

TRANSPORTATION & INFRASTRUCTURE BACKGROUND REPORT

OFFICIAL COMMUNITY PLAN UPDATE

The Resort Municipality of Whistler | January 2011

THE PREMIER MOUNTAIN RESORT COMMUNITY
MOVING TOWARD A SUSTAINABLE FUTURE



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INTRODUCTION

Transportation and Infrastructure are key elements of community livability and sustainability.

It is sometimes asked why the two subjects are treated together. Firstly, transportation is a combination of two elements, modes of transportation, such as walking, cycling, and motor vehicles, need transportation infrastructure, which includes the roads, paths, sidewalks, crosswalks, street lighting, and traffic signals. The second reason is that much of our infrastructure, including sewers, drainage, water, gas, and electricity, share road right of ways and are often located under roads, which is how 85% of us still get around, whether on foot, on a bike, in a bus, or in a private motor vehicle. Finally, roads and infrastructure both exist to provide access and service properties and buildings.

OCP Transportation and Infrastructure policies will support a number of Whistler 2020 strategies directly, including Built Environment, Materials and Solid Waste, Transportation, and Water and others indirectly, including Economic, Energy, Finance, Natural Areas, and Visitor Experience.

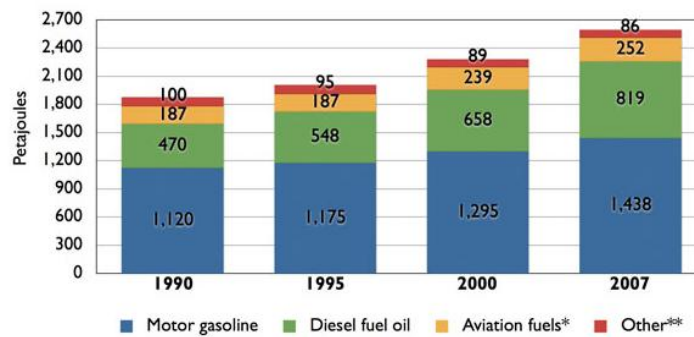
This Background Report will introduce the role and importance of transportation and infrastructure, and summarize the current realities, related current policy base, and issues.

It should be noted that the background information provided is not exhaustive and not all of the data or policies in plans have been formally adopted by the municipality. Information has been provided that paints a picture of where the community is at and the evolution of related policies over time, culminating in the long-range community objectives enshrined in the Whistler 2020 Descriptions of Success.

Transportation

Transportation affects our lives in many ways. It provides access to basic needs, services, employment, and recreation. It also supports a wide range of emergency services, such as fire, police, ambulance, and firefighting. Motorized transportation is a fundamental element the modern lifestyle and has greatly shaped the form and character of our communities. While the world was once scaled to slower, human, animal, or wind-powered modes of travel, the introduction of fossil fuels over the last few centuries has made us accustomed to faster, more convenient, and less expensive modes of travel. As a result, we have dramatically increased the number of trips that we make and the distance of these trips. In fact, our consumption of energy for transportation has increased about 50% in the last 20 years alone.

Transportation sector energy use by energy source¹

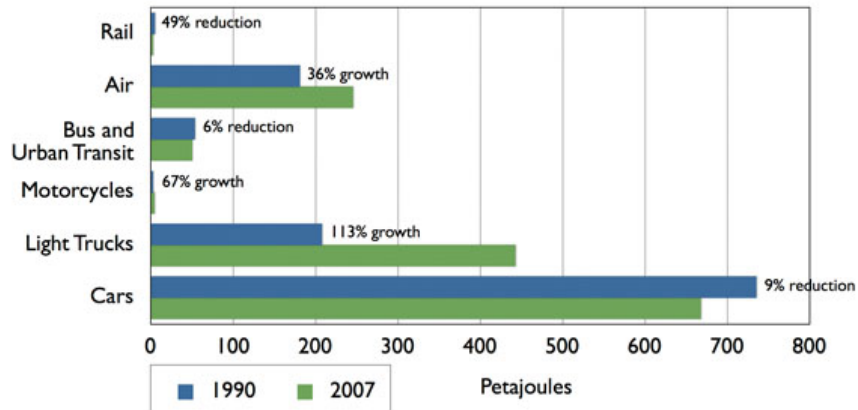


* Aviation fuels include aviation turbo fuel and aviation gasoline.

** "Other" includes electricity, natural gas, heavy fuel oil and propane.

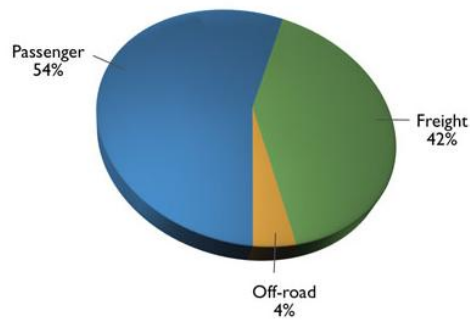
Unfortunately, while traffic and travel-related energy usage has been relatively stable, there has been no decrease in consumption, in spite of more energy efficient vehicles, due to a trend towards “light trucks,” i.e., SUVs, vans, and pickup trucks in lieu of smaller, higher mileage passenger vehicles.

Passenger transportation energy use by mode, 1990 and 2007¹



In addition to transporting ourselves, there is a tremendous amount of energy used to transport goods and services for personal, as well as business, purposes.

Energy use by subsector, 2007 (percent)¹



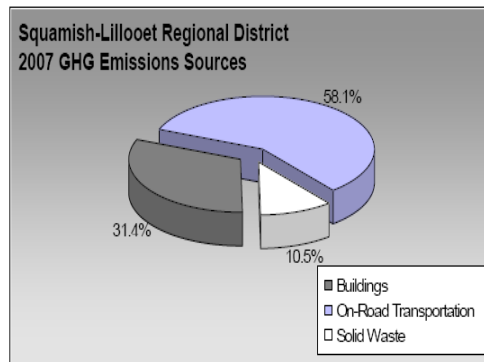
¹ NRCAN, Energy Efficiency Trends in Canada, 1990 to 2007 (2009)

It has been estimated that food for a typical Canadian household travels *on average* 2400km. Needless to say, as the average Canadian consumes hundreds of kilograms of food every year, this is enormously costly and requires considerable amounts of energy for transportation.

In Whistler, trip reduction programs like the Whistler Way have been instrumental in seeking to shift visitors and residents towards lower impact modes of transportation.

Why is this important?

On-road transportation accounts for almost 3/5 of the SLRD's measured emissions sources, which is significantly larger than emissions from buildings and other sources.¹



If we cannot significantly reduce our energy consumption related to transportation, or shift to energy that is renewable and not dependent on imports from other locations, increased costs and uncertainties in supplies suggest that there is a considerable risk that there may be severe disruptions to our quality of life and economic sustainability.

In addition to quality of life impacts related to accessibility and costs, transportation has other impacts on livability, including noise, visual intrusion, congestion, pollution, and health and safety.

Infrastructure

Infrastructure includes all of the local, regional, and provincial physical services that support our built form and modern way of life. While much of this infrastructure is visible, such as roads, sidewalks, streetlights, and traffic signals, much of it is hidden, including water, sanitary sewer, and drainage systems, including treatment plants. Significant amounts of energy are consumed in the construction and operation of our infrastructure.

Examples of the energy and materials used in construction include the oil and aggregate used in asphalt for our roads, concrete used in sidewalks, metal and oil-based plastics used in pipes, and energy used for excavation. Operational uses include energy and maintenance for pumps, street lighting, the operation of treatment plants, and general maintenance, such as snowplows.

While a relatively small proportion of energy is used for infrastructure, it is not a negligible amount. In the U.S., for example, 3% of all energy is used in water and wastewater systems.² A recent community energy study in Coquitlam indicated that energy aware planning could reduce infrastructure capital

¹ Province of British Columbia, 2007 Community Energy and Emissions Inventory (2010)

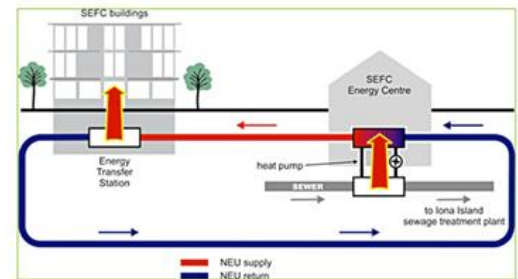
² http://water.epa.gov/infrastructure/sustain/bettermanagement_energy.cfm

and operating costs by 30%.³ New technologies and practices exist that can result in dramatic energy and resource savings for infrastructure, including:

- » Recycling of existing asphalt when repaving roads;
- » Using alternative development standards that reduce road widths;
- » Considering natural drainage systems in lieu of traditional stormwater sewer and drainage systems that depend on mechanical pump systems;
- » Directing lighting systems only to areas that need to be lit, rather than general areas, to reduce the number of lights required and energy consumed;
- » Installing street lighting and traffic light systems with LEDs or energy-efficient white light sources, such as metal halide;
- » Planning compact development patterns that require less infrastructure;
- » Applying Leadership in Energy and Environmental Design (LEED) building standards to operational buildings and structures, just as with other institutional buildings; and
- » “Right sizing” fleets and developing protocols to ensure that larger vehicles are only used when necessary for infrastructure maintenance operations and not for general business.

Infrastructure can also be a renewable resource. A considerable amount of waste heat can be extracted from sewer systems for use in district energy systems. As the graphic below suggests, after reducing energy demand, waste heat recovery can be the second most important “source” of energy; by harvesting renewable, low-impact heat, we avoid the need to use other non-renewable, higher impact heat sources, particularly fossil fuels.

The following images provide examples of sustainable infrastructure initiatives, including in-place asphalt recycling, solar-powered LED street lighting, and a sewer heat recovery system.

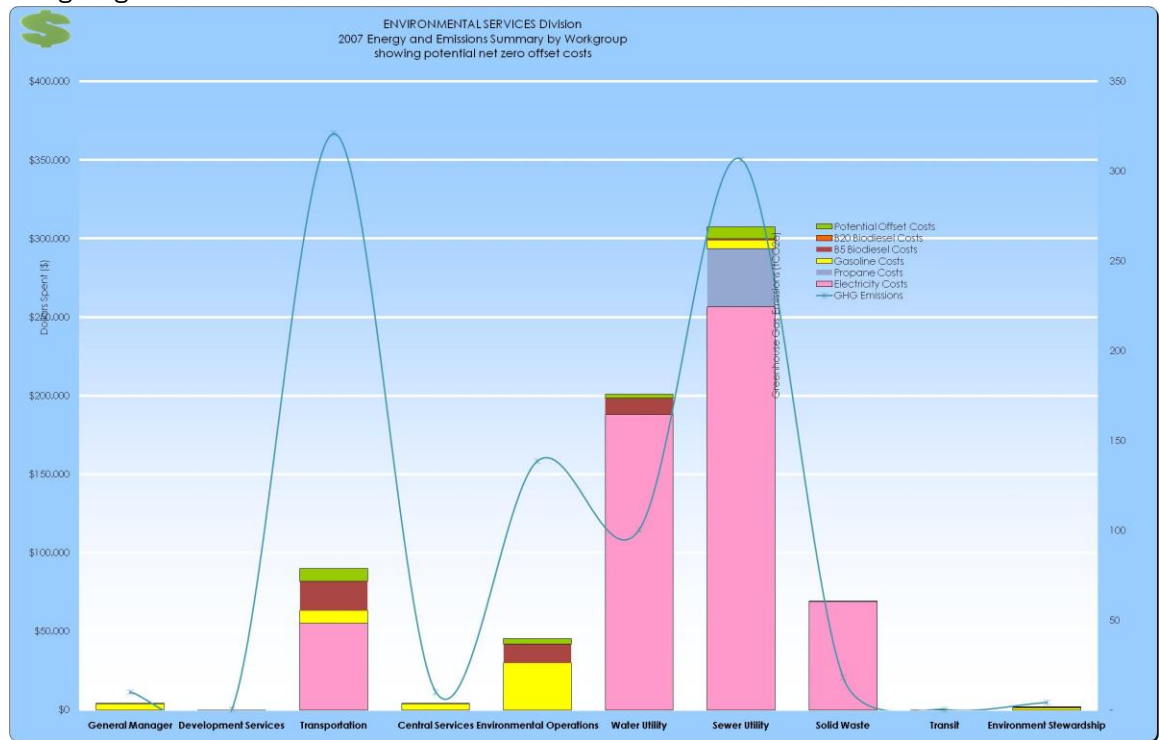


³ Community Energy Association, A Tool Kit for Community Energy Planning In British Columbia (2006)

Why is this important?

