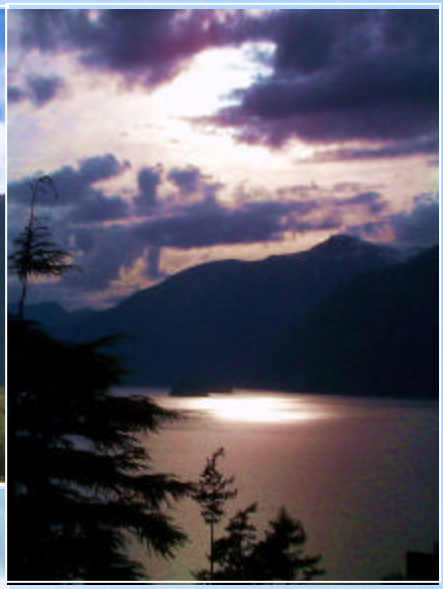
Sea to Sky TDM Study



Final Report

November 2003

TSI consultants

Prepared for:

Ministry of Transportation and Highways

And

Corridor Technical Liaison Committee

Final Report

Sea to Sky TDM Study

November 2003

Prepared by:

TSI consultants

Table of Contents

List of Tables and Figures

1.0 Introduction

1.1 Background

The Ministry of Transportation (MoT) is planning to implement the Sea to Sky (STS) Highway Improvement Project, which will improve safety and reliability of Highway 99 from Horseshoe Bay to Whistler. To complement the planned improvements, the municipalities along the highway corridor had requested that the MoT consider Transportation Demand Management (TDM) measures as a method to improve utilization of the highway and reduce air pollution. Accordingly, the subject study was undertaken to develop a TDM strategy for the corridor, which is the first step toward implementation of TDM measures.

Since TDM strategies and programs are all about changing people's travel behaviour, it was felt that TDM strategies would be most effectively implemented through initiatives of the local governments in the corridor. Furthermore, it was recognized that TDM initiatives would entail coordination and cooperation amongst the corridor districts, municipalities and communities. As such, the MOT, acting as the study facilitator, retained Transys International Consultants Ltd. (TSi Consultants) to prepare this TDM study on behalf of the STS Technical Liaison Committee (TLC).

The TLC comprises key Sea to Sky Highway project staff and representation from the local governments and the Squamish First Nation, and is working closely with key stakeholders and the Community Advisory Groups to deal with project issues that impact their communities. The local governments and other organizations represented on the TLC are:

- Greater Vancouver Regional District
- District of West Vancouver
- Village of Lions Bay
- District of Squamish
- Squamish Lillooet Regional District
- Resort Municipality of Whistler
- Squamish First Nation (represented by UMA)

- Ministry of Transportation
- SNC-Lavalin (Owner's Engineer)

The TLC representatives contributed generously to this report through the process described in the following sections.

1.2 Study Purpose

The overall objective of the TDM Study is "to develop a strategy that will lead to more efficient utilization of the Sea-to-Sky (STS) Highway by encouraging multi-occupant vehicle usage for inter-regional travel and thereby:

- Improve air quality
- Extend the life of planned improvements

Accordingly, the purpose of this study is to evaluate a wide-range of potential TDM that are practical and applicable to the STS Corridor in order to establish and prioritize candidate TDM measures for further study leading toward their implementation.

For this study, the STS Corridor is defined as the urban and rural areas adjacent to Highway 99 North between Horseshoe Bay and Whistler, B.C. **Figure 1.1** highlights the communities and activity centres along the corridor.

Figure 1.1 – STS Corridor Study Area

1.3 Tasks and Study Process

Figure 1.2 shows the overall study approach which included:

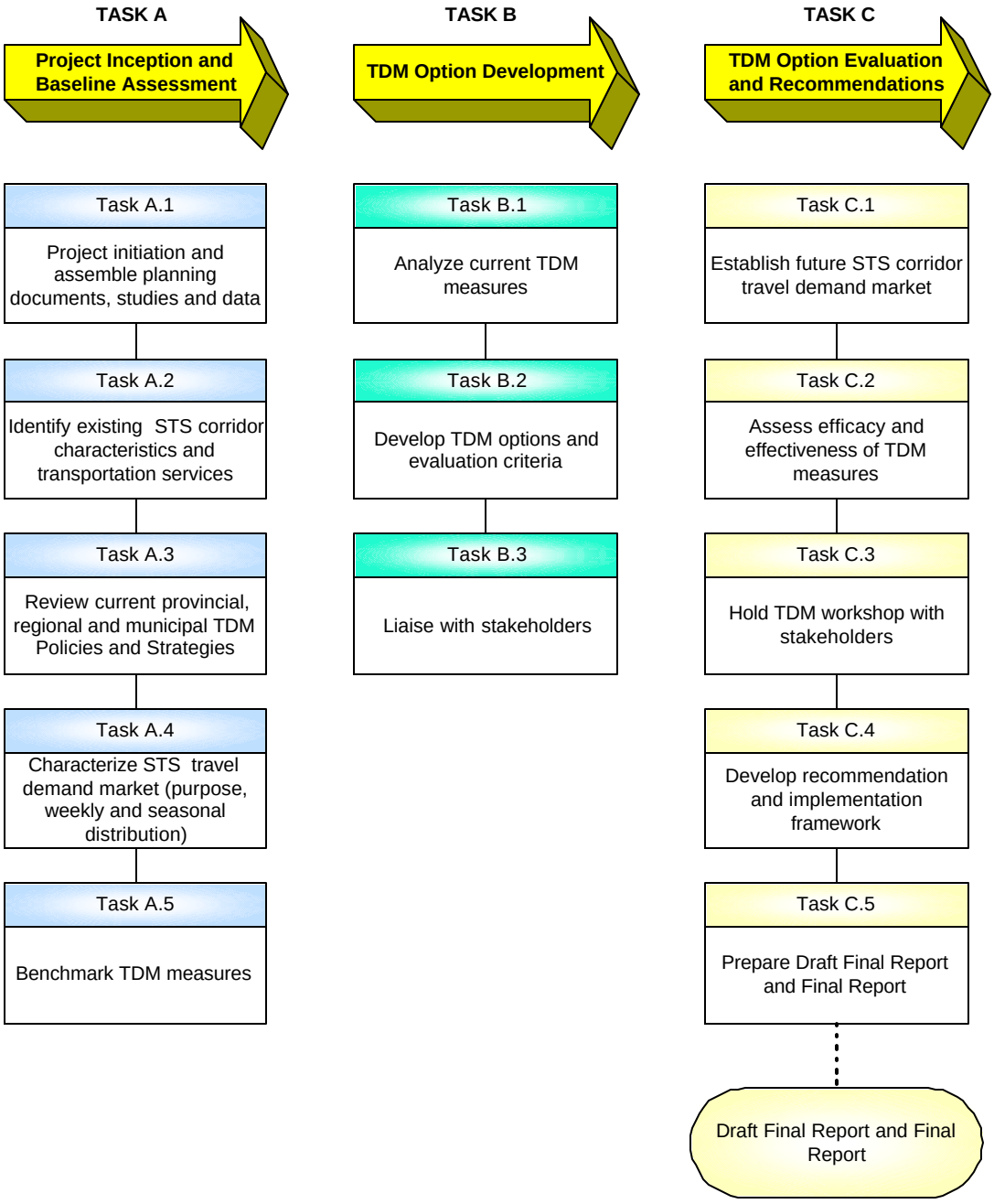
- A review of current policies and practices and their effectiveness in encouraging multi-occupant vehicle usage and reducing vehicular traffic volumes.
- Identification of potential TDM policies including a literature review of international experience.
- An understanding of current inter-urban travel demand in the corridor including market segment by journey purpose and origin-destination.
- Identification of major market segments to target for TDM strategies.
- Assessment of the effectiveness of potential TDM measures in terms of the likely reduction in vehicular traffic (AADT) in the corridor.
- 'High-level' evaluation including consideration of user and institutional cost, socio-political acceptability, economic impacts (particularly on the tourist industry), ease of implementation and technical feasibility.

A consultative approach was adopted to execute the assignment involving a high degree of interaction and input from the representatives of the TLC. The study progress and key findings were discussed with the TLC at the following three junctures in the study:

- TLC meeting of July 24, 2003 – Presentation of the TDM study work plan
- TLC meeting of August 28, 2003 – Presentation of the existing TDM policies and practices, research on TDM practices applied at resort destinations in other countries, Sea to Sky Highway demand markets and characteristics, potential TDM measures and packages and evaluation criteria
- TLC Workshop on September 25, 2003 – Workshop on evaluation of potential TDM measures covering recap of background information, identification of TDM measures for detailed evaluation, TDM evaluation, implementation strategies and recommendations.

The workshop led to a ranking of specific TDM measures according to three priority levels (High, Medium and Low) and, where appropriate, identification of the public and/or private agencies responsible for implementation.

Figure 1.2 – Study Approach



1.4 Report Structure

Section 2 provides the background to the study including a description of the proposed road improvement and existing alternative modes, a summary of existing travel characteristics in the corridor and identification of key market segments for evaluation of corridor TDM measures.

Section 3 provides a definition of TDM, reviews existing TDM policies and practices established for the Lower Mainland and corridor municipalities and provides a brief overview of applicable international experience.

Section 4 identifies and evaluates a list of candidate TDM measures and establishes priorities for each measure and recommends which agency(s) should be responsible for implementation.

Section 5 summarizes the recommendations arising from the study.

2.0 Background

2.1 Previous Reports

This study builds on the work documented in a series of transportation planning reports that describe the travel characteristics and supply options for the STS corridor. These reports include:

- Whistler Comprehensive Transportation Strategy, 1999
- Multi-modal Corridor Transportation Study Horseshoe Bay to Highway 97, Reid Crowther, 2001
- Sea to Sky Corridor – Travel Demand Study, TSi Consultants, 2002
- Sea to Sky Corridor – Modal Diversion Study, TSi Consultants, 2002
- Sea to Sky HOV Lane Concept Overview, Earthtec, September 2002
- Transportation Options for the Squamish Whistler Corridor, BC Transit, 2001

As a result of these studies it was concluded that measures such as tolling will not be pursued and that an upgraded rail service is not a viable alternative for servicing long-term demand in the STS corridor. These studies also established the general design concepts for the improvement of the highway in the corridor in the period leading up to the 2010 Olympics.

2.2 Proposed Highway Improvement

The Ministry of Transportation is planning to implement the Sea to Sky Highway Improvement Project, which involves the upgrade of Hghway 99N between Nelson Creek Canyon at Horseshoe Bay and Function Junction in Whistler, a total length of 95.1 kilometres. The objectives of the improvements are to:

- Improve safety and reliability along the highway corridor;
- Provide additional highway lane(s) in selected areas where capacity increase is most needed;

- Meet the transportation requirements and commitments for the 2010 Winter Olympic Games. The requirements, at a minimum, include 2 dedicated northbound lanes and 1 southbound lane for the period of the Games.

