Town of Sidney

CLIMATE ACTION PLAN

FINAL
May 31, 2010

Stantec

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PLAN SUMMARY

Recently, federal and provincial initiatives and legislation have been implemented to support local governments in taking action to advance energy efficiency, promote energy conservation and reduce greenhouse gas (GHG) emissions. This Climate Action Plan assists the Town of Sidney in reducing energy and emissions from both corporate (Town) operations and the community as a whole, allowing it to fulfill both its voluntary commitment to carbon neutrality as well as its provincial legislative responsibility.

The Climate Action Plan answers the following four key questions:

- Where are we now?
- Where are we going?
- Where do we want to go?
- How will we get there?

In 2007, Sidney consumed over 1.1 million GJ of energy as a community and contributed more than 55,000 tonnes of CO_2e to the atmosphere. Most of the community's energy use and emissions were from transportation (65%), with buildings contributing 18% and solid waste the other 17%. Community-wide emissions in Sidney are projected to increase to over 68,000 tonnes CO_2e by the year 2030.

Emissions from corporate operations were in the neighbourhood of 340 tonnes CO_2e in 2009. While this figure is small compared to community-wide emissions, the Town is committed to carbon neutral operations by 2012 and through this Climate Action Plan, has developed actions to help achieve this commitment.

Proposed GHG emissions reduction targets for Sidney are as follows:

- Corporate operations: 15% below 2009 by 2015, and;
  20% below 2009 by 2020
- Community-wide: 15% below 2007 by 2020 (a 30% per capita reduction);
  30% below 2007 by 2030 (a 50% per capita reduction), and;
  80% below 2007 by 2050 (a 90% per capita reduction).

The Climate Action Plan outlines six initiative areas and 22 specific actions for moving Sidney towards these targets. These are listed on the following page.

CORPORATE COMPONENT

LEAD BY EXAMPLE (TOWN OPERATIONS)

Action-1 Improve the energy efficiency of existing Town facilities

Action-2 Investigate the opportunity to share a Community Energy Coordinator

Action-3 Commit to evaluating all capital expenditures using a life cycle approach

Action-4 Formalize sustainable fleet management activities

Action-5 Include energy and GHG considerations in the Town's purchasing policy

Action-6 Conduct staff outreach to encourage energy efficient behaviours

COMMUNITY COMPONENT

DEVELOP SUSTAINABLY (LAND USE & DEVELOPMENT)

Action-1 Implement the Downtown/Downtown Waterfront Local Area Plan

Action-2 Consider density bonuses during rezoning applications

Action-3 Incorporate energy efficiency guidelines in Development Permit Areas

Action-4 Explore incentives for energy efficient development

Action-5 Engage the development community

ADAPT OUR HOMES (RESIDENTIAL BUILDINGS)

Action-6 Provide energy efficiency information to homeowners

Action-7 Explore incentives to encourage residential energy efficiency

CHOOSE ALTERNATIVE MODES (TRANSPORTATION)

Action-8 Establish an Alternative Transportation Infrastructure Reserve Fund

Action-9 Conduct outreach to promote the regional Anti-Idling Bylaw

Action-10 Explore micro transit service

Action-11 Consider preferential parking for low emissions vehicles

RETHINK OUR WASTE (SOLID WASTE)

Action-12 Implement a waste reduction campaign

Action-13 Encourage local food opportunities and efforts to "buy local"

DEVELOP LOCAL ENERGY RESOURCES (ALTERNATIVE ENERGY)

Action-14 Implement an alternative energy demonstration project

Action-15 Conduct a district energy pre-feasibility study

Action-16 Provide information and incentives for solar energy systems

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1 INTRODUCTION

WHAT IS THE CLIMATE ACTION PLAN?

The Climate Action Plan (CAP) is a strategy to reduce energy consumption and greenhouse gas (GHG) emissions from the Town of Sidney's (corporate) operations, and the community as a whole. The CAP responds to the following four questions:

Where are we now?	A profile and inventory of current energy consumption and GHG emissions for corporate operations and the community.
Where are we going?	A business-as-usual forecast of GHG emissions from the 2007 baseline year to 2030.
Where do we want to go?	A community vision and goals, as well as recommended GHG emissions reduction targets to help guide reduction efforts.
How will we get there?	Specific strategies, actions and policy tools to assist in moving towards the GHG emissions reduction targets.

HOW WAS THE PLAN DEVELOPED?

The CAP was developed through engagement with Town staff, Council, stakeholders and the general public. The plan development process began in January 2010 and included a series of activities aimed at engaging targeted stakeholders across the community, and reaching out to citizens in order to raise awareness of issues related to energy and climate change (see Table 1).

Table 1: Climate Action Plan Engagement Activities

Activity	Description
Webpage	Background and context information about the CAP posted to a page on the Town of Sidney website.
Handout	A brochure including background information about the CAP, the 2007 community energy and emissions inventory, benchmarks, and additional information and resources.

Activity	Description
Online Survey	A survey available online during the month of March 2010; accessible via a link on the Town of Sidney website and distributed to Town staff, Council and key stakeholders via email (see Appendix A)
Staff Workshop	A full-day staff workshop at Town Hall with discussions around how to reduce energy and emissions from Town (corporate) operations (morning session), and from the community as a whole (afternoon session).
Key Stakeholder Workshop	An afternoon workshop held at the Mary Winspear Centre on March 24, 2010, with targeted stakeholders.

The conversations that took place, and the input received through these activities informed the development of the CAP. The plan was drafted in April 2010 and reviewed by Town staff before being presented to Council in May 2010.

Figure 1: Images from Climate Action Plan Stakeholder Workshop

2 CONTEXT

GLOBAL CLIMATE CHANGE

Greenhouse gases (GHGs) such as carbon dioxide, nitrous oxide and methane are produced primarily through our use of energy (i.e. when we burn fossil fuels such as gasoline, natural gas, oil, etc) to support activities such as driving our cars, heating and cooling our homes, manufacturing and transporting the products we buy, throwing our garbage in landfills (emissions result from decomposition), and growing and transporting our food. Our use of energy is resulting in drastic increases in atmospheric concentrations of GHGs, which is the most significant contributor to global climate change (see Figure 2). The Fourth Assessment Report (2007) of the Intergovernmental Panel on Climate Change (IPCC), states unequivocally that the consensus of scientific opinion is that:

- Global GHG emissions due to human activities increased 70% between 1970 and 2004;
- Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level;
- Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in human-caused GHG concentrations, and;
- There is high agreement and much evidence that with current climate change mitigation policies and practices, global GHG emissions will increase over the next few decades.[1]

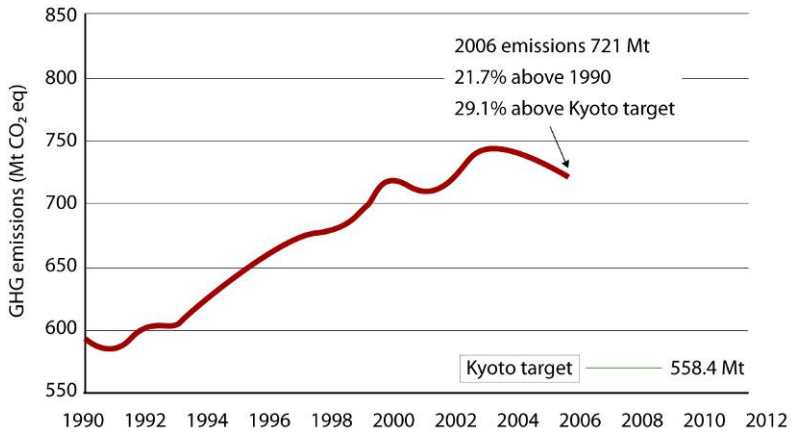

Figure 2: Canadian GHG Emission Trend[2]

[1] IPCC 4th Assessment Report (2007). http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf
[2] National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006.

LOCAL ACTION

The Province of BC has been moving forward with a series of measures to advance energy efficiency, promote conservation and reduce GHG emissions. A few of these measures are targeted at the local level; encouraging local governments to take action to reduce energy and emissions across the community, as well as from their own operations. Key measures include:

Greenhouse Gas Reductions Target Act (Bill 44, 2007): The Province of BC has set a province-wide GHG emissions reduction target of 33% below 2007 levels by 2020 and 80% below 2007 levels by 2050 (see Figure 3). The GHGRTA also sets requirements for public sector organizations to be carbon neutral by 2010.[3] The BC Climate Action Plan outlines how the province will get 73% of the way towards achieving these targets.

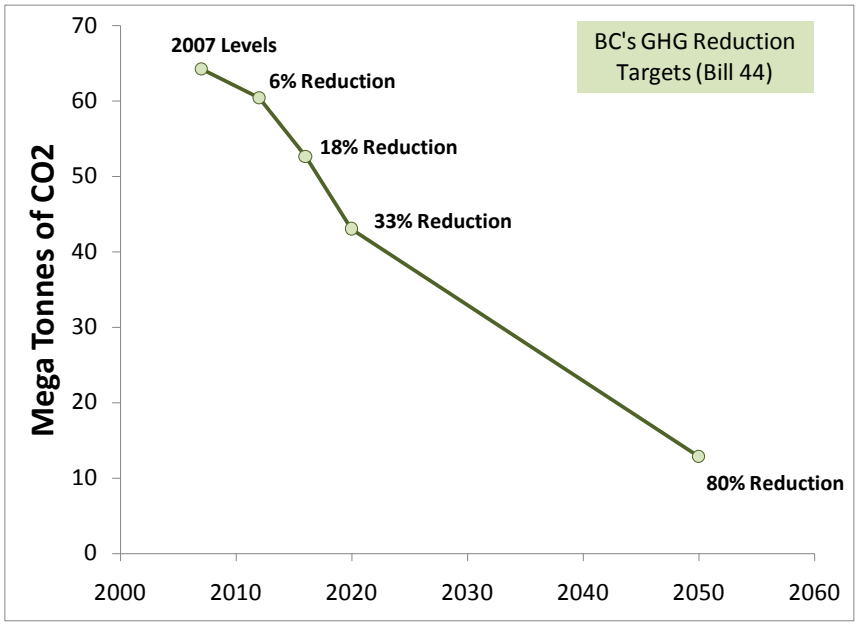

Figure 3: Province-wide GHG Emissions Reduction Targets

- **Local Government Statutes Amendment Act (Bill 27, 2008):** Bill 27 requires local governments include GHG emission targets, policies, and actions in their Official Community Plan (OCP).[4] To achieve this objective, the legislation provides a range of potential new powers for local governments.[5]

[3] Although local governments are encouraged to support the provincial goals, Bill 44 does not apply to local governments.
[4] It is currently understood that these OCP requirements would have a transitional period and not be fully required until May of 2010.
[5] Each of these possible powers still requires that the local government develop an enacting bylaw and to define the conditions and process for it to apply.

- **BC Climate Action Charter:** Introduced in September 2007 to encourage local governments to significantly cut GHG emissions. Participating local governments have voluntarily committed to become *carbon neutral* in their operations by 2012. Achieving carbon neutrality will require local governments to implement measures to reduce GHG emissions, and because it is currently not possible to operate without some emissions, local governments will need to purchase carbon offsets to net any remaining emissions to zero.

The latter two measures are relevant for Sidney and the CAP represents the Town's efforts to address these measures. More specifically:

1. The Town of Sidney is setting community-wide GHG emissions reduction targets, developing policies and actions to help achieve them, and articulating these in their OCP. In doing so, the Town will fulfill requirements under the Local Government Statutes Amendment Act (Bill 27, 2008).
2. Also included in the CAP are targets and strategies to assist the Town in reducing energy and emissions from its operations. These targets address the Town's voluntary commitment to the Climate Action Charter and help to define what measures will be taken to reduce emissions and what emissions remain to be offset, in order to achieve carbon neutrality.

