



Village of Harrison Hot Springs
**Corporate Greenhouse Gas
Inventory and Reduction Plan**
“Creating a Sustainable Future”

UPDATE
January 2011

Village of Harrison Hot Springs

Corporate Greenhouse Gas Inventory and Reduction Plan

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1. Introduction

1.1. Background

The Village of Harrison Hot Springs is working to create a sustainable future. The Village has showed leadership in climate protection by making a commitment to use the Village's influence to reduce both community, and municipal corporate emissions by signing on to the BC Climate Action Charter. The municipality has signed onto the Charter with the Province of BC, the Union of British Columbia Municipalities (UBCM), and over 175 other BC local governments. In 2008 the Village of Harrison Hot Springs developed a Community Sustainable Development Strategy, and a Water and Wastewater Sustainability Strategy, reports that formed the foundation for the greenhouse gas (GHG) reduction policies, actions, and targets for the existing Official Community Plan (OCP). The current Village of Harrison Hot Springs OCP states that the Village will strive to reduce community greenhouse gas emissions 16% below 2007 levels by 2020.

Community GHG emissions result from all of the energy consumption activities generated by on-road transportation, buildings, and solid waste from within the entire community. Corporate GHG emissions are the emissions generated by the energy consumed during the delivery of municipal operations. Thus, the corporate GHG emissions reductions are linked to and will result in community GHG emissions reductions. As a BC Climate Action Charter signatory the Village of Harrison Hot Springs has committed to develop strategies and take action to become carbon neutral in respect to municipal operations by 2012. The Village's commitment to reduce municipal corporate GHG emissions exemplifies a leadership role in building a sustainable future for the community. The completion of this Corporate Greenhouse Gas Inventory and Reduction Plan for 2009 and ongoing annual updating and review is an important component of reducing community GHG emissions, and reaching OCP GHG reduction targets.

In early 2011, the Village of Harrison Hot Springs joined the FCM-ICLEI (Local Governments for Sustainability) Partners for Climate Protection (PCP) program. The Village is now in the process of following the five PCP milestones in efforts to become a more sustainable municipality. Later in 2011, the Harrison Hot Springs is expected to develop an Integrated Community Sustainability Plan (ICSP) with the assistance from the Whistler Centre for Sustainability in efforts to address other components of sustainability and develop a comprehensive community wide green action plan.

1.2. What is Carbon Neutral?

Carbon neutral refers to reducing a local government's greenhouse gas emissions as much as possible and balancing the remaining emissions through the purchase or production of qualified offsets so that the municipal corporate operations result in net zero carbon footprint. GHG offsets usually include investments in renewable energy, energy efficiency and reforestation projects. The Province of BC has set up the Pacific Carbon Trust, a provincial Crown corporation, to identify credible GHG offset projects that are located in BC on the Province's behalf.

