

Coquitlam

For Committee

February 5, 2010

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To: City Manager

From: General Manager Planning and Development

Subject: **Council Workshop - Community Greenhouse Gas Reduction Strategy**

For: **Land Use and Economic Development Standing Committee**

Recommendation:

That the Committee receive the report dated February 5, 2010 of the General Manager Planning and Development entitled "Council Workshop - Community Greenhouse Gas Reduction Strategy " for information.

Executive Summary:

At its regular meeting of November 16, 2009, Council authorized a process to develop a Community Greenhouse Gas (GHG) Reduction Strategy to meet the requirements of *Local Government Act Section 877 (Bill 27, 2008)* and to guide the City's long term response to climate change. Council input into the formulation of this strategy is critical. The February 8, 2010 Land Use and Economic Development Standing Committee meeting, to which all of Council are invited, will provide one of several opportunities for Council to provide input and direction on developing the strategy. This report outlines the objectives of the February 8th session and provides background information intended to assist Council members in the workshop discussion.

Development of the Community GHG Reduction Strategy upholds the corporate objectives of supporting neighbourhoods, innovating to meet changing needs, building community capacity, and continually improving processes, policies and services.

Purpose:

The purpose of this report is to provide background and agenda information in preparation for the February 8th Land Use and Economic Development Standing Committee meeting. This session is a key component in developing the GHG Reduction Strategy and all members of Council are encouraged to attend.



Background:

Local Government Act Section 877 (Bill 27, 2008) requires all local governments to incorporate greenhouse gas (GHG) reduction targets, including policies and actions with respect to achieving those targets in their Official Community Plans by May 31, 2010.

Phase 1 of the strategy process, which involved developing a community energy and emissions profile for the City and understanding the local context, is now complete as reported to the Land Use and Economic Development Standing Committee at its regular meeting of January 25, 2010.

Building on the foundation of Phase 1, the next phase involves exploration and analysis of scenarios, or potential paths for Coquitlam to reduce community-wide greenhouse gas emissions and energy use. The formulation of a preferred scenario for detailed analysis will be guided by public input and direction from Council.

This process will help the City comply with *Bill 27* legislation through development of high level interim targets, policies and actions for incorporation into the Citywide Official Community Plan by May 31, 2010. Following Council adoption of the interim CWOCP targets, policies and actions, work will continue with further public input and direction from Council to define a more detailed policy and action path for the final strategy document. Attachment 1 highlights key steps in the proposed process, including opportunities for public input and Council direction.

Workshop Objectives:

The February 8, 2010 session objectives include the following:

- » Update Council on the Community Greenhouse Gas Reduction Strategy objectives, process and methodology;
- » Introduce the global, regional and local climate context;
- » Provide a snapshot of Coquitlam's greenhouse gas emissions and energy profile, and identify key challenges and opportunities for Coquitlam. (Situational Analysis Briefing Executive Summary provided in Attachment 2);
- » Solicit feedback on a draft *vision, goals and preliminary criteria* that will guide evaluation and shaping of policies and actions for the strategy (Attachment 3);

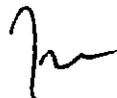
Workshop Objectives:

- » Receive and discuss Council feedback on a preliminary scenario based on the general land use direction set out in the CWOCP.

Attachment 4 provides a generalized description of the scenario assumptions and outlines high level policy directions and elements associated with each sector (land use, transportation, buildings, energy and solid waste). This scenario, and potential impacts of making adjustments to the variables, will be discussed in greater detail at the workshop.

Financial Implications:

This initiative is funded through the combination of a senior government grant and approved Planning and Development capital budget. There are no specific financial implications associated with the information presented in this report.



J.L. McIntyre, MCIP

RP/ms

- Attachments:
1. Process Flow Chart
 2. Situational Analysis Briefing Executive Summary
 3. Draft Vision and Goals
 4. Reference Scenario Description

This report was prepared by Ryan Perry, Community Planner and reviewed by Rob Innes, Manager Community Planning and Jim McIntyre, General Manager Planning and Development.

Phase One

Winter 2009/10

Analyzing the Situation

- Council Consideration/ Endorsement of proposed Sec. 879 Public Consultation Process (November 16, 2009)
- Analyzing the Coquitlam Situation
- Community Energy and Emissions Profile

Phase Two

Winter/Spring 2010

Exploring Options

- Council Workshop (Feb 8)
- Open House (Feb 9/10)
- Scenario Modeling and Analysis
- Identify Preferred Path

Phase Three

Late Spring - Fall 2010

Defining a Path

- Council Workshop - Review Proposed Scenario (Late March)
- Open House (Late March)
- High level interim GHG Target, Policies and Actions Adopted (Bill 27) - Late May

- Develop Detailed Policy and Action Path (Spring - Summer)
- Council Workshop (Summer)
- Final Strategy Drafted (Summer)
- Open House (Fall)
- Considered for Council endorsement (Fall)



