

Corporate Climate Action Plan Update

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1 Context

1.1 Greenhouse Gas Emissions from City Operations 2007-2015

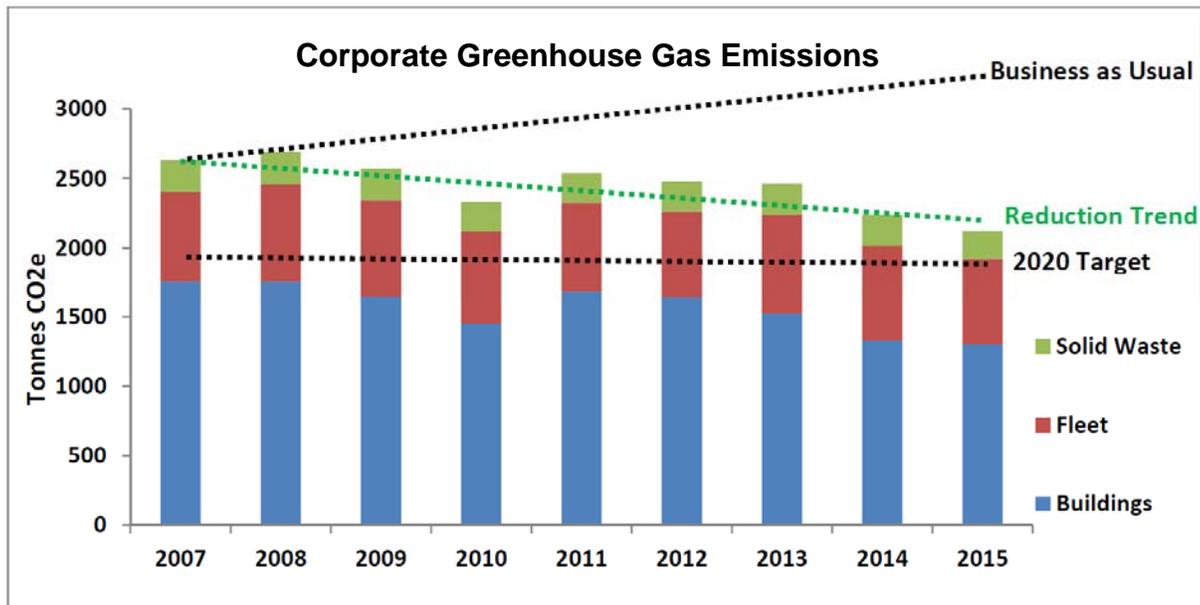


Figure 1. Greenhouse Gas Emissions from City Operations 2007-2015

The City adopted a Local Action Plan for reducing greenhouse gas emissions in 2005, and updated the corporate (City Operations) component of that plan in 2011.

Emissions have remained stable over the past decade and in recent years have declined significantly (Figure 1).

1.2 2020 Corporate Climate Action Target: 25% reduction

The City's 2011 Corporate Climate Action Plan set a target of a 25% reduction, below 2007 levels by 2020.

Significant progress has been made since the plan was adopted and in 2015, the City's corporate emissions were **19% below 2007 levels**.

Reductions have been achieved in part through the following measures taken by the City:

- discontinuing the use of older boiler plants and connecting buildings to the City's district energy system, Lonsdale Energy Corporation (LEC);
- incorporating electric and more efficient vehicles into the City's fleet; and
- implementing the Corporate Zero Waste program in City facilities.

Emissions have also decreased due to actions on the part of senior governments. For example, emissions due to electricity have decreased due to changes to BC Hydro's generating facilities resulting in a lower emissions factor for electricity (electricity is less carbon intensive on a per-unit basis). Reductions have also been achieved due to increased renewable fuel content in gasoline and diesel.

It is worth noting that 2014 and 2015, in particular, were fairly warm years and thus less natural gas was used for building heating, resulting in lower emissions those years. Snow clearing activities, which influence fleet fuel usage, were also minimal in those years. It may be challenging to maintain some of these reductions going forward.