1.3. Why Does Corporate Carbon Neutrality Matter?

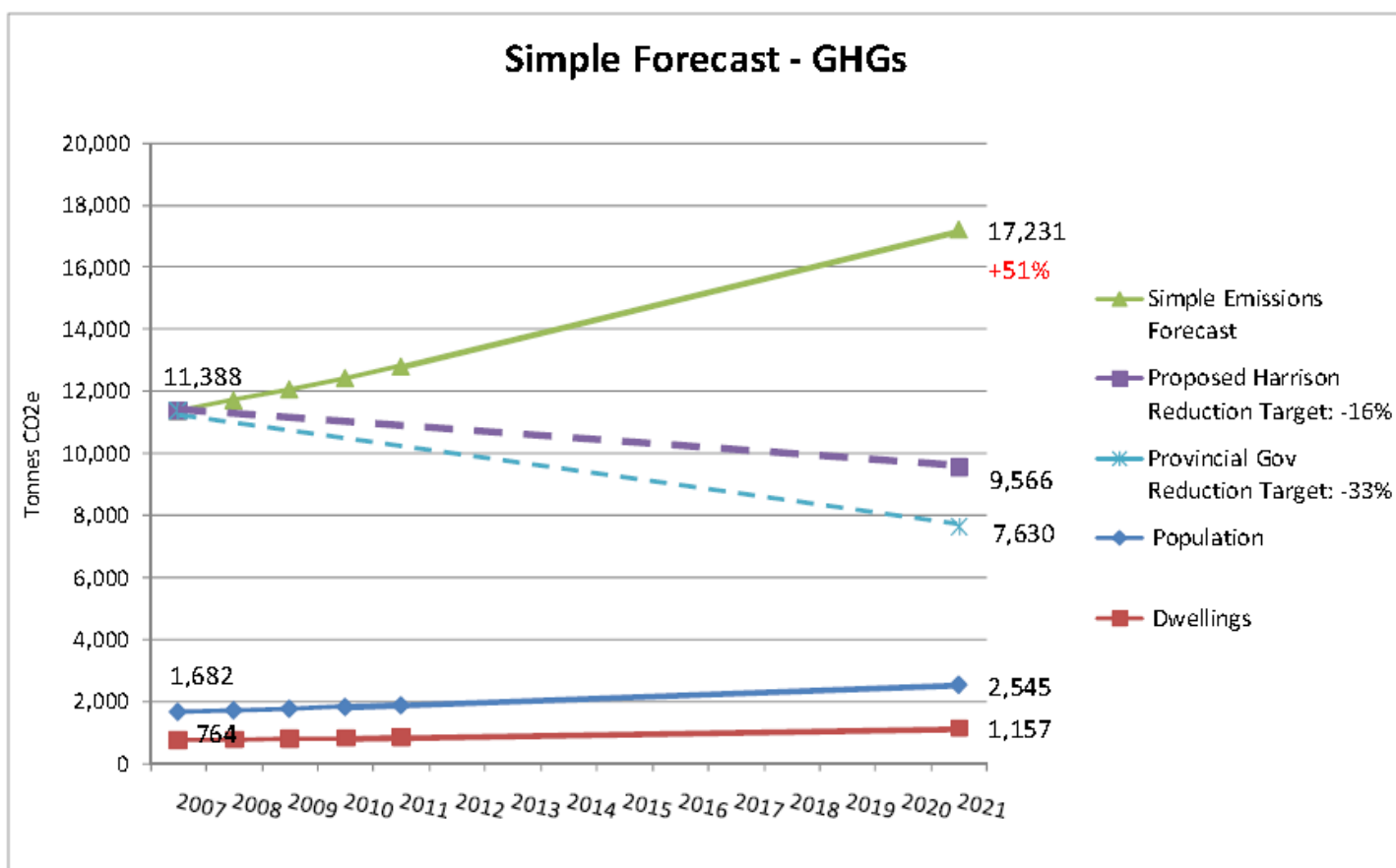
Recent attention to global warming and climate change refers to the changes or variations in the Earth's global climate experienced regionally caused by human activities in comparison to the historical and evolutionary changes caused by natural Earth processes. Human activities leading and contributing to climate change include those resulting in the increase in atmospheric concentrations of greenhouse gases,

urbanization, and deforestation. Corporate carbon neutrality aims to reduce the Village's ecological footprint and contributions to global warming, climate change, and the changes that result from the output of emissions.

Apart from moral reasons, the reductions in corporate emissions through energy reductions and shifts to more sustainable energy sources can also save money and help build a more resilient energy future for the Village. In fact, the Village can anticipate and mitigate the impacts of climate change by reducing the reliance on fossil-fuel based energy resources while at the same time protecting the municipality from anticipated escalating energy costs of non-renewable energy sources. Sustainable energy sources such as geothermal heat, wind or solar power are not subject to long term price volatility and substantial cost increases that non-renewable energy sources are. As a result, sustainable energy uses will be more common in the future. Furthermore, energy conservation, regardless of energy source, can result in both short-term and long-term cost savings for the municipality.

