

CHAPTER 5 - GREENHOUSE GAS EMISSION TARGETS, POLICIES, AND ACTIONS

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5.1 INTRODUCTION

Mitigating and adapting to the impacts of climate change is now generally viewed as one of the greatest challenges of our time. At the same time as communities throughout the world are struggling to prepare for a future without abundant, low-cost fossil fuels, the greenhouse gases created by the world's current dependence on fossil fuels are creating devastating impacts on global ecosystems and social systems that are expected to last for many generations. In British Columbia and Canada, these include forests ravaged by pine beetle infestations, the pending loss of the Arctic ice pack, and significant losses of salmon stocks and species such as polar bears due to increases in ocean and river water temperatures.

To address this challenge, provincial legislation requires that an Official Community Plan include targets for the reduction of greenhouse gas emissions and the policies and actions that the local government has proposed for achieving these targets.

In establishing the targets, policies, and actions, it is important to understand the role and ability of local government to effect GHG reductions that can be framed in terms of jurisdictional responsibilities, areas for action within local government responsibility, and the timeframes for GHG reduction actions taking effect.

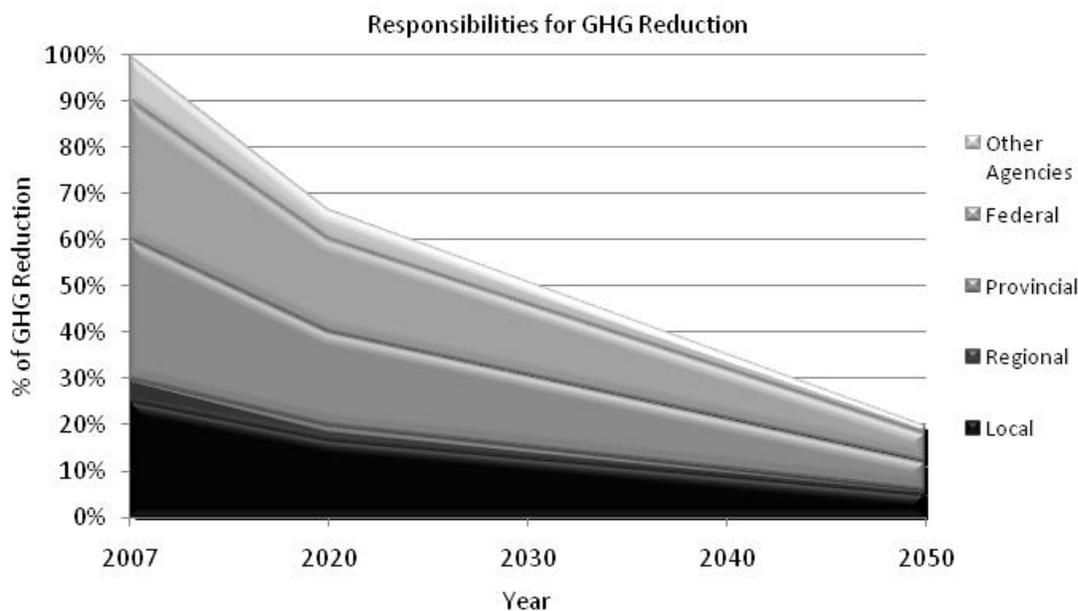


Jurisdictional Responsibilities

Local governments, while important stakeholders, clearly cannot achieve the province's desired GHG reductions alone. The achievement of the targets identified in this chapter will depend on the contributions of a number of other jurisdictions:

