Fraser Basin Council

SUSTAINABILITY SNAPSHOT 2010

Working Together
in the Lower Mainland

A report of the Fraser Basin Council for organizations and residents of:

- Fraser Valley
- Metro Vancouver
- Squamish-Lillooet



Acknowledgements

This report would not have been possible without the support of people who provided data and information, technical expertise, research, writing, stories, photographs, editing and financial assistance. The Fraser Basin Council (FBC) expresses its sincerest gratitude to its many supporters.

The Council's Board of Directors provided oversight for this initiative, particularly through the Fraser Valley and Greater Vancouver Sea-to-Sky Regional Committees and through the Fraser Basin Council Standing Committee on Sustainability Indicators.

The Council would like to thank Environment Canada, the Lower Mainland Local Government Association, and Environment Canada's Air Quality Health Index program for contributing financial support for this report.

A talented team collaborated on the report. Thanks to Tracey Hooper, Polly Ng and Roxy Design who worked with several FBC staff – Amy Greenwood, Marion Town, Marion Robinson and Steve Litke – as researchers, contributing writers and editors.

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Executive Summary

The primary intentions of this report are to inform, stimulate thought and inspire action.

The sustainability indicators presented in this report help to measure the broadly defined health of a very diverse region. These recent trends and current conditions can assist in identifying and highlighting issues of greatest concern.

HOW ARE WE DOING?

Of the 19 key indicators that provide a high-level glance at seven issues, 4 are good and/or getting better; 5 are fair and/or mixed results; 7 are mixed results and/or poor; and 3 are poor and/or getting worse.

Indicators only reflect specific aspects of very complex, inter-related issues and are limited by data accessibility. While most data is comparable, some information (i.e. land use, water quality) varies widely in detail and completeness across the three regions of the Lower Mainland.

INDICATORS WITHIN OUR CONTROL

While sustainability issues and indicators are influenced by several forces, many are directly or indirectly affected by land use. For example, the way our communities are built impacts air and water quality, greenhouse gas emissions and energy consumption.

Although some measures are globally driven (i.e. employment), locally and regionally controlled community design and planning can play a significant role in the Lower Mainland's overall health.

MANAGING POPULATION GROWTH PRESSURES

Burgeoning population growth pressures throughout the Lower Mainland have had an impact on a wide range of sustainability issues.

Despite high rates of population growth, many areas of the region have seen increased population density, shorter commutes and have managed to contain urban envelopes.

Lower Mainland forecasts estimate a population increase of nearly 60% between 2006 and 2036.

WORKING TOGETHER IN THE LOWER MAINLAND

The time is at hand for more integrated and inter-regional cooperation to effectively manage issues of regional importance, such as transportation, land use, health, air quality, housing, and the natural environment. Sustainability Snapshot 2010 provides the informational foundation for gathering broad input, focusing discussions, and identifying priority issues to be advanced through shared action.

Introduction

The Fraser Valley, Metro Vancouver and Squamish-Lillooet regions are the most populated and fastest growing areas in British Columbia. The relationship between population growth and social, economic and environmental health in the Lower Mainland is significant and needs to be clearly understood in order to strengthen sustainability efforts across these incredibly beautiful, fragile and important regions. Issues such as urban expansion, consumption and waste, transportation, air quality, food security and agricultural land protection, and health are interconnected and shared across the regions. These issues will only benefit from consensus among all levels of government as well as coordinated and comprehensive policies, programs and strategies.

"Not everything that counts can be measured. Not everything that can be measured counts."

ALBERT EINSTEIN

The Fraser Basin Council (FBC) is a unique non-governmental organization that was created in 1997 when community groups, business and four orders of government—including First Nations—came together to advance sustainability throughout the Fraser River watershed. The Council's mandate is to ensure that the decisions made now will protect and advance social, economic and environmental sustainability within the Basin into the future. FBC understands that complex sustainability issues often extend beyond the jurisdictional boundaries of individual municipalities and regions into bioregions, watersheds or super-regions. The Council is committed to improving the understanding of sustainability issues and trends, identifying critical issues and responses to address those issues and informing and influencing decisions and actions to advance sustainability.

Since 2002, FBC has prepared several Sustainability Snapshot reports on the state of the Fraser Basin. The reports highlight a number of key issues and trends throughout the Basin and five sub-regions, including the Upper Fraser, Cariboo-Chilcotin, Thompson, Fraser Valley and Greater Vancouver-Sea to Sky. The Council has also prepared papers that specifically examine sustainability within the Thompson and Upper Fraser regions.

This report, Sustainability Snapshot 2010: Working Together in the Lower Mainland, was prepared in co-operation with Environment Canada, the Lower Mainland Local Government Association, Air Quality Health Index and other sponsoring partners. Through this report, FBC continues to analyze the most pressing sustainability issues, from across the Lower Mainland, including the Squamish-Lillooet, Metro Vancouver and Fraser Valley regions. The selected indicators profile many of the drivers, pressures, states, impacts and responses related to these pressing issues. The intention of this initiative is to build a common understanding, identify shared priorities and foster cooperative efforts across communities throughout the Lower Mainland.

Sustainability indicators are not complete measures of a community's overall health or livability, nor are they solutions to sustainability issues. They can, however, be used to summarize key aspects of complex issues, and build understanding by reflecting trends over time and allowing comparisons to be made among different geographic areas. Indicators and related stories can also be used to identify where progress is being made and where change is needed. Sustainability Snapshot 2010: Working Together in the Lower Mainland examines several of the most pressing issues in the region and explores the connections among those issues. The following themes are covered in this report:

- AGRICULTURE & FOOD
- CONSUMPTION & WASTE
- ENVIRONMENTAL HEALTH
- LAND USE
- POPULATION & HEALTH
- SOCIAL & ECONOMIC WELL-BEING
- TRANSPORTATION

It is acknowledged that lengthy reports could be generated for each of the subject themes and still have limitations, given the complexities of the subject matter. This report does not purport to provide a fully comprehensive analysis of the many varied elements which factor into the livability of the entire Lower Mainland. Source data gaps, missing information, inconsistent data collection methods and varying data assumptions each contribute to the limitations in the research findings. However, this report draws from over a decade of knowledge, experience and continuous improvement by the Fraser Basin Council in its efforts to measure and report on sustainability. Data used within this inter-regional report are considered to be the best available at this time. However readers are encouraged to seek additional information, where available, to supplement this report and their understanding of the issues. Although common data are presented for each Lower Mainland region, there are region-specific circumstances that need to be considered prior to making comparative assessments. There may be a variety of reasons why trends are different for different regions. Caution is advised for the reader before comparisons or judgments are made about one region being better or worse than another.

Sustainability Snapshot 2010: Working Together in the Lower Mainland provides the foundation for gathering broad and representative input and focusing discussions on issues, which transcend local and regional boundaries. Through an outreach and dialogue process, the issues will be discussed along with related barriers, key gaps, opportunities, best practices, possible solutions, and critical next steps. The intention of the dialogue process is to further scope and advance the priority issues so that shared action can be taken across the Lower Mainland.

Agriculture & Food

A healthy, secure, safe and reliable food supply is integral to community well-being and individual health. The agriculture sector provides income and employment and contributes to local and regional economies. Agriculture is the province's third largest primary industry after forestry and mining.[1] Farmland can also enhance wildlife habitat and green space.

With the growing financial and environmental costs of global shipping, increasing food prices, and concerns about food safety, local food production is becoming even more important to the sustainability of communities and regions. Currently, BC farmers have the capacity to produce nearly half of all food consumed in BC on less than 5% of the province's land base.[2] In the Lower Mainland on this small percentage of land, the agricultural community produces the most high bush blueberries, cranberries and raspberries of any province in Canada. Lower Mainland farmers also rank second or third in the nation for the production of greenhouse tomatoes, hens and chickens, flowers, eggs, sweet peppers and mushrooms.[3]

The population of the Lower Mainland is projected to increase on average by 41% in the next 25 years.[4] If trends over the past two decades continue, the demand for food will increase over the same period. Food self-reliance concerns focus on whether or not BC can meet the future increases in demand for food. The food and agriculture industry is facing significant and unprecedented challenges such as retiring farm operators and experts, and risks from major events such as floods, and diseases like avian influenza. However, the biggest challenge in the Lower Mainland is the availability of land for farming, stemming from pressures from competing land uses such as urban development.

Food production in BC and the Lower Mainland is unique compared with other parts of North America. For example, some of the best soils and climatic conditions and shortest distances to market occur in the Fraser Valley from Hope to Richmond and in the Pemberton Valley.[5] In 2005, these areas produced $1.7 billion of farm product measured in gross farm receipts, making steady and strong economic contributions in the region.[6] In addition, the following characteristics enhance the agriculture industry in BC:

- BC farmlands are preserved through the Agricultural Land Reserve.
- Farms in the province are 97% owned and operated by BC families.[7] Some have incorporated status but are still a family interest.
- Fraser Valley agriculture is widely diversified and produces many high-value crops.
- Close proximity between farms and a very diverse urban population increases the opportunity to market niche crops.
- Canadian supply management systems are not subject to market fluctuations and support farmers and consumers.

ISSUES AND TRENDS

1 • Viability of the Agricultural Sector

A viable and thriving agriculture industry is essential to ensuring the social and economic well-being of communities and the production of local food. Key components and indicators of a healthy agricultural sector include the retention of farmland and land tenure, the economic viability of farms and the agricultural sector, and the adequacy of the labour force and agricultural expertise for the present and future needs of the industry.

Retention of Farmland and Expansion of Production[8]

The area of farmed land owned by Lower Mainland farmers increased between 2001 and 2006, including ALR and non-ALR land. This was due to more land being put into production and it may have also risen, slightly, from farmers reporting on the acquisition of lands in other regions as they sought more land for expansion (because they did not have access to enough affordable land locally); thus, helping the viability of their Lower Mainland farms. In 2006, the Fraser Valley had 56,603 hectares (ha) of farmland; Metro Vancouver had 41,035 ha; and, Squamish-Lillooet had 19,585 ha. As a percentage of the total land area within each region, 14.3% of Metro Vancouver was farmland in 2006 compared to 4.2% in the Fraser Valley and 1.2% in Squamish-Lillooet. Between 2001 and 2006, the Fraser Valley experienced the largest growth (7,933 ha or 0.6%) in total area of farmland in production within the Lower Mainland. Growth in farmland area was also significant in Squamish-Lillooet (4,430 ha or 0.3%) and Metro Vancouver (1,300 ha or 0.5%) during the same period.

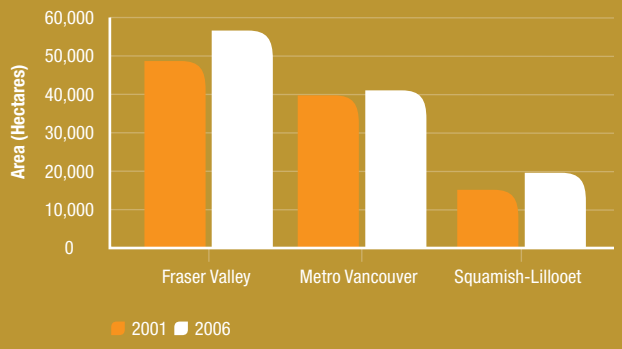
Economic Viability[9]

In 2005, the primary and secondary (value-added) agricultural industries employed 297,000[10] people in BC, many of whom worked in the Lower Mainland. In 2000 and 2005, most farms in the Lower Mainland made less than $50,000 per year in gross farm receipts, although many farmers operate their farms on a part-time basis, earn off-farm incomes, are retired, and benefit from the farm tax credit. Understanding farm income is more complex than simply reporting gross farm receipts.

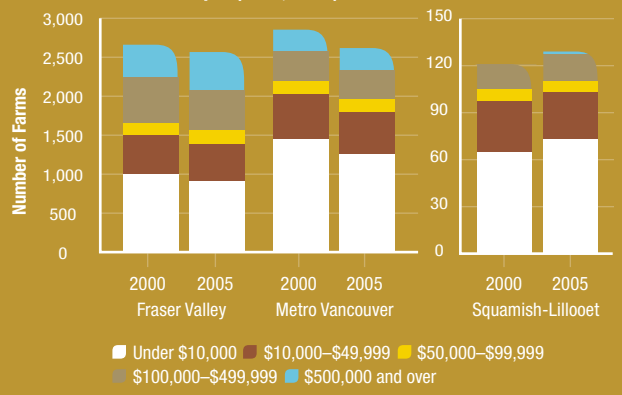
In 2005, about 80% of farm businesses in Squamish-Lillooet, almost 70% in Metro Vancouver, and 54% in the Fraser Valley reported less than $50,000 in gross farm receipts. Many farms earned less than $10,000; around half of farms in both Squamish-Lillooet and Metro Vancouver and 35% in the Fraser Valley. This is partly a reflection of the sizes of farms in the Lower Mainland. In 2005, 80% of farms in the Fraser Valley, 88% in Metro Vancouver, and 56% in Squamish-Lillooet were less than 28 ha. Between 2000 and 2005, the proportion of farms with gross farm receipts of less than $50,000 decreased by almost 3% in the Fraser Valley, by 1.2% in Metro Vancouver, and by 0.3% in Squamish-Lillooet.

The costs of operating a farm are rising but earnings are not increasing as quickly, leading to the declining profitability of many farm businesses in the Lower Mainland. The ratio of expenses to gross receipts reflects how much was spent for every dollar received in gross receipts; the higher the

Total Area of Farms in the Lower Mainland (2001; 2006)[8]

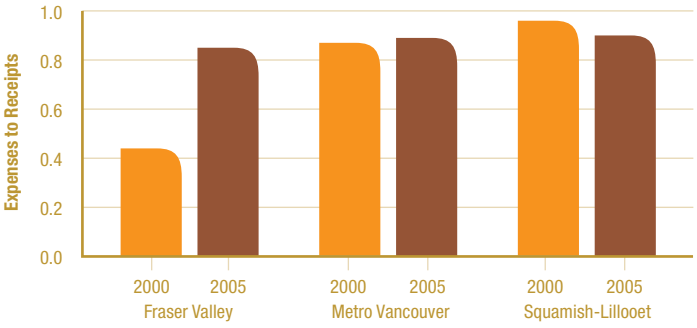


Number of Lower Mainland Farms by Total Gross Farm Receipts (2000; 2005)[9]



ratio, the lower the profits. For example, in 2005 the average farm in the Lower Mainland earned $10,000–15,000 for every $100,000 of gross farm receipts after annual operating expenses were considered. Between 2000 and 2005, the Fraser Valley experienced a large increase in the ratio of expenses to gross receipts (0.41) whereas the increase in Metro Vancouver was very slight (0.02). The ratio of expenses to gross receipts improved (from 0.96 to 0.90) in Squamish-Lillooet during this period but was the highest in the Lower Mainland. In order to maintain or improve profitability, farmers will either need to reduce expenditures or increase income through heightened productivity or accessing better markets.

Ratio of Farm Business Operating Expenses to Gross Receipts in the Lower Mainland (2000; 2005)[9]



Lower Mainland agriculture is highly diversified with more than 200 commercial products grown. Of particular note is Small Lot Agriculture (4 ha or less), which constitutes 25% of BC's agriculture economy.[11] The Lower Mainland has a diverse range of dairy and poultry operations and produces such specialties as land-based and ecologically-friendly fish farms, artisan cheeses, mushrooms, bulbs, and grass-fed beef. In addition, farmers have developed value-added opportunities in agri-tourism, such as the Circle Farm Tour.[a]

Agricultural economists conservatively estimate that the sector has a 2.5 economic multiplier because the farmer purchases feed and supplies locally, and many food processors and feed mills hire local employees and truckers for delivery to the farm.[12] The food product is often processed and distributed within BC. Each of these steps adds economic activity and value. For example, Abbotsford has the highest farm-related economic activity in BC at $1.8 billion, representing ¼ of all private sector jobs in that area.[13]

Labour Force[14]

A significant challenge to the viability of the Lower Mainland's agricultural sector is its aging workforce. The average age of Lower Mainland farmers is between 51 and 55. Fewer young farmers are entering the industry. Between 2001 and 2006, the proportion of farmers under 35 years of age in the Fraser Valley and Metro Vancouver declined by 2.7% and 2.5%, respectively. During the same time, the total number of farm operators in these regions also declined, dropping slightly in the Fraser Valley (0.9%) and more significantly in Metro Vancouver (8%). Conversely, in Squamish-Lillooet the proportion of young farmers increased (1.4%), as did the number of farm operators (15%).

2 • Food Security and Self-Sufficiency

Agricultural Land Reserve[15]

The Agricultural Land Reserve (ALR) provides a foundation for food security and self-sufficiency in BC. It is a provincial land use designation that applies to land with agricultural capabilities and is intended to ensure that the province's limited agricultural land base is preserved and available for food production over the long term. This form of land use policy is particularly important for strengthening a vibrant agricultural industry in regions with significant urban development pressures. The ALR is the envy of many jurisdictions in North America. It has considerable influence in directing urban development away from lands with high agricultural capability. Because agricultural lands are located in river valleys, the ALR provides additional benefits by limiting development in areas that are also ecologically sensitive and/or vulnerable to flooding.

The total area of exclusions from the ALR in the three regions has been decreasing each decade since the ALR was established in the mid 1970s (see the Land Use section of this report for more details). However, more land has been taken out of the Reserve in the Lower Mainland than has been added. Between 1979 and 2008, a net of almost 2,500 ha was excluded from the ALR in the Fraser Valley, about 4,000 ha was excluded in Metro Vancouver, and almost 2,700 ha was removed in Squamish-Lillooet[19]. In the past 20 years, most ALR exclusions in the Lower Mainland involved lands that were classified as having prime agricultural capability. Non-farm use of ALR land is also a concern. In its 2004 Land Use Inventory, Abbotsford found that 5% of its ALR was not in farm use.[16] Similar rates of non-farm use have occurred in Chilliwack (5% in 2004) and Kent (6% in 2005).[17]

Also of concern is subdivision development of the ALR. Subdivision of farmland may limit long-term economic opportunities. Currently, there is wider availability of smaller parcels for farm development than larger parcels. Subdivision may increase the likelihood of farm parcels being utilized for non-farm use (such as primarily residential use) and potentially limit the access of farmers to land.

Pressures and Conflicts with Regional Growth

Nearly 85% of British Columbians live in urban areas (in the Lower Mainland, Thompson-Okanagan, and southern Vancouver Island) that are located near the food-producing lands that generate 81% of provincial gross farm receipts.[18] In these areas, more than 37,000 ha have been removed from agricultural uses in the past 30 years.[19] The competition for this non-renewable resource—the valleys with the most productive agricultural soils and where people want to live—puts the productivity of BC's working landscape at risk. It remains the responsibility of local governments and the Provincial Agricultural Land Commission to protect this invaluable resource for our economic and environmental well-being and for food security for current and future generations.

Near urbanized areas, farmlands may also become fragmented by new roads or subdivisions that cut them off from other farm clusters or efficient transportation routes. In Chilliwack, 8% of farmlands are sufficiently alienated so as to no longer be used effectively for production.[20]

In addition to land pressures, there are competing interests in water resources. In some cases, the agricultural sector relies on municipal water supplies, even though the municipality is not mandated to plan for agriculture. For example, water meter records in Abbotsford indicate that agricultural users account for approximately 20% of all water consumed, and food processing users account for approximately 4%.[21] Therefore, it is critical that local and regional governments plan for water use by agriculture when doing long-range water resource planning.

Conflicts can arise between farm and non-farm uses of rural lands, particularly when residences are built without a buffer zone from farm practices. Conflicts include issues related to noise, odours, lights, and dogs chasing livestock. As food production intensifies, the need for farmland and in particular, irrigated farmland increases.