The provincial government has adopted a phased program or "building block" approach toward achieving the long-term configuration of the highway. The first phase of the improvement plan (current project scope) specifies improvements to different parts of the highway to address the most critical corridor needs first. The first phase improvement are scheduled for completion by year 2010 and it includes:

- 4 lanes from Horseshoe Bay to Lions Bay;
- 2 lanes from Lions Bay to Porteau Cove (use BC Rail for third lane during the Olympics);
- 3 lanes from Porteau Cove to Squamish;
- 4 lanes through Urban Squamish;
- 3 lanes from Squamish to Whistler.

The Project is subject to a harmonized review under the British Columbia Environmental Assessment Act (BCEAA) and the Canadian Environmental Assessment Act (CEAA). A formal application was submitted in June of 2003 for Certification in 2004.

2.3 Existing Alternatives in the Corridor

While the automobile is the dominant mode of transportation in the corridor (as shown in **Section 2.4**), alternatives do exist and are well utilized by some market segments. The main alternative for inter-urban travel is privately operated bus service, which is regulated by the Motor Carrier Commission (MCC) and includes:

- scheduled service
- charter service.

At this time, BC Transit provides service within Squamish and Whistler, but does not provide inter-urban service (service is provided between Pemberton and Whistler, but this is outside the study area). BC Transit has developed plans to provide limited service focusing on commuters traveling from Squamish to Whistler (2 trips from Squamish to Whistler in the morning returning in the afternoon). However, this commuter bus service has not yet been implemented due to funding limitations. Note that TransLink

currently provides limited service between Lions Bay and Horseshoe Bay, with connecting service to downtown Vancouver.

For the private bus industry, the MCC issues certificates (effectively license plates) that identify the jurisdiction where the bus can operate. There are three areas of operations relevant for the STS corridor:

- Vancouver-Whistler corridor with a base in Vancouver
- Vancouver-Whistler corridor with a base in Whistler
- Provincial scope

A total of 2 scheduled services and 35 charter services are licensed to serve the corridor directly and represent the first two categories. In addition to these companies, "provincial scope" includes about 40 companies that can carry passengers to Whistler on a request basis and approximately 850 additional companies operating under general "intra-provincial" and "extra provincial" licenses that can serve Whistler as a destination from time to time.

Currently, private scheduled service is available through Greyhound and Perimeter. Greyhound offers 7 round trips per day between the main bus terminal in Vancouver and Whistler (with stops in Squamish and other corridor communities). Fares are $22.5 for a one-way trip between Vancouver and Whistler and $9.75 for the trip between Squamish and Whistler. A book of 10 one-way commuter tickets can be purchased for $56 (or $5.60 per trip), but the current schedule is not convenient for commuting between Squamish and the GVRD. This service caters primarily to the local recreational travel market.

Perimeter offers service from Vancouver International Airport (YVR), providing pick-up service at downtown hotels, continuing directly on to Whistler. During the winter seasons there are typically 11 round trips per day, and typically 7 round trips during the summer. The one-way fare is $58. This service caters to the tourist market arriving at YVR.

Information on charter bus operations in the corridor was investigated as part of the STS Travel Demand Study. This study undertook an inter-urban bus survey that featured interviews with bus operators[1]. The survey profiled the supply and demand

[1] Sea to Sky Corridor Travel Demand Study: Appendix B – Vancouver Whistler Inter-City Bus Demand, TSi Consultants, January 2002.

characteristics of the scheduled and charter service. It found that on average, there are approximately 70 charter bus trips per day (35 round trips) and that this varies dramatically by season. The study estimated that there were approximately 0.7 million bus passenger trips in 2001, and that charter service carried approximately 55 percent of that demand. While scheduled service offers fairly consistent service throughout the year (30-40 round trips per day), charter service is much more demand-focused and can vary between 10 and more than 100 trips per day (winter is by far the busiest season).

Interestingly, discussions with some of the operators indicated that they were very optimistic about future growth and were strongly marketing their services. It was suggested by some of the charter operators that current MCC regulations restrict their ability to expand service. Whether there are opportunities to enhance the current regulatory environment was beyond the scope of the study, but may be worth further investigation as follow-up to this study.

2.4 Corridor Travel Characteristics

The STS Corridor Travel Demand Study, completed by TSi Consultants in January 2002, provided comprehensive information on travel characteristics in the Vancouver-Whistler corridor. This information included:

- Travel demand by purpose
- Trip origins and destinations
- Mode of travel
- Vehicle occupancy

This study also provided forecasts for future travel demand for new supply options (e.g., upgraded passenger rail, passenger ferry, expanded highway). A follow-up study (STS Modal Diversion Study, June 2002) estimated mode shifts resulting from automobile tolls in the corridor, and thus, provides an indication of the maximum potential of TDM.

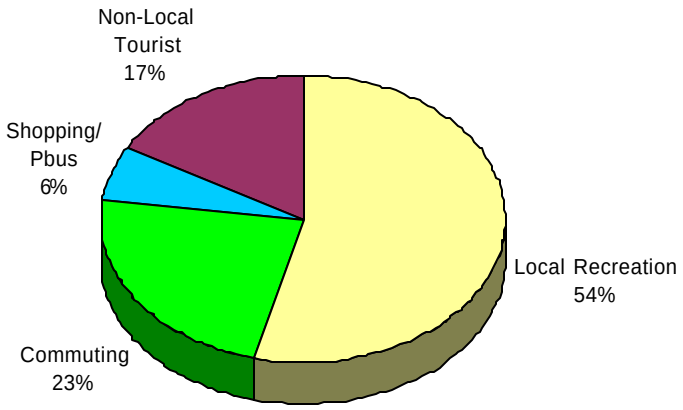
The following highlights some of the relevant travel demand information from the initial study.

2.4.1 Travel Demand by Purpose

In 2001, STS corridor demand was estimated at approximately 11 million person trips. Note that these are "inter-urban" trips and do not include travel within municipalities located in the corridor. **Figure 2.1** shows the distribution of trip purposes and highlights

the predominance of recreational trips in the corridor (local and non-local combine to account for about 70 percent). Long-distance commuting accounts for more than one trip in five, while shopping/personal business trips represent a relatively small percentage. It is interesting to note that "non-local tourists" account for less than 20 percent of the corridor demand., which are defined as trips from outside of the Lower Mainland (ie. other parts of B.C., rest of Canada and other countries)

Figure 2.1 - Trip Purpose Distribution

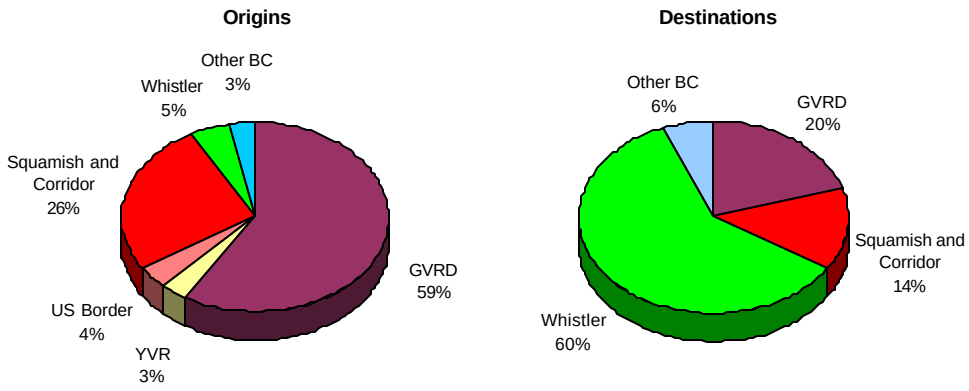


The seasonal variation in trip-making was examined but it was found that trip totals are similar between the summer and winter seasons and that the purpose composition was remarkably consistent.

2.4.2 Trip Origin and Destination

The origin and destination of the first leg of the trip into the corridor is presented in **Figure 2.2**. The GVRD and Squamish (including other corridor locations) represent the main origins, while Whistler is the primary destination.

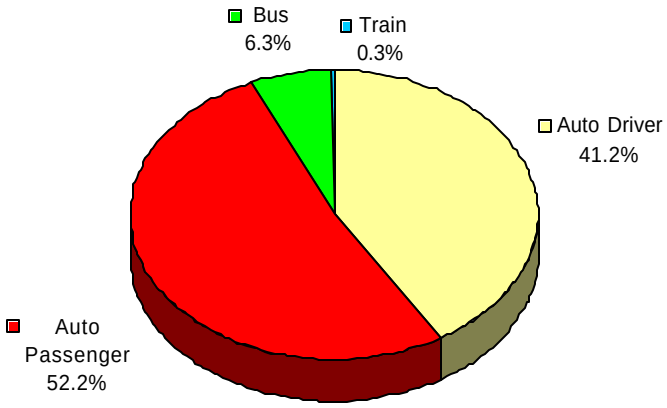
Figure 2.2 - Trip Origins and Destinations



2.4.3 Mode of Travel

Figure 2.3 summarizes the mode of travel used in the corridor. Auto demand (drivers and passengers) accounted for 93 percent of the corridor travel, while bus and rail passengers accounted for 6 percent and less than 1 percent, respectively. Note that the passenger rail service (Cariboo Prospector) is no longer operating in the corridor.