Corporate versus Community Emissions

Figure 4 illustrates the difference in magnitude between corporate emissions (from Town operations) and community emissions (from buildings, transportation, solid waste, etc).

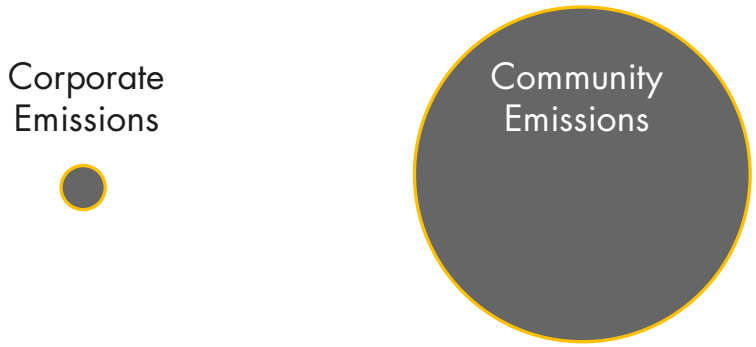

Figure 4: Corporate versus Community GHG Emissions

3 WHERE ARE WE NOW?

CORPORATE (OPERATIONS)

Profile

The Town of Sidney operates the facilities, fleet and utility accounts (as outlined in Table 2) either directly or through the provision of funds to other agencies. This profile is the basis for the 2009 corporate energy and GHG emissions inventory.

Table 2: Operations Profile for the Town of Sidney

Type	Number
General Buildings	16
Community and Recreational Facilities*	–
Fire halls	1
Vehicle Fleet	70
Electricity Accounts**	50
Natural Gas or Propane Accounts**	4

* No data provided at this time.
** Number of utility accounts accessed to develop the corporate inventory

Corporate Energy and Emissions Inventory

The Town of Sidney has compiled corporate energy and emissions inventories for 2007, 2008 and 2009. The figures presented in this plan reflect the 2009 corporate inventory.[6] In 2009, the Town consumed a total of 10,090 GJ of energy and emitted 343 tonnes of CO_2e in the delivery of its services. Table 3 breaks down these totals by fuel type.

Table 3: Corporate Energy Consumption and GHG Emissions, 2009

Fuel Type	Energy Consumption	Energy Units	GHG Emissions (tonnes CO_2e)	Annual Energy Expenditure (Approx $)
Electricity	1,458,794	kWh	38	$95,000
Natural Gas	1,644	GJ	84	$20,000
Gasoline	1,850	L	122	$51,000
Diesel	1,350	L	99	$36,000
Total			**343**	**$202,000**

[6]The Town's corporate GHG reduction target has been set using 2009 as the baseline year.

The majority of corporate emissions can be attributed to the gasoline and diesel used to fuel the Town's fleet (221 tonnes CO_2e). Electricity and natural gas used to power, heat and cool Town facilities accounted for about 122 tonnes CO_2e. Details of the 2009 corporate energy and emissions inventory are presented in Appendix B.

The total energy consumed and GHG emissions produced are also broken down by segment, as shown in Figure 5 and Figure 6, respectively. These charts demonstrate that although electricity accounts for a substantial portion of energy consumption, it contributes fewer GHG emissions than fossil fuel-based energy sources (e.g. natural gas, gasoline, and diesel).

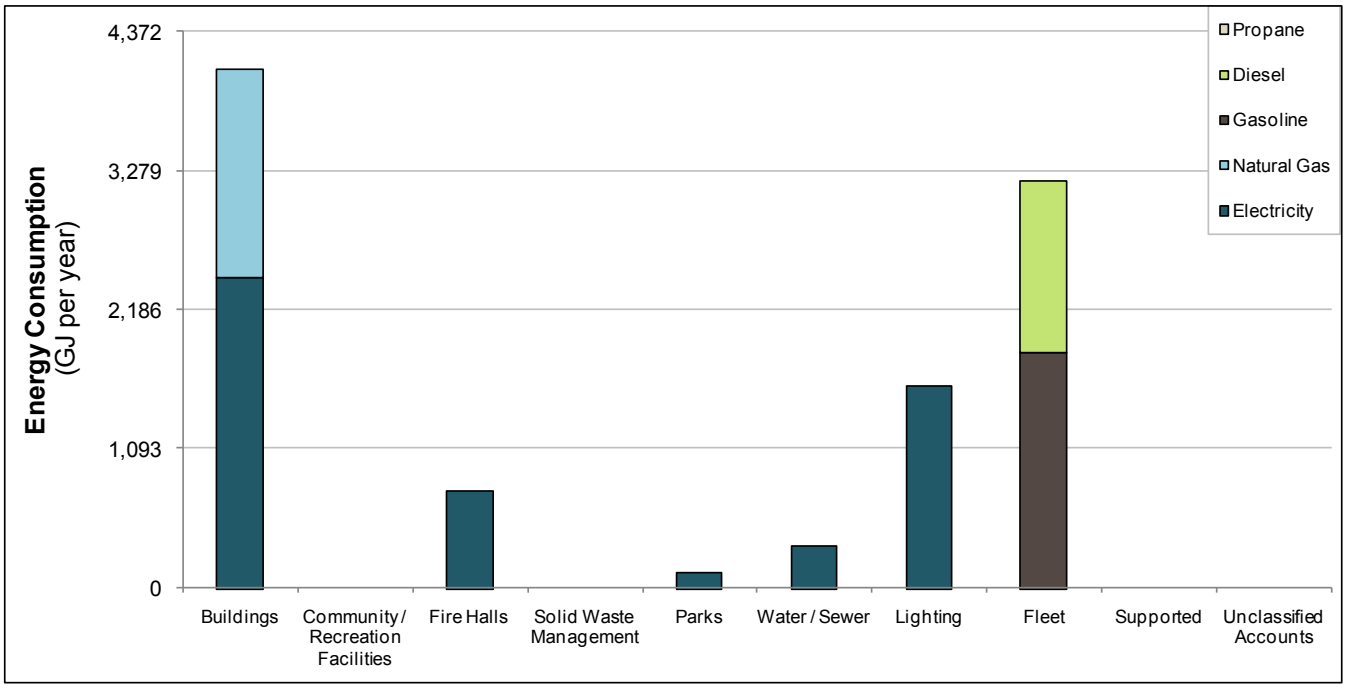

Figure 5: Energy Consumption (GJ) by Segment

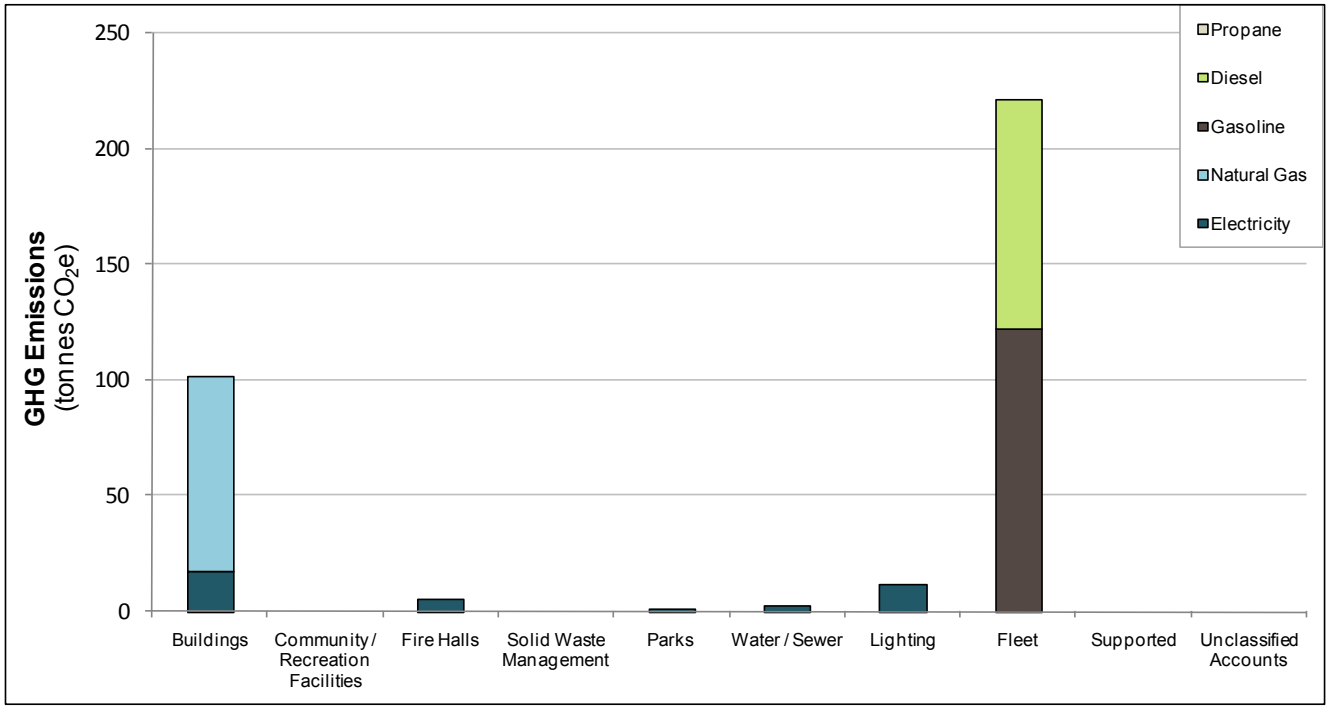

Figure 6: GHG Emissions (tonnes CO_2e) by Segment

Local governments in BC now have carbon liabilities – first for the "carbon tax" associated with all purchases of fossil fuels (e.g. gasoline, diesel, natural gas, propane), and second for the voluntary purchase of carbon offsets to become carbon neutral starting in 2012. By committing to become carbon neutral, local governments are eligible for a rebate on the carbon taxes paid. The following outlines the expected costs and rebates for 2012, based on 2009 consumption. Offsets are assumed to cost $25 per tonne and the carbon tax is scheduled to cost $30 per tonne.

Estimated cost of offsets required to become "carbon neutral":	$ 9,180
Estimated Climate Action Revenue Incentive Program (CARIP) rebate:	$ 8,400

COMMUNITY

Profile

Table 4 profiles Sidney's characteristics and attributes including population and growth, land use, dwellings, transportation and energy supply, and highlights implications (challenges and benefits) for energy use and GHG emissions.

Table 4: Community Profile and Implications for Energy and GHG Emissions

Current State	Implications for Energy Use and GHG Emissions
Population and Growth	
Current population is approximately 12,311 and is expected to grow to approximately 15,117 residents by 2038. Sidney is projected to accommodate approximately 1/3 of the designated 11% growth allocated to the Peninsula for future population growth in the CRD. Sidney's major growth area is the downtown, which has been identified as a higher density redevelopment area by the Town and in the CRD Regional Growth Strategy The Town has an age profile with several of the population cohorts in the older age categories (65-74 years, and 75 + years respectively) compared to BC and regional averages. The number of residents in the 20-44 years age cohort is significantly lower.	Significant population growth often implies more energy consumers and rising GHG emissions. However, growth can provide opportunities for increased transportation choices to meet the increased demands of a larger population, particularly if higher densities are achieved. New growth in compact communities is characterized by a mix of housing types and amenities nearby. This will lead to reductions in per capita GHG emissions due to increased energy efficiency in transportation and housing. Older populations are often interested in living in smaller dwellings, which are typically more energy efficient than single family homes or larger dwellings. They also have a propensity to move to areas where transit service is available.