Growing Food Interest

Urban agriculture has a very high value for social and community cohesion, health benefits and knowledge sharing. It provides a great way for people in cities to add fresh fruit and vegetables to their diets. Urban agriculture helps reconnect people with nature and the process of growing food, and it can be a highly rewarding experience. Rooftop and community gardens provide local food that can supplement, but not replace, the amount of produce currently consumed by our population. Urban agriculture cannot provide significant meat, dairy, or cereal grains.

There has been a strong interest in agriculture and food in BC, as exemplified in long-standing organizations such as 4H, agricultural fair boards, the BC Agriculture Council, and numerous commodity groups and marketing boards. In recent years, this interest has grown among the general population, as observed in numerous food policy[c] and community groups such as the Vancouver Food Policy Group, Vancouver Gleeners, MCC Gleeners, Mission Food Access Network, UBC Food Cooperative, UBC Farm, Farm Folk/City Folk, Slow Food Vancouver, Smart Growth BC, and BC Food Security networks.[d] In 2009, Food TV aired The 100 Mile Diet[e] (now being shown in Europe and Asia) which was filmed in the Fraser Valley.

Sustainability Stories

Delta Farmland and Wildlife Trust[26]

The Fraser delta is one of Canada's most productive agricultural areas due to its rich soils and optimal climate. It yields a wide range of vegetables, berries, and dairy products. It also provides wildlife habitat of international significance, with an estimated 1.5 million birds from 20 countries migrating through the area every year.

In 1993, local farmers and conservationists created the Delta Farmland and Wildlife Trust to promote the stewardship and preservation of agricultural and wildlife resources in the delta. The Trust administers a number of stewardship programs that cost-share specific environmental management practices with farmers. Two examples of current programs are:

• Grass Set-Asides: Farmers can take advantage of financial incentives to leave fields covered with grasses and clover for up to four years. The soil and surface structure can be restored while the fields provide valuable habitat for grassland bird species and small mammals, such as the Townsend's vole.

• Cover Crops: The costs of planting winter cover crops are cost-shared with the Trust. The program not only protects delta soils from heavy winter rains, it also provides important winter forage for abundant populations of waterfowl, such as wintering snow geese.

Agricultural Environment Stewardship Initiative[27]

The Agricultural Environment Stewardship Initiative (AESI) helps BC farmers and ranchers address environmental issues and enhance environmental sustainability. Funded by Agriculture and Agri-Food Canada through the Investment Agriculture Foundation of BC, the Initiative seeks to encourage management practices and technologies that maintain soil and water quality over the long term, protect fisheries and wildlife, ensure compliance with environmental regulations and standards, and promote the voluntary adoption of environmentally sustainable practices.

The program funds environmental stewardship and research projects that are aimed at helping producers adapt to environmental regulations and deal with environmental issues identified by an increasingly knowledgeable public. Examples of recent environmental stewardship projects include:

• The Delta Farmers Institute's research project on poultry litter and compost practices on the Fraser River delta. The research focused on ways to increase the use of poultry litter/compost in a cost-effective and environmentally sound manner.

• Invasive plants threaten agricultural crops and livestock as well as many ecosystems. The Invasive Plant Council of BC has led the way in developing a collaborative and comprehensive research strategy around invasive plants. Stakeholders, researchers and the business and agricultural communities come together through regional forums to coordinate strategies and action plans.

The Public Value of Farmland[22]

A recent study estimated the public value of farmland in urban areas—i.e., the benefits the public associates with farmland beyond its food production value, such as the green-space it affords, the wildlife habitat it offers, and the local nature of the food it produces. Using a combination of methods, the study determined that the public value of farmland in Metro Vancouver is as much as 10 times higher than the private market value. The study indicated that a family unit would be willing to pay $73 for the benefits provided by farmland, which is equivalent to one meal out per year. These findings reinforce previous studies that suggest residents of Metro Vancouver have a great appreciation for local farmland.[23] The study provides land use planners and decision makers with another tool to use when making decisions about land use.

3 • Agriculture and the Environment

Agriculture is dependant on the natural environment, including healthy soils and adequate supplies of clean water and clean air. Agricultural practices can have a wide range of positive and adverse effects on the natural environment. They can deplete or degrade soil and water or may conserve and protect these natural resources. They can also harm or reduce natural habitat values or protect and improve them.

Environmental Farm Plans[24,25]

Significant progress in supporting environmental improvements on farms has been made in recent years through the BC Environmental Farm Plan (EFP) Program, which complements and enhances the current environmental stewardship practices of BC producers. The program applies to all types and sizes of farm operations throughout the province. As participants in this program, producers are able to identify their farm's environmental strengths, prioritize risks to the environment, and take advantage of available tools and techniques for managing those risks. By 2006, 194 EFPs had been completed in the Fraser Valley; an additional 380 were completed between 2006 and 2008. In the combined region of Metro Vancouver and Squamish-Lillooet, 78 EFPs had been completed by 2006; an additional 203 were completed between 2006 and 2008. In 2008-09, more than 700 producers in BC participated in the program and completed 523 EFPs, which in total covered 103,878 ha. In addition, 550 Beneficial Management Practices (BMP) projects were completed. The most popular BMP categories focused on irrigation management, product and waste management, and prevention of wildlife damage.

Nutrient Management

Many Fraser Valley communities such as Abbotsford and Chilliwack rely on groundwater as their primary water supply. A threat to groundwater quality in recent decades is nitrogen leaching into the ground from livestock manure or crop fertilizers. Many Lower Mainland farm operations have become more intensive due to increased livestock density and production of higher value horticultural products. As a result, agricultural wastes are now managed differently than in the past. Because the Lower Mainland region receives high amounts of rainfall over the winter, livestock producers have increased their manure storage capacity so that manure can be applied at a time when its fertilizer uptake value is optimized. In addition, poultry manure is trucked around the Fraser Valley and beyond because it is used as fertilizer on nutrient poor lands with agricultural crops.

Notes

[a] For more information about Circle Farm Tours, see www.circlefarmtour.com.

[b] For more information on supply management, see:
- www.bcegg.com/files/supply-management.php
- www.nanaimofoodshare.ca/downloads/igfi/2pager_CJ_09.pdf
- www.dairyfarmers.ca/what-we-do/supply-management/frequently-asked-questions

[c] A food policy is a decision, program, or project that is endorsed by a government agency, business, or organization, which affects how food is produced, processed, distributed, purchased, protected and disposed. Food policy can be local, regional, provincial, national, or within an institution (Vancouver Food Policy Council).

[d] For more information on food and agriculture organizations, see http://infobasket.gov.bc.ca/portal/server.pt; BC Food Security Gateway www.phabc.org/modules.php?name=Food_Security&file=sitemap&all=1; Bits & Bytes (Food Secure Canada) www.bitsandbytes.ca/index.php

[e] Paperny Films Production based on the book by James McKinnon and Alisa Smith.

[f] For more information on management of livestock manure, see www.sustainablepoultry.com/ and www.agf.gov.bc.ca/resmgmt/EnviroFarmPlanning/FV_SoilNutrientStudy/_FVSNS-CombinedReport_Feb28_2007_for_Release.pdf

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Consumption & Waste

The large and growing population in the Lower Mainland region can create high rates of natural resource consumption and waste generation. Limiting consumption to within sustainable levels is of utmost importance to the region and beyond. Similarly, it is vital to manage wastes in ways that do not exceed the capacity of the land, water and air to receive them.

Strategies for limiting the impacts of consumption and waste generation include using renewable resources and creating practices and technologies that improve energy efficiency, control pollution and conserve water and other resources. The simple act of buying local products can reduce fuel consumption and greenhouse gas (GHG) emissions, which are associated with transporting goods from afar. Government regulations, assistance programs and other financial incentives can all play important roles in encouraging the wise use of resources through corporate and consumer behaviour.

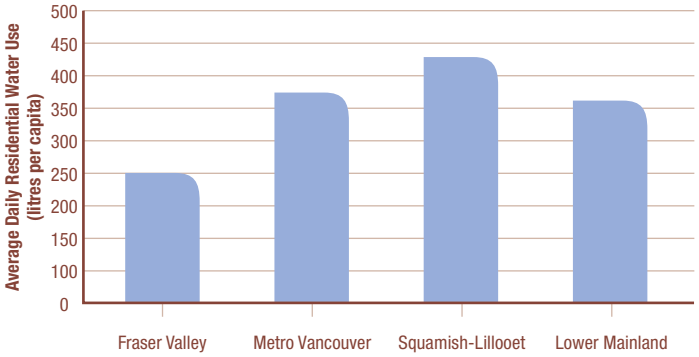
ISSUES AND TRENDS

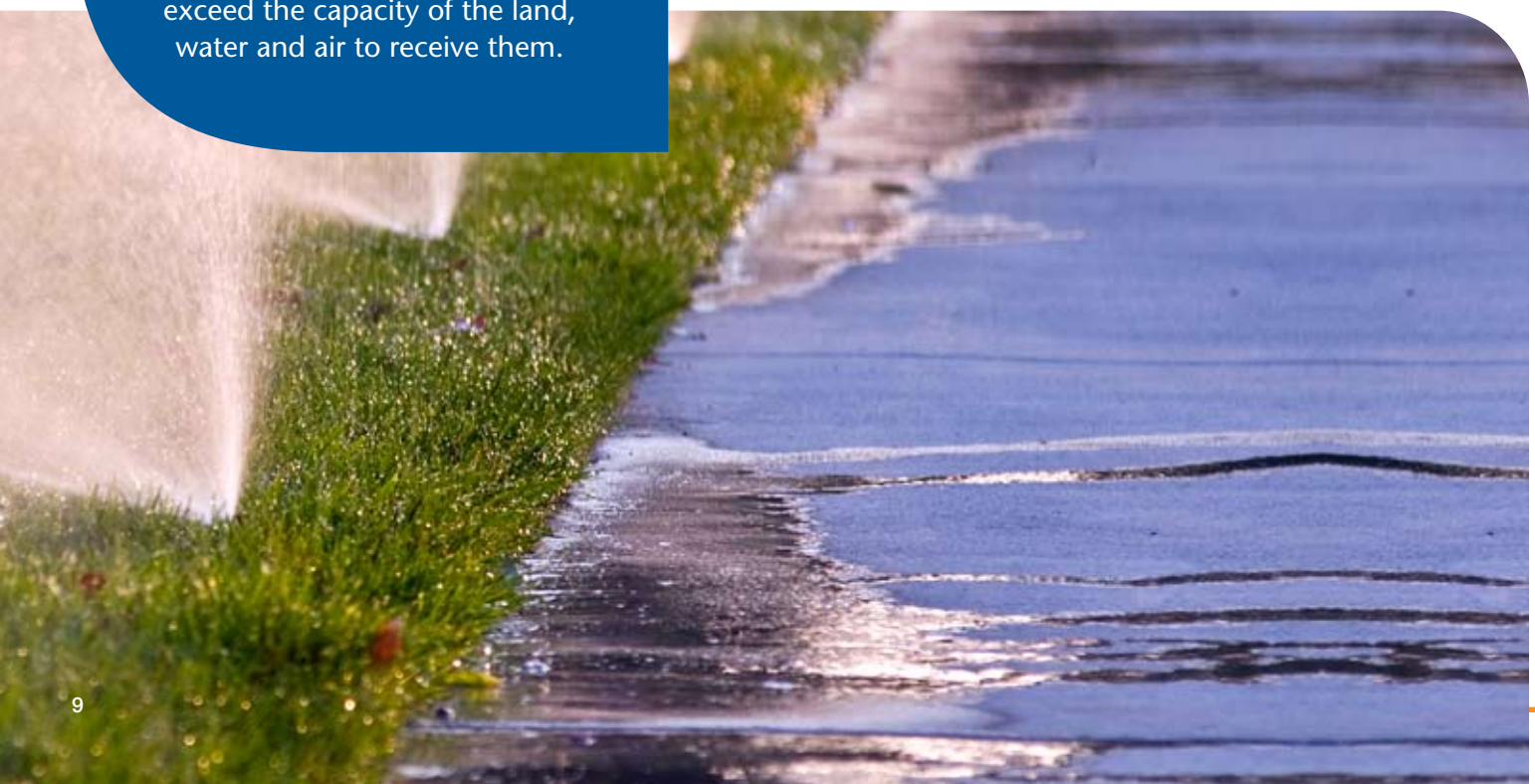
1 • Water

Municipal Water Consumption and Wastewater Treatment[1]

In most Lower Mainland communities, domestic (i.e., residential) consumption accounts for more than half of municipal water use. In 2004, average daily residential water use ranged from 251 litres per capita in Fraser Valley municipalities to 371 litres in Metro Vancouver and 429 litres in Squamish-Lillooet.

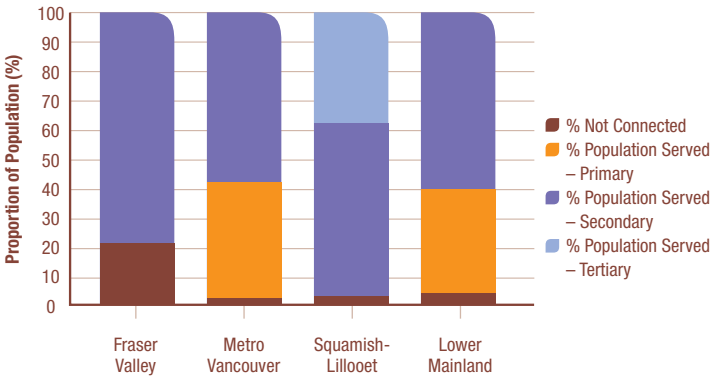
Average Daily Residential Water Use Per Capita in the Lower Mainland (2004)[1]





In 2006, Metro Vancouver served 40% of its population with primary wastewater treatment and 58% with secondary treatment. The remaining 2% were served by municipal systems or private on-site systems. In 2004, 78.4% of the population in Abbotsford, Chilliwack and Hope was served by secondary treatment; 21.6% was not connected to municipal wastewater treatment systems. In 2004, 59% of the population in Lillooet, Whistler and Squamish was served by secondary treatment, 38% was served by Whistler's tertiary treatment and 3% were not connected.

Proportion of Population Served by Type of Wastewater Treatment in the Lower Mainland (2004; 2006)[1]



2 • Energy and Greenhouse Gas Emissions

Energy Consumption in BC[2]

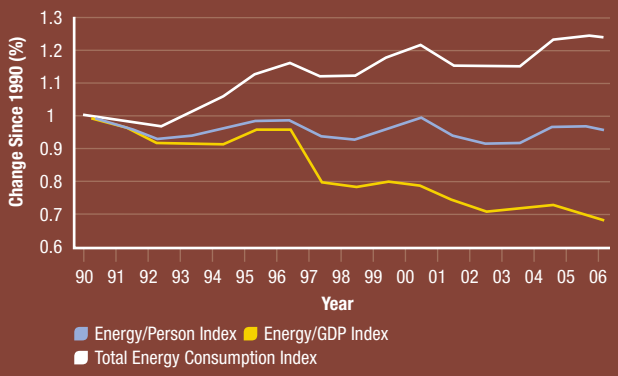
Between 1990 and 2006, total energy consumption in BC rose by 24% to 1,292 petajoules; however, energy intensity (i.e., consumption per capita or per gross domestic product [GDP]) improved.[a] During this period, population and GDP ($1997) grew by 31% and 86%, respectively. The higher growth rates in population and GDP compared to energy consumption resulted in energy intensity declining by 5% per person and by 33% per unit of GDP.

Residential Electricity Consumption[3]

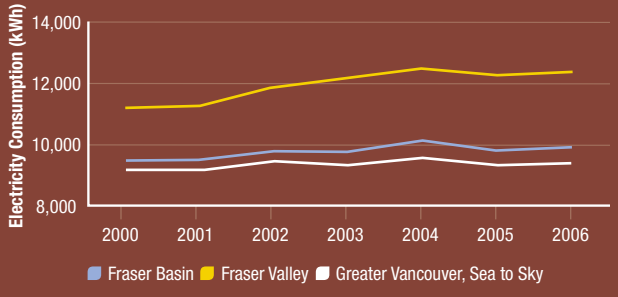
Average residential consumption was much higher in the Fraser Valley (about 12,400 kWh in 2006) than in the Greater Vancouver Sea-to-Sky* area (9,400 kWh), and in the Fraser Basin overall (9,900 kWh). Residential consumption between 2000 and 2006 also increased at a higher rate in the Fraser Valley (10.7%) than in the GVSS region (2.9%).

**The Greater Vancouver Sea-to-Sky (GVSS) includes all of Metro Vancouver and the area south from Pemberton in the Squamish Lillooet region.*

Energy Consumption and Intensity Trends in BC (1990–2006)[2]



Average Annual Electricity Consumption per Residential Account in the Lower Mainland (2000–2006)[3]



Total Energy Consumption[4]

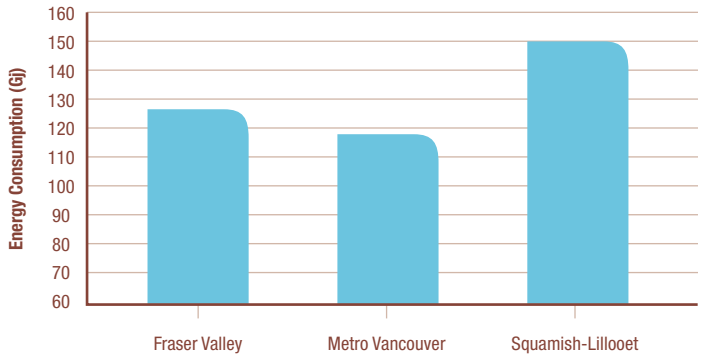
In 2007, total energy consumption was 248 million Gigajoules (Gj) in Metro Vancouver, 32 million Gj in the Fraser Valley and 5.2 Gj in Squamish-Lillooet. The largest proportion of energy consumption in the Lower Mainland was related to buildings (ranging from 62 to 71%), whereas about one third (29–38%) was due to on road transportation. The proportion of energy use from on road transportation was highest in the Fraser Valley (37.6%), whereas the proportion from buildings was highest in Metro Vancouver (71.4%). Energy consumption per capita was highest in the Squamish-Lillooet Regional District (149.6 Gj) and lowest in Metro Vancouver (118.3 Gj).

Greenhouse Gas Emissions[4]

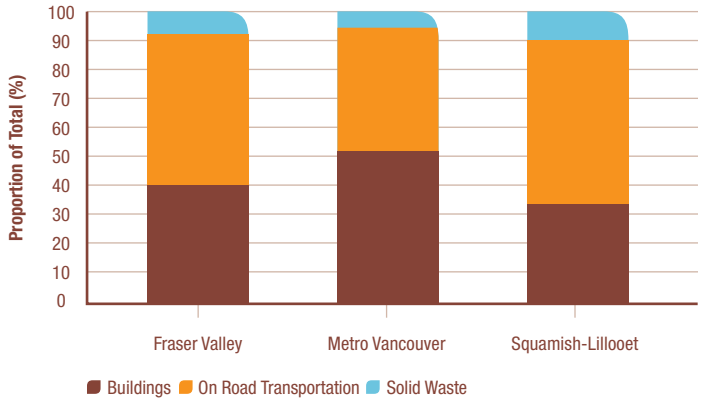
Greenhouse gas emissions in the Lower Mainland show similar patterns to energy consumption. For example, the highest annual per capita GHG emissions were in Squamish-Lillooet (7.1 tonnes per year); the lowest were in Metro Vancouver (5.5 tonnes). The Fraser Valley had the highest emissions associated with on road transportation (52.3% of total emissions), followed by Squamish-Lillooet (47.4%) and Metro Vancouver (44.6%). Slightly more than half (50.5%) of GHG emissions in Metro Vancouver were associated with buildings.

