt. Rose Summit, Emerald Bay, Sugar Pine State Park, South Stateline, Diamond Peak Ski Area, etc. 24-hours in advance reservation for guaranteed service, as well as on-call service provided on a space-available basis.
   b. $194,400 estimated annual cost.
   c. Service would consist of a fleet of 3 bio-diesel or natural gas powered vans and a concierge dispatch.
   d. Forecast Daily Impact on Vehicle-Trips = -27
   e. Daily VMT Impact = -216

3. Employee Transportation Program
   a. Reduces employee-related trips to and from the resort (see attached "Boulder Bay Trip Reduction Plan"). Includes subsidy of employee transit passes, preferential carpool parking, carpool matching service, and bicycle amenities.
   b. $36,500 estimated annual cost.
   c. Getting employees to and from the site via mass transit or non-vehicle options.
   d. Forecast Daily Impact on Vehicle-Trips = -53
   e. Daily VMT Impact = -209

1. Crystal Bay Alternative Transportation Center
a. Provides two additional bus bays along SR 28 (for a total of four bays), and a center for transit, bicycle and pedestrian travel, along with traveler information kiosks.
b. Includes bays for TART buses (SR 28 to Incline Village, SR 28 to Tahoe City, SR 267 to Truckee) as well as Crystal Bay – Tahoe Vista shuttle and North Lake Tahoe Express van. Called for in the Tahoe Area Regional Transit Systems Plan Study as a key transit facility for the North Shore.
c. Includes bicycling amenities: air compressor and secured parking.
d. $50,000 estimated incremental construction cost. $10,000 per year in maintenance.
e. Make public transportation user friendly for the residents, visitors and employees.
f. Forecast Daily Impact on Vehicle-Trips = - 100
g. Daily VMT Impact = - 489

2. On-site Alternative-Fuel Car Share Program
   a. Help to reduce guest anxiety about the decision to arrive at the site via modes other than the personal automobile. Similar to Zipcar, guests will be able to use single party vehicles only when necessary vs. the current experience of renting a car and then using it for all transportation needs.
   b. $10,000 estimated annual cost.
c. Service would consist of a fleet of 4 electric vehicles for hourly use.
d. Pilot program to begin in spring 2009.
e. Forecast Daily Impact on Vehicle-Trips = - 25
f. Daily VMT Impact = - 198

3. Electric bicycle rental program
   a. Encourage alternative modes of transportation that address the topographical challenges of the Tahoe roads for the average visitor.
   b. $8,000 estimated annual cost.
c. Service would consist of a fleet of bicycles with hub motor electric assist for hourly use. The bikes have an average battery life of 4 hours.
d. Pilot program to begin in Spring 2009.
e. Forecast Daily Impact on Vehicle-Trips = - 20
f. Daily VMT Impact = - 30

In total, this Alternative Transportation Program would increase transit ridership by 415 over the course of a busy peak summer day, or 48,900 passenger-trips over the course of a year. It would reduce vehicle-trips by 298 over the course of a busy peak season day, and would reduce vehicle-miles of travel by 1,494. Annual ongoing subsidy costs are estimated to total $318,100.
The Boulder Bay Resort project proposes to redevelop the existing site of the Tahoe Biltmore Casino area located in Crystal Bay north of State Route 28 (SR 28), including the site previously occupied by the Tahoe Mariner Lodge and the Crystal Bay Motel site. Once complete, the new Boulder Bay Resort will include hotel rooms, condominium units, employee housing units, a casino, restaurant space, meeting space, and retail commercial space. The size of the existing casino would be reduced.

A key element in the overall Boulder Bay plan is to reduce reliance on the private automobile. Along with providing a mix of land uses within the site, Boulder Bay is proposing the implementation of an alternative transportation plan, in order to:

- Provide a high quality resort experience for Boulder Bay guests and customers, without the need for a private automobile.
- Reduce commuting costs for resort employees.
- Minimize overall auto use in the Tahoe Region, with associated reductions in air and noise emissions.
- Participate in community solutions to regional programs to enhance non-auto access both to and within the Tahoe Region.

This plan is based on a review of existing public and private transit services around the lake and an assessment of potential demand for transit services generated by the proposed project. First a review of existing transit services in the North Shore area is presented, followed by recommended improvements, including both stand-alone new services as well as partnerships to expand existing transit services that address any “gaps” in transit service. Other plan elements are presented to improve facilities for non-auto travel, encourage use of
"green" transportation alternatives, and reduce employee travel impacts. An overall estimate of operating costs, ridership, and the number of vehicles eliminated from roadways as a result of the various plan elements is provided.