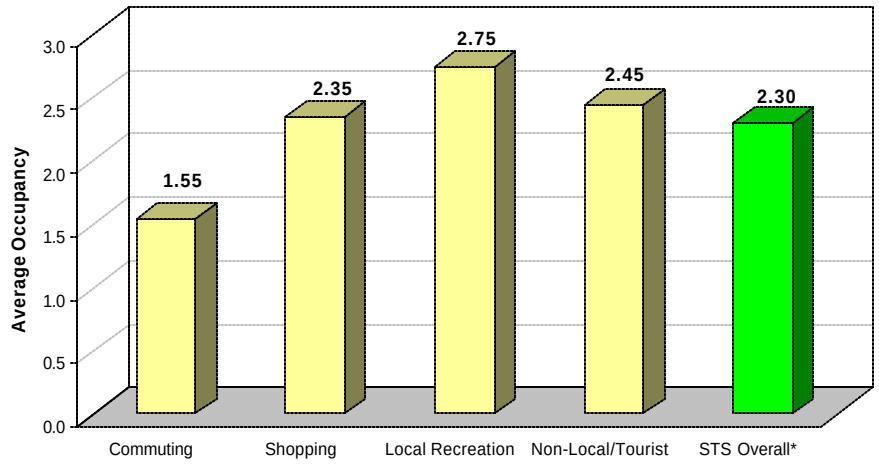
Figure 2.3 – Mode of Travel



2.4.4 *Auto Vehicle Occupancy*

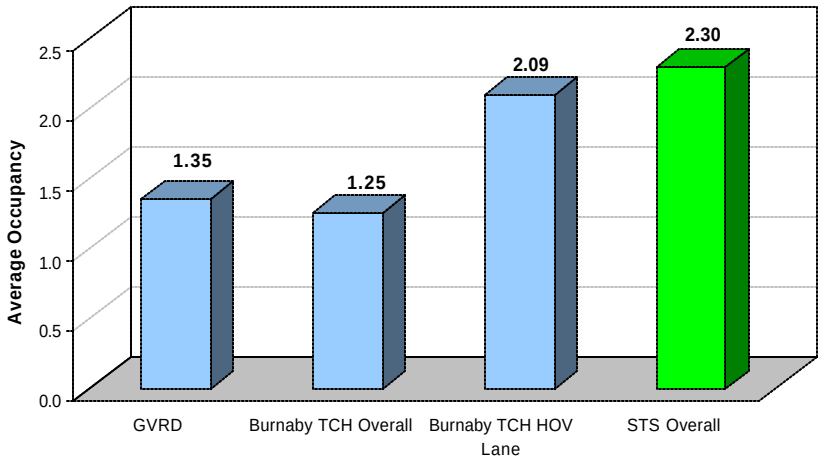
The previous section shows a higher percentage of auto passengers than drivers indicating a high level of auto occupancy in the corridor. **Figure 2.4** provides a breakdown of the auto occupancy by the four main trip purposes. Overall, the average auto occupancy is estimated at approximately 2.3. Commuting to work represents the lowest occupancy at 1.55, while local recreation trips have the highest occupancy at 2.75.

Figure 2.4 – Average Auto Occupancy by Purpose



These occupancies are compared with average occupancies observed in the GVRD in **Figure 2.5**. On a daily basis, the average auto occupancy in the GVRD is estimated at 1.35 (this includes trips on local streets, arterials and highways). Focusing on a specific facility, the Burnaby section of the Trans Canada Highway (TCH), which includes 4 general purpose lanes and 2 HOV lanes, has an average auto occupancy of 1.25 (this includes vehicles in the HOV lanes). The TCH HOV lanes in isolation have an auto occupancy of about 2.1. This comparison illustrates that the auto occupancy in the STS corridor is very high relative to a typical urban situation and even exceeds the performance of the dedicated HOV lane.

Figure 2.5 – Comparison with GVRD Auto Occupancies



2.4.5 Travel Demand Summary and AADT Estimates

In summary, travel in the STS corridor can be characterized as follows:

- Recreational trips by locals and non-locals and commuting trips comprise the majority of travel in the corridor.
- GVRD and Squamish are the main trip origins, while Whistler is the primary destination.
- Vehicle occupancy is very high for all trip purposes compared to a typical urban situation.

For the purpose of evaluating the effectiveness of TDM measures in the corridor, the travel demand data was translated into average annual daily traffic (AADT) estimates and aggregated into four market segments as shown in **Table 2.1**. Shopping/personal business trips have been combined with local recreation trips and commuting trips are separated by the morning travel direction (note that the commuting trip totals include the return trip home, as do recreation trips with no overnight stay).

Table 2.1 — 2001 STS Market Segments

Market Segment	2001 Average Daily Trips				Auto Occ	Transit MS
	Total	Auto Dr.	Auto Pass	Bus Pass		
Local Recreation	18,350	6,510	11,380	460	2.75	3%
Non-Local Tourist	5,050	1,530	2,220	1,300	2.45	26%
Southbound Commuter	3,850	2,480	1,360	10	1.55	0%
Northbound Commuter	3,050	1,880	1,040	130	1.55	4%
Total	**30,300**	**12,400**	**16,000**	**1,900**	**2.30**	**6%**

On a daily basis, there are approximately 30,000 person trips in the corridor and more than 12,000 inter-urban auto trips. Bus passengers account for close to 2,000 daily trips and represent about 6 percent of the demand in the corridor (note that travel by bus is quite seasonal and much more prevalent in the winter).

The principal destination of the local recreation and non-local tourist trip is Whistler. Southbound commuter trips are made primarily by residents of the corridor to and from jobs in the GVRD with Squamish being the most significant "home" trip end. Some northbound commuter trips are made to and from jobs in Squamish and other smaller communities in the corridor from the GVRD or from communities in the corridor. However, the largest component (more than 75%) of northbound commuting trips are made by Squamish residents to jobs in Whistler. There are also significant numbers of Pemberton residents who commute to jobs in Whistler. However, these trips are not made within the study area and consequently are not considered in the analysis.

Table 2.2 provides an estimate of the average daily travel in the corridor in 2010 assuming an upgraded highway. This forecast indicates that auto travel in the corridor could grow by approximately 3 percent per annum over the next 9 years.

Table 2.2 — 2010 STS Market Segments

Market Segment	2010 Average Daily Trips			
	Total	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	23,410	8,370	14,470	570
Non-Local Tourist	6,270	1,930	2,760	1,580
Southbound Commuter	4,960	3,210	1,740	10
Northbound Commuter	3,840	2,380	1,300	160
Total	**38,480**	**15,890**	**20,270**	**2,320**

Appendix A contains additional information on travel demand.

3.0 Review of Transportation Demand Management

3.1 TDM Defined

Transportation Demand Management (TDM) can be defined as any policy or regulation that facilitates or encourages multi-occupant vehicle use and/or reduces total vehicle trip-making, particularly, but not exclusively, during congested periods. Most of the work to date in developing, evaluating and applying TDM measures has been undertaken in urban areas particularly for commuting to work. Typically, TDM policies generally seek to achieve one or more of the following:

- Trip Reduction — the outright elimination of the need, opportunity or incentive to travel.
- Mode Change — the encouragement of higher occupancies in private vehicles or greater use of public transit or other modes.
- Temporal Change — encouraging vehicle drivers to travel in less congested periods.
- Route Change — encouraging vehicle drivers to travel on less congested routes.

TDM objectives can often be achieved by the implementation of supply-side measures such as the construction of HOV lanes, bicycle and pedestrian facilities or improvements in public transport services. Supply side improvements are often required to complement specific TDM measures in order that such measures may be employed most effectively.

3.2 Inter-urban TDM

For an inter-urban corridor, such as the STS Highway, some of the typical TDM objectives are unrealistic or impractical. Measures to reduce total trips are likely to be unacceptable if they affect recreation and tourist trips because of the negative impact on Whistler's recreation-based economy. Temporal change is also an unrealistic objective. The most congested conditions in the corridor usually occur on Friday evenings and Sunday evenings during the ski season. This peaking is related to the working hours of Vancouver area skiers and it would be impractical to expect that TDM measures alone could significantly affect this. Finally, there is no reasonable alternative route for most of the trips made in the corridor eliminating the opportunity for route change.

Consequently, the trip reduction objectives appropriate for TDM in the STS corridor were limited to trip reduction and mode change. Moreover, trip reduction was targeted at measures that reduce commuting trips without significantly reducing recreational and tourist trips. Mode change measures placed considerable emphasis on increasing private vehicle occupancy as well as encouraging greater use of public transport modes.

3.3 Existing Policies and Practice

TDM policies and measures are a central theme of transportation and land use plans developed for the Lower Mainland and corridor municipalities. While these plans primarily focus on travel within their respective areas, it is important to consider these strategies and to ensure consistency in the preparation of a TDM plan for the corridor.

3.3.1 TransLink/GVRD

Since the adoption of the GVRD's Livable Region Strategic Plan and Transport 2021 in the mid-90's, TDM has been an important element of transportation planning in the Lower Mainland. Transport 2021[2] established a list of policies aimed at changing the behaviour of travelers in order to make better use of the existing transport system (e.g., telecommuting, employer trip reduction programs, parking management, fuel taxes and tolls). Transport 2021 established a target of a 10 percent reduction in rush hour vehicle trips by 2021 (compared to automobile usage under current trends).

In 1996, the GVRD and the BC Transportation Financing Authority took this to the next stage by developing a joint implementation strategy for TDM[3]. This project established a three-phased implementation strategy which saw the introduction of regional trip reduction services in the short-term, comprehensive parking management and converted insurance and license payment methods in the medium term, and road pricing over the long-term.

During this period, many of the municipalities within the Lower Mainland prepared their own transportation plans, which built on the regional strategy by outlining supporting local TDM measures.

In 1998, the Province created the Greater Vancouver Transportation Authority or "TransLink" with a mandate is to plan and fund public transit, the major road network

[2] Transport 2021, A Long-Range Transportation Plan for Greater Vancouver, GVRD and Province of British Columbia, September 1993.

[3] Greater Vancouver Regional Transportation Demand Management Project: Final Report, GVRD and BCTFA, September 1996.

and transportation demand management. TransLink's Strategic Transportation Plan released in 2000, builds on the previous work and outlines TDM policies and actions aimed at pricing, parking management and alternatives to the single-occupant vehicle.

Specifically, TransLink's existing TDM activities include:

- Supporting employers with products and services to assist them in implementing transportation management programs aimed at reducing single occupant vehicle travel to their work sites. This includes a component subcontracted to Better Environmentally Sound Transportation (BEST), which provides training and information to individuals in major employers on alternative travel options. This service also includes a pilot program known as the "On Board Program" which works directly with senior executives of firms to conduct travel surveys, employee interviews, on-site analysis and specific travel plans with products tailored to the employers' needs.

- GO GREEN Choices holds Go Green Coordinator classes, provides support for implementation of employer trip reduction programs and publishes the *Getting to Work* newsletters. It also supports three Transportation Management Associations and the post-secondary Access Committee.

- Employers Pass Program which provides discounted monthly transit passes (15% discount to organizations with 25 or more employees)

- Funding the Jack Bell Foundation (JBF) for administration of the regional ride share program, which supports 110 car/vanpools in the region.

- Preparing tool kits and promotional materials for distribution at work locations to encourage the use of alternative modes.

- U-Pass program, which requires all students at the University of British Columbia and Simon Fraser University to purchase monthly transit passes at substantially reduced rates. This program will be in effect for two years after which it will be evaluated.

- TransLink is preparing to experiment with the "shared vehicle" concept for access to and from Sky Train stations.

3.3.2 *Resort Municipality of Whistler*

Whistler's development has been based on the concept of the "walkable" village centre. Vehicles can only access the periphery of the village and satellite underground parking lots. This presents a solid foundation on which to build TDM programs.