Metro Vancouver, with the largest population, emits substantially more GHGs in total (11 million tonnes annually) than the Fraser Valley (1.7 million tonnes) and Squamish-Lillooet (0.25 million tonnes). On the other hand, the City of Vancouver reports the lowest GHG emissions per capita of any city in North America.[5]

Energy Consumption per Capita in the Lower Mainland (2007)[4]



Proportion of Greenhouse Gas Emissions by Source in the Lower Mainland (2007)[4]



Sustainability Stories

Signatories to the Climate Action Charter[7,8]

In BC, the Climate Action Charter represents a municipal commitment to address climate change by reducing GHG emissions. By signing the Charter, local governments commit to measuring and reporting on their community's GHG emissions, and to becoming carbon neutral by 2012. In the Lower Mainland, all three regional districts and 30 of 31 municipalities are signatories to the Climate Action Charter. Communities are undertaking a variety of actions, such as improving energy efficiency in buildings, reviewing fleet operations and supporting compact community development.

Whistler 2020 – comprehensive and integrated community planning

Whistler2020 is an Integrated Community Sustainability Plan managed and facilitated by the Whistler Centre for Sustainability that involves the Resort Municipality of Whistler, over 50 community partners, and close to 200 task force members that annually put into action strategies to create more compact and complete communities and to reduce urban sprawl. Associated initiatives include a Green Building Policy, infill housing guidelines, an urban containment boundary, sustainable purchasing policies, and the use of Whistler2020 as a guideline for all decisions presented to Council.

High-efficient and cost-effective district heating in North Vancouver

The City built an interconnected mini-plants system that is maintained and operated by the municipally owned and governed Lonsdale Energy Corporation. The system surpasses conventional heating sources in reliability. It also emits 64% less nitrous oxide, 21% less carbon dioxide, and 4,070 fewer tons of GHGs than conventional heating. The boilers have a 95% rate of capture on heat energy and energy rates are very competitive.

3 • Solid Waste

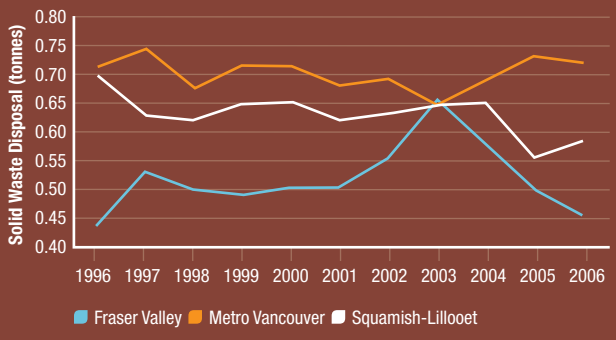
Solid Waste Disposal[6,b,c]

The total amount of solid waste disposal from the Lower Mainland increased by 16% between 1996 and 2006 (from 1.5 to 1.7 million tonnes). During this period, per capita solid waste disposal also increased in both the Metro Vancouver (1%) and Fraser Valley (4%) regions. The Squamish-Lillooet region recorded a decrease (16%) in per capita solid waste disposal during this period. Total solid waste disposal increased at a much greater rate than per capita disposal between 1996 and 2006, with increases of 21% in the Fraser Valley, 15% in Metro Vancouver, and 12% in Squamish-Lillooet. In 2007 in Metro Vancouver, 1,617,392 tonnes of solid waste were disposed (i.e., went to a landfill or were incinerated). However, caution is advised in analyzing trends over time and making comparisons between regional districts because methods of estimating solid waste disposal differ (e.g., weigh scales versus population-based assumptions) and community conditions differ (e.g., recently, a portion of solid waste in the Fraser Valley has been disposed in landfills operated by First Nations, but it has not been reported centrally).

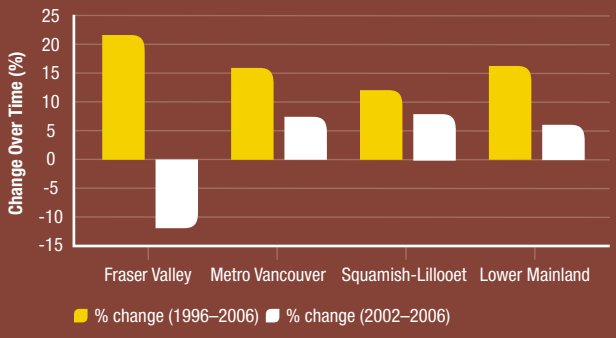
Recycling and Solid Waste Diversion[c]

In 2007, 1,980,752 tonnes of solid waste were diverted in Metro Vancouver (i.e., did not go to a landfill or were incinerated). This represents 55% of total solid waste and a diversion rate of 0.88 tonnes per capita. Pemberton similarly reported high rates of recycling in 2007 (54%), 2008 (42%) and 2009 (39% through November). Whistler reported a diversion rate of 48% in 2009, including both recycling and compost (as of September). Data were not readily available for the Fraser Valley.

Per Capita Solid Waste Disposal in the Lower Mainland (1996–2006)[6]



Change in Total Solid Waste Disposal in the Lower Mainland (1996–2006)[6]



Notes

[a] For this report, energy intensity is the amount of energy used per person and per unit of real GDP.

[b] Disposal includes landfill and incineration facilities.

[c] Data supplemented by Metro Vancouver and Squamish-Lillooet Regional District.

References

[1] Environment Canada. Municipal Water and Wastewater Survey 2004. www.ec.gc.ca/eau-water/ [accessed October 2008].

[2] Nyboer, J. Review of Energy Consumption and Supply in British Columbia, 1990 to 2006. Canadian Industrial Energy End-use Data and Analysis Centre, Simon Fraser University. Updated by personal communication by email with the author March 2008.

[3] BC Hydro. Custom tabulation of electricity consumption data, 2000–2006.

[4] BC Ministry of Environment. Community Energy and Greenhouse Gas Emissions Inventory: 2007. Prepared by HYLA Environmental Services Ltd. www.toolkit.bc.ca/ceei [accessed November 2009].

[5] City of Vancouver. Vancouver 2020 a Bright Green Future: An Action Plan for Becoming the World's Greenest City by 2020. www.vancouver.ca/greencapital/index.htm [accessed January 2010].

[6] Recycling Council of BC. BC Municipal Solid Waste Tracking Reports (2006, 2003–2005 and previous tracking reports). www.env.gov.bc.ca/epd/epdpa/mpp/solid_waste_index.html [accessed December 2008].

[7] Ministry of Community and Rural Development. www.cd.gov.bc.ca/ministry/whatsnew/climate_action_charter_update.htm [accessed December 2009].

[8] BC Climate Action Toolkit. Success Stories. www.toolkit.bc.ca/success-stories [accessed December 2009].

In the summer of 2009 14 Whistler2020 Partners got together at the new Squamish-Lil'wat Cultural Centre to sign on as official Whistler2020 partners, working together to collaborate on making the Whistler2020 vision a reality through communication and cooperation. Photo courtesy the Whistler Centre for Sustainability.

Environmental Health

Biodiversity includes all living things, such as mammals, birds, fish, insects, and plant life, as well as the habitats in which they live. The environment provides essential ecological services, such as clean air and fresh water, food, and fibre; and protection from flooding and erosion that support life on earth.[1]

A number of key issues are of significant interest in the Lower Mainland because of their impacts on the health of people, communities and the environment. These issues include air and water quality, as well as human-caused habitat loss and impacts to biodiversity. Our natural environment also supports aesthetic, spiritual and recreational values. In BC, the most significant impacts on biodiversity include habitat loss, degradation and fragmentation due to urban development (including housing, roads and industrial areas), agricultural production and invasive species introductions.[2] In fact, 86% of the species at risk in BC are directly linked to habitat loss from human-related land use and development.[1]

ISSUES AND TRENDS

1 • Air Quality and Health

In 2008, it was estimated that 21,000 Canadians died from the effects of air pollution. While 2,682 of these deaths were the result of acute, short term exposure, most were due to chronic exposure over a number of years.[3] Across BC, outdoor air pollution contributes to as many as 250 deaths every year.[4] In the Lower Mainland, the most significant air pollutants are Particulate Matter smaller than 2.5 microns in diameter (PM2.5) and Ground Level Ozone, which is a key component of smog. Vehicles manufactured before 1991 contribute significantly to air pollution in the Lower Mainland. They make up about 20% of all vehicles in the region but account for more than 50% of the region's air pollution.[4]

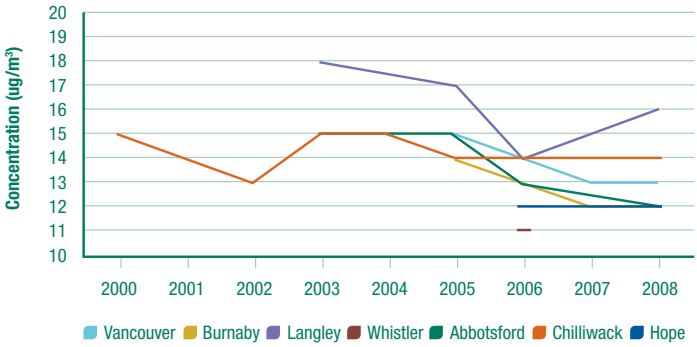
Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ has a significant impact on human health because the very small particles are inhaled deep into the lungs. $PM_{2.5}$ has been shown to cause childhood asthma, low birth weight and premature births. The most significant sources of $PM_{2.5}$ in the Lower Mainland region include emissions from household heating, light and heavy duty vehicles, farm and recreational vehicles, and marine vessels. A recent study forecast that if $PM_{2.5}$ in the Lower Fraser Valley increased by 10% from 2005 to 2010, there could be an additional 40 deaths and more than 9,000 asthma symptom days due directly to deteriorating air quality.[5]

Between 2000 and 2008, $PM_{2.5}$ levels were below the Canada Wide Standard[a] (CWS) in the seven Lower Mainland communities included in

this report. Levels have remained stable or decreased in most communities since 2003, with the exception of Langley, where $PM_{2.5}$ levels increased between 2006 and 2008. On a daily basis since monitoring began in each Lower Mainland community, there have been very few exceedances of the CWS base measure of 30 ug/m^3. Burnaby South recorded two 24-hour exceedances in 2005, and Chilliwack Airport recorded one 24-hour exceedance in 2006.[6] It is important to note that while short-term exceedances have health implications, longer-term exposure to $PM_{2.5}$ has been associated with more significant health impacts; there are no safe thresholds below which there are no effects on our health.[7]

$PM_{2.5}$ trends in the Lower Mainland Communities (2000–2008)[6]



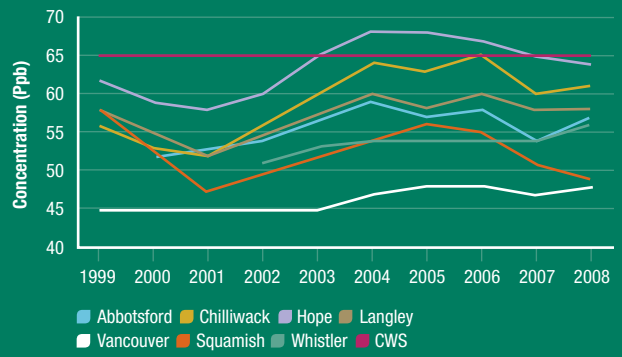
Ground Level Ozone

Ground Level Ozone (GLO) is the main component of smog and is formed when compounds such as nitrogen oxide and volatile organic compounds—mainly from vehicle exhaust—react in the atmosphere in the presence of sunlight. Health effects of exposure to GLO include damage to the lungs and irritation of mucus membranes. There is no effects-free threshold for exposure to GLO. From 1999 to 2008, GLO concentrations in communities monitored in the Lower Mainland region were generally below the Canada Wide Standard.[b] The exception was Hope, where concentrations exceeded the CWS from 2003 to 2006. Annual concentrations in most communities peaked between 2004 and 2006. Weather conditions likely had a large influence on these results.[7] On a short-term basis, the CWS base measure for GLO (65 parts per billion 8-hr daily maximum) was exceeded several times in communities throughout the Lower Mainland. However, the annual frequency of these exceedances was relatively low, ranging from 0.3% to 2.5% across different communities.[6,7]

Air Quality Health Index

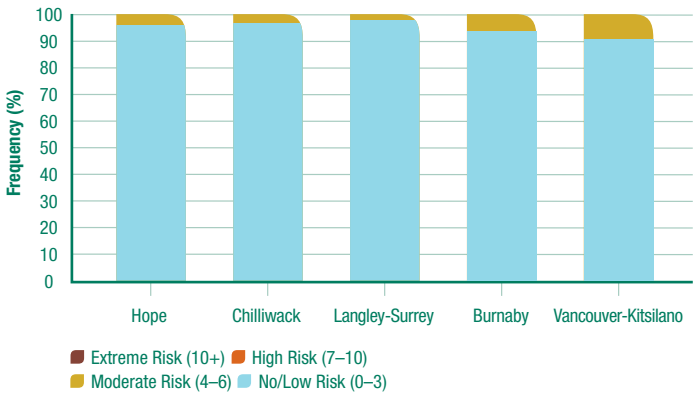
The Air Quality Health Index (AQHI) is a new on-line public health tool that helps Canadians protect their health on a daily basis from the negative effects of air pollution. The Index provides an hourly measurement of air quality in 17 locations across British Columbia. It was developed in response to a federal health study that showed relationships between mortality and daily concentrations of air pollutants. The AQHI is based on hourly concentrations of three key pollutants that negatively affect human health: $PM_{2.5}$, GLO and nitrogen dioxide (NO_2). These three pollutants were chosen because they were statistically most likely to be linked to mortality rates and are routinely measured across Canada. Other pollutants, including PM_1 and $PM_{0.1}$, are also important but are not as widely monitored. Nitrogen dioxide likely acts as a proxy for other pollutants that put health at risk.

Ground Level Ozone Trends in Lower Mainland Communities (1999–2008)[6]



The AQHI is a scale from 1 to 10 – the higher the number, the greater the health risk associated with the air quality. The Index also provides a category that describes the level of health risk – low, moderate, high or very high health risk – and accompanying health messages for both at-risk populations and the general public. From 2000 to 2006, the AQHI health risk in Hope, Chilliwack and Langley-Surrey was Low (0–3) more than 97% of time. During that period, Vancouver-Kitsilano recorded the highest frequency of days with a Moderate Health Risk (8.5%).[8] Only Vancouver-Kitsilano and Langley-Surrey recorded any days with High Risk (3 days and 2 days respectively, or 0.01% of total days). No communities recorded days with Extreme Risk.

Frequency of Occurrence of AQHI Health Risk Categories for Select Lower Mainland Communities (2000–2006)[8]



2 • Biodiversity and Habitat

The Lower Mainland region has among the highest species richness in the province with 370– 940 species per hectare.[2,c] Throughout the Lower Mainland, 623,285 ha (19%) of the land is formally designated as provincial Protected Areas.[9,d] However, that does not include the multitude of regional and municipal managed parks, conservation areas and open spaces located throughout the region. See the Land Use section for more information.

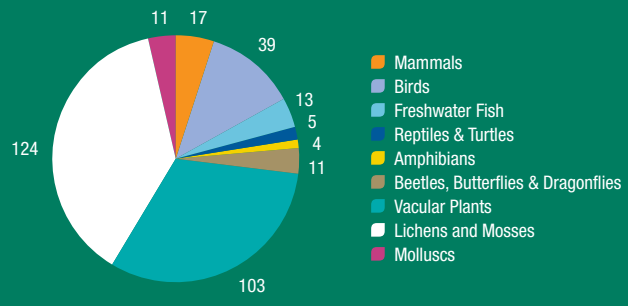
Lost Streams in the Lower Fraser Valley

A 1997 survey of the Lower Fraser Valley, which includes Georgia Strait to Hope and the North Shore Mountains to the Canada/U.S. border, indicated that of the 779 streams classified, 86% were lost, endangered, or threatened. Not surprisingly, all of the lost streams were located in the portion of the Lower Fraser Valley that has been occupied by people.[10] The Lower Fraser Valley provides spawning habitat for 66% of the wild coho salmon in the Fraser River system.[11]

Threatened Ecosystems and Species in the Lower Mainland

Five of BC's eight ecosystems at risk occur in the Lower Mainland region: estuaries, wetlands, coastal Douglas-fir, Garry oak and cottonwood riparian ecosystems.[12,e] The most significant threats to these ecosystems and the species that depend on them for survival include habitat loss, degradation and fragmentation due to human-related impacts such as urban, agricultural and industrial land development, and the introduction of invasive plant and animal species.[2] As of 2008, the Lower Mainland region supported 327 of the province's red- and blue-listed species.[f] Almost 70% of these species were vascular plants, lichens and mosses. Another 12% were bird species; less than 6% were mammal species.[13]

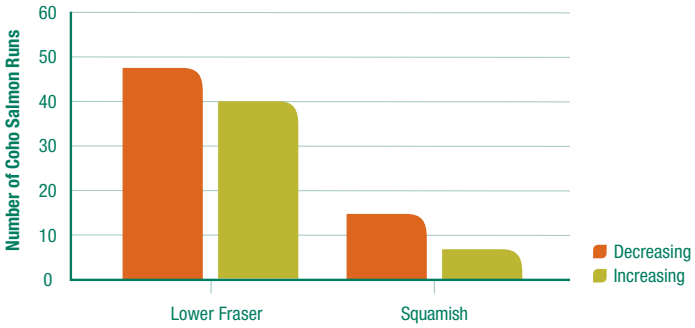
Number of Red- and Blue-Listed Species in the Lower Mainland (2008)[13]



Salmon

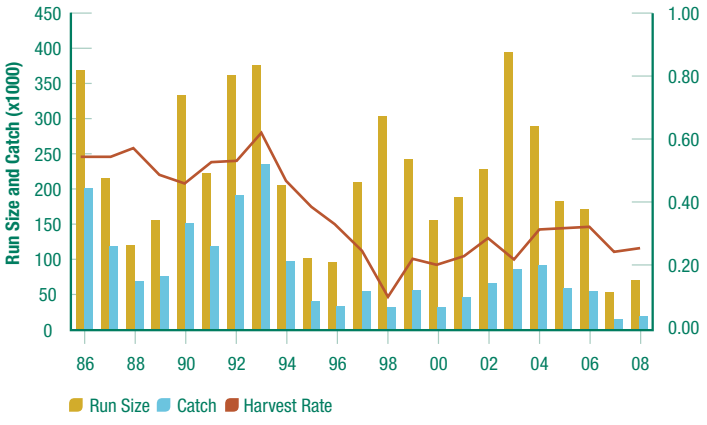
In 2004, using data from Fisheries and Oceans Canada, the Fraser Basin Council analyzed the status of different coho salmon runs to determine the degree to which runs were increasing or decreasing. From pre-1980 to 2003, 40 coho runs increased in the Lower Fraser watershed but 48 runs decreased. During this same period, six coho runs increased in the Squamish watershed but 14 runs decreased.[14]

Number of Coho Salmon Runs that are Increasing and Decreasing in the Lower Mainland (pre-1980–2003)[14]



Data for Lower Fraser River chinook salmon showed significant variation from 1986 to 2008; however, the two lowest run sizes and catches occurred in 2007 and 2008.[15]

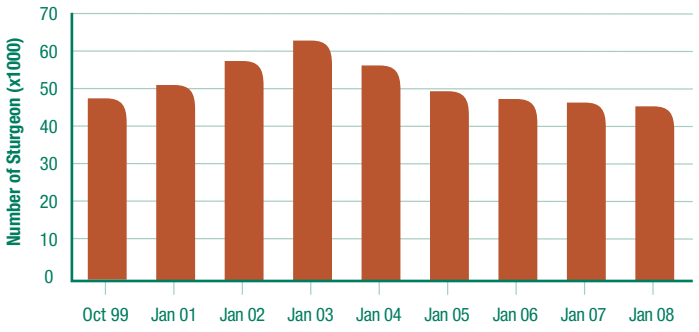
Fall Chinook Salmon in the Lower Fraser (1980–2008)[15]



Fraser River White Sturgeon[16]

White sturgeon are the largest freshwater fish in North America. They can reach more than 6 m and 600 kg in size and live for more than 150 years. The Lower Fraser is one of four "stock groups" of white sturgeon in the Fraser Basin. All four stock groups have been designated as Endangered, but in 2006, only the Nechako and Upper Fraser stocks were listed by the federal Species at Risk Act. White sturgeon spawn only in freshwater and are very dependent on the health of critical in-river habitats. They are a prized species for recreational anglers, particularly in the Lower and Middle Fraser. The growth rate of Lower Fraser white sturgeon has declined since 2003, and the population declined by about 27% between 2003 (62,611) and 2008 (45,896). The greatest reductions have occurred in the smallest (juvenile) size classes. These trends are thought to be the result of impacts on critical spawning and rearing habitats, and to declines in food supply. Pacific eulachon, a culturally significant fish which are also a Sturgeon food source, are now a tiny fraction of even recent historical returns, and overall salmonid returns to the Fraser are at an all-time low.