EXISTING TRANSIT SERVICES SERVING BOULDER BAY

A variety of transit services both publicly and privately funded are available on the North Shore of Lake Tahoe near the Boulder Bay project site, as shown in Table A. The services vary by season and are discussed below.

Year-Round Service

North Lake Tahoe Express

An important new element in the North Tahoe regional transit program is the North Lake Tahoe Express. This service is in its second year of operation, and provides an attractive alternative to the private or rental automobile between the Truckee/North Tahoe region and the Reno/Tahoe International Airport. Of the three routes operated, Route 3 (the "Blue Line") serves the North Stateline area, via Mount Rose Summit and Incline Village. Visitors flying into the Reno/Tahoe International Airport can catch the North Lake Tahoe Express to North Stateline at 5:15 AM, 8:30 AM, 11:30 AM, 2:30 PM, 6:00 PM, 9:15 PM, and 11:55 PM. Return shuttles depart North Stateline at 3:35 AM, 6:35 AM, 9:45 AM, 1:05 PM, 4:00 PM, 7:40 PM, and 10:55 PM. A one-way passenger trip from North Lake Tahoe to the airport is $35.00 and a roundtrip is $60.00. Total annual ridership on the Blue Line is roughly 6,700. About 75 – 80 percent of Blue Line ridership represents trips to or from the Hyatt in Incline Village, a similar type of resort lodging property to the proposed Boulder Bay development in North Lake Tahoe.

Summer Season – End of June to Early September

Tahoe Area Regional Transit Service (TART)

The TART system began service on the North Shore of Lake Tahoe in 1975. Operated by the Placer County Department of Public Works, TART is funded by Transportation Development Act funds, Federal Transit Administration funds, fare box revenues, contract revenues from the Washoe County Regional Transportation Commission for Incline Village service, and by contract revenues from the Town of Truckee and the North Lake Tahoe Resort Association for the Truckee Route.

TART’s “Main Line” route operates on SR 28 and SR 89 along the Northern and Western shores of Lake Tahoe from Sugar Pine Point State Park in El Dorado County on the Southwest shore to Incline Village, Nevada on the Northeast shore. During the summer, half-hourly service is provided between Tahoe City and Incline Village, while hourly service is provided
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<th>Service</th>
<th>Season</th>
<th>Service Area</th>
<th>Span of Service</th>
<th>Frequency</th>
<th>Provider</th>
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<td>Winter</td>
<td>Squaw Valley, Alpine Meadows, Northstar, Diamond Peak</td>
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<td>Ski Resorts</td>
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<td>Incline Village - Tahoe City</td>
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<td>Hourly to West, Half-Hourly to East</td>
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**Total Daily Transit Departures From Boulder Bay**

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Note 1: FY 07-08: Summer = July, August, Winter = December, January, February, March. Fall = September, October, November. Spring = April, May, June.
Note 2: Estimated Northstar Shuttle ridership from last weekend June 2008 to Labor Day.
along the West Shore (as far south as Meeks Bay). As the whole, the route requires four hours to operate using four buses. In the summer, TART service operates approximately from 6:00 AM to 6:45 PM, seven days a week and 364 days per year (the exception being Christmas). The first bus arrives at North Stateline from Tahoe City around 6:24 AM and the first bus departs North Stateline for Tahoe City around 6:00 AM. The last bus arrives at North Stateline from Tahoe City at 6:52 PM and the last bus departs North Stateline for Tahoe City at 6:25 PM. During the summer of 2007, the North Shore portion of the TART Main Line carried nearly 38,000 one-way passenger-trips. The general public one-way fare on TART is $1.50.

Crystal Bay – Tahoe Vista Trolley

Also operated by Placer County is the summer-only Crystal Bay - Tahoe Vista Trolley (Crystal Bay-Tahoe Vista Trolley) service which runs from 10:15 AM until 5:10 PM between the Tahoe Biltmore in North Stateline and the Tahoe Sands Resort in Tahoe Vista using rubber-tired replica trolleys. The service operates every half-hour and is free to passengers. The trolley provides visitors staying in North Stateline with access to the beaches, restaurants, and shops in Kings Beach and Tahoe Vista. Approximately 8,100 boardings were recorded on this service during the summer of 2007 and about one-quarter of those boardings occurred in Crystal Bay.

Northstar Shuttle

A free shuttle is operated between North Stateline and Northstar at Tahoe Resort during the summer months. The shuttle departs the Village at Northstar every hour beginning at 7:00 AM and arrives at North Stateline one-half-hour later. In addition to serving visitors and guests along the route, this shuttle also serves employee housing areas in Northstar and on the North Shore. The last bus leaves the Village at Northstar at 8:00 PM. From May to September of 2007, Northstar operated a similar shuttle between Northstar Village, Sawmill Heights employee housing, North Stateline, and the Hyatt in Incline Village. This route carried 10,660 one-way passenger-trips last year. It should be noted that the bulk of these trips were Hyatt employees living at Sawmill Heights employee housing in Northstar.