1.3 Where do the City's emissions come from?

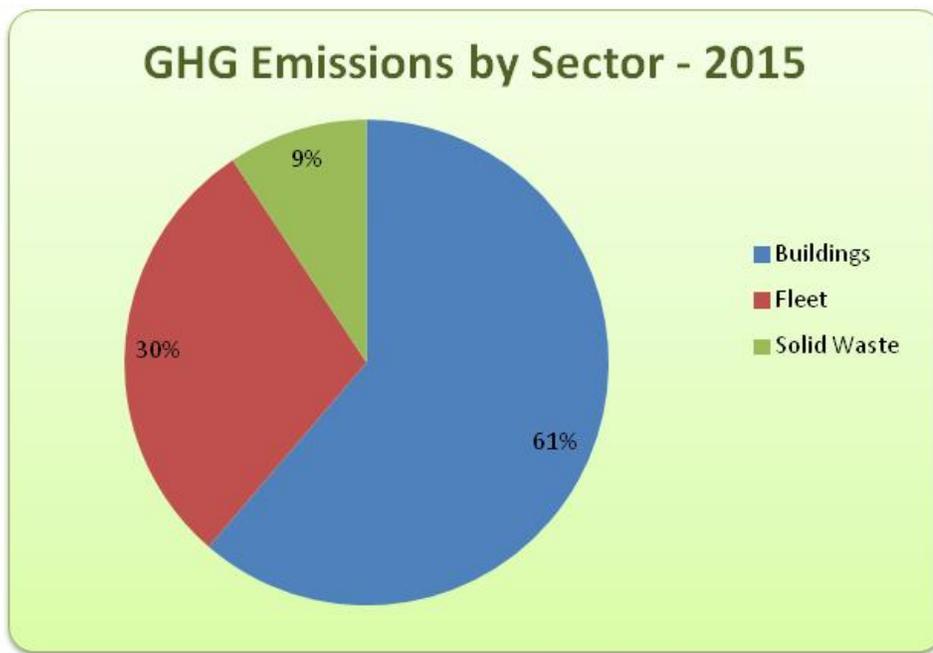


Figure 2. Corporate greenhouse gas emissions by sector

The majority of the City's emissions are due to the use of natural gas and electricity for heating, cooling, lights and equipment in corporate buildings (61%). Emissions are also generated through burning gasoline and diesel to power the City's fleet (30%) and from methane emissions associated with solid waste disposal (9%) (Figure 2).

2 Progress Snapshots by Sector

2.1 Buildings and Infrastructure: 26% reduction

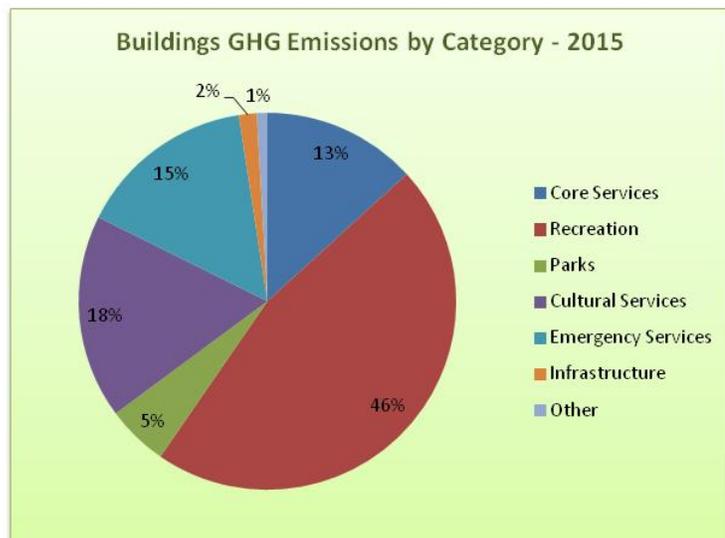


Figure 3. Building Emissions by Category. Core Services includes City Hall and the City Operations Centre. Cultural Services includes Centennial Theatre, Presentation House Theatre, museum facilities, and the City Library. Please refer to Appendix B for a full listing of buildings and facilities in each category.