Community
Greenhouse Gas
Reduction Strategy

City of Coquitlam Community Energy and Emissions Situational Analysis Briefing



Executive Summary

Prepared for:
Coquitlam

Prepared by:
HB LANARC
PLANNING DESIGN SUSTAINABILITY

January 13, 2010

Executive Summary

The City of Coquitlam has embarked on a process to create a Community Energy and Emission Reduction Strategy. The first phase of this project examines the City's current situation, how the City got there and where it is going in terms of Community energy use and greenhouse gas emissions. Given this information, the strategy process identifies the current challenges and opportunities and assesses the implications of the findings for designing and prioritizing future targets, policies and actions.

Factors that Drive Emission Trends

Greenhouse gas emissions and energy use across all communities are driven in large part by a set of common factors. Awareness of these factors can provide a strategic perspective for planning.

Buildings

The key factors for residential and commercial buildings are:

- Building energy efficiency, influencing energy consumption
- Energy sources – e.g. hydro-electricity, natural gas, solar thermal
- Building type and size
- Building location and siting (i.e. passive solar gain)

Building elements that contribute to energy efficiency include:

- Envelope performance (e.g. insulation, windows)
- Efficiency of lighting
- Ventilation heat recovery
- Hot water demand
- Hot water and space heating/cooling from renewables (e.g. solar thermal, geo-exchange, wood)
- Efficiency of appliances

Transportation and Land Use

Compact complete and mixed-use development creates an urban form that increases liveability and accessibility, while decreasing resource use and greenhouse gas emissions associated with transportation. The individual factors within this category include:

- Proximity of residents to jobs
- Land use mix
- Density
- Distance to grocery stores and shopping
- Proximity to transit and transit service levels
- Walking and bicycling network connectivity
- Parking

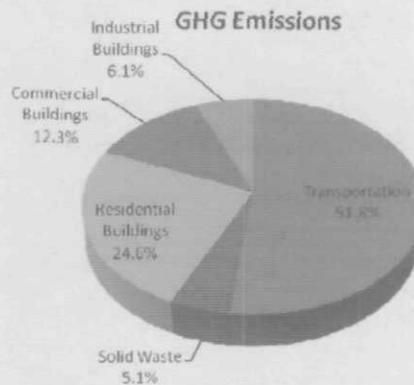
Emission and Energy Inventory

In 2007, Coquitlam residents, businesses and the municipal government were responsible for emitting a combined 637,160 tonnes of carbon dioxide equivalent (CO_{2e}). This calculates to 5.3 tonnes of CO_{2e} per capita. A useful indicator for comparing emissions between different cities considers total annual emissions in relation to the combined number of residents and employees:

$$\frac{\text{Annual Emissions (CO}_2\text{e)}}{\text{Residents + Jobs}} = \text{Average CO}_2\text{e per resident/job}$$

For Coquitlam in 2007 this works out to 3.8 tonnes CO_{2e} per resident/job¹, compared with an average of 4.3 tonnes CO_{2e} per resident/job for Metro Vancouver communities.² As well, in 2007 Coquitlam residents, businesses and the City consumed 12.6 million GJ of energy, translating to an estimated \$274 million in energy related expenditures.

Energy use and greenhouse gas emissions can also be summarized by activity, which is useful for understanding the source of emissions within sectors. The table below shows that the majority of the emissions in Coquitlam are from the use of gasoline in vehicles (44%) and natural gas for space heating and water heating in homes and businesses (40%).



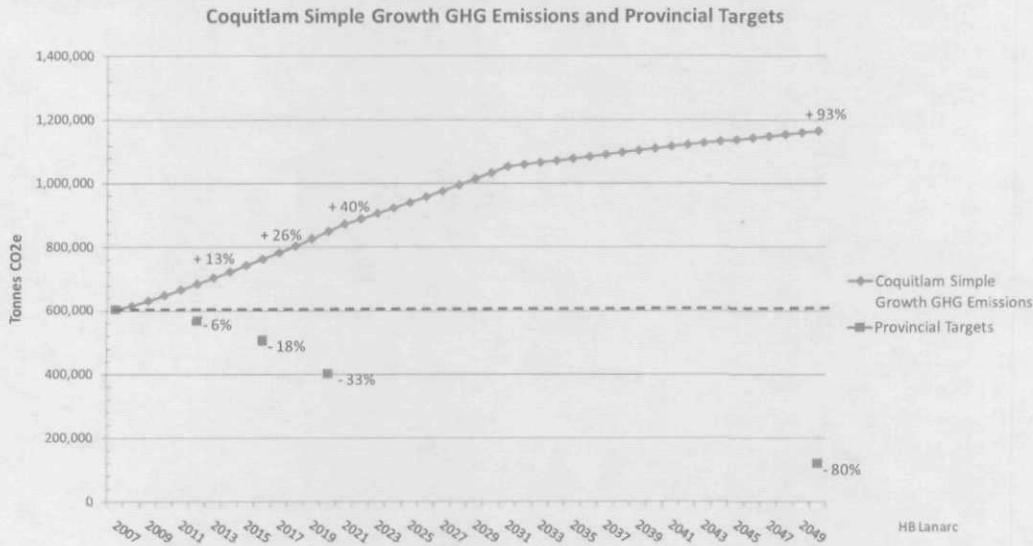
Activity Summary				
	Energy (GJ)	GHG Emission (CO _{2e})	% CO _{2e}	Estimated Expenditures
Electricity	3,067,062	18,743	3%	\$ 60,687,502
Natural Gas	4,998,584	255,674	40%	\$ 74,067,691
Gasoline	3,849,326	277,357	44%	\$ 120,277,564
Diesel	720,602	51,780	8%	\$ 18,976,348
Mobile Propane	20,318	1,220	0%	-
Solid Waste	0	32,701	5%	-
Total	12,655,892	637,160		\$ 274,009,105

