

Comparison and Analysis of Bill 27 GHG Emission Reduction Targets

For 20 municipalities in Metro Vancouver, Fraser Valley, and the Capital
Regional District

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We accept this project as conforming to the required standard:

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Executive Summary

The Province of British Columbia has committed to reducing greenhouse gas (GHG) emissions^a by 33 percent from 2007 levels by 2020 and 80 percent by 2050.¹ To achieve this target, the Province must rely on local governments to implement emissions reduction policies for both their own corporate activities as well as for communities under their jurisdiction. Independent modeling shows that the initiatives included in the British Columbia *Climate Action Plan* will only achieve 73 percent of the 2020 emissions reduction target.² So, communities, businesses, and industries will be relied upon for additional reductions.

To reduce GHG emissions, the Province has taken a number of steps to require and foster local government-level action. The 2007 *Greenhouse Gas Reduction Targets Act* mandates that all public sector organizations achieve carbon neutrality by 2012.³ British Columbia also worked in partnership with the Union of BC Municipalities (UBCM) to create the BC Climate Action Charter. The Charter, which is a voluntary commitment for local governments and regional districts, requires signatories to: achieve carbon neutral municipal operations by 2012; measure and report on community GHG emissions; and, to create more energy efficient and compact communities.⁴ The Climate Action Revenue Incentive Program (CARIP) gives rebates to signatories of the BC Climate Action Charter equal to 100 percent of their carbon tax obligation.⁵ Finally, the Province passed the *Green Communities Act (Bill 27)*.⁶ The *Green Communities Act* gives local governments more power to regulate GHG emissions through development permits. However, the act also requires local governments and regional districts to include GHG emission reduction targets, policies, and actions into their Official Community Plans by May 31, 2010 (May 31, 2011 for regional districts).

As North American communities are measuring and reducing their GHG emissions more and more, the implementation of British Columbia's climate action regulations and policies will be interesting to follow. BC's model, similar to legislation in California but unlike the purely voluntary processes followed by other communities in North America, offers a mixture of "sticks and carrots," mandatory and volunteer commitments. The setting of targets is mandated by the Province in the absence of Federal climate change legislation. Furthermore, incentives are a mix of technical and monetary, as well as government, not-for-profit, and business-based assistance. The *Green Communities Act* is flexible enough to permit localized solutions, so GHG emission reduction targets in each community should reflect local circumstances. The Province's motivation for pursuing a legislated GHG emissions reduction model is related to the fact that British Columbia has acknowledged and documented the effects and associated costs of climate change in the province. As many communities have written in their OCPs that anthropogenic global warming is the cause of the climactic changes they directly experience, municipal-level governments have an understanding about and motivation to reduce GHG emissions, which is not always the case across North America.

^a According to Bill 44, *Greenhouse Gas Reduction Targets Act*, 2007, "greenhouse gas" means carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and any other substance prescribed by regulation.

As the deadline for incorporation of GHG emissions reduction targets into Official Community Plans has recently passed, the opportunity exists to examine how BC municipalities have responded to Bill 27, namely whether the emissions reduction target exists in municipal Official Community Plans and what the target looks like. The characteristics of the emissions reduction targets can be compared between communities. For example, some communities may have chosen to adopt the Provincial target. However, the targets differ in terms of base year and type of reduction, such as per capita or community-wide absolute tonnes or relative percentages. So, a superficial and direct comparison between communities is not helpful in identifying how ambitious or practical a community's target is.

Rather than examine each of the 188 municipalities in British Columbia, this report is limited to municipalities with more than 25,000 residents in the Province's three most populous regional districts: Metro Vancouver, Fraser Valley Regional District, and Capital Regional District. This specific set of municipalities has been chosen, because their size enables a planning capacity to result in GHG emissions target reductions based on land use and transportation decisions through their respective OCPs. Also, this set of municipalities are regionally similar enough to have been members of regional GHG emission reductions efforts, guided by the same three regional district plans, and faced with relatively similar challenges. Nevertheless, variety exists within the set. For example, not all of the communities have signed the BC Climate Action Charter or joined the Partnership for Climate Protection Initiative.^b

This research normalizes the GHG targets for the twenty municipalities on an average annual rate of reduction in emissions per capita. This is effectively the linear slope of each municipality's self-reported emission reduction targets. The measure accounts for areas with population growth, as population forecast data supplied by the three regional districts forms the basis of predicted population numbers. The research finds that out of the twenty communities, 16 have targets that specify a reduction amount and target "maturity" year. One specifies a reduction target without a deadline. The final three have not incorporated a target into their Official Community Plans, and it is unknown whether they filed a target with BC Ministry of Rural and Community Development by the deadline.

The per capita base year emissions (2007) for the study group communities range from Saanich's 3.65 tonnes of carbon dioxide equivalent (tCO₂e) to Delta's 9.22 tCO₂e (see Table 2). The mean base year emission is 5.92 tCO₂e per capita.^c Nine communities have base year emissions above 6 tCO₂e per capita.

The communities set a variety of targets, with four adopting the Province's target verbatim, five adopting a modified version of the Province's target, three adopting per-capita targets, and the remaining four basing their targets on recommendations from the Partners for Climate Protection program. The communities with per capita targets had quite high base year per capita emissions. They benefited from in-depth analysis of their emissions portfolios and, in two cases, formulated targets that permitted growth in emissions. Of the other communities with greater than 6 tCO₂e per capita emitted in 2007, two essentially have no target. Four adopted the Province's target and have not completed a community energy and emissions plan. One

^b The Climate Action Charter is a voluntary commitment to achieving carbon neutral local government operations by 2012. The Partners for Climate Protection Initiative is a five-step financial and technical assistance program with the goal of reducing corporate and community-wide emissions.

^c According to the United States Environmental Protection Agency Energy Resources Calculator, 6 tCO₂e is equivalent to carbon dioxide emissions from 674 gallons of gasoline (almost 14 barrels of oil). Annual emissions of 1 tCO₂e per capita by 2050 is recognized as being a threshold for remaining below runaway global warming.

community, City of Langley adopted a target influenced by the Partners for Climate Protection and has the highest anticipated rate of emissions reduction of the communities studied in this report. The next highest per capita rate of emission reductions are likely to occur in Abbotsford and Delta. Neither of these communities has completed a community energy and emissions plan. In other words, the expected rate of emissions reduction in communities with more than 6 tCO₂e emitted per capita in 2007 is extreme. They tend to either be very aggressive or very low / non-existent.

Within the remaining thirteen communities, which have 2007 per capita emissions of less than 6 tCO₂e, the communities' rate of emissions reduction are within the average range.^d However, many of these communities may achieve less than one tonne per capita emissions by 2050, which is a significant figure from the climate science community. The greatest anticipated reductions come from communities that adopted the Province's targets. Communities in the Capital Regional District and those that adopted a Partners for Climate Protection influenced target show smaller anticipated reductions. However, those communities generally have shorter-term targets that will mature by 2020.

The analysis suggests that the largest influence on target adoption is whether a municipality has completed a community energy and emissions plan. All communities with community energy and emissions plans adopted custom targets. Most communities that adopted the Province's target lacked any plans that analyzed community-wide emissions; however, three have completed climate action plans, which while similar to community energy and emissions plans are less rigorous in the study group communities. A secondary influence is per capita emissions in 2007. Of the communities that adopted their own targets, communities with higher per capita emissions in 2007 tended to adopt per capita targets. Those with lower 2007 per capita emissions, tended to adopt Partners for Climate Protection influenced targets.

Background: Climate Change Regulation and Policies in BC

The Impact of Climate Change in British Columbia

The *BC Climate Action Plan*⁷ cites evidence from the Intergovernmental Panel on Climate Change (IPCC) 2007 report to establish the rationale to reduce GHG emissions. The 2007 IPCC report states that 11 of the past twelve years (1995 to 2006) rank among the warmest since 1850 worldwide. Furthermore, atmospheric carbon dioxide equivalents (CO₂e) increased from a relatively stable 280 parts per million to over 380 parts per million over the past 150 years. Furthermore, global average sea level rose at a rate of 1.3 to 2.3 mm annually between 1961 and 2003, with the latter years being at the faster rate of 2.4 to 3.8 mm annually. Fossil fuel combustion and land use changes, including agriculture, are the primary cause of the average surface temperature increases and the higher concentration of atmospheric carbon dioxide described by the IPCC.⁸

The effects of increased atmospheric GHGs are not fully understood; however, the IPCC expects that we will experience rising sea levels, decreasing snowpack, increasing rates of glacial melting, more droughts, and higher frequency of extreme weather events. These changes in climate increase the risk of plant and animal extinction, as well as decrease food production.⁹

^d The results show that the rate of emissions reduction ranges from 0.06 tCO₂e per capita annually to 0.20 tCO₂e per capita each year. The mean and the mode is 0.12 tCO₂e per capita per year. The range of average emission reduction rates is 0.10 to 0.13 tCO₂e per capita annually.

According to *Climate Change Impacts and Adaptation: A Canadian Perspective* from Natural Resources Canada, British Columbia is already facing a number of climate change effects. In 2001, British Columbia experience the driest winter on record, with precipitation levels at only half of historic averages. Furthermore, snow packs in the southern regions of the province were at or exceeded historically low levels. The report anticipates that British Columbia will experience increased spring flood risks and decreased river flows caused by glacier retreat and eventual disappearance. In fact, glaciers in BC are currently retreating at the most rapid rate in 8,000 years.¹⁰ As a result, British Columbia may have reduced hydroelectric potential, more wildfires, less productive fisheries, and less potable water. Already, almost one-fifth of BC's surface water resources are approaching their supply capacities, which means that the rate of water extraction is approaching the amount of surface water available to meet demand. Furthermore, parts of the Fraser Delta, Victoria, and Vancouver are susceptible to complications from ocean-level rise, including the breaching of dykes, flooding, and erosion.¹¹

The British Columbia Ministry of Environment notes that between 1950 and 2001, BC's average annual temperature increased by 1.5 degrees Celsius (C). Overall, BC is experiencing warmer and drier winters. At the same time, the Ministry observed that lakes and rivers become free of ice earlier in the spring. Furthermore, at least two southern B.C glaciers have retreated by more than a kilometre each, which in 50 years is extremely fast by glacial standards. Also, the Middle Fraser Basin experienced 47% reduction in snowpack between 1956 and 2005. The Fraser River is discharging more water sooner in the year, which could make less water available for late summer. Average sea levels have risen by 4 to 12 cm, and high water sea levels have increased in Vancouver. Finally, average coastal sea surface temperatures are higher by 0.3 to 0.9 degrees C.¹²

As a result, climate change poses significant threats in British Columbia to human and ecological health, as well as economic productivity, especially in the fisheries and forestry sectors. The two approaches that communities can follow to address climate change are: 1) reducing GHG emissions to prevent the increased atmospheric GHG concentrations; and, 2) identifying and implementing strategies to adapt to changing climate conditions that are likely to occur with current atmospheric GHG concentrations. Although some communities are developing climate change adaptation plans, the predominant approach in British Columbia favours reducing GHG emissions.

While Canadian provinces influence the supply of electricity, natural resource project approvals, the administration of municipalities, and transportation options, municipalities control the allocation of urban land uses and transportation infrastructure and are therefore an important partner in reducing GHG emissions. The British Columbia Climate Action Secretariat commissioned MK Jaccard and Associates (MKJA) to conduct an analysis of draft policy recommendations that were considered by the Climate Action Team in 2008 to determine to what extent the policies will enable British Columbia to reach its GHG emissions reduction targets. As outlined in *Climate Action Plan*, legislated targets, the revenue-neutral carbon tax, emissions trading system, a carbon-neutral public sector, and partnerships with other jurisdictions are estimated to achieve 73 percent of BC's 2020 emissions reduction target.¹³

MKJA examined a number of policies included in the *Climate Action Plan* to arrive at this number; however, the specific policies analyzed are not identified. MKJA states, "The analysis was not comprehensive, that is it did not include all of the announced policies, but instead focused on those with the greatest potential to generate significant GHG reductions at a reasonable cost."¹⁴ Furthermore, the *Climate Energy Plan* states:¹⁵

The CIMS model [or MKJA Model] is an energy-technology model and does not include emissions associated with land use change. As a result, the baseline emissions used [in the Climate Action Plan] are approximately 4 million tonnes greater than those reflected in the results from the CIMS model. The B.C. government included emissions associated with land use change in its baseline data in order to accurately recognize their environmental impact, and to ensure that this impact is addressed through policy (in this case, through a commitment to net zero deforestation).

MKJA also considered additional policies that BC could undertake to achieve the 2020 target.^e Those policies were more related to actions within the realm of local governments and included: revising the residential and commercial building codes, zero-emission buildings for those built after 2015, incentives to retrofit existing commercial buildings, electric oil and gas fields and pipelines, doubled mode share for walking and cycling, and emissions pricing as a core policy.¹⁶ MKJA expect that these additional measures could reduce emissions by a further 8.1 million tonnes (Mt) by 2020, bringing total emissions reductions in the *Climate Action Plan* to 30 Mt. If 69 Mt CO₂e is used as BC's 2007 emissions baseline (see Methods), the Province will have to reduce emissions a further 900,000 tonnes beyond the 8.1 Mt of additional reductions identified by MKJA.

Thus, municipalities play a role in BC's attainment of its 2020 emissions reduction target. First, municipalities are "other jurisdictions" mentioned in the *Climate Action Plan*. Second, a significant number of policies identified by MKJA that would reduce BC's emissions by a further 8.1 Mt are in the purview of local governments. Finally, emissions could be reduced by 18 Mt if BC municipalities achieve the Province's target of reducing 2007 emissions by 33% by 2020, using 2007 Updated Community Energy and Emissions Inventory (CEEI) baseline data. The Government of British Columbia estimates that local governments can influence about 45 percent of emissions,¹⁷ which is not surprising considering that in 2006 over a third of emissions in BC originated from transportation.¹⁸ However, as the CEEI data for each municipality includes emissions outside of a community's purview, the Province is actually asking municipalities to influence more than 80 percent of the province-wide emissions by 2020.^f Thus, local governments will need assistance from senior levels of government to achieve community-wide emissions reduction targets.

The Approach to Reducing GHG Emissions in British Columbia

In British Columbia, a mix of regulation, voluntary commitment, and financial and technical assistance undertaken in partnership between various levels of government, associations, and businesses is requiring and encouraging BC municipalities to establish a greenhouse gas emissions reduction target and identify actions to meet the target. To describe the array of policies affecting municipalities in British Columbia, this section first outlines how BC is addressing climate change. Then, it describes the mandatory and voluntary programs available to municipalities. As many of these multi-agency programs involve many strategies, such as

^e Appendix I of the *Climate Action Plan* contains MK Jaccard A *Quantitative Analysis of British Columbia's Climate Action Plan*. This analysis is different from the standalone version of *Quantitative Analysis* as it considers policies announced in the *Climate Action Plan* rather than additional policies. The announced policies are: the revenue-neutral carbon tax at \$30/ tonne in 2012 and subsequent years; regulations on new residential and commercial buildings to be more efficient; key transportation policies including – California tailpipe standards (including post-2016); renewable content in gasoline and diesel, a public transit system as announced in the Transit Plan; landfill gas regulation; a directive to BC Hydro for zero emissions from electricity generation; and, a cap and trade system. *Climate Action Plan* p. 58.