Lower Fraser River White Sturgeon Population Estimates, 40–280cm Fork Length (October 1999–January 2008)[16]



Sustainability Stories

City of Surrey Salmon Habitat Restoration Program

The City of Surrey's Salmon Habitat Restoration Program (SHaRP) began in 1996 with the primary goal of reducing urban impacts to streams through enhancement and restoration projects. Over the last thirteen years, SHaRP has adopted a broader, more integrated approach to watershed restoration including: protecting and improving fish habitat; providing public education and community outreach programs; and creating community partnerships. In addition to the enhancement of Surrey's local streams and creeks, a key aspect of the SHaRP program is to introduce local youth to environmentally sustainable practices and to instill a stewardship mentality through education, increased awareness and a sense of ownership.

Fraser Basin Council's Youth Watershed Leadership and Mentoring Program

In 2009, the Fraser Basin Council, with support from the Fraser Salmon and Watersheds Program, brought together 10 youth from throughout the Lower Mainland in a program designed to build their capacity to be watershed champions through hands-on learning and mentorship. The program included a 2-day residential workshop at Loon Lake Education Centre in Maple Ridge, where participants learned about watershed issues, salmon health, environmental management, and being active and engaged community citizens. Following the workshop, the youth were paired with local stewardship organizations – including Metro Vancouver, Alouette River Management Society, Langley Environmental Partners Society and the Fraser Valley Regional Watersheds Coalition – for one-on-one mentoring, skills development and hands-on learning in a professional environment. Projects and activities completed by the youth participants included: invasive species mapping, landscape design planning for the rehabilitation of a local stream, salmon spawner surveys, community education and public outreach for school groups, planning and enhancement of beaver habitat in an urban area, and blue heron surveys.

BC Water Quality Index[17]

BC Water Quality Index (WQI) scores represent water quality in relation to the attainment of water quality objectives. The objectives are safe limits set by the BC Ministry of Environment in areas of human activity and are used as a means of protecting the most sensitive uses of a body of water. Water quality objectives measure a number of key parameters such as turbidity, fecal coliforms and the presence of chemical compounds such as copper, lead, and polycyclic aromatic hydrocarbons in sediments.

Based on the WQI, water quality in the Fraser River improved in the Main Stem between 2003 and 2006 but declined at other Fraser River locations—most notably at Sturgeon Banks, which declined from a WQI score of Excellent in 2003–2005 to Poor in 2006. Between 2005 and 2006, water quality improved at three of four Burrard Inlet monitoring locations. In Boundary Bay, water quality remained Fair in 2005 and 2006.

Attainment of Water Quality Objectives (2006)[17]

Attainment of BC Water Quality objectives is tracked at a number of locations throughout the Fraser Valley and Metro Vancouver regions.

Burrard Inlet

Water quality in Burrard Inlet is affected mainly by discharges of primary-treated effluent, combined sewer overflows, and stormwater, and by discharges from bulk-loading terminals, a sugar refinery, a sodium chlorate plant, a chlor-alkali plant, and oil depots. In 2006, monitoring sites in Burrard Inlet met or exceeded water quality objectives 90% of the time. Objectives that were occasionally not met included fecal coliforms, total chromium, copper, lead, mercury and nickel, as well as various polycyclic aromatic hydrocarbons in sediments.

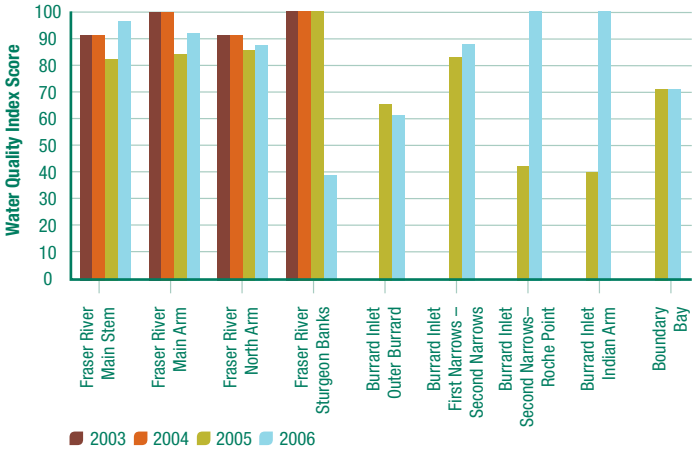
Boundary Bay

Water quality in Boundary Bay is affected primarily by discharges of effluent, stormwater, and septic tanks, and by agricultural runoff in the surrounding tributaries. In 2006, monitoring sites in Boundary Bay met or exceeded water quality objectives 94% of the time. Objectives occasionally not met included fecal coliforms and suspended solids.

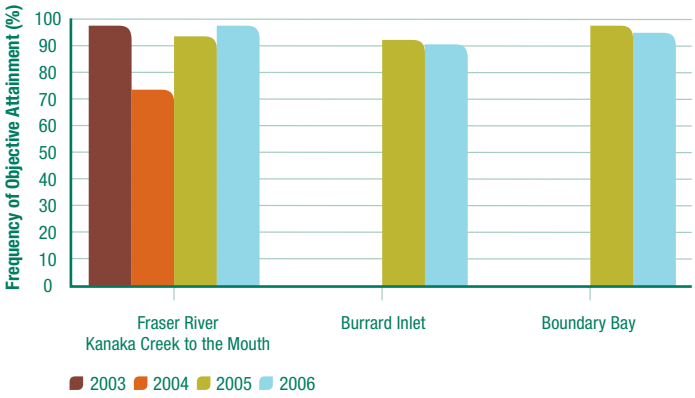
Fraser River: Kanaka Creek to the Mouth

Water quality in this section of the Fraser River is affected by industrial and agricultural activities, and discharges of treated sewage. Water quality objectives at monitoring locations along this section of the river were met 98% of the time. Objectives occasionally not met included dioxins, furans and total chromium in sediments; suspended solids and total copper in water; phenanthrene and fecal coliforms.

Water Quality Index Scores for Water Quality Monitoring Locations in the Lower Mainland (2003–2006)[17]



Attainment of Water Quality Objectives at Lower Mainland Monitoring Locations (2003–2006)[18]



Notes

[a] The annual PM2.5 Canada-Wide Standard level is based on daily average concentrations and is calculated from the annual 98th percentile (approximately the 7th highest daily average concentration) averaged over three consecutive years. As it is averaged over a three-year period, the CWS is a longer-term measure, which shows a smoothed trend line and does not reflect daily fluctuations in PM2.5 concentration or the highest concentration recorded at each site.

[b] The annual GLO Canada Wide Standard is calculated from the fourth highest daily 8-hr maximum value averaged over three consecutive years. As it is averaged over a three-year period, the CWS is a longer-term measure, which shows a smoothed trend line and does not reflect daily fluctuations in GLO concentrations or the highest concentration recorded at each site.

[c] Species richness (i.e., the number of different species) estimates are based on observations since 1961.

[d] Provincial Protected Areas include ecological reserves; Class A, B and C provincial parks; conservancies; recreation areas; and protected areas that are designated under the Environment and Land Use Act.

[e] This refers to ecosystems at risk of extinction because they have been drastically reduced in area and/or are in danger of being lost completely.

[f] Red-listed species include any indigenous species or subspecies that is extirpated, endangered, or threatened in British Columbia. Blue-listed species include any indigenous species or subspecies that are considered to be of special concern in British Columbia.

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Land use and land use decisions are key to advancing sustainability. Land use patterns influence our relationship with the natural environment, how and where we live, where we work, where services are located, how we travel, our quality of life, and the cost of providing public services.

Land Use

Building complete, compact communities and directing new growth into already urbanized areas can reduce development pressure on farmland and natural spaces, which fosters food security and the protection of environmentally sensitive areas. Densification can also reduce the costs of building and maintaining urban infrastructure and providing community services because less extensive road, water and sewer systems can service higher numbers of residents. Compared to many other North American jurisdictions, growth in the Lower Mainland has been relatively compact over the last several decades due to geographical constraints, establishment of the Agricultural Land Reserve, presence of a less extensive highway system, and political commitment to maintaining livability.[1]

Creating compact, complete communities can also reduce greenhouse gas emissions, improve air quality and contribute to public health by providing residents with local jobs and services and making walking and cycling attractive and effective modes of transportation. Siting and reserving land for industrial purposes in locations that are accessible by a range of transportation modes can support a mixed employment base, if well planned. Sustainable land use also creates resiliency to risks from natural hazards such as flooding, landslides and interface fires. Zoning and infrastructure planning that identifies and mitigates risk can strengthen community capacity to prevent and minimize impacts from natural disasters.

Indicators of land use sustainability are challenging to define. An ideal composition of land uses does not exist. The ways in which space and resources are allocated for different uses and the policies and plans that guide decision-making should reflect a community's values and priorities, including commitments to sustainability. Many Lower Mainland municipalities have embedded "smart planning" principles into their land use plans, policies and decisions; however, common tracking systems to measure their implementation and impact on the community do not exist.

Indicators of effective smart planning approaches can include changes in urbanized areas, the Agricultural Land Reserve and Protected Areas; increases in density; changes in the mix and distribution of land uses such as residential, business and employment, recreation and leisure, and natural areas; and changes in the vulnerability of communities to natural hazards.

ISSUES AND TRENDS

1 • Land Use

Currently, the availability of information on land use varies across the three regions in the Lower Mainland. Regional land use information for Metro Vancouver is relatively comprehensive and accurate because the regional district has the capacity to generate the relevant data. The Fraser Valley and Squamish-Lillooet districts do not have similar regional databases. The closest proxy is BC Assessment data, which is inadequate due to gaps and assumptions about property dimensions.[a] The lack of consistent and accurate information on land use at the regional level presents a challenge in assessing sustainability and managing growth.

Fraser Valley

The Fraser Valley region covers approximately 14,000 square kilometers of land and has a population of about 274,000. It is the second largest of the three regions but only 1% of its area is currently used for settlement purposes. Highly productive agricultural lands cover 5.4% of the land base. Much of the rest of the region is dominated by mountainous terrain, some of which is used for resource development, rural settlement, and parkland, or is federal land or Crown reserves and lands used for recreation and other tenures. Less than 6% of the region's population lives in these rural areas. Areas of future urban growth in the Fraser Valley Regional District will expand the urban envelope by 0.5% of the region's total land base. Most of the regional population and employment growth is forecast to occur in the urban centres of Abbotsford, Chilliwack and Mission. These communities will continue to be the region's major employment nodes, and will account for approximately 82% of regional employment by the year 2021.[2]

Metro Vancouver

The Metro Vancouver region (2,878.52 km^2) is less than a quarter of the size of the Fraser Valley but is home to more than 2.2 million residents. Urban land makes up about 25% of the total area of the region; two-thirds of this is used for residential, commercial, industrial, institutional, transportation, communications, or utilities purposes. The remainder is less developed or undeveloped. Non-urban land includes forested areas, agricultural land, community watersheds, parks and open space. Agricultural land occupies about 41,000 ha. In recent years, land uses have changed in Metro Vancouver but the amount of urbanized land has remained stable. Between 2001 and 2006, commercial and residential land use increased and rural residential land use decreased slightly.[3] During the same period, the proportion of the region that was open and undeveloped land dropped from 10.6% to 9.2%.[4]

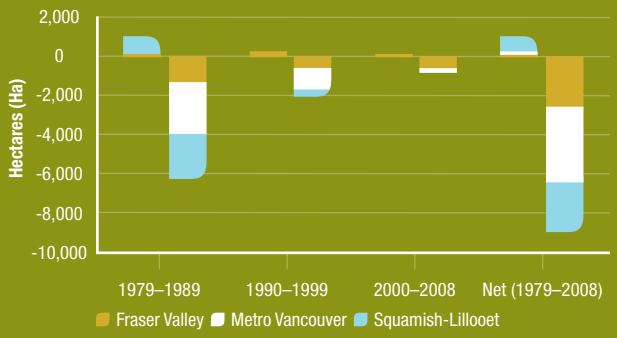
Squamish-Lillooet

The Squamish-Lillooet region is the largest of the three regions at over 16,000 km^2. Land use in Squamish-Lillooet is primarily rural. Municipalities account for only 2% of the region. Most of the land base is Crown land, which is used for a wide range of resource and recreational uses.[5] The Agricultural Land Reserve constitutes 1.6% of the region. Approximately 86% of the region's population is located in communities that are centered around Squamish, Whistler, and Pemberton; the remainder is located in Lillooet and the surrounding electoral areas. In 2009, residential properties and farms accounted for 50% and 43% of Squamish-Lillooet municipalities, respectively. Commercial and industrial land uses occupied 5% and 2% of the municipal land base, respectively.[6]

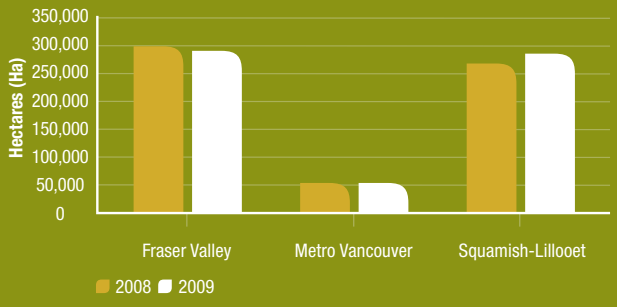
Changes in Land Use in Metro Vancouver (2001–2006)[4]

Type of Land Use	Area (ha)	Percent of Region (%)		Area (ha)	Percent of Region (%)
Commercial	16,297	6.2%	^	16,789	6.4%
Residential	30,243	11.5%	^	31,383	11.9%
Rural Residential	4,844	1.8%	v	4,408	1.7%
Other	15,357	5.8%	v	14,161	5.4%
Total Urban Area	66,741	25.0%	>	66,741	25.0%
Indian Reserves	1,471	0.6%	>	1,471	0.6%
Total Non-Urban Area	193,501	73.0%	>	195,301	73.0%

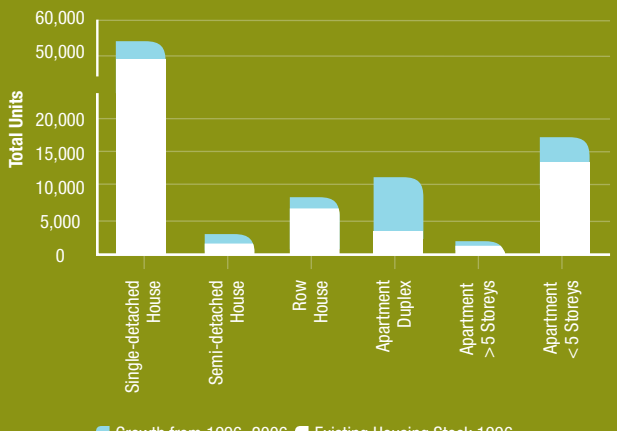
Agricultural Land Reserve Inclusions and Exclusions in the Lower Mainland (1979–2008)[7]



Protected Areas in the Lower Mainland[9]



Change in FVRD Housing Stock by Type (1996–2006)[13]



Source: Statistics Canada

Agricultural Land Reserve[7]

The existence of areas preserved for farming within the Agricultural Land Reserve (ALR) is generally believed to be slowing the rate of conversion of farmland into non-agricultural uses and thus minimizing the expansion of urbanized containment areas, particularly in the past 10 years. A review of the ALR exclusions which have occurred in the last 30 years (1979 to 2008) reveals that almost 9,200 ha were taken out of the ALR. Almost half of those exclusions occurred in Metro Vancouver (44%); 29% and 27% occurred in Squamish-Lillooet and the Fraser Valley, respectively. Two-thirds of these exclusions occurred in the 1980s. Slightly more than 1,100 ha of land were added to the ALR over the last 30 years. Almost all of those inclusions occurred in the 1980s and most occurred in Squamish-Lillooet (938 ha).