- **Regional**, including the provision of utilities and transportation services. For the purposes of this OCP, it will be assumed that the Cariboo Regional District will maximize opportunities for GHG reductions in areas of regional responsibility, particularly solid waste. The City will commit to working towards carbon neutrality by 2012 and continue to be members of the FCM Partners for Climate Protection (PCP) for municipal operations outputs. In addition the City will support cost-effective regional measures to reduce GHG emissions, such as a regional transit system that increases transportation options for local residents, employees, and visitors.
- **Provincial**, including air quality, building codes, farming practices and transportation facilities, such as bike and priority vehicle lanes on provincial highways. For the purposes of this OCP, it will be assumed that the province will maximize opportunities for GHG reductions, particularly in areas such as:
 - Air quality management, reducing emissions from industrial emissions, that often have a greenhouse gas component, to a minimum;
 - Building code enhancements to increase energy efficiency and promote the use of alternative energy;
 - While not interfering with the right to farm, informing and encouraging farming best practices that minimize GHG emissions, particularly methane emissions;
 - Transportation Demand Management (TDM) measures on provincial roads, such as transit amenities where needed;
 - Expanding the use of low-impact, renewable energy with lower carbon content; and
 - Incentive programs to encourage individuals, households and businesses to adopt low carbon footprints, such as rebates on energy efficient products and services.
- **Federal**, including fuel efficiency standards. In particular, for the purposes of this OCP, it will be assumed that federal housing programs will promote high green building standards through programs offered by agencies such as the Canada Mortgage and Housing Corporation (CMHC) and that federal vehicle fuel efficiency standards will be raised significantly in the 2010-2050 time period.
- **First Nations**. It will be assumed that the City's neighbouring First Nations will work with the City to reduce local energy consumption and emissions where possible.
- **Other Agencies**, including incentive programs and standards defined by the private sector and non-governmental organizations. There are two key non-government areas that have considerable influence over local GHG emissions:

- **Energy Utilities**, including electrical and gas utilities, operating within the regulatory frameworks of the BC Utilities Commission, have an exceptional ability to promote green energy and GHG reductions. For the purposes of this OCP, it will be assumed that utilities will maximize opportunities to promote energy efficiency, reduce dependence on fossil fuels, and encourage the use of low-impact alternative energy, through pricing mechanisms, incentive programs and education and awareness campaigns.
- **Standards Organizations**, such as the Canadian Standards Association and the Canada Green Building Council (CaGBC), set energy standards for a wide variety of products, from appliances to buildings. For the purposes of this OCP, it will be assumed that standards organizations will move quickly towards promoting energy efficiencies within the time horizon of this plan that rank among the highest in the world and that, for green building standards, that there will be a significant uptake by the development community of building standards that exceed minimum municipal and provincial building code requirements.



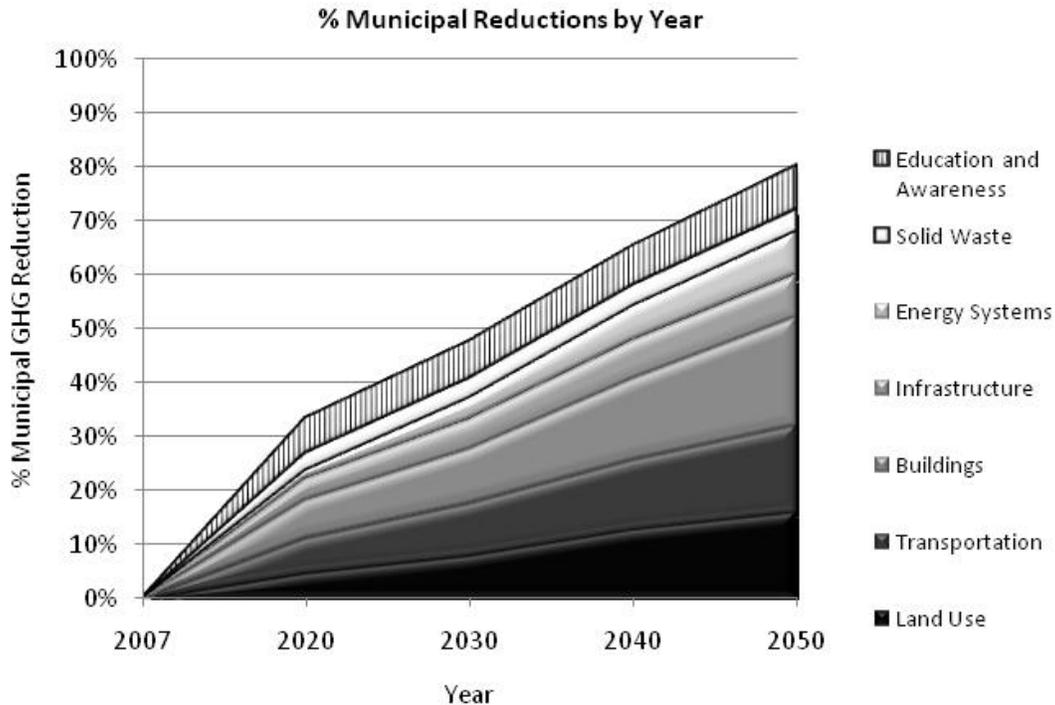
Local Government Responsibilities and Timeframes for Effecting Change