^f 18 Mt is 81 percent of 22.2 Mt, which is one third of British Columbia's 2007 emissions

voluntary commitments, financial incentives, and technical assistance, it is most clear to separate them by mandatory and voluntary programs.

Province's Approach

The Province of British Columbia has established a framework that supports a Provincial emissions reduction target, cap and trade program, vehicle emissions standards, renewable energy policies, local government requirements, and a carbon tax with financial and technical assistance.

The Province passed a series of regulations in 2007-8 to reduce greenhouse gas emissions. The *Greenhouse Gas Reductions Targets Act (Bill 44)* establishes emissions reduction targets for 2020 and 2050 and mandates interim targets.¹⁹

- 6% below 2007 level by 2012
- 18% below 2007 level by 2018
- 33% below 2007 level by 2020
- 80% below 2007 level by 2050

Bill 44 also requires that public sector organizations become carbon neutral by 2010, with the purchase of carbon offsets permitted through the cap and trade system.²⁰ It applies to all provincial public sector operations, including government ministries and agencies, schools, colleges, universities, health authorities and Crown corporations.

The *Greenhouse Gas Reduction (Cap and Trade) Act* implements the cap and trade system within the framework of the Western Regional Initiative.⁸ In cap and trade systems, emitters are given or auctioned allowances, which they can buy or sell. If their actual emissions are lower than the allowable cap, they can sell their remaining allowances. If their emissions are higher than the cap, they have to buy surplus emissions allowances. The total number of allowances is capped to a total emission amount. The result of such a system is to financially reward cleaner and innovating industries, while giving more polluting industries time to reduce emissions. In April 2007, British Columbia joined the Western Climate Initiative (WCI). The Initiative, which currently includes seven U.S. states and four Canadian provinces as full members, was established to develop “a design for a regional market-based multi-sector mechanism, such as a load-based cap-and-trade program.”²¹ The initiative’s members agreed to a regional GHG emission reduction goal of 15 percent below 2005 levels by 2020. The goal is an average of members’ own goals, and as such, does not supersede British Columbia’s own 33 percent below 2007 levels by 2020 goal.²² The Initiative covers large emitters in five sectors. The emitters will be able to purchase a capped number of offsets. Beginning in 2012, sectors include i) electricity generation, ii) industrial and commercial fossil fuel combustion, and iii) industrial process emissions; iv) Gas and diesel consumption for transportation and v) residential fuel use will be added in 2015.

In terms of assistance, the British Columbia’s *Balanced Budget 2008* allocated in excess of \$1 billion over four years for action on climate change.²³ BC’s *Balanced Budget 2009* allocated an additional \$75 million over three years to extend the Innovative Clean Energy Fund to advance investments in green technology and \$15 million to rebate carbon tax revenues for local governments that commit to achieving carbon neutrality by 2012.²⁴

⁸ The Western Climate Initiative (WCI) represents US, Canadian, and Mexican states, provinces, and tribes who comprise approximately 20 per cent of the U.S. economy, 73 per cent of Canada’s economy, and 50 per cent of all GHG emissions in Canada. The WCI program aims to reduce emissions by 15% below 2005 levels (over 25,000 tonnes/yr) starting January 1, 2012. <http://westernclimateinitiative.org/>

The *Balanced Budget 2008* provided for, among other programs: \$98 million for the new LiveSmartBC: Efficiency Incentive Program, the Pacific Carbon Trust, a \$14 billion Provincial Transit Plan, a \$25 million Innovative Clean Energy (ICE) Fund, a \$25 million Bioenergy Network, and a \$94.5 million endowment to create the Pacific Institute for Climate Solutions, and a \$161 million reforestation program.²⁵ BC's carbon tax is a revenue-neutral tax on each tonne of GHGs emitted from the burning of fossil fuels. The tax is applied and collected at the wholesale level, starting at a rate of \$10/tonne CO₂e in 2008 and rising in annual \$5 increments to \$30/tonne in 2012. Revenues are returned to taxpayers through reductions to income tax, small business tax, and corporate tax, low-income climate action credits, and "the climate dividend," which was a one-time payment to BC residents.²⁶ The Pacific Carbon Trust is a provincial Crown corporation set up to purchase GHG offsets to meet the carbon neutral public sector operations requirement of Bill 44.

In 2008, the Government of British Columbia passed a series of regulations in preparation for the *Climate Action Plan*. The *Greenhouse Gas Reductions Target Act*, *Cap and Trade Act*, *Green Communities Act*, and *Carbon Tax Act* have already been described. The *Greenhouse Gas Reduction (Emissions Standards) Statutes Amendment Act*,²⁷ to regulate landfill gas. The *2008 Utilities Commission Amendment Act*²⁸ encourages more low-carbon energy generation projects and require the Province and public utilities achieve electricity self-sufficiency by 2016, maintaining self-sufficiency each year thereafter. Although the act does not define self-sufficiency, the focus of the act is to encourage public utilities to implement demand-side management programs and develop en electricity transmission and generation capacity that can meet projected demand. The *Greenhouse Gas Reduction (Vehicle Emissions Standards) Act*²⁹ is enabling legislation that allows British Columbia to create emission standards equivalent to those in California. The *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act*³⁰ is enabling legislation that aims to decrease the carbon content of fuels. The act has the target to reduce the average carbon intensity of fuel by 10 percent by 2020. It also requires that gasoline and diesel consist of 5 percent renewable fuel. Finally, the Province amended the BC Building Code in 2008 with a new Part 10 that addresses water and energy efficiency, with the aim of reducing energy consumption and resulting GHG emissions.³¹

Role for Local Governments

Mandated

The *Green Communities Act*, passed in May 2008, gives local governments more power to regulate GHG emissions through development permits.³² However, the act also requires local governments and regional districts to include GHG emission reduction targets, policies, and actions into their Official Community Plans by May 31, 2010 (May 31, 2011 for regional districts to incorporate into Regional Growth Strategies):³³

An official community plan must include targets for the reduction of greenhouse gas emissions in the area covered by the plan, and policies and actions of the local government proposed with respect to achieving those targets.

Before the *Green Communities Act*, Official Community Plans could designate development permit areas for the protection of the natural environment, its ecosystems, and biological diversity. The *Green Communities Act* now allows the creation of development permit areas for the establishment of objectives to promote:³⁴

- Energy conservation
- Water conservation
- Reduction of greenhouse gas emissions

These three development permit areas may include requirements for landscaping, the siting of buildings and other structures, form and exterior design of buildings and other structures, specific features in the development, and machinery equipment, and systems external to buildings and other structures. It is important to note that the development permit areas for energy and water conservation and the reduction of greenhouse gas emissions only address the exterior of buildings. As previously mentioned, the BC Building Code was amended in September 2008 to address water and energy efficiency. Since the building code is established by the Province, municipalities can enforce building standards, but they cannot establish standards even if they are more stringent than the Provincial code.

Voluntary

A number of voluntary programs exist to aid municipalities in reducing their emissions, including: the BC Climate Action Charter, the Partners for Climate Protection Initiative, Community Action on Energy and Emissions, and the BC Hydro PowerSmart program.

BC Climate Action Charter

The BC Climate Action Charter, a non-binding commitment with financial incentives, presents a popular voluntary commitment for local governments. Out of the province's 188 municipalities, 176 have signed the Charter, which commits municipalities to becoming carbon neutral in operations by 2012. The Charter binds local governments to measuring and reporting on their community's GHG emissions and to creating compact and more efficient communities. Signatories of the Climate Action Charter are eligible to receiving grants to offset the carbon tax that they pay through the Climate Action Revenue Incentive Program (CARIP).³⁵

Corporate operations include activities that are under control of or directly managed by municipalities: energy use from buildings, employee travel, and corporate fleets. The corporate emissions inventory is calculated utilizing data collected and reported by municipalities.

Partners for Climate Protection Initiative

The Partners for Climate Protection (PCP) Initiative is a technical and financial assistance program. The Initiative is a partnership between the Federation of Canadian Municipalities (FCM) and ICLEI – Local Governments for Sustainability.^h FCM developed the Partners for Climate Protection Initiative to guide municipal governments towards reducing GHG emissions. The program started in 1995 as FCM's "20% Club," in which member municipalities committed to reducing their corporate emissions to 20 percent below 1994 levels. Now, the PCP Initiative defines a process for municipal governments to quantify their GHG emissions and then to develop and implement action plans that can achieve emissions reductions. PCP receives financial support from FCM's Green Municipal Fund.

The PCP Initiative consists of five milestones, separated by municipal or corporate operations and community activities:

1. Conduct a baseline emission analysis
2. Establish GHG reduction targets
3. Develop a local action plan outlining action items to reduce energy use and greenhouse gas emissions
4. Establish a program to implement action items that will reduce GHG emissions
5. Continue to monitor, verify, and report GHG reduction achievements and amend the action plan accordingly to reflect new strategies

^h ICLEI was founded in 1990 as the 'International Council for Local Environmental Initiatives.'

As of May 2010, over two hundred municipalities from across Canada have joined the PCP Initiative including 63 in British Columbia. The majority of the PCP participating municipalities in BC are in the process of collecting baseline information or developing their management plans (Milestones 1, 2, and 3). Only the City of Vancouver and the Resort Municipality of Whistler have completed the program in British Columbia. Communities currently implementing action plans include: Dawson Creek (corporate only), Township of Langley (corporate only), and City of North Vancouver (corporate and community).

PCP is the Canadian component of ICLEI's Cities for Climate Protection (CCP) network, which involves more than 900 communities worldwide.

Community Action on Energy and Emissions

The BC Government and the Fraser Basin Council established the Community Action on Energy and Emissions (CAEE) program in 2005. The program aims to provide financial and technical support to local government to undertake community level energy efficiency, energy conservation and emission reduction measures through innovative policy and planning initiatives. CAEE program is complimentary to the PCP framework and is a key element of the Ministry of Energy, Mines and Petroleum Resources' *Energy Efficient Buildings Strategy: More Action, Less Energy*.³⁶ Since the program's inception, 54 communities have participated and received approximately \$1.7 million.

The program has been administered in phases, with each phase focusing on different programs:

- Phase 1 – 2004-5
- Phase 2 – 2006-7 (Pilot)
- Phase 3 – 2006-7
- Phase 4 – 2007-8 (Gold Program)
- Phase 5 – 2007-8
- Phase 6 – 2008-9
- Phase 7 – 2009-10 (Gold Program)

Community Energy and Emissions Inventory Reports³⁷

Community Energy and Emissions Inventory (CEEI) Reports are a result of a partnership between the Ministry of Environment, BC Hydro, Terasen, and the Ministry of Transportation and Infrastructure. The reports provide a province-wide solution to assist local governments in BC to track and report annual community-wide energy consumption and greenhouse gas (GHG) emissions. For 2007, the reports provided high-level energy and GHG emission estimates in three primary sectors – on-road transportation, buildings, and solid waste. For regional districts, the CEEI Reports provide estimates of land-use change from deforestation activities and enteric fermentation from livestock under the agricultural sector. The CEEI reports do not account for all emissions produced within or attributable to a community, because the reports are intended to be comparable between communities. Additional emissions accounting could prevent the CEEI methodology from being reproducible across communities and time.³⁸

The CEEI report data are calculated using methods distinct from the Province's emissions inventory and the FCM Partners for Climate Protection inventory guidelines. In fact, the CEEI technical methods and guidance document cautions against directly comparing community-level CEEI reports and provincial reports, because the data aggregation and methods differ substantially.³⁹ CEEI reports include three main sources of GHG emissions:

- Direct emissions from burning fossil fuels
- Indirect emissions from generating electricity

- Emissions from the decomposition of biomass in landfills

CEEI reports only include the following greenhouse gases: carbon dioxide, methane, and nitrous oxides. For buildings, electricity and natural gas data are calculated using actual energy consumption data provided by BC Hydro, FortisBC, Terasen Gas, and Pacific Northern Gas. Community-level consumption and emissions for heating oil, propane, and wood is estimated by subtracting electricity and gas consumption from the total energy required for heating and other uses. A ratio separates the emissions from heating oil, propane, or wood. Emission estimates for on-road transportation are based on activity data, such as the number and type of vehicles licensed and vehicle kilometers traveled, provided by the Insurance Corporation of British Columbia. Natural Resources Canada provides fuel consumption rates. Solid waste estimates are based on the mass of solid waste tipped at landfills, divided by the amount of waste attributable to municipalities and unincorporated areas. Large industrial facilities are omitted, and emissions from deforestation and livestock are included as memo items for regional districts only.⁴⁰

On May 31, 2010, the Draft 2007 CEEI reports were updated, and the updated values are used in this paper.ⁱ A main difference between the draft and updated figures is changes in industrial emissions. The draft reports generally included GHG emissions from the electricity use of industrial facilities; however, much of that information has been omitted in the updated reports out of anonymity concerns for large emitters. Other differences include: updated methodology and improved data; estimates for residential heating oil, propane use, and wood use; estimates of land-use change from deforestation; estimates of enteric fermentation from livestock; and, supporting indicators, like availability of park space or commute times, to aid local governments in framing emissions reduction policies. Overall as a result of the updates, on-road transportation consists of a larger portion of, and in most cases a majority of, GHG emissions in each community.

Starting this year, the Ministry of Environment anticipates that CEEI Reports will be produced every two years with updates to the 2007 base year inventories. The Reports are intended to support local governments in three ways:

- Fulfill the second commitment of the *Climate Action Charter*: “measuring and reporting on their community’s GHG emissions profile”
- Establish a base year to help communities identify targets, policies, and actions to meet the *Green Communities Act* requirements
- Enable municipalities to achieve the community portion of Milestone One for the Partners for Climate Protection Program.

BC Hydro PowerSmart Program

BC Hydro has an array of programs designed for residential, commercial, and industrial customers that promote energy conservation through incentive and other voluntary programs. For industrial customers, BC Hydro designates Key Account Managers to work with each customer individually. For commercial and residential customers, BC Hydro has hired six regional PowerSmart Specialists. The PowerSmart Specialists are responsible for:

- Identifying and activating community based conservation initiatives;
- Educating local governments, community and environmental organizations, and service clubs in their region about energy conservation;

ⁱ Final reports are expected in Q3 2010.

- Promoting and in some cases supporting the delivery of existing Power Smart programs and campaigns; and
- Engaging in developing deeper relationships with Power Smart's trade allies in their regions, such as retailers, distributors, and contractors, to further address the availability barrier across the province.