Infrastructure, if not properly constructed, maintained, and operated, can have significant environmental impacts. In fact, one of the best ways to “construct” infrastructure is to not construct it at all, but to integrate it with natural systems. For example, with on-site water retention from building roofs and impervious surfaces, the natural hydrology of a site can be preserved and, treated through natural filtering processes, rain runoff can be returned at natural flow rates to streams instead of storm sewers. Rain collection and on-site waste retention systems can significantly reduce the need to treat and pump water to buildings. Passive design guidelines for buildings, such as roof overhangs that block summer sun and allow winter sun, can reduce heating and cooling demands, reducing the need for transmission facilities and transformers.

Infrastructure also consumes a significant amount of local government budgets. For example, Whistler’s Environmental Services Division spends close to a million dollars per year in energy costs alone, which is about half of the municipality’s entire energy budget, including buildings; much of this is related to the Sewer, Water, and Solid Waste utilities, as is shown in the graph below. Another quarter of a million dollars is spent on park and village electricity for operations, much of which is used for lighting.



In addition to potential energy cost savings, applying best practices for infrastructure provides community leadership, but also sets an example for businesses and institutions, many of which have extensive private infrastructure systems.

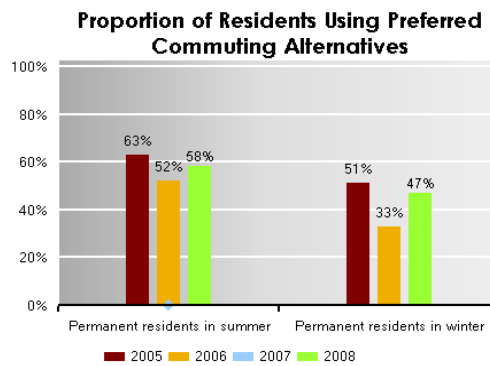
CURRENT REALITY

While not comprehensive, the indicators in the following two sections provide a snapshot of where the community is heading in terms of key indicators related to transportation and infrastructure.

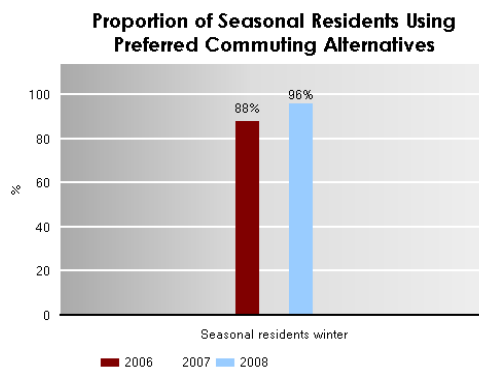
Transportation Indicators

Transportation Mode

Commuting to work constitutes a large proportion of Whistler residents' transportation trips and transportation in single occupancy vehicles (SOV) is generally more resource intensive and polluting than other modes. Commuting times also coincide with peak traffic volumes on Highway 99. The regularity of work commuting may also make it one of the easier trips to shift from single occupancy vehicle (SOV) to preferred modes of transportation such as carpooling, transit, biking or walking. This indicator reveals the proportion of residents who reported commuting to work via preferred transportation alternatives, specifically mass transit, carpool, or cycling.



Source: Whistler2020 Explorer



Source: Whistler2020 Explorer

Seasonal residents, including a large workforce from other locations without access to motor vehicles, are far more inclined to use preferred modes of transportation than permanent residents.

Permanent Residents

- » The proportion of permanent residents using preferred modes of travel trends up between 2006 and 2008 in both summer and winter.
- » Residents under 34 years of age and residents in Whistler for less than 5 years are more likely than others to walk, while those in Whistler for more than 5 years and over 34 years of age are more likely to drive alone.
- » Amongst permanent residents, 69% ranked transit as a high priority for budget allocation, ranking transit third behind snow clearing, and fire inspection and rescue services.

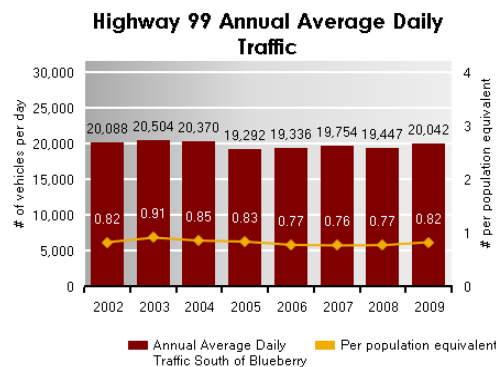
Seasonal Residents

- » Already quite high, winter trends increased between 2006 and 2008 from 88% to 96%.
- » Improving transit services ranked 2nd behind housing as the single most important issue requiring the greatest amount of attention in Whistler.

Benchmarks: Canada Census 2006 Whistler: 38%, Squamish: 12%, Pemberton: 18%, Banff: 61%

Traffic Levels

Annual average daily traffic on Highway 99 is used in this case as a proxy for the potential pollution impacts from transportation to and around Whistler. These impacts might include, air quality, contribution to climate change or noise pollution. This indicator measures the annual average daily two way traffic on Highway 99 just south of Blueberry.

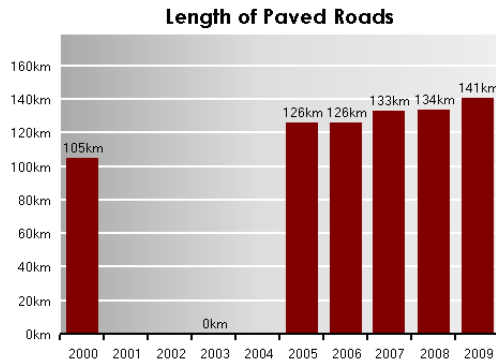


Source: Whistler2020 Explorer

- » The average annual daily traffic count on Highway 99 in 2009 was estimated at 20,042. Estimates were made for 2009 as the counter wasn't operational for part of the year. Estimates were in part based of counters between Whistler and Squamish.
- » The three year average trend increased slightly and increased by 3% on a one year basis from 2008 to 2009.
- » The number of vehicles per average population increased on a three year average and on a one year basis to 2009.

Road Construction

A greater distance of roads within a specified area generally indicates more physical encroachment on nature resulting in issues such as soil erosion, loss of habitat, disruption of wildlife, noise and loss of limited land. While the width of roads also impacts the environment, this parameter is not represented, i.e., a 2 or 4 lane road appears the same. Note that data was not collected between 2001 and 2004.

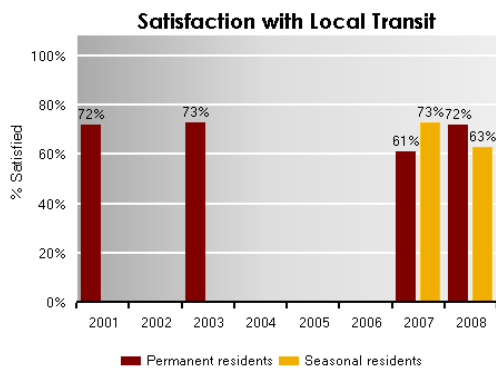


Source: Whistler2020 Explorer

- » Paved road length increased by 4% to 141km between 2008 and 2009. Paved road length increased 41% between 2000 and 2009.
- » The development of the parking lots and the sliding centre contributed to this increase from 2006 to 2009.
- » While not measured in this indicator, width increases occurred on Highway 99 south of the village between 2005 and 2008.

Satisfaction with Alternative Transportation Modes

Alternative options for transportation are important in order to transition from single occupancy vehicle (SOV) travel to more benign modes of transportation such as walking, biking, transit and car pooling. These alternative options must be convenient and attractive for use by residents or visitors. This indicator reports on resident satisfaction with Whistler’s transportation alternatives to the single occupancy vehicle such as mass transit and the valley trail network.



Source: Whistler2020 Explorer

Permanent Residents

- » In 2008, 72% of permanent residents were satisfied with local transit service (33% very satisfied, 39% somewhat satisfied). Of permanent residents 17% expressed some level of dissatisfaction.
- » Overall, satisfaction with local transit services increased significantly from a year ago, and is consistent amongst all permanent residents, with dissatisfaction highest amongst employed residents.

Seasonal Residents

- » In 2008, 63% of seasonal residents said they are satisfied with Whistler’s local transit service (23% very satisfied, 40% somewhat satisfied). Of seasonal residents 24% expressed some level of dissatisfaction.
- » The level of satisfaction is consistent amongst all seasonal residents, but sees an overall significant decline compared with a year ago and significant increase in ‘dissatisfied’ categories.

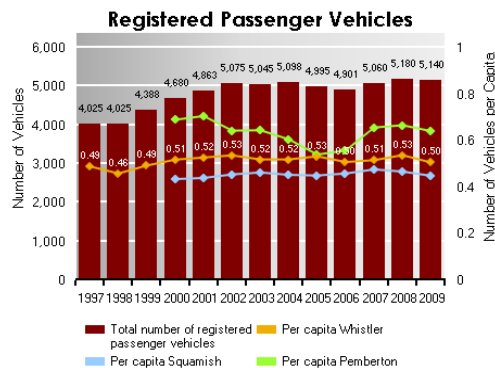
It should be noted that the Whistler and Valley Express (WAVE) Transit System won a 2009 Award from the Canadian Urban Transit Association (CUTA) for its performance 1991 – 2008:

The Whistler and Valley Express (WAVE) transit system rolled into service December 1, 1991 with 5 buses and 21,100 service hours. It has grown with the Whistler community serving 9,800 year-round residents and a daytime winter population of 24,000 with 25 small (30 and 35-foot) buses and 69,900 service hours annually. WAVE operates from 5:25AM through 3:15AM 365 days a year.

For the past 17 years, the WAVE conventional transit system has consistently had the highest rides per capita (293 in 2008) – even when using daytime population (120), highest rides per hour (41) and lowest cost per ride (\$2.43) for the Tier 1 Municipal Systems in BC. Only in the past five years, have other Tier one systems been able to surpass WAVE’s cost recovery, which is currently 32.4%. This cost recovery is still noteworthy considering Whistler’s municipal Council made the deliberate decision to keep transit affordable and did not raise fares for 15 years even when facing the challenges of an aging fleet and the increasing cost of fuel. It is also important to note that the WAVE transit system has three routes which operate in a free fare zone and one transit route which was at a significant discount.

Vehicle Ownership

Residents require transportation to, from, around and within Whistler. While convenient at times, of all transportation options passenger vehicles, especially older and larger models, tend to be a more resource intensive and costly mode of transportation than other options such as walking, biking, or buses. Personal cars and trucks in British Columbia are required to carry insurance when in use. This indicator reports on the number of non-commercial vehicles registered with insurance in Whistler.

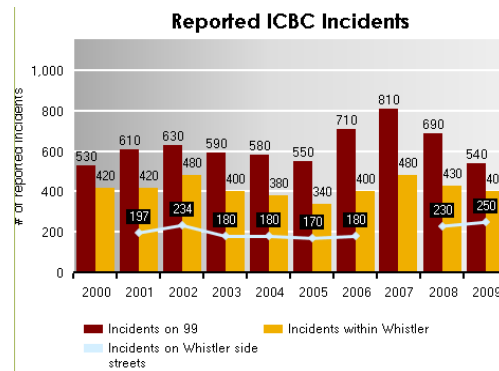


Source: Whistler2020 Explorer

- » After fluctuating increases and decreases in the total number of vehicles, numbers decreased from a record 5,180 passenger vehicles in 2008 to 5,140 in 2009. The three year total trend however is still increasing.
- » The number of vehicles registered per capita ranged from 0.46 in 1998 to a high of 0.53 vehicles per person in 2008. In general, this result has fluctuated in recent years between .50 and .53. Year to year per capita results decreased while they remain stable on the three year average.

Collisions

Safe transportation is desired by visitors, residents of Whistler, and other residents in the Sea to Sky Corridor. Since the majority of transportation related accidents involve vehicles, these accidents are reported as a proxy for the safety of transportation. This indicator measures ICBC reported motor vehicle accidents along Highway 99 from Lions Bay to Pemberton, as well as incidents within Whistler on Highway 99 and community side streets. Note that parking lot incidents are excluded from these results.