Current State	Implications for Energy Use and GHG Emissions
Land Use	
The Town of Sidney is situated entirely within the Urban Containment Boundary of the CRD. The Town of Sidney will manage its growth in order for adjacent municipalities to preserve rural lifestyles and communities. The Town has a mix of low to moderate density residential development. Future redevelopment will consist of higher density, particularly in the downtown to accommodate anticipated future growth. The Town will continue its objective to develop as a complete community. This will include balancing population growth with increased amenities for all residents.[7]	Given the compact nature of the Town, opportunities for alternative transportation are significant (i.e. walking, cycling, etc). In future, there will be less kilometres travelled by car as transit continues to be enhanced within the Town and the region.
Dwellings	
The number of dwellings in the Town is expected to increase from 5,748 dwellings to about 7,652 dwellings in 2038.[8] Based on the estimated rate of growth and the fact that Sidney is relatively built out, it is anticipated that higher density redevelopment will occur, particularly in the downtown, which provides many amenities and services. According to Statistics Canada, Sidney has a low average household size of 6.0 rooms per dwelling (BC average is 6.4 rooms per dwelling). There is a high rate of home ownership (71% owned vs. 29% rental) in the Town.	Multiple family homes are often more energy efficient as they have less exterior walls per space and are smaller. As the energy efficiency standards in new dwellings improve, the home energy profile will decrease. The location and context of dwellings is important. People who live closer to services and transit tend to drive less. While household size (# of people per household) is decreasing in North America as a trend, the size of dwellings is increasing. The more space that must be heated per person, the less energy efficient. The high rate of home ownership may mean that occupants are more invested in making energy efficiency improvements that they will benefit from directly through reduced utility bills and increased comfort.

[7] Town of Sidney, Official Community Plan, p. 17.
[8] A Context for Change Management in the Capital Regional District: Changing People in a Changing Region, Urban Development Institute and CitySpaces, p. 51.

Current State	Implications for Energy Use and GHG Emissions
Transportation	
Sidney is well-situated to major regional transportation hubs: it is five minutes from the Victoria International Airport, ten minutes from the Swartz Bay ferry terminal that links to Vancouver, and thirty minutes to downtown Victoria. The Sidney Ferry Terminal, with service to the United States, is situated in the Town of Sidney. There is a public transit network in Sidney with regional connections to central areas of the CRD. There is also an interest in enhancing transit service within the Town. 70% of Sidney's employed labour force drive to work (2006 Census, Statistics Canada), yet over half of the employed labour force works within the municipality.	Sidney has unique characteristics that make it ideal for the promotion of alternative forms of transportation: it is flat, with a well-developed and compact downtown, making it easy for walking, cycling and taking public transit. With over half of Sidney's employed labour force working within the municipality, opportunities to get residents out of their single occupancy vehicles and to promote commute trip reduction (through improved transit service, car and van pool opportunities, and active transportation) are significant.
Alternative Energy Supply	
There is an ocean loop geo-thermal heat pump system that provides heating and cooling for the Sidney Pier Hotel and the Shaw Ocean Discovery Centre.	Development of a local energy supply is key to reducing GHG emissions for the Town over the long term. A district energy pre-feasibility study for the Town is planned. This study will explore opportunities for district energy using alternative fuel sources such as biomass boilers, heat pumps and ocean water loops.

Community Energy and Emissions Inventory

An energy and GHG emissions inventory helps the community to understand how much energy it consumes and for what purposes, as well as how much it emits in terms of GHGs and where those emissions come from. Figures for 2007 baseline energy consumption and GHG emissions are shown below in Table 5.[9]

[9] 2007 figures provided by the Province of BC Community Energy and Emissions Inventory (CEEI) initiative.

Table 5: Community Energy Consumption and GHG Emissions, 2007

Component	Energy (GJ)	GHG Emissions (tonnes of CO_2e)
Residential Buildings	319,642	4,782
Commercial Buildings	244,563	5,504
Industrial Buildings	39,603	242
Transportation	512,350	36,874
Solid Waste	–	9,577
Total	**1,116,158**	**56,980**

Figure 7 shows the community's GHG emissions broken down by sector. The largest contributor of GHG emissions in Sidney is transportation. These emissions account for 65% of total emissions. GHG emissions from buildings account for 18% of the community's GHG emissions, while emissions from solid waste account for 17% of total emissions.

- **Buildings:** This includes the energy to heat and cool residential, commercial and industrial buildings, as well as the activities that occur within these residences and facilities. This data is obtained from utility records and includes electricity and natural gas consumption. Other sources such as wood, fuel oil, or propane tank heat have not been quantified in the inventory.
- **Transportation:** Vehicular emissions estimates are based on a count of the vehicles registered in the Town of Sidney, an estimate of fuel consumption based on the type of vehicle, and an estimate of the number of kilometres driven. This data is obtained through ICBC and Natural Resources Canada.
- **Solid Waste:** Waste does not directly consume energy but when deposited into landfills, it decomposes and releases methane gas which is a potent GHG. The inventory includes estimates of the annual mass (tonnes) of municipal solid waste disposed of at local landfills and attributed to Sidney, as well as Sidney's estimated share of (methane) emissions.

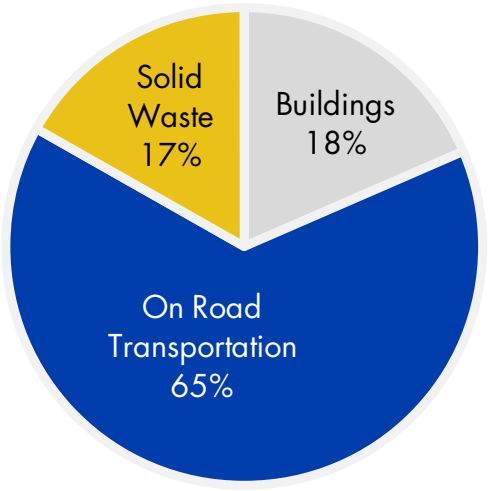

Figure 7: GHG emissions by sector, 2007

An exercise was conducted to test the validity of the CEEI figures for target-setting and climate action planning within the Town of Sidney. Residential sector GHG emissions from the CEEI were compared with estimates using Statistics Canada 2006 Census of Canada data and energy use intensities from BC Hydro 2007 Conservation Potential Review studies. From this review, it was concluded that the CEEI provides a sufficiently accurate baseline for Sidney's Climate Action Plan. For more detail on the CEEI validation exercise, please see Appendix C.

4 WHERE ARE WE GOING?

EMISSIONS FORECAST

At the community scale, GHG emissions in Sidney are projected to increase to over 59,000 tonnes CO_2e by the year 2020, and to over 92,000 tonnes CO_2e by the year 2050 (Figure 8). This forecast is based on population projections that use an annual growth rate of 1.5%, resulting in a population increase from 11,315 in 2006 to 13,937 by 2020 and 21,785 by 2050. This forecast assumes a business-as-usual approach; that is, no direct intervention is taken by the Town.

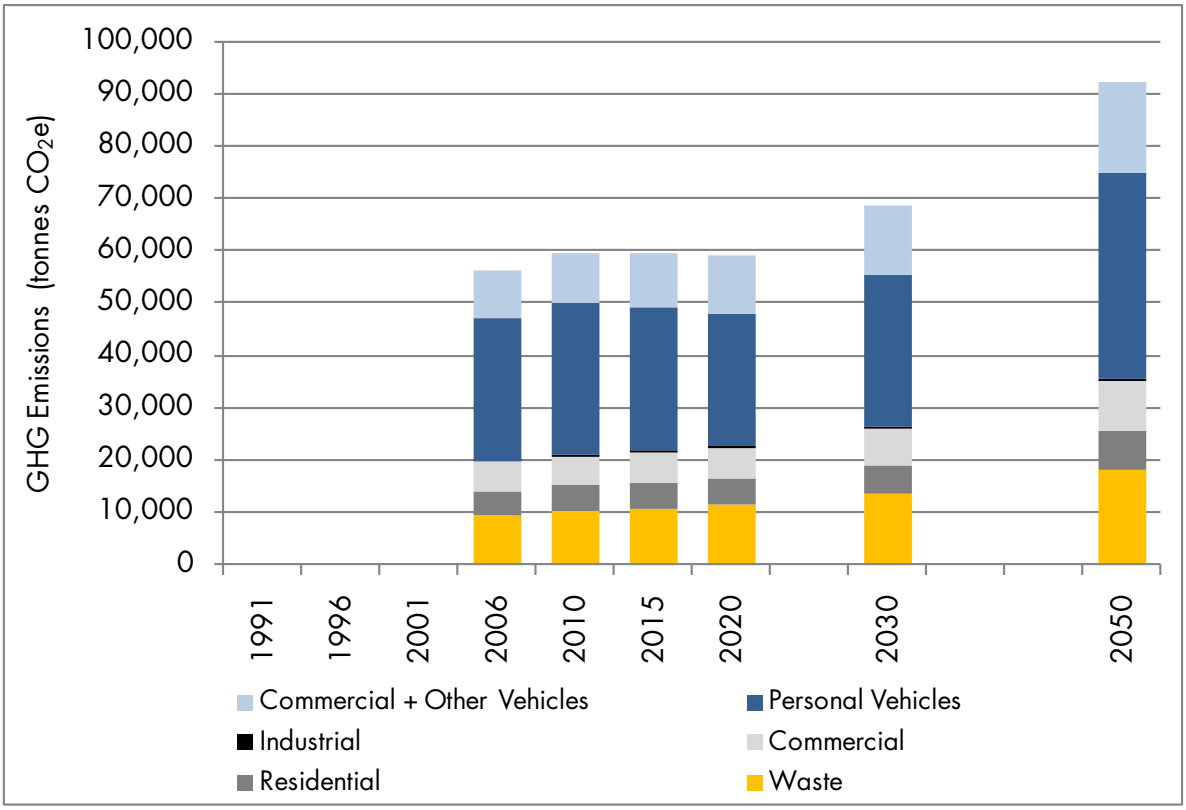

Figure 8: Business-as-Usual Forecast of GHG Emissions (tonnes CO_2e)

5 WHERE DO WE WANT TO GO?

OUR VISION

A strategic plan, such as the Climate Action Plan, benefits from having an overarching vision to articulate how the community sees itself in future. Rather than recreating a vision specifically for the Climate Action Plan, we will refer to existing vision statements developed through planning and consultative processes within the community, as follows:

From the **Town of Sidney Official Community Plan**: *"…a balanced, vibrant waterfront community with a revitalized town centre, which caters to residents, visitors and businesses through the provision of a broad range of services including: efficient transportation, tourist amenities and cultural and social activities for all segments of the community, while affording optimal opportunities for industrial and commercial development."*

From **Vision 2020**: *"Sidney will be the best seaside town in Canada – vibrant, unique, welcoming."*

From the **Downtown/Downtown Waterfront Local Area Plan**: *"The Town of Sidney will strive to achieve a dynamic, vital and economically successful downtown that retains its strong sense of community and meets the changing needs of residents and visitors alike."*

For the purposes of the Climate Action Plan, it may be helpful to supplement these vision statements with a goal that articulates our community's desire to achieve our vision *in the most energy efficient manner possible, so as to ensure the long-term resiliency of our community.*

HOW HARD CAN WE PUSH TO REDUCE EMISSIONS?

Through the Climate Action Plan process, residents indicated strong support for taking aggressive action to reduce energy use and GHG emissions in the community. In both the online survey and in the stakeholder workshop residents were asked the following question: How hard do you think the Town of Sidney should push to reduce GHG emissions in the community? In the online survey an overwhelming majority (63%) felt that the Town should be leaders in reducing GHG emissions (i.e. set a high target), while about 31% of respondents felt that the Town should set a moderate GHG emissions reduction target.[10] Results from the stakeholder workshop are shown below in Figure 9.

[10] See full results of the online survey in Appendix A.