Local Governments must work to reduce GHG emissions through their corporate operations and within the Community. There are seven general areas for emissions reductions that are more directly influenced by local government responsibility:

- **Transportation;**
- **Public Infrastructure, Facilities, and Equipment Fleet;**
- **Solid Waste;**
- **Awareness, Education and Outreach.**
- **Land Use and Development;**
- **Buildings; and**
- **Community Energy Systems.**

In addition to defining shared responsibilities between jurisdictions and the areas for GHG reductions more directly controlled by local governments, it is important when identifying targets to understand the timeframe for these GHG reductions to come into effect. Simply put, measures supporting some policies can be implemented relatively quickly, while others may take generations to fully implement. To reach targets by 2020 and 2050, efforts in each area will necessarily need to be adjusted to maximize potential results within the defined timeline.

In general, to meet 2020 targets, the City can affect the quickest change in GHG reductions in **Transportation, Infrastructure, Solid Waste, and Awareness, Education, and Outreach.**



In addition to the specific policies later in this chapter that are related to the seven general areas for emissions reductions that are more directly influenced by local government responsibility, the following “overarching” policy will be applied consistently within the City to support strong partnerships by other jurisdictions to reduce GHG emissions. The City will:

Work with other jurisdictions, directly and through organizations such as the Union of British Columbia Municipalities (UBCM) and the Federation of Canadian Municipalities (FCM), to ensure that these partners are achieving significant GHG reductions in their areas of responsibility.

5.2 GHG TARGETS

The City's targets are based on understanding the local government's role and ability to effect GHG reductions. This indicates the need for sharing responsibility with other governments and external agencies, working in parallel on a number of action areas within local jurisdiction, and expecting that measures in these action areas will have effect over varying timeframes. Uncertainty over the future rate of local development and the wide variety of parameters that will affect the type and amount of energy used will create some uncertainty in the efforts to reduce GHG emissions.



GHG - Municipal Jurisdiction GHG Reduction Targets

- GHG.1** The City will commit to meeting the reduction targets of **33% by 2020 and 80% by 2050**, based on the 2009 GHG inventory, for its corporate operations, which will also address commitments made under the Climate Action Charter and the Partners for Climate Protection Milestone 2.
- GHG.2** The City will also work to reduce GHG emission within the Community with the goal of achieving the same standard set for corporate operations: **33% by 2020; and 80% by 2050**. This will be done in partnership with other governmental and non-governmental partners to promote a per capita reduction in GHG emissions from 2007 levels for non-industrial and non-agricultural sources within the City of Williams Lake by the identified policies and actions contained in the plan.

5.3 GHG POLICIES

It is not the intention of this section to duplicate policies contained in other parts of this OCP that support GHG reduction, but rather to summarize key existing GHG reduction policies in the seven main action areas under local government influence and to identify appropriate additional policies.



Transportation is a key policy area, in that the greatest component of the City's emissions and potential for reductions is from Transportation. In 2007¹, when 2/3 of community emissions were related to transportation, priority mode use (i.e., walking, cycling, and transit) was only 2/3 of the provincial average, and larger passenger vehicle types, such as trucks and Sport Utility Vehicles (SUVs), were the predominant vehicle choice. An important factor in transportation emissions is that Williams Lake is a regional hub and, in addition to local fuel consumption, a significant amount of through traffic and regional traffic use the City as a fuelling stop.