The RMOW has clearly articulated its visions for Transportation Demand Management within the Comprehensive Strategy published in 1999. The relevant policies are summarized below:

- Transportation Demand Management
  - Focus TDM Programs on Peak Travel Periods
  - Develop Local Programs, Facilities and Services to Support Use of Alternate Travel Modes
  - Develop Regional Programs, Facilities and Services to Support Carpooling
- Parking Management
  - Manage Village Area Parking More Effectively
  - Locate New Skier Lots South of the Village

Parking Management included a range of strategies including pay-parking options.

Whistler's TDM strategy also included recommendations for inter-urban TDM to complement the locally adopted policies. These included:

- Make Regional Transit Services More Attractive
- Make the Use of Rail More Attractive
- Improve Air Connections to Whistler

Since the publication of this Strategy follow-up studies have found that the rail option is prohibitively expensive in relation to the inter-urban modal share it could capture. On the other hand, improved bus service in the corridor was found to show strong potential.

The Resort Municipality of Whistler has acted upon several TDM measures. The following components of the 1999 Strategy are being implemented:

- A TDM staff position has been created as experience elsewhere has shown that this is an essential element of a successful plan.

- The municipality helped in the planning of the Whistler Way! Rideshare program, which is now being operated by the Jack Bell Foundation. This program provides for infrastructure expansion and is supported by administrative funding provided by BC Transit.

- A program for municipal staff is being evaluated where employees could subscribe for a discounted monthly transit passes. Baseline surveys have been undertaken and mode shift would be measured at a later date; in this way the municipality will understand the barriers and successful elements of the experiment before extending the concept to other employers.

In addition to these initiatives, the Jack Bell Foundation (JBF) has 4 registered vanpools between Squamish and Whistler. Intrawest also provides a small fleet of carpool vehicles to employees commuting from Squamish and Pemberton. These vehicles are available at about half the cost of the JBF vanpool option, which costs an individual approximately $150-160 per month.

3.4 International Experience

To date the TDM experience has been most commonly applied in large metropolitan areas and applied by large employers. The STS corridor represents a unique situation with a large metropolitan area at one end and a resort municipality at the other.

Research was conducted on the experience with TDM measures in place around the world in ski resort communities. The highlights are outlined below.

3.4.1 Europe

Europe has a well-developed infrastructure for both winter sports and public transportation. Resorts have a long history and a relatively high local population, which in itself allows for the support of local public transportation. Similarly, the high population density of the continent generally allows for the support of high quality inter-city rail for all manner of trips, not only recreational. Within this context, there are several noteworthy ideas.

- EC and Austrian governments are experimenting with programs that present the concept of "car-free" vacations.

- The village of Werfenweng in Austria uses creative web-site design to create the first impression of a "car-free" vacation before booking commitments are made.
- Werfenweng offers guaranteed luggage delivery from home to hotel room (one is less likely to need a car if unencumbered with sports equipment).
- Combinations of public transportation access with ski pass are common (car rental options are downplayed).
- Combinations of local transit with ski pass (Val Gardena).
- Combinations of local points of interest (museums, spas) and tours with ski passes (Gstaad).

3.4.2 United States

A review of current practice in Aspen Colorado was undertaken. Because the resort is that much more remote from Denver than Whistler is from Vancouver, air travel to the resort has been more common. However, since September 11th the resort notes a shift to automobile arrivals. In order to encourage alternative modes by employees and resort guests, Aspen employs the following measures:

- Discounts to employees for the use of the local bus system, car-pooling, etc.
- Guaranteed Luggage Delivery

3.4.3 Applicability to STS Corridor

Based on this review, additional measures that could be considered for the STS corridor include:

- a combined transit/recreation pass (e.g., featuring a ski ticket, green fee or mountain pass).
- marketing of a car-free holiday with guaranteed luggage service.

Whistler already markets itself as a Sustainable Resort and could enhance this with higher profile marketing and better information services. It is noteworthy that currently there is a built in financial incentive for booking agents to place customers in rental cars at YVR (to be used for multi-day stays) rather than promote the bus alternative.

4.0 Evaluation of Corridor TDM Measures

4.1 Potential TDM Measures and Evaluation Criteria

Based on our review of TDM and discussions with the STS Technical Liaison Committee, the following TDM measures and supporting supply initiatives were identified as shown in **Table 4.1**.

Table 4.1 – Potential TDM Measures

A. Trip Reduction Measures	
1	Flexible work week
2	Telecommuting
B. Disincentive Polices and Measures - "Sticks"	
3	Tolls
4	Parking Supply
5	Parking Pricing
C. Incentive Polices and Measures - "Carrots"	
6	Carpooling
7	Vanpooling
8	Preferred Parking for Carpools
9	Reduced Fare or Free Transit Services
10	Combined Transit/Recreation Pass
11	Promotion of a Sustainable Resort
D. Supporting Supply Measures	
12	Strengthened Conventional Inter-Urban Transit
13	New Premium Transit
13	New Marine Services
14	New Rail Services
15	HOV/Transit Lanes
16	Transit Priority Measures
17	Park and Ride Lots
18	Bike Trailers/Racks on Buses

An initial screening resulted in the removal of tolling as the Province has indicated that the application of tolls in the STS corridor will not be pursued. Also, reduced fare or free public transit service through increased funding was not evaluated, as this was not

perceived to equitable to other jurisdictions in BC. The remaining measures were subject to an evaluation process with the TLC based on the criteria listed in **Table 4.2**.

Table 4.2 –TDM Evaluation Criteria

Criteria		Description
1	Demand Target and Potential Effectiveness	definition of travel markets the measure would target and the potential reduction in vehicle travel measured in AADT.
2	Affordability	cost to user/government or promoting agency.
3	Social Acceptability	perception of the general public.
4	Economic Impacts	potential for negatively impacting the economy of corridor municipalities.
5	Ease of Implementation	level of effort required to implement and modify as required.
6	Technical Feasiblity	are there any technical issues to be addressed?

4.2 Detailed TDM Evaluation and Recommendations

A TDM evaluation workshop was held with members of the TLC and Owner's Engineer team. Prior to the workshop, the potential effectiveness of each measure was estimated based on its potential impact on the different market segments. The remaining criteria were also assessed in qualitative terms. This provided a starting point for the workshop session. The workshop session included the TLC's evaluation of each measure, followed by a recommendation in terms of priority (High, Medium, Low), identification of responsibility (e.g., lead agency) and next steps.

The following sections provide a description of each measure and highlights the TLC's key comments and recommendations. **Appendix B** includes the detailed evaluation sheets that were revised during the workshop session.

4.2.1 Flexible Work Week

Flexible Work Week (4-day week or 9-day fortnight) — Under these schemes, employees work longer hours each working day in return for an extra day off each week or each fortnight. Such schemes are usually applied by large employers for staff with little or no direct sales or service responsibility.

In a typical "9-day fortnight" application, employees would work eight nine-hour days and one eight hour day every two weeks. In most cases, the employees do not all take

the same day off. One popular system provides for 25 percent of staff to be off duty each Monday and 25 percent to be off duty each Friday. This is popular with employees because it gives them a long weekend every second week and minimizes workplace disruption because (except for sick leave and annual leave) a minimum of 75 percent of staff are on duty at all times.

There are many employers in the GVRD who operate a flexible work week. There are also employers in the corridor who operate in a similar manner (although the number of employees affected is not known). A significant component of employment in the corridor is recreation/tourist based and is seasonal in nature, which limits the application of this measure. However, assuming 25 percent of corridor employment is suited to this measure and half of the employers are willing to participate (two-thirds adopting a 9-day fortnight and one-third a four-day week), this would reduce northbound commuting by less than 2 percent or a reduction in AADT of up to 30 vehicles.

The benefits in reduced auto travel are also difficult to estimate reliably as they may be offset by two phenomena. Flexible hours, especially if all workers do not follow the same schedule, reduce opportunities for carpooling and vanpooling. In addition, employees may make recreational trips in the corridor on their additional days off.

The TLC concluded that although this practice is probably beneficial on balance, significant efforts to expand the practice may meet with little success. Given the relative small reduction in vehicular traffic resulting from the practice it was regarded as "Low Priority" and no specific programme of implementation was recommended.

4.2.2 Telecommuting

Telecommuting — This is typically applied to employees with little or no direct sales or service responsibility and whose duties require long periods of independent data processing or analysis. When interface with other staff is not required, some of this work may be undertaken at the employee's home relying on email or networking to transfer the completed work to the employer's databank. On days when an employee is "telecommuting" no personal travel to the employee's workplace is required.

For southbound commuters, because of the long distances involved, there is significant current "telecommuting" where permitted by enlightened employers. It is therefore difficult to define and evaluate the potential for further application of this measure for southbound traffic.

Because of the high proportion of recreation/tourist-based employment in the corridor and its seasonal nature, there is limited scope for the application of telecommuting for

northbound commuting. Moreover, even if as much as 10 percent of the employment in Whistler could be considered for this measure and that, on average, eligible employees would choose to "telecommute" one workday in five, the reduction in northbound commuting would be only 2 percent on an average weekday. The reduction in AADT would be approximately 40 vehicles.

The TLC concluded that significant effort to promote telecommuting among employers and employees could not be justified by the relatively small reduction in vehicular traffic. Consequently, this measure was rated as "Low Priority" and no specific programme of implementation was recommended.

4.2.3 Parking Pricing and Supply Management

Parking Pricing and Supply Management — Parking pricing is simply the practice of charging for parking while supply management would restrict the number of parking spaces to a predetermined policy number. Both measures may be applied to distribute available parking between long stay and short stay parking. There is no doubt that parking policy it is relatively effective as a measure to manage travel demand. However, in the STS corridor, it must be carefully implemented if negative economic impacts on the recreation/tourist industry are to be avoided. On the positive side, parking charge increases are not irreversible. Introduction of higher charges or new charges where none exist for a trial period could allow an appropriate and acceptable level of parking charges to be determined.

Based on relatively modest charge of $5 per day, the TLC estimated a 4 percent reduction in local recreation auto driver trips and a 1 percent drop in other recreation trips and northbound commuter trips by the auto driver mode. This would reduce auto driver trips by approximately 2 percent per day and AADT by approximately 290 vehicles.

The TLC considered that parking policy in general was likely to be one of the more effective tools to achieve TDM objectives. The TLC rated parking management as a "High Priority" and recommended that the RMOW undertake a Parking Management Study in consultation with private interests in Whistler. The TLC also recommended that the study consider the option of using additional parking revenues to subsidize other supply side improvements.