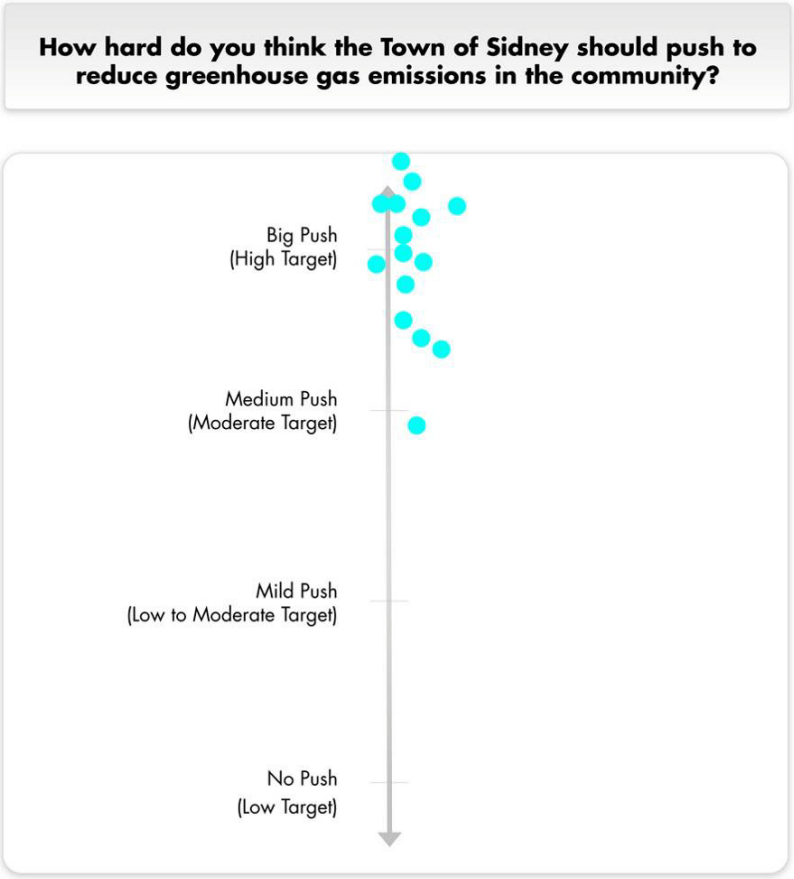

Figure 9: Opinions expressed at the Stakeholder Workshop

GHG EMISSIONS REDUCTION TARGETS

Target-setting is a challenging process that requires technical analysis, values tradeoffs and local knowledge. Staff, stakeholders and the general public were engaged, through surveys and discussions, in the development of GHG emissions reduction targets for both Town operations (corporate target) and the community as a whole (community-wide target). Based on this process, the following GHG emissions reduction targets are proposed (Table 6).

Table 6: Town of Sidney GHG emissions reduction targets (proposed)

Year	Town of Sidney Corporate Targets	Town of Sidney Community-wide Targets	Province of BC Province-wide Targets
2015	15% below 2009	–	–
2020	20% below 2009	15% below 2007 (30% per capita reduction)	33% below 2007
2030	–	30% below 2007 (50% per capita reduction)	–
2050	–	80% below 2007 (90% per capita reduction)	80% below 2007

The community-wide GHG reduction targets translate into actual emissions of roughly 47,500 tonnes CO_2e in 2020; 39,000 tonnes CO_2e in 2030, and; 11,500 tonnes CO_2e in 2050.

On the corporate side, targets are expected to be achieved mainly through progressive fleet management activities and improved energy efficiency in existing civic facilities. The community-wide targets recognize the challenge of achieving reductions in the short term. Policies and actions to reduce emissions take time to establish and even longer to take effect. However, based on an analysis of the reductions likely to result from successful implementation of the strategies outlined in the Climate Action Plan, the 2020 and 2030 targets are thought to be achievable (Figure 10). The 2050 target represents a more visionary approach to target-setting, and aligns with both the provincial target and what the science is telling us with respect to the reductions required to avoid the potentially serious consequences of global climate change. The strategies that will be required to reach the 2050 target are currently undefined. That is, they are not outlined in this plan, nor can we at present predict what the conditions will be in 2050 that will allow us to achieve the target. We assume there is likely to be further intervention by senior levels of government, changing market conditions that will influence how we consume energy, as well as behavioural changes in society more broadly.

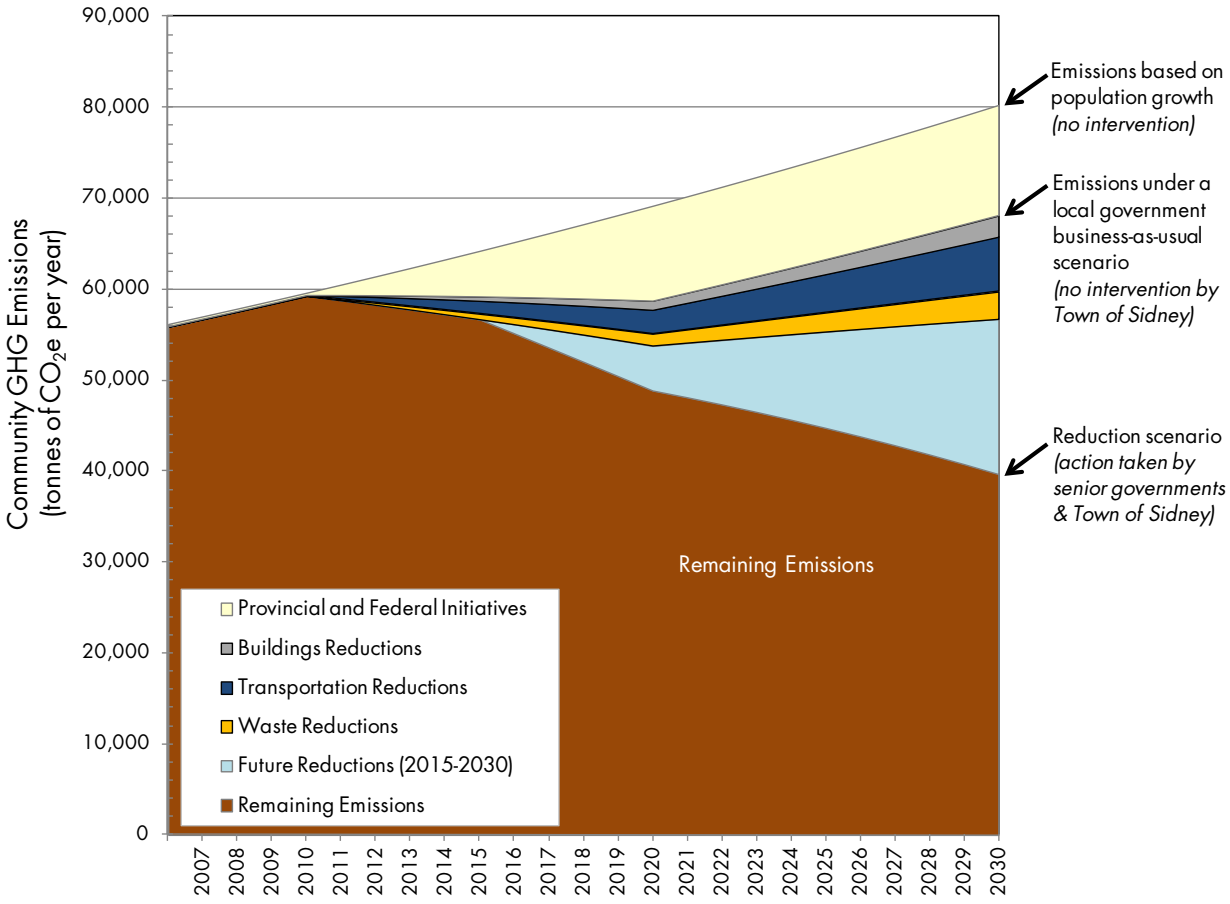

Figure 10: Community GHG Emissions Reduction Scenario to 2030

6 HOW WILL WE GET THERE?

CORPORATE COMPONENT

Lead by Example (Town Operations)

Emissions attributed to Town operations (340 tonnes CO_2e in 2009) are far less than community-wide emissions (57,000 tonnes CO_2e in 2007). However, the Town has an important role to play in demonstrating leadership in energy and GHG reductions – leading by example to encourage change in the behaviours and actions of individuals, organizations and businesses. Key reduction opportunities for the Town include fleet management activities, and retrofitting existing facilities to improve energy efficiency. An assessment of energy conservation opportunities in Town facilities was conducted as part of the Climate Action Plan development process. This assessment helped to identify low-hanging fruit for Town facilities and outlined potential costs and savings (energy and financial). In order to demonstrate leadership in the community, the Town will need to ensure that projects that reduce energy and GHG emissions are widely communicated to citizens.

Action-1 **Improve the energy efficiency of existing Town facilities**

In an effort to improve energy efficiency in existing facilities, the Town will implement the recommendations in the *Energy Efficiency Opportunity Assessment of Corporate Buildings* report, as time and budget allow. Recommended next steps include: (1) Review the life expectancy of facilities and identify where energy retrofits may logically coincide with other planned improvement projects; (2) determine what can be done in-house by Town staff, and how the remaining work will be contracted out; (3) set aside sufficient budget to undertake the work, and determine how retrofits will be financed, and; (4) investigate funding opportunities and requirements for programs through BC Hydro and others.

Action-2 **Investigate the opportunity to share a Community Energy Coordinator**

The Town will investigate opportunities to share a Community Energy Coordinator position with other municipalities (within the Capital Region District, CRD) or institutions such as School Districts. BC Hydro currently provides funding for staff positions to both municipal

governments (50% funding) and School Districts (100% funding) to facilitate energy efficiency and conservation activities both corporately and throughout the community. CRD and member municipalities should consider opportunities to share a staff position regionally.

Action-3 Commit to evaluating all capital expenditures using a life cycle approach

The Town will commit to evaluating all new capital expenditures (e.g., new or expanded facilities, fleet vehicles, infrastructure improvements, etc) using life cycle costing. Understanding the full costs associated with capital expenditures will allow for more informed decision-making. To formalize this commitment the Town should consider requiring that life cycle costing be included in Council reports regarding capital expenditures.

This approach will ensure that energy efficient and "green" technologies are given a fair evaluation against more traditional approaches which may cost less upfront, but require larger expenditures to operate and maintain over time. In particular, this action will assist the Town in: (1) building new facilities to higher standards of energy efficiency and sustainability and, (2) purchasing goods (e.g., fleet vehicles) and services (e.g., contracted services) that lead to reductions in energy use and GHG emissions over time.

Action-4 Formalize sustainable fleet management activities

The Town will continue to implement sustainable fleet management activities and consider joining the E3 Fleet program[11] to formalize its commitment to reducing energy and emissions from the fleet. Members of the E3 Fleet program are supported by resources and tools to assist and guide fleet management activities. A base annual E3 Fleet membership will cost $300 for the number of vehicles that the Town owns (70).

The E3 Green Fleet Rating uses a point-based system to evaluate performance at a Bronze, Silver, Gold or Platinum level, and comes at an additional cost of $6,000 (based on fleet size). Points are obtained by implementing actions in the following areas: Green Fleet Action Plan; Idling Reduction; Fuel Data Management; Trip and Route Planning; Fuel Efficiency; Training and Awareness; Vehicle Purchasing; Operations and Maintenance; Utilization Management, and; GHG Reductions. The economic case for pursuing the E3 Green Fleet Rating may be weaker for smaller fleets; however, the activities outlined in the program can help to guide fleet management efforts by the Town and provide a framework for reducing fuel consumption and emissions over time.

[11] E3 Fleet, a program of the Fraser Basin Council, promotes activities to increase fuel efficiency and reduce emissions, and certifies fleets according to Bronze, Silver, Gold or Platinum levels (http://www.e3fleet.com).