The Power Smart Sustainable Communities Program offers a range of services to help local governments make smart choices about energy management and efficiency community-wide. The program provides funds and resources for:

1. **Community Energy and Emissions Planning:** A comprehensive, long-term plan designed to limit energy consumption and the creation of greenhouse gases, and to improve energy efficiency.
2. **Community Energy Manager:** A designated resource in the local administration responsible for the CEEP, or other energy solutions and policy options.
3. **District Energy Systems:** Funding for pre-feasibility and feasibility studies to assess the community's needs and determine whether a district energy system is a viable choice for energy efficiency and community benefits. In some cases, capital incentives may also be available to reduce a system's payback period.

BC Hydro also offers a ranking system. Power Smart Partners in the Government rankings include municipalities, Crown corporations, and government ministries. Rankings were last updated on June 18, 2010.⁴¹ The ranking lists the year the partner joined the program, points accrued for being an “enabler,” and credits given for implementation. For enabler credits, each time a Power Smart Partner completes an initiative that enables them to identify an energy savings opportunity, they earn one credit. For implementation credits, each time a Power Smart Partner completes an energy conservation project, they earn one credit.

Other programs

Other programs that encourage local governments to reduce GHG emissions exist in BC. The Remote Communities Clean Energy Program serves the 70 communities that are not connected to the major natural gas or electricity grid.⁴² BC Solar for Schools is a pilot project that helps schools to install solar power.⁴³ The Towns for Tomorrow program provides \$21 million over three years for capital projects. Smart Development Partnership Program (grants up to \$50,000) and BC Local Government Grants program (grants up to \$10,000) provide funding for projects that support sustainable land-use planning, community energy planning, and GHG reductions.⁴⁴

Municipal Response to Bill 27 to Date

As of July 2010, reports on the extent to which BC municipalities met the May 31 deadline to submit GHG emissions reduction targets is not available. Thus for the purposes of this analysis, a group of municipalities in British Columbia (the study group) has been selected to evaluate their compliance with the *Green Communities Act*. The purpose of the analysis is to ascertain: 1) whether emissions reduction targets exist in municipal Official Community Plans; and, 2) how emission reduction targets vary between communities.

Metro Vancouver, Fraser Valley Regional District, Capital Regional District Study Group

Rather than examine each of the 160 municipalities and 28 regional districts in British Columbia, the selected municipalities meet the criteria of more than 25,000 residents in the

Province's three most populous regional districts: Metro Vancouver, Fraser Valley Regional District, and Capital Regional District. Furthermore, the \$14 billion Provincial Transit Plan outlined in the *Climate Action Plan* identifies Metro Vancouver as the recipient for new rapid transit lines, and Victoria for a RapidBus line.⁴⁵ The Fraser Valley Regional District and the Capital Regional District are the two other most populous districts in British Columbia. Communities that have made significant progress towards reducing GHG emissions, through the creation and implementation of community emissions reduction plans or participation in programs like Partners for Climate Protection, but are not included in this analysis are The Resort Municipality of Whistler and Dawson Creek. Squamish, Langford, and Prince George have also made substantial process, but do not meet the criteria of this report.

The following twenty communities meet the criteria and are referred to as the “study group”:

- | | | |
|---------------------|------------------------------|--------------------|
| 1) Abbotsford | 8) Maple Ridge | 14) Port Moody |
| 2) Burnaby | 9) Mission | 15) Richmond |
| 3) Chilliwack | 10) New Westminster | 16) Saanich |
| 4) Coquitlam | 11) North Vancouver City | 17) Surrey |
| 5) Delta | 12) North Vancouver District | 18) Vancouver |
| 6) Langley | 13) Port Coquitlam | 19) Victoria |
| 7) Langley Township | | 20) West Vancouver |

Methods

The GHG emissions reduction targets of the aforementioned communities are evaluated in a combined textual and numerical analytical approach.

First, the author gathered the Community Energy and Emissions Inventory (CEEI) for each community. The CEEI data set is the Updated 2007 CEEI Report. While a number of communities in the Study Group used the Draft 2007 CEEI Report data to formulate their GHG reduction plans, other communities conducted their own emission inventories earlier in the decade. For the sake of consistency and given that the Updated 2007 CEEI Reports represent improved methodology and information compared to the Draft data, the Updated 2007 CEEI Reports are used for each community's 2007 baseline data in the analysis. As Vancouver was the only municipality to include emission reduction targets with a 1990 baseline, the author use the City of Vancouver's self-reported 1990 emissions.⁴⁶

Afterwards, the greenhouse gas reduction targets for each community were located. For many communities, the targets have been integrated into the Official Community Plan. However, a few communities are in the process of updating their OCPs. Consequentially, these communities either do not have targets or the targets exist in other documents. To ascertain the rationale, if any, for a community's selection of its GHG emissions reduction target, the author examined corporate and community climate action plans and related documents, including relevant Council minutes and documents.

Finally, the author combined the CEEI data with the community-reported GHG targets and other pertinent information. While many communities chose to adopt the Province's emissions reduction target of 33 percent of 2007 levels by 2020 and 80 percent of 2007 levels by 2050, other communities formulated their own targets. These targets vary in terms of enumerating absolute or relative emissions reductions. Also, some refer to aggregate emissions while others are per capita emissions. Furthermore, while most communities state emissions reductions targets in terms of an overall reduction by a certain year, a few communities have annual reduction targets.

So, in order to compare targets between communities, these varying targets had to be normalized. Given the consistency, reliability, and availability of CEEI data, the author used the following process to calculate each community's expected rate of emissions reductions. Rate of emissions reduction is a useful metric, because it is straight forward to calculate on a linear basis. Furthermore, the method works the same for communities that have one target or three targets. Finally, it clearly shows how aggressive or practical a community's emission reduction target may be. A summary of methods is as follows:

1. Used 2007 baseline from the Updated 2007 CEEI Report to record 2007 baseline emissions data in tCO₂e. Fortunately, each community except Vancouver used 2007 as the baseline year. Recorded tCO₂e 2007 as per capita values using 2007 population data in Updated CEEI report.
2. Ascertained each municipality's emission reduction goal from the Official Community Plan or Council Reports
3. Used emission reduction goal and baseline tCO₂e to calculate community's target emissions by reduction "maturity" date. Recorded aggregate future year emissions and per capita emissions. Populations for future years were calculated using the method described below.
4. Calculated rate of emissions reduction for each community in aggregate and per capita terms by plotting each community's emission reduction trajectory and calculating the average (mean) slope (linear) of the path

As a note, Table 3 estimates what each community's 2020 and 2050 per capita emissions would be like, assuming linear population growth and linear aggregate emissions reductions. The per capita emissions for 2020 and 2050 were calculated by dividing the estimated aggregate emissions by estimated population. In all cases, the additional data points changed the rate of per capita emissions reduction, because the rate of per capita emissions reduction is calculated by the proportion of two linear trends. As these calculations are simple estimates, the new rate of emissions reduction are reported in Table 3, but the Results and Analysis sections refer to the original rate.

Overall, the results for each community were compared to each other and British Columbia as a whole. Finally, each community was evaluated against a summary standard: reduction to less than one tonne CO₂e per capita by 2050. Achieving one tonne CO₂e in emissions per capita by 2050 is not a stated provincial target. However, according to the University of New South Wales Climate Change Research Centre, average global per capita emissions will need to be reduced to less than one tonne per capita by 2050. Reaching one tonne per capita in 2050 will likely stabilize average global temperature at a maximum of 2°C above pre-industrial temperatures. Two degrees is widely considered to be a tipping point, after which runaway global warming occurs.⁴⁷

Corporate GHG emissions reduction targets for communities were omitted for two reasons. First, corporate operations influence one or two percent of emissions in a community. Second, although these emissions can be explained in per capita terms using the community's population, the result is not very meaningful.

Population Estimates

For per capita emissions, British Columbia and the municipality's population in the future reduction deadline year were estimated. British Columbia's 2012, 2016, and 2020 populations have been forecasted by BC Stats.⁴⁸ The author estimated the Province's 2050 population using linear regression of BC 2009 population statistics ranging from 1971 measures to 2036 estimations. For communities in Metro Vancouver, the Regional District estimated population

projections for 2021, 2031, and 2041 in November 2009 in preparation for the new Regional Growth Strategy. The author used linear regression to estimate future populations for years not included in the Metro Vancouver document, such as 2020 or 2050.⁴⁹ In the Fraser Valley Regional District, the author extrapolated data from population estimates made for the District by an Urban Futures report.⁵⁰ In the Capital Regional District, Victoria reported an estimated 2020 population in its OCP.⁵¹ Saanich's OCP reports Census data from 1996, 2001, 2006, and 2026 (estimated).⁵² The author extrapolated a value for 2000 using linear regression.

British Columbia's 2007 Baseline Emissions

While the *Technical Methods and Guidance Document for 2007 CEEI Reports* states that comparing community-level emission inventories to the Province's GHG inventory is "inappropriate,"⁵³ comparing British Columbia's 2007 baseline emissions between Provincial documents is just as challenging. The *British Columbia Greenhouse Gas Inventory Report 2007* was published in July 2009 and states that the province's 2007 baseline emissions were **67.3 Mt CO₂e**, which is the value cited in this report.⁵⁴ Earlier reports from the Ministry of Environment cite Environment Canada emissions data for the province: 65.9 Mt in 2005, or 15.5 tonnes per capita.⁵⁵ This would be 66.8 Mt CO₂e using the per capita figure with the 2007 population count.

Neither the *Climate Action Plan* nor the two MKJA studies explicitly identify British Columbia's 2007 emissions. The MKJA report included in the *Climate Action Plan* uses 2005 GHG emissions levels from Environment Canada's 2005 Greenhouse gas inventory, which is 64.3 Mt CO₂e.⁵⁶ MKJA estimates that emissions with \$85/barrel energy prices will be 74.3 Mt CO₂e in 2020, an emissions growth of 16 percent. At the same time, MKJA estimates that annual emissions reductions from announced policies will be 21.9 Mt CO₂e in 2020.⁵⁷ Unlike the *Climate Action Plan*, the MKJA report does not mention a 9 Mt gap or that BC will reach 73 percent of its 2020 target.

However, the *BC Climate Action Plan* cites different statistics. It states that the "business as usual" scenario for BC emissions would result in 78 Mt CO₂e in 2020, compared to the 74.3 Mt cited above. So, it is not exactly clear how this "73 percent of the 2020 target" figure is calculated. Using the following information from the *Climate Action Plan*, it would appear that BC's 2007 emissions were approximately 69 Mt CO₂e:⁵⁸

- Policies already announced as part of the B.C. *Climate Action Plan* are expected to result in a significant change from the Business As Usual (BAU) scenario, resulting in an estimated emissions level of 55 Mt (instead of 78 Mt BAU) by 2020.
- To achieve a 33 percent reduction, BC must reduce emission levels to 46Mt by 2020.
- BC will have a 9 Mt emissions "gap" between the reduction target (46 Mt) and the estimated emissions from implementing the *Plan* (55 Mt).

It is important to note that methodological differences exist between the Province's calculation of its emissions and the CEEI reports for communities, so directly comparing community CEEI data with provincial emissions data does not yield accurate results. For reference, summing the 2007 CEEI emissions for all British Columbian municipalities yields 55.83 Mt CO₂e, which is substantially below 67.3 Mt, 64.3 Mt, 66.8 Mt, or 69 Mt. The difference is almost certainly caused by methodological differences. The *British Columbia Greenhouse Gas Inventory Report 2007* states that emissions included in the inventory originated from energy, industrial processes, solvents and other product use, agriculture, waste, and net deforestation. The difference is significant, because the CEEI reports are given to municipalities for their use in establishing GHG emission reduction targets.

If the methods to calculate emissions for CEEI reports are substantially different than the methods for federal or provincial inventories, then the question remains why the CEEI reports encompass areas beyond the influence of municipal governments. To put it another way, the Government of British Columbia estimates that local governments can influence about 45 percent of emissions both directly and indirectly.⁵⁹ However, the proportion of province-wide emission that local governments may directly and indirectly impact could be different when calculating emissions with the CEEI methodology. If it is significantly different, the Province could consider using the same methodology at the local and province level to permit comparison between the two. Or, the local level methodology could be updated to better reflect emissions that can be influenced by local governments.

Results

The following table summarizes the GHG emissions reduction targets for the subgroup. “Provincial” in the second column indicates that the municipality adopted the same targets as the Province: a 33 percent reduction from 2007 levels by 2020, and an 80 percent reduction from 2007 levels by 2050. “Modified Provincial” means that the municipality adopted only the Province’s 2020 target. “Aggregate” in the third column means that the municipality’s target refers to a reduction in total emissions in a target year compared to the total emissions in the base year. “Per capita” emissions mean the target is expressed as a per-person value rather than a total value. If the target is written as a percentage reduction compared to a base year, the table states “relative.” If the target is expressed as a specific number of tCO₂e, then the table will indicate this with “absolute.” The final column, “Percentage Per Capita GHG Reduction” is the per capita annual rate of emissions reduction (the normalized value) divided by the 2007 per capita emissions. It illustrates the percentage of the base year’s emissions that have to be reduced each year to meet the proposed targets.

The variable for comparison, rate of emissions reduction per capita, represents a normalized value for each municipality’s GHG target, permitting the comparison of each community’s target.

Results of this analysis are organized into tables and city-by-regional district summaries. The summaries describe the city’s target, broad actions that it has taken regarding climate change, and motivations, if any, for choosing its GHG reduction target.