4.2.4 Carpooling

Carpooling — This features the adoption of specific programmes to encourage two or more travellers making trips between the same or neighbouring origins to the same or neighbouring destination at the same general time to travel together. A considerable

degree of informal carpooling occurs naturally as family members, colleagues or friends travel together for a common purpose. The existing private vehicle average occupancy rate in the STS corridor is significantly higher than that observed in Greater Vancouver. This indicates that informal carpooling is currently contributing significantly to restraining the growth in traffic.

Formal carpooling programmes generally provide a "ride-matching" service to allow trip-makers to identify others with similar travel habits to form formal (usually registered) carpools. In the STS corridor, a ride-matching service is provided for carpools and vanpools for employees in the Greater Vancouver region and the STS corridor by the Jack Bell Foundation with some financial support from BC Transit and TransLink.

These programmes are well-publicized and are relatively successful. Consequently, the TLC rated additional efforts to promote these programmes as "Low Priority" and no specific programme of implementation was recommended.

4.2.5 Vanpooling

Vanpooling — This takes the "carpooling" concept one step further in that in addition to a ride-matching service an agency will provide a vehicle to the "pool" at cost, which could be either a passenger car or van. Users pay a monthly fee to use the service, which is intended to cover vehicle operating, maintenance costs and depreciation.

There is a significant amount of vanpooling currently occurring in the corridor. Some of this operates under the auspices of the Jack Bell Foundation whose administration costs are funded by BC Transit (Squamish/Whistler) and by TransLink (Squamish/Vancouver). There are 4 registered pools in the Squamish/Whistler section and 14 vans travelling to Vancouver. Monthly fees to the user are in the range of $150-$160. It should be noted that the seasonal nature of work in the corridor limits the effectiveness of vanpooling as JBF requires a one-year commitment and in the past has had difficulty keeping car/vanpools in operation.

Some companies also provide their own vehicles for use by their employees to travel to work. For example, Intrawest provides four such vehicles (two each for Pemberton and Squamish commuters). These operations are subsidized by the employer and offer a significant cost saving over the JBF option.

The existing programmes are well-publicized and are relatively successful. Consequently, the TLC rated additional effort to promote these programmes as "Low Priority" and no specific programme of implementation was recommended.

4.2.6 *Parking Priority*

Parking Priority — this programme would reserve preferred locations in parking lots to high occupancy vehicles. It is an incentive measure and a supporting supply-side measure for carpooling and vanpooling. TDM participants are rewarded with small time savings. It is relatively inexpensive to implement and administer. While the direct benefits are difficult to quantify, applied in consort with other measures, it could assist in reducing private vehicle traffic.

The TLC considered that this issue could not be separated from consideration of parking policy in general. The TLC recommended that the proposed Parking Management Study should include consideration of Parking Priority for High Occupant Vehicles.

4.2.7 *Combined Transit/Recreation Pass*

Combination Passes — this would involve offering a discount when a transit pass or transit ticket is bought in combination with another service. This could involve selling lift tickets at a discount to bus passengers travelling from Vancouver, or offering a discount or complementary local bus pass to purchasers of lift tickets, green fees or other recreational services, perhaps through hotels. Our review of international experience indicated that a similar scheme is operated in Werfenwang.

With adequate publicity and promotion, it could contribute to a reduction in private vehicle travel in the corridor. The TLC estimated that this measure could reduce recreation/tourist auto driver trips by (say) 1% leading to a reduction in AADT of approximately 90 vehicles. However, it was recognized that it could be difficult to implement as it would require the cooperation of the private operators who would be asked to accept a revenue risk as the discount would need an offsetting increase in patronage to the bus operators and/or recreational providers. It was noted that it could be a useful complement to other measures such as promoting the "sustainable resort" or parking pricing.

The TLC rated these programmes as "Medium Priority" and no specific programme of implementation was recommended.

4.2.8 *Promotion of a Sustainable Resort*

Sustainable Resort — Whistler Village is a pedestrian-focused development. This combined with free transit service in the vicinity of the Village Centre should be a major selling point as it allows visitors, especially non-local visitors to enjoy a "car-free" vacation. Although the pedestrian nature of the Village Centre is acknowledged on the

RMOW web site, there does not appear to have been any effort made by the Tourism Whistler, Intrawest, local hoteliers or non-local travel agents to promote this feature of the Resort Community.

The TLC considered that the build-up to the 2010 Winter Olympics could provide an opportunity for the world-wide promotion of this attribute of the site. It was rated as "Medium Priority" and it was recommended that the RMOW work with private interests to better publicize the "Sustainable Resort" concept.

4.2.9 Strengthened Conventional Inter-Urban Transit

Conventional Transit — **Section 2.3** provides a summary of the current bus service operating in the corridor (private scheduled and charter service). There is, however, no publicly-funded or subsidized transit service operating along the corridor except for TransLink bus services to Lion's Bay (BC Transit provides service between Pemberton and Whistler, but this is outside the study area).

A BC Transit Study[4] undertaken in 2001, analyzed the costs and effectiveness of conventional peak hour transit service between Squamish and Whistler. The study estimated that a subsidized service would attract 44,000 annual trips and that fare revenues would cover 40% of the estimated annual cost of $212,000. Alternatively, subsidies could be provided to the Greyhound service reducing the $5.60 discount fare to the order of $3. It was estimated that the fare reduction could attract 4,000 additional riders annually to the Greyhound service.

The TLC estimated that the introduction of conventional transit service between Squamish and Whistler and Squamish and the GVRD could reduce AADT by 130 vehicles (refer to Appendix B9).

The TLC considered that the improvements to conventional transit services in the corridor were a "High Priority" and that these should include improvements between Squamish and Greater Vancouver as well as between Squamish and Whistler. It was recommended that the Districts, Municipalities and communities in the corridor work together with BC Transit, TransLink and the Motor Carrier Commission to develop an action plan for implementation of these improvements. It was noted that Squamish-Lillooet Regional District has recently announced the proposed undertaking of a development strategy for the region. The issues of the future urban development of the

[4] Transportation Options for the Squamish-Whistler Corridor, BC Transit, November 2001.

corridor and the preparation of a Transport Master Plan should also consider the need for improved conventional transit service.

4.2.10 Premium Transit

Premium Transit — this would be a private initiative to provide a service to appeal to "up-market" trip-makers. Principal features would include fast, direct and reliable schedule, comfortable spacious seating and on-board food service. Premium fares can be expected – perhaps 25% above standard fares.

There is no premium service in the corridor. Perimeter service, offering direct connections from the airport to Whistler, is the closest to a premium service. There would be regulatory obstacles to starting a new service in the corridor whether provided by existing service providers or by new players. It is unlikely that a case could be made for a premium service to be subsidized. Therefore, the prospective operators must be able to develop a satisfactory business case.

In terms of effectiveness, the TLC estimated that the service but could attract an additional 1.5% of local recreational trips and 3% of non-local trips reducing AADT by 150 vehicles.

The TLC considered this a "Medium Priority" initiative. It was particularly noted that there may be interest by the private sector in providing such a service during the 2010 winter Olympics. In effect, the Games could be a catalyst leading to the mid-term and long-term enhancement and diversification of public transit service in the STS corridor.

A premium transit initiative would require that the Motor Carrier Commission review the current regulations affecting the provision of transit service in the STS corridor. The objective of the review should be to identify and remove any barriers to the provision of additional private carrier transit service, particularly "specialty" service before, during and after the 2010 Olympic games.

4.2.11 Marine Services

Marine Services — this involves high-speed ferry service between Vancouver and Squamish. It could be attractive to southbound commuters provided a reasonable frequency, travel time and fare were offered. It could also be attractive to tourists provided reliable, attractive road-based transit service was provided between Squamish and Whistler.

Previous studies indicated that the service could attract up to 300,000 passengers per year or an average of 800 passengers per day. Assuming that 25% of the passengers would divert from other transit services and that 60% of the remaining 600 passengers would be auto passengers and 40% would be drivers, the reduction in AADT was estimated at approximately 240 vehicles.

This would be a private sector initiative. However, it was recognized that it could be difficult for a private contractor to recoup a reasonable financial return without some form of subsidy. Moreover, there are concerns about the environmental impacts of marine services. Marine fuel quality is much worse than on-road fuel products. In the case of some pollutants, the quality could be more than 500 times worse.

The TLC rated this a "Medium Priority" but made no specific recommendations towards implementation because of the environmental and operational issues to be overcome.

4.2.12 Rail Service

Rail — It was noted that the Rocky Mountain Railroad Company (RMRC) will be providing a high-end tourist service catering to cruise ship passengers starting next year. This may be extended to other tourist markets but is unlikely to be effective as a TDM measure for the existing market segments because of the likely high fare and low service frequency.

The TLC rated this a "Low Priority" and made no specific recommendations towards implementation.

4.2.13 HOV/Transit Lanes

HOV/Transit Lanes — this involves the provision of dedicated roadway lanes for the exclusion use of transit buses and High Occupant Vehicles (HOV) either by construction of additional lanes or the conversion of existing general-purpose lanes. In the STS corridor, conversion of existing (or currently planned) lanes would be impractical. Therefore this measure would involve costly new construction.

In order to be effective, HOV/transit lanes must offer a travel time saving to the HOV occupants and to buses. The STS corridor is relatively un-congested and the proposed highway improvements will further reduce delays where they currently exist. The potential saving to HOV/transit lane users would therefore be negligible. Consequently no significant reduction in auto driver trips is expected.

The TLC rated this measure as "Low Priority." No action was recommended.

4.2.14 *Transit Priority*

Transit Priority — this involves providing signal priorities and queue-jumper lanes for public transit vehicles at congested intersections and other bottlenecks. These measures are more cost-effective and arguably provide equal or superior time savings than constructing lengthy HOV lanes – especially in difficult terrain. This measure could be applied selectively at intersections in Squamish should congestion begin to occur.

The potential for time-savings is limited. Consequently no significant reduction in auto driver trips is expected. As urban development in Squamish continues, the potential time-savings could increase because of increased peak hour congestion. This combined with improved transit service at "suburban" headways could make transit priority more worthwhile.

The TLC rated this measure as "Low Priority" at present. No action was recommended at this time. However, it was considered desirable that this be reviewed once improved transit services in, and through Squamish have been implemented.

4.2.15 *Park-and-Ride*

Park-and-Ride — this involves designating parking lots, or a portion thereof, for the use of trip makers to park their private vehicle and complete their journey by public transit. Such lots may also be used by car pools as a collection point. Park-and-Ride/Park-and-Pool facilities may be provided by construction of lots specifically for this purpose or by allowing user to park in a lot constructed for other purposes when there is surplus capacity.