Protected Areas

The amount of land designated as Protected Areas in the Lower Mainland has increased in recent years. Protected Areas include ecological reserves, Class A, B and C provincial parks, conservancies, recreation areas and protected areas that are designated under the *Environment and Land Use Act*.[8] Many of these areas serve to conserve representative and special natural ecosystems, plant and animal species and features. Between 2008 and 2009, there have been slight increases in Protected Areas in Metro Vancouver and Squamish-Lillooet but slight decreases in the Fraser Valley.[9]

2 • Population Density

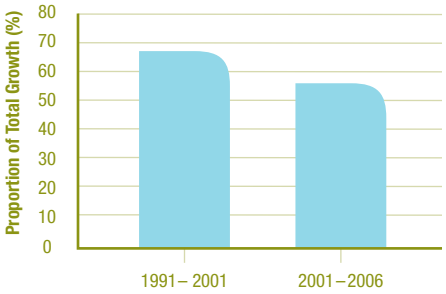
Eighteen of the province's 30 most populous municipalities are located in Metro Vancouver and the Fraser Valley. The combined population of the Metro Vancouver, Fraser Valley and Squamish-Lillooet regions was 2.5 million in 2006 and is projected to increase to 3.8 million by 2040. Populations within the three regions are estimated to grow between 39% to 47% in the next three decades. This equates to 15,000 more people in Squamish-Lillooet, 131,000 in the Fraser Valley, and more than 1,000,000 in Metro Vancouver. With the Squamish-Lillooet and Fraser Valley Regional Districts projected to be the two fastest growing regional districts in BC during this period, a major challenge will be how to accommodate population growth and development while maintaining livability and affordability. Achieving dense, compact, complete communities in existing urban centres supports investments in frequent transit networks, facilitates more walking and social cohesion, and more broadly advances sustainability.[10,11]

Although the Fraser Valley is still far more rural than neighbouring Metro Vancouver, its population density is more than four times that of the province as a whole.[12] Most housing stock in the Fraser Valley Regional District (FVRD) is single-family dwellings that were constructed in the 1980s and early 1990s. The total number of single-family dwelling units increased from 1996 to 2006 but decreased proportionately from 67% of all

housing stock in 1996 to 57% in 2006. Medium-density ground-oriented units and apartment units increased both overall and as a percentage of total housing stock during the same period.[13]

Metro Vancouver is the most densely populated region in the province. Although the region comprises only a small proportion of the province's land base, it contains nearly half of BC's population. Population growth in Metro Vancouver has been fairly compact in the last two decades, although it has been less so in recent years. According to a Sightline study, growth in high-density areas accounted for about 67% of the total population growth in Metro Vancouver from 1991 to 2001 but only 56% of population growth in the region between 2001 and 2006. Eleven percent of Metro Vancouver's residents now live in highly compact, pedestrian-oriented neighborhoods of 100 residents or more per hectare such as Yaletown and central New Westminster. Every community in Metro Vancouver has some compact development, but municipalities that are closer to the urban core of Vancouver tend to exhibit more compact growth.[1] In Metro Vancouver, the area occupied by mixed-use residences and apartments stayed the same between 2001 and 2006 but the area occupied by singled detached houses, duplexes, and townhomes increased.[4]

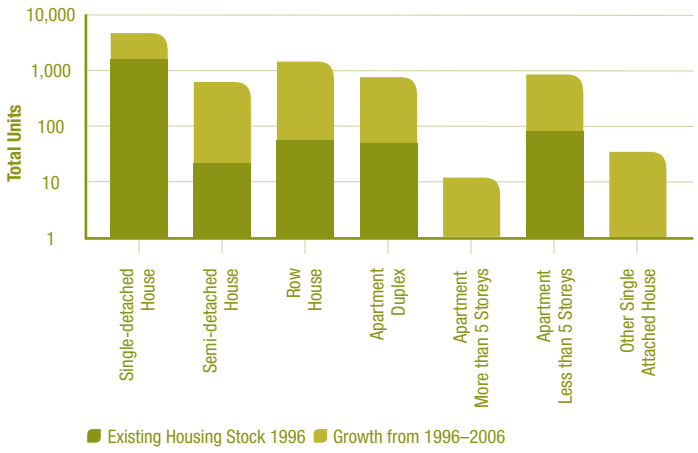
Compact Growth, as a Share of Total Population Growth in Metro Vancouver (1991–2006)[1]



Population within the Squamish-Lillooet Regional District grew by 28% between 1993 and 2003, an increase of almost 8,000 new residents. Half of that growth occurred in Whistler, 26% in Squamish and 18% in Pemberton.[5] Single-family dwellings constitute the majority of housing stock in Squamish-Lillooet. The total number of single-family dwellings grew between 1996 and 2006 but decreased as a percentage of the housing stock from 87% in 1996 to 60% in 2006. The total number and the proportion of medium density, ground-oriented units and apartment units increased during the same period. The largest proportional increase was in row housing from 4% in 1996 to 15% in 2006.[14]

Population density and land use mix are correlated with transportation patterns. It is notable that with increased densification occurring within all three regions, more people are working at home, working within their home municipality, or working nearby in a neighbouring municipality.[15] See the Transportation section for more information.

Change in Housing Stock by Type in the SLRD (1996–2006)[14]

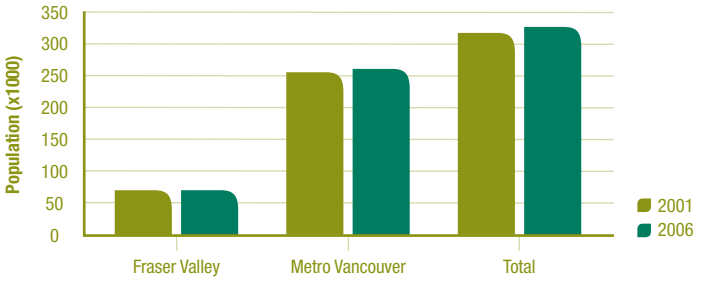


3 • Development within the Lower Fraser Floodplain[16]

Land use decisions and development patterns can greatly influence the vulnerability and/or resilience of a community to natural hazards, such as flooding, earthquakes, and interface fires. For example, by discouraging growth and development within flood prone areas, future flood damages, economic disruption and social hardship can be minimized.

In 2006, more than 324,000 people lived within the floodplain of the Lower Fraser River. About 80% (almost 261,000) resided in Metro Vancouver communities; 20% (just under 64,000) lived in the Fraser Valley. There was a 3.6% increase in the floodplain population in Metro Vancouver between 2001 and 2006 compared with an overall population increase of 6.7%. There was no change in the Fraser Valley floodplain population between 2001 and 2006 despite an overall population increase of 8.5% during that period.

Population Living in the Lower Fraser River Floodplain (2001; 2006)[16]



Sustainability Stories

Tracking Change

Outside of market forces, local government decision-making has the most significant effect on land use. However, regional growth strategies serve as important overarching guiding instruments on land use. Metro Vancouver's Livable Region Strategic Plan uses sustainability indicators to monitor land use changes and report on them annually to its Board of Directors and the public. Indicators include the amount of area within the green zone and the Agricultural Land Reserve, the number and proportion of dwellings by type and within regional town centres, benchmark prices for housing stock, labour force patterns, vehicle kilometers driven, and transit capacity.

Since 2002, Metro Vancouver has used the Sustainable Region Initiative as its framework for decision-making, most recently in a comprehensive report entitled Metro Vancouver Sustainability Report 2009, which has also served as a critical background document to the draft Regional Growth Strategy Metro Vancouver 2040: Shaping Our Future. The 2008 Squamish Lillooet Regional District's Regional Growth Strategy (2nd reading) also intends to use quality of life indictors to monitor progress in implementing the plan. The Fraser Valley Regional District has recently issued two comprehensive and instructive reports in a Regional Snapshot series. These documents report on issues related to Housing and Transportation.

New Approach to Risk Management

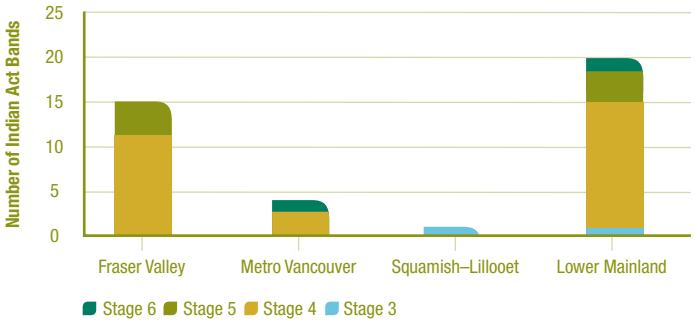
The District of North Vancouver commissioned an in-depth study of landslide risk in response to a landslide that occurred in the Blueridge/ Seymour area in 2005. In an effort to mitigate natural hazard risks following that event, the District initiated the Natural Hazards Management Program. It allocates funding to risk assessment and mitigation, and provides the public with greater access to hazard and risk information. The District also created a risk-based approach to managing natural hazards, which focuses on both the likelihood and consequence of natural hazard events such as landslides, debris flows, wilderness-urban interface fires, flooding, and earthquakes. The District uses the CAN/CSA Q850-97 risk management framework to manage natural hazards. In addition, Development Permit Area guidelines for the different types of natural hazards are being developed along with hazard maps, which property owners can use to learn about hazards in their area and take precautionary steps to reduce risk. There is increasing interest in BC in using quantitative risk assessment as a development planning tool in hazard areas to relate risks to human life.

4 • Coordination with First Nations Planning

The Lower Mainland is home to many Aboriginal peoples, including several First Nations communities and traditional territories. Treaties, land claims, co-management agreements, memoranda of understanding, community-based initiatives and other agreements between First Nations and other levels of government can build trust, strengthen socio-economic conditions of the Aboriginal population, and significantly advance sustainability. Reconciliation and acknowledgement of title and rights must be concluded in a fair and just manner. Relations between Aboriginal and non-Aboriginal people are complex and cannot be adequately measured with existing information. However, the status of the treaty process is relevant to land use and management as it relates to opportunities for community and economic development, as well as health and well-being. First Nations are decision makers in land management and governance, and land and resource development. They are also sacred keepers of traditional and local knowledge. As such, coordinated planning and co-operative land use management decisions between First Nations and local governments are necessary for maintaining sustainability.

Prior to 2002, 28 Bands in the Lower Mainland had entered the BC Treaty Commission. As of 2009, only 6 of them had progressed to more advanced stages, 14 had remained in the same stage (mainly stage 4 or 5), and 8 had recently withdrawn.[17]

Status of Treaty Negotiations for Lower Mainland Indian Act Bands Participating in the BC Treaty Commission Process (2009)[17]



Perhaps most notable of those who made progress was the Tsawwassen First Nation, whose treaty officially took effect on April 3, 2009. It is the first urban treaty in the history of BC and the first modern treaty negotiated and ratified under the BC Treaty Commission process. The treaty and related agreements present Tsawwassen First Nation with modern governance tools, coupled with funds, to generate increased economic vitality. It creates new government-to-government relationships with Canada and BC, and establishes a place for Tsawwassen on Metro Vancouver's Board of Directors. The Yale First Nation recently initialed a Final Agreement and the In-SHUCK-ch Nation is currently negotiating a Final Agreement.

A strategic land use agreement was developed by the Squamish Nation and the City of North Vancouver to protect cultural areas through the establishment of 11,000 ha of new conservancies and the creation of a framework for collaborative and sustainable land management. It is an important component of the larger Sea-to-Sky Land and Resource Management Plan, which also involves the In-SHUCK-ch Nation, Lil'wat Nation, and the Province of BC.

Notes

[a] There are challenges in using BC Assessment data to assess land use. While the agency assesses all properties in the province, coverage of undeveloped and remote properties is incomplete. Information on property area and dimensions is also inconsistent. Irregular lot dimensions require BC Assessment to qualify accuracy. A small percentage of records do not contain information on dimensions. For example 7.5% of the 5,524 records of properties in Squamish-Lillooet do not have information on lot dimensions. 10.7% of residential property records and 2.3% of industrial property records are missing data on dimensions. Hence, interpreting the percentage of the land base that is used for residential and industrial purposes from this information, could be inaccurate.

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The size of a population can significantly affect sustainability through rates of resource consumption and waste generation, urban development patterns and the land base needed for housing and food production. Community sustainability can be impacted as the population ages or its composition changes due to immigration.

Population & Health

In particular, demographic changes may affect the availability of a diverse and skilled labour force, and result in increased demands on the health care system, social support services and community infrastructure.

Good health is a function of a wide variety of factors. It relates to how we live our lives, what we eat, how much we exercise, how much stress we have and what types of activities we engage in. Positive and supportive personal relationships are also essential to good health, as is access to health services. Our health is also affected by the state of our environment, the air we breathe and the water we drink.

In assessing the state of our health, it is important to consider different social, environmental and physical impacts, and mental as well as physical well-being. It is also important to understand how these health impacts affect different ages, regions and populations.

ISSUES AND TRENDS

1 • Population Demographics

In 2006, 58.6% of the BC population lived in the Lower Mainland region; Metro Vancouver accounted for 88% of the region's population. Between 1996 and 2006, the population of the Lower Mainland increased from 2.1 to 2.4 million. The growth rate was largest in Squamish-Lillooet (19.8%), followed by the Fraser Valley (16%) and Metro Vancouver (15.7%). However, total population growth was greatest in Metro Vancouver (284,030), followed by the Fraser Valley (35,095) and Squamish-Lillooet (5,805).[1]

In 2006, the Aboriginal population in the Lower Mainland numbered almost 59,000 (2.5% of the total population). The largest proportion of Aboriginal population lived in the Squamish-Lillooet region (11.6%), followed by the Fraser Valley (5.7%) and Metro Vancouver (1.9%). In the Fraser Basin, the rate of Aboriginal population growth between 1996 and 2006 (38%) was about triple the rate of total population growth (13%) in the Basin. The growth rate was highest in Squamish-Lillooet (68%), followed by the Fraser Valley (60%) and Metro Vancouver (29%) regions.[1,a]

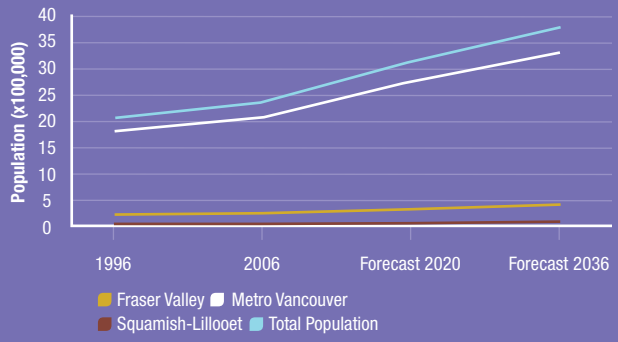
The population of the Lower Mainland is forecast to increase by nearly 60% between 2006 and 2036. Most of this increase is expected to occur in Metro Vancouver, with an estimated growth of 1.2 million people. By 2036, the populations in the Fraser Valley and Squamish-Lillooet are expected to increase by 158,920 and 18,778, respectively.[2]

In 2006, the largest proportion of the population in the Lower Mainland was aged 35–44 years (16.3%), followed closely by those aged 45–54 years (15.8%). Approximately 13% of the Lower Mainland population was aged 65 years or older. However, the forecast by BC Statistics is that from 2001 to 2031, as the population ages across BC, the number of people aged 65–74 years will increase by 175%.[3] This will result in increased demands for health and social services, and there will be impacts on the economy as an increasing proportion of the population retires from the workforce. In 2009, health system costs in BC were estimated at $5,252 per person, which equates to the total health expenditure in the Lower Mainland of more than $12.6 billion.[b]

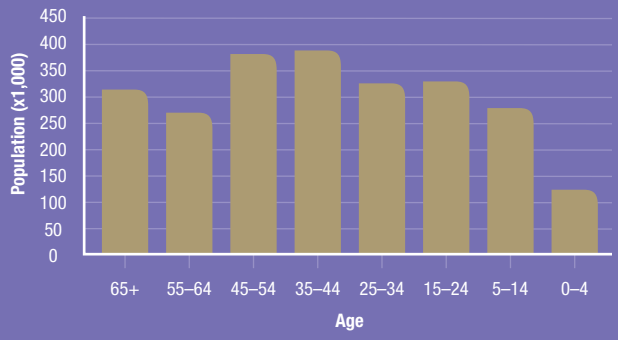
The composition of the population in the Lower Mainland varies among regions. In 2006, the median age of people living in the Fraser Valley was 38.2 years, although people older than 65 and between the ages of 15 and 24 dominated the population profile (14.6% each). The median age in Metro Vancouver was 39.1 years, with the population profile dominated by 35 to 44 year olds (16.4%). In the Squamish-Lillooet region, people aged 25 to 34 years and 35 to 44 years were the dominant age classes (18.1% and 17.8%, respectively), and the median age was 35.1 years.

While detailed population forecasts by different age classes were not available when this report was written, it is clear that significant population growth is expected for all age classes 45 years and older. For example, the population in Metro Vancouver aged 70–75 years is forecast to nearly triple between 2010 and 2036. During this same period, the Fraser Valley population aged 75–80 years is expected to double.[2]

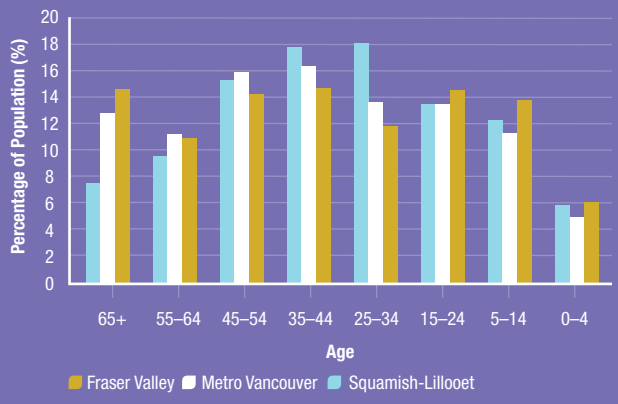
Population Growth in the Lower Mainland (Actual: 1996–2006, Forecast: 2006–2036)[1,3]



Population by Age Category in the Lower Mainland (2006)[1]



Percentage of Population Per Age Category in the Lower Mainland (2006)[1]



Sustainability Stories

Abbotsford Regional Hospital VolunTEEN Program[10]

In 2009, Volunteer Resources at the Abbotsford Regional Hospital piloted a VolunTEEN program to support patients, families and hospital staff. The program launched in July with a total of 56 teens participating in the pilot program. VolunTEENs were trained and orientated on topics such as confidentiality, emergency responses, infection control, respectful workplace and volunteering with elders.

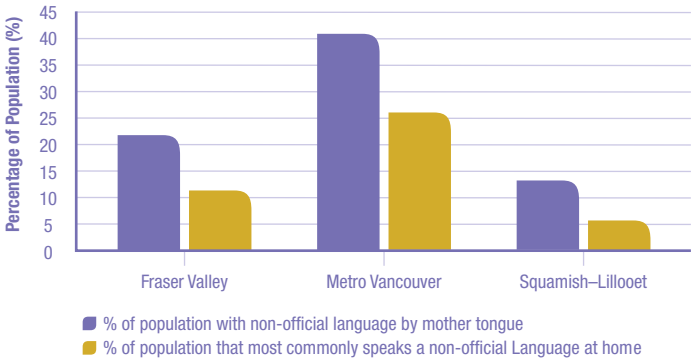
VolunTEENs contributed approximately 4,000 hours of support at the close of the program's first session in late January of 2010. The pilot program has been a success for all involved. Youth participants offer patients valuable companionship. They offer immeasurable support and peace of mind to the families of patients who know their loved ones are being visited and cared for. They also provide important support to hospital staff. Youth access the opportunity to accumulate volunteer hours needed for graduation, and those considering careers in health care gain experience in their field of interest. The second session of the VolunTEEN program is scheduled to begin in February 2010 with a new group of participants. Some past participants may return as team supervisors.

2 • Diversity

As the population ages and birth rates remain low, immigration and inter- and intra-provincial migration are expected to make the most significant contribution to population growth in the Lower Mainland.[5]

In 2006, Metro Vancouver had one of the most diverse populations in Canada; 39.6% of the population identified themselves as an immigrant from another country, and more than 40% spoke a non-official language as their mother tongue (i.e., their first language was not English or French). Approximately one-fifth (21.8%) of Fraser Valley residents and 13.4% of Squamish-Lillooet residents identified a non-official language as their mother tongue.[1]

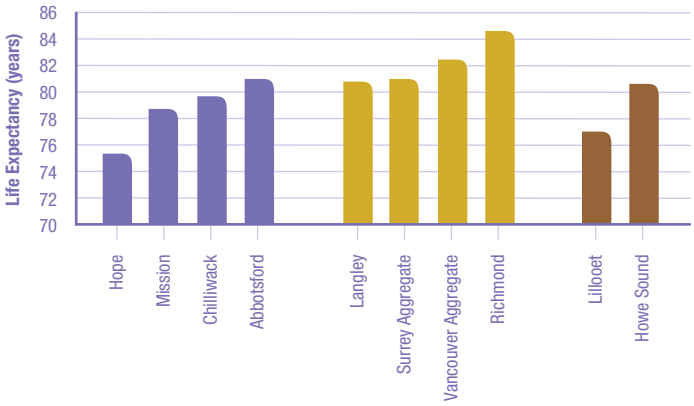
Non-Official Languages Spoken in the Lower Mainland[1]



3 • Life Expectancy

From 2004 to 2008, average life expectancy in the Lower Mainland ranged from 79.7 to 82.1 years in the three regional districts. Since 1997, life expectancy has increased in all three regional districts. Metro Vancouver experienced the largest increase (1.7 years), followed by Squamish-Lillooet (1.6 years) and the Fraser Valley (0.8 years). At the Local Health Area (LHA) scale, Hope and Lillooet have the lowest life expectancy of all LHAs in the Lower Mainland at 75 and 77 years, respectively. Richmond has the highest life expectancy at 84.4 years.[6]

Average Life Expectancy in Lower Mainland Local Health Areas (2004–2008)[6]

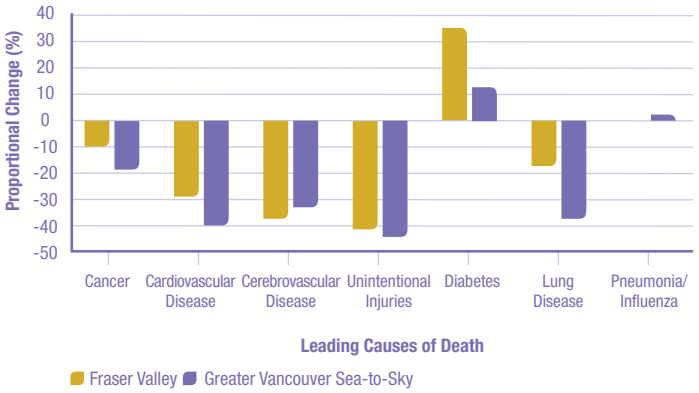


4 • Mortality Rates for Leading Causes of Death[7]

Age standardized mortality rates (ASMR) are death rates that have been adjusted by age and gender, and have been standardized to a "standard" population to enable comparisons to be made between genders, different time periods and different geographic locations. Between 1996 and 2006, the ASMR for the most common causes of death in the Lower Mainland decreased with the exception of pneumonia/influenza and diabetes. Although cancer was still the most common cause of death in the region, the ASMR for cancer dropped by 9.8% in the Fraser Valley and 19.4% in

the GVSS regions. On the other hand, the ASMR for diabetes in these two regions increased by 35.0% and 11.8%, respectively.