Tahoe Truckee TMA Night Service

Using funds gathered by the Truckee North Tahoe Transportation Management Association (TNT/TMA), a free night service is operated by TART. The summer night service travels between Squaw Valley and the Hyatt in Incline Village with on-call stops at Granlibakken Resort on the West Shore. The night service departs North Stateline for Incline Village at 52 minutes past the hour every hour from 6:52 PM to 10:52 PM and departs for Tahoe City/Squaw Valley at 18 minutes past the hour every hour from 7:18 PM to 11:18 PM. In 2007, approximately 15,500 one-way passenger-trips were recorded on the free summer night service, of which about 12 percent boarded at North Stateline.
Winter Season – Mid December to Mid April

TART

During the winter season, half-hourly service is provided between North Stateline and Incline Village and hourly service is provided for the remainder of the Main Line route. Three buses are used to operate a three-hour route. Service in North Stateline begins at 6:00 AM and ends at 7:25 PM. From December 2007 to March 2008, nearly 69,000 one-way passenger-trips were carried on the North Shore portion of the Main Line.

In the winter 2007-08, TART began operating transit service between North Stateline and Truckee via SR 267. Hourly service is operated from 7:00 AM to 5:50 PM. The TART 267 service includes stops in Kings Beach, Northstar Village, Truckee Airport, Hampton Inn, Best Western, and the Truckee Train/Bus Depot. A total of 37,391 one-way passenger-trips were recorded on this route over the winter season.

Tahoe Truckee TMA Night Service

In the winter, a variety of routes on the North Shore, West Shore, Truckee, and Northstar are operated generally every hour between the hours of 7:00 PM and Midnight. A total of 30,816 one-way passenger-trips were carried on this service during the 2007-08 winter season. The North Shore service travels hourly between North Stateline and Squaw Valley between 7:00 PM and Midnight. During the winter of 2007-08, this route carried 16,072 one-way passenger-trips. Approximately 9.6 percent of the ridership was generated by North Stateline and over 44 percent was generated by the Squaw Valley region. Another route travels between Northstar, Kings Beach, and North Stateline from 7:30 PM to 12:30 PM on an hourly basis. This route carried a total of 8,149 one-way passenger-trips. Approximately 39.1 percent of ridership was generated from Northstar and 19.3 percent of ridership was generated from North Stateline.

Skier Shuttles

Visitors and residents of North Stateline can choose between four different free ski resort shuttles during the winter months:

- The Alpine Meadows skier shuttle travels between the Hyatt in Incline Village and the ski resort with a pick-up time in North Stateline at 8:15 AM and drop-off time of 8:50 AM at Alpine Meadows. The return trip departs Alpine Meadows at 4:30 PM.

- The Northstar at Tahoe skier shuttle departs North Stateline at 8:20 AM and arrives at Northstar at 8:45 AM. The return trip leaves Northstar at 4:30 PM.
• The Diamond Peak skier shuttle picks up skiers at North Stateline at 8:07 AM. Return trip shuttles depart the ski resort every half-hour between 2:00 PM and 5:00 PM.

• Squaw Valley’s skier shuttle also departs North Stateline around 8:00 AM for arrival at the ski resort at 9:00 AM.

All shuttles provide connections to the TART Mainline.

Off-Season

TART

During the spring and fall months, half-hourly service is provided between North Stateline and Incline Village and hourly service is provided for the remainder of the Main Line route. Service hours are generally the same throughout the year, beginning at 6:00 AM and ending at 7:00 PM. Ridership during the off-season (April, May, June, September, October, and November) was 52,595 for the North Shore route.

Summary of Existing Services

As the North Stateline area is located at the one point where the enhanced transit services to the east (including the year-round TART half-hourly service and the Diamond Peak skier shuttle service) overlap with the enhanced transit services to the west (including the SR 267 services and the Tahoe Vista – North Stateline trolley service), the North Stateline area has the highest level of transit service of any location along Lake Tahoe’s North and West Shores. In total, existing transit services provide the following number of daily departures (as well as arrivals):

• Summer – 88 daily departures and arrivals
• Winter – 74 daily departures and arrivals
• Off-Seasons – 46 daily departures and arrivals

RECOMMENDED TRANSIT SERVICE EXPANSIONS

The vision of the Boulder Bay project is to create a destination resort where visitors have little need for their own private vehicle in order to enjoy a complete North Lake Tahoe vacation. The potential service expansion strategies discussed below are designed to enhance the “destination resort” aspect of Boulder Bay by addressing existing gaps in transit service.