Long-term effects in the **Transportation** area will not be realized until energy prices have caused greatly reduced demand and alternatives competitive in terms of price and convenience. In Williams Lake's case, higher population densities, mixed land use and alternative transportation infrastructure will be required to promote increased walking, cycling, and particularly the viability of frequent transit service, which will be in the middle to later part of the 2010-2050 period for GHG reduction targets.

In order to encourage energy efficiency and the use of alternative, low-impact transportation, the City will:

- GHGTr.1** Explore opportunities to work with the CRD and other local communities to establish regional transit connections, including to the airport and regional railway connections.
- GHGTr.2** In partnership with BC Transit, School District and local First Nations, create a local transit system that serves most destinations within the community, including major workplaces, institutions, and outlying rural areas.
- GHGTr.3** Continue to provide weather protection, lighting, and improved sidewalk access at stops for inter-city and future local transit buses.
- GHGTr.4** Support vehicle sharing within the community and region, such as the establishment of central parking facilities for shared vehicles in secure locations or the reduction of parking requirements for developments and organizations that provide shared vehicles.
- GHGTr.5** Support carpooling within the community and the region through measures such as facilitating a community carpooling database or providing information on carpooling to community employers and major institutions.

¹ 2007. *BC's Community Energy and Emission Inventories*. Williams Lake City. CEEI Reports are a result of a multi-agency effort to provide a province-wide solution to assist local governments in BC to track and report on community-wide energy consumption and greenhouse gas (GHG) emissions every two years. CEEI Reports are one of the many resources available through the Climate Action Toolkit (<<http://www.toolkit.bc.ca>>), a web-based service provided through the ongoing collaboration between UBCM and the Province.

- GHGTr.6** Encourage the use of smaller, more fuel-efficient vehicles through measures such as priority parking in public parking lots, and the provision of plug-ins for electric vehicles and hybrids at new building sites and in public parking facilities.
- GHGTr.7** Ensure adequate, secure bicycle parking facilities at major destinations within the City.
- GHGTr.8** Prioritize roads for bike lanes and multi-use paths within existing road allowances as part of the drafting of a City-Wide Transportation Network.
- GHGTr.9** Create a comfortable, direct, and safe network of walking facilities, including sidewalks and paths that connect most destinations in the City and encourage walking in all seasons within the City.

GHGIn - Public Infrastructure, Facilities, and Equipment Fleet

Williams Lake has been proactive in working towards GHG reductions, including initiatives to:

- Replace fluorescent lighting fixtures with high efficiency fixtures in all City-owned buildings;
- Change traffic lights to low-energy LED fixtures;
- Purchase electric hybrid vehicles for the municipal vehicle fleet;
- Create an anti-idle policy for City equipment;
- Work with BC Hydro and other partners to determine effectiveness of “Adaptive Street Lighting,” which is programmable dimming of street lights in areas requiring less illumination at specific times of the day or year;
- Replace electric pump motors with high efficiency motors, resulting in approximately 30 to 40% energy savings;
- Investigate options for replacement of City Hall Heating Ventilation and Air Conditioning (HVAC) system with a high efficiency system; and
- Upgrade the area swimming pool complex with high efficiency equipment;
- Create a GHG inventory and reduction targets to monitor yearly GHG usage.



In order to encourage additional energy efficiency measures and alternative energy systems in infrastructure and public facilities, the City will:

- GHGIn.1** Consider using outdoor lighting practices that, while maintaining their safety and security roles, reduce energy consumption. These include:
 - a. Sharp cutoff filters that focus light directly onto walking, cycling, and road facilities;
 - b. LED lighting, solar powered lighting, street lights with individual light level sensors; and

- c. The use of natural white light spectrum sources, which permit the easier recognition of objects at lower light levels than non-white light sources.

GHGIn.2 Construct all future municipal facilities, or major facility upgrades, to a minimum of the green-building guidelines and rating systems of BuiltGreen² and LEED³ or equivalent.