Where are we now?

Emissions from buildings have declined by 26% since 2007. While some of these reductions can be attributed to warmer weather in 2014 and 2015, key actions include:

- six municipal buildings connected to LEC;
- new LEED Gold municipal library opened;
- energy efficiency upgrades to various facilities; and
- staff outreach and awareness.

What are we doing?

A number of next steps are proposed or underway in support of further reductions in this sector, including:

- energy studies planned for several City buildings in support of a comprehensive energy retrofit;
- upgrades planned for lighting and control systems;
- more buildings to be connected to LEC; and
- the City working with LEC to increase renewable energy content.

Challenges and Opportunities

Harry Jerome Recreation Centre accounts for 29% of the City's building energy greenhouse gas emissions. With the centre undergoing a major redevelopment there is an opportunity to demonstrate leadership through best-in-class energy efficiency, such as a net zero building.

2.2 Fleet: 3% reduction

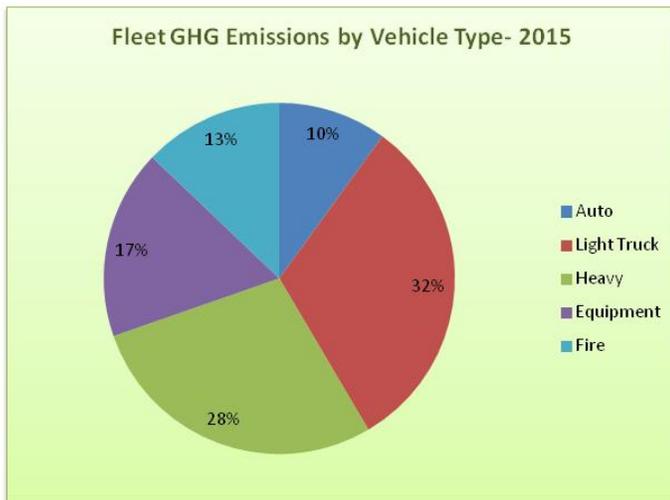


Figure 3. Fleet Emissions by Vehicle Type. Auto includes the City Hall pool vehicles and Bylaw vehicles. Light Truck includes medium sized pickup trucks. Heavy includes garbage trucks and dump trucks. Equipment includes backhoes, excavators and small equipment such as leaf blowers.

Where are we now?

Emissions from fleet vehicles have declined by 3% since 2007. Although the reduction is modest, the City population serviced by the fleet has increased more than 15% over the same time period. Key actions include:

- new hybrid and electric vehicles purchased;
- use of biodiesel fuel; and
- fuel efficient driving practices.

What are we doing?

A number of next steps are proposed or underway in support of further reductions in this sector, including:

- replacement of older vehicles with models with increased fuel efficiency;
- right sizing of new vehicles (ensuring right size of vehicle is being used for the task); and
- electrification of the City's fleet, where possible.

Challenges and Opportunities

Some of the larger contributors to the City's fuel consumption are larger vehicles, such as garbage trucks and fire trucks, where there are currently limited options for improving efficiency. Unpredictable weather and demands on the City's fleet for snow clearing and other activities present other challenges. However, rapidly evolving electric vehicle technologies are beginning to show significant promise, and staff continue to monitor these developments.

2.3 Solid waste: 14% reduction



Figure 4. Corporate Zero Waste Stations. Stations have been installed in the majority of City facilities.

Where are we now?

Emissions from solid waste generated in municipal facilities have declined by 14% since 2007. Key measures include:

- implementation of the City's Corporate Zero Waste Plan and
- number of weekly pickups in municipal buildings reduced by 35%.