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Table 1: Summary of GHG Targets by Regional District

Municipality	GHG Target	Aggregate or Per Capita	Absolute or Relative	Target in OCP	2007 T CO ₂ e Per Capita (CEEI)	Rate of Emissions Reduction (T CO ₂ e per capita / yr) ^j	Percentage Per Capita GHG Reduction
British Columbia	33% by 2020 and 80% by 2050 below 2007	Aggregate	Relative	N/A	15.61	0.31	1.99%
Metro Vancouver							
Burnaby	5% below 2007	Aggregate	Relative	May 3 2010	6.04		
Coquitlam	15% by 2031 and 30% per capita by 2021 below 2007	Aggregate & Per Capita	Relative	May 10 2010	5.41	0.12	2.22%
Delta	Provincial	Aggregate	Relative	May 10 2010	9.22	0.17	1.84%
Langley	20,992 T CO ₂ e below 2017 forecast, 16% below 2007	Aggregate	Absolute & Relative	May 31 2010	6.85	0.20	2.92%
Langley, Township of	10% below 2007 by 2021	Per Capita	Relative	May 3 2010	8.13	0.06	0.74%
Maple Ridge	Provincial	Aggregate	Relative	May 11 2010	5.00	0.10	2.00%
New Westminster	None (Corporate only)				4.62		
North Vancouver, District of	None				4.79		
North Vancouver, City of	15% by 2020 and 50% by 2050 below 2007	Aggregate	Relative	May 17 2010	4.84	0.08	1.65%
Port Coquitlam	8% below 2007 by 2017	Aggregate	Relative	May 25 2010	5.74	0.12	2.09%
Port Moody	10% below 2007 by 2017	Aggregate	Relative	No, as of July 2010	4.36	0.11	2.52%
Richmond	Provincial	Aggregate	Relative	May 17 2010	6.19	0.12	1.94%
Surrey	Modified Provincial ^k	Per Capita	Absolute	May 17 2010	5.67	0.10	1.76%
Vancouver	Modified Provincial ^l	Aggregate	Relative	May 20 2010	4.82	0.08	1.66%
West Vancouver	Provincial	Aggregate	Relative	June 21 2010	6.41	0.12	1.87%
Fraser Valley							
Abbotsford	20% by 2025 and 45% by 2040 below 2007	Per Capita	Relative	May 10 2010	7.84	0.17	2.17%
Chilliwack	None				7.29		
Mission	Modified Provincial ^m	Aggregate	Relative	May 17 2010	6.61	0.13	1.97%
Capital							
Saanich	Modified Provincial	Aggregate	Abs. & Rel.	May 17 2010	3.65	0.10	2.74%
Victoria	Modified Provincial	Aggregate	Relative	May 13 2010	4.68	0.13	2.78%

^j Average Rate of Emissions Reduction for entire sub group is 0.12 tonnes CO₂e per capita per year^k Provincial targets on per capita basis: 3.29 tons CO₂ equivalent per capita by 2020 and less than 0.98 t CO₂ equivalent by 2050.^l Reduce Community emissions by 33% below 2007 levels by the end of 2020 and 80% below 1990 levels by the end of 2050^m Reduce Community emissions by 20% below 2007 levels by the end of 2020 and 80% below 2007 levels by the end of 2050

Table 2: Summary of GHG Emissions & Reductions by Regional District

Municipality	2007 Population	T CO ₂ e in 2007	T CO ₂ e pc in 2007	Reduction Target Year	Reduction Target Year Population	T CO ₂ e in Target Year	T CO ₂ e pc in Target Year	Rate of Emissions Reduction (T CO ₂ e per capita / yr)
British Columbia	4,310,305	67,300,000	15.61	2012	4,634,700	63,262,000	13.65	0.31
				2016	4,889,500	55,186,000	11.29	
				2020	5,148,500	45,091,000	8.76	
				2050	6,924,518	13,460,000	1.94	
Metro Vancouver								
Burnaby	214,919	1,298,362	6.04	Unknown				
Coquitlam	120,249	650,213	5.41	2021	176,000	666,170	3.79	0.12
				2031	213,000	552,681	2.59	
Delta	99,293	915,158	9.22	2020	108,903	613,156	5.63	0.17
				2050	130,043	183,032	1.41	
Langley	25,167	172,441	6.85	2017	29,585	144,850	4.90	0.20
Langley, Township of	99,012	805,271	8.13	2021	146,000	1,068,685	7.32	0.06
Maple Ridge	72,502	362,616	5.00	2020	94,676	242,953	2.57	0.10
				2050	146,641	72,523	0.49	
New Westminster	61,778	285,135	4.62	No Target				
North Vancouver	85,966	411,908	4.79	No Target				
North Vancouver, City of	47,277	228,982	4.84	2020	49,733	194,635	3.91	0.08
				2050	73,171	114,491	1.56	
Port Coquitlam	54,971	315,797	5.74	2017	64,161	290,533	4.53	0.12
Port Moody	29,945	130,587	4.36	2017	35,753	117,528	3.29	0.11
Richmond	186,376	1,153,658	6.19	2020	221,072	772,951	3.50	0.12
				2050	300,670	230,732	0.77	
Surrey	422,873	2,399,002	5.67	2020	555,082	1,826,221	3.29	0.10
				2050	837,194	820,450	0.98	
Vancouver (1990)	542,879	2,735,000	5.04	2012	629,563	2,570,900	4.08	0.08
		2,943,222	4.82	2020	661,084	1,971,959	2.98	
(1990)	542,879	2,735,000	5.04	2050	779,290	547,000	0.70	
West Vancouver	42,973	275,405	6.41	2020	51,093	192,784	3.77	0.12
				2050	63,766	55,081	0.86	
Fraser Valley								
Abbotsford	131,239	1,028,472	7.84	2025	204,527	822,778	4.02	0.17
				2040	261,493	565,660	2.16	
Chilliwack	73,294	534,085	7.29	No Target				
Mission	36,280	239,687	6.61	2020	57,245	191,750	3.35	0.13
				2050	97,527	47,937	0.49	
Capital								
Saanich	112,062	409,027	3.65	2020	115,847	274,048	2.37	0.13
Victoria	81,649	382,412	4.68	2020	87,000	256,216	2.95	0.10

Table 3: Estimated Emissions in 2020 and 2050

Municipality	2007 Aggregate Emissions (CEEI) (tCO ₂ e)	2007 Per Capita Emissions (CEEI) (tCO ₂ e)	Rate of Emissions Reduction (tCO ₂ e per capita / yr)	Estimated 2020 Emissions (tCO ₂ e)		Estimated 2050 Emissions (tCO ₂ e)	
				Aggregate	Per Capita	Aggregate	Per Capita
British Columbia	67,300,000	15.61	0.31	45,091,000	8.76	13,460,000	1.94
Metro Vancouver							
Burnaby	1,298,362	6.04					
Coquitlam*	650,213	5.41	0.12 (0.08)	621,778	3.64	509,888	1.78
Delta	915,158	9.22	0.17	613,156	5.63	183,032	1.41
Langley*	172,441	6.85	0.20 (0.12)	136,573	4.42	53,802	1.22
Langley, Township of*	805,271	8.13	0.06 (0.03)	1,049,869	7.36	1,614,327	6.63
Maple Ridge	362,616	5.00	0.10	242,953	2.57	72,523	0.49
New Westminster	285,135	4.62					
North Vancouver, District of	411,908	4.79					
North Vancouver, City of	228,982	4.84	0.08	194,635	3.91	114,491	1.56
Port Coquitlam*	315,797	5.74	0.12 (0.08)	282,954	4.23	207,163	2.19
Port Moody*	130,587	4.36	0.11 (0.07)	113,611	3.03	74,435	1.00
Richmond	1,153,658	6.19	0.12	772,951	3.50	230,732	0.77
Surrey	2,399,002	5.67	0.10	1,826,221	3.29	820,450	0.98
Vancouver	2,943,222	4.82	0.08	1,971,959	2.98	547,000	0.70
West Vancouver	275,405	6.41	0.12	192,784	3.77	55,081	0.86
Fraser Valley							
Abbotsford*	1,028,472	7.84	0.17 (0.14)	861,392	4.70	443,222	1.00
Chilliwack	534,085	7.29					
Mission	239,687	6.61	0.13	191,750	3.35	47,937	0.49
Capital							
Saanich**	409,027	3.65	0.10 (0.09)	274,048	2.37	0	0.00
Victoria**	382,412	4.68	0.13 (0.12)	256,216	2.95	0	0.00

* Linear trend calculated for 2020 and 2050 emissions and population. Per capita 2020 and 2050 emissions calculated by dividing estimated emissions amount by estimated future population. New data points changed rate of emissions reduction, which is the value shown in brackets. See Methods.

* Trend calculated for 2050 emissions, found to be zero

Table 4: Summary of Municipal Commitments by Regional District

Municipality	Year of OCP Adoption (GHG Amendment)	Community Energy & Emissions Plan	Signed Climate Action Charter	Member PCP Year, Corporate/Community Milestone	Participated in CAEE	BC Solar Community	BC Hydro PowerSmart Community Score
Metro Vancouver							
Burnaby	1998 (2010)	No	Has not signed	1994 M1/1	2006 (Pilot)	No	2002 R 24
Coquitlam	2001 (2010)	Yes	2007*	1997 M1/1	No	No	2002 R 27
Delta	1985 (2010)	No	2007	1996 M3/1	2007, 2009 (Gold)	Yes	2002 R 17
Langley	2005 (2010)	Yes	2009	2002 M0/1	No	No	2003 R 3
Langley, Township of	1979 (2010)	Yes, draft	2008	2001 M4/1	No	No	2002 R 14
Maple Ridge	2006 (2010)	No	2008	2000 M1/1	No	No	2002 R 3
New Westminster	1998	No	2008	1996 M3/1	2006	No	2003 R 4
North Vancouver, District of	1990	Yes, Climate Action Plan	2007*	2001 M1/1	2007 (Gold)	Yes	2008 R 6
North Vancouver, City of	2002 (2010)	Yes	2007	2002 M4/4	2006 (Pilot), 2007 (Gold)	No	2005 R 15
Port Coquitlam	2004 (2010)	Yes	2008	2002 M0/1	No	No	2008 R 4
Port Moody	1992	Yes, draft	2008	1996 M 2/2	2006, 2007 (Gold)	No	2003 R 9
Richmond	1999 (2010)	No, eta 2011	2009	2001 M 1/1	No	No	2002 R 47
Surrey	1996 (2010)	No	2007*	1996 M 1/1	2006, 2009 (Gold)	No	2002 R 31
Vancouver	N/A	Yes, Climate Action Plan	2007*	1995 M 5/5	2006 (Pilot), 2007 (Gold)	Yes	2002 R 51
West Vancouver	2004 (2010)	Yes, Climate Action Plan	2008	2000 M 1/1	No	No	2002 R 8
Fraser Valley							
Abbotsford	2005 (2010)	No, but GHG inventory + forecast in OCP	2008	2000 M 1/1	2006	No	2002 R 24
Chilliwack	N/A	No	2007*	No	No	No	2003 R 6
Mission	2008 (2010)	No	2008	2003 No Action	No	No	2008 R 2
Capital							
Saanich	2008 (2010)	Yes, Climate Action Plan	2007*	1996 M 3/3	2006 (Pilot), 2007 (Gold)	Yes	2002 R 5
Victoria	1995 (2010)	No	2007*	1994 M 1/1	2006 (Pilot)	No	2002 R 28

*First signatories of Climate Action Charter

Table 5: Share of Emissions from Buildings, On-Road Transportation & Solid Waste (2007 Update CEEI)

Municipality	Com/Sm Indust	Buildings Lg Industrial	Residential	Buildings Total	On-Road Total	Solid Waste Total
British Columbia				34.9%	60.0%	5.1%
Metro Vancouver						
Burnaby	35.96%	24.42%	39.62%	47.8%	47.8%	4.3%
Coquitlam	28.45%	12.66%	58.89%	43.8%	52.7%	3.6%
Delta	18.46%	47.96%	33.58%	54.4%	43.0%	2.6%
Langley	60.26%		39.74%	34.8%	53.9%	11.3%
Langley, Township of	25.89%	25.02%	49.09%	43.6%	55.7%	0.8%
Maple Ridge	22.60%	9.68%	67.72%	41.8%	55.6%	2.6%
New Westminster	60.66%		39.34%	41.5%	54.2%	4.3%
North Vancouver, District of	21.17%		78.83%	44.6%	51.8%	3.5%
North Vancouver, City of	53.87%	12.54%	33.58%	52.2%	43.1%	4.7%
Port Coquitlam	28.48%	17.60%	53.92%	45.4%	51.3%	3.3%
Port Moody	25.13%		74.87%	40.3%	55.9%	3.8%
Richmond	38.01%	20.56%	41.43%	45.2%	50.9%	3.9%
Surrey	25.12%	12.27%	62.62%	37.6%	59.1%	3.3%
Vancouver	39.38%	22.07%	38.55%	54.3%	40.9%	4.8%
West Vancouver	18.40%	8.26%	73.34%	55.7%	41.0%	3.3%
Fraser Valley						
Abbotsford	34.85%	23.75%	41.40%	35.3%	63.4%	1.3%
Chilliwack	35.73%	10.40%	53.86%	34.7%	55.0%	10.3%
Mission	21.36%	5.43%	73.21%	31.3%	59.0%	9.7%
Capital						
Saanich	32.44%		67.56%	34.0%	63.3%	2.6%
Victoria	56.19%		43.81%	51.6%	43.8%	4.5%

Metro Vancouver

Per capita emissions in Metro Vancouver in 2007 were generally between those in the Capital Region District and the Fraser Valley Regional District. However, the per capita emissions in the municipalities within Metro Vancouver varied much more greatly – from 4.36 tCO₂e in Port Moody to 9.22 in Delta. By contrast, the communities in the Fraser Valley Regional District and Capital Regional District have more similar per capita emissions. Not surprisingly, Metro Vancouver's communities also show a variety of GHG targets and anticipated rates of emission reductions. The Township of Langley shows the least ambitious GHG emissions reduction target. Its per capita target is likely to result in quite substantial aggregate emission increases. In fact, the Township of Langley's anticipated rate of annual emissions each year would more than cancel out Delta's emissions reductions in the same period. The largest aggregate reductions are expected to come from Vancouver, Richmond, and Surrey, which is expected given their populations and growth rates. Delta and City of Langley have the most aggressive reduction targets in Metro Vancouver. Nevertheless, both communities have high 2007 baseline per capita emissions. The results also indicate that Delta and City of Langley will have high per capita emissions in their reduction target years, of 5.6 and 4.9 tonnes CP₂e per capita respectively. So, despite very aggressive reductions, the cities will still have some of the largest per capita emissions in Metro Vancouver. Four municipalities in the Metro Vancouver group are expected to achieve less than one tonne per capita of emissions by 2050. These communities, Maple Ridge, Richmond, Surrey, Vancouver, and West Vancouver all adopted targets equal to or closely resembling the Province's target.

Burnaby

Burnaby has not signed the Climate Action Charter and has only completed Milestone 1 of the Partners for Climate Protection initiative. The City's GHG reduction target reflects this general lack of commitment to emissions reductions: Burnaby's target does not include the year by which the target is to be reached. In fact, according to Committee Reports, it is quite evident that the target has been selected 1) to meet the requirement of Bill 27, and 2) because it is achievable through existing environmental sustainability initiatives, policies, and programs. The City acknowledges that the target is an interim target and expects to update it once a Community Greenhouse Gas Reduction Strategy has been completed.⁶⁰

Coquitlam

Coquitlam integrated greenhouse gas reductions targets into its Official Community Plan (OCP) in May 2010:⁶¹

Reduce annual community-wide GHG emissions 15% below 2007 levels by 2031

Reduce per capita annual GHG emissions 30% below 2007 levels by 2021

Coquitlam hired HB Lanarc to complete the Community Greenhouse Gas Reduction Strategy. While the Strategy remains in unpublished draft form, background documents have been completed.⁶² A Council Workshop conducted in February 2010 modeled GHG emissions and compared a business as usual case with an emissions reduction reference scenario. Although the scenario included a goal to reduce 2031 emissions by 20% compared to 2007 levels, the target was revised to 15% before incorporation into the OCP. This happened, because Coquitlam and HB Lanarc recalculated the 2007 baseline data, resulting in a lower starting point for measuring emission reductions against future years. Modeling based on the previous 20% target shows that the reference scenario could achieve:⁶³

- Total annual community GHG emissions would be slightly higher (+2%) in 2021; would decrease by 13% by 2031; and would decrease by 29% by 2051.