Expand North Lake Tahoe Express Service

While the existing seven-runs-a-day North Lake Tahoe Express (NLTE) service has proven effective, a review of existing services and ridership indicates the potential for substantial
additional patronage. Appendix A presents detailed information on existing NLTE services and ridership, focusing on Route 3. To provide information applicable to potential new airport service, ridership generated by shopping trips to/from The Summit Reno shopping center are excluded from these figures. A review of this information indicates the following:

- Ridership over the course of the year is surprisingly consistent. While the summer and winter seasons have the highest overall ridership, there are also high ridership days in the fall, and at least modest ridership throughout the year.

- A review of average ridership by run indicates that ridership to the airport is highest in the morning hours (arrivals at 5:00 AM, 8:00 AM, and 11:00 AM). Ridership from the airport is highest in the middle of the day (11:00 AM and 2:20 PM departures).

- A comparison was conducted of the existing NLTE service schedule against the current RTIA airline flight schedule. NLTE vans arriving at the airport were assumed to conveniently serve those flights departing between 60 and 120 minutes after the arrival of the van (to allow for check-in and screening), while NLTE vans departing the airport were assumed to convenient serve those flights arriving between 30 and 90 minutes before the departure of the van. Based on these parameters, existing NLTE schedules only provide convenient service to 52 of the existing 140 daily arriving and departing flights, or 37 percent of the total. In particular, there a substantial number of flights not served in the mid-morning period, the lane morning period, the mid afternoon period, and the mid-evening period.

Reviewing the existing airline and NLTE schedules, a total of four additional NLTE runs would be effective in substantially increasing the number of flights conveniently served. Approximately new service times should be as follows:

- Arrival at RTIA at 9:15 AM, departure at 9:45 AM
- Arrival at 12:05 AM, departure at 12:35 PM
- Arrival at 3:15 PM, departure at 3:45 PM
- Arrival at 6:45 PM, departure at 7:15 PM

In total, these additional runs would provide new convenient service to an additional 41 flights per day, raising the proportion of total flights served from 37 percent to 66 percent. These new service times would increase ridership by approximately 2,100 per year, if operated over four months in the winter and three months in the summer. The additional service would cost roughly $88,100 per year, but would generate $56,600 in new passenger revenues, yielding a net increase in subsidy of $31,500 annually.
Expand Summer Daytime Crystal Bay -- Kings Beach – Tahoe Vista Trolley to Fifteen Minute Headways

The summer season in North Lake Tahoe generates the highest traffic volumes and associated congestion. Therefore, summer should be a focus of transit expansion efforts. The most popular Tahoe summer daytime activity that is not available at Boulder Bay is “the beach.” The most convenient public beaches to Boulder Bay are those along Kings Beach and Tahoe Vista; this proximity and the limited available parking tend to increase the potential for expanded transit service to capture this transit “market.” Guests and residents of Boulder Bay may also wish to frequent shops or restaurants in Kings Beach. As stated above, during the summer months, a Boulder Bay guest/resident could catch a free trolley to the beaches at the Kings Beach State Recreation Area and Tahoe Vista or to Safeway in Kings Beach every half-hour. The visitor could also catch the TART bus for $1.50 per trip to Kings Beach or other destinations on the North Shore every half-hour. As the two services alternate, there is transit service every 15 minutes between North Stateline and Tahoe Vista. TART on-board surveys performed in 2003 by LSC Transportation Consultants, Inc. showed that only 3.5 percent of respondents on the TART bus were overnight visitors whereas a greater proportion, or 23.4 percent, of Trolley respondents were overnight visitors. Other research has shown that by not charging a fare, ridership can be increased by approximately 50 percent. This indicates that there is the potential to increase visitor or Boulder Bay guest/part-time resident transit use through the use of the Trolley and/or free transit service. Additionally, according to recent ridership statistics for both the Crystal Bay – Tahoe Vista Trolley and the summer TMA Night Service, ridership during the first half of July has increased by over 25 percent from the same period one year ago. Therefore, one transit strategy that would reduce summer vehicle trips is to increase the frequency of the Crystal Bay – Tahoe Vista Trolley to every 15 minutes.

For this strategy, summer is defined as the last Saturday in June through Labor Day weekend or 73 operating days. In order to provide service every 15 minutes, one additional vehicle would travel between Boulder Bay and the Tahoe Sands Resort in Tahoe Vista, alternating with the existing Trolley schedule. As at present, the first westbound Trolley would depart North Stateline at 10:15 AM and every half-hour thereafter until 4:45 PM. The new vehicle would depart North Stateline at approximately 10:30 AM and every half-hour thereafter until 4:30 PM.