Source: Whistler2020 Explorer

- » In 2009, 540 ICBC-reported incidents occurred on Highway 99 between Lions Bay and Pemberton, while 400 incidents occurred in Whistler (Highway 99 and side streets).
- » Within Whistler, side street incidents totaled 250.
- » The three year average trend for incidents on Highway 99 in total moved toward the Whistler2020 vision, whereas trends for all Whistler were stable and Whistler side streets moved away from the vision.
- » Year to year results were positive for Highway 99 total and in Whistler, but results increased for incidents on Whistler side streets.
- » The top three human causal factors (2008) in incidents attended to by RCMP on Highway 99 are: 1) Driver inattentive 2) Speed 3) Driver Error/confusion.

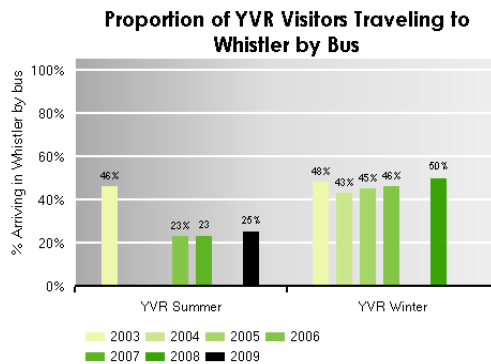
Vehicle Occupancies

Alternative options for transportation are important in order to transition from single occupancy vehicle (SOV) travel to more preferred modes of transportation such as walking, biking, transit and car pooling. These alternative options must be functional and attractive to be used by residents or visitors. This indicator reports on occupancy rates of vehicles traveling in/out and around Whistler.

- » Overall vehicle occupancies on Highway 99 at Lake Placid Rd. were at their lowest level since 2001, at 1.81 passengers per automobile. This is still considerably higher than occupancies in many areas, such as Metro Vancouver at approximately 1.2.
- » In general, outbound vehicles from Whistler Village have higher occupancy levels than inbound.
- » Overall occupancies are greatest in both directions at the survey location just south of Village Gate BLVD and Highway 99 compared to north of the Village at Nancy Green Drive, indicating that local occupancies are likely lower than in the vehicles of visitors.

Intermodal Travel by Visitors

Visitor travel to Whistler, which is critical to the resort's success, has a significant impact on the environment as a result of emissions and transportation infrastructure. While reducing air travel impact is a longer term undertaking, decreasing single occupancy vehicle travel to and from Whistler through increased use of mass and shared transit reduces congestion and associated human health and environmental impacts. This indicator measures the proportion of all visitors arriving in Whistler by bus. In addition, the chart displays results for visitors arriving at the Vancouver International Airport. (Both measures are interim indicators for the proportion of visitors arriving in a single occupancy vehicle). Note that those traveling to Whistler via bus tour that does not originate in Vancouver may not be captured as traveling to Whistler by bus.



Source: Whistler2020 Explorer

- » Based on surveys of all visitors the proportion of summer visitors traveling to Whistler by bus decreased to 2009. Results increased however for those traveling in the winter.
- » In general, only half as many visitors arriving in summer take the bus from YVR as in winter.
- » Based on surveys of visitors arriving at YVR, results for summer visitors dropped between 2003 and 2006 and are just slowly recovering. Winter visitors arriving at YVR are more likely than in the past to take a shuttle or bus to Whistler.

- » First time visitors are generally more likely than repeat visitors to take buses and taxis (taxis in winter only) to travel to Whistler; repeat visitors (generally regional) are more likely to travel by car or rental vehicles.
- » Past survey results show that visitors from Europe, the United Kingdom and Australia are more likely to take the bus than those from long haul US and Canadian markets. (2004)

Visitor Transport Satisfaction

- » In the winter of 2006/07, a majority of surveyed travelers arrived in British Columbia through YVR. Of those, the proportion satisfied with the variety of transport options decreased slightly from 2005/06.
- » Of those arriving at YVR in the summer of 2007, most were satisfied with the variety of transport options, with results increasing slightly from 2006 and significantly increasing from results in 2005.

Summary of Transportation Indicators

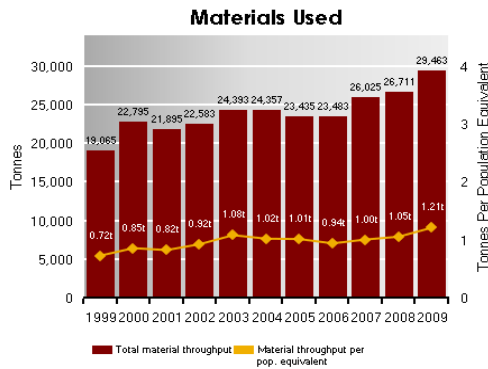
While the situation for Transportation is not getting significantly worse, in terms of reducing traffic volumes, increasing vehicle occupancies, use of preferred transportation modes, or collisions, significant movement towards community objectives is not being observed. In some areas, notably the amount of paving occurring in the municipality and the number of summer visitors using preferred modes, we are moving away from community objectives.

While the ratio of traffic volume to road capacity ("V/C") is not exceeded during most of the year, it is exceeded and there is significant congestion on Highway 99 and roadways leading from day skier parking lots on many weekend late afternoons during the ski season and on Sundays and holiday Mondays in the summer, particularly when the weather is good or there are major events occurring. Similarly, while parking is generally available in the Village and Creekside throughout the year, on weekends during the ski season most parking is fully subscribed.

Infrastructure Indicators

Material Use

Offering visitor services and maintaining resident lifestyles and needs currently requires significant quantities of various materials. Waste is generally produced and energy generally used (embodied) in all stages of extracting, making, packaging, transporting, using and finally disposing of products and residuals. Currently, all of these lifecycle stages have potential negative environmental impacts, which are measured using the proxy total material use in Whistler. Managing material use is important and can contribute to a reduction of overall material flows. This indicator totals the weight of solid material disposed, recycled or composted through data captured by Carney's Waste Services at the landfill transfer station and materials dropped at the Whistler Re-Use It Centre. The measurement does not include biosolids from the waste water treatment plant. Approximately 900 tonnes of materials combined from the Bottle Depots are not included in these results. While most demolition waste is included in the measure, some demolition waste skips Whistler's transfer station and as a result is not captured in this measure.

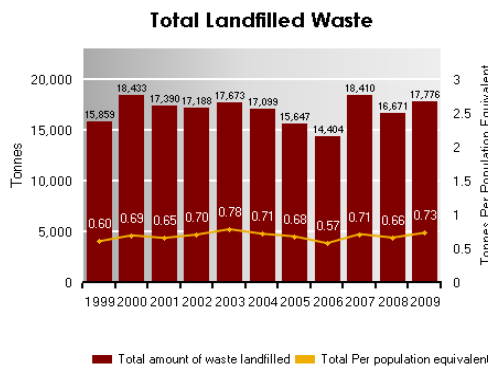


Source: Whistler2020 Explorer

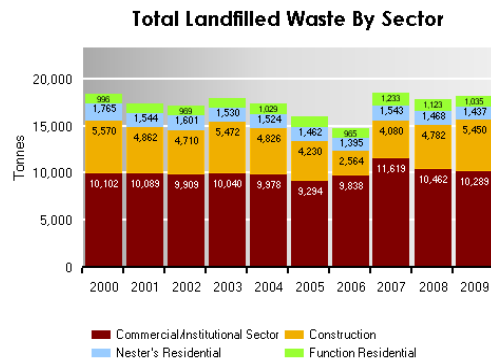
- » In 2009, 29,048 tonnes of materials (over one tonne per person) were used then landfilled, reused, composted or recycled.
- » The three year average amount of materials being used in Whistler has increased 7.5% on an absolute basis to 2009 and increased 8.7% on a per capita basis over the same time frame.
- » Contributing to this rising three year average trend was the increase in use of all types of materials from all sources (Commercial/Institutional, Construction, and Residential).
- » The year to year results increased by 9%. Contributing to the one year increase was a rise in construction waste and waste that ended up recycled or composted.

Landfill Waste

This indicator measures the total kilograms of solid waste material collected from Whistler and disposed of in the landfill. While there is more than one waste collection organization in Whistler, the large majority of Whistler's waste is dropped off at Whistler's transfer station. While most demolition waste is included in the measure, some demolition waste skips Whistler's transfer station and as a result is not captured in this measure.



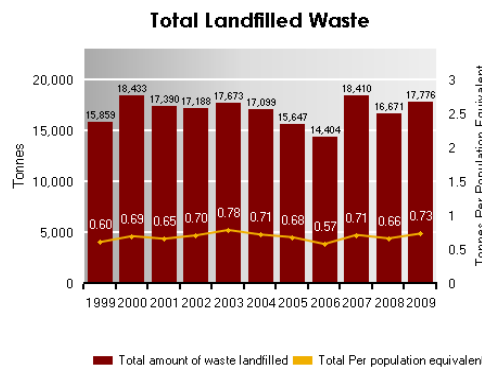
Source: Whistler2020 Explorer



- » In 2009, 17,776 tonnes of waste was sent to the landfill. In 2009, the amount per population equivalent was .73 tonnes. Whistler’s Environmental Strategy Interim Target is .4 tonnes.
- » Total waste landfilled increased over the three year average and on a year to year basis to 2009.
- » Contributing to this three year average trend was an increase in waste from the construction, residential and commercial/institutional sector. The year to year increase was due primarily to an increase in construction waste.
- » Commercial/Institutional waste generally makes up 59% of the total waste to landfill, while construction waste makes up 27% with residential household waste representing 14%.

Waste Diversion

This indicator represents the estimated proportion of materials recycled/composted through Carney's Waste Services and collected at the Recycle Centre managed by Carney's. The measurement includes biosolids from the waste water treatment plant that are composted and materials sent to the Re-Use it Centre. Note that approximately 900 tonnes of materials from Return it Bottle Depots are not calculated in this result.



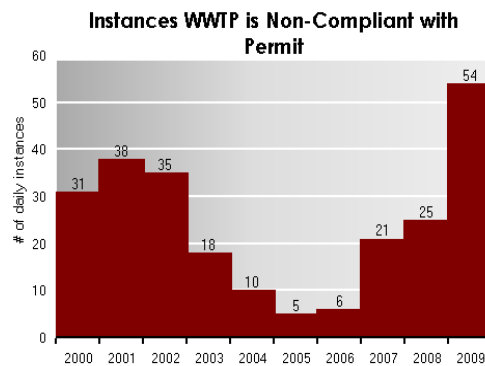
Source: Whistler2020 Explorer

- » In 2009, 17,776 tonnes of waste was sent to the landfill. In 2009, the amount per population equivalent was .73 tonnes, considerably higher than Whistler’s Environmental Strategy Interim Target of .4 tonnes.
- » Total waste landfilled increased over the three year average and on a year to year basis to 2009.

- » Contributing to this three year average trend was an increase in waste from the construction, residential and commercial/institutional sector. The year to year increase was due primarily to an increase in construction waste.
- » Commercial/Institutional waste generally makes up 59% of the total waste to landfill, while construction waste makes up 27% with residential household waste representing 14%.

Waste Water Effluent Quality

This indicator tracks the number of days where effluent (water leaving the waste water plant) test results are out of compliance with the permit standards. Effluent water is tested periodically to find out whether permit requirements are being met. The permit is negotiated based on numerous factors, including cost, technology and the health of the Cheakamus River.

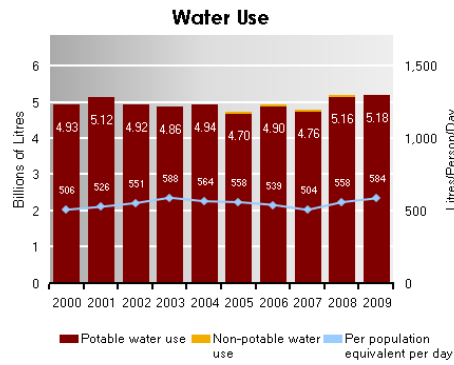


Source: Whistler2020 Explorer

- » In 2008, there were 25 daily instances where permitted standards were exceeded.
- » The number of daily instances where results violate permit standards increased on a three year average and increased significantly from 2007 to 2008.
- » Total suspended solids were over the permit requirements on days in January, February, and December while biological oxygen demand was over the permit levels in January and December.
- » Violations were due to increase flows through the system during holiday periods and procedural malfunctions, but these malfunctions are expected to drop now that the new plant is up and running.