- Per capita annual community GHG emission reductions were more significant decreasing by 33% in 2021; 51% in 2031; and 64% in 2051.

Coquitlam's model estimates that Coquitlam will achieve its GHG reduction targets if Coquitlam, British Columbia, and the Government of Canada all complete the programs outlined in the reference scenario. Implicitly, it is likely that Coquitlam chose not to adopt the Province's targets because they would not be achievable. In fact, the *Preferred Path White Paper on the Community Greenhouse Gas Reduction Strategy* states that over half of Coquitlam's community emissions reductions "need to be instituted at the regional, provincial, or federal level."⁶⁴ Variables and assumptions included in the model are:⁶⁵

- Population and job growth in accordance with the Draft Metro Vancouver Regional Growth Strategy
- Land use changes in accordance with current OCP
- Planned transportation improvements, such as rapid transit along Southeast Corridor and cycling and pedestrian improvements
- District energy development in Northeast Coquitlam Village Centre and Fraser Mills Waterfront Village by 2031
- Senior levels of government actions: Evergreen Line implementation by 2014, BC Building Code improvements, BC Hydro emissions reductions, Metro Vancouver Zero Waste Initiative program implementation

As the average annual reduction of GHG emissions in tonnes per capita indicated in Table 1 is calculated using a linear relationship, the resulting value does not reflect Coquitlam's modeled behaviour of community emissions reductions which includes rapid initial increases that then slow down.

Delta

Delta integrated the Province's GHG reductions targets into its Official Community Plan (OCP) in May 2010.⁶⁶ The amended OCP not only includes Delta's targets; the bylaw also contains text that describes the city's aggregate emissions in tonnes, including the relative share of emissions from each sector (on-road transportation, buildings, and solid waste). In 2007, Delta adopted a corporate emissions reduction plan, the Climate Change Initiative.⁶⁷ Delta has not completed community energy and emissions plan. So, while the city cites CEEI data in the OCP amendment, it is possible that Delta chose to adopt the Province's targets because staff lacked the in-depth and sector-based GHG inventory and forecast that would inform a Delta-specific target. In other words, the CEEI report supplies a static description of 2007 emissions in three broad categories, but additional work has to be completed by municipalities (i.e. through a community energy and emissions plan) to forecast emissions under business as usual and emission reduction scenarios. In 2020, it is expected that Delta will have the highest per capita emissions of the study group, second to Township of Langley. Nevertheless, at 0.17 tCO₂e per capita per year, Delta's emissions reduction target is the second most aggressive reduction targets of the study group.

City of Langley

The City of Langley completed a *Sustainability Framework*, a *Corporate Energy and GHG Emissions Plan*, and a *Community Energy and GHG Emissions Plan* in May 2010. The City of Langley's targets are specifically derived from the *Community Energy and GHG Emissions Plan*.⁶⁸ The City's target is as follows:⁶⁹

Adopt as a target the goal of reducing annual community emissions by 20,992 tCO₂e from the 2017 emissions forecast, resulting in a 16 percent reduction below 2007 levels as outlined in the Community Energy and GHG Emissions Plan.

City of Langley's business-as-usual (BAU) scenario actually results in a 2 percent decrease in emissions in 2017 compared to 2007. The BAU scenario includes legislated reduction initiatives, such as net zero GHG emissions from BC Hydro electricity generation by 2016, carbon neutral provincial organizations by 2010, provincial tailpipe standard, and the provincial fuel requirements.⁷⁰ The City of Langley also has a corporate emissions reduction target. The City of Langley has the most aggressive emissions reduction target, which averages to 0.20 tonnes per capita per year.

Township of Langley

The Township of Langley integrated GHG emission reduction targets into its OCP in May, 2010. Like Coquitlam, the Township of Langley has a per capita emissions reduction target:⁷¹

The GHG reduction target for the Township of Langley (as a community) is 10% below 2007 levels by 2021, on a per capita basis.

The Township of Langley is in the process of completing a Community Energy and Emissions Plan. The Township completed a Corporate GHG Emissions Reduction Plan in 2006 and established a corporate emissions reduction target. Township of Langley's per capita emissions reduction target disguises the fact that its emissions will increase at a rate of 18,815 tonnes per year. The results also indicate that the Township of Langley has the least ambitious emissions reduction target of 0.06 tCO₂e per capita per year.

Maple Ridge

Maple Ridge adopted the Province's targets into its OCP in May, 2010.⁷² Like Delta and Burnaby, Maple Ridge has not completed a Community Energy and Emissions Reduction Plan. In fact, the Maple Ridge Official Community Plan Amending Bylaw no. 6726 (2010) states that the District will "explore undertaking a Community Energy and Emissions Plan that will help the municipality identify indicators to help track community energy emissions and to also provide recommendations on opportunities for reducing community emissions and achieving reduction targets."⁷³ As a result, it seems clear that Maple Ridge adopted the Province's targets as staff did not have the information available to formulate a "made in Maple Ridge" target. Nevertheless, the Province's target seems appropriate for Maple Ridge; at a rate of 0.10 tCO₂e per capita per year, the results show Maple Ridge's rate of emissions reduction to be average. By 2020 the City's per capita emissions will be below average.

New Westminster

New Westminster has a corporate emission reduction target of reducing emissions 15 percent below 2007 levels, or 1,311 tonnes, by 2017.⁷⁴ However, New Westminster has not identified and adopted a community-wide emissions reduction target into its OCP. It is unclear why New Westminster lacks an emissions reduction target. The OCP is relatively old, having been adopted in 1998. Furthermore, New Westminster is not currently undertaking a planning process that could be occupying staff time. Finally, New Westminster joined the Partners for Climate Protection initiative in 1996 and completed corporate Milestones 1 through 3. It is unclear why New Westminster has not completed the community milestones.

District of North Vancouver

The District of North Vancouver has not incorporated GHG emission reduction targets into its OCP. However, as the District is undertaking an OCP review with an anticipated adoption by the end of 2010, North Vancouver will be incorporating the target into the new OCP. As part of the

preparation for the new OCP, the District retained HB Lanarc to complete Foundations *Report for a Climate Change Action Plan*, which examines community-wide emissions. The report established base year emissions and then forecasted them using business as usual assumptions. Then, the report created three scenarios for emissions reductions. In examining the scenarios, the consultants found that the most aggressive scenario did not achieve emission reductions close to the provincial targets. So, a fourth and more aggressive scenario, the “Do the Most” scenario, was created. It meets the Province’s 2020 target and almost meets the 2050 target. The “Do the Most” scenario could achieve a 37 percent reduction in total GHG emissions by 2020, which is a 44 percent per capita reduction. The scenario also models a 68 percent reduction in total emissions by 2050, which is a 78 percent per capita reduction compared with the 2006 baseline.⁷⁵ As a result, the District could exceed British Columbia’s 2020 target, but is somewhat short of the 2050 target. HB Lanarc chose 2006 as a baseline as it was the date of the most recent census and close to the 2005 preliminary CEEI data used in the report.

Given that the District of North Vancouver has not chosen a specific emissions reduction target, the District is not included in the analysis portion of this report.

City of North Vancouver

The City of North Vancouver adopted GHG reduction targets into its OCP in May 2010, with the following emission reduction targets:⁷⁶

15% below 2007 levels by 2020

50% below 2007 levels by 2050

The City of North Vancouver’s targets were formulated by examining the 2007 CEEI data and updating the City’s 2005 Local Action Plan with a 2010 Community Energy and Emissions Plan.⁷⁷ The 2010 Community Energy and Emissions Plan prepared by HB Lanarc accounts for the following variables:⁷⁸

- Land use changes as set out in the current OCP
- Transportation infrastructure and service improvements as laid out in the Transportation Plan
- Estimation of the impact of policies from senior levels of government
- Projections of possible emission reductions from identified policies and actions in land use, transportation, buildings, energy supply, and solid waste sectors

North Vancouver is one of the more sustainability-focused communities in BC. In 2002, North Vancouver joined the Partners for Climate Protection and established corporate and community emissions reduction targets. In 2005, the City was one of the first municipalities in the country to develop and begin implementing a Local Action Plan for greenhouse gas emissions reduction, allowing North Vancouver to achieve Milestone 4 of the PCP program. The Plan includes corporate and community-wide emission reduction targets for 2010, which have been superseded by the new targets.⁷⁹ Also, the City completed an award-winning 100 Year Sustainability Vision in 2008 with the University of British Columbia Design Centre for Sustainability.⁸⁰ As a result, it is not surprising that the City of North Vancouver’s 2007 per capita emissions baseline is one of the lowest in the study group.

What is surprising is the fact that the City of North Vancouver has one of the lowest rates of emission reductions in study group at 0.08 tCO_{2e} per capita per year. One factor affecting this is City of North Vancouver’s low baseline emissions. The other factor is that the City is not aiming to reach one tonne per capita by 2050, instead aiming to reach an average per person emissions

target of 1.5 tonnes. A partial explanation for the City's 2050 target is that the City of North Vancouver aims to achieve net zero emissions by 2107, the City's 200th Birthday.

Port Coquitlam

Port Coquitlam completed a Corporate and Community Climate Action Plan in 2010 that identifies the City's GHG reduction target for incorporation into the OCP:⁸¹

8% below 2007 levels by 2017

The Corporate and Community Climate Action Plan was designed to meet corporate and community Milestones 1 through 3 of the Partners for Climate Protection initiative.⁸² As a result, it has a ten year horizon. Port Coquitlam has adopted an achievable target. According to the Corporate and Community Climate Action Plan, the community-wide reduction target was calculated once staff had selected the reduction initiatives to propose for public consultation. The consultant then calculated possible emission reductions based on the initiatives. So, total reductions that could be achieved by the city were the sum of the individual estimates of each reduction initiative.⁸³

Like the City of North Vancouver, Port Coquitlam has previous experience with developing emission reduction targets. The City of Port Coquitlam completed an inventory of emissions in 2005 using 2002 baseline data. While Port Coquitlam's target seems small, the City's rate of reduction is average at 0.12 tCO₂e per capita per year, relative to all rates of reduction in the study group.

Port Moody

Port Moody has completed a Corporate Energy and Emissions Reduction Plan and is completing a Community Energy and Emissions Reduction Plan. Like the City of Langley and Port Coquitlam, Port Moody is undertaking its emissions reduction target and Community Energy and Emissions Plan development as part of the Partners for Climate Protection initiative. The PCP program encourages ten-year emission reduction targets and suggests the adoption of a community-wide target of about 8 percent. A bylaw amendment to establish the following target was brought to Public Hearing in May, 2010:⁸⁴

10% below 2007 levels by 2017

The target directly stems from Port Moody's draft Community Energy and Emissions Plan. However, as the City decided to revise the bylaw following public input at the public hearing, the targets were not adopted by the May 31 deadline.⁸⁵ Instead, Port Moody is continuing by adopting its new OCP, which is anticipated to include the same 10 percent emissions reduction target. Port Moody also has a 2006 Corporate Energy and GHG Management Action Plan. Port Moody's target emissions and rate of emissions reduction are average.

Richmond

Richmond adopted the Province's GHG reduction targets into its OCP in May, 2010.⁸⁶ The City has not completed a Community Energy and Emissions Plan; however, it is expected to be completed in 2011. Richmond states in its amended OCP that the City expects that the Province and other jurisdictions "will undertake necessary GHG reduction improvements within their jurisdictions and the City will receive the necessary assistance from the Province and other jurisdictions to achieve these targets."⁸⁷ In other words, Richmond perceives that the target is ambitious and cannot be achieved without significant investment. In reality, Richmond's rate of emissions reduction is average at 0.12 tCO₂e per capita per year. Due to sheer population, the City's aggregate emission reduction obligation appears to be larger.

Surrey

The City of Surrey adopted GHG targets into its OCP in May, 2010.⁸⁸ According to a report to Council from the General Manager of Planning and Development, Surrey had practical and financial motivations for adopting its distinct targets based on the City's 2007 CEEI estimates:⁸⁹

3.29 tons CO₂ equivalent per capita by 2020 and less than 0.98 t CO₂ equivalent by 2050.

It is worth noting that these targets specifically exclude emissions from agricultural and industrial land uses.

Surrey chose per capita targets, because the City anticipates rapid population growth. The corporate report to Council cites Metro Vancouver estimates that show Surrey having the largest absolute population growth within the next thirty years. So, the City believes that per capita reductions are both more “appropriate” and “realistic.”⁹⁰ Surrey also states that its targets are interim ones that are to be revisited with detailed analysis as part of the City's ongoing OCP review. Finally, the City notes that it is motivated to adopt GHG targets before the Province's May 31 deadline as it will “allow the City to move forward with local transit planning initiatives and will guarantee continued, seamless access to Provincial infrastructure grant funding.”⁹¹

Surrey's target brings the city to just below one tonne per capita by 2050 with a rate of reduction above average at 0.10 tCO₂e per capita per year. Unlike Township of Langley and Coquitlam, Surrey's aggregate emissions do not increase over time, despite the per capita target.

Vancouver

In May, Vancouver Council adopted a new Official Development Plan, the Greenhouse Gas Emission Reduction Development Plan, to comply with the Vancouver Charter, as amended by bill 27.⁹² Vancouver's Official Development Plan adopts targets that Council approved previously. The 2012 target was approved in 1995. The 2020 goal was approved in 2007, and Council approved the 2050 goal in 2008.⁹³ Unlike other communities in the study group, Vancouver's 2050 goal has a base year of 1990 rather than 2007. Vancouver's 2050 goal results from the City's adoption of the World Mayors and Local Governments Climate Protection Agreement in Bali, 2007.⁹⁴

Vancouver's GHG reduction targets are as follows:⁹⁵

6% below 1990 levels by 2012

33% below 2007 levels by 2020

80% below 1990 levels by 2050

Like many communities in the study group that adopted a target identical or similar to the Province's target, Vancouver has not completed a Community Energy and Emissions Plan. The City anticipates that a new Climate Change Action Plan will be completed to meet the 2020 emissions reduction target as part of the Greenest City 2020 program.⁹⁶

At 0.08 tCO₂e per capita per year, Vancouver has a low rate of emissions reduction, equal to the City of North Vancouver. Like the City of North Vancouver, Vancouver is starting with a low baseline in 2007 / 1990. However, unlike the City of North Vancouver, Vancouver anticipates going beyond achieving one tonne emissions per capita in 2050.