1.4. Why Get Started on Corporate Carbon Neutrality Now?

As a BC Climate Action Charter signatory the Village of Harrison Hot Springs has committed to develop strategies and take action to become carbon neutral in respect to municipal operations by 2012. Although 2012 may seem a long way off, it is right around the corner and acting sooner rather than later in trying to measure corporate GHG output will provide necessary time to develop and implement corporate conservation initiatives. Acting soon on corporate GHG reductions will allow the Village to perfect GHG output measurement techniques, improve GHG reduction strategies, and maximize cost savings associated with the initiative. By taking a leadership role in measuring and reducing corporate GHG emissions, the municipality can spark interest and inspire community-wide emissions reductions. The initiative can also focus the attention of community members on how they can reduce their own emissions. Moreover because both corporate and community GHG emissions in the Village of Harrison Hot Springs are expected to grow due to expected population growth, acting early will help to subdue and reverse that trend. Aiming for early carbon neutrality positions the municipality as a leader and an innovator.



Harrison Hot Springs Community GHG Emission Projections (HB Lanarc – HHS Greenhouse Gas Targets, Actions, and Policies)

1.5. Objective

The Corporate Greenhouse Gas Inventory and Reduction Plan is meant to provide an over-view of the energy use for corporate reduction actions and to assess the corporate GHG emissions footprint, provide reduction strategies, and set reduction goals. This document focuses only on corporate emissions, as the completion of this document will give the Village an opportunity to focus on internal structures and lead by example before tackling emissions reductions in the broader community. This plan should be considered a living document and annual reviews are recommended to ensure that new ideas and opportunities are incorporated. By implementing this plan the Village of Harrison Hot Springs will meet the goals of the BC Climate Action Charter relating to municipal operations.

By signing onto the BC Climate Action Charter, the Village agreed to the following goals:

- To develop strategies and take actions aimed at reducing GHG emissions;
- To become carbon neutral in respect to municipal operations by 2012;
- To remove barriers such as existing policies and procedures that impede taking action on climate change;
- To encourage infrastructure and a built environment that supports economic and social needs while minimizing environmental impacts.

1.6. Methodology

The Corporate Greenhouse Gas Inventory and Reduction Plan is the first step for the Village of Harrison Hot Springs to assess its corporate GHG emissions output and strategies for energy reductions. This Plan aims to begin the internal corporate discussion about carbon neutrality and the four key steps towards achieving it:

- Measurement/Inventory;
- Reduction Strategies/Plan;
- Plan for Offsets;
- Reporting.

The completion of the Corporate Greenhouse Gas Inventory and Reduction Plan included a significant amount of research which involved a review of relevant literature, and analysis of the energy reducing practices of several municipal governments throughout British Columbia and North America. A detailed analysis of the Village's existing GHG emissions was completed. This provides the Village with data required to continuously review and monitor corporate carbon emissions. The municipality now has up-to-date corporate carbon emission data for 2009 and 2010. The Plan outlines several GHG emissions reduction opportunities. As a living document, this Plan and the opportunities identified in it should be periodically reviewed, analysed, and updated.

2. Corporate Energy and GHG Inventory Profile

This corporate energy and GHG inventory profile provides a snap-shot of all corporate emissions in the Village of Harrison Hot Springs in 2010. As part of this inventory: corporate sources of emissions were identified, data of energy consumption was collected, and conversions of fuel/energy consumption into a measure of greenhouse gas emissions were performed.

**Fuel/Energy to CO²
Conversion Table**

GHG Emission Factors	tCO ₂ e	per
Hydro Electricity	0.000022	kWh
Natural Gas	0.0503	GJ
Gasoline	0.00236	Litre
Heating Oil	0.00314	Litre
Diesel	0.00278	Litre
Propane	0.00154	Litre

Please note: the conversion factors were updated from the previous report to correlate with evolving Provincial standards.