Action-5 Include energy and GHG considerations in the Town's purchasing policy

The Town is currently undertaking a review of its corporate policies. As part of this review the Town will revise its current purchasing policy to include consideration for energy and GHG emissions in all procurement decisions. While this action is similar to Action 3 (above), the purchasing policy applies more to the procurement of general office supplies and information technology (IT) equipment.

Action-6 Conduct staff outreach to encourage energy efficient behaviours

The Town will conduct outreach with staff ("in-reach") to raise awareness and encourage action on energy conservation and GHG reduction opportunities associated with operations. The outreach program needn't be an onerous task for staff. Instead, simple tools such as stickers and email prompts can offer energy conservation reminders (e.g., shut down workstations), and easy-to-organize activities such as monthly staff lunch-and-learns, could form the basis of the outreach program. The Town should use this opportunity to reinforce the actions already underway to reduce energy and emissions from operations, including the:

- Corporate anti-idling policy, and;
- Green Technologies Initiative.[12]

The outreach program could serve as a forum through which Town staff can contribute ideas and initiate further action (e.g., in waste reduction, employee commuting, etc).

[12] The Town of Sidney currently uses its Climate Action Revenue Incentive Program (CARIP) rebate to fund projects and initiatives that reduce energy and GHG emissions, increase sustainability, test new "green" products or technologies, etc.

COMMUNITY COMPONENT

Develop Sustainably (Land Use & Development)

Sidney has many land use attributes that favour energy efficiency and sustainability. Its relatively compact and flat land base, its commercial downtown and public waterfront lend to its walkability and vibrancy for citizens and visitors alike. The town has limited developable land left, which means that in the future the focus will be on infill development and renewal of older buildings. This brings opportunities for increased density and mixed uses, which may lead to an even greater selection of amenities and services within a walkable distance. The *Town of Sidney's Downtown/Downtown Waterfront Local Area Plan (LAP*) provides for just that; the creation of a "complete community." The objectives and policies outlined in the LAP are exactly the direction that Sidney needs to take to continue along the path of sustainability. Additional policies to further encourage energy efficient land use and multi-family and commercial development are outlined in this section of the Climate Action Plan.

Action-1 Implement the Downtown/Downtown Waterfront Local Area Plan

The Town will continue to use the Downtown/Downtown Waterfront LAP as a framework to guide the development of Sidney's downtown. Where necessary, the policies outlined in the LAP should be formalized through inclusion in the Town's Zoning Bylaw. The LAP follows sustainable development principles that strongly support the objective of reducing energy use and GHG emissions in the community, including: (1) enhance the pedestrian experience; (2) increase residential densities; (3) reduce automobile reliance, and; (4) use existing infrastructure efficiently.

Action-2 Consider density bonuses during rezoning applications

The Town will consider establishing density bonuses in the Zoning Bylaw for the purpose of encouraging energy efficiency and GHG emissions reductions. Density bonuses enable developments to surpass the allowable residential density set within a particular zoning category in exchange for amenities (e.g., park or plaza space), affordable housing, or for sustainable development and high performance "green" buildings. The specific conditions needed in order to receive the increased residential density would be set out within the Zoning Bylaw.

Action-3 Incorporate energy efficiency guidelines in Development Permit Areas

The Town will update the existing Development Permit Area (DPA) guidelines to include energy efficiency considerations for new development. This can include guidelines for the siting of buildings (such as solar orientation), and the exterior aspects of buildings, but not any guidelines regarding systems contained within a building (such as low flow fixtures and efficient appliances).

Action-4 Explore incentives for energy efficient development

The Town will explore opportunities such as:

- **Rebates on development permits** for development that meets a certain level or standard of energy efficiency and sustainability. This standard could be a recognized green building standard, such as LEED® (for multi-family residential and commercial development) or EnerGuide (for residential development). Different levels of rebates can be established based on the level of performance achieved.
- A **Development Cost Charge (DCC) Bylaw** also provides financial incentives for development with lower infrastructure capital costs (e.g., higher density, infill or centrally located development). The Local Government Statutes Amendment Act (Bill 27, 2008) enables local governments to waive or reduce DCCs for low impact development patterns and small lot subdivisions meant to reduce energy use and GHG emissions.
- The Community Charter allows for a **revitalization tax exemption** to be offered for the purposes of energy and water conservation. Local governments must clearly define the revitalization program in a bylaw. For example, a property tax exemption might be structured as X % for 5 years, for new homes that meet a certain level of LEED® (for commercial and multi-family buildings). The objective of this action is to create financial value for building "green" that stays with the property owner (as opposed to the occupants/tenants). This value can be used by builders as a marketing tool for the extra features of the energy efficient home and provides a clearly defined 'value' to offset any incremental cost to the purchaser.

Action-5 Engage the development community

The Town will look for an opportunity to engage local developers, builders, and architects in a dialogue around the future of development in Sidney. This dialogue could take the form of meetings/workshops where Town staff would: (1) present relevant objectives and policies put in place to encourage more sustainable, energy efficient development, and; (2) communicate existing programs and incentives aimed at encouraging sustainable development. The meetings would also provide an opportunity for the development community to give their input on challenges and opportunities for sustainable development in Sidney, which in turn could help the Town to adapt/improve its land use and development policies and programs.

Adapt our Homes (Residential Buildings)

Currently, the Town's OCP permits downtown residential densities of 85 to 120 units per hectare. Policies outlined in the Downtown/Downtown Waterfront LAP permit increased residential densities to a maximum of 260 units per hectare (with the provision of certain amenities). Over time, this policy will greatly improve the energy efficiency of residential buildings in the downtown (it will also assist in providing more diverse housing options, improving the pedestrian experience, reducing car dependency, etc). For other residential development zones in Sidney, infill development, energy retrofits of existing homes, and encouraging more energy efficient building occupant behaviours present great opportunities. This section of the Climate Action Plan is focused on providing information and opportunities to homeowners to improve energy efficiency whether building a new home, improving an existing home or occupying a current home.

Action-6 Provide energy efficiency information to homeowners

The Town will compile and provide information on energy efficiency to homeowners. This information could be provided in a brochure at the Town's permit desk – to capture citizens that may be looking to build or renovate a home – and via the Town's website. The brochure might include information on programs, incentives and resources that encourage energy efficiency (e.g., LiveSmart BC Efficiency Incentive Program, local qualified energy auditors, etc) or on specific technologies and behaviours aimed at conserving energy in the home (e.g., programmable thermostats, water heater settings, compact fluorescent lights, etc). The brochure should also include information on relevant objectives and policies that the Town of Sidney has put in place to encourage residential energy efficiency.

Action-7 Explore incentives to encourage residential energy efficiency

The Town will explore opportunities such as:

- **Building permit fee rebates** for residential development (new construction) and improvements (retrofits) that meet a certain standard of energy efficiency, such as EnerGuide. Different levels of rebate can be established based on the level of energy performance achieved. Building permit fee rebates could also be applied to energy audits completed by a qualified auditor.
- The Community Charter allows for a **revitalization tax exemption** to be offered for the purposes of energy and water conservation. Local governments must clearly define the revitalization program in a bylaw. For example, a property tax exemption might be structured as X % for 5 years, for new homes that meet a certain level of EnerGuide. The objective of this action is to create financial value for building "green" that stays with the property owner (as opposed to the occupants/tenants). This value can be used by builders as a marketing tool for the extra features of the energy efficient home and provides a clearly defined 'value' to offset the incremental cost to the purchaser.

Choose Alternative Modes (Transportation)

Transportation accounts for approximately 65% of GHG emissions in Sidney and as such provides the largest opportunity for achieving reductions. As stated earlier, Sidney has a number of attributes –compact, flat, walkable downtown – that afford opportunities for citizens to reduce their dependency on their cars and choose alternative modes of transportation to get around town. Continued sustainable development of the downtown and waterfront (see *Downtown/Downtown Waterfront LAP*) will improve these opportunities over time and create densities that better support public transportation infrastructure. Further, planned improvements in fuel efficiency will help to reduce GHG emissions. In the meantime, what strategies can Sidney implement in order to achieve a reduction in emissions from transportation? This section of the Climate Action Plan requires partnerships with transportation authorities, local organizations and businesses, and individuals in order to realize success in reducing GHG emissions.

Action-8 Establish an Alternative Transportation Infrastructure Reserve Fund

The Local Government (Green Communities) Statutes Amendment Act (Bill 27, 2008) provided local governments increased authority with respect to varying off-street parking requirements. Local governments may now exempt or reduce the amount of off-street parking required based on activities or circumstances related to the transportation needs associated with the land or building. For example, co-operative car share arrangements, buildings situated close to public transit, or the provision of additional bicycle parking are all alternative transportation features which could result in a reduced need for off-street parking. Local governments can now accept cash in-lieu of those parking spaces and put it into an *Alternative Transportation Infrastructure Reserve Fund*. The Town of Sidney will consider establishing such a fund to support the implementation of transportation demand management (TDM) activities.

Action-9 Conduct outreach to promote the regional Anti-Idling Bylaw

The Capital Regional District (CRD) passed a region-wide Anti-Idling Bylaw on April 8, 2009. The bylaw limits vehicle idling to a maximum of 3 consecutive minutes (with some exceptions) and is managed collaboratively by the CRD and the Vancouver Island Health Authority (VIHA) with a focus on public awareness and education. The VIHA is responsible for receiving complaints about idling. The Town will promote the regional Anti-Idling Bylaw through outreach to the public and will explore opportunities to increase outreach efforts through partnerships with local businesses, organizations and institutions where idling is common, such as restaurant drive-throughs, convenience store parking lots, school pick-up/drop-off zones, and medical offices. To assist in these outreach efforts, the Town should join Idle Free BC[13] to receive a free starter kit which includes vehicle decals, driver outreach materials and street signs.

[13] Idle Free BC: www.idlefreebc.ca

Action-10 Explore micro transit service

The Downtown/Downtown Waterfront LAP calls upon the Town to examine the feasibility of establishing a fuel efficient micro transit system to service the downtown, waterfront and surrounding areas.

As a first step, the Town should consider focusing its efforts towards partnership with BC Transit to augment transit service within the community. This approach would achieve economies of scale in the initial purchase, and in the ongoing operations and maintenance of a community-oriented shuttle, thereby minimizing the financial burden on the Town.

Another approach to micro transit service would be to model it on successful examples from other municipalities, such as the Town of Ladysmith Trolley[14], the City of Langford Trolley[15] and the District of Mission Shopper Shuttle.[16] A number of potential opportunities exist to fund the establishment and ongoing operation of micro transit service, including:

- Establishing an Alternative Transportation Infrastructure Reserve Fund (see Action 1 in this section) and directing the funds at micro transit service
- Establishing parking fees in the downtown area and directing parking revenues to micro transit service[17]
- Selling advertisement space to local businesses and directing revenues to micro transit service
- Conducting a community-wide fundraising campaign and directing proceeds to the purchase of a shuttle bus or trolley
- Charging a nominal fee per ride during a start-up period and then moving towards a donation-based system.

Action-11 Consider preferential parking for low emissions vehicles

The Town will investigate opportunities to provide preferential parking spaces to low emissions vehicles (e.g., compact cars, hybrids, car co-op vehicles, car or van pools, etc) throughout the downtown and waterfront area, and work in partnership with large retailers to do the same in private parking lots (e.g., Thrifty Foods, etc). This action is intended to provide residents with a non-financial incentive to drive smaller, more fuel efficient vehicles. It also recognizes that improvements to alternative transportation infrastructure take time and that until these options become more viable and attractive to citizens, there will continue to be a need to drive personal vehicles around town.