West Vancouver

The District of West Vancouver incorporated GHG reduction targets into its OCP after the Province's May 31 deadline. West Vancouver's targets commit the District to:⁹⁷

Becoming carbon neutral with respect to municipal operations by 2012; and

Reducing greenhouse gas emissions by at least 33% below 2007 levels by 2020 and at least 80% below 2007 levels by 2050

Unlike other communities in the study group that may have adopted the Province's targets because they lacked the inventory and forecasting data to formulate their own targets, the District of West Vancouver completed a Community Climate Action Plan. The Plan outlines baseline emissions, establishes community reduction targets, and recommends actions to reach the targets. The Climate Action Working Group uses Draft CEEI 2007 emissions to identify which sector (buildings, transportation, solid waste, corporate operations) was most responsible for emissions. Then, the report identifies possible emission reduction actions without specifying ranges of emission reductions the actions could achieve.⁹⁸

Part of West Vancouver's motivation to adopt the Province's targets could be ideological. The bylaw amending the OCP with emission reduction targets states, "These bold and visionary targets support West Vancouver's vision to 'inspire excellence and lead by example.'" ⁹⁹ Another possibility is that the 2007 baseline data without an accompanying context describing necessary actions to achieve given emission reductions gave the Climate Action Working Group a false sense of what West Vancouver can realistically achieve. In other words, while many municipalities either outsource climate action plans to consultants or have permanent in-house staff to complete the task, the District of West Vancouver created an ad hoc group to complete the report. Presumably, consultants and permanent staff have access to information that correlates emissions reduction strategies with actual emissions reductions and approximate cost. As this sort of information is missing in the Climate Action Working Group's report, it is possible that the group did not have access to this information. If this is true, it would indicate that a static base year inventory is not enough information for a municipality to create a locally appropriate emissions reduction strategy and that additional in-house or consultant expertise is necessary. The results show that West Vancouver's emission reduction targets are average within the study group, at a rate of emissions reduction of 0.12 tCO₂e per capita per year. The results also anticipate that West Vancouver will achieve a per capita emissions level of less than one tonne by 2050.

Fraser Valley Regional District

Generally, communities in the Fraser Valley Regional District have higher per capita emissions in 2007 compared to Metro Vancouver and Capital Regional District municipalities. However, Abbotsford and Mission have adopted targets that incur higher than average emission reduction rates at 0.17 and 0.13 tonnes per capita annually, respectively. The results predict that Mission will be tied with Maple Ridge for the lowest per capita emissions in 2050, at less than a half tonne per capita. Very generally speaking, considering the small sample size of communities in this regional district, the communities in Fraser Valley have been latecomers to climate change mitigation. The three communities adopted the Climate Action Charter and began participating in the Partners for Climate Protection initiative after communities in the Capital Regional District and Metro Vancouver. The proportion of emissions in these communities originating from on-road transportation is the same as British Columbia, which is greater than in Metro Vancouver or the Capital Regional District.

Abbotsford

To develop its GHG targets, Abbotsford partnered with the Fraser Valley Regional District (FVRD) and their consultant, Sustainability Solutions Group, to develop a GHG inventory and model GHG emissions for the years 2025 and 2040. This model illustrated the effect of land use change and projected the effect of population and job growth on GHG emissions. As a result,

Abbotsford could create targets specific to its needs, one of which being high growth projections. The model included the following variables and estimated variables influenced by Provincial and Federal governments:¹⁰⁰

- population and job projections (census year projections)
- consideration of OCP build out (incorporating land use change, building area change and transit improvements)
- building energy use and vehicle fuel efficiency improvement projections
- solid waste diversion projections
- uptake of anaerobic digester technology projections
- uptake of other green energy technologies

The City consulted with the public, the Chamber of Commerce and the Abbotsford Social Development Advisory Committee, Agricultural Advisory Committee, City Industry and Development Advisory Committee, Economic Development Commission, Environment Advisory Committee, and Mission Abbotsford Transit Committee in fall 2009. City staff also consulted with the Fraser Valley Regional District, Metro Vancouver, Ministry of Community and Rural Development, and other stakeholders outside of the city.¹⁰¹ Of any target in the study group, this one appears to have received the most research, deliberation, and consultation.

Abbotsford chose per capita, rather than aggregate, targets unlike nearly every other community in the study group. The City perceives that the combination of a growing population and a relatively underdeveloped transit system will make emissions reductions very challenging. In a Council Report, the City states, “Given Abbotsford’s high growth rate, per-capita reductions may be more viable and relevant at this time.”¹⁰² While 2040 emissions are equal whether the emissions are calculated on an aggregate or per capita basis, 2025 emissions are 115,000 tCO₂e (0.5 tCO₂e per capita) lower with the aggregate calculation. So, Abbotsford’s per capita calculation effectively lowers its emissions reduction commitment. Nevertheless, the City is pursuing an aggressive rate of emissions reduction at 0.17 tonnes per capita per year. The City is one of forty communities in Canada participating in the “One Tonne Challenge.”¹⁰³

Chilliwack

Chilliwack has not adopted GHG emission reduction targets into its OCP. Although the community was an inaugural signatory of the Climate Action Charter in 2007, the City has not adopted a corporate or community-wide emissions reduction plan. Chilliwack just passed a Downtown Land Use and Development Plan in June 2010. It is possible that the completion of this plan occupied municipal resources that otherwise could have been used to finish the emission reduction plans.¹⁰⁴

Mission

Mission adopted emission reduction targets on May 17, 2010 into its Official Community Plan:¹⁰⁵

Reduce corporate emissions by 10% below 2008 levels by the end of 2015

Reduce Community emissions by 20% below 2007 levels by the end of 2020 and 80% below 2007 levels by the end of 2050

Mission has an Environmental Charter, but lacks a community energy and emissions plan. Mission states that it chose these particular targets to balance meeting the Provincial targets with the additional challenge of having undeveloped transit infrastructure and being able to meet a target in reality.¹⁰⁶ It is unclear whether Mission’s emission reduction targets are feasible.

With an above average rate of emissions reduction at 0.13 tonnes per capita per year, the results indicate that Mission will achieve half a tonne per capita of CO₂e emissions by 2050. Nevertheless, Missions lower transit infrastructure will be a challenge considering that almost 60 percent of its emissions in 2007 originated from on-road transportation.

Capital Regional District

Generally, Capital Region municipalities are adopting the Provincial targets for 2020. Of the three regional districts in the study group, the Capital Regional District has the lowest 2007 per capita emissions. The results predict that Saanich and Victoria will have rates of emission reduction that are within the average range for the study group, at 0.10 and 0.13 tonnes CO₂e per capita annually, respectively. Both communities joined the Partners for Climate Protection in the mid-1990s and have participated in the Community Action on Energy and Emissions program.

Saanich

The District of Saanich integrated modified Provincial greenhouse gas reductions targets into its Official Community Plan (OCP). The targets are as follows:

33% reduction in community greenhouse gases by 2020 based on 2007 emissions (228,000 tCO₂e)

50% reduction in municipal operation's greenhouse gases by 2020 based on 2007 emissions

Saanich also has a Climate Action Plan that outlines the District's actions to reach its target. In the Plan, Saanich clearly explains that it chose the Provincial targets:¹⁰⁷

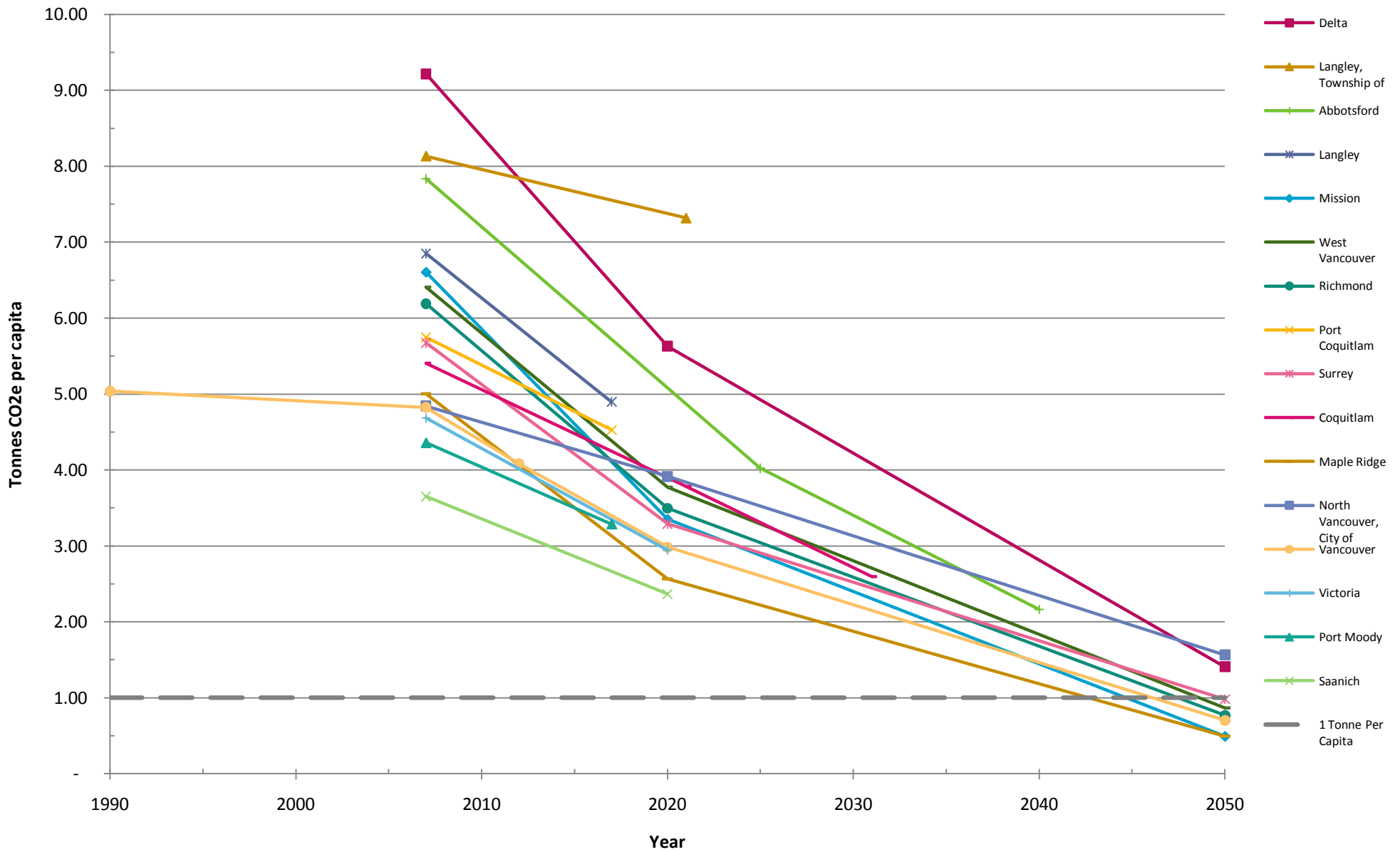
This challenging target has been set to match the aggressive targets adopted by the provincial Government in the BC Climate Action Plan. Interim reductions targets of 6% by 2012 and 18% by 2016 have also been set by Saanich along with the provincial government's long-term target of 80% by 2050.

With a below average rate of emissions reduction, Saanich should be able to achieve the Province's target. From 2004 to 2008, the District reduced annual corporate GHG emissions by 10%, two years ahead of its target year.¹⁰⁸

Victoria

Victoria incorporated an interim greenhouse gas reduction target into its OCP on May 13, 2010. The target, which is 33% below 2007 levels by 2020, reflects British Columbia's target.¹⁰⁹ Victoria conducted an informal survey of Capital Region municipalities, discovering that the majority adopted the Province's target. As a result, Victoria adopted half of the Province's target temporarily; stating, "Victoria will establish the same target for GHG reduction as our partners."¹¹⁰ As part of the OCP formulation process, Victoria hired HB Lanarc to conduct a climate and energy review paper that profiles the City's historic and current energy and emissions. The report outlines a modified CEEI GHG emissions baseline by sector and recommends processes and policies to be developed to maximize feasible GHG reductions.¹¹¹

Figure 1: Greenhouse Gas Reduction Targets for Study Group



(Based on Table 3 values)

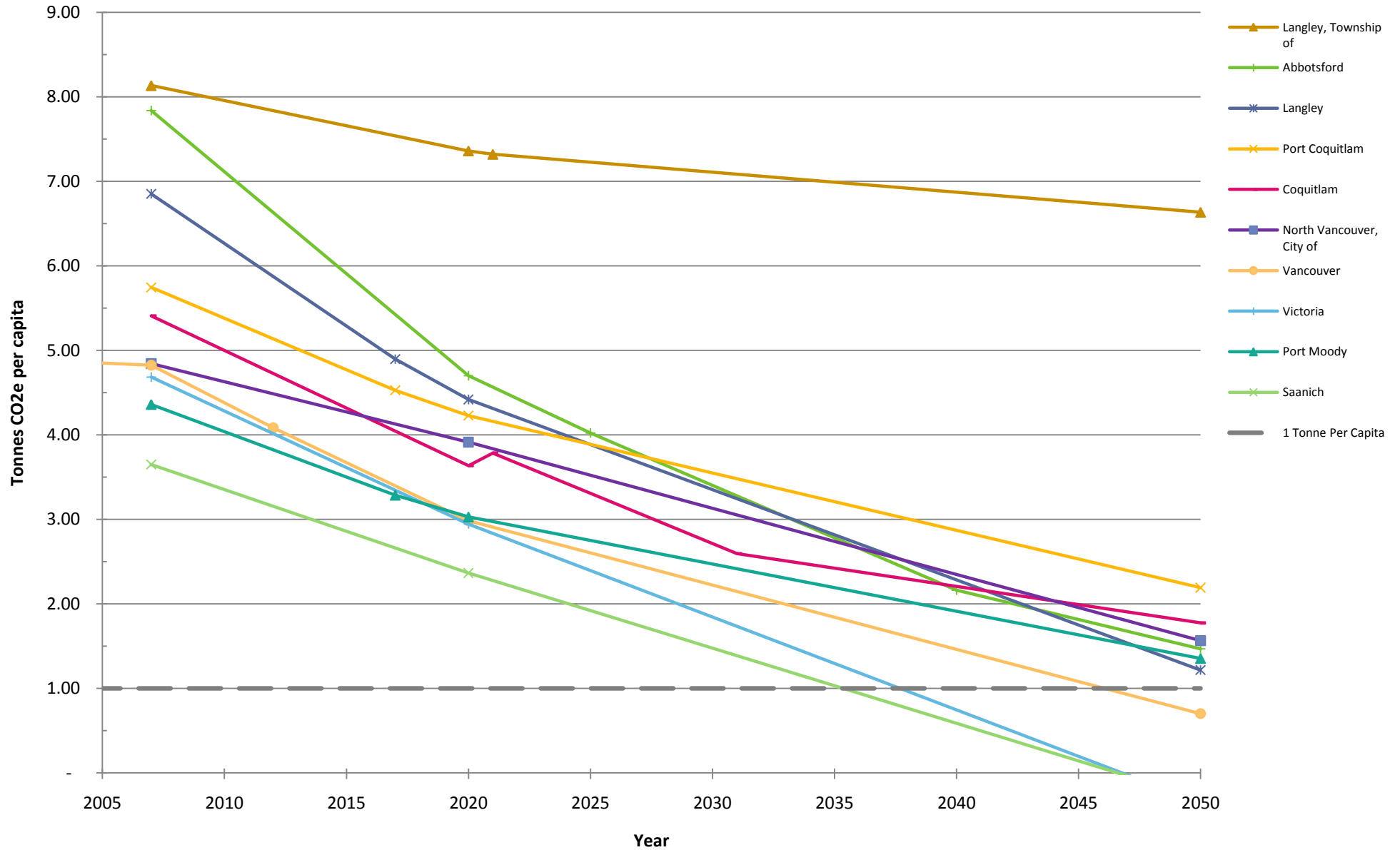


Figure 3: Estimated 2050 Greenhouse Gas Emission Levels Per Capita for Study Group