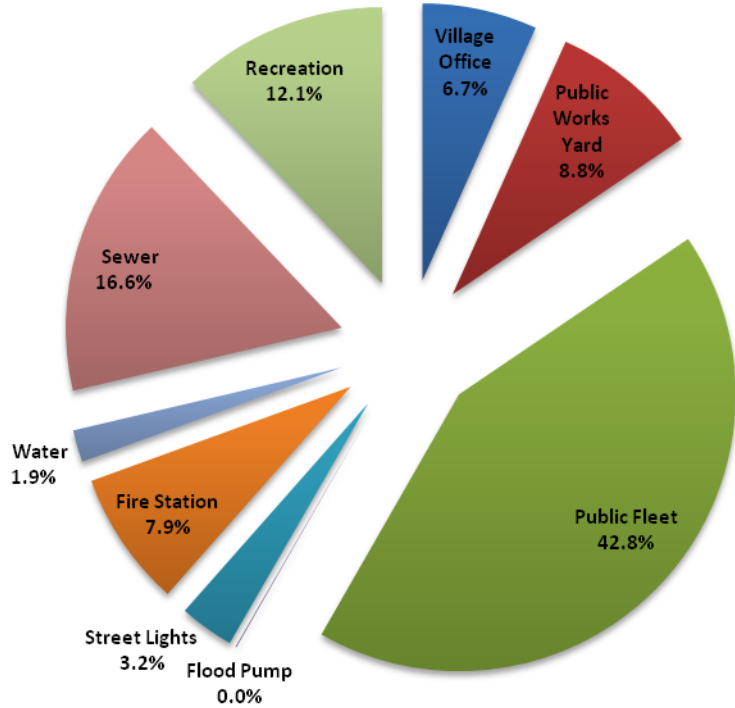
As outlined by Provincial requirements, fuel/energy data was gathered on the following corporate municipal services:

- Administration and Governance;
- Drinking, Storm and Waste Water;
- Solid Waste Collection, Transportation and Diversion;
- Roads and Traffic Operations;
- Arts, Recreation and Cultural Services;
- Fire Protection.

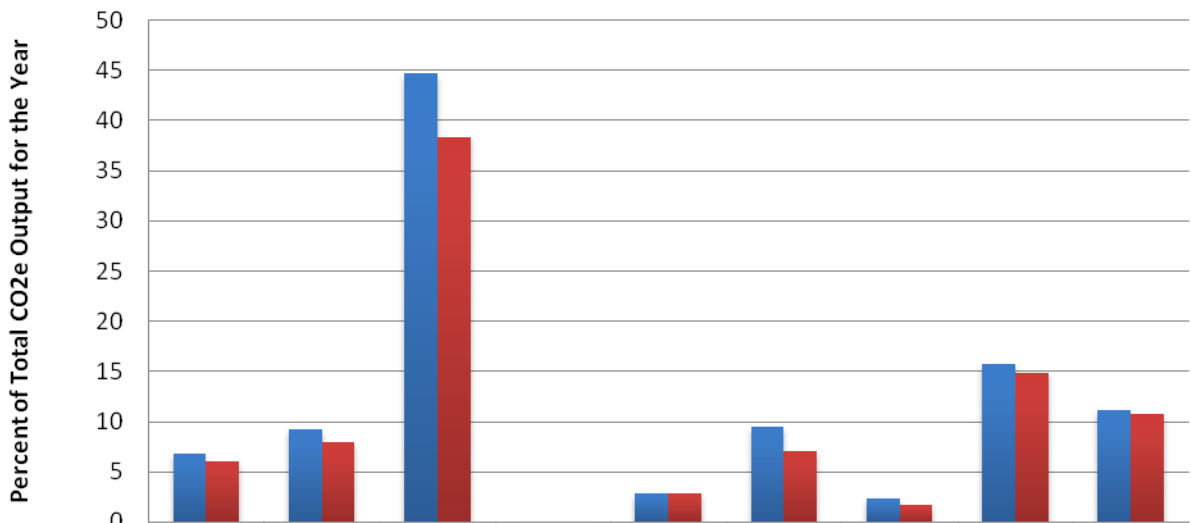
Further, the municipal services were broken into the following corporate categories: village office, public works yard and compound, public fleet, flood pump, street lights, fire station, water, sewer, recreation. Different types of energy use were considered depending on the sectors, such as electricity use, heating fuel use, and fuel for vehicles. Where records were available, the costs of purchasing these energy sources were factored into the analysis.