GHGIn.3 Work towards the achievement of the Fraser Basin Council’s “e-Fleet” Gold certification for the City’s equipment fleet.

GHGIn.4 Encourage civic employees to use low impact transportation for their journeys to and from work and for business purposes.

GHGSw - Solid Waste and Waste Management

While emissions from solid waste and waste management are generally excluded from municipal GHG responsibility, there are a number of opportunities to demonstrate community leadership by supporting best practices and the development of the Regional District’s Solid Waste Management Plan.



To reduce energy and emissions associated with waste management, the City will:

GHGSw.1 Enhance programs to reduce waste, recycle and reuse waste where possible, and promote composting systems that reduce the amount of methane resulting from the uncontrolled decomposition of organic waste.

GHGSw.2 Consider establishing a community composting program with residential pick up.

GHGSw.3 Consider extending recycling collection to Multi-family Residential, Commercial and Industrial users in the City.

GHGSw.4 Consider waste collection systems that minimize energy use, such as small, medium and large garbage containers with a price range that encourages waste reduction.

² <http://www.builtgreencanada.ca/>

³ The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. It provides building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance.

GHGAw - Awareness, Education and Outreach

Community Outreach through programs such as Water Wise, Waste Wise, the Imagine Our Future Integrated Community Sustainability Plan (ICSP) process, and the work of organizations within the Community has greatly increased awareness of sustainability issues within the city, including energy use and the effects of greenhouse gases. In order to encourage the energy efficiency and the use of alternative energy in the broader community, the City will:



- GHGAw.1** Continue to work with the Cariboo Chilcotin Conservation Society, Williams Lake Environmental Society, Air Quality Roundtable and other groups to continue public education on environmental issues and specifically around community energy and emission reduction.
- GHGAw.2** Distribute and link to information on measures that individuals and businesses can take to reduce GHGs on the City’s web site, public mailings, and through the Cariboo Chilcotin Conservation Society web site.

GHGLu - Land Use and Development

Williams Lake has the inherent advantage that, due to geography and historical development patterns, most existing settlement is relatively compact and distances between most destinations, particularly in the older areas of the City, are relatively short. For example, in 2006, four out of five residents lived within five kilometres of their workplace, which is less than a 15-minute bike ride when weather conditions permit.

Unfortunately, average densities are currently approximately half of the provincial average, which increases the distance to basic needs. In addition, many rural residents commute into the city for work, however rural land use development is outside the jurisdiction of the City. It is assumed that the effects of actions in land use and development will most likely be seen later in the 2010-2050 period for GHG reduction targets and will require development of strong partnerships with other levels of government.



In order to encourage GHG reduction and energy efficiency through the regulation of land use and development, the City will:

- GHGLu.1** Promote increased walking, cycling and transit use by increasing the density and mix of uses in transit oriented development and along desired public transit corridors, particularly the Downtown Core and identified Neighbourhood Centres.
- GHGLu.2** Develop passive site design guidelines that promote energy efficiency, such as orienting buildings for maximum solar gain, setting maximum amounts of glazing, requiring overhangs that protect from summer sun and rain but allow winter sunlight in, and providing landscaping that shades in summer and allows sunlight in during the winter.

GHGB - Buildings



In 2007, 1/3 of community GHG emissions resulted from buildings. Williams Lake has an older building stock, significantly older than the provincial average, with over 2/3 of buildings having been constructed before 1980, when energy efficiency standards were much lower.⁴ Almost half of residential buildings are single family homes, which are more energy intensive to heat and cool than multi-family buildings due to their larger surface area and lack of shared walls. Long-term effects in the **Building** area will not be realized until a significant proportion of the existing building stock has been updated and major updates to building codes have been implemented.