What are we doing?

A number of next steps are proposed or underway in support of further reductions in this sector, including:

- expanded recycling programs to all municipal facilities, including Rec Centres;
- expanded on-street recycling;
- conducting waste audits in key facilities; and
- continuing outreach and education for staff and the public.

Challenges and Opportunities

The City has achieved significant reductions through the implementation of the Corporate Zero Waste Program: at City Hall alone, solid waste tonnages were reduced by 70%. However, to maintain these reductions requires the commitment of staff using the facilities as well as the public where the zero waste stations are located in public areas. As such, ongoing outreach and education program for staff and the public will be required to maintain success.

3 Objectives and Indicators

The 2011 Corporate Plan set out the following overall and sector-specific objectives. Supporting indicators for each of these objectives have been reviewed and updated so that they align with available data.

Table 1. Updated Corporate Climate Action Objectives and Supporting Indicators

	Objectives	Indicators	Target	To Date
Overall	Show leadership and innovation by showcasing technologies and best practices.	Number of public communications	2 per year through 2020	1/yr
	Engage staff regarding energy conservation and waste reduction, and develop an ongoing mechanism to support and reinforce efforts over time.	Number of events and programs	3 per year through 2020	2/yr
	Encourage alternative transport modes for employee commuting.	% staff using alternatives to SOV	60% by 2020	52%
Buildings, Infrastructure, & Renewables	Reduce energy consumption in existing facilities.	Energy use reduction	25% by 2020	9%
		Energy consumption per m ²	300 kWh/m ² by 2020	330
	Connect all City-owned buildings over 1000 m ² to LEC.	Civic floor space connected to LEC	95% by 2020	34%
	Increase the use of renewable energy, both on-site and through LEC.	Energy from renewable sources	5% by 2020	1%
Fleet	Increase fleet efficiency and reduce GHG emissions.	Average fuel efficiency – light vehicles	17.5 L/100km by 2020	24.6
		Average fuel efficiency – heavy vehicles	63.8 L/100km by 2020	68.4
	Reduce fleet km.	Total fleet kilometres	600,000 km by 2020	627,773
Solid Waste	Reduce solid waste going to the landfill.	Mass of solid waste	317 tonnes by 2020	408

4 Updated Corporate Climate Actions Summary

Actions from the 2011 Corporate Climate Action Plan have been updated. Some actions are complete, others have been modified or updated, and new actions have been identified where appropriate. The status of the original 2011 plan actions is be found in the Appendix.

Table 2. Updated Corporate Climate Actions Summary

Action		Timeframe	Responsibility
1.1	Monitor and report annually on energy consumption, GHG emissions, and indicators.	Ongoing	Environment, All
Buildings & Infrastructure			
2.1	Determine future building plans and undertake appropriate retrofit projects.	2017 - 2018	Facilities
2.2	Connect buildings to LEC.	2017 - 2020	Facilities, LEC
2.3	Make energy efficiency and GHG emissions a priority for the Harry Jerome upgrade or redevelopment. Target near net-zero GHG emissions.	TBD	Facilities
2.5	Encourage LEC to publish an annual emissions factor and set a target for lowering their emissions factor over time.	2018	LEC
2.8	Continue to monitor developments and cost of new streetlighting technologies, piloting new streetlight technologies where opportunities arise.	Ongoing	Transportation
2.12	Investigate latest technologies and opportunities to reduce energy consumption in IT equipment.	2017	IT, Facilities
Fleet			
3.1	Utilize the E3 Review to identify underperforming vehicles and take corrective action to assist in identifying vehicles for replacement.	2017	Eng. Ops., Fire
3.2	Initiate a fuel efficiency driver training program.	2017 - 2018	Eng. Ops, Parks
3.3	Review task scheduling procedures and driving routes to determine if vehicle use can be reduced.	2017 - 2018	Eng. Ops., Parks
3.4	Ensure that replacement vehicles are both fuel-efficient and the most appropriate vehicle for the use.	Ongoing	Eng. Ops., Fire
3.5	Determine opportunities for fleet electrification and conduct site assessments to determine charging needs and options	2017	Eng. Ops., Facilities, Environment