Proportional Change in ASMR for Leading Causes of Death in the Lower Mainland (1996–2006)[7]



5 • Low Weight Births and Toxins

Babies weighing less than 2,500 grams at birth experience increased risks of serious health problems as newborns, lasting disabilities and premature death. Between 1996 and 2006, the proportion of low weight births increased by 8.4% in the Fraser Valley and 11% in the Greater Vancouver Sea-to-Sky regions. Between 2001 and 2006, the rate of low weight births in these regions has increased by 7.7% and 17.8%, respectively.[7] A recent study by UBC researchers has shown a correlation between poor air quality and the occurrence of low weight births. Findings showed that the proportion of low weight births increased by 22% among babies born to women who lived within 50 metres of a highway.[8] This was independent of socio-economic status and it has implications for people living in the Lower Mainland because many neighbourhoods are located near major roads and highways.

In 2004, Sightline conducted a survey on the levels of PCBs and PBDEs[c] in the breast milk of 40 first-time mothers in Oregon, Washington, British Columbia and Montana. Testing breast milk serves as a good proxy for investigating the levels of toxins in men and women of similar ages because PCBs and PBDEs adhere to fats such as those found in breast milk. Results showed that both compounds were present in every participant. The level of PBDEs was 20–40 times higher than concentrations normally found in northern Europe and Japan. Approximately one third of the participants had higher levels of PBDEs than PCBs, suggesting that PBDEs are a growing health concern.[9]

Notes

[a] Data for the Aboriginal population are based on the Population Census, and include those who responded as being of Aboriginal identity.

[b] This figure was calculated using 2006 census population data and 2009 estimated health expenditure data.

[c] Polychlorinated biphenyls (PCBs) are persistent organic pollutants that have a wide range of toxic effects, including birth defects and impairment of brain and memory functions, and are associated with certain types of cancers. PCBs were originally used as coolants and insulating fluids but were largely banned in the 1970s. Polybrominated diphenyl ethers (PBDEs) are organic compounds that are used as flame retardants. They bioaccumulate in blood, breast milk, and fatty issue. It is unclear what impact regular exposure to PBDEs have on human health or what levels of exposure are safe. However, animal studies suggest that these persistent toxic chemicals can impair memory, cause learning disabilities, and disrupt hormones.

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Social & Economic Well-Being

The social dimension of sustainability has significant implications for people and communities. A vibrant economy that provides adequate income to fulfill basic needs is essential for the well-being of individuals and families. Most residents of the Lower Mainland depend on their business or employment as their main source of income.

A diversity of employment opportunities, along with a skilled workforce to fill those positions, are two necessary ingredients of a strong and resilient economy. Of equal importance is sufficient income for individuals and families to meet their needs, feel secure, and participate in society. Inadequate household income can be associated with a number of physical and mental health problems, increased dependence on social support and charity, and lower levels of education. Those with incomes at the lowest end of the spectrum may not earn enough or receive sufficient social assistance to meet their basic needs. As a result, they may have difficulty finding affordable housing, may have to rely on food banks, and may be homeless or at risk of becoming homeless. BC has the highest poverty rate in Canada: 13% of the total population—about 546,000 individuals—lives in poverty. BC has also had the highest child poverty rate in Canada for the last five years. In addition, the gap between the poorest and richest households in BC is the highest in Canada. In 2006, the wealthiest 20% of the province's population had incomes that were more than 10 times higher than those of the least wealthy 20%.[1]

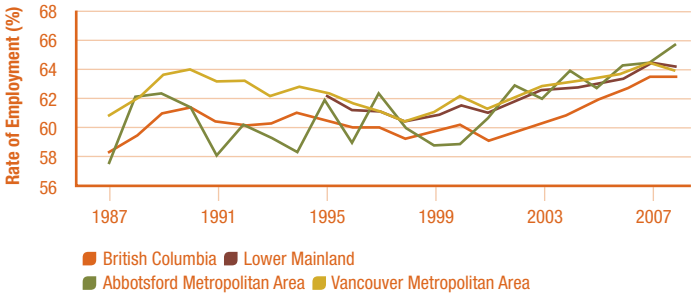
ISSUES AND TRENDS

1 • Employment and Unemployment[2]

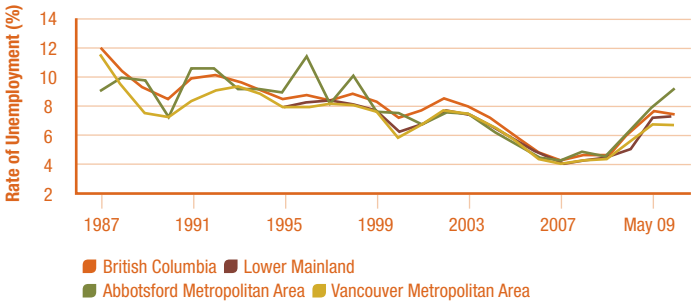
The rate of employment in the Lower Mainland increased over the last two decades during a period of strong economic growth but took a downturn due to the current economic recession. Between 1995 and 2008, the employment rate increased by about 2% in the Lower Mainland (from 62.2% to 64.1%). Employment in the Abbotsford Census Metropolitan Area increased from 57.4% in 1987 to 65.8% in 2008, and from 60.7% to 63.9% in the Vancouver Census Metropolitan Area during the same period. There was a corresponding drop in unemployment over the last two decades until the Canadian economy went into a recession in the last quarter of 2008.

From the spring of 2007 to the summer of 2008, unemployment rates in BC and the Lower Mainland were among the lowest in several years. However, those rates climbed from less than 4% to over 7% by October of 2009. Although the Bank of Canada announced that the national economy began to grow again in the third quarter of 2009, economists are predicting that unemployment will continue to rise for some time.[3]

Annual Employment Rates in the Lower Mainland (1987–2008)[2]



Annual and Monthly Unemployment Rates in the Lower Mainland (1987–2009)[2]



2 • Income

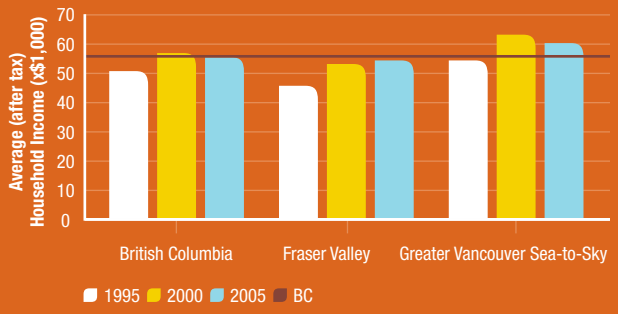
Average after tax household incomes in the Lower Mainland in 2005 ranged from just over $54,000 in the Fraser Valley to over $60,000 in the Greater Vancouver Sea-to-Sky (GVSS) area. Income in the Fraser Valley rose steadily from 1995 to 2005 but fluctuated in BC and the GVSS region during the same period. Average incomes in the GVSS region were above the provincial average in 2000 and 2005; in the Fraser Valley, they were below the BC average from 1995 to 2005.[4]

A recent Statistics Canada survey of household spending reported that basic needs continue to account for the largest proportion of household expenditures across Canada. In 2008, the average Canadian household spent 20.5% of its budget on personal taxes, 19.9% on housing and shelter, 13.6% on transportation, and 10.4% on food. These figures changed little from those in 2007. In BC, housing was the largest expenditure, accounting for 20.8% of the average household budget.[5]

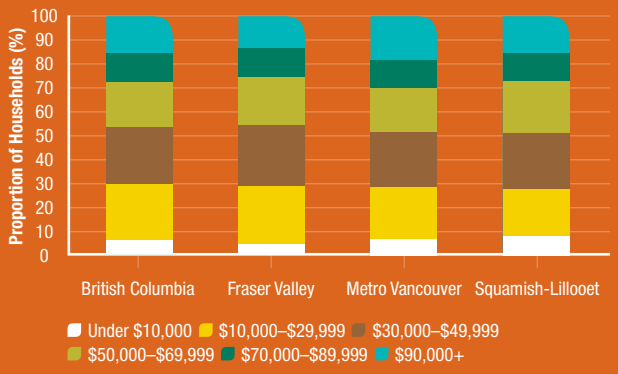
In 2005, almost 30% of households in BC earned an average of less than $30,000. In the Lower Mainland, the proportion of households with average incomes of less than $30,000 was slightly lower. Squamish-Lillooet had the smallest proportion of households earning less than $30,000 (27.7%) but had the highest proportion earning less than $10,000 (7.5%). In Metro Vancouver and the Fraser Valley, just over 28% of households earned less than $30,000. The Fraser Valley had the lowest proportion of households earning less than $10,000 (4.7%).

The recent economic downturn has likely had an effect on household income. The most current data on income levels are from the 2005 national census; therefore, data on the percentage of the population on employment insurance (E.I.) and income assistance (I.A.) are used as an indication of how household income in the Lower Mainland has changed recently. In September 2008, the proportion of the population on E.I. and I.A. ranged from 1.9% in Metro Vancouver to 2.7% in the Fraser Valley. Six months later, after two consecutive quarters of negative growth in the national Gross Domestic Product, the proportion of the population on E.I. and I.A. grew by 2.8% in BC, 2.4% in the Fraser Valley, 2.8% in Squamish-Lillooet, and 1.9% in Metro Vancouver.[6]

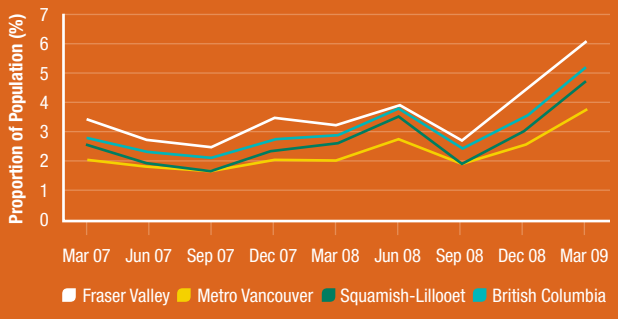
Average (after tax) Household Income in the Lower Mainland (2005)[4]



Household Income Levels in the Lower Mainland (2005)[4]



Percentage of Population on Income Assistance or Employment Insurance in the Lower Mainland (2007–2009)[6]



Access to adequate and affordable housing is a basic need for all people, and it plays an important role in determining one's quality of life. Housing is part of the broader issue of land use planning. The type, pattern and style of housing can affect the livability of a community—and region—in positive and negative ways. A key element of a sustainable, healthy community is an adequate and diverse supply of affordable homes that are designed to suit a range of housing needs in neighbourhoods that facilitate healthy living.

Housing Affordability

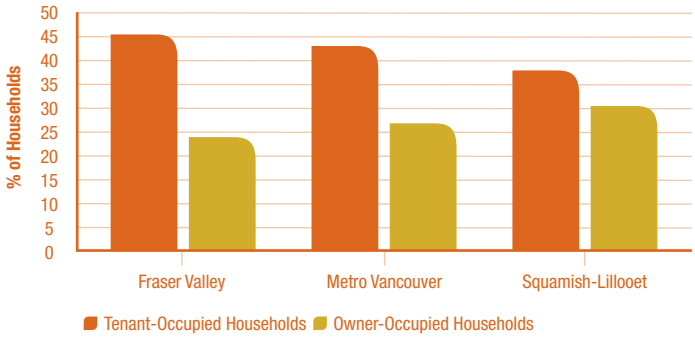
In 2008, BC had the least affordable housing market in Canada.[7] The Lower Mainland region is no exception. In 2007, Metro Vancouver had the least affordable housing in BC, with home ownership requiring on average 73.8% of household income compared to an average of 68.5% across the province and 31.7% in northern BC.[8]

In December 2009, the benchmark price for a detached single-family home was $766,816 in Metro Vancouver, $497,732 in the Fraser Valley and $500,874 in Squamish. These benchmark prices had increased by 18.3%, 7.2% and 16.4%, respectively since December 2008.[9,10]

The proportion of household income spent on housing is a key component of core housing need. A generally accepted rule-of-thumb for affordability is that a household should spend less than 30% of its gross income on housing costs.[11] In 2006, 45.2% of individuals and families living in rental housing in the Fraser Valley spent more than 30% of their household income on housing costs. The proportion of the population that spent this much on housing costs was slightly lower in the Metro Vancouver (43.4%) and Squamish-Lillooet (38.5%).[12]

In 2006, 30.4% of owner-occupiers in Squamish-Lillooet spent more than 30% of their household income on housing costs. The proportion was slightly lower in Metro Vancouver (27%) and the Fraser Valley (23.9%).

Percent of Renters and Owner-Occupiers Spending 30% or More of Household Income in Housing Costs in the Lower Mainland (2006)[12]



Rental Housing

In the fall of 2009, the rental vacancy rate in the Vancouver Census Metropolitan Area increased to 2.1% following several years of rates that were below 1%. In the Fraser Valley, the rental apartment vacancy rate was 6.1% in October 2009, which is the first time since 1999 that vacancy rates had risen above the 15-year average of 4.2%.[13,a]

Between 2001 and 2007, the cost to rent a two-bedroom apartment increased in communities throughout the Lower Mainland. In 2007, the cost in Metro Vancouver was significantly higher than in other regions in the Lower Mainland—38% higher than in Fraser Valley communities and nearly 30% higher than in Squamish. Between 2001 and 2007, Squamish experienced the most significant increase in rental costs for a two-bedroom apartment (25%), followed by Metro Vancouver (18%), and more modest increases in the Fraser Valley region—5% in Abbotsford and 11% in Chilliwack.[14]

Sustainability Stories

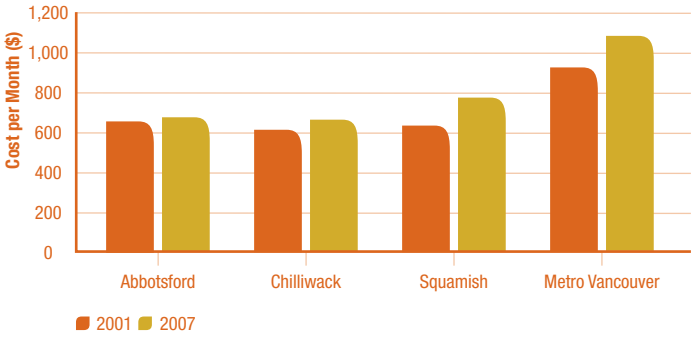
United We Can and Urban Binning[20,21]

United We Can is a non-profit organization in Vancouver's Downtown Eastside that creates and runs social enterprise projects that combine social equity with sustainability. Projects generate business and services from recycling and provide opportunity and income for people who experience multiple barriers to traditional employment. Started in 2004, the Urban Binners Unit (U.B.U.) offers a beverage container pick-up service to local businesses. Employees are equipped with carts, wear identifiable clothing and carry United We Can identification. The U.B.U. program helps its participants build valuable social and employment skills. Individuals involved in the program have also reported having higher self-esteem because they are recognized for their important work. The Urban Binners Unit was to be expanded to more than 70 participants during the 2010 Olympics in order to collect recyclables during the Games. Funded by a $50,000 grant from Vancouver City Council, participants will work four-hour shifts and be paid $10 an hour to collect cans and bottles from about 250 temporary recycling bins around downtown Vancouver. Deposits from the recycled items will be used to employ other workers at the United We Can recycling depot.

The Richmond Fruit Tree Sharing Project[22]

The Richmond Fruit Tree Sharing Project grows organic produce for charitable food distribution organizations. Started in 2001 by a group of volunteers, the non-profit organization began as an initiative to supply the Richmond Food Bank with donated fresh fruit from backyards and vegetables from farm fields that may have otherwise gone to waste. London Farm, a heritage farm site owned and operated by the City of Richmond, donated six rows of garden space in 2002 for growing vegetables. Since then, the Project has expanded to two farms on 1.2 hectares of City land at the end of Gilbert Road and at Terra Nova Rural Park. In nine years, the project has harvested and donated over 58 967 kilograms of fruit and vegetables to the Richmond Food Bank and other charitable food security agencies.

Cost per Month to Rent a Two-Bedroom Apartment in the Lower Mainland (2001; 2007)[14]



Homelessness[b]

Homelessness continues to be a significant challenge in the Lower Mainland, with more than 3,000 homeless people in the region. Homelessness is a complex issue because it is associated with economic circumstances, severe drug addiction and mental health problems.[15]

During a 24-hour period in March 2008, 2,660 homeless people were counted in Metro Vancouver. This represented a 22% increase since 2005, when 2,174 homeless people were counted,[c] and a 134% increase since 2002 when 1,136 homeless were counted. In 2008, most homeless people in Metro Vancouver (59%) lived on the street rather than in shelters.[16] In 2005, the cost of homelessness in the City of Vancouver was estimated at more than $51 million.[17]

A 24-hour homeless count conducted in the Fraser Valley region in March 2008 identified 465 homeless individuals—a 13% increase since 2004. Most of this homeless population (50%) was located in the Abbotsford area.[18]

Although no official homelessness count is conducted in the Squamish-Lillooet region, the Sea to Sky Community Services Society has identified 146 homeless in Squamish through its Homeless Outreach Services. The Society has also identified 15 homeless from Whistler, 3 from Mount Currie and 4 from Pemberton. Although the society has not conducted counts, anecdotal evidence suggests that there is a significantly high number of homeless living north of Squamish.[19]

Notes

[a] Based on data for the Abbotsford Census Metropolitan Area, which consists of the City of Abbotsford and the District of Mission for the purpose of the Canada Mortgage and Housing Corporation's Rental Market Survey.

[b] Definitions of Homelessness: Sheltered homeless: people living temporarily in emergency shelters, safe houses, or transition houses; Street /unsheltered homeless: people living or sleeping in places not intended for human shelter (e.g., parks, alleys, doorways, parkades, beaches, vehicles, under bridges); Hidden homeless: people temporarily staying with family or friends, also known as sofa surfing; At risk of homelessness: people living in housing that is inadequate or unsuitable for their needs, and who spend at least 50% of their household income on shelter.

[c] Total homeless includes both street homeless and sheltered homeless.[16]

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[22] The Richmond Fruit Tree Sharing Project website. www.richmondfruittree.com [accessed January 2010].