Water Quality and Consumption

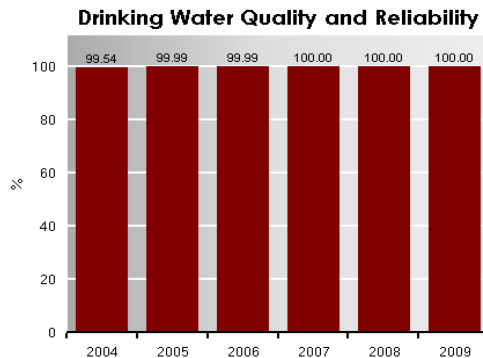
Water use measures the total of water extracted then delivered from RMOW water plants and non-potable systems to end users. Water uses that are not captured within this measure include private purpose uses such as for Whistler's golf courses and Whistler/Blackcomb's mountain operations. To account for the large influx of visitors to the community, the per capita measure uses Whistler's population equivalent as the total community population.



- » In 2009 Whistler treated and sent out approximately 5.18 billion litres of potable water , while RMOW irrigation with non-potable well water represented .0192 billion litres or .03% of water use reported in this indicator.
- » The three year average results increased 2% while the year over year results increased very slightly. Results for 2009 reported the highest water use in the past ten years and the 2nd highest per capita water use results.
- » Per capita daily water use reporting 584L/person/day in 2008 is above Whistler’s recommended target of 425 L, and represents an increase from year over year and on the three year average from 2008.

Water Quality and Reliability

This indicator measures quality and reliability of Whistler’s drinking water and delivery system, reporting a score out of 100. The score takes into account the frequency, duration and magnitude of boil water incidents and other service disruptions to residential and commercial dwellings. Boil water advisories are issued when tested sample results do not meet Canadian Drinking Water Guidelines and as a precautionary measure when there is some cause for concern, such as a minor break somewhere in the water delivery system. The indicator does account for water quality issues for water pipes or systems on private property.



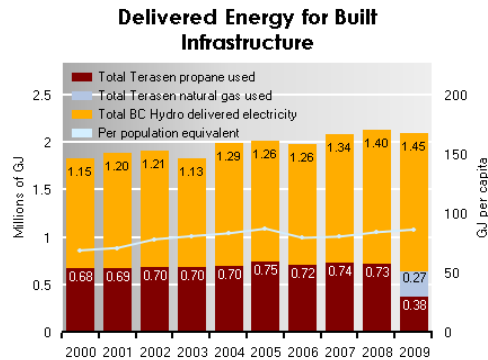
Source: Whistler2020 Explorer

- » No boil water advisories were issued for the RMOW municipal drinking water system in 2009. Likewise no advisories were issued for the Function Junction water system supplied by the Van West Water Utility. The Van West Water Utility however, was ordered to connect to the RMOW water system on March 27th 2010.

- » A few of the non-RMOW water systems were on moderate hazard ratings in 2009, full details can be located here at the Vancouver Coastal Health Site.

Electrical and Gas Consumption

The primary utilities requiring infrastructure, other than telecommunications infrastructure, are gas and electricity. A significant shift is occurring as propane systems are converted to natural gas with the arrival and expansion of the Terasen distribution network.



Source: Whistler2020 Explorer

- » Whistler's total primary energy use for 2009 was estimated at 3,100,000 GJ, which is the equivalent of 1 million 100 watt light bulbs left on, 24hrs per day, year round. On a per capita basis, Whistler used 127.29 GJ/capita of energy in 2009 and total energy costs for Whistler in 2009 are estimated at roughly \$68 million, \$5 million less than 2008.
- » The estimated three year average primary energy use increased 1.4%, and the estimated year to year primary energy use remained relatively stable between 2007 and 2008.
- » Overall energy use is increasing across the commercial, residential and intra-community transportation sectors on a three year average.
- » On a one year basis, overall energy use was generally stable with decreases in commercial sector stationary energy use slightly offsetting increases in the residential sector, and intra-community transportation sector.

Summary of Infrastructure Indicators

Although the quality of drinking water remains high, per capita consumption of water and production of waste water are constant and remain well above community objective levels. Although instances of waste water effluent violations of permitted contamination have been exceeded often in the past, the new waste water treatment plant currently in operation is expected to address many of these problems. In general, our society is wasteful, consuming considerable resources and emitting considerable waste products, which requires significant infrastructure to distribute and treat. Energy consumption in particular continues to increase in absolute as well as per capita terms, requiring a growth in distribution infrastructure, such as transmission lines, and facilities, such as substations.

Whistler's water and sewer mains (distribution lines) are near capacity, and future development will need to either be directed to those areas with surplus capacity, or new capacity will need to be built.

EXISTING POLICY CONTEXT

This section provides a summary of key related Official Community Plan (OCP) policies as well as other plans and policies introduced since the last OCP update, including Whistler 2020 Descriptions of Success. (Indented text in italics has been taken from policy documents).

Transportation

Existing Official Community Plan Policies (OCP, 1993) – TRANSPORTATION

Existing OCP policies, which have been significantly modified by subsequent policies and W2020 directions, while supporting a pedestrian and bicycle network in the valley, focused on ensuring adequate road and parking capacity to accommodate demand for travel by private automobile.

BACKGROUND

Transportation for Whistler can be separated into two components, namely regional and local. Each one is subjected to a travel demand based on the number of users, and the required corresponding quality and quantity of transportation facilities to meet that demand. The ability to conveniently and effectively travel both to Whistler and within Whistler is important for Whistler to remain successful both as a community and as a resort. For regional transportation issues, automobiles will continue as a principal mode of travel to Whistler, and the OCP advocates continued efforts to upgrade Highway 99, particularly if more developments are approved in other parts of the corridor. Within Whistler, automobiles will continue as the primary mode of transportation. However, there is a need for increasing emphasis on providing alternate modes of transportation, and for upgrading the existing overall transportation system with improved public transit, additional pedestrian and bicycle trail systems, satellite parking, and improvements to the local road system.

POLICIES

1. *The Municipality will implement a local road system that will be adequate to provide for new development and growth in existing developed areas, and that will minimize negative impacts of development on existing subdivisions.*
2. *The Municipality in cooperation with the Ministry of Transportation and Highways will develop a local network road system that will provide appropriate connection points to Highway 99 and, while Highway 99 will continue to be the backbone of the community's transportation system, will provide alternate routes for local traffic in order to reduce traffic volumes on the Highway. The local network road system will avoid wherever possible, running network roads through existing subdivisions and will be based on these objectives:*
 - a. *Providing alternative routes for local traffic in order to reduce the demand on Highway 99 within the Municipality;*
 - b. *Upgrading Highway 99 within the Municipality, while continuing to provide for local use;*
 - c. *Minimizing negative circulation impacts of new development projects on existing subdivisions; and*
 - d. *Improving the short and long-term transportation infrastructure without compromising the livability and attractiveness of the community and resort.*
3. *The Municipality will ensure that construction standards for local roads are consistent with the special mountain resort character of Whistler and with overall goals for the quality of the resort and community.*

4. The Municipality will ensure that on-site parking requirements for all developments are adequate.
5. The Municipality will continue to implement a cycling and walking trail system throughout the valley, particularly adjacent to Highway 99.
6. The Municipality will continue to monitor the utilization of Highway 99, and the requirement to expand the capacity of Highway 99 and/or construct a bypass route.
7. The Municipality will identify land and facility requirements for transportation centres.
8. The Municipality will monitor the impact of skier parking on transportation circulation, and will promote and support the construction of satellite parking to the south of the Municipality.
9. The Municipality will encourage the centralization of helicopter movements at the Whistler Municipal Heliport.
10. The Municipality will consolidate and regulate float plane activity at Green Lake.

Comprehensive Development Plan (CDP, 1993) – LOCAL TRANSPORTATION

The CDP also recognizes that automobiles will remain the dominant mode of transport, but states that increasing emphasis should be placed on preferred modes for both travel to and within Whistler.

The ability to travel conveniently to and within Whistler is vital to the resort's success and livability. Recognizing that automobiles will remain the principal mode of travel to the resort for the foreseeable future, continuing improvements to the regional and local network are necessary.

The Comprehensive Development Plan, therefore, advocates continued efforts to upgrade Highway 99, particularly if development occurs in other parts of the corridor. However, the Municipality strongly believes that the upgrading of Highway 99 must be governed by two principles:

1. *Highway 99 (particularly from Vancouver to Whistler) is a scenic, mountain highway that is an important element in the visitor's experience. The quality of the experience and safety should be the key design criteria and these should not be compromised by striving to achieve maximum speed or capacity. This may mean that capacity is lower than demand at some peak times, but it is likely (and desirable) that this condition may lead to peak-spreading as traveler's adapt their plans. This approach is consistent with Whistler's aim to emphasize improving access for resort visitors over improving access for day skiers or weekend visitation by recreation home occupants.*
2. *Highway 99 within the Municipality is regarded by the community as an important element in the local road network. While it is desirable to create alternative routes that will take some of the local traffic off of Highway 99, the highway will continue to be the backbone of the local road network. Any upgrading or changes on the Highway should recognize and facilitate local use.*

The Comprehensive Development Plan advocated increasing emphasis on alternative modes of transportation to Whistler, such as train and bus, and within Whistler, such as transit and bicycle.

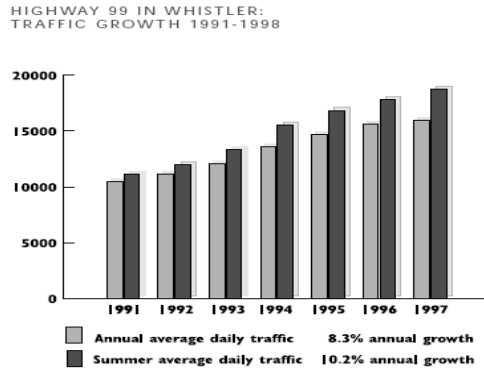
POLICIES

1. *The Municipality will include in its Official Community Plan a road plan that will emphasize:*
2.
 - a. *Creating alternative routes for local traffic in order to reduce local use of Highway 99, provided that new network roads should avoid going through existing subdivisions and should not have negative effects on existing neighbourhoods;*
 - b. *Upgrading Highway 99 within the Municipality, provided that the Highway's role as an important local road is maintained; minimizing negative circulation impacts of new development projects on existing subdivisions; and*

- c. *Improving the short and long term transportation infrastructure without compromising the livability and attractiveness of the community and resort.*
3. *The locations of local roads and the construction standards for local roads should be consistent with the overall goals for quality of life, quality of environment, and resort image in Whistler. Road layouts and standards should reflect the special mountain resort character of Whistler and respect existing neighbourhoods. Typical municipal standards are not necessarily appropriate because these can involve too much emphasis on wide paving widths (which are visually inappropriate) and too much emphasis on traffic efficiency over quality of the community and resort environment.*
 4. *The Municipality generally supports continued upgrading of Highway 99, particularly between Vancouver and Whistler. However, the Municipality views Highway 99 as a scenic, mountain highway and advocates emphasizing safety and the quality of the experience of the drive over speed and efficiency as criteria for highway design.*
 5. *The Municipality will ensure that on-site parking requirements for residential developments, commercial and industrial developments, and major visitor attractions and facilities are adequate. This may require a review of current parking standards.*
 6. *The Municipality will attempt to implement as many as possible of the recommendations for transportation improvements included in the 1991 Whistler Transportation Study and the 1992 Comprehensive Transportation Study. These improvements concentrate on improving transit to make service more efficient (such as bus lanes) and convenient and on reducing the use of private automobiles at peak times in peak locations (such as the use of satellite parking lots with shuttle service).*
 7. *The Municipality will continue to implement bike routes and bike lanes throughout the valley, particularly in the Highway 99 corridor. The Municipality also supports continued extension and improvement of pedestrian routes and walking trails.*
 8. *The Municipality strongly supports increased use of public transit within the Municipality. The Municipality also supports the idea of public transit or shuttle bus service between Whistler and Squamish and between Whistler and Pemberton, as these communities play an increasing role in housing people who come to Whistler for work, recreation, or other purposes. The Municipality's support for any specific proposal will depend on the fiscal impacts on the Municipality.*
 9. *The Municipality will encourage the expansion and improvement of rail service for visitors to Whistler and other parts of the region.*
 10. *The Municipality will work toward identifying sites and developing concept plans for transportation centres that will act as a hub for bus, transit, and shuttle service,*
 11. *The Municipality supports the efforts of Pemberton to upgrade its airport and will assist Pemberton as appropriate in its efforts to gain senior government assistance for this facility.*
 12. *The Municipality will encourage the centralization of helicopter movements at the Whistler Municipal Heliport.*
 13. *The Municipality will consolidate and regulate float plane activity at Green Lake.*

Whistler Comprehensive Transportation Strategy (WCTS, 1999)

In the 1990s, traffic growth was occurring at alarming levels:



In response to this growth, the Transportation Action Group prepared this strategy, which is still used as a blueprint for transportation planning and investments. (The Transportation Action Group still meets today on a regular basis and consists of a large group of community stakeholder groups).