In order to encourage energy efficiency and the use of alternative, low-impact energy in existing and future buildings, the City will:

- GHGB.1** Explore municipal tools such as tax exemptions for incorporating energy efficiency and renewable, low-impact energy sources through new development, major renovations and expansions of existing buildings.
- GHGB.2** Promote multi-unit buildings with shared walls and high efficiency heating and cooling systems that reduce energy losses and energy consumption.
- GHGB.3** Encourage buildings that are hydronically (hot water) heated in areas that have potential for future district energy systems, such as new major development sites, near major institutions, and the City Centre.
- GHGB.4** Work with BC Hydro under the standing offer program to promote the creation of small-scale, renewable, low-impact electricity production within the City, such as windmills or solar photovoltaic panels, on new and existing properties.
- GHGB.5** Create a sustainability checklist, or a Development Permit Area for the City for the purposes of reducing energy and emissions, that would promote the use of green building standards that increase energy efficiency and renewable, low-impact energy sources.

⁴ 2007. *BC's Community Energy and Emission Inventories*. Williams Lake City. CEEI Reports are a result of a multi-agency effort to provide a province-wide solution to assist local governments in BC to track and report on community-wide energy consumption and greenhouse gas (GHG) emissions every two years. CEEI Reports are one of the many resources available through the Climate Action Toolkit (<<http://www.toolkit.bc.ca>>), a web-based service provided through the ongoing collaboration between UBCM and the Province.

GHGc - Community Energy Systems

The City has potential alternative energy sources, particularly biomass from waste wood products. Local industries produce significant amounts of wood waste, and the large-scale Capital Power, fed by waste wood products, is already in place within the City approximately 3 kilometres from the downtown. Within the City limits there are a number of large institutions that could serve as potential nodes for future community district energy systems, such as the schools, hospital and recreation complex. This identified opportunity needs to consider the constraints and challenges of the Williams Lake and Area Airshed to not complicate the risks.



In order to encourage the energy efficiency and the use of alternative energy, the City will:

- GHGc.1** Explore partnerships with other levels of government, energy utilities, local industry and the development community to identify opportunities for community energy systems, while considering the Williams Lake and Area Airshed, these opportunities include:
- District energy systems;
 - Heat recovery from industrial or commercial sources, particularly wood waste and other secondary sources, such as refrigeration equipment;
 - Combined heat and power systems, including waste to energy facilities; and
 - Geoexchange fields in areas too distant from other types of district energy.
- GHGc.2** Consider, in areas with high potential for future district energy systems, providing the necessary infrastructure for hydronic heating and cooling systems during major street or underground utility replacement projects.

5.4 GHG ACTIONS

The main actions for moving toward the City's GHG reduction targets and general policies are the creation of a detailed energy and emissions action plan, based on OCP directions and a reporting and monitoring system to guide the implementation of the plan.

Community Energy and Emission Plan

The City will, subject to the availability of adequate resources, create, maintain, and implement a Community Energy and Emissions Plan (CEEP) that will include a set of detailed actions in support of energy and emissions policies to support the GHG reduction targets and general policies. The research, modeling and community inventories can be supported by the work of the Williams Lake Air Quality Roundtable. In 2012, the Williams Lake and Area Airshed Management Plan is coming up for review and this is a great opportunity for the City to partner with the Ministry of Environment on the collection of GHG and pollutant data to accurately plan for the future.

Monitoring and Reporting

Subject to availability, the City will acquire and report annually on the following data:

1. Total community energy use by energy source; and
2. Corporate Greenhouse Gas Emissions.

Over the next ten years the City will also strive to identify and maintain, subject to availability, data for key actions related to those GHG reduction action areas that are under local jurisdiction, such as:

1. Land Use and Development:
 - a. Density of new development projects.
2. Transportation:
 - a. Kilometres of pedestrian and bicycle facilities (sidewalks, paths, bike lanes);
3. Buildings:
 - a. Number of buildings certified to a LEED, BuiltGreen or equivalent.
4. Infrastructure and Public Facilities:
 - a. Total energy by source consumed by City infrastructure and equipment fleet.
5. Community Energy Systems:
 - a. Number of new buildings compatible with District Energy systems.
6. Solid Waste and Waste Management:
 - a. Solid waste collected per capita; and
 - b. % of diversion from waste stream of recyclable and compostable materials.
7. Awareness, Education and Outreach:
 - a. List of community based programs and partnerships focused on energy and emissions education.