Transportation networks are vital to the sustainability of communities and regions. They support vibrant economies by moving goods and people and by providing access to amenities, services and opportunities such as employment, education and recreation.

Transportation

From an environmental perspective, the transportation sector is a major contributor of greenhouse gases (GHGs) and other emissions. In 2005, transportation was responsible for 35% of total GHG emissions in Metro Vancouver and 43% in the Fraser Valley.[1] Transportation is also deeply interconnected with land use and the development of livable, complete communities. High quality public transit networks can support a more compact pattern of urban development and thus reduce pressures on environmental integrity, agricultural lands and the development of green spaces. In turn, land use patterns influence traffic volumes and travel choices. High density and mixed use developments can reduce the number of vehicles on the road by making walking and cycling attractive and effective ways to travel, and by providing residents with local services and employment. This can decrease air pollution and GHG emissions that contribute to health risks, environmental degradation and climate change. Transportation is also important to social equity. Providing a range of transportation options that enable people to get around without needing to own a car can reduce household and business costs. Good indicators of transportation sustainability include how we travel and how far we travel.

ISSUES AND TRENDS

1 • Public Transit

Many factors influence our daily travel choices, including the price of gas[2] or a transit trip, our discretionary household income, and the distance between our home and place of work. The extent, accessibility and frequency of transit services within a community play key roles in people's decisions to use public transit.

Since 1998, population growth in the Lower Mainland has been significant. The provision of transit, expressed as kilometres of service per person, has grown steadily in Metro Vancouver (with the exception of 2001 during a labour dispute), the Fraser Valley and between Squamish and Lillooet, reflecting significant regionally coordinated investments in transit infrastructure by TransLink, BC Transit and senior levels of government. Across the Lower Mainland, total transit service increased by more than 24 million kilometres between 1999 (108,585,501 km) and 2007 (132,833,171 km), while service per capita increased in both the Fraser Valley and Squamish-Lillooet regions by more than 50%.[3,4]

The provision of transit, in total and on a per capita basis within the Squamish-Lillooet region has been significant since 1998, with both ridership and service hours provided increasing on average by more than 20%. This high level of service is due to major investments in transit fleets in Whistler and Squamish. Pemberton's commuters are serviced only by the Whistler WAVE, and like many other communities in the Lower Mainland, they also have a private bus carrier connecting the community.

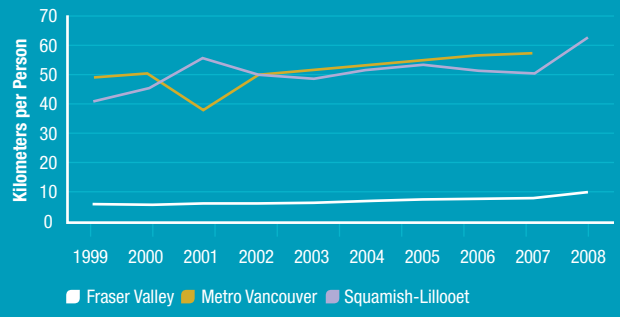
Transit provision in the Fraser Valley has increased with significant investment in transit infrastructure, with the bus fleet increasing by more than 50%. Although there is a comparatively lower level of per capita service kilometers in the Fraser Valley, attention to service provision (i.e. location and time of day) has resulted in ridership increases by more than 80% over the period to 2008. Chilliwack, Mission and Abbotsford each deliver public transit in cooperation with BC Transit; the latter two communities are also connected to Metro Vancouver through the West Coast Express and a new rapid bus service.

2 • Commuting Distances and Travel Patterns

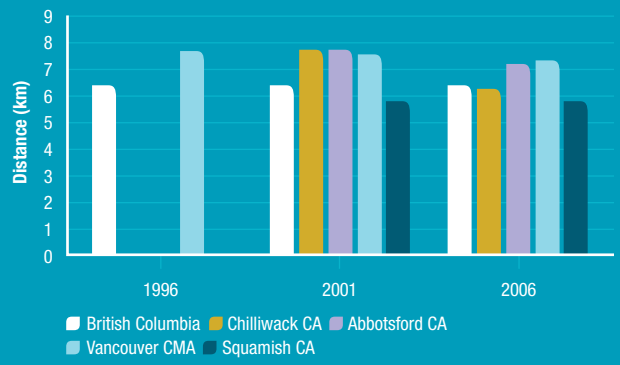
From a sustainability perspective, the distance traveled to work can be indicative of a community's size, and its mix and distribution of land uses. Commuting distances are associated with economic impacts (cost of fuel and other transportation costs), social impacts (time spent commuting) and environmental impacts (vehicle emissions).

Compared to all other communities in BC, between 1996 and 2006 residents of Abbotsford, Chilliwack, Metro Vancouver and Squamish traveled the furthest to work. Although the provincial median commuting distance has recently increased, commutes have been getting somewhat shorter in some Lower Mainland communities. Commuter distances decreased by 0.3 km in Metro Vancouver between 1996 and 2006, and by 1.5 km in Chilliwack and 0.4 km in Abbotsford from 2001 to 2006.[6] These declines may be due to the concentration of higher density residential growth in the metropolitan core and in regional city centres, even though growth in employment is becoming increasingly decentralized.[5]

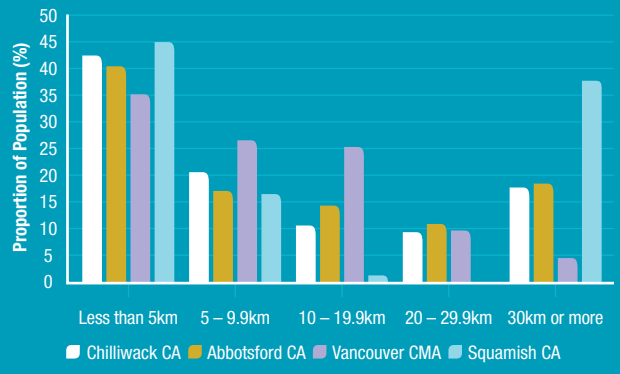
Transit Service Kilometers Per Capita in the Lower Mainland (1999–2008)[3,4]



Median Commuting Distance in the Lower Mainland (1996; 2001; 2006)[6]



Proportion of Population Commuting a Given Distance in the Lower Mainland (2006)[6]



Sustainability Stories

E3 Fleet Certification

E3 Fleet, designed by fleet managers for fleet managers, is a practical program that provides services and resources to help private and public sector fleets increase fuel efficiency, reduce emissions, manage expenses, incorporate new technologies and use alternative fuels. Driver training, adjusting tire pressure, choosing the right lubricant and reducing idling are all easy, inexpensive tweaks that can increase vehicle fuel efficiency and reduce emissions. So far, the cities of Langley and Vancouver and the Corporation of Delta have had their municipal fleets gold certified. As a result, total GHG emissions in Langley have declined by 14%.

Free Fare for Clean Air[11]

On days when the Ministry of Environment issues air advisories for Prince George, transit for the city's residents is free between 12:00 a.m. on the night of the advisory until midnight of the day the advisory ends. Transit vehicles display "Free Fare for Clean Air" on their digital signs and cover fare boxes so passengers do not have to deposit money. The City of Prince George established the initiative in 2009 to improve air quality and promote public transit. So far, there have been four Free Fare for Clean Air days: two in April and two in June. On average, there was a 7% increase in ridership on all four of the air quality advisory days, which contributed to improved air quality, fewer vehicles on the road, and fewer emissions of greenhouse gases and particulate matter. Equally important was the opportunity to positively remind people of the connection between transportation choice and air quality.

Student Universal Pass Program

Transit ridership among students in the Lower Mainland has increased significantly since the introduction of the U-Pass Programs at UBC and SFU in 2003, and at Langara College and Capilano University in subsequent years. The program, sponsored by TransLink and Vancity, provides students with unlimited access to all routes for an affordable fee per semester when school is in session. Transit ridership at UBC and SFU increased by 63% in the first two years after the program was launched, which resulted in a decrease of 10% in vehicle traffic. In response to the increase in demand, TransLink and Coast Mountain Bus Company increased transit service capacity to the main campuses of UBC and SFU by 27%.[12] Not only are student ridership programs getting tomorrow's leaders comfortable with using transit, they are also providing a reliable income source in support of public transit.

In 2006, a significant proportion of Lower Mainland residents made localized work trips. Many residents of Chilliwack (43%), Abbotsford (40%), Metro Vancouver (35%) and Squamish (45%) had commutes of less than 5 km.[6] The greatest potential to shift to more sustainable transportation modes (i.e., changing from a single occupancy vehicle to carpooling, cycling or using transit to get to work, and even telecommuting, on occasion) exists where commuting distances are 5 km or less.

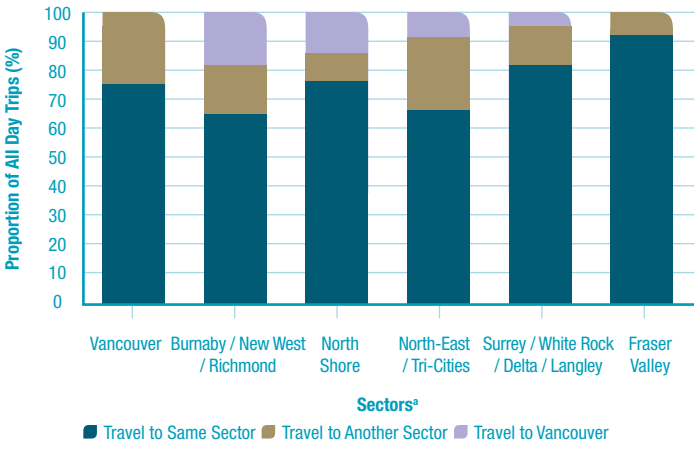
Many Abbotsford and Chilliwack residents (40% and 42%, respectively) commuted between 5 and 30 km, and almost 20% travelled more than 30 km for work. Although approximately two-thirds of residents in these Fraser Valley communities live and work in the same community, the agriculture and resource-industry jobs that are vital to the region's economy are situated mostly in rural areas, which necessitates longer commutes.[7]

Two-thirds of commuters in Squamish travelled less than 10 km; the remaining one-third travelled 30 km or more. In Squamish, residential growth has outpaced growth in employment, so many new residents are working outside of the community, with a growing number travelling to Metro Vancouver for work.[8]

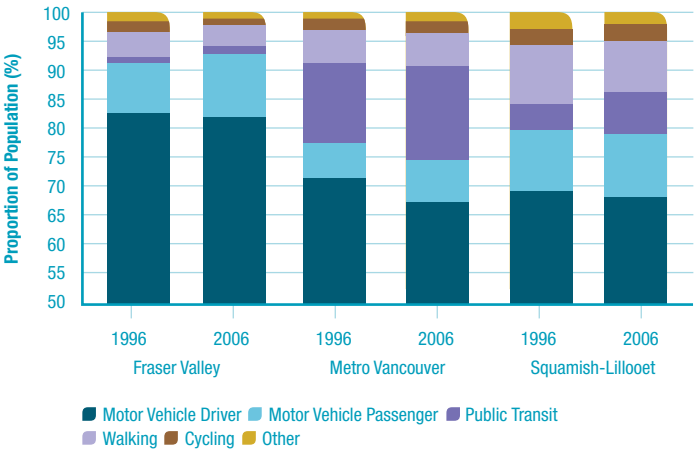
Half of Metro Vancouver residents commuted between 5 and 20 km for work, and less than 5% travelled more than 30 km. Only one-third of all daily trips were for work; two-thirds were for personal matters.

Commuting patterns varied considerably by community, in relation to differences in land use and locations and types of employment.[a] Most daily trips made by Metro Vancouver and Fraser Valley residents ended in the same sector where they started. Although Vancouver was an important destination in 2004, accounting for 18.6% of trips from Burnaby, New Westminster and Richmond, 13% from the North Shore, and 10% from the North-East/Tri-Cities, travel patterns are becoming more dispersed.[9]

Regional Travel Patterns in the Lower Mainland (2004)[9]



Mode of Transportation to Work in the Lower Mainland (1996; 2006)[10]



Note: this graph starts at 50%, therefore an additional 50% of commuters were motor vehicle drivers

3 • Mode Share

Reducing the number of people travelling in single occupancy vehicles (SOV) improves sustainability by reducing vehicle emissions, operating costs and traffic congestion.

SOVs remain the most significant mode of transportation to work in the Lower Mainland. However, between 1996 and 2006, many commuters shifted from driving alone to other modes of transportation. During this period, all three regional districts saw a decrease in SOV drivers, ranging from small reductions of 0.3% in the Fraser Valley to 3.3% in Metro Vancouver.[10]

Throughout the Lower Mainland, more people chose instead to carpool and take public transit to work, perhaps because they were motivated in part by higher gas prices.[2] Transit use was highest in Metro Vancouver, growing from 14.3% in 1996 to 16.5% in 2006, possibly due to the steadily increasing extent and frequency of the public transit service network. The greatest growth in transit use occurred in the Squamish-Lillooet region, with an increase of 2.4%. Those walking to work increased by 0.5% in Metro Vancouver by 2006 but decreased by about 1% in the other regions. Cycling decreased by 0.8% in the Fraser Valley, remained steady in Metro Vancouver, and increased slightly in Squamish-Lillooet.

Despite the growth in use of public transit and active modes of transportation, most Lower Mainland commuters continue to drive to work. In recent years, growth in car ownership has exceeded population growth.[5]

Notes

[a] SECTOR	MUNICIPALITIES
Vancouver	Vancouver
Burnaby/New West/Richmond	Burnaby, New Westminster, Richmond
North Shore	North Vancouver, West Vancouver, Lions Bay
North East/Tri-Cities	Coquitlam, Port Coquitlam, Port Moody, Anmore, Belcarra
Surrey/White Rock/Delta/Langley	Delta, White Rock, Surrey, Langleys, Pit Meadows, Maple Ridge
Fraser Valley	Mission, Abbotsford, Chilliwack (excluding Hope and Canyon)

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Sustainability Highlights

The following highlights present two to three key indicators for each topic and a description of the status of those indicators. The highlights serve as a high-level glance at each issue, not an exhaustive summary of all the indicators and data in this report. The status of each indicator is characterized by one of four descriptions that range from best to worst (see inset).

GOOD / GETTING BETTER
The current state is good and/or the indicator is improving over time. The data must be good or show improvement across all or most of the Lower Mainland.

FAIR / MIXED RESULTS
The current state is fair and/or the indicator is changing little over time. Mixed results refer to variations between regions or variations between sub-indicators (e.g., some are getting better while others are getting worse).

MIXED RESULTS / POOR
The current state is poor and/or the indicator is getting slightly worse over time. Mixed results refer to variations between regions or between sub-indicators.

POOR / GETTING WORSE
The current state is poor and/or the indicator is deteriorating over time. The data must be poor or deteriorating across all or most of the Lower Mainland.

Agriculture & Food

GOOD / GETTING BETTER
Farmed Land – The amount of land being farmed increased between 2001 and 2006.

MIXED RESULTS / POOR
Agricultural Land Reserve – Much more land was excluded from the Reserve than was included between 1979 and 2009.

MIXED RESULTS / POOR
Farm Business Profitability – The ratio of expenses to gross receipts increased in Metro Vancouver and the Fraser Valley between 2000 and 2005.

Consumption & Waste

FAIR / MIXED RESULTS
Energy Consumption – Total energy consumption increased in BC but consumption per capita and per unit of GDP in the province improved between 1990 and 2006.

POOR / GETTING WORSE
Solid Waste – The total amount of solid waste disposal increased between 1996 and 2006. Total solid waste disposal increased at a much higher rate than per capita disposal in the same period due to population growth.

Environmental Health

FAIR / MIXED RESULTS

Air Quality – The Air Quality Health Index health risk was low for most of the time between 2000 and 2006 but Ground Level Ozone increased in some communities.

POOR / GETTING WORSE

Biodiversity and Habitat – Five of BC's eight ecosystems at risk occur in the Lower Mainland, as do 327 of the province's red- and blue-listed species. More Coho runs decreased than increased from pre-1980 to 2003. The lowest Chinook runs occurred in 2007 and 2008.

FAIR / MIXED RESULTS

Water Quality – Water quality improved in the main stem of the Fraser River but deteriorated at other Fraser River locations between 2003 and 2006.

Land Use

FAIR / MIXED RESULTS

Population Density – The proportion of medium-density units and apartments increased in the Fraser Valley and Squamish-Lillooet regions from 1996 to 2006. Population growth in Metro Vancouver was fairly compact between 1991 and 2001 but was less so from 2001 to 2006.

MIXED RESULTS / POOR

Development within the Lower Fraser Floodplain – The floodplain population in Metro Vancouver increased between 2001 and 2006 but stayed the same in the Fraser Valley.

MIXED RESULTS / POOR

Coordination with First Nations Planning – As of 2009, only 6 of 28 Bands had progressed to more advanced stages of the BC Treaty Commission process, and 8 had withdrawn. The Tsawwassen First Nation Treaty, which took effect in 2009, represents significant progress in governance and Aboriginal and non-Aboriginal relationships.

Population & Health

GOOD / GETTING BETTER

Life Expectancy – Life expectancy has increased since 1997 but there are significant differences between communities within regions and between regions.

MIXED RESULTS / POOR

Low Weight Births – The proportion and rate of low weight births increased between 1996 and 2006.

Social Well-Being

FAIR / MIXED RESULTS

Employment – The rate of employment increased steadily between 1987 and 2008. It began decreasing in 2008 due to the global recession.

MIXED RESULTS / POOR

Income – Average after tax household income rose from 1995 to 2005. Almost 30% of households in the Lower Mainland earned an average income of less than $30,000 in 2005. The proportion of the population on Employment Insurance and Income Assistance started increasing in 2008.

POOR / GETTING WORSE

Housing and Homelessness – In 2006, between 39% and 45% of renters and between 24% and 30% of home-owners spent more than 30% of household income on housing. The number of homeless people increased from 2002 to 2008 in Metro Vancouver and the Fraser Valley.

Transportation

GOOD / GETTING BETTER

Public Transit Service – Transit service kilometers per capita grew in Metro Vancouver, Squamish-Lillooet and the Fraser Valley from 1998 to 2007.

GOOD / GETTING BETTER

Commuting Distance – Median commuting distance decreased from 1996 to 2006. In 2006, a significant proportion of commutes to work were less than 5 km.

MIXED RESULTS / POOR

Mode Share – Although there were shifts to other modes of transportation from 1996 to 2006, most commuters continued to rely on single-occupancy vehicles.

Overarching Stories: How Are We Doing?

Diagnosing the health of a person, habitat, neighbourhood, community, or bioregion requires input from a wide variety of sources. This report draws upon numerous indicators from a range of information sources, assembling the best readily-available information, in order to measure and report on the vital signs of a very diverse region. However, indicators have inherent inadequacies due to data limitations and because they reflect only specific aspects of very complex, highly inter-related issues. This is particularly true in a region that is inhabited by over 2.4 million people of many different cultures, living in a mix of urban, rural and resource-based communities.

The primary intentions of this report are to inform, stimulate thought and inspire action. Reviewing recent trends and current conditions can help identify and highlight issues of greatest concern. For some themes, this involves examining measures on both a total population and per capita basis, as well as statistics for the Lower Mainland overall and by the different sub-regions (Fraser Valley, Metro Vancouver and Squamish-Lillooet). Insights may be gained from a review of specific indicator measures within each theme, an analysis of the relationships among multiple indicators, and by taking a look at the overall big picture issues.