The review of the 2010 corporate GHG inventory indicates that the Village of Harrison Hot Springs produced 90 tonnes of carbon dioxide (CO²) emissions through municipal operations that year. Furthermore, the review indicates that the Village spent \$99,796.92 on corporate energy. The inventory shows that most of the emission output came from the public vehicle fleet operation, 38.29 tCO²e that is 42.8% of the total CO²e in 2010. The sewer accounts for 14.85 tCO²e or 16.6% of the total CO²e in 2010. In 2010, recreation facilities (this includes the Memorial Hall, Village Centre Plaza Square, and municipal parks) produced 10.81 tCO²e, fire station produced 7.10 tCO²e, public works yard compound 7.89 tCO²e, and village office 6 tCO²e. Please refer to the graphs and Appendix A for more detailed information.

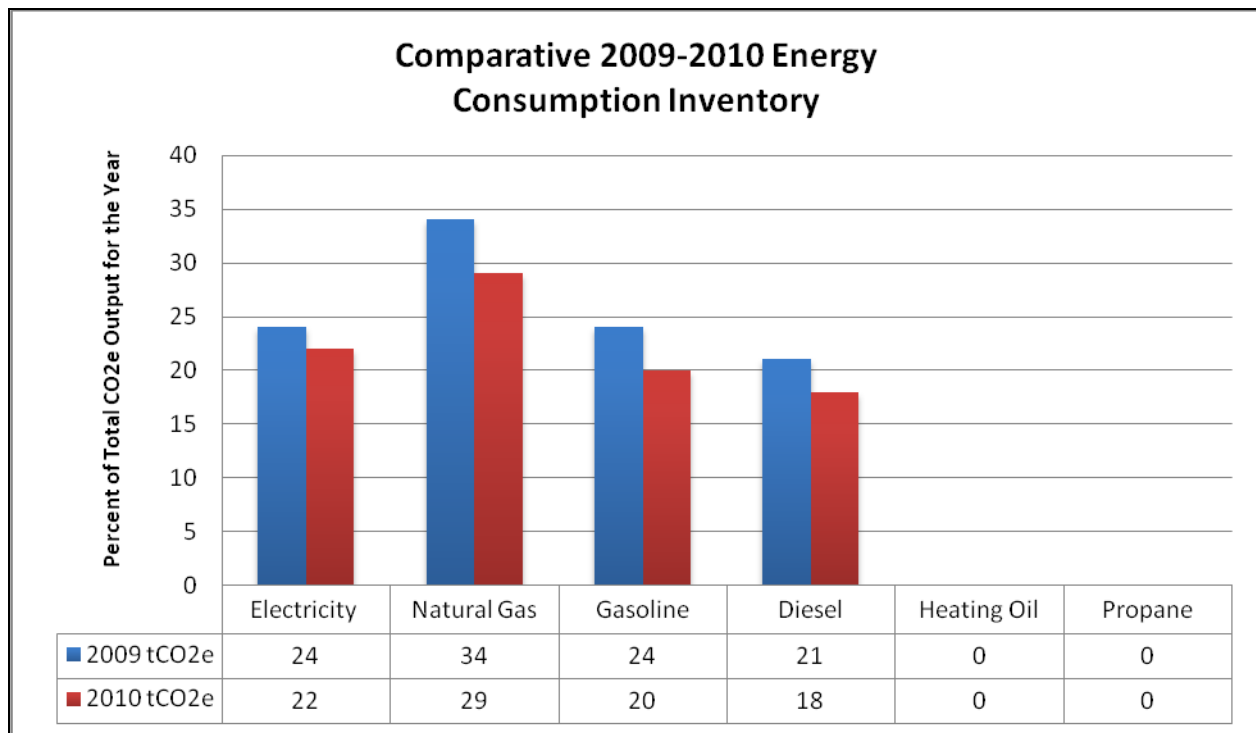
2010 Corporate Greenhouse Gas Inventory Percent of Total CO2e Output