[14] The Town of Ladysmith established a community trolley service in August 2009 (http://www.ladysmithtrolley.com/).
[15] The City of Langford has 2 trolleys servicing the community. The trolleys were purchased with funds donated by the development community. Ongoing operations and maintenance, as well as driver's salaries are paid for through Gas Tax funds and advertisement space on the trolleys. The service is free to the public (donations are accepted).
[16] Mission Shopper Shuttle: http://www.bctransit.com/regions/cfv/schedules/shopper_shuttle.cfm
[17] Parking fees could be introduced in the downtown area in phases. For example, during peak hours only, or only within certain areas (e.g., Fifth Street to the waterfront).

Rethink our Waste (Solid Waste)

GHG emissions from the breakdown of waste at the landfill account for approximately 17% of total emissions in Sidney. While this figure does not represent Sidney's largest impact on GHG emissions, it is an area where individuals can easily take action and make a difference. This section of the Climate Action Plan focuses on opportunities to encourage waste reduction and diversion from landfill. This will ensure that Sidney contributes to the regional waste diversion goals of 60% by 2013 and 90% by 2020.[18]

Sidney already has a residential user-pay system in place for solid waste collection, which helps to limit the amount of waste that households can put out for collection. This is a positive step to help encourage waste reduction. Continued efforts to raise public awareness and create additional opportunities for waste reduction will increase diversion rates in Sidney and assist in reducing emissions associated with solid waste.

Action-12 Implement a waste reduction campaign

The Town will explore opportunities to work in partnership with local retailers (i.e., Beacon Avenue retailers, Thrifty Foods, etc), organizations (i.e. Sidney Business Association, Chamber of Commerce) and the Capital Regional District (CRD) to promote waste reduction. Specific opportunities to consider include:

- A dedicated page on the Town of Sidney website with information and resources on waste reduction
- A Sidney-branded reusable shopping bag for use in local retail outlets (along with outreach efforts to encourage retailers to phase out the use of plastic shopping bags)
- Prominent "landfill" labels on public garbage bins to communicate where waste is going
- Increasing the size of public recycling bins to make them more prominent in the downtown core and minimizing the size of public garbage bins
- Reducing the frequency of municipal waste collection (i.e. switching to bi-weekly collection, same as blue box collection)
- Promoting local outlets and resources that encourage the 3Rs (reduce, reuse, recycle), as well as composting:

[18] Capital Regional District Solid Waste Management: http://www.crd.bc.ca/waste/index.htm

- *Beacon Community Services* – a community-based, not-for-profit with thrift shops that accept donations of clothing, books, collectibles and household items.[19]
- *Syntel* – a company that accepts plastics that don't go in the blue box and recycles them to create a wood-like product for use in landscaping, fences, park benches, etc.
- *Pacific Mobile Depots*– a business that offers mobile collection depots and takes back materials that can't be recycled through the blue box program.[20]
- *Greater Victoria Composting Education Centre* – an organization that provides information, equipment, training and education on composting (for use in backyards, apartments, offices, etc).[21]
- *Pedal to Petal* – a service that sells composting bins and comes to your house by bike on a regular basis to collect household organics for composting.[22]

Action-13 Encourage local food opportunities and efforts to "buy local"

The impact of the global food system on the environment and local economies has become an important topic in the public discourse on climate change and sustainability. Concepts such as the "100 mile diet" and campaigns that encourage citizens to "buy local" are increasingly being incorporated into community sustainability efforts, recognizing the many benefits to be gained by pursuing a more localized approach to our food system.

There are many such efforts ongoing in the Capital Regional District which can serve as resources to Sidney citizens and potentially act as models that could be replicated locally, with the support of community members. The Town of Sidney will work in partnership with community organizations to further promote and develop local food. Opportunities for action include:

- Investigate year-round opportunities to increase the amount of local food available in Sidney.
- Review the "Pocket Market Toolkit" created by Victoria-based *Food Roots* and explore opportunities to host "pocket markets" in Sidney.[23]
- Allocate public space for community gardens; underutilized space such as road ends and the grounds of civic buildings provide a starting point to test receptivity by the public.

[19] Beacon Community Services: http://www.beaconcs.ca/pages/aboutus.html
[20] Pacific Mobile Depots: http://www.pacificmobiledepots.com/
[21] Greater Victoria Compost Education Centre: http://www.compost.bc.ca/
[22] Pedal to Petal: http://pedaltopetal.blogspot.com/
[23] Food Roots Pocket Market Toolkit: http://www.foodroots.ca/pmtoolkit_index.htm

Develop Local Energy Resources (Alternative Energy)

Alternative and renewable technologies exist for providing electricity, space and water heating requirements to buildings. While many of these technologies are not yet widely deployed, for the most part they are fully commercialized. The real or perceived financial costs associated with these technologies are, at present, the major barrier associated with their implementation. Despite these barriers, Sidney already has at least one successful alternative energy example in the community. The geothermal heat pump system at the Pier Hotel and Shaw Ocean Discovery Centre draws heat from the ocean to help heat and cool the building, reducing energy use by 30 to 60 percent. This section of the Climate Action Plan outlines opportunities that will build a solid foundation for the continued development of alternative energy systems in Sidney.

Action-14 Implement an alternative energy demonstration project

In an effort to test and demonstrate local opportunities for alternative energy, the Town will investigate the potential to set up a small scale alternative energy demonstration project in the community. Partial support for this could come through the Town of Sidney's *Green Technologies Initiative* (see page 17). Initial ideas for this demonstration project include:

- Installing a wind turbine near Tulista Park to test the feasibility of off-shore wind.
- Installing a solar energy system in a highly visible public space.

Action-15 Conduct a district energy pre-feasibility study

District energy is becoming more frequently integrated in new development, particularly in areas well situated to service multiple users. It has significant potential to save users money, conserve resources and reduce GHG emissions. The Town has secured funding through the Infrastructure Planning Grants Program (IPGP) and will use it to conduct a district energy pre-feasibility study for the community. Opportunities to develop new district energy systems in the downtown/downtown waterfront area should be considered in this study. As density increases in this area (as planned), district energy opportunities will become more viable. Additionally the study should consider the range of innovative fuel sources that may be feasible in Sidney including biomass boilers, heat pumps and ocean water loops.

Action-16 Provide information and incentives for solar energy systems

In the online survey (see Appendix A), citizens expressed a willingness to invest in solar hot water systems given a certain degree of support. The Town could encourage this type of action by compiling existing information on programs and incentives to support solar hot water systems and providing it to Sidney citizens. LiveSmart BC and SolarBC both provide financial incentives for solar hot water systems.[24]

Further support could come from the Town in the form of cash rebates for the installation of solar hot water systems. The Town should explore its capacity to provide rebates to property owners that install solar hot water systems. The City of Vancouver has a solar homes pilot program that provides $3500 towards the cost of a solar hot water system for people building new homes in Vancouver. The incentive is made available by the City of Vancouver, SolarBC, Terasen Gas and Offsetters and is available to 50 new homes on a first come, first served basis beginning January 2010 through March 2011.

[24] LiveSmart BC provides a $125 rebate on the installation of CAN/CSA compliant systems (http://www.livesmartbc.ca/attachments/LiveSmart.pdf). SolarBC contractors provide a $2,000 discount at the point of sale on solar hot water systems (http://www.solarbc.ca/learn/incentives-costs).

7 IMPLEMENTATION

DEVELOPING CLIMATE ACTION AS A PROGRAM AREA

The Town of Sidney has developed a plan to reduce energy and GHG emissions throughout the community. The Climate Action Plan (CAP) contains 6 initiative areas and 22 actions to assist Sidney in moving towards a sustainable, low carbon future. As a local government, the Town of Sidney can use certain powers granted by legislation and within their mandate to help the community move in this direction; however, the Town should work jointly with its partners and citizens to catalyze action around energy efficiency, conservation and GHG emissions reductions. To succeed in this, it is recommended that climate action be developed as a program area for the Town and allocated appropriate resources. A program model template is provided below.

Program Name

Climate Action

Program Objectives

- To address the Town's voluntary commitment to the BC Climate Action Charter, which calls for "carbon neutral" local government operations by 2012. The Town is proposing the following GHG emissions reduction targets for corporate operations:
    - 15 % below 2009 levels by 2015
    - 20% below 2009 levels by 2020
- To set GHG reduction targets and to develop policies and actions that can be incorporated into the OCP in order to meet the requirements of Bill 27, 2008. The Town is proposing the following community-wide GHG emissions reduction targets:
    - 15 % below 2007 levels by 2020 (a 30% per capita reduction)
    - 30% below 2007 levels by 2030 (a 50% per capita reduction)
    - 80 % below 2007 levels by 2050 (a 90% per capita reduction)
- To raise public awareness and foster collaboration between the Town, stakeholders and citizens in order to advance plan implementation.

Program Overview

The Climate Action Plan's major features include:

- Baseline energy and emissions inventories for corporate operations and the community;
- A business-as-usual forecast of community GHG emissions to 2050;
- GHG emissions reduction targets for corporate operations and the community;
- Six initiative areas comprising a total of 22 actions;
- Estimated resource requirements for plan implementation.

Program Coordinator

A Program Coordinator is required for successful implementation and continuance of climate action. This person is responsible for working with staff from each department and for reaching out to the broader community to initiate action. Additional responsibilities such as annual work planning and progress reporting would also be the responsibility of this individual. The Program Coordinator role is expected to be a half full-time equivalent (FTE) for the first year, but should be re-evaluated as implementation progresses.

Staff Responsibilities

Additional staff time (e.g. from Administration, Engineering and Works, Development Services, Corporate Services, Fire and RCMP) will need to be accommodated within existing work plans and budgets. This may be equivalent to a quarter of a FTE position for each of the Town's departments.

MONITORING AND REPORTING

A monitoring program will enable the Town to assess progress towards the defined targets. Tracking progress against the targets is most easily achieved by updating the energy and emissions inventories (for corporate operations and the community) on an annual basis. Reporting out on the following indicators is also recommended:

- Total corporate energy consumption (GJ/year)
- Total corporate GHG emissions (tonnes CO_2e/year)
- Total community energy consumption (GJ/year)
- Total community GHG emissions (tonnes CO_2e/year)
- Per capita community GHG emissions (tonnes CO_2e/year/person)

Annual Reporting

It is proposed that brief annual progress reports be prepared by the Program Coordinator to monitor progress on implementation. The annual report will describe activities implemented in the previous year and identify areas of change, providing an opportunity to update the Climate Action Plan by adding new actions or modifying existing actions. This exercise helps to ensure relevance of the actions in the plan.

Five-Year Reporting

It is proposed that the Climate Action Plan be updated at least every three-to-five years in order to ensure the Town continues to make progress on reducing energy consumption and GHG emissions. This five-year update is likely to involve:

- A detailed review of the actions and their success;
- An updated energy and GHG emissions inventory;
- Recommendations for plan improvements, and;
- Communications around plan progress with stakeholders and citizens.

RESOURCES FOR IMPLEMENTATION

Financing and Assistance

Table 7 outlines current external funding opportunities to assist with plan implementation.

Table 7: Selected Funding Opportunities for CAP Implementation

Program	Key Features
Local*Motion*	Cost-sharing (50/50) between provincial government and local governments for capital projects that make communities greener, healthier and more active and accessible places in which to live.
LiveSmart BC	Rebates and incentives to help British Columbians reduce their carbon footprint at home, on the road, and at work.
BC Hydro: Energy Manager Funding	BC Hydro has provided partial funding to some municipalities for an energy Manager position. In some cases, municipalities may partner with other municipalities, School Districts or Health Authorities to share a BC Hydro sponsored Energy Manager.
BC Hydro Power Smart	Rebates and incentives to encourage energy efficiency in new construction and the installation of energy efficient products and appliances in existing facilities.
BC Housing – Housing Endowment Fund	$10 million annually to support housing initiatives that are consistent with the provincial housing strategy and address the needs of households with low to moderate incomes. Projects must have strong partnership contributions from local government, community organizations, private and non-profit sectors, and other government agencies.
FCM Green Municipal Fund	Grants available to support sustainability and climate action planning efforts. Low-interest loans available to support capital projects that reduce energy and GHG emissions. Competitive process with RFPs launched annually to fund projects related to brownfield redevelopment, energy, planning, transportation, waste and water.
Climate Action Revenue Incentive Program (CARIP)	The Town may elect to use its annual CARIP grant to support both corporate and community climate action initiatives.