There is a small park-and-ride lot in Lions Bay, which provides connection to TransLink bus services into Greater Vancouver. There is also anecdotal evidence of Greater Vancouver residents using commercial parking lots to Park-and-Pool while travelling in a group for recreational purposes to Whistler.

This informal parking could be legitimized by negotiating with shopping malls or other commercial parking providers to use existing lots for these purposes. Additional Park-and-Ride facilities could be provided in the corridor to complement new conventional transit services between Squamish and Whistler and/or Squamish and Vancouver.

The TLC rated this measure as "Medium Priority" and recommended that the issue be studied as part of the development of an action plan to identify and implement conventional transit improvements in the corridor.

4.2.16 *Bicycle Facilities*

Bicycle Trailers/Racks — this involves the provision of facilities to carry bicycles on conventional buses. This is usually achieved by mounting bicycle racks on the front and/or back of the bus. This is provided primarily to encourage bus use by accommodating bicycles on buses for travelers who wish to make recreational use of their bicycles at destinations in the corridor.

The TLC rated this measure as "Medium Priority" and recommended that the private bus operators in the corridor be encouraged to provide bicycle trailers/racks.

Bicycle Lanes — it is noted that the design standard for all newly constructed sections of the highway will include a 1.5-metre shoulder on each side of the roadway. One of the functions of this shoulder is to provide for cyclists. However, while this safety measure may attract more recreational cyclists to the corridor, it is unlikely to significantly affect the volume of vehicular traffic using the corridor.

As this is a "fait accompli," the TLC did not assign a priority to this measure.

4.3 Summary of TDM Priorities and Effectiveness

Table 4.3 provides a summary of the high and medium priority measures as recommended by the TLC. The potential reduction in AADT generate by each measure in isolation is shown. Note that the effectiveness is not necessarily cumulative, as some of the measures will compete with one another (e.g., premium transit and marine service), while others may produce greater effectiveness when combined (e.g., conventional transit and park and ride lots). In general, this analysis indicates that coordinated implementation of TDM and supporting supply measures could reduce vehicle travel in the corridor by as much as 10 percent, or result in up to a 5-year extension of the planned life of the highway improvements.

This represents a significant reduction in vehicle travel and is consistent with TDM targets established in many urban settings. In addition to the environmental benefits, the implementation of these initiatives will increase the travel choices and hence the quality of life for residents and tourists travelling the corridor.

Although beyond the scope of this study, a key issue identified by the TLC is the importance of a comprehensive growth management strategy for the Squamish-Lilooet Regional District that reduces the dependence on corridor commuting. Anecdotal evidence suggests that the lack of affordable housing in Whistler has contributed to the growth of commuting traffic from Squamish to Whistler in recent years.

Table 4.3 – Summary of TDM Priorities and Potential Effectiveness

TDM Measures	Potential Reduction in AADT
High Priority	
Parking Pricing and Supply Management	300
Parking Priority	80
Strengthened Conventional Inter-Urban Transit	130
Medium Priority	
Combined Transit/Recreation Pass	90
Promotion of a Sustainable Resort	20
New Premium Transit	150
New Marine Services	240
Park and Ride Lots	NA
Bike Trailers/Racks on Buses	NA

NA - supports the conventional inter-urban transit measure

5.0 TLC Recommendations

The evaluation and prioritization of the TDM measures led to nine recommendations from the TLC. It is noted that several of the recommendations fall under the jurisdiction and authority of other government agencies and private interests, and as such, these measures will require pro-active initiative from the districts, municipalities and communities in the corridor to encourage and promote their implementation.

The TLC recommendations are as follows:

1. Introduction of the Squamish-Whistler bus service proposed in BC Transit's 2001 Study — Transportation Options for the Squamish Whistler Corridor.

2. A joint study of the feasibility of publicly funded Squamish-Vancouver bus and marine service be undertaken by BC Transit and TransLink.

3. Wherever feasible, park-and-ride lots and bike trailers/racks should be included as supporting measures to new transit initiatives.

4. A Parking Management Study be conducted by Whistler and private interests to assess how changes in parking supply, allocation and pricing would support modal shifts and contribute to other TDM initiatives.

5. The Motor Carrier Commission should review the current regulations affecting the provision of transit service in the STS corridor. The objective of the review should be to identify and remove any barriers to the provision of additional private carrier transit service.

6. Premium services (bus, marine and rail) should be left to the private sector to study and implement if feasible.

7. Additional effort should be made by Whistler and private interests to promote the Sustainable Resort concept as greater attention is focused on Whistler in the lead-up to the Olympics.

8. Trip reduction measures and carpool/vanpool initiatives are already in place and operating well in the corridor. No further efforts are required for these measures at this time.

9. The SLRD development strategy must develop a long-term, sustainable land use plan that helps to reduce the emphasis on corridor commuting (e.g., provision of affordable housing in Whistler).

Appendix A – Demand Profile Summary

The results of the 2000 Travel Demand Survey are documented in Sea to Sky Corridor – Travel Demand Study, TSi Consultants, 2000. A summary of the data used to analyze the demand segments for this study is provided in Tables A1 through A3.

Table A1 – Population Estimates by Area of Residence of STS Travellers

Location	2001	2010	2025	% chg 01-10	% chg 01-25
STS Corridor	25,870	33,310	48,170	29%	86%
Lower Mainland	2,485,360	2,860,950	3,551,480	15%	43%
Rest of BC	1,876,810	2,105,670	2,495,660	12%	33%
Rest of Canada	30,644,600	32,941,600	35,716,700	7%	17%
United States	281,421,910	305,158,110	343,689,740	8%	22%
Mexico	100,349,770	114,994,750	133,834,710	15%	33%
Western Europe	390,660,880	397,522,580	396,445,360	2%	1%
Japan	126,549,980	127,252,380	120,235,270	1%	-5%

Note: STS Corridor includes Whistler, Squamish and all communities in between.

Table A2 – 2001 STS Inter-urban Trip Estimates (one-way trips)

	Non-Residents	Residents	Total
Trip Mode			
Total Trips	**1,843,980**	**9,211,870**	**11,055,850**
Auto Person	1,339,915	8,987,395	10,327,310
Auto Driver	546,770	4,008,065	4,554,835
Bus Passenger	479,245	214,620	693,865
Train Passenger	24,820	9,855	34,675
Transit Mode Split	27%	2%	7%
Trip Purpose			
Commuting/Business		2,524,705	2,524,705
Recreation/Social		5,976,875	5,976,875
Shop/Personal Business		710,290	710,290
Non-Resident	1,843,980		1,843,980

Table A3 – Corridor Trip Tables from Place of Origin (first leg of trip only)

2001 Total Trips from place of residence to destination (first leg excluding return trip)

	Whistler	Squamish	Other Corridor	North Shore	Vanc/Burn NW	Other L.M.	YVR	U.S. Border	Other External	Total
Whistler	-	58,950	7,050	45,660	119,160	46,830	-	-	4,700	282,350
Squamish	332,960	-	71,000	240,480	442,780	73,430	-	-	26,200	1,186,850
Other Corridor	29,850	83,280	-	120,800	87,560	8,700	-	-	2,740	332,930
North Shore	434,950	152,100	31,060	-	-	-	-	-	36,930	655,040
Vanc/BurnNW	1,376,800	275,350	76,650	-	-	-	-	-	97,920	1,826,720
Other L.M.	541,560	133,630	8,220	-	-	-	-	-	87,040	770,450
YVR	146,400	-	-	-	-	-	-	-	-	146,400
U.S. Border	189,940	-	-	-	-	-	-	-	-	189,940
Other External	86,470	29,990	-	4,110	16,030	650	-	-	-	137,250
Total	3,138,930	733,300	193,980	411,050	665,530	129,610	-	-	255,530	5,527,930

2001 Resident Trips from place of residence to destination (first leg excluding return trip)

	Whistler	Squamish	Other Corridor	North Shore	Vanc/Burn NW	Other L.M.	YVR	U.S. Border	Other External	Total
Whistler	-	58,950	7,050	45,660	119,160	46,830	-	-	4,700	282,350
Squamish	326,710	-	71,000	240,480	442,780	73,430	-	-	26,200	1,180,600
Other Corridor	29,850	83,280	-	120,800	87,560	8,700	-	-	2,740	332,930
North Shore	389,720	152,100	31,060	-	-	-	-	-	36,930	609,810
Vanc/BurnNW	1,053,600	275,350	71,650	-	-	-	-	-	97,920	1,498,520
Other L.M.	469,830	133,630	8,220	-	-	-	-	-	87,040	698,720
YVR	-	-	-	-	-	-	-	-	-	-
U.S. Border	-	-	-	-	-	-	-	-	-	-
Other External	210	-	-	1,110	1,040	650	-	-	-	3,010
Total	2,269,920	703,310	188,980	408,050	650,540	129,610	-	-	255,530	4,605,940

2001 Non-Resident Trips from place of trip origin to destination (first leg excluding return trip)

	Whistler	Squamish	Other Corridor	North Shore	Vanc/Burn NW	Other L.M.	YVR	U.S. Border	Other External	Total
Whistler	-	-	-	-	-	-	-	-	-	-
Squamish	6,250	-	-	-	-	-	-	-	-	6,250
Other Corridor	-	-	-	-	-	-	-	-	-	-
North Shore	45,230	-	-	-	-	-	-	-	-	45,230
Vanc/BurnNW	323,200	-	5,000	-	-	-	-	-	-	328,200
Other L.M.	71,730	-	-	-	-	-	-	-	-	71,730
YVR	146,400	-	-	-	-	-	-	-	-	146,400
U.S. Border	189,940	-	-	-	-	-	-	-	-	189,940
Other External	86,260	29,990	-	3,000	14,990	-	-	-	-	134,240
Total	869,010	29,990	5,000	3,000	14,990	-	-	-	-	921,990

Appendix B – TDM Evaluation Work Sheets

B1. Flexible Work Week

Description

A four-day week or nine-day fortnight, when adopted by employers, involves employees working longer hours each working day in return for an extra day off each week or each fortnight. Instead of working eight hours every day (say), employees would work eight nine-hour days and one eight hour day. In most cases, the employees do not all take the same day off. One popular system provides for 25% of staff to be off duty each Monday and 25% to be off duty each Friday. This is popular with employees because it gives them a long weekend every second week and minimizes workplace disruption because (except for sick leave and annual leave) a minimum of 75% of staff are on duty at all times

It is usually applied by large employers for staff with little or no direct sales or service responsibility.