The Transportation Advisory Group, or TAG, was formed in the spring of 1996 to address transportation issues in Whistler. TAG is comprised of many diverse stakeholders, including local residents, councilors, municipal staff, representatives from Whistler-Blackcomb, Tourism Whistler, BC Transit, and the Ministry of Transportation and Highways. One of the first actions of TAG was to develop a future vision for transportation in Whistler, one which emphasized alternative travel modes and limited additional road capacity. TAG then engaged a consultant team to assist them in preparation of a long-range strategic plan to realize the vision.

The three key issues identified by TAG were:

1. *Congestion on Highway 99 and in the Village during peak winter afternoon periods is excessive. Traffic is growing steadily and this is expected to continue with increasing Whistler development. Congestion on Highway 99 and in the Village increases response time for all emergency services.*
2. *On average, 20 percent of Whistler employees live in Pemberton or Squamish and commute, primarily by car, putting more pressure on Highway 99. This percentage could grow, when the bed cap is reached and market housing becomes even more expensive*
3. *Many people perceive public transit as unattractive. Local public transit is, therefore, not being used to the extent it could be.*

TAG Vision

Quality Experience for Residents and Visitors:

- » *Be able to move quickly and easily*
- » *Have a safe system*
- » *Retain scenic aspects we now have*
- » *Ensure a high-quality design*

Short-term Plan:

- » *Facilitates goods and people moving.*
- » *Is affordable, attractive and practical.*
- » *Allows for future development.*
- » *Utilizes incentives and deterrents to shape desired behavior.*
- » *Recognizes that major stakeholders within Whistler must address transportation concerns.*

Long-term Plan:

- » *Solutions and systems should be flexible.*
- » *Solutions should be physically and financially practical.*
- » *Pro-active versus re-active solutions.*
- » *There should be integration of the Resort and Community.*
- » *Ease of access.*
- » *Should consider growth management.*
- » *Facilitate increased capacities with efficient use of existing systems.*
- » *Growth should not be accommodated simply with linear expansion of existing systems.*
- » *Use creative and unique solutions.*
- » *Ease congestion.*
- » *Integrate transportation and recreation.*

Action Plan

The resulting action plan had these components:

1. *Communication and Monitoring*
 - a. *Promote and encourage transit use, carpooling, cycling, and walking*
 - b. *Report on the implementation and impacts of strategy recommendations*
 - c. *Improve communications and coordination between major stakeholders in transportation*
2. *Land Use Plans and Policies*
 - a. *Minimize travel distances to work for Whistler employees*
 - b. *Protect future rights-of-way*
 - c. *Minimize travel distances for common daily trips*
 - d. *Minimize impact of new roads*
 - e. *Use the development process to reduce future vehicle parking requirements and encourage alternative transportation modes*
 - f. *Support regional growth management*
3. *Whistler Transit*
 - a. *Improve and expand transit*
 - b. *Create new transit services*
 - c. *Reduce the need to carry large items on the transit system*
 - d. *Improve vehicles to make transit more attractive*

4. *Transportation Demand Management*
 - a. *Focus TDM programs on peak travel periods*
 - b. *Develop regional programs, facilities, and services to support carpooling*
 - c. *Develop local programs, facilities, and services to support alternative travel modes*
5. *Bicycle/Pedestrian Networks & End-of-Trip Facilities*
 - a. *Provide an extensive, off-road, multi-purpose trail system focused on recreational cyclists.*
 - b. *Improve pedestrian and cyclist accessibility and links to other modes*
 - c. *Provide an on-street bicycle route system focused on commuter cyclists*
 - d. *Provide end-of-trip facilities for commuter cyclist trips*
 - e. *Improve pedestrian and cyclist safety and security*
6. *Parking Management*
 - a. *Manage village area parking more effectively*
 - b. *Locate new skier lots south of the village*
7. *Whistler Road System*
 - a. *Remove local traffic from Highway 99 where practical*
 - b. *Reduce congestion and improve safety on Highway 99 in peak periods*
8. *Regional Road System*
 - a. *Improve safety and maintain existing capacity on Highway 99 to Lower Mainland*
 - b. *Increase highway capacity if TDM measures implemented and congestion still at unacceptable levels*
 - c. *Plan for bypass routes to Highway 99 in Whistler*
9. *Other Regional Improvements*
 - a. *Make regional transit services more attractive*
 - b. *Improve air connections to Whistler*
 - c. *Make the use of rail more attractive*
10. *Traffic Operations*
 - a. *Reduce congestion in Whistler by improving traffic operations*
 - b. *Improve emergency response times during peak traffic*
 - c. *Reduce speed of traffic residential areas to improve livability*
 - d. *Reduce the impact of trucks in the village*
 - e. *Improve transportation system operation through better communications with users*
11. *Lift Systems and Mountain Operations*
 - a. *Plan and implement new lift systems to minimize travel distances and reduce congestion in the valley*
12. *Fiscal Impacts*
 - a. *Minimize municipal and provincial taxpayers share of transportation costs by adopting user-pay principles.*
 - b. *Ensure transportation improvements are affordable*
 - c. *Create funding partnerships*

The implementation of the plan between 1999 and 2011 was estimated at \$45 million, in 1999 dollars.

Sea to Sky Corridor Travel Demand Study (2002)

The intent of the study was to determine if other modes of transportation could make a significant impact on reducing private vehicle trips for long-distance travel. The study concluded that no other mode was viable, although a key assumption of the Study was that TDM measures would not be in place along with the proposed transportation options.

Key information from the study follows:

Study Objective

The objective of this study is to estimate the long-term demand for rail and other multi-modal services on the Sea-to-Sky corridor up to 2025. In addition, the study identifies feasible opportunities that could be operational by 2010. The Sea-to-Sky corridor is defined in this study as the urban and rural areas adjacent to Highway 99 North between Horseshoe Bay and Whistler, B.C.

The key tasks undertaken for this study included:

- ❑ selection and refinement of feasible corridor options;
- ❑ current demand assessment and market research
- ❑ model development, demand forecasting and option evaluation

Sea-to-Sky Corridor Options

Four corridor options were developed and selected for demand forecasting and evaluation. These options provided the range of possible multi-modal improvements for the Sea-to-Sky corridor and are defined as follows:

- ❑ **Option 1 – Highway Emphasis** included the four laning of Highway 99 North between Horseshoe Bay and Squamish and safety and urban improvements for the entire corridor to Whistler. This option also includes minimum rail investments (e.g. new or refurbished rolling stock and upgrade of level crossings). The capital cost for this option is estimated at \$996 million, with an annual operating cost of \$0.85 million.
- ❑ **Option 2 – Medium Rail Investment** entailed increased rolling stock and service frequency for the passenger rail between Lonsdale Quay and Whistler (three northbound and three southbound trips daily). Train passenger fares between North Vancouver and Squamish would be \$25 one-way and \$50 one-way to Whistler. This option also included highway safety and urban improvements identified in Option 1. The capital cost is estimated at \$524 million, with an annual operating cost of \$23 million.
- ❑ **Option 3 – Maximum Rail Investment** would result in the reduction of line-haul travel time by as much as 25 minutes while offering identical passenger service frequencies as Option 2. Train passenger fares between North Vancouver and Squamish would be \$35 one-way and \$70 one-way to Whistler. This option also included highway safety and urban improvements identified in Option 1. The capital cost is estimated at \$774 million, with an annual operating cost of \$23 million.
- ❑ **Option 4 – Passenger-Only Ferry/Bus** included a new passenger-only ferry service between Central Waterfront and Squamish, and bus connection up to Whistler (four northbound and four southbound trips daily). Ferry/Bus passenger fares between Vancouver and Squamish would be \$25 one-way and \$35 one-way to Whistler. This option also included highway safety improvements and minimum rail upgrades. The total capital cost for this option is estimated at \$271.3 million, with annual operating costs of \$7.45 million.

Existing Corridor Demand

Current inter-city corridor demand was estimated using a combination of existing information and original surveys conducted for this study. Two marketing research studies were completed to assess current demand levels and consumer interest in the proposed options. The first survey involved telephone interviews with 900 residents of the Sea-to-Sky corridor and Lower Mainland. An on-site survey at Whistler was also completed with 200 non-residents to determine their travel characteristics and responsiveness to the corridor options. Additionally, a survey of bus companies operating in the corridor was conducted in order to estimate inter-city bus movements and ridership.

On the bases of market research and existing information, the current inter-city corridor demand was estimated at approximately 11 million trips per year. Residents of the corridor and Lower Mainland account for approximately 83 percent of the total travel demand. The remaining 17 percent of travel is made by non-residents (e.g. Rest of B.C., Canada and International). Auto demand (drivers and passengers) accounts for 93 percent of total inter-city demand. Bus and rail passengers account for six percent and less than one percent of travel demand, respectively.

Other features of the corridor demand include:

- ❑ Corridor residents account for approximately 35 percent of the inter-city demand, while comprising of only one percent of the population of the study area (defined as the Sea-to-Sky corridor and the Lower Mainland).
- ❑ Whistler attracts 55 percent of the corridor destinations, while Squamish attracts 15 percent of the destinations.
- ❑ Sixty-five percent of the non-resident visitors to Whistler arrived by airplane in Vancouver, and the majority of them spent time in the Lower Mainland prior to travelling to Whistler.
- ❑ Washington and Oregon visitors who drive across the border represent 20 percent of the total non-resident demand.

Conclusions

The key conclusions drawn from the study are:

- ❑ The multi-modal options tested do not appear to divert significant demand from Highway 99 North. Note that this analysis assumed status quo TDM measures and no highway tolling within the study area.
- ❑ Market research results indicate that an enhanced bus service concept may offer potential to divert some automobile traffic from Highway 99 North.
- ❑ The passenger-only ferry service may offer potential as an independent service.
- ❑ The medium and maximum rail options tested for this study are not viable alternatives for servicing long-term demand in the Sea-to-Sky corridor.

Additional planning and detailed analysis would be required if further consideration is given to any of these options.

Whistler Welcome Strategy (2003)

The Welcome Strategy was aimed at managing the visitor experience from the time the visitor contemplated visiting Whistler until they returned home — and all points in between, ensuring that the visitor’s experience was seamless and pleasant. While this may not at first appear at first glance to be transportation related, getting to, from, and around the community was correctly viewed as an important part of the community’s success.

The Strategy focuses on each of the phases of the visitor experience, including:

- » Pre-trip information gathering;
- » Travel from the point of departure and ground transfer to Whistler;
- » The arrival in Whistler and initial orientation;
- » Way-finding and information gathering during the visit; and
- » Check-out and departure.

Unlike many traditional transportation studies, this strategy took the unique approach of viewing Whistler primarily from a visitor’s eyes, i.e., someone not familiar with the local transportation infrastructure and arriving and leaving at all times of the day in all types of conditions. Many of the principles apply to everyday travel within the community, whether by local or visitor: clarity, ease of use, free of barriers, safe, and pleasant.

Whistler Resort Transportation Planning Study (2004)

The primary objectives of the study included:

- » *To compile and review existing information and previous studies, and incorporate insights derived from the stakeholder interview program conducted for the Inter-modal study;*

- » *To develop a comprehensive array of long-term highway planning options (infrastructure, policy and information related) that provide for the safe and reliable movement of people and goods on both Highway 99 and the intersecting municipal roadways;*
- » *To generate a set of tangible transportation option ‘bundles’ that take into account the land use and development projections outlined by the Whistler It’s Our Future program;*
- » *To evaluate the generated transportation option “bundles” under resort guiding principles to ultimately identify a preferred transportation set of improvement solutions; and*
- » *To develop a strategic level implementation plan that identifies recommended improvements. Capital and operating costs for proposed new infrastructure improvements are included.*

The basis for the study is found within four key municipal documents including: Whistler 2002: Charting a Course for the Future, Draft Comprehensive Sustainability Plan, the Whistler Welcome Strategy, and the Whistler Comprehensive Transportation Strategy. Central to each of these documents is a commitment to enhance the ‘Whistler Experience’ in its broad Vision 2002 definition and at all stages of the experience continuum as described in the Whistler Welcome Strategy. Of recognized importance towards enhancing the ‘Whistler experience’ and improving visitor arrivals to the Village is the need for a comprehensive and sustainable transportation strategy.