Comparative 2009 - 2010 Greenhouse Gas Inventory



	Village Office	Public Works Yard	Public Fleet	Flood Pump	Street Lights	Fire Station	Water	Sewer	Recreation
■ 2009 tCO2e	6.83	9.26	44.68	0.02	2.84	9.51	2.37	15.70	11.10
■ 2010 tCO2e	6.00	7.89	38.29	0.04	2.86	7.10	1.68	14.85	10.81



The GHG inventory provides a comprehensive look at corporate energy consumption and emissions output by the Village of Harrison Hot Springs. A comparative look at 2009-2010 corporate energy consumption and greenhouse gas output provides a positive picture. The data suggests that the municipality has been able to make substantial reductions in corporate emissions in one year. In 2010 corporate emissions reduced by 11.8% compared to 2009 base year. The reductions were observed across all corporate categories and all energy types. In particular there was a 25.3% reduction in emissions in the fire station, 14.8% reduction within the public works yard, and a 14.3% reduction within the public fleet. This suggests the strategies outlined in the previous version of this document are successful. The previous strategies were:

1. Communicate a clear direction to change “business as usual”;
2. Establish a team to champion carbon neutrality;
3. Provide and/or allocate additional human resources and funds to champion and implement energy and GHG reduction strategies;
4. Review existing and monitor future policies, procedures, and plans to make sure that they align with the goal of carbon neutrality.

Further review of the corporate energy consumption and strategies for emission reduction is required. Please note that the inventory and measurement techniques are not perfect, although all reasonable attempts have been made to acquire and analyse the most accurate and complete data. Please also note that although the corporate energy consumption declined by 11.8% in 2010 from 2009 base year, the overall costs of corporate energy have increased resulting from higher energy rates in 2010 than in 2009. Please refer to Appendix A and Appendix B for more information.

3. Corporate Greenhouse Gas Reduction Plan

The Village of Harrison Hot Springs has committed to develop strategies and take action to become carbon neutral in respect to municipal operations. To achieve this, the Village should consider taking the following main actions:

1. Continue to communicate a clear direction to change “business as usual”;
2. Continue to encourage and support work of the Corporate Sustainability Task Team in regards to carbon neutrality;
3. Continue with the provision of allocation of additional human resources and funds to champion and implement energy and GHG reduction strategies;
4. Continue to review existing and monitor future policies, procedures, and plans to make sure that they align with the goal of carbon neutrality;
5. Commit to a 25% reduction in real corporate carbon emissions by 2015 from the 2009 base year;
6. Commit to purchasing carbon offsets from the Pacific Carbon Trust to offset the 90 tCO₂e produced in 2010 in order to achieve corporate carbon neutrality and to set a positive example.

3.1. Other Possible Future Actions

- GHG data collection is always challenging. In the future it would be helpful to try to account for GHG output produced by private contractors providing municipal services in the Village (e.g. paving, street line painting, etc.).
- It would be very desirable to reduce the emissions from the vehicle fleet sector. The first step to saving on vehicle fleet energy use would be to set up a system to track fuel use and costs more specifically.
- Municipal buildings may need an energy audit to outline potential energy and GHG savings.
- Village purchasing policy may require a review to account for GHG considerations.
- Budget requirements of carbon neutrality should be reviewed.
- Future annual review of this Plan is recommended to revisit GHG inventory, annual implementation plans, and to consider current funding opportunities, recommended best practices, and technological innovations.
- In 2011 the Village needs to undertake the Integrated Community Sustainability Plan (ICSP) with full public participation and community involvement. An ICSP will help to establish a more socially, culturally, economically, and environmentally resilient community. An ICSP should be a big picture, holistic plan that will provide guidance for the development or alignment of all municipal plans, policies and decisions (i.e., OCP, Transportation Plan, municipal development plan, energy plans, purchasing policies, capital planning, etc.).

4. Conclusion

As a BC Climate Action Charter signatory the Village of Harrison Hot Springs has taken a leadership role and committed to become carbon neutral in respect to municipal operations by 2012. The Village needs to continue to closely monitor GHG output inventory and continue to work towards energy conservation and carbon neutrality. The Village should also start making provisions for carbon offsetting. Today's plans and actions will assist in creating a more sustainable tomorrow for the Village of Harrison Hot Springs.