Solid Waste			
4.1	Conduct regular waste audits of core facilities to track quantities and sources of waste generated and assess effectiveness of diversion programs. Conduct visual assessments at non-core facilities and adjust pickup frequency as needed.	Ongoing	Facilities, Environment
4.2	Expand recycling programs at all facilities to include organics, compostable paper, blue bin materials, mixed paper and deposit beverage containers and expand the provision of on-street recycling infrastructure.	2017	Facilities, Environment
Renewable Energy			
5.1	Consider best available renewable energy source for future facilities or upgrades.	TBD	Facilities, LEC
5.2	Work with LEC to identify and support opportunities for renewables in LEC's system and/or City buildings connected to LEC.	Ongoing	Facilities, LEC
5.3	Implement pilot projects, where operationally feasible, to showcase technologies to the public.	Ongoing	All
Policies			
6.1	Develop a new Green Building Policy for City buildings which incorporates small facilities and renovations.	2018	Facilities
6.2	Develop criteria for vehicle purchases and provide documentation.	2017	Purchasing, Eng. Ops.
6.3	Develop selection criteria for equipment purchases based on EnergyStar.	2017	Purchasing
6.4	Adopt a zero waste meeting policy.	2017	Environment, All
Staff Awareness			
7.1	Develop and provide funding and resources to implement an ongoing staff behaviour and awareness program to encourage waste reduction, energy use reduction, and transportation demand management.	2017 - 2020	Environment, Facilities, Transportation

5 Appendix A: Actions from 2011 Corporate Climate Action Plan

Table 3. Actions from 2011 Corporate Climate Action Plan

	Action	Timeframe	Responsibility	Status
1.1	Monitor and report annually on energy consumption, GHG emissions, and indicators.	Ongoing	Community Energy Manager, All	Complete except for indicators.
2.1	Determine future building plans and undertake a comprehensive project to retrofit all buildings.	2012 - 2014	Facilities, NVRec	Study planned for 2017, retrofits planned for 2018-19.
2.2	Connect buildings to LEC.	2011 - 2018	Facilities, LEC, NVRec, Planning	Six buildings connected.
2.3	Make energy efficiency and GHG emissions a priority for the Harry Jerome upgrade or redevelopment, targeting near net-zero emissions.	TBD	Planning, NVRec	Requires continuous ongoing support until redevelopment is complete.
2.4	Work together with LEC to identify and support renewable alternatives in LEC's system, particularly in the Harry Jerome redevelopment.	Ongoing	Facilities, NVRec, LEC	Ongoing.
2.5	Encourage LEC to publish an annual emissions factor and set a target for lowering their emissions factor over time.	2011	LEC	Discussions with LEC ongoing. Emissions factor not yet available.
2.6	Conduct an audit of streetlight types and light levels.	2012	Traffic and Transportation	Streetlight inventory complete, will be used in City-wide LED retrofit.
2.7	Conduct a further investigation of streetlight dimming technology. If viable and there are no reliability concerns, proceed with a comprehensive retrofit.	2012 - 2016	Traffic and Transportation	Investigation complete. All new LED streetlights will be capable of dimming.
2.8	Continue to monitor developments and cost of new streetlighting technologies, piloting new streetlight technologies where opportunities arise.	Ongoing	Traffic and Transportation	Ongoing. Solar streetlights investigated but not feasible at this time.
2.9	Continue with plans to upgrade server hardware and virtualization.	Ongoing	IT	Server upgrades completed.
2.1	Run an outreach program for staff to shut off computers at night.	2011	IT, Green Team	Complete.
2.11	Investigate opportunities to recover waste heat from the Fire Hall servers.	2011 - 2012	IT	Investigated but found to be impractical.
2.12	Initiate a cloud computing pilot.	2011 - 2013	IT	IT reports they have virtualized machines.
3.1	Utilize the E3 Review to identify underperforming vehicles and take corrective action to assist in identifying vehicles for replacement.	2011	Public Works, Fire	Has not yet been applied.