These four key reports were also used to broadly guide the Transportation Planning Study and to generate the accounts for ‘Multiple Account Evaluation’ and evaluation criteria. Using these criteria, the study’s recommendations included three ambitious Transportation Demand Management (TDM) goals:

TDM Goal 1 - 50% Increase in the Number of Day Skiers Arriving by Inter-City Buses Rather than Car

This targets day -skiers and requires making bus service (transit, scheduled and chartered), and ridesharing relatively more attractive than driving. This will involve providing information about transport options to day-skiers, improved regional bus and rideshare services, improved baggage handling options for bus riders, improved local transportation options (walking, local bus, taxi), parking pricing and restrictions, and possibility private automobile traffic restrictions or pricing on local streets. As mentioned above, day -skiers tend to have lower incomes and travel in smaller groups than overnight visitors, and so are probably more responsive to incentives.

TDM Goal 2 - 50% Shifts of Out-of-Town Automobile Commuter Employees to Transit

This targets out of town commuters and requires making transit relatively more attractive than driving. This will involve implementing commute trip reduction programs, providing targeted information about transportation options, improved regional bus and rideshare services, improved local transportation options (walking, local bus, taxi), parking pricing and restrictions, and possibility private automobile commuting restrictions. If programs only target peak periods (winter weekends) they will only affect a small portion of total travel.

TDM Goal 3 - 50% Shifts of Resident Employees to Transit

This targets local commuters and requires making transit relatively more attractive than driving. This will involve implementing commute trip reduction programs, providing targeted information about transport options, improved local bus and rideshare services, improved non-motorized travel options (walking, cycling and skiing), parking pricing and restrictions, and possibility private automobile commuting restrictions. If programs only target peak periods (winter weekends) it will only affect a small portion of total travel.

Whistler Intermodal Transportation Study (2004)

This study built upon the Whistler Welcome Strategy and the Comprehensive Transportation Study, focusing on people getting here by modes other than the private motor vehicle, primarily by bus.

Several major needs were considered in developing the inter-modal passenger handling system:

- » *Passenger terminals and stops, primarily the physical requirements for vehicles;*
- » *Passenger amenities, including passenger handling and ticketing, wayfinding, covered areas, and information;*
- » *Vehicle storage and parking. Including layover, midday short term, and overnight parking; and*
- » *Vehicle maintenance, addressing the potential for minor and major maintenance.*

Addressing the first area, the study suggested that the needs of public transit users in Whistler would require more than one passenger terminal facility based on the results of the stakeholder interviews, the demand forecasts, and current activities in the Gateway Loop. To meet the needs of all users, it was assumed that several transportation nodes be considered outright as a potential option in conjunction with one key facility. It was suggested that some level of facilities be required at the following nodes:

- » **Gateway Loop.** This would be the primary facility and would be known as the central location for ticket sales, information and the highest level of service.
- » **Gondola Transit Exchange.** This would provide good access to the base of Whistler Mountain.
- » **Blackcomb Base.** This would provide good access to the lifts located at the base of Blackcomb Mountain.
- » **Creekside/Function Junction.** Demand for service in this location is currently small but is a potentially growing segment of the market.
- » **Base II near the Day Lodge.** to accommodate in a formalized manner, charter bus passenger pick up and drop off operations.
- » **South Base** as per recommendations in the companion study Whistler Resort Transportation Planning study (April 2004) prepared for the Resort Municipality of Whistler and the Ministry of Transportation. This companion study clearly indicates that the anticipated increase in private auto use is contrary to a sustainable resort. To address the current trends, a series of recommendations to curb traffic growth (transportation demand management) and to affect changes in traffic patterns have been made to mitigate traffic congestion in the municipality.

Other specific sites tied to major hotel check in locations may be pursued. Facility size at each location will be dependent on the number of vehicles, the types of schedules they keep, and the ability to use the facility effectively, recognizing the some improvements to access may be required.

A successful intermodal system with terminal facilities must be able to accommodate boarding, alighting, and short-term bus parking as well as providing a location for connections to local transport and passenger amenities. The current arrangement at the Gateway Loop is uncontrolled and the key two operators of scheduled services utilize the facility without the benefit of any supervision by the Resort Municipality of Whistler.

Considerations, such as those listed below, will also be needed to make the key facility truly multi-modal:

- » **Base II near the Day Lodge** to accommodate in a formalized manner, charter bus passenger pick up and drop off operations.
- » The taxi stand should remain and be integrated into the new design;
- » Provision for limousine services should be considered;
- » Transfers to local hotels could be included, especially if the bus terminal becomes the baggage handling facility.

The following policy improvement recommendations to be included in the overall strategy are listed as follows:

Recommendation #1

That the Resort Municipality of Whistler seek to implement a policy to foster cooperation between the various transportation stakeholders (e.g. Inter-city coach operators, hotels, etc.) to provide uniform service levels and to improve overall mobility as well as the information provided to potential users. This could include the development of guidelines / plans to improve access for inter-city buses to major hotels in the Village where direct drop off are provided.

Recommendation #2

That the Municipality of Whistler consider the implementation of a policy that supports bus ticket sales to be located in the Visitor Information Centre adjacent to the Gateway Loop.

Recommendation #3

That the Municipality of Whistler pursue the implementation of the Transportation Demand Management Measures outlined in the companion study, Whistler Resort Transportation Planning Study. Specifically, these include employee trip reduction programs, implementation of a commuter transit service to reduce private autos from the road network, and incentives to promote an increase in inter-city bus ridership. It is acknowledged at the time of preparing this report, the Resort Municipality has already embarked on the implementation of several TDM measures.

Recommendation #4

That the Municipality of Whistler consider implementing an incentive program to foster seamless transportation to, from, and within Whistler.

Recommendation #5

Institute a regular program of data collection to obtain data related to traffic and transit operations, as well as other transportation data. The Resort Municipality has already implemented aspects of this program at the time of preparing this study.

Information Improvements

The following information improvement recommendations to be included in the overall strategy are listed as follows:

Recommendation #6

Develop a decision-point model (way finding) of information provision to inform how and where signage is placed and what information is included at that location. The decision-point model can be used to reduce the total amount of information provided at some locations and increase the level of comfort (in terms of information dissemination) of visitors.

Recommendation #7

That the Municipality of Whistler implement and upgrade the spatial data (e.g. information maps) at the various transportation nodes.

Recommendation #8

That the Municipality of Whistler implement a bus schedule information system that would be incorporated with other recommended improvements. The bus schedule information system should include the following aspects:

- » *Variable Message Displays;*
- » *Timetables of transit information - departures and estimate of total travel times.*

Physical Improvements

The following recommendations for the improvement of the physical inter-modal transportation infrastructure are listed as follows:

Recommendation #9

That the Resort Municipality of Whistler seek to implement improvements to the existing transportation infrastructure by retaining an urban design team / architect to develop plans which would include the following:

- a. *Maintaining the Gateway Loop as the primary transportation focal point;*
- b. *Formalize transportation nodes at the following locations (including connections to pedestrian facilities and integration with local transit):*
 - » *Variable Message Displays;*
 - » *Fitzsimmons Loop,*
 - » *Creekside,*
 - » *Blackcomb Base,*
 - » *Base II,*
 - » *South Base (Future);*
- c. *Modify pay parking in the Gateway Loop - Undertake a design assignment to Reconfigure / Reorganize the Gateway Loop Bus Parking and circulation patterns;*
- d. *Implement a Marshalling system with a marshalling centre located in Lot 4;*
- e. *At the time when a South Base parking facility is implemented (recommendation as per the Whistler Resort Transportation Planning Study), a transportation node with features similar to that envisioned at Creekside should be incorporated into the design.*

Recommendation #10

That the Resort Municipality of Whistler implement supporting measures in the form of transit priority measures at:

- a. *Lorimer Road Upgrade – consider dual westbound to southbound left turn lanes to be used by all motorists;*

- b. *The Resort Municipality of Whistler should monitor the operation of inter-city bus access at the Creekside transportation node and consider implementing a transit priority signal at London Lane and Highway 99 if delays become significant.*

Other Improvements

To provide a more comprehensive set of recommendations to be acted upon by the Resort Municipality of Whistler, the following supplementary recommendations have been suggested:

Recommendation #11

Consider developing and implementing incentives for day skiers through the offer of inter-city coach service in which the lift ticket and the bus fare are integrated at a reduced price.

Recommendation #12

Improve the availability and quality of information on inter-city and local transit service availability to encourage visitors flying into Vancouver to use public transport rather than rental cars if their only destination is Whistler with the purpose to ski during the winter season. If these recommendations are acted upon in concert with the key stakeholders, a more significant increase in the demand for inter-city bus travel would likely result as the mode of choice for both day skiers and long haul visitors would be affected. As a further effect, the mode shift from the private automobile (or rental car) would result in less traffic congestion and improved air quality in the Whistler Valley – two key goals of the Resort Municipality.

Whistler Cycling Policy (2004)

Cycling benefits Whistler's environment, its economy, the health of its people, the resort experience, and society at large. It is the goal of the Resort Municipality of Whistler to integrate cycling into the lives of residents and visitors by providing safe, accessible and convenient transportation cycling routes and facilities. The RMOW will also encourage and support environmentally responsible recreational cycling as an economic driver of the resort community and a contributor to the well being of Whistler residents.

Recommendations included:

- 1. Specific provisions for cyclists will be made on new and upgraded municipal roadways. Exceptions to this requirement will be subject to the evaluation process described below.*
- 2. Valley Trail connections will be extended to and within new and redeveloped neighbourhoods and commercial developments subject to the evaluation process.*
- 3. Appropriate bicycle end-of-trip facilities will be provided at municipal buildings and parks. The RMOW will encourage the provision of appropriate end-of-trip facilities in development permit re-zoning developments such as commercial and residential buildings.*
- 4. Municipal roads and paved bicycle paths will be maintained to enable cyclists to use the facilities safely and conveniently.*
- 5. The RMOW will work in conjunction with the Ministry of Transportation in the planning and implementation of cycling improvements to Highway 99.*
- 6. Recreational cycling trails will be provided for the benefit of residents and visitors. The RMOW will work cooperatively with the private and volunteer sectors to build and maintain recreational trails to Whistler Trail Standards, Environmental and Technical Trail Features.*

7. Recreational cycling contributes to the economic well being of the resort. The RMOW will support cycling tourism and events that are deemed to be in the interest of the resort community.
8. The RMOW will consult with local cycling stakeholders in the planning and promotion of transportation and recreational cycling routes, trails, facilities and programs. The Whistler Cycling Committee, the Whistler Off Road Cycling Association and other cycling advocacy groups will advise on cycling issues and provide feedback on the effectiveness of the Cycling Policy.
9. The capital and operating costs of implementing the Cycling Policy for RMOW facilities will be managed within normal RMOW business practices and annual budgeting and financial planning processes.
10. This Cycling Policy and other cycling plans will be reviewed on a regular basis, in consultation with cycling stakeholders.
11. Exceptions to this policy will be subject to a detailed evaluation to the satisfaction of the Deputy Administrator, as outlined in the Evaluation Process.

Evaluation Process

In the application of the Cycling Policy RMOW staff will give careful consideration to cycling in the planning, design, construction and operation of all new and upgraded municipal roads, paved trails, buildings and facilities. Occasionally, after a detailed evaluation to the satisfaction of the Deputy Administrator, it may be concluded that specific provisions for cycling are not feasible on a route or facility. Provisions for cycling may be excluded for the following reasons:

- a. There may not be a feasible way to ensure cyclist safety when using the route. For example, a cliff face along the edge of a road may make it impossible to build a facility wide enough to share the road safely.
- b. The volume of automobile traffic on a route may be sufficiently low that the safety of cyclists is not compromised and separate facilities may not be necessary. This exception might apply to a street within a residential neighbourhood.
- c. The cost to accommodate cyclists may be too high given the number of users.
- d. An existing Provincial Law or Municipal bylaw specifically prohibits cycling along that route.
- e. Cycling is not in the greater public interest. This may include situations where the changes necessary to accommodate cyclists could damage environmentally sensitive sites or infringe onto sacred aboriginal lands.