Effectiveness

The TLC estimated that approximately 25% of employment in Whistler could be considered for this measure with minimum productivity or economic impact. Assuming that 50% of prospective employers adopted this measure with (say) two-thirds adopting the nine-day fortnight and the remainder adopting a four-day week, 8% of the work force would work a nine-day fortnight while 4% would work a four-day week. This would reduce northbound commuting by approximately 1.6% on an average weekday and AADT by approximately 30 vehicles. These reductions would be partially offset by additional leisure trips made by employees on their extra days off.

For southbound commuters, any extension of the existing applications of the "compressed work week" measure would not be specifically targeted at the STS corridor. It is therefore difficult to define and evaluate the potential for further application of this measure for southbound traffic.

Table B1 – Flexible Work Week Evaluation Sheet

Flexible Work Week

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,000	1,850	1,020	130	1.6%
Total	**30,250**	**12,370**	**15,980**	**1,900**	

%Change Auto Driver	**-0.2%**
Absoute (AADT)	**30**

Other Criteria	**Evaluation**
Affordability	Offers travel cost saving to user (employee). Any marginal administration cost to employer is offset by increased productivity and reduced absenteeism.
Social Acceptability	Generally positive public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Requires promotion and persuasion. Public agencies can "lead by example."
Technical Feasibility	No technical issues to be addressed.

B2. Telecommuting

Description

This measure allows or encourages employees whose duties require long periods of independent data processing or analysis. When interface with other staff is not required, some of this work may be undertaken at the employee's home relying on email or networking to transfer the completed work to the employer's databank. On days when an employee is "telecommuting" no personal travel to the employee's workplace is required.

It is usually applied by large employers for staff with little or no direct sales or service responsibility.

Effectiveness

The TLC estimated that approximately 10% of employment in Whistler could be considered for this measure with minimum productivity or economic impact. Assuming that eligible employees choose to "telecommute" one day per week, this would reduce northbound commuting by approximately 2% on an average weekday and AADT by approximately 40 vehicles.

For southbound commuters, because of the long distances involved, there is significant current "telecommuting" where permitted by enlightened employers. It is therefore difficult to define and evaluate the potential for further application of this measure for southbound traffic.

Table B2 – Telecommuting Evaluation Sheet

Telecommuting

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	2,990	1,840	1,020	130	2.0%
Total	**30,240**	**12,360**	**15,980**	**1,900**	

%Change Auto Driver	**-0.3%**
Absoute (AADT)	**40**

Other Criteria	Evaluation
Affordability	Offers travel cost saving to user (employee). Minor equipment cost and communication cost to be borne by employer and/or employee. Possible marginal productivity and administrative cost to sponsor (employer) offset by increased productivity.
Social Acceptability	Generally positive public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Requires promotion and persuasion. Public agencies can "lead by example." Other reasons for implementing beyond TDM effect (e.g., attract people to a position).
Technical Feasibility	No technical issues to be addressed.

B3. Parking Pricing

Description

Parking pricing is simply the practice of charging for parking. As a stick measure, it is relatively effective. However, as a TDM "stick", it must be carefully implemented if negative economic impacts are to be avoided.

There are many examples of this measure in current practice. For example, underground parking in Whistler Village is paid for at either daily or hourly rates. There is some metered surface parking. However, the large day-lots for day skiers are free and most parking in Squamish is free. Generally parking for employees is free throughout the corridor.

Effectiveness

There is no doubt that this measure would be effective in reducing auto driver trips. It is unclear, however, how much reduction can be achieved without reducing the economic viability of the resort industry. Nor is it possible to determine the appropriate level of charge. On the positive side, parking charge increases are not irreversible. Introduction of higher charges or new charges where none exist for a trial period could allow an appropriate and acceptable level of parking charges to be determined.

However, based on relatively modest charge of $5, we estimate a 4% reduction in local recreation auto driver trips and a 1% drop in other recreation trips and northbound commuter trips by the auto driver mode. This would reduce auto driver trips by approximately 2% per day and AADT by approximately 290 vehicles.

In order to minimize the impacts on use of the resort, Intrawest could consider a modest reduction in the cost of ski lift tickets to make the overall impact of this measure "revenue-neutral."

Table B3 – Parking Pricing Evaluation Sheet

Parking Pricing

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,250	11,510	590	4.0%
Non-Local Tourist	5,050	1,510	2,230	1,310	1.0%
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,860	1,050	140	1.0%
Total	**30,300**	**12,100**	**16,150**	**2,050**	

%Change Auto Driver	**-2.4%**
Absoute (AADT)	**300**

Other Criteria	Evaluation
Affordability	Increased costs for users. Minor costs for operators. Net revenue could be used to support alternative modes.
Social Acceptability	Some resistance and complaints from users and businesses likely. However, most users accept parking charges as an unavoidable "fact-of-life.
Economic Impacts	Needs careful implementation if negative impacts are to be minimised.
Ease of Implementation	Relatively easy.
Technical Feasibility	No technical issues to be addressed.

B4. Carpooling

Description

There is a considerable amount of "informal" carpooling in the corridor for all trips. This is evidenced in the relatively high average auto occupancy for all market segments. Formal car-pooling usually involves a government or non-profit agency providing a ride-matching service for registered commuters.

This service is currently provided for employees in the Greater Vancouver region and the STS corridor by the Jack Bell Foundation with some financial support from BC Transit and TransLink.

Effectiveness

There is a significant amount of car-pooling currently in the corridor as shown by the relatively high car occupancy. Much of this appears to be informal or privately arranged because the communities are small. It is unclear how much contribution is made by the sponsored ride-matching service and it is also unclear how this could be more effectively promoted. Consequently, the potential for further application of this measure is negligible.

Table B4 – Carpooling Evaluation Sheet

Carpooling

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,400**	**16,000**	**1,900**	

%Change Auto Driver	**NA**
Absoute (AADT)	**NA**

Other Criteria	**Evaluation**
Affordability	Offers travel cost saving to user (employee).
Social Acceptability	Generally positive public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Requires establishment of "Ride-matching" service. There are many examples of such applications.
Technical Feasibility	No technical issues to be addressed.

B5. Vanpooling

Description

Vanpooling is a formal practice where an organizing entity provides vehicles and an administration that includes ride-matching services to groups of people who agree to pay most of the costs of operating the pooled vehicle. Four simultaneous conditions have to exist for successful vanpool formation: the geographic and temporal concentration of trips at both ends. For this reason, vanpooling is appropriate for the commuting demand segment. Moreover, the temporary nature of seasonal work militates against the successful implementation of vanpooling for this group of employees.

There is a significant amount of vanpooling currently occurring in the corridor. Some of this operates under the auspices of the Jack Bell Foundation whose administration costs are funded by BC Transit (Squamish/Whistler) and by TransLink (Squamish/Vancouver). There are 4 registered pools in the Squamish/Whistler section and 14 vans travelling to Vancouver. Monthly fees to the user are in the range of $150-$160.

Some companies also provide their own vehicles for use by their employees to travel to work. For example, Intrawest provides four such vehicles (two each for Pemberton and Squamish commuters). These operations are subsidized by the employer and offer a significant cost saving over the JBF option.

Effectiveness

Increased use of this mode for northbound commuters would invariably require a reduction in the monthly cost to users. If subsidies were made available, the TLC estimated that an additional six vanpools could reduce northbound commuting auto drivers by approximately 2% and AADT by approximately 40 vehicles.

Table B5 – Vanpooling Evaluation Sheet

Vanpooling

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,840	1,080	130	2.0%
Total	**30,300**	**12,360**	**16,040**	**1,900**	

%Change Auto Driver	**-0.3%**
Absoute (AADT)	**40**

Other Criteria	**Evaluation**
Affordability	High cost to employee unless subsidised. Subsidy transfers part of cost to employer (or government agency.
Social Acceptability	Generally positive public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Administrative infrastructure currently exists. However, seasonality of jobs in Whistler make it difficult to maintain ongoing vanpools.
Technical Feasibility	No technical issues to be addressed.

B6. Parking Priority

Description

The proposed application of parking priority would give preferred locations to high occupancy vehicles. It is an incentive measure and a supporting supply-side measure for carpooling and vanpooling. TDM participants are rewarded with small time savings. It is relatively costless to implement.

Effectiveness

Applied in Whistler, this measure applies to all demand segments except southbound commuting. It is estimated that it would reduce auto driver trips by less than 1% per day and AADT by approximately 80 vehicles.

Table B6 – Parking Priority Evaluation Sheet

Parking Priority

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,440	11,415	495	1.0%
Non-Local Tourist	5,050	1,520	2,225	1,305	0.5%
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	0.1%
Total	**30,300**	**12,320**	**16,040**	**1,940**	

%Change Auto Driver	**-0.6%**
Absoute (AADT)	**80**

Other Criteria	Evaluation
Affordability	No costs for users. Minor costs for operators. (One-time training and/or some monitoring).
Social Acceptability	Generally accepted.
Economic Impacts	None.
Ease of Implementation	Relatively easy.
Technical Feasibility	No technical issues to be addressed.

B7. Combined Transit/Recreation Pass

Description

This proposal markets combined transit with ski lift tickets and perhaps other services similar to the new U-pass in Vancouver or the new Whistler Community pass. The cost of the pass must be less than the cost of buying the two services separately. The proposal could be marketed to both international and local recreational markets.

Effectiveness

If implemented with a reasonable saving the user, this measure could reduce recreation/tourist auto driver trips by (say) 1% leading to a reduction in AADT of approximately 90 vehicles. This may not be sufficient reduction to justify the independent introduction of this measure. However, it could be a useful complement to other measures such as promoting the "sustainable resort" or parking pricing.

Table B7 – Combined Transit/Recreation Pass Evaluation Sheet

Combined Transit/Recreation Pass

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,440	11,380	530	1.0%
Non-Local Tourist	5,050	1,510	2,220	1,320	1.0%
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,310**	**16,000**	**1,990**	

%Change Auto Driver	**-0.7%**
Absoute (AADT)	**90**

Other Criteria	**Evaluation**
Affordability	Offers cost saving to user but may reduce suppliers' revenues.
Social Acceptability	Expected to be well received by affected members of the public.
Economic Impacts	No identified negative impacts.
Ease of Implementation	Some administrative effort to establish. Precedents are available internationally. Would require agreement between private operator and Intrawest.
Technical Feasibility	No technical issues to be addressed.

B8. Promotion of a Sustainable Resort

Description

This measure is largely a marketing effort to promote the "car-free" potential of a Whistler vacation. This would involve editing and expanding the transport information provided on the Whistler/Blackcomb web-site to promote the option of the car-free vacation. It would also involve promoting the concept to local hoteliers, travel agents, tour operators and others.

Effectiveness

If enthusiastically pursued, the TLC estimated that this measure could reduce local recreation auto driver trips by 0.2% and non-local recreation auto driver trips by 0.5%. This would reduce AADT by approximately 20 vehicles.