3.2	Initiate a fuel efficiency driver training program.	2012	Public Works, Parks	No additional driver training has occurred.
3.3	Review task scheduling procedures and driving routes to determine if vehicle use can be reduced.	2012	Public Works, Parks	No additional route analysis has occurred.
3.4	Ensure that replacement vehicles are both fuel-efficient and the most appropriate vehicle for the use.	Ongoing	Public Works, Fire	Generally done, but no formal policy in place.
4.1	Conduct visual assessments of waste volumes at all facilities on an annual basis, and adjust pickup frequency as needed.	Ongoing	Community Energy Manager, Facilities	Done regularly.
4.2	Conduct regular waste audits of core facilities to accurately track quantities and sources of waste generated and assess effectiveness of diversion programs.	Ongoing	Facilities, Community Energy Manager	Waste audits performed on some buildings, but not regularly.
4.3	Provide food waste collection for food scraps, other organics and compostable paper at all facilities.	2013	Facilities, Public Works	Provided at all major civic facilities, rec facilities by Jan/Feb 2017.
4.4	Expand recycling programs at all facilities to include blue bin materials, mixed paper and deposit beverage containers and expand the provision of on-street recycling infrastructure.	2012	Facilities	Provided at all major civic facilities, rec facilities by Jan/Feb 2017. 15-20 on-street recycling receptacles, expansion underway.
5.1	Consider best available renewable energy source for future facilities or upgrades (e.g. solar thermal for pool water heating and geo-exchange for space heating/cooling in the Harry Jerome redevelopment).	TBD	Facilities, LEC, Planning	No new renewable energy sources added since plan was adopted in 2011.
5.2	Work with LEC to evaluate the use of biomass heating.	TBD	Facilities, LEC, NVRec	Biomass no longer under consideration by LEC.
5.3	Implement pilot projects, where operationally feasible, to showcase technologies to the public.	Ongoing	All	In progress.
6.1	Add criteria for small buildings and renovations to the <i>LEED Standards for City of North Vancouver Buildings</i> policy.	2011	Facilities	Green buildings standard is to be overhauled as LEED is no longer applicable.
6.2	Develop criteria for vehicle purchases and provide documentation.	2011	Purchasing, Public Works	Not yet done.
6.3	Develop selection criteria for equipment purchases based on EnergyStar.	2011	Purchasing	Not yet done.
6.4	Adopt a zero waste meeting policy.	2011	Community Energy Manager, All	Not yet done.
7.1	Develop and provide funding and resources to implement an ongoing staff behaviour and awareness program.	2011 - 2013	Community Energy Manager, Facilities	Further work needed in this area.

6 Appendix B: Buildings and Infrastructure by Category

Table 4. City Buildings and Infrastructure by Category

Category	Buildings and Infrastructure
Core Services (13%)	City Hall, City Operations Centre, Greenhouse, City Warehouse
Recreation (46%)	Harry Jerome Recreation Centre, Mickey McDougall Recreation Centre, Memorial Gym, John Braithwaite Community Centre, North Shore Neighbourhood House
Arts & Culture (18%)	Centennial Theatre, North Shore Museum Warehouses, North Shore Museum and Archives, Presentation House Theatre, Anne Macdonald Hall, City Library
Emergency Services (15%)	RCMP Gerry Brewer Building, Fire Hall, Community Policing Station
Parks (5%)	Park washrooms, changerooms, field and pathway lighting, water pumps, field houses
Infrastructure (2%)	Pump stations, traffic signal lighting, electric vehicle fast charge station
Other (1%)	Women's Centre, residential rental and holding properties, parking lot