¹ Total 2007 emissions is from CEEI 2007, with modifications to the waste sector by HB Lanarc. 2007 population estimate from BC Stats 2009 Coquitlam Community Profile. 2007 jobs estimated based on 2006 Census figure.

² The regional average was calculated in: City of North Vancouver 2009. CEEI Report Review and Comparison to Metro Municipalities.

Emission Forecast

Forecasting annual emission levels into the future is important for estimating the effect of past and current activities on emissions in future decades. The figure below illustrates emission levels going forward to 2050 using a “simple growth” scenario. The starting point for this scenario is the Provincial Government’s 2007 Community Energy and Emissions Inventory (CEEI) for Coquitlam. The forecast assumes emissions will increase with population and job growth going forward in line with projections from the Metro Vancouver 2009 Draft Regional Growth Strategy. Under this theoretical scenario emissions would increase approximately 93% by 2050.



Challenges and Opportunities for Emission Reductions in Coquitlam

As the simple growth emission forecast indicates, past development and transportation patterns are driving emissions in a direction opposite of where the City should be aiming. However, existing and on-going planning direction that considers compact complete communities supported by transportation choice (See Appendix 1) address many of the factors that drive emissions. This evolving policy context, in addition to the long term economic benefits of adopting new technologies and practices, should present significant opportunities for making future emission reductions.

Some of the Challenges Include:

- Population growth
- Existing inefficient buildings
- Existing land uses that create dependencies on personal automobiles for travel to work, school and shopping

- Insufficient public transit alternatives to travel by personal automobile
- Current low price of energy
- Changing individual behaviour

Some of the Opportunities Include:

- The City has an Official Community Plan and Neighbourhood Plans that support compact, mixed use development
- Creation of District Heating/Energy plants in conjunction with new community centre developments
- The Evergreen Line and other regional mass transit initiatives
- Rising energy prices
- Decreasing cost of low carbon technologies
- Public support for taking action to reduce emissions

COQUITLAM COMMUNITY GREENHOUSE GAS REDUCTION STRATEGY

DRAFT VISION & GOALS

The City of Coquitlam has a well established planning framework that complements climate protection. The City's Strategic Plan and Official Community Plan articulate commitments to complete communities, sense of place, local job creation, protecting the environment for present and future generations, and housing affordability. A well designed Greenhouse Gas Reduction Strategy can contribute to these priorities.

1. DRAFT VISION

The following draft vision for the community Greenhouse Gas Reduction Strategy draws on the City's current policy and strategic priorities and has been developed with input from the staff Interdepartmental Working Group.

"The City is committed to working in partnership with senior levels of government to contribute to provincial and global efforts to protect the climate by supporting land use, transportation, infrastructure, and development planning that reduces community greenhouse gas emissions."

2. DRAFT GOALS

The following draft goals reflect and build on many of the City's current policy and strategic directions and were developed with input from the Interdepartmental Working Group. Buildings, transportation, energy supply and waste sectors are the primary sources of community greenhouse gas emissions.

BUILDINGS & LAND USE

This sector focuses on improving energy and emission performance in buildings with regards to envelope efficiency, renewable energy supply, building type and some district energy opportunities. While the Province, BC Hydro and natural gas utilities have significant authority to influence the buildings sector, the City can make modest improvements, and really significantly support per capita and per unit energy and emission performance through land use planning (i.e. multi-unit buildings).

Buildings:

- » Improve the energy efficiency of *new and existing* residential, commercial and institutional buildings;
- » Promote renewable energy in new and existing residential, commercial and institutional buildings;

Land Use:

- » Strengthen per capita and per unit energy and emission performance through consideration of building/dwelling types and unit sizes (i.e. high efficiency multi-unit buildings, smaller unit sizes, suites).