Transportation Cycling Plan (2006)

The Whistler Transportation Cycling Plan is oriented to cycling trips to specific destinations, such as to work, school, parks and commercial centres. Whistler's network of transportation cycling routes is examined, including Highway 99, municipal roadways and the Valley Trail. Other key aspects of transportation cycling covered by the plan are end-of-trip facilities, connections to other transportation modes, and community education and encouragement programs.

The plan found that:

- a. The most efficient and effective transportation cycling network is the existing road system, provided that facilities are properly designed and maintained. Currently, the width of the paved highway shoulder is within the accepted minimum cycling standard of 1.5 m, except for some localized "pinch points". The 35 km Valley Trail network provides an enjoyable alternative to roadway cycling, but may be a less

direct route between some destinations, and riding speeds are limited for the safety of the multi-use trail.

- b. *Intersections and crossings can provide significant impediments for transportation cyclists, and several pedestrian/cyclist-activated traffic signals have been installed on Highway 99. Other safe crossing options include overpasses and underpasses, although these are very expensive and may not be used if they are perceived to be inconvenient. With the increasing traffic volumes on Highway 99, crossing safety is a concern.*
- c. *Signs and roadway markings are important to the promotion and safety of transportation cycling, as they identify preferred cycling routes, alert motorists to the presence of bicycles, and legitimize cyclists as users of the roadways. Recently the Ministry of Highways installed “Cyclists on Roadway” signs at the north and south entrances to Whistler. Further signage on the Highway and on municipal roads will improve cycling safety.*
- d. *End-of-trip facilities, consisting of bicycle parking and change facilities, are required by cyclists at their destinations. Because they perspire, get dirty and wet, and wear clothing specifically designed for cycling, commuting cyclists may need change rooms, lockers and showers at their destination. Many Whistler cyclists ride expensive bicycles, requiring secure parking at work and at other destinations. Adequate end-of-trip facilities are necessary for cycling to be a feasible and attractive mode of transportation. The new Whistler Public Library incorporates a change room and bicycle storage facilities for use by commuting local cyclists. Cyclists also require adequate bicycle storage at the beginning of their trip, be that a residential building or tourist accommodation. Resident housing units for year-round and seasonal workers should have adequate, secure bicycle storage.*
- e. *On some occasions cyclists may find that the full return trip from home to their destination is not practical by bicycle, due to distance, weather, darkness or unusual circumstance. In such a case the transportation cyclist may find it possible to complete a portion of the trip by bicycle and the remainder by another mode of transportation, such as bus or taxi. This would enable cyclists to travel longer distances than would be practical by bicycle alone or offer an alternative to making the entire trip by automobile.*
- f. *Cycling to work, shopping and errands may involve a significant change in behaviour for those used to making these trips by automobile. Encouragement programs use information and incentives to motivate people to ride their bicycles. During Commuter Challenge events, Whistler has received national honours by having the highest rate of participation in the use of sustainable transportation means, including cycling, of any municipality in Canada.*
- g. *Bicycle safety programs can educate cyclists of all ages and skill levels regarding rules and responsibilities on the road and on multi-use pathways. Education programs also inform motorists about the rights of cyclists on roadways, and encourage motorists to “share-the-road” with cyclists and other road users.*

To address issues related to these findings, the plan identified 28 actions.

Recreation Cycling Plan (2006)

This plan focused on off-road and mountain bike facilities which have a limited role in transportation cycling and are not considered in this background report. There are some issues related to mountain biking, particularly routes taken to and from mountain bike trails and potential conflicts with other modes of transportation.

Accessible Whistler in 2010 (2010)

While no formal study has been conducted of accessibility, an inventory of accessibility hotspots has been prepared and a vision for an accessible community was prepared in advance of the Olympic Games, with objectives aligned around providing accessibility considerations in:

- a. Built Environment;
- b. Housing;
- c. Transportation;
- d. The Village;
- e. Recreation;
- f. Emergency Preparedness;
- g. Training;
- h. Employment;
- i. Community Participation;
- j. Tourism; and
- k. Communication.

Whistler 2020 (2005/2010) Descriptions of Success

In 2020, transportation to, from and within Whistler is convenient, safe, seamless, and affordable. By this time:

1. *Whistler policy, planning and development prioritizes preferred methods of transportation in the following order:*
 - a. *Pedestrian, bicycle, and other-non-motorized means;*
 - b. *Transit and movement of goods;*
 - c. *Private automobile (HOV, and leading low-impact technologies); and*
 - d. *Private automobile (SOV, traditional technology).*
2. *Transportation alternatives and options are developed, promoted and supported so that inter-community mobility minimizes the negative impacts of traditional modes of travel.*
3. *The convenience and seamlessness of the alternative transportation system to, from and within Whistler ensures usage rates continue to rise.*
4. *Whistler's transportation system is transitioning toward renewable energy sources, improving air quality, and maintaining ecosystem integrity.*
5. *Whistler's local and regional transportation systems minimize encroachment on nature.*
6. *Regional partnerships enhance the journey to the resort as part of the experience.*
7. *Residents, businesses and visitors are increasingly aware of the importance and benefits of alternative transportation choices.*
8. *The transportation system efficiently meets both the short- and long-term needs of all users.*
9. *Whistler's transportation system is safe and enjoyable.*
10. *The transportation systems to, from, and within the resort community are accessible and offer affordable travel options.*

Infrastructure

Infrastructure covered by this Background Report includes:

- » Drainage;
- » Waste Water, including sewage;
- » Water;
- » Solid waste; and
- » Utilities, including hydro, natural gas, propane, and telecommunications.

Not included in this Transportation and Infrastructure Background Report is energy demand management which is in the Climate Action, Energy, Emissions, and Resources Chapter, and the environmental impacts of waste products which is in the Natural Environment Chapter.

Existing OCP Policies (1993) – MUNICIPAL SERVICES

The OCP's policies support expansion of infrastructure throughout the municipality in a cost effective way while protecting the environment, particularly water bodies, and supporting reductions of resources consumed and waste products generated.

BACKGROUND

The water and waste water disposal systems in Whistler have the potential to be expanded to accommodate the level of development committed under this OCP, assuming completion of planned expansions of major facilities and incremental extensions of service networks to new developments. Expansion of sewer and water systems must be cognizant of the environmental sensitivities of lakes and streams in Whistler, and should set exceptionally high standards consistent with Whistler's image as a resort community.

POLICIES

1. *The Municipality will continue to maintain a water supply system capable of supplying high quality water for domestic use and sufficient quantities to provide for fire protection to service new and existing development.*
2. *The Municipality will continue to seek solutions to the problem of wastewater treatment and disposal that address the present and future concerns of the region on the basis of social, environmental, economic and technical requirements.*
3. *The Municipality will pursue innovative and environmentally sensitive methods of handling solid wastes including the development of a recycling program based on reduce, reuse, recycle, recover and residual management.*
4. *The Municipality will develop a plan and a funding proposal to extend wastewater collection to the presently unserved areas.*
5. *The Municipality will implement systems to reduce water consumption and wastewater volumes.*
6. *The expansion of the Municipal water supply and wastewater treatment systems will be carried out within a logical phasing program on the basis of good engineering practice and cost effectiveness and will be subject to the Municipality's ability to accommodate additional development without compromising the quality of the community and the resort and without any negative impact on the lake.*
7. *The Municipality will require that all development proposals incorporate adequate storm water drainage facilities including all downstream components. The downstream components to be assessed will include all storm drainage works from the site to the receiving lake on the valley floor.*

Comprehensive Development Plan (1993) - MUNICIPAL SERVICES

The CDP complements the OCP, and focuses primarily on ensuring adequate servicing for new development and planning capacity expansion for future development.

The Municipality will ensure that adequate water supply and wastewater collection, wastewater treatment, landfill capacity, and storm drainage works are provided to service approved development. Existing services planning provides for expansion to accommodate the committed bed units. To go beyond this level, comprehensive, long-range services planning will be needed.

POLICIES

1. *The water-supply system will be monitored carefully to maintain a high standard of water quality and ensure that supply is increased to accommodate new development.*
2. *The Municipality will, to the fullest extent within its jurisdiction, control development in, and access to, the watershed for the municipal water supply, in order to safeguard water quality. The Municipality will seek the cooperation of all applicable government agencies in controlling access to and activity in the watershed.*
3. *The wastewater collection and treatment system will be expanded as necessary to meet all the requirements of the Ministry of the Environment and to accommodate new development.*
4. *The Municipality will develop a plan and a funding proposal to extend wastewater collection to the presently unserved areas of Emerald Estates and the west side of Alta Lake.*
5. *Any significant changes or expansions to the water and sewer systems must avoid any reductions in the quality of existing lake and river systems.*
6. *The Municipality will explore and implement appropriate ways to reduce total water consumption and total wastewater volume.*
7. *The approval of additional development will be conditional on the availability of municipal services.*
8. *The Municipality will monitor the capacity of the landfill and provide additional capacity as required. The Municipality will also explore ways of reducing the volume of solid waste in the community as part of its Municipal Environmental strategy.*
9. *The Municipality recognizes that comprehensive and long-range services planning will be necessary if the development capacity of the Municipality is expanded significantly beyond the current approved/committed total number of bed units.*

Liquid Waste Management Plan (2004)

Wastewater encompasses not only sewage, but also water sources, such as runoff from roadways that may contain contaminants. Sewage in Whistler is directed by gravity to the wastewater treatment plant in Function Junction, where it receives treatment sufficient to remove environmental impacts before being released into the Cheakamus River.

The 2004 plan addresses a wide range of issues, including

- » Wastewater flows from land use and development;
- » Wastewater treatment plant upgrades;
- » Environmental monitoring;
- » New sanitary sewer services to unserved areas;
- » Water conservation and reuse;
- » Biosolids management;

- » Control of non-point source pollution; and
- » Stormwater management.

The plan called for the development of a consolidated Stormwater Management Plan, either as a standalone document or as part of the LWMP, including:

- » A policy and design manual;
- » Master drainage plan;
- » Watershed management plans;
- » Identification and implementation of stormwater Best Management Practices (BMPs);
- » Periodic updates of the stormwater management plan; and
- » Linking stormwater management to water conservation practices.

Results from the plan direction included a \$51.5 million upgrade to Whistler's Waste Water Treatment Plant, including an industrial-sized composting facility. With construction complete, the RMOW now operates one of most advanced systems in the country.

Construction began in August 2008 on the wastewater treatment plant, and all of the upgrades were designed with sustainability in mind. The plant is now in full operation and provides heating for the Athletes Village. Sustainable elements include changing the treatment process to eliminate the need for chemicals through the use of microbes. The project was funded by a combination of municipal reserves, contributions from the federal/provincial infrastructure program and long-term financing.

Long-Term Water Supply Plan (2004) and Update (2007)

The objective of the Long-Term Water Supply Plan, which addressed both existing and future potable water needs for the community, had a number of objectives:

- » A cost-effective water demand management strategy, through:
 - Extension of existing conservation programs;
 - Water use bylaws;
 - Alternate irrigation systems; and
 - Water metering for commercial areas.
- » Water supply to meet current and anticipated future water quality standards, including:
 - Completion of groundwater chlorination program;
 - Monitoring and protection of aquifer groundwater systems; and
 - Surface water filtration.
- » Development of reliable, economic, and high-quality water sources to meet existing and long-term water demands, given that existing water sources were not seen as able to meet long-term demand. Development of the 21 Mile Creek aquifer was recommended as the first priority.
- » Upgrading the water distribution system to ensure reliable delivery of long-term fire and peak domestic water demands, including increasing capacity of water mains and water storage.

The assessment of the water system in 2004 was:

ASSESSMENT OF EXISTING WATER SYSTEM

The water supply for the RMOW consists of both surface and groundwater sources. The surface sources are 21 Mile Creek, Blackcomb Creek and Agnew Creek. None of these sources use filtration for treatment and therefore would not meet current requirements for removal of Giardia and Cryptosporidium.