This service would require 5,690 vehicle service miles and 475 vehicle service hours over the course of the summer. While the existing Crystal Bay – Tahoe Vista Trolley service is operated by Placer County, the additional service could be operated more cost-effectively directly through Boulder Bay. Applying a reasonable unit cost estimate for providing service in-house of $60 per hour, the Fiscal Year 2009-10 operating costs of the additional summer day runs for Crystal Bay – Tahoe Vista daytime Trolley are estimated at $28,500.
The ridership increase associated with this alternative was estimated based on an “elasticity analysis.” This methodology, as presented in the Traveler Response to Transportation System Changes: Interim Handbook (Transportation Cooperative Research Program Project B-12), applies the elasticity of demand for transportation service associated with a change in service level (in this case, service headways) observed at other transit services that have implemented similar changes in the past to the existing ridership data for the Crystal Bay – Tahoe Vista Trolley. As shown in Table B, this analysis indicates a total increase in Trolley ridership of 5,300 one-way passenger-trips over the summer season. This is equivalent to 91 additional passenger-trips on the 10th-highest ridership day of the summer. The expansion of the Crystal Bay – Tahoe Vista Trolley service would also serve the numerous other development projects currently being planned, such as Langundo, Sandy Beach, Kings Beach Village Center, Tahoe Sands, etc.

Year-Round Tahoe Connection Service

Despite the high level of fixed-schedule transit services that will be available for Boulder Bay guests (either existing today, or provided through the services outlined above), there will be some potential transit needs that will not be effective to serve with scheduled bus service. To address these needs and ensure that a Boulder Bay guest can have a comprehensive visit to the region without the need for a car, the “Tahoe Connection Service” will be implemented. Boulder Bay will operate up to three alternative-fueled vans (12-15 passenger) to provide free transit service throughout the Tahoe / Truckee region. Service will be available with confirmation at least 24 hours in advance, as well as on-call service on a space-available basis. Key potential trips to be served by this program include the following:

- Service to dispersed recreation / tourist sites, including Sand Harbor State Park (for beach, hiking and Shakespeare Festival), Emerald Bay, Mount Rose Summit, the West Shore state parks, etc. A reasonable estimate of potential ridership, considering ridership on similar services in other resorts as well as ridership generated by visitor-oriented transit services in the Tahoe Region, is 60 passenger-trips over the course of a busy summer day. Over the course of the year, this service would serve roughly 7,000 passenger-trips

- Service to/from Northstar in periods not otherwise served, such as after 8:30 PM in the summer, and during the existing gap in the winter service schedule between 5:30 PM and 7:30 PM. Based on existing ridership and observed ridership by time of day in other areas, this would serve 12 passengers per day in winter, 5 passengers per day in the summer, or roughly 1,600 over the year.

- Golf is an activity popular among summer tourists, particularly those who stay at destination resorts. The closest 18-hole golf courses to Boulder Bay are the Incline Village Championship Course and Northstar at Tahoe’s golf course, neither of which is currently on a public transit route. The Tahoe Connection Service could provide direct service to these golf courses. (Another possible transit opportunity would be for Northstar to
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establish a request stop at the Northstar golf course on the existing hourly Northstar summer shuttle.) A reasonable estimate of ridership generated by golfers is 20 one-way trips per day, or roughly 1,200 over the course of the year.

- Expanded service could be provided to the ski resorts, beyond the shuttle buses currently available to four resorts. The ski shuttles only offer one departure time in the morning around 8:00 AM. While his time works well for “die-hard” skiers needing to get to the slopes early, many Boulder Bay guests and residents may find an additional mid-morning departure more convenient. It is possible to use the hourly TART service to travel to Northstar, Squaw Valley, and Homewood. Although TART serves Incline Village – Diamond Peak ski resort is not directly served by TART. There is currently a Diamond Peak Ski Shuttle that travels between the Hyatt in Incline Village and the ski resort every half-hour between 8:30 AM and 1:00 PM. If a similar type of shuttle were arranged between Boulder Bay and Diamond Peak, there would be convenient and frequent access via transit to skiing from Boulder Bay. Ridership on a Boulder Bay/Diamond Peak Skier Shuttle was estimated in the following manner:

- Peak day population generated from residential and lodging units at Boulder Bay was obtained from the Boulder Bay Resort Transportation Study. This is about 965 persons.