Table 8 (on the following page) outlines an implementation framework for the Climate Action Plan, including the departmental lead, potential partners and estimate timeline and costs. While the Program Coordinator is responsible for tracking and reporting on plan implementation, the plan itself has responsibilities across other Town departments. The strategic goal of the plan is to increase energy efficiency and reduce GHG emissions from corporate operations and throughout the community. To this end, all Town departments and management are expected to commit to including energy and climate change considerations in their daily activities.

Table 8: Climate Action Plan Implementation Framework

#	Initiative Areas and Actions	Suggested Lead	Potential Partners	Estimated Timeframe*	Estimated Costs
	CORPORATE COMPONENT				
	LEAD BY EXAMPLE (Town Operations)				
1	Improve the energy efficiency of existing Town facilities	Engineering and Works	BC Hydro	Medium term	$130,000 (less incentives)
2	Investigate the opportunity to share a Community Energy Coordinator	Administration	CRD, School District, and BC Hydro	Short term	Staff time
3	Commit to evaluating all capital expenditures using a lifecycle approach	Finance	N/A	Short term	Staff time
4	Formalize sustainable fleet management activities	Engineering and Works	Fraser Basin Council (E3 Fleet)	Short to Medium term	$300 (E3 Fleet membership)
5	Include energy and GHG considerations in the Town's purchasing policy	Finance	N/A	Short term	N/A
6	Conduct staff outreach to encourage energy efficient behaviours	All Departments	BC Hydro Power Smart, Terasen Gas	Short term	Staff time + materials
	COMMUNITY COMPONENT				
	DEVELOP SUSTAINABLY (Land Use and Development)				
1	Implement the Downtown/Downtown Waterfront LAP	Development Services	Local developers, builders, architects	Medium to Long term	Staff time
2	Consider density bonuses during rezoning applications	Development Services	N/A	Short to Medium term	Staff time
3	Incorporate energy efficiency guidelines in Development Permit Areas	Development Services	N/A	Short to Medium term	Staff time
4	Explore incentives for energy efficient development	Development Services and Finance	BC Hydro Power Smart	Short term	Staff time
5	Engage the development community	Development Services	CRD, neighbouring municipalities	Short to Medium term	Staff time or Consultant:~ $5,000
	ADAPT OUR HOMES (Residential Buildings)				
6	Provide energy efficiency information to homeowners	Development Services	BC Hydro, Terasen Gas, Natural Resources Canada	Short term	Staff time + materials
7	Explore incentives to encourage residential energy efficiency	Development Services and Finance	BC Hydro, Terasen Gas, Natural Resources Canada, LiveSmartBC	Short term	Staff time
	CHOOSE ALTERNATIVE MODES (Transportation)				
8	Establish an Alternative Transportation Infrastructure Reserve Fund	Finance	N/A	Short term	Staff time
9	Conduct outreach to promote the regional Ant-Idling Bylaw	Engineering and Works	CRD, Idle Free BC, Natural Resources Canada	Short term	Staff time + materials
10	Explore micro transit service	Administration	Sidney Business Association, local businesses, BC Transit	Short term	Capital costs: ~ $90,000 O&M costs: ~ $50,000/yr
11	Consider preferential parking for low emissions vehicles	Engineering and Works	N/A	Short term	Staff time
	RETHINK OUR WASTE (Solid Waste)				
12	Implement a waste reduction campaign	Administration	CRD, Zero Waste BC	Short term	Staff time + materials
13	Encourage local food opportunities and efforts to "buy local"	Administration	Sidney Business Association, Food Roots, area growers and producers	Short to Medium term	Staff time + materials
	DEVELOP LOCAL ENERGY RESOURCES (Alternative Energy)				
14	Implement an alternative energy demonstration project	Engineering and Works and Development Services	Solar BC, FCM Green Municipal Fund (GMF)	Medium term	Staff time Capital costs: unknown
15	Conduct a district energy pre-feasibility study	Engineering and Works	Province of BC, BC Hydro, FCM GMF	Short term	Consultant: ~ $15,000
16	Provide information and incentives for solar energy systems	Development Services and Finance	Solar BC	Short term	Staff time + materials

* Short = <3 yrs; Medium = 3 – 5 yrs; Long = > 5 yrs

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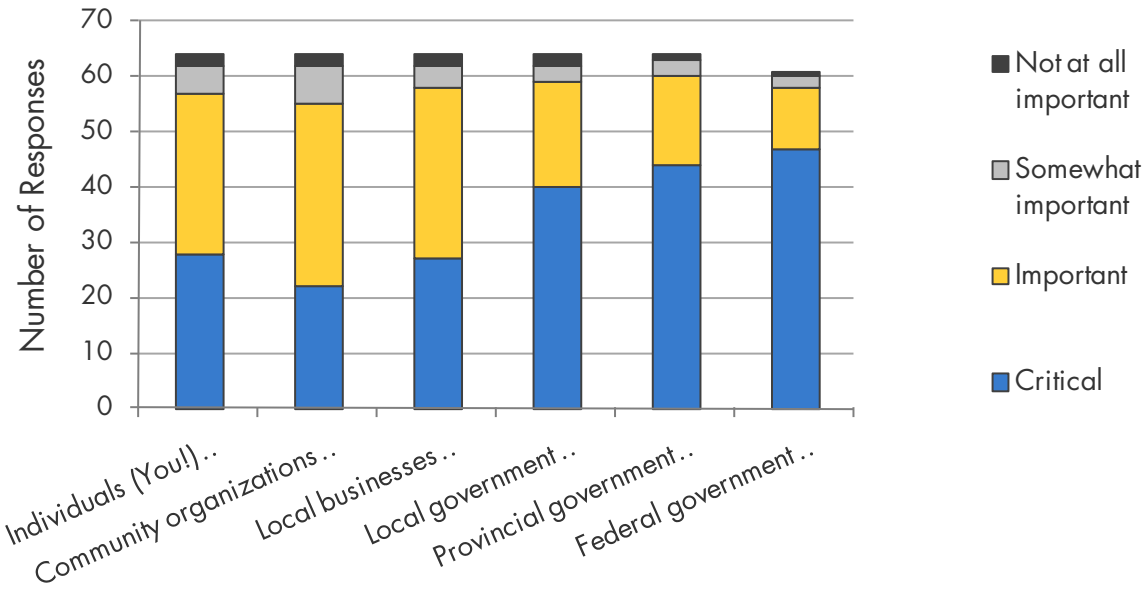
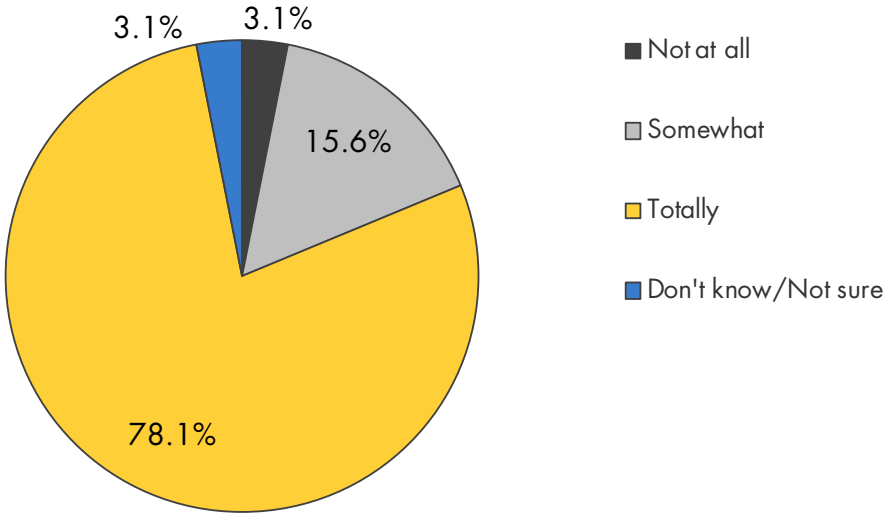
APPENDIX A: Online Survey Results

Online Survey Results

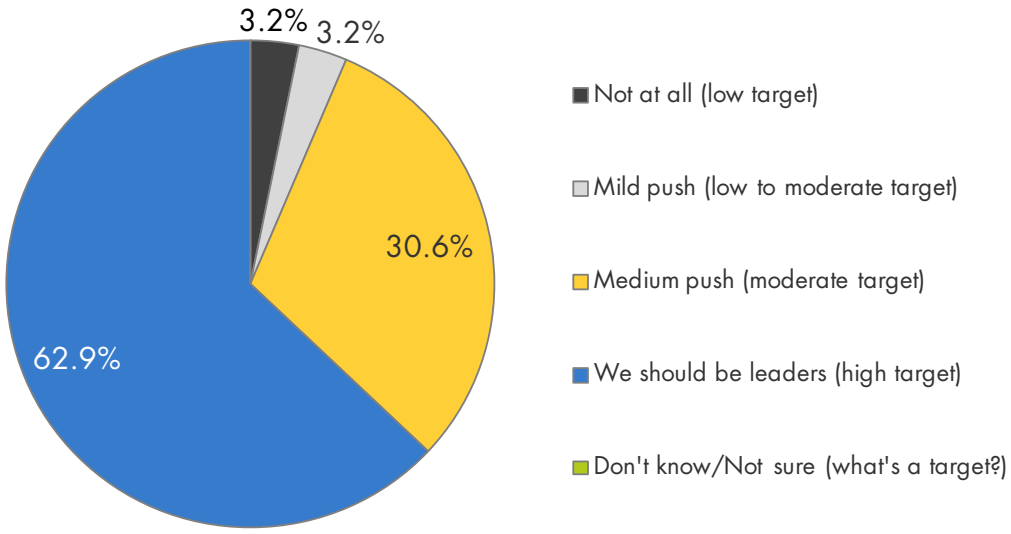
QUESTION #1: How important is it for the following individuals / organizations to take action to reduce energy consumption and GHG emissions?