Groundwater wells are located throughout the municipality. Water treatment is presently limited to coarse screening, settling and chlorination of surface sources. Some groundwater sources are chlorinated, and plans are in place to provide chlorination for the remainder. Operating experience indicates that the existing water supply can meet present peak demands (i.e. peak demands resulting from high domestic and irrigation uses). However, the supply can be compromised by low flows or high turbidity conditions in 21 Mile Creek.

The water distribution system consists of 100 mm to 400 mm diameter pipes with the oldest dating back to the 1960s. Due to the rapid growth of the municipality over the past 25 years, most of the watermains are relatively new and in good condition.

The most significant constraint in the existing water distribution system is the link between the principal source, 21 Mile Creek, and the principal areas of consumption on the south side of the valley. A shut down at any location on this main will result in the loss of the major water supply to the municipality and draining of major reservoirs in less than a day. This constraint significantly limits the capacity of the system at present demands and will become unacceptable in the future.

In the event that fire storage reserves are threatened, the municipality has procedures in place to effectively reduce water demand in the central service area. It has been calculated that without these procedures the existing water reservoirs in the Village area would be inadequate to meet combined maximum day flow and fire storage requirements.

The plan based future demand on a maximum of 55,000 bed units, and a relatively high estimate (i.e., conservative estimate) of the average and peak demand from these bed units. While the assumptions on demand included a number of water conservation measures, significant reductions in consumption were not anticipated.

WATER DEMANDS AND EXTENSION OF WATER CONSERVATION PROGRAM

The long-term water demands for the RMOW are based on the following three items:

- a development limit of approximately 55,100 bed units (including staff housing);
- a detailed analysis of existing water use for the year 1998; and
- the estimated impact of water conservation measures that have been implemented since 1998 and further water conservation measures that are part of the long-term plan.

The estimated long-term demands are summarized in Table ES1.

Table ES1: Summary of Estimated Long-Term Water Demands

Item	Average Day Demand	Maximum Day Demand	Peak Hour Demand
Unit Demand (L/bu/d)	300	700	1270
Total Long-Term Demand (L/s) ⁽¹⁾	191	447	809
Total Long-Term Demand (ML/day) ⁽¹⁾	16.5	38.6	70.0
⁽¹⁾ Based on development to 55,100 bed units.			

The RMOW has implemented, or is in the process of implementing, the following measures as part of the Long-Term Water Supply Plan:

- a low volume toilet and fixture bylaw;
- a comprehensive water use bylaw;
- investigation and development of alternate water sources for significant irrigation demands;
- an unaccounted for water reduction program through identification of areas with high leakage and leakage repair programs;
- efficient landscaping and irrigation requirements through existing bylaws; and
- ICI metering and volume-based pricing in the core commercial areas.

The recommendations made by the Long-Term Water Supply Plan for water quality were:

It is recommended that existing RMOW drinking water treatment facilities be upgraded as follows to meet current and anticipated regulations:

- treatment of all groundwater sources with chlorine and complete testing to determine if any of the source aquifers are influenced by surface water;
- treatment all long-term surface sources by chlorination and filtration to ensure 99.9% reduction of Giardia cysts and greater than 99.9% reduction of viruses. It is recommended that Cryptosporidium control should be implemented as adopted by USEPA; and
- treatment of groundwater sources that are discovered to be under the direct influence of surface water so that it meets the same treatment objectives as surface sources.

It is also recommended that an aquifer protection and well head protection program be implemented for existing and new wells using the guidelines of the B.C. Environment *Well Protection Took Kit* and standard well construction techniques.

Recommendations for water supply were:

Based on available information, it is anticipated that the following sources will comprise the Long-Term Water Supply Plan, and these have been used for capital budgeting purposes:

- Existing groundwater supplies are to be kept in place and existing developed wells (Spring Creek) are to be put into production.
- A groundwater development program is to be implemented for the 21 Mile aquifer.

Failing development of sufficient capacity from the above sources, one of the following options will be selected to provide the balance of the water supply:

1. a treated surface water supply from 21 Mile Creek (requiring pilot testing of a membrane filtration plant);
2. a treated groundwater supply (requiring pilot testing for manganese and iron removal), which may be cost-effective for limited quantities of water; or
3. a treated surface water supply from the Cheakamus River or Green Lake (requiring pilot treatment plants, environmental approvals, a significant public education program and adjustments to the feedermain implementation plan).

The water supply capacity of the various sources considered for the central service area are summarized in Table ES2. The total capacity required to meet the maximum day demand of the central service area is 429 L/s.

The recommendations from the 2007 Long-Term Water Supply Plan Update were:

7.0 CONCLUSIONS

The RMOW's potable water supply strategy is that all potable water will be provided through groundwater. Based on the foregoing the RMOW will have sufficient groundwater supplies to meet build-out demands once the Stage 2 development of the Rainbow Park well field is complete. This will require approximately 35 L/s of water from Whistler south or Function Junction to be directed to the Village Zone. Work is on-going to assess the hydraulic requirements within the distribution system necessary to achieve this.

As 21-Mile Creek is unfiltered it is subject to variable water quality and therefore cannot be relied upon as a primary supply to meet the RMOW's long term potable water requirements. Therefore, further development of the available groundwater should be continued. As an interim measure and to permit the use of 21-Mile Creek when the water quality meets all the requirements of an unfiltered surface water it is recommended that the UV disinfection be installed at this source.

SLRD Solid Waste Management Plan (2007)

With the closure of the Whistler landfill, this plan transferred waste management to the control of the regional district, with the exception of the management of Whistler's two waste transfer stations (Nesters and Function Junction) and the Callaghan composting facility.

In 2006, the Squamish Lillooet Regional District (SLRD) achieved a recycling rate of 33% and had reduced the per capita disposal rate by 53% as compared to their 1990 disposal rate. This updated Solid Waste Management Plan, upon full implementation, will reduce the amount of waste disposed by an additional 30%, thereby achieving a reduction in the per capita disposal rate by 67% as compared to 1990. Key elements of the Solid Waste Management Plan include:

Waste Minimization Components:

- » *Waste minimization promotion and education activities, including a school program*
- » *Continuation of existing recycling services*
- » *Enhanced recycling in Lillooet*
- » *In-vessel composting facility in Whistler*
- » *Disposal bans on recyclable materials, yard waste and products covered under product stewardship programs*
- » *Technical Assistance Program for commercial waste generators*
- » *Task Force on Waste Diversion in Tourist Accommodations*
- » *Recycling Assistance Program for construction waste generators*
- » *Enhanced product stewardship*
- » *Reuse facilities*

Residual Waste Components:

- » *Upgrading/expanding the Squamish Landfill to serve as a regional landfill for the southern SLRD*
- » *New transfer stations in Pemberton (2006) and Whistler (2007)*
- » *Continued use of the Lillooet Landfill*
- » *Final closure of the Pemberton Landfills*
- » *Elimination of open burning of wood waste (land clearing waste and construction wood waste) in the southern corridor*
- » *Funds to support clean-up of illegal dumping and litter*
- » *The components of this plan are to be implemented progressively from 2008 to 2011 by the SLRD and member municipalities.*

The SLRD will undertake the waste minimization programs, operate the Lillooet Landfill and the transfer stations (with the exception of the Whistler transfer station, which is the responsibility of the Resort Municipality of Whistler) and complete the closure of the Pemberton landfills.

While the municipality still has a significant role in education and awareness around solid waste, particularly programs to mitigate wildlife issues related to solid waste and efforts to increase reduction, reuse, recycling, repurposing, and composting of waste, the SLRD manages waste at the regional level. The RMOW will continue to operate local transfer and composting facilities, which diverts a significant amount of solid waste from disposal, and will work with community partners such as the Whistler Community Services Society (WCSS) to promote reuse of products within the community.

Stormwater Management Plan (2010)

The recent (Stormwater Management Plan) SMP built upon the 2004 Liquid Waste Management Plan, taking elements relating to stormwater and meltwater and studying watersheds in more detail to, address both development and environmental impacts.

The report focuses on the three primary components of the study:

1. *Environmental Inventory and Assessment - including review and evaluation of watershed health indicators and water, sediment and benthic quality data;*
2. *Municipality-Wide Stormwater Strategy - including strategic elements to assist the RMOW in planning development and controlling stormwater impacts for public safety and environmental benefits; and*
3. *Hydraulic Studies for Four Priority Creeks - to assess hydraulic issues on the creeks and recommend upgrades where warranted.*

The plan recommended the following actions for the RMOW to pursue to improve public safety and environmental protection related to stormwater within the municipality:

1. *Implement a Stormwater Program including the bylaws and standards needed to adopt or recognize up to date stormwater design criteria and direct its application within the RMOW.*

2. Continue water quality monitoring in accordance with the recommendations in Section 2; this includes work with BC MOE to provide an ongoing historical record of the aquatic environment and the changes occurring within it.
3. Pursue instream and riparian restoration opportunities to re-instate and improve the riparian forest integrity and instream complexing in the lower reaches of the creeks within the RMOW.
4. Plan for detailed design and construction of future culvert improvements on Rideau Brook, Write-Off/No-Name Creek, and Gonzales Creek to mitigate flood risks up to the 200-year event. Coordination with road works and development-related upgrades will reduce the overall cost impact of the upgrades to the municipality.

Whistler 2020 (2005/2010) Descriptions of Success

Materials and Solid Waste

In 2020, Whistler's material flows are managed in a comprehensive, convenient and upstream way, and the resort community is well on its way to embracing the concept of a 'zero waste' society. In the future:

1. *The resort community is clean and well maintained*
2. *Whistler offers the same or higher quality service using less materials than in the past*
3. *Whistler is using materials and products that are less environmentally harmful, preferring recycled, compostable, repairable, reuseable, natural and sustainably harvested materials, and plentiful metals*
4. *The resort community is 'closing the loop' by providing appropriate and convenient opportunities for reducing, reusing, composting, repairing and recycling materials*
5. *Whistler is close to meeting its 'zero waste' goal*
6. *Increased business performance and economic opportunities are being realized as a result of smart materials management*
7. *Whistler is committed to providing education and accessible infrastructure capable of continually decreasing our residual wastes*
8. *Local businesses, residents and visitors are knowledgeable about material flows, and through their actions, demonstrate and communicate a strong ethic of responsibility and stewardship toward resources and materials*
9. *Substances and chemicals that are potentially harmful to human, animal, and environmental health are being eliminated, replaced, or managed in a way that they do not disperse in nature*
10. *Partnerships are developed such that collective procurement choices favour companies and suppliers that are consistent with our identified materials and solid waste values*
11. *Whistler advocates for zero waste through education and demonstration, and works toward removing external barriers to achieving zero waste.*

Water, Drainage, and Wastewater

Although developed by the "Water" Task Force, these Descriptions of Success related to water address potable water, drainage, and wastewater.

In 2020, Whistler's water resources provide a dependable supply of healthy water to meet the long-term needs of people, other species, and nature. In the future:

1. *Whistler's potable water supply system delivers water of excellent quality, which meets or exceeds all relevant health standards, and meets benchmark aesthetic standards whenever possible*

2. *Water supply is distributed reliably, equitably and affordably – and is managed proactively within the context of effective and efficient emergency preparedness*
3. *Residents and visitors are educated about, and encouraged to protect and conserve natural water resources*
4. *All potable water is used sparingly and only used to meet appropriate needs*
5. *Wastewater and bio-solids are readily assimilated in nature*
6. *Water supply, wastewater management and flood control infrastructure minimize energy requirements, and favour sustainably managed materials and resources*
7. *Watershed-based management approaches and policies guide and integrate overlapping land and resource values including (but not limited to) development, infrastructure, forests, habitat, recreation, fisheries and aquifers*
8. *Effective stormwater management and flood control measures are in place, and replicate natural hydrological systems and functions as much as possible*
9. *Flood control systems are maintained at a high level of emergency preparedness, where risks are managed proactively, effectively, and efficiently*
10. *With respect to water resources, capital and long-term costs are managed in a financially prudent and fiscally responsible manner*
11. *Potable water supply source protection is optimized within a multi-barrier approach*
12. *Healthy streams, rivers, lakes and wetlands support thriving populations of fish, wildlife and aquatic invertebrate*

NEXT STEPS

The Transportation and Infrastructure Background report is a compilation of current practices. Through the OCP update process, the RMOW will draw on public input and best practices to round out and draft this portion of the Official Community Plan and more fully reflect the interests of the residents of Whistler.



THE RESORT MUNICIPALITY OF WHISTLER

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2010 Olympic and Paralympic
Winter Games

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