MANAGING POPULATION GROWTH PRESSURES

Across the Lower Mainland, population growth has the most significant influence on a wide range of sustainability trends and conditions. As the total population grows, so do pressures on the land base, natural resources and community services. Between 1996 and 2006, the population of the Lower Mainland region increased by 15.8% from 2.1 to 2.4 million, and is forecast to increase by 58.5% between 2006 and 2036, with an additional 1.2 million in Metro Vancouver alone. Unless we minimize our ecological footprint by managing the effects of this growth and reducing the generation of waste, the use of vehicles, and the consumption of land, water, energy and goods, we will continue to threaten sensitive natural habitats, ecological services, and the capacity of local and regional infrastructure to support our communities. The time is clearly at hand for more integrated and inter-regional cooperation to effectively manage issues of regional importance such as transportation, land use, health, air quality, housing and the natural environment.

SOME ASSETS, OPPORTUNITIES AND CHALLENGES

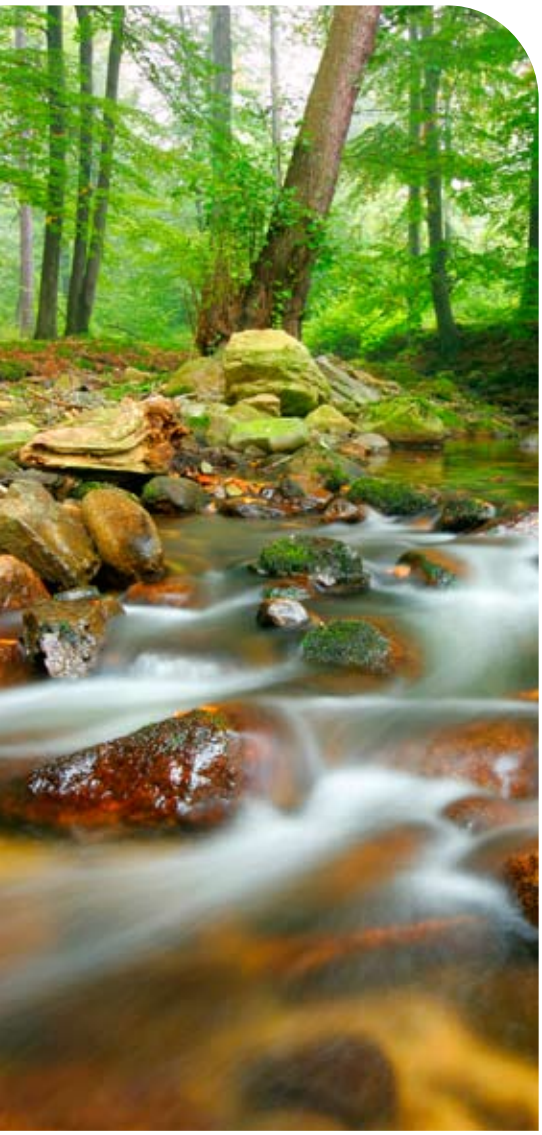
The Lower Mainland continues to have many social, economic, and environmental assets, opportunities and challenges. Overall, we are living longer than ever before and rates of mortality from the leading causes of death have decreased. A significant challenge facing society in the Lower Mainland and in BC overall is the general aging of the population with many more people reaching later stages in life. For example, the population in Metro Vancouver aged 70–75 years is forecast to nearly triple between 2010 and 2036. During this same period, the Fraser Valley population aged 75–80 years is expected to double. This will affect the availability of a skilled, experienced labour force and will result in significantly shifting demands in relation to housing, healthcare and other community services. The region's history of immigration, its current ethnic diversity, and its vibrant socio-economic characteristics should continue to attract immigrants. Although this will add to population growth pressures, it will also strengthen the region in terms of cultural diversity and international expertise, help maintain a skilled labour force, and make general contributions to society.

Despite the high rates of population growth, the region has done relatively well in terms of urban containment, population density, preservation of farmlands, and availability of protected areas and other natural resources. Compared with other parts of BC and the Pacific Northwest, many Lower Mainland communities have achieved relatively high rates of population density. More people are choosing to work close to where they live; however, most still take their cars to work. Increases in total population have led to increases in total energy consumption, solid waste disposal, and greenhouse gas emissions. However, as a result of technological efficiencies, infrastructure improvements, high-density development patterns, and personal choices, there have been reductions in per capita energy consumption and commuting distances, high rates of solid waste diversion (i.e., recycling and composting), and increased rates of commuting by public transit. While much progress is being made, the region faces many continuing challenges.

WORKING TOGETHER IN THE LOWER MAINLAND

The subtitle of this report is "Working Together in the Lower Mainland". Collaboration is vital to enable shared enjoyment of the social, economic and natural wealth of this region. Each of us influences the health and sustainability of our communities with the choices and decisions we make, with effects occurring now and long into the future. As residents and citizens, planners and policy-makers, businesses and community organizations, staff and elected officials, we have a shared responsibility to be stewards of this great region. We hope that this report helps inspire and mobilize cooperative action in a variety of ways. The indicator data and trends are intended to highlight several critical issues in the Lower Mainland and clarify some differences across the region. The "success stories" profiled within each of the themes offer examples of actions and achievements that can be adapted to other communities. Lastly, the report presents a wide range of actions or steps for sustainability and examples of available resources that can be used to support a strong, vibrant, healthy and sustainable Lower Mainland.

Steps for Sustainability



Agriculture & Food

FOR ORGANIZATIONS

• Local and regional governments and the Agricultural Land Commission can continue to protect prime agricultural land from subdivision and urban development. Local governments could also require that any exclusions from the ALR be replaced with twice as much farmland.

• Municipalities can prepare Agricultural Area Plans and identify and plan for agricultural lands and food production within Official Community Plans. Many other local government policies and practices can support farmers and farmlands. These include:
– maintaining "A1" zoning to support agricultural production rather than allowing rural residential, commercial, or industrial uses, which can alienate farmland;
– establishing setbacks to prevent buildings from being constructed in the middle of farm property, which reduces its usability;
– avoiding sending indirect signals about future urban development on farmlands, such as rezoning lands in the ALR for other uses or allowing subdivision roads to extend into a farm field; and
– using edge-planning at the urban-rural fringe to prevent conflicts between farmers and adjacent urban dwellings.

• Municipalities can enhance local food production and community involvement by creating community garden space on municipal land and encouraging businesses and schools to allocate space and volunteers for community gardens.

FOR INDIVIDUALS

• Consumers can publicly support the protection of farmland when land use decisions are being made.

• Consumers can choose to purchase local and regional BC products. Get to know your local farmers and support them by purchasing their products through farmers' markets, farm gate sales, community-share agriculture and your local grocery store. Visit www.bcfarmersmarket.org and www.getlocalbc.org to learn more and connect with farmers in your area.

• Learn about invasive plants and avoid planting them in your garden. Dispose of garden waste appropriately at your local landfill or compost it, but only if will not lead to the spread of seeds from invasive species. Never dump weeds or garden waste on neighbouring properties, vacant lots, or public spaces because this can lead to the rapid spread of invasive species.
Visit www.invasiveplantcouncilbc.ca to learn more.

Consumption & Waste

FOR ORGANIZATIONS

• Restaurants can work with Ocean Wise to ensure they—and their customers—make sustainable choices when purchasing seafood. Visit www.vanaqua.org/oceanwise for more information. In addition, restaurants can support local farmers by including and highlighting locally grown products on their menus.

• The Sustainability Purchasing Network educates, connects and inspires organizations to develop and improve their sustainability purchasing decisions through learning events, skills training and resources. Visit: www.buysmartbc.com.

• Conduct a waste assessment in your business or organization to identify ways to reduce waste and save money. Waste assessments help determine the weight, volume and types of waste materials being generated and identify options for reducing, reusing and recycling waste material.

• Reduce the amount of paper waste generated in your office by printing documents only when necessary and ensuring they are printed on both sides of the paper. Where possible, re-use paper that has been printed on only one side, and recycle paper, cardboard and newsprint when it is no longer needed.

• Municipalities can reduce GHG emissions from buildings and vehicle fleets by using green energy and fuels. Simple practices such as driver training, not idling, and maintaining optimal tire pressure can also reduce GHGs. Visit www.greenfleetsbc.com

• Municipalities can also create green building guidelines for businesses and zoning bylaws that promote dense, mixed use development in their community.

• In addition to financial incentives to reduce the amount of biodegradable waste going to the landfill, municipalities can initiate or support community composting programs.

FOR INDIVIDUALS

• Reduce the amount of waste going to the landfill by purchasing products that have minimal packaging and by using your own cloth bags when grocery shopping.

• Compost yard waste and kitchen scraps. Visit www.metrovancouver.org/services/solidwaste/composting/Pages/default.aspx. Apartment dwellers who do not have access to a compost bin can try using a worm-composter instead. Visit: www.cityfarmer.org/wormcomp61.html.

• Safely recycle electronic goods and hazardous waste such as batteries, paint, pesticides and chemicals. Visit the Recycling Council of BC (www.rcbc.bc.ca) or Metro Vancouver (www.metrovancouver.org) for information on waste management.

• Buy local food and other products such as locally made art, crafts, clothing and home décor.

• Reduce the number of unwanted or unused gifts by making a donation in someone else's name to a local charity or non-profit organization.

Environmental Health

FOR ORGANIZATIONS

• Municipal and regional governments can improve air quality by working collaboratively on implementing Air Quality Management Plans.

• Municipal and regional governments can incorporate ecosystem values into urban growth and development plans, and can assess the potential cumulative effects of development on habitat and the natural environment.

• Governments and businesses can partner with groups such as the Nature Conservancy of Canada (www.natureconservancy.ca), the Land Conservancy of Canada (www.conservancy.bc.ca) and Ducks Unlimited Canada (www.ducks.ca) which focus on enhancing biodiversity and wildlife habitat on private and public land.

• Local governments can protect water quality by developing and implementing Liquid Waste Management Plans that reduce storm water runoff into sensitive receiving bodies.

• Local governments can start or continue to support public education campaigns that foster sustainable behaviour, such as conserving water by using rain barrels and low-flow appliances; reducing pollution by limiting vehicle idling or using clean-burning stoves and woodburners; using energy conservation practices; and providing habitat by planting native trees and restoring riparian areas.

• Governments and businesses can reduce air pollution by supporting innovation and development of clean technology.

FOR INDIVIDUALS

• Use clean energy sources and improve home energy efficiency, especially when it comes to home heating. Use high-efficiency furnaces and certified wood-burning stoves.

• Support sustainability in the fishing sector by making informed choices when purchasing seafood. See Canada's Seafood Guide www.seachoice.org or Ocean Wise www.vanaqua.org/oceanwise.

• Visit a regional or provincial park to enjoy the outdoors and experience nature first hand. Use human-powered ways to get to and around these outdoor areas (i.e. walk, run, bike, kayak, rollerbalde, etc.)

• Help protect habitat and water quality by planting trees and native vegetation to reduce erosion. Avoid using chemical pesticides and fertilizers on lawns and gardens to reduce runoff into streams and shoreline areas.

• Protect water quality by disposing garbage, motor oil, paint, or pesticides in proper facilities rather than in storm drains or near water bodies. Contact the Recycling Council of BC (www.rcbc.bc.ca) or your local municipality for information on the best way to safely dispose of hazardous waste and other household products.

• Visit www.livingwatersmart.ca for other ideas on preserving and protecting water in your community.

Land Use

FOR ORGANIZATIONS

• The Smart Planning for Communities program is helping local and First Nation governments strengthen the social, economic and environmental fabric of their communities by incorporating sustainability principles and practices into their planning processes. (www.fraserbasin.bc.ca/programs/smart_planning.html)

• Communities and developers can learn how to implement smart growth principles and practices from Smart Growth BC: www.smartgrowth.bc.ca. The Smart Growth on the Ground initiative helps communities prepare sustainable neighbourhood plans that include land use, transportation, urban design and building design plans.

• Consider adding planning timelines that extend beyond a generation (i.e. 100 year Plans) and embed sustainability principles and actions throughout all guiding documents and decision-making processes.

FOR INDIVIDUALS

• Support land use changes that create more compact growth and enhance the development of complete communities. Inform decision makers about your support for such changes within your community.

Population & Health

FOR ORGANIZATIONS

• Organizations can promote health within the workplace by offering incentives for walking or cycling to work, and providing facilities for cyclists, such as storage lockers, showers and secure bike parking.

• Learn about how land use and development patterns can affect human health

• Communities can join the BC Health Communities initiative: www.bchealthycommunities.ca.

FOR INDIVIDUALS

• Take the healthy living pledge and enhance your health by getting at least 30 minutes of physical activity per day – walk the dog, ride your bike or go snowshoeing with friends and family. Visit www.actnowbc.ca for more information.

• No matter where you live or the state of your health, the quality of the air you breathe each day affects you. Visit the Air Quality Health Index regularly to get up to date information about the state of the air in your community or region to help you make informed decisions to better protect yourself and those under your care: www.airhealthbc.ca.

• Healthy eating is essential to healthy living and is a key element in healthy human development, from the prenatal and early childhood years to the senior years. Healthy eating is equally important in reducing the risk of many chronic diseases including type-2 diabetes, heart disease, osteoporosis and some types of cancer. For a copy of Canada's Health Eating Food Guide visit www.hc-sc.gc.ca.

• Help make your community a friendlier place by getting to know your neighbours and learning about the ethnic and cultural diversity within your community.

Social & Economic Well Being

FOR ORGANIZATIONS

• Municipalities can establish land use plans and development policies that encourage sustainable design and create a diverse mix of housing options. Municipalities can also provide developers with incentives for incorporating affordable housing units into new developments.

• Governments and community organizations can work together through social planning committees to develop and implement policies and programs to reduce poverty, provide affordable housing and support other social services for people on low incomes.

• Municipalities can ensure that their policies and taxes do not disproportionately burden low-income households

FOR INDIVIDUALS

• Volunteer your time or donate money, food, or clothing to a worthy cause to help others in your community. Visit www.volunteerbc.bc.ca or your local volunteer centre for information on local volunteering opportunities.

• Learn more about poverty issues in your community and help create solutions by connecting with local social planning committees and agencies that work with people who are on reduced incomes.

Transportation

FOR ORGANIZATIONS

• Daily choices about transportation depend largely on the communities where people live. How people move is closely related to housing choices, land use mix (employment, services and amenities) and density. For all three regions, creating compact urban communities fosters improved transportation sustainability. Metro Vancouver's focus on concentrating growth in urban centres, and its commitment to a Frequent Transit Network and Development corridors exemplifies this goal. While each of the three regional growth strategies connects

these concepts, the critical land use decisions that support sustainable transportation are made at the municipal level.

• The current situation of significant fiscal constraint can undermine planned investments in public transit. Strategic planning for new infrastructure and the deployment of vehicles to maximize ridership is now even more necessary. Marketing programs and workplace champions can foster behavioural shifts at a fraction of the cost of transportation infrastructure. Since most commuter trips are short, programs or incentives geared at having drivers switch even occasionally to carpooling, transit, walking or cycling are worthwhile investments.

• Reduce energy consumption, save money and improve air quality by using more efficient fleet management practices and technologies. See www.greenfleetsbc.com. Participate in the E3 Fleet Rating System: www.e3fleet.com.

• For residents and businesses of Squamish-Lillooet, Metro Vancouver and the Fraser Valley, jurisdictional boundaries are invisible. Intra- and inter-regional trips by commuters or for the movement of goods and services require cooperative transportation planning. Together, all three regions, working in collaboration with senior levels of government, should consider new ways to advance sustainable transportation in the Lower Mainland.

• Municipalities can support alternative transportation options by creating incentives for using public transit and developing bike-friendly infrastructure.

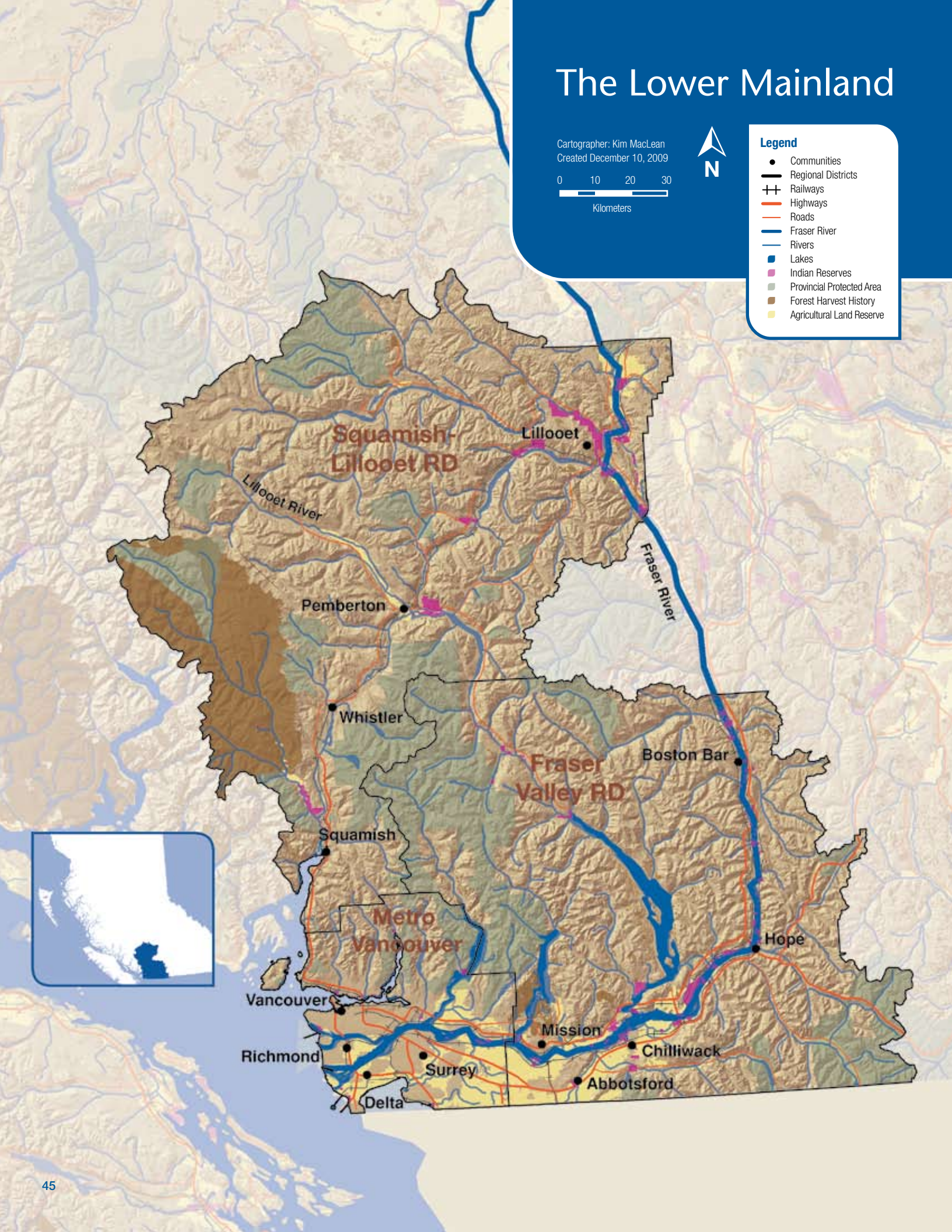
FOR INDIVIDUALS

• Walk, cycle, or take public transit to work or school and to run errands.

• If your workplace offers the option, work from home once a week.

• Learn how to cycle confidently in the city by taking a Streetwise Cycling Course with the Vancouver Area Cycling Coalition (www.vacc.bc.ca/cycling/cycling.php?pageID=5) or contact a cycling group near you. Chart out routes to work, school, and the grocery store with the Cycling Trip Planner (www.cyclevancouver.ubc.ca).

The Lower Mainland



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