- It was assumed that 50 percent of the peak population will be skiers. This proportion was obtained from estimates developed by SE Group for studies performed for Royal Gorge and Northstar ski resorts and reduced to reflect the fact that Boulder Bay offers other amenities besides skiing.

- There are a total of six downhill ski resorts (Mt. Rose, Diamond Peak, Northstar, Alpine Meadows, Squaw Valley, and Homewood) within a one hour drive of Boulder Bay. With frequent transit connections and the lure of a cheaper lift ticket (in comparison to other resorts), it is reasonable to assume that 15 percent of the skiing population at Boulder Bay will ski at Diamond Peak.

- Another 10 percent reduction was taken to account for skiers who prefer to drive to the resort.

- The result is a peak day Boulder Bay/Diamond Peak Ski Shuttle ridership estimate of 65 one-way daily passenger-trips. The 10th highest and average daily ridership numbers were determined by applying skiers-per-day data at a nearby ski area to the peak day Boulder Bay/Diamond Peak Ski Shuttle ridership estimate. As shown in Table B, the Boulder Bay/Diamond Peak Ski Shuttle will carry approximately 3,100 one-way passenger-trips for the winter season and 49 one-way passenger-trips on the 10 highest day.
In total, this service is estimated to serve roughly 13,000 passenger-trips. A total of 3,240 vehicle-hours of service are estimated, costing $194,400 per year.

This plan element will address the need for expanded transportation for Boulder Bay residents and guests to/from the Northstar area. Another possible strategy to address this issue considered as part of development of this plan was expansion of TART service on the SR 267 corridor from Truckee through Northstar and Kings Beach, terminating at Crystal Bay. While TART initiated winter hourly daytime service on this corridor in 2007, at present no TART service is provided in the other seasons of the year. However, the cost of this service expansion is substantial (on the order of $403,000 per year for operating costs, and $372,000 in subsidy once $37,000 in fare revenues is subtracted), and the need for this expansion is regional in nature. Rather than fund a portion of this subsidy, a more effective use of Boulder Bay funding would be to fully fund the enhancements to the North Lake Tahoe Express service, and serve the specific transit needs generated by Boulder Bay on the 267 corridor through the Tahoe Connection Service.

OTHER RECOMMENDED PLAN ELEMENTS

Employee Trip Reduction Program

As detailed in the Boulder Bay Trip Reduction Plan, Boulder Bay will commit to the following:

- Designating an Employee Transportation Coordinator.
- Posting ridesharing and alternative transportation information.
- Providing bicycle parking facilities, as well as preferential carpool/vanpool parking.
- Providing a carpool matching service.
- Subsidizing employee transit passes.
- Providing transit amenities and showers/lockers for cyclists.
- Participation in the Transportation Management Association.

In addition, Boulder Bay will improve transit passenger facilities (as discussed below) and provide on-site employee housing. The impacts of the subsidy of employee transit passes on transit ridership is estimated to be 16,400 passenger-trips per year, based upon the existing observed Tahoe Biltmore employee transit mode split, the expected average daily employment at Boulder Bay, and an observed 50 percent increase in transit ridership that typically accompanies elimination of transit fares to the riders.
Crystal Bay Alternative Transportation Center

As called for in the Tahoe Area Regional Transit Systems Plan Study, a transit center in the North Stateline area is an important needed capital improvement for the North Shore. Boulder Bay proposes to provide this facility, expanded to consider other alternative forms of transportation such as bicycle and pedestrian travel. This facility would provide the following:

- Two bus bays along the north side of SR 28 adjacent to Boulder Bay property, in the area east of Stateline Road. In addition to the existing bus bays on the north side of SR 28 just west of Stateline Road and on the south side of SR 28 adjacent to the Crystal Bay Club, a total of four bus bays would be available. These bus bays would be sufficient to accommodate up to 3 TART buses at a time (eastbound service on SR 28 to Incline Village, westbound service on SR 28 to Kings Beach and Tahoe City, and northbound service on SR 28 and SR 267 to Northstar and Kings Beach), as well as the Crystal Bay – Kings Beach – North Stateline shuttle. (The North Lake Tahoe Express vans, the Tahoe Connection Service vans and skier shuttle buses would directly serve the porte cochere).

- Waiting area protected from the elements for transit passengers and other travelers, built into the adjacent building. This will provide space for an information display on transit services, bicycle and pedestrian facilities in the North Tahoe region, and other alternative transportation options.

- A “bicycle station” providing amenities for local and long-distance bicycling, including an air compressor and secured parking.

A preliminary estimate of the incremental construction costs for this facility (as part of the larger site construction project) is $50,000. In addition, Boulder Bay would assume maintenance responsibilities for the facility, up to $10,000 per year.