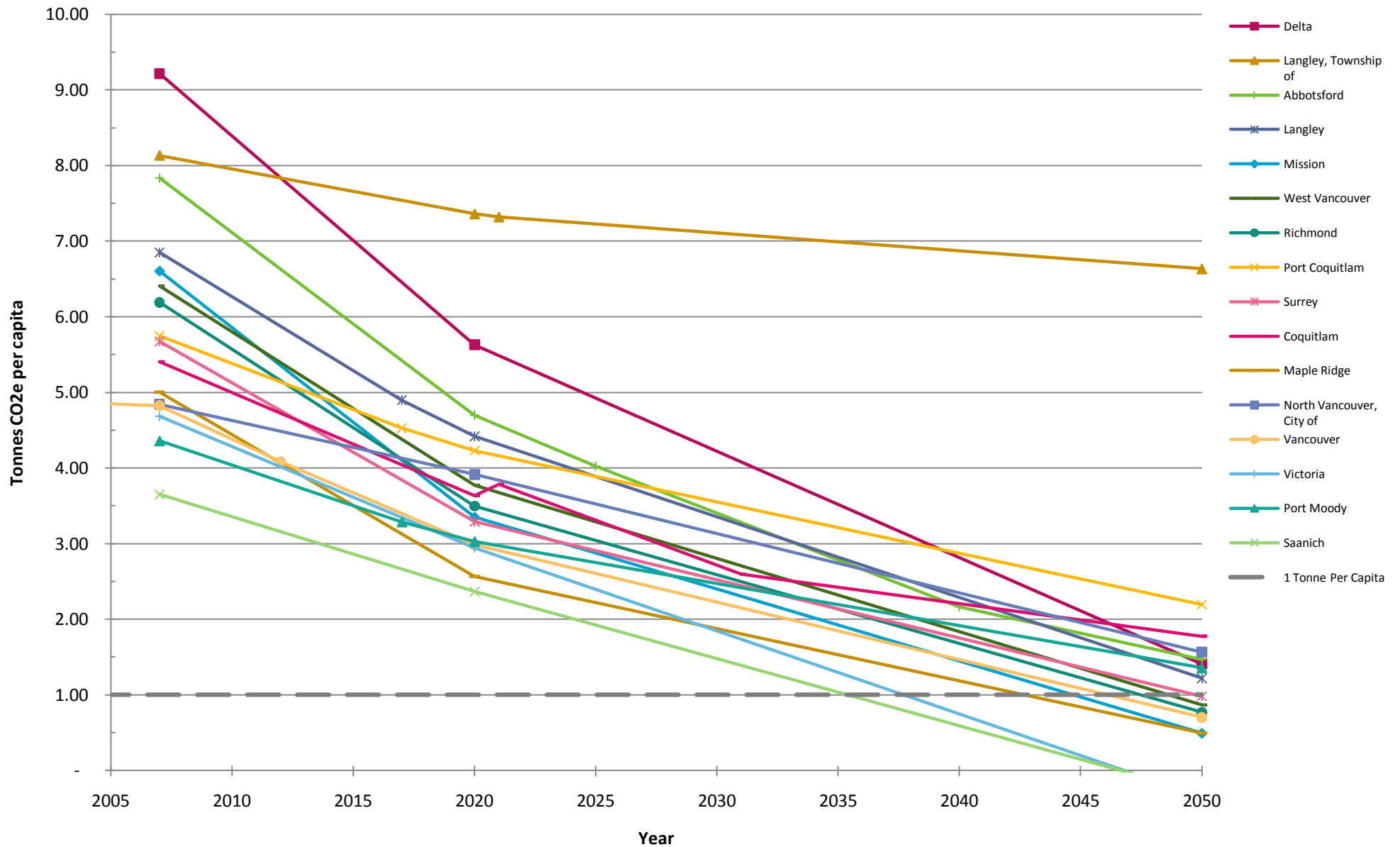


Figure 4: Aggregate tCO2e Emitted (Reduced) Annually

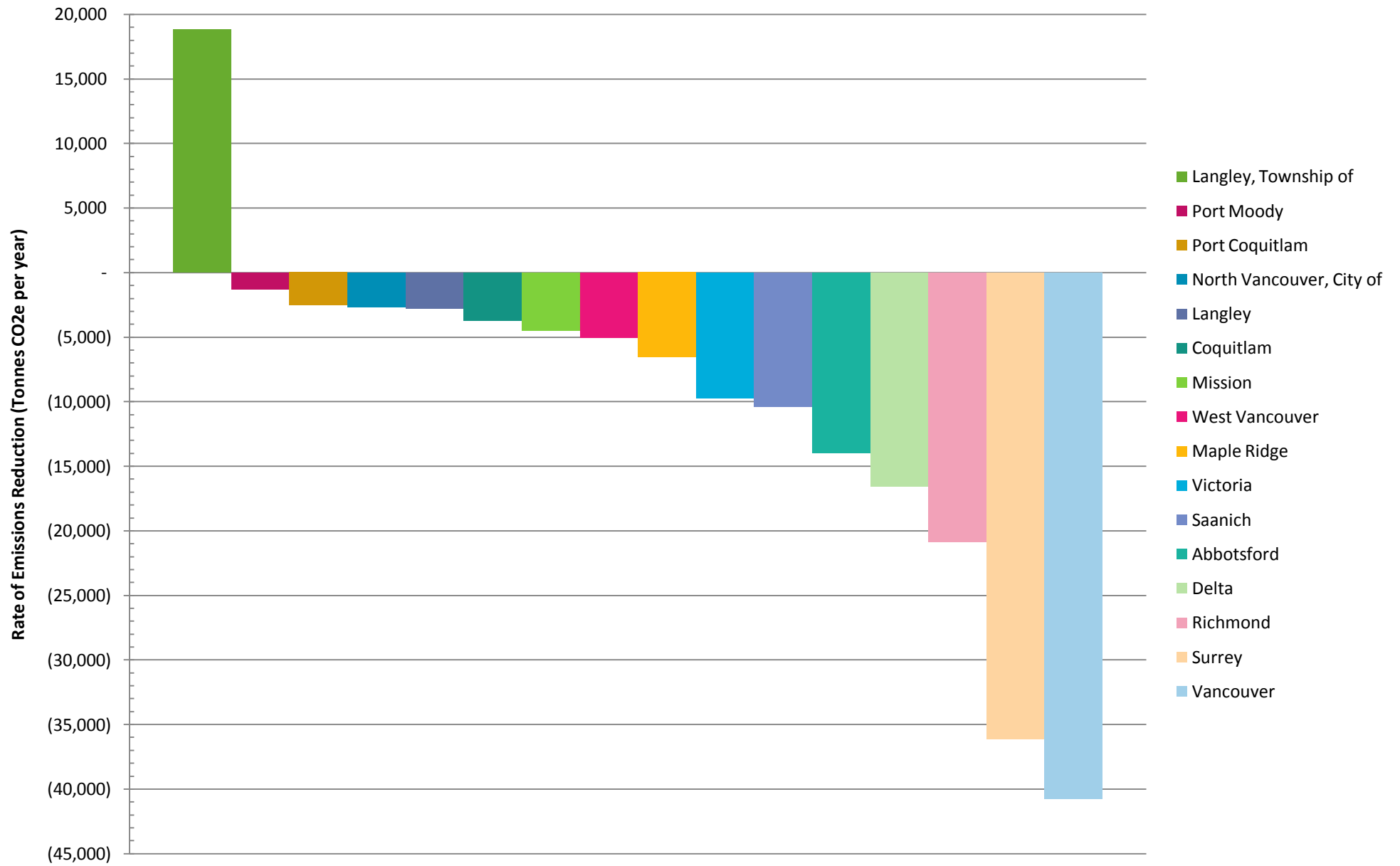
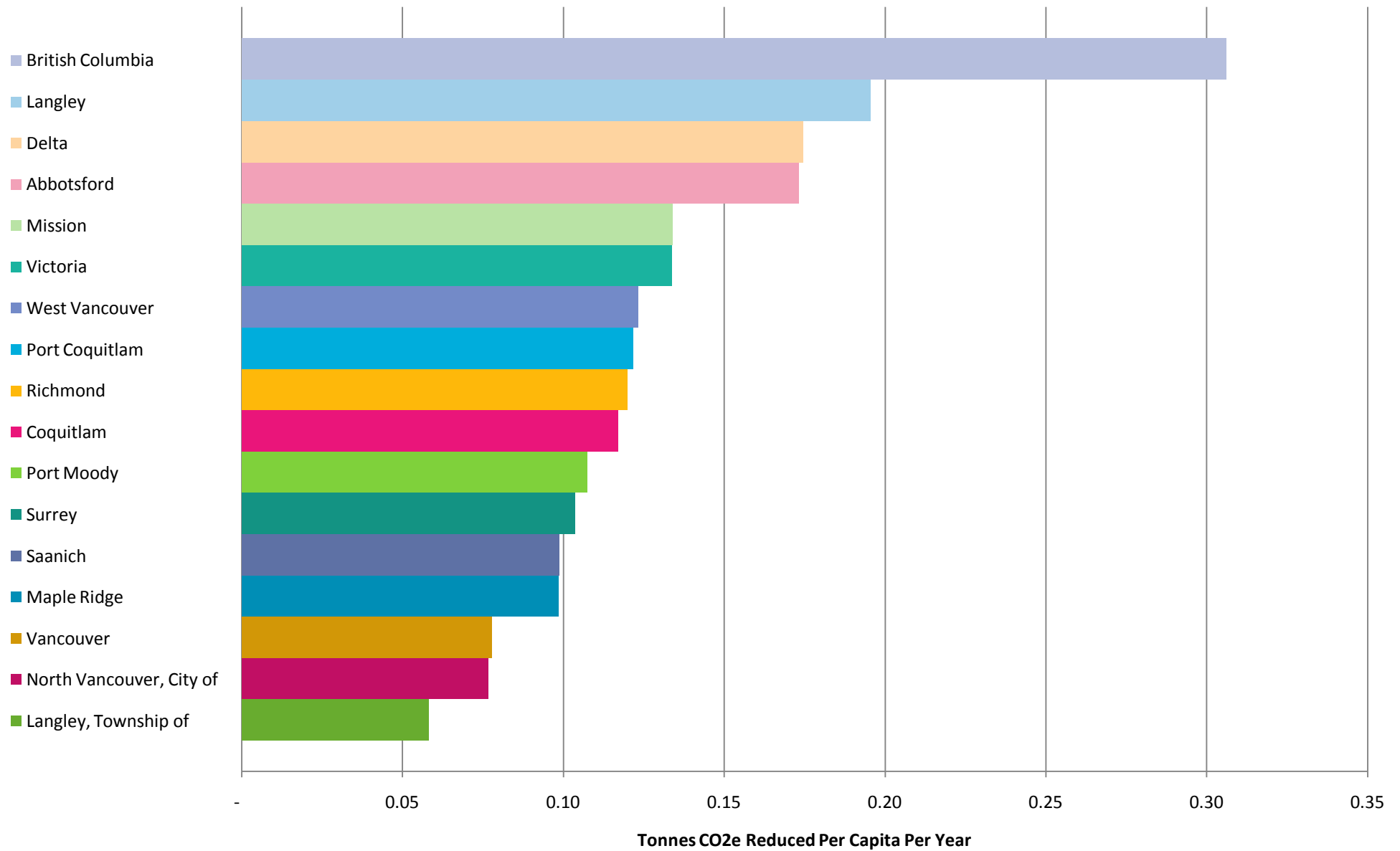


Figure 5: Rate of Emissions Reduction Per Capita (tCO2e)



Analysis

As predicted, the study group displays a fair amount of variety regarding 2007 baseline emissions per capita, emission reduction targets, future emissions per capita, and rates of emission reductions. In comparing the communities to each other, to British Columbia, and to the one tonne per capita by 2050 goal, a few trends emerge. Communities can be sorted into four groups: those with no targets, those with the Province's target or something similar, communities with per capita targets, and municipalities with Partners for Climate Protection targets.

Cross-Municipal Comparison

Communities with no Targets

- Chilliwack
- District of North Vancouver
- New Westminster
- Burnaby

Chilliwack, District of North Vancouver, and New Westminster did not incorporate an emissions reduction target by the May 31 2010 deadline into their Official Community Plans. Although Burnaby did adopt a target by the May deadline, the City adopted the bare minimum standards required by *Green Communities Act*, representing a lack of commitment to emissions reductions. As Burnaby's target does not include a target year, it is essentially meaningless.

The factors influencing the failure to incorporate a complete reduction target are not entirely clear. The District of North Vancouver is undertaking an OCP review, with the new OCP expected by the end of 2010. As the OCP review includes completing a community energy and emissions plan, the District will incorporate GHG reduction targets into the new OCP. Chilliwack just completed a Downtown Land Use and Development Plan in June 2010. As a result, it is possible that the municipality lacked resources to create an emissions reduction target. Although Chilliwack was among the first communities to sign the Climate Action Charter, the city has not participated in the Partners for Climate Protection program, the Community Action on Energy and Emissions initiative, or other similar and high level climate change action programs.

By contrast, it is unknown why New Westminster was unable to complete an emissions reduction target. The City has an older OCP and is not currently undertaking a significant community planning initiative. Furthermore, New Westminster has been a member of the Partners for Climate Protection initiative since 1996, having completed corporate Milestone 3. Burnaby's motivation to adopt an incomplete target is unclear; however, the City may have sought to just follow the letter of the law. Burnaby is the only member of the study group that did not sign the Climate Action Charter. The City also joined the Partners for Climate Protection initiative in its inaugural year, but has only completed the first milestone. It is likely that Burnaby will update its target upon completing a Community GHG Reduction Strategy. A Council Report accompanying the OCP Amendment for the GHG target states, "The interim target is being recommended with the understanding that an updated reduction target and implementation approach would be advanced for a subsequent OCP amendment. The update would follow completion of further research and community consultation processes [...]."¹¹²

Communities with (Modified) Provincial Targets

- Delta
- Maple Ridge
- Mission

- Richmond
- Saanich
- Surrey
- Vancouver
- Victoria
- West Vancouver

A clear pattern emerges with respect to communities who adopted the Province's targets. None of these communities has formulated and adopted a community energy and emissions plan. While Vancouver, West Vancouver, and Saanich have Climate Action Plans, these plans tend to be less rigorous than community energy and emissions plans. Rather, they serve more as visioning and strategy documents that outline policies that the city can undertake to reduce emissions. A functional difference between community energy and emissions plans and climate action plans is not necessarily the case across British Columbia. In fact, the names "community energy and emissions plan" and "climate action plan" are often used interchangeably. However, within the study group the plans titled "climate action plan" tend to not evaluate whether the chosen actions will achieve the desired level of emissions reduction. By contrast, the plans titled "community energy and emissions plans" do. Vancouver, West Vancouver, and Saanich's Climate Action Plans record baseline emissions by sector. West Vancouver's Council formed a Climate Action Working Group after the municipality signed the Climate Action Charter. The Working Group's sole responsibility was to complete the Climate Action Plan.¹¹³ As a result, West Vancouver's Climate Action Plan is essentially a report written by volunteers who met over the course of a year. The Saanich and Vancouver plans go further to project emissions under a business as usual scenario. Saanich's plan also identifies specific actions that the city can undertake with sector-specific emission reduction goals. Vancouver will be updating its climate action plan as part of the Greenest City 2020 initiative.