Complementary:

- » Promote and encourage energy supply options which help reduce volatility and overall expenditures on energy for City residents and businesses;
- » Build on the City's commitment to housing diversity to promote access and support opportunities for aging in place.

TRANSPORTATION & LAND USE

This sector focuses on improving energy and emission performance in the transportation sector, including transportation modes (e.g. walking, cycling, single passenger automobile, car pooling, and transit), and the fuel economy of those modes. The Province and TransLink have greater ultimate influence over some of these opportunities, notably transit investments. The City, however, has a significant influence over land use decisions that ultimately determine the viability and success of transit, and the viability of walking and cycling networks.

Transportation

- » Improve transportation choice – supporting active transportation and the ability for residents to walk, cycle, car pool, take transit, as well as travel by car – seek to integrate these modes;
- » Support major rapid transit lines to facilitate efficient transportation to, from and within the City;
- » Reduce the annual per capita vehicle kilometres traveled (VKT) by Coquitlam residents through greater transportation choice, compact complete communities, and local employment;
- » Support Provincial efforts to improve vehicle fuel efficiency through means within municipal authority;
- » Create street/road designs and parking standards that are attractive to walking, cycling and public transit use.

Land Use

- » Foster an increase in complete compact community design in new and existing neighbourhoods to reduce travel distance and frequency of vehicle trips;

Complementary

- » Establish a built form (i.e. buildings and public realm) and mix of uses that supports liveability and healthy lifestyles;
- » Foster urban development that encourages efficient use of existing and planned infrastructure;
- » Reduce overall expenditures on energy in the transportation sector;
- » Curb increases in travel time caused by single occupancy vehicle congestion through greater transportation choice.

ENERGY SUPPLY & WASTE

The focus of these sectors is on improving energy and emission performance of energy supply, notably through district energy, and reducing GHG emissions (i.e. methane gas) in the waste sector. Emissions in the other sectors, such as transportation and buildings, are carbon dioxide generated from the combustion of fossil fuels for energy. With utility and provincial assistance, the City has the potential to further explore or support development of district energy. Improved emission performance in the waste sector would involve the City, Metro Vancouver, and Province.

Energy

- » Support development of low carbon district energy;
- » Focus on area-wide vs. building scale solutions for renewable energy.

Solid Waste

- » Work with Metro Vancouver to strengthen the Solid Waste Management Plan from a climate perspective;
- » Build on Metro Vancouver's plans through municipal composting;
- » Build on Metro Vancouver's plans in recycling;
- » Encourage Senior Governments to strengthen targets, policies and actions on waste *reduction*;

COQUITLAM COMMUNITY GREENHOUSE GAS REDUCTION STRATEGY

REFERENCE SCENARIO

The following scenario is intended as a reference to understand the potential influence of high level policies and actions for reducing greenhouse gas emissions in Coquitlam and determining the resulting GHG reduction target. This scenario is based largely on the current land use direction set out in the Official Community Plan with additional assumptions made for the longer term. Discussing and adjusting the variables within the sectors (land use, transportation, energy, solid waste and buildings) of this baseline scenario will help Council, staff and the public understand the potential impact of policies and actions for reducing greenhouse gas emissions at the community level.

Land Use

- » Medium-high increase in density and mixed-use;
- » Largely nodal growth with land uses and densities as envisioned in the CWOCP – higher density mixed-use in City Centre and Neighbourhood Centres (e.g. Lougheed, Burquitlam, Maillardville); Northeast Coquitlam builds out as planned;
- » Considers potential future land use changes associated with on-going or phased planning processes (City Centre rapid transit station areas, Austin Heights, Partington Creek);
- » Longer term development of new neighbourhoods centres identified in CWOCP policy and the broader application of housing choices infill in Southwest Coquitlam;
- » Longer term mixed-use redevelopment around a future Falcon Evergreen Line Station and some concentrated residential growth focused around future rapid transit stops in the SE corridor;
- » Medium to high increase in local employment.

Transportation

- » Evergreen Rapid Transit by 2014;
- » Provincial vehicle emission standards = California tailpipe emissions;
- » Modest timing for new transit implementation (Southeast Coquitlam Rapid Transit by 2031, enhancement of existing bus routes; implementation of new bus routes);
- » Steady implementation of new cycling and pedestrian facilities.

Buildings

- » BC Building Code improvements;
- » High increase in multi-unit residential and mixed use development;
- » Improved energy performance of existing buildings through education and promotion.

Energy Supply

- » Implementation of District energy in Northeast Coquitlam Village Centre and Fraser Mills Waterfront Village by 2031.

Waste

- » Metro Vancouver implementation of programs associated with Zero Waste initiative;
- » Implementation of City programs to increase recycling and diversion of organics.