The provision of a new facility can be expected to stimulate additional transit ridership (as well as non-motorized travel). While many transit systems around the country have developed transit centers, there have been few “before and after” studies conducted to document the ridership benefit. The Redding Area Bus Authority in Redding, California opened its Downtown Transit Center in 1996. Within two months and with no increase in service, ridership increased 22 percent over the trend line. A similar benefit was generated in 1990 by improved facilities in the Alameda County Transit system in Alameda County, California. A series of transit centers and modified routes to serve these new centers, implemented in a portion of the service area, increased ridership in these areas between 7 percent and 32 percent, at a time when the remainder of the service area experienced a 16 percent decline. Based upon this limited information, a reasonable assumption for the increase in ridership generated on transit services would be a minimum of 5 percent. Applying this factor to the
ridership on the routes serving North Stateline, provision of the Crystal Bay Alternative Transportation Center is estimated to increase annual transit ridership by roughly 12,100 one-way passenger-trips per year.

Electric Car Sharing Service

Many visitors to the Tahoe Region are interested in accessing dispersed recreation sites, such as hiking on the West Shore and East Shore. While it will be served by extensive public transit services, some Boulder Bay guests will want access to an auto for at least a day or two of their stay. Providing on-site short-term car rentals for these guest activities can accommodate this desire without guests needing to bring a car (increasing the likelihood of auto use for all of their trip-making). Accordingly, Boulder Bay will provide up to four electric vehicles as demand warrants, and offer short-term rental to Boulder Bay residents and guests. In addition to encouraging use of zero emission vehicles, this service will also tend to encourage use of public transit options for persons arriving and departing the region (such as the North Tahoe Express van service from the Reno Tahoe International Airport), as it allows persons arriving without a car the opportunity to rent a car for only a day or two of their stay. While much of the cost of this program will be recovered through rental fees, an annual subsidy of $10,000 is estimated.

Free “Bicycle Share” Service

Boulder Bay will operate a “bike sharing” program, making bicycles available to any Boulder Bay guest or resident for us to a week at a time. This will encourage bicycle use, particularly for recreational trips between the resort and destinations along the North Shore. A portion of this bicycle fleet will be electric-assist bicycles to help with some of the “topographic challenges” of the North Shore. Estimated ongoing annual costs are on the order of $8,000.

IMPACT OF ALTERNATIVE TRANSPORTATION PLAN ON VEHICLE-TRIPS AND VEHICLE-MILES OF TRAVEL

As shown in the bottom of Table B, the plan elements directly impacting transit ridership are estimated to result in a total increase of 415 transit-passenger trips over a busy summer day, or 48,900 over the course of a year. The estimates of transit ridership impacts can be combined with calibrated model values regarding private vehicle occupancy and trip length to estimate the impacts of the alternative transportation strategies on both the number of private vehicle-trips generated as well as the vehicle-miles of travel. As shown in Table C, this analysis is based upon the following:

- Average vehicle occupancy factors (the number of persons per private vehicle) are drawn from the TRPA regional traffic model. Note that these values vary by type of traveler, with visitors having a relatively high vehicle occupancy and residents / employees having a relatively low value.
| TABLE C: Boulder Bay Alternative Transportation Program Vehicle-Trip and VMT Impacts |
|---|---|---|---|---|---|---|---|
| | Private Vehicle-Trip Impact | Vehicle-Miles of Travel Impact |
| | Avg. Vehicle Occupancy | (One-Way Trips) | | Trip Length | 10th-Highest | Day | Annual |
| | | 10th-Highest | Day | Annual | (Miles) | 10th-Highest | Day | Annual |
| Add 4 Additional North Lake Tahoe Express Route 3 Runs In Peak Seasons | 1.82 | -4 | -1,200 | 35.5 | -142 | -42,600 |
| Vehicle-Trips Replaced by NLTE Ridership (Note 1) | | | Note 1 | -20 | -8,000 | 6.8 | -135 | -40,400 |
| Vehicle-Trips Not Taken on Other Days | | | Total | -24 | -7,200 | | -277 | -83,000 |
| Expand Summer Crystal Bay - Tahoe Vista Trolley to Every 15 Minutes | 1.82 | -50 | -2,900 | 1.5 | -75 | -4,400 |
| Tahoe Connection Service | 2.87 | -27 | -4,900 | 8.0 | -216 | -39,200 |
| Employee Trip Reduction Program | 1.42 | -53 | -13,900 | 4.0 | -209 | -55,200 |
| Crystal Bay Alternative Transportation Center | 1.82 | -100 | -6,800 | 4.9 | -489 | -32,400 |
| Electric Car Sharing "Zipcar" Service | 994 | Note 1 |
| Total Daily Guest Vehicle-Trips | | | % of Guests not Bringing Cars to Tahoe due to Zipcar | 4% |
| | | | Average Length of Stay (Days) | 4 |
| | | | Zipcar Trips per Day | 15 |
| | | | Private Vehicle-trips Not Taken by Zipcar User Travel Groups per Day | -40 |
| | | | Net Change in Daily Vehicle-Trips | -25 | -1,700 | 8.0 | -198 | -13,600 |
| Electric Bicycle Share Program | | | Percent of All Trips to Destinations in Easy Cycling Range | 20% |
| | | | Percent of Potential Trips Shifting Mode | 10% |
| | | | Total Daily Vehicle Trips | -20 | -1,300 | 1.5 | -30 | -2,000 |
| | | | Total Daily Bicycle Trips | 53 |
| TOTAL | -298 | -38,500 | -1,494 | -229,800 |