Consequently, most of the municipalities in this category likely lacked the in-depth inventories and forecasts to formulate a specific emissions reduction plan. All of them probably lacked an evaluation of how well their chosen emissions reduction actions could achieve their target.

Surrey is an outlier in this category, because it adopted the Province's target on a per capita basis and with the exception of industrial and agricultural emissions. Nevertheless, like other communities that adopted the Provincial target, Surrey generally has a lack of climate change-related policy work completed. The City expects rapid population growth, using that assumption to justify a per capita target. Surrey's per capita target significantly lessens its reduction commitment. Had Surrey adopted the Province's targets on an aggregate basis, its 2020 emissions would be 2.90 tCO₂e per capita. Emissions in 2050 would be 0.57 tCO₂e per capita. But, the City's target is 3.29 tCO₂e per capita by 2020; and less than 0.98 tCO₂e by 2050, with both targets specifically excluding emissions from agricultural and industrial land uses. Fortunately, Surrey's per capita target does not permit aggregate emissions increases, like Coquitlam and Township of Langley. Furthermore, Surrey still anticipates achieving less than one tonne per capita CO₂e by 2050.

Communities with Per Capita Targets

- Abbotsford
- Coquitlam
- Township of Langley

A trend also exists between communities that adopted per capita targets. Abbotsford and Township of Langley have two of the highest per capita emissions baselines, with only Delta

having higher per capita emissions in 2007. Coquitlam and Township of Langley both have completed community energy and emission plans. Abbotsford has completed a climate action plan-equivalent summary in its official community plan. All three are still on the first Partners for Climate Protection Milestone; however, they have quite high scores in the BC Hydro PowerSmart Communities program. Abbotsford and Township of Langley self-identify as high-growth communities. Overall, this category indicates that communities with community energy and emissions plans used the in-depth analysis of current and forecasted emissions from the plan to inform their communities' emission reduction targets.

For all three communities, per capita targets effectively reduced each community's emissions reduction commitment. Coquitlam and Township of Langley's targets even permit emission increases. While Abbotsford's 2040 emissions are equal whether the emissions are calculated on an aggregate or per capita basis, 2025 emissions are 115,000 tCO₂e (0.5 tCO₂e per capita) lower with the aggregate calculation. So, Abbotsford's per capita calculation effectively lowers its emissions reduction commitment. Coquitlam's 2021 target is a per capita target, rather than an aggregate one. As a result, despite the fact that Coquitlam's per capita emissions would decline by 1.62 tCO₂e by 2021, aggregate emissions would be almost 16,000 tCO₂e higher in 2021 compared to 2007. This represents approximately 112,000 tCO₂e in total cumulative emissions between 2007 and 2020. The Township of Langley also has a per capita target that results in GHG emission increases. Although Township of Langley's per capita emissions would decline by 0.81 tCO₂e by 2021, emissions still increase at a rate of 18,800 tCO₂e annually to reach 1.8 Mt CO₂e in total cumulative emissions between 2007 and 2021.

Nevertheless, the communities differ in terms of anticipated outcomes. Township of Langley is ranked worst of the study group communities in terms of having the highest per capita base year emissions, the highest per capita emissions in the target year, and the lowest rate of emissions reduction. By contrast, Abbotsford joins Delta and City of Langley with having very aggressive targets. If Coquitlam and Abbotsford's populations and emissions reductions grow at the same rate until 2050, both communities could see per capita emissions levels similar to the Partners for Climate Protection group, all of which are estimated to be more than one tonne per capita.

Partners for Climate Protection Targets

- City of Langley
- City of North Vancouver
- Port Coquitlam
- Port Moody

These four communities stand out, because their emission reduction targets have a ten year horizon, which is one of the recommendations of the Partners for Climate Protection initiative for achieving Milestone 3. Although City of North Vancouver's target is actually 13 years, the City specifically references that it is implementing its Community Energy and Emissions Plan with emissions reduction target as a component of the Partners for Climate Protection program.¹¹⁴ All four communities have completed a community energy and emissions reduction plan. None of them were among the first communities to sign the Climate Action Charter. City of North Vancouver and Port Moody in particular have significant levels of participation with Partners for Climate Protection and the Community Action on Energy and Emissions programs. City of North Vancouver, Port Coquitlam, and Port Moody all have very low per capita baseline emissions, ranging from 4.4 to 5.7 tCO₂e per capita.

The City of Langley has the most aggressive emissions reduction target of 0.20 tCO₂e per capita annually. The City of Langley's target is an aggregate and absolute reduction from the city's 2017 business-as-usual forecast, which equates to a 16 percent reduction below 2007 levels.¹¹⁵ City of

Langley's business-as-usual (BAU) scenario actually results in a 2 percent decrease in emissions in 2017 compared to 2007, largely resulting from the assumed full implementation of provincial legislation.

These communities serve as a counterpoint to the "per capita reductions" category. The per capita reductions communities used their community energy and emissions plans to ascertain the magnitude of reductions they would have to make and consequentially chose a target formulation that lessened their burden. This strategy is logical considering their higher baseline emissions. By contrast, the Partners for Climate Protection group have much lower baseline emissions and, by their demonstrated commitment to reducing emissions, could adopt more rigorous targets than their per capita counterparts in order to achieve one tonne per capita in emissions by 2050. Nevertheless, this group has less impressive results. Port Moody, Port Coquitlam, and City of North Vancouver have the smallest aggregate emissions reductions annually next to Township of Langley. City of Langley, by contrast, has the study group's most aggressive emission target. One possibility is that the Partners for Climate Protection group have achieved the "low hanging fruit" emissions reductions, making additional reductions more costly and challenging.

Table 3 and Figure 2 show estimates of the Partners for Climate Protection group and Per Capita Emissions group's 2050 per capita emissions levels, which range from 1.2 to 2.2 tCO₂e per capita.

Discussion

Initial Outcomes from the *Green Communities Act*

Out of 20 communities, 16 have complete targets, one has an incomplete target, and three have no community targets. Port Moody did not incorporate its target into the OCP by the May 31 deadline as the OCP Amendment Bylaw had to incorporate comments from the Public Hearing. Nevertheless, the City is in the process of adopting a new Official Community Plan that does include the emissions reduction target. West Vancouver after May deadline, too.

One objective of the *Green Communities Act* is to give local governments more flexibility in how they address GHG emissions reduction. The results indicate that when communities are empowered to formulate individual targets, through a community energy and emissions plan, they do. However, the outcomes are mixed and generally less ambitious with a shorter term focus. Some communities may experience increases in emissions, as their per capita targets allow aggregate increases in emissions. By contrast, of the nine communities that adopted the Province's target, three had completed a climate action plan and purposely chose the target. The remainder appeared to adopt the Provincial target out of convenience. In terms of outcomes, it is anticipated that communities adopting the Province's target will reach less than one tonne per capita of emissions by 2050, except for Delta, Saanich, and Victoria.

Communities that have completed community energy and emissions plans tended to choose their own targets. Communities with higher per capita base year emissions tended to choose per capita targets, as it lessened their greenhouse gas reduction needs. Those with lower per capita emissions in 2007 tended to choose ten year horizon reduction targets that do not seem to be very impressive. In contrast to the communities that adopted the Province's targets, the communities that chose their own targets are not predicted to achieve one tonne per capita in emissions by 2050. Township of Langley is likely to experience aggregate emissions increases and marginal per capita emissions decreases.

A few communities stand out and essentially represent the range of extreme responses to Bill 27. Delta, City of Langley, and Abbotsford have adopted GHG emission targets. The results show that to meet their targets, they will have to reduce emissions by 0.17 to 0.20 tonnes per capita each year, which is much higher than the study group average of 0.12 tonnes per capita. Delta adopted the Province's target and has not completed a community energy and emissions plan. City of Langley created its own target and has completed a community energy and emissions plan. Abbotsford has a climate action plan and its own target. Township of Langley stands out, also. The city is likely to see increases in aggregate emissions and has the slowest rate of emissions reduction. So, within this group, Delta adopted the Province's target, but had the City completed a community energy and emissions plan, it may have adopted something less ambitious. Abbotsford and City of Langley created their own targets with the input of emissions analyses, but they may have been too ambitious. It will be interesting to observe whether they achieve their targets. Township of Langley made its own target and virtually achieves nothing.

City of North Vancouver also stands out as it fails to reach one tonne per capita emissions in 2050. At 15 percent below 2007 levels by 2020 and 50 percent below 2007 levels by 2050, the City of North Vancouver's targets are substantially below the Province's. Arguably, the City of North Vancouver is one of the more "climate aware" communities in BC, and with its already low per capita baseline emissions in 2007, the City has fewer reductions to make. The City, having completed an emissions reduction target in 2005, is familiar with what it takes to formulate an achievable target. In fact, the City of Vancouver provided a review of the CEEI report methodology in 2009, criticizing the CEEI for using building subsector and vehicle kilometre travelled data that are substantially limited.¹¹⁶ Nevertheless, the analysis indicates that the City will have the lowest rate of emissions reduction, second to Township of Langley. In a background report to introduce the OCP amendment, City staff propose that City of North Vancouver adopt the Province's targets. However, staff caution against adopting Provincial targets, saying that many communities choose to do so due to the "lack of a rigorous process and plan to produce a target specific to the community."¹¹⁷ The staff report frames the Provincial targets as "not rigorous"; however, the City adopted less substantial targets. In another report introducing the 2010 Community Energy and Emissions Plan, staff state, "The Provincial targets are aspirational in nature, based on science linked to climate change mitigation. Well intended, they include unanswered questions including a significant policy gap that has yet been tackled."¹¹⁸ As a result, it appears that the City of North Vancouver believes that the Province's targets are neither practical nor possible.

Implications

While the Government of British Columbia estimates that local governments can influence about 45 percent of emissions,¹¹⁹ which is not surprising considering that in 2006 over a third of emissions in BC originated from transportation,¹²⁰ it seems that many communities are unclear about where their responsibilities end and where the regional districts, provincial government, and federal government's responsibilities begin.

For example, the City of Langley's *Community Energy and GHG Emissions Plan* identifies which levels of government are responsible for emissions reductions: regional, provincial, and federal governments are responsible for 32%; 40% is shared responsibility; and, 27% is the responsibility of the municipality.¹²¹ Coquitlam stated in "Preferred Path White Paper on the Community Greenhouse Gas Reduction Strategy" that over half of Coquitlam's community emissions reductions "need to be instituted at the regional, provincial, or federal level."¹²² Both communities have completed a community energy and emissions plan.

Going forward, if there is a lack of clear delineation between emission reduction strategies to be achieved by senior levels of government and strategies in the purview of local governments, it

will be easy for municipalities to blame their lack of real emission reductions on the policy failures of the federal, provincial, or regional bodies.

Recommendations

In order to ensure that communities reach their emission reduction targets and do not revise their targets later to adopt less ambitious goals, British Columbia can provide some additional technical assistance to communities.

First, the Province can better delineate emissions reductions that are Federal, Provincial, Regional District, or Utility responsibilities. This explanation could be in the form of a tool that that explicitly states the estimated carbon reductions of programs from senior levels of government. Communities could use this guide to incorporate “freebie” reductions into their targets, enabling them to make more ambitious targets that address transportation, solid waste, and buildings-related decisions at the municipal level.

Second, the Province could formulate a guide that contextualizes emission reduction strategies into tonnes of possible emission reductions. In other words, many of the climate action plans adopted by communities suggest a variety of actions for the municipality to undertake, but the plans do not identify how much CO₂e will be reduced by the action or how much this would cost. This guide could be a list that identifies common actions from climate action plans, like converting a percentage of drivers to transit users or retrofitting houses from baseboard heating to district energy, and lists both approximate costs and expected CO₂e reductions. The common actions could be qualified with icons that indicate whether the action is relatively affordable or expensive and whether it reduces a relatively small or large amount of emissions. This sort of tool could aid communities in formulating climate action plans that are more useful.

Finally, the Partners for Climate Protection programs seems to be engaging communities in formulating well-considered emissions reduction targets. However, as the results suggest that the communities who adopted Partners for Climate Protection-influenced goals have lower rates of emissions reductions compared to the other communities. As a result, the Province could work more closely with local governments within the framework of the Partners for Climate Protection framework to utilize the framework’s effective tools and resources to encourage communities to adopt and achieve more aggressive emissions reductions targets. Considering that all but one member of the study group are participants in the Partners for Climate Protection Program, but adopted emissions reduction targets are varied, there could be potential to encourage the Partners for Climate Protection program to help communities adopt more aggressive targets.

Conclusion

Although the results appear to show that communities that have completed community energy and emissions plans tend to choose their own emission reduction targets, which are less ambitious than the Provincial goal, the Province of British Columbia should not be afraid to empower local governments to examine their emissions and revise their targets. As stated earlier, British Columbia estimates that local governments can influence 45 percent of the Province’s emissions through direct and indirect action. Communities may feel more confident to adopt more aggressive emissions reduction targets if information were clearly available to them that delineated the estimated emissions reductions from Federal, Provincial, and utility-based actions and programs.

With global concerns about climate change, reducing per capita emissions to one tonne by 2050 is recognized as necessary to prevent catastrophic global warming. The results show that

communities adopting the provincial target, should they meet their target, are likely to achieve this goal. By contrast, the communities that completed a community energy and emissions plan are not predicted to reach one tonne per capita in emissions by 2050 if they continue to reduce emissions at the same rate until 2050. This result is very telling. The City of North Vancouver, who is potentially the most serious of the study group communities about climate action, has one of the slower rates of emissions reductions. The City of North Vancouver has pursued a 100-year sustainability plan and has provided input into the CEEI methodology. Nevertheless, staff reports criticize the Province's target as "not rigorous," "aspirational," and as having a "significant policy gap."¹²³

As a result, this very initial analysis indicates that the Province's strategy to regulate emissions reductions while providing technical and financial assistance to communities has encouraged communities to adopt targets specific to their needs. While those targets vary in nature, for the most part they appear to enable the achievement of real emission reductions.

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