Table B8 – Sustainable Resort Evaluation Sheet

Promotion of a Sustainable Resort

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,500	11,380	470	0.2%
Non-Local Tourist	5,050	1,520	2,220	1,310	0.5%
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,380**	**16,000**	**1,920**	

%Change Auto Driver	**-0.2%**
Absoute (AADT)	**20**

Other Criteria	Evaluation
Affordability	Minimal cost. No cost to user.
Social Acceptability	Positive public perception.
Economic Impacts	No negative impacts. Potential for positive impacts.
Ease of Implementation	No major obstacles.There are international examples (Wefenweng).
Technical Feasibility	No technical issues to be addressed.

B9. Strengthen Conventional Inter-Urban Transit

Description

This supply-side measure bolsters conventional transit service in the corridor by either introducing the proposed BC Transit service between Squamish and Whistler, a new service between Squamish and the GVRD, or by strengthening the existing Greyhound service. This measure would serve all demand segments. (There are also services provided by Perimeter transport aimed primarily at tourist trips between VIA/Downtown Vancouver and Whistler.)

The proposed BC Transit service between Squamish and Whistler would be subsidized with 40% of annual costs (estimated in 2001 at $212,000) expected to be recovered through the fare-box. Alternatively, subsidies could be provided to the Greyhound service reducing the $5.60 discount fare to the order of $3. The annual cost of this subsidy was estimated in 1991 at $6000. At this time, costs for public transit between Squamish and the GVRD are not available.

Effectiveness

BC Transit estimated that it's proposed (initially peak hours only) service would attract 44,000 annual trips. Under the probably optimistic assumption that as many as 50% of these would otherwise be auto drivers, AADT would be reduced by approximately 60 vehicles. Assuming that a new public transit service was provided between Squamish and the GVRD, this could reduce AADT by an additional 70 vehicles. In combination, the TLC estimates these services could reduce AADT by 130 vehicles.

Table B9 – Conventional Inter-Urban Evaluation Sheet

Conventional Inter-Urban Transit

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,440	11,270	640	1.0%
Non-Local Tourist	5,050	1,510	2,200	1,340	1.0%
Southbound Commuter	3,850	2,460	1,350	40	1.0%
Northbound Commuter	3,050	1,860	1,030	160	1.0%
Total	**30,300**	**12,270**	**15,850**	**2,180**	

%Change Auto Driver	**-1.0%**
Absoute (AADT)	**130**

Other Criteria	Evaluation
Affordability	Offers travel cost saving to user (primarily employees) but requires subsidy.
Social Acceptability	Generally positive public perception.
Economic Impacts	None.
Ease of Implementation	Requires additional equipment but not seen as major obstacle subject to availability of funds.
Technical Feasibility	No significant technical issues to be addressed.

B10. Premium Transit

Description

Premium transit describes a system that can include the following elements:

- Direct service
- Superior on-board service similar to the airline industry (movies, food service)
- Attractive terminals

The service (aimed primarily at the tourist/recreational market) should be supported by transit priority techniques on the road. Premium fares can be expected – perhaps 25% above standard fares.

There is no premium service in the corridor. Perimeter service offering direct connections from the airport to Whistler comes the closest to the objective.

The concept is to provide a new premium service between Whistler and Vancouver to be provided by existing or new service providers. In the latter case, regulatory issues will need to be addressed – as such implementation could be a lengthy process.

Effectiveness

The service would appeal to a broad range of market segments; however, much of the ridership would be attracted from other friendly alternate modes such as existing transit ridership and auto passengers. It is noted that about 27 percent of existing international visitors use the transit mode – much through the Perimeter service.

The TLC assumed that the service would be little used by commuters but could attract an additional 1.5% of local recreational trips and 3% of non-local trips reducing AADT by 150 vehicles.

Table B10 – Premium Transit Evaluation Sheet

Premium Transit

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,410	11,210	730	1.5%
Non-Local Tourist	5,050	1,480	2,150	1,420	3.0%
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,250**	**15,760**	**2,290**	

%Change Auto Driver	**-1.2%**
Absoute (AADT)	**150**

Other Criteria	Evaluation
Affordability	Would be a niche market. Estimated start up cost for service provider is $5M.
Social Acceptability	Government subsidy would probably be opposed on social and political grounds.
Economic Impacts	No significant negative impacts.
Ease of Implementation	May be regulatory issues to be resolved. May be opposition from existing service providers. Will also require transit priority measures to be effective.
Technical Feasibility	No technical issues to be addressed.

B11. Marine Service

Description

This involves high-speed ferry service between Vancouver and Squamish. It could be attractive to southbound commuters providing reasonable frequency, travel time and fares were offered. It could also be attractive to tourists provided reliable, attractive road-based transit service was provided between Squamish and Whistler.

Effectiveness

Previous studies indicated that the service could attract up to 300,000 passengers per year — an average of approximately 800 passengers per day. These would likely be mainly recreational trips at the fare levels assumed by these studies ($25 one-way GVRD to Squamish).

If we assume that 25% of the passengers would divert from other transit services and that 60% of the remaining 600 passengers would be auto passengers and 40% would be drivers, the reduction in AADT would be approximately 240 vehicles.

Table B11 – Marine Service Evaluation Sheet

Marine Service

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				Marine			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**		Auto Reduction	Pass Reduction	Trans Redcution
Local Recreation	17,970	6,380	11,150	440	380	2.0%	2.0%	4.0%
Non-Local Tourist	4,630	1,420	2,090	1,120	420	7.0%	6.0%	14.0%
Southbound Commuter	3,850	2,480	1,360	10				
Northbound Commuter	3,050	1,880	1,040	130				
Total	**29,500**	**12,160**	**15,640**	**1,700**	**800**			

%Change Auto Driver	**-1.9%**		
Absoute (AADT)	**240**	**360**	**200**

Other Criteria	**Evaluation**
Affordability	One way fares of $25 would be required between Vancouver and Squamish if the service were to operate with little or no subsidy.
Social Acceptability	Generally positive public perception. Could be environmental concerns depending on the choice of marine fuel.
Economic Impacts	No negative impacts. Could generate additional economic activity.
Ease of Implementation	Requires significant investment in infrastructure.
Technical Feasibility	Potential issues of marine traffic regulations, speed limits, conflicts with other vessels. Requires efficient bus/vessel interface in Squamish.

B12. HOV /Transit Lanes

Description

This involves the provision of dedicated roadway lanes for the exclusion use of transit buses and High Occupant Vehicles (HOV) either by construction of additional lanes or the conversion of existing general purpose lanes for exclusive use.

In the STS corridor, conversion of existing (or currently planned) lanes would be impractical. Therefore this measure would involve costly new construction.

Effectiveness

In order to be effective, HOV/transit lanes must offer a travel time saving to the HOV occupants and to buses. The STS corridor is relatively uncongested and the proposed improvement will further reduce delays where they currently exist. The potential saving to HOV/transit lane users would therefore be negligible. Consequently no significant reduction in auto driver trips is expected.

Table B12 – HOV/Transit Lanes Evaluation Sheet

HOV/Transit Lanes

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,400**	**16,000**	**1,900**	

%Change Auto Driver	**NA**
Absoute (AADT)	**NA**

Other Criteria	Evaluation
Affordability	No cost user but high capital cost to government.
Social Acceptability	Some negative public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Requires significant enforcement and maintenance efforts.
Technical Feasibility	Significant technical challenges to be overcome.

B13. Transit Priority

Description

This involves providing signal priorities and queue-jumper lanes for public transit vehicles at congested intersections and other bottlenecks. These measures are more cost-effective and arguably provide equal or superior time savings than constructing lengthy HOV lanes – especially in difficult terrain.

This measure could be applied selectively at intersections in Squamish should congestion begin to occur.

Effectiveness

Because the need for, and the opportunity for this measure is limited, the travel time saving is likely to be insufficient to materially affect the choice of mode. Consequently no significant reduction in auto driver trips is expected.

Table B13 – Transit Priority Evaluation Sheet

Transit Priority

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,400**	**16,000**	**1,900**	

%Change Auto Driver	**NA**
Absoute (AADT)	**NA**

Other Criteria	Evaluation
Affordability	No cost user. Some capital and operating costs involved.
Social Acceptability	Probable neutral public perception.
Economic Impacts	No significant impacts.
Ease of Implementation	Requires detailed examination to determine practicality.
Technical Feasibility	Requires preliminary design to determine feasibility.

B14. Park-and-Ride Lots

Description

This involves designating parking lots, or a portion thereof, for the use of trip makers to park their private vehicle and complete their journey by public transit. Such lots may also be used by car pools as a collection point. Park-and-Ride/Park-and-Pool facilities may be provided by construction of lots specifically for this purpose or by allowing user to park in a lot constructed for other purposes when there is surplus capacity.

There is a small park-and-ride lot in Lions Bay, which serves TransLink bus services to Greater Vancouver. There is also anecdotal evidence of Greater Vancouver residents using commercial parking lots to Park-and-Pool while travelling in a group for recreational purposes to Whistler.

This informal parking could be legitimized by negotiating with shopping malls or other commercial parking providers to use existing lots for these purposes. In addition, space for Park-and-Ride could be provided as part of a design for a new transit centre in Squamish.

Effectiveness

This proposal is not considered sufficient on its own to effect a change of mode. However, it could be a valid "supply-side" initiative to complement and support other measures.

Table B14 – Park-and-Ride Lot Evaluation Sheet

Park-and-Ride Lots

Base	2001 Average Daily Trips			
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**
Local Recreation	18,350	6,510	11,380	460
Non-Local Tourist	5,050	1,530	2,220	1,300
Southbound Commuter	3,850	2,480	1,360	10
Northbound Commuter	3,050	1,880	1,040	130
Total	**30,300**	**12,400**	**16,000**	**1,900**

Revised	2001 Average Daily Trips				
Market Segment	**Total**	**Auto Dr.**	**Auto Pass**	**Bus Pass**	Auto Reduction
Local Recreation	18,350	6,510	11,380	460	
Non-Local Tourist	5,050	1,530	2,220	1,300	
Southbound Commuter	3,850	2,480	1,360	10	
Northbound Commuter	3,050	1,880	1,040	130	
Total	**30,300**	**12,400**	**16,000**	**1,900**	

%Change Auto Driver	**NA**
Absoute (AADT)	**NA**

Other Criteria	**Evaluation**
Affordability	No cost to user.
Social Acceptability	Generally positive public perception.
Economic Impacts	No significant negative impacts.
Ease of Implementation	Requires identification of suitable lots, analysis of available spare capacity and negotiation with car park owners/operators.
Technical Feasibility	No significant technical issues to be addressed.