Note 1: Distance to Reno-Tahoe Int'l Airport. Distance to edge of Tahoe Basin = 11.1 miles.  
Note 2: Based on lodging trip generation. See text.
Average private vehicle trip length values are also drawn in large part from the TRPA regional traffic model. A relatively long trip length was assumed for the Tahoe Connection Service and Zipcar (reflecting the typical trip length to destinations such as Sand Harbor and Diamond Peak, and that most short trips to Kings Beach and Tahoe Vista will be served by the Trolley). On the other hand, the trips eliminated by the Trolley service and the electric bicycle program would be relatively short.

In addition to the vehicle-trips replaced by the increased ridership generated by the additional NLTE runs, this service expansion would also yield a secondary reduction in vehicle-trips and VMT, as visitors arriving via NLTE would be less likely to use a private automobile for other trips while in the Tahoe Region. This secondary benefit is estimated to equal 2 percent of the trips otherwise generated by lodging guests, based upon the number of travel groups accessing the regional on the additional NLTE runs per day, the estimated length of stay, and the total number of lodging/residential units provided in Boulder Bay.

The reductions in auto use associated with the subsidy of employee transit passes as part of the Trip Reduction Program is based upon the ridership and factors applicable to employee travel. An additional 20 percent reduction in auto use is assumed for the other elements of the Trip Reduction Program.

The benefits of the Crystal Bay Alternative Transportation Center are based upon the average travel factor values for all users of the transit systems.

As a relatively new concept, the impacts of a car sharing program (Zipcar) on travel mode decisions related to visitor travel are not well known. Much of the professional literature on the subject (such as the Transit Cooperative Research Program Report 108: Car Sharing – Where and How it Succeeds) focuses on large urban settings. While there are some existing car-sharing programs in resort communities (such as Aspen and Whistler), they are focused on employees and residents rather than visitors. The greatest potential for the Zipcar program is to shift visitors arriving by air away from renting a car. In addition, some visitors within driving distance (like the Central Valley and Bay Area) may choose to not bring a second car if they know that their travel party can “split up” for a day while staying at Boulder Bay. Overall, it is estimated that a minimum of 4 percent of visitors will choose to arrive without a car given the availability of the Zipcar program. At maximum occupancy of the 375 units, therefore, 15 would be occupied by Zipcar user groups. Over the course of a four-day stay (on average), these travel groups are assumed to choose to use a Zipcar for two round-trips, or one one-way Zipcar trip per day per travel group. For the remainder of their trips, however, these travel groups will be using transit or other non-auto travel modes, yielding a net reduction in overall vehicle-trips and VMT each day.
• The benefits of the electric bike program are estimated assuming that the program will have the potential to shift travel mode for those trips within a relatively easy bicycling distance (largely to and from Kings Beach and Tahoe Vista). Twenty percent of all guest/resident trips are estimated to be within this convenient cycling distance. Of these, it is estimated that 10 percent over a busy summer day would shift to the bicycle program. Note that there may well be other recreational trips made using these electric bicycles, but these are not considered to be a traffic benefit as they do not replace what otherwise would be an auto trip.

In total, this Alternative Transportation Program would reduce vehicle-trips by 298 over the course of a busy peak season day, and would reduce vehicle-miles of travel by 1,494. Annually, the program as a whole would eliminate 38,500 vehicle-trips from the North Shore’s roadway system, equating to 229,800 vehicle-miles of travel.
APPENDIX A

Existing North Lake Tahoe Express Route 3 Ridership Data
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### Average Ridership by Run by Day

**For Route 3**

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**Note:** Ridership numbers exclude shopping trips.
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Total Daily Flights: 140
Number of Flights Served by NLTE: 52 (37%)