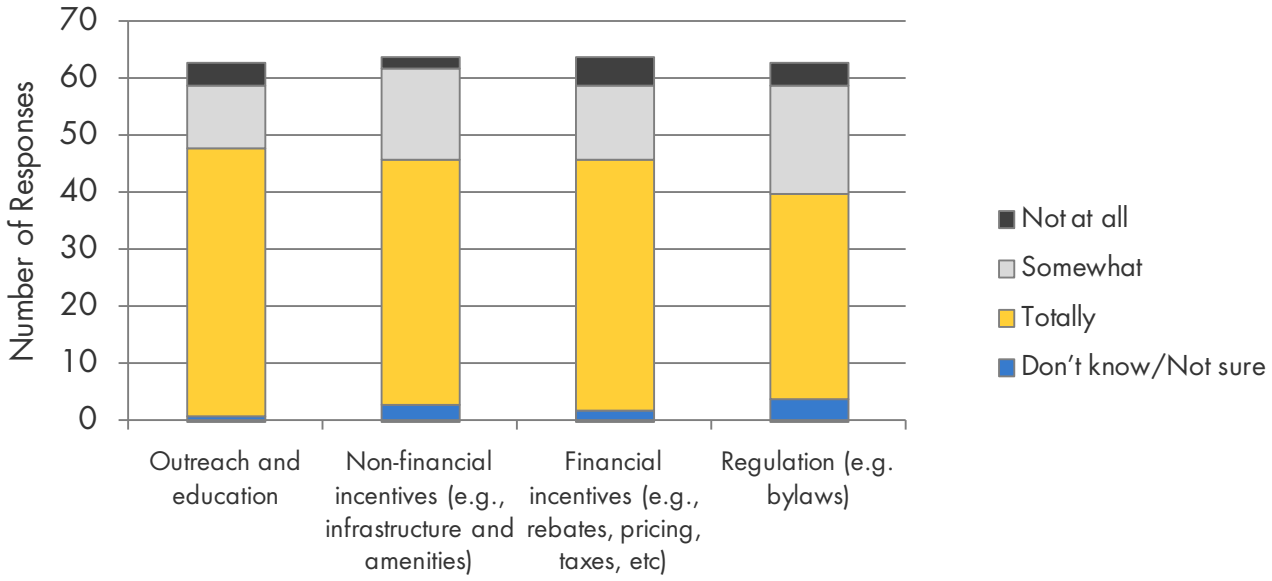
QUESTION #2: To what extent do you support your local government in taking action to reduce energy use and GHG emissions in the community?



QUESTION #3: Recent provincial legislation requires local governments to set GHG emissions reduction targets. How hard do you think your local government should push to reduce energy consumption and greenhouse gas emissions in the community?

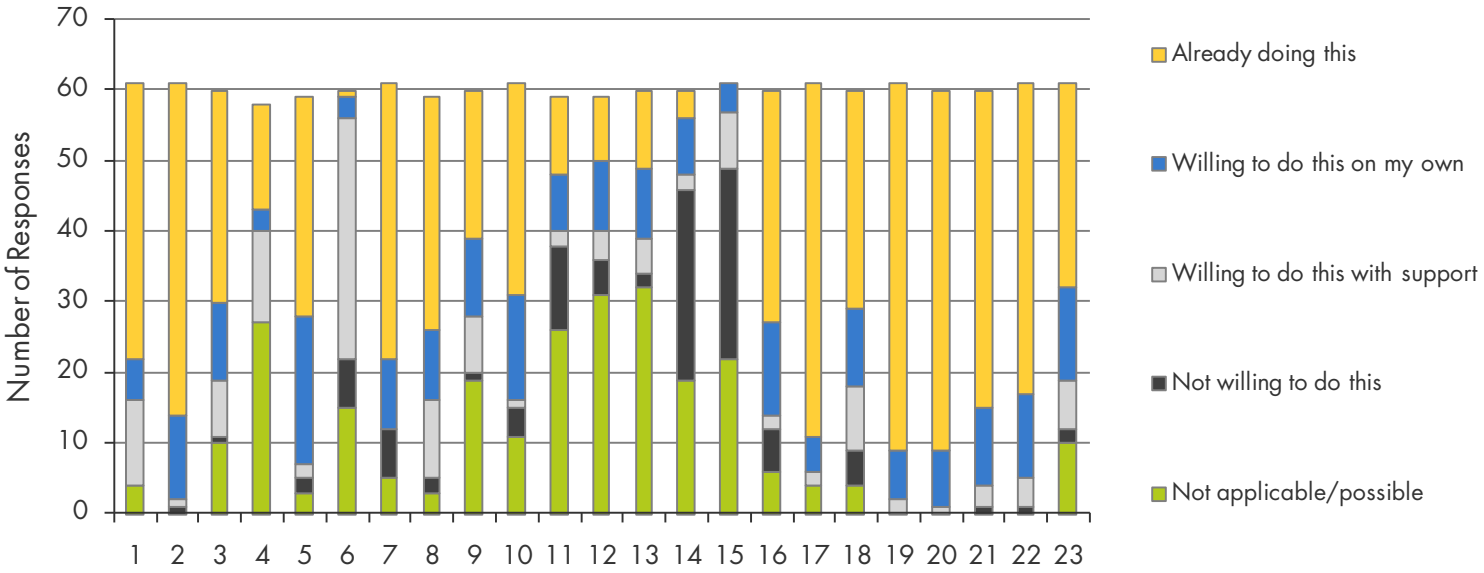


QUESTION #4: There are a number of policy tools available to local governments to assist in reducing energy consumption and GHG emissions in the community (e.g., education / outreach, non-financial incentives, financial incentives, and regulation). The potential to reduce GHG emissions will vary depending on the type of policy tool implemented. To what extent do you support your local government in pursuing the following policy tools or approaches?



QUESTION #5: As individuals, there are many actions we can take to reduce energy consumption and GHG emissions. Please review the list of actions below and fill in the check boxes as appropriate.

1	Make energy efficiency improvements to your home or office (e.g., improving insulation, replacing windows, etc)
2	Turn down the temperature in your home/office by 2 degrees Celsius in the winter (and up by 2 degrees Celsius in the summer)
3	Install a programmable thermostat at home or at work
4	Replace your furnace with a high efficiency model with a variable speed motor
5	Set your water heater to 49 degrees Celsius
6	Install a solar water heating system to heat your water
7	Wash your clothes in cold water and hang your laundry to dry
8	Install low flow fixtures and faucets in your home/office
9	Plant deciduous trees to the south of your home/office building
10	Walk, cycle or use active modes of transportation to get to work/school at least one day a week
11	Take transit to work/school at least one day a week
12	Carpool to work/school at least one day a week
13	Telecommute to work at least one day week
14	Buy an electric bicycle or scooter instead of owning a car
15	Join a car-sharing co-op instead of owning a car
16	Turn off your car instead of idling for periods longer than 10 seconds
17	Schedule or perform regular maintenance checks for your car
18	Compost organic wastes in your garden or with a worm composter in your apartment, school or office
19	Reuse products wherever possible instead of buying new ones
20	Buy good quality, long lasting products that you will not have to replace so soon
21	Buy products with minimal or recyclable packaging
22	Buy local, sustainable food whenever possible
23	Grow some of your own food in your home garden or community garden plot



APPENDIX B: Corporate Inventory Detail

Corporate Energy and GHG Emissions Inventory (2009)
Dashboard Summary

Town of SIDNEY

Operations Profile	
General Buildings	16
Community and Recreational Facilities	–
Fire halls	1
Vehicle Fleet	70
Electricity Accounts	50
Natural Gas or Propane Accounts	4

Energy and GHG Emissions by Type of Fuel

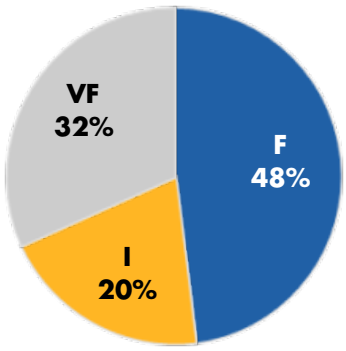
Fuel Type	Energy Consumption	Energy Units	GHG Emissions (tonnes CO_2e)	Annual Energy Expenditure (Approx $)
Electricity	1,458,794	kWh	38	$ 95,000
Natural Gas	1,644	GJ	84	$ 20,000
Propane	0	L	0	------
Gasoline	1,850	L	122	$ 51,000
Diesel	1,350	L	99	$ 36,000
Total			**343**	**$ 202,000**

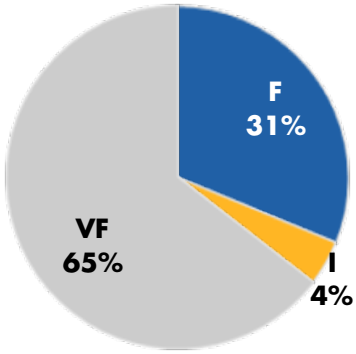
Carbon Costs and Rebates (based on current levels of consumption):

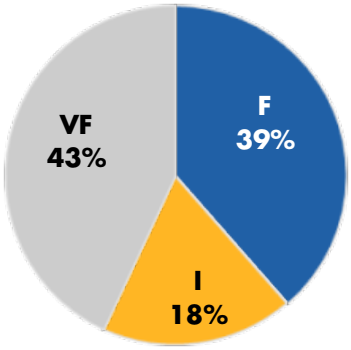
Estimated cost of offsets required to become "Carbon Neutral" in 2012: **$ 9,180**
Estimated Carbon Tax Rebate (CARIP rebate) in 2012: **$ 8,400**

Energy, Greenhouse Gas Emissions, and Costs (2009) by Energy Users

Energy Consumption	GHG Emissions	Energy Spending (approx)
10,090 GJ	**343 CO_2e**	**$202,000**







VF=Vehicle Fleet; **F**=Facilities; **I**=Infrastructure

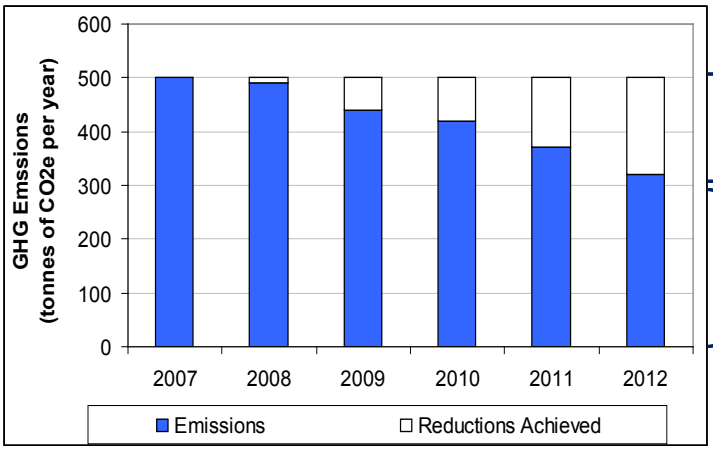
INTRODUCTION

Recently, the Province of BC has embarked upon a number of initiatives to reduce greenhouse gas (GHG) emissions across the province. One such initiative, the **BC Climate Action Charter**, was introduced to encourage local governments to reduce energy consumption and GHG emissions from their **corporate operations**. The Climate Action Charter is a voluntary commitment by local governments to achieve **carbon neutral** operations by 2012. The Town of Sidney is a signatory to the Charter.

A corporate energy and GHG inventory is a profile of the emissions that a local government creates through its operational activities (e.g., civic facility operations, vehicle fleets, and utility services). A corporate inventory is the first step on the path towards carbon neutrality.

Carbon neutrality means that the operations of the local government will result in no net GHG emissions to the atmosphere. Carbon neutrality results from a combination of:

- **Reduction measures** to reduce the GHG emissions from operations. This is accomplished through retrofits, efficiency initiatives, and behavioral change of staff; and
- **Carbon Offsets**, which are reductions made by others (elsewhere in the community or province) through registered and reviewed projects that reduce GHG emissions. Owners of these offset projects may sell these 'reduction credits' to other parties that are working to neutralize their carbon footprint.



Getting to Carbon Neutral:

Efficiency improvements will reduce the emissions from operated facilities. However, there will always be some emissions remaining and these will be 'neutralized' through the purchase of offsets.

Carbon Neutrality is achieved through a combination of reductions of emissions and offsets (hypothetical case)

Estimating GHG Emissions from Consumption Data

From an inventory of energy consumption, the GHG emissions are calculated by multiplying the consumption by an emissions factor. The emissions factors used in this inventory are aligned with those used by the Province of BC (see page B-9). For the combustion of fossil fuels, the emissions factor represents the amount of CO_2 created when burning that fuel (i.e. the "tailpipe" emissions), and depends primarily upon the type of fuel consumed (e.g. natural gas, gasoline, diesel, etc.) [1]

For the consumption of electricity, the GHG emission factor represents the amount of CO_2 released to the atmosphere from the generation of the electricity. These emissions do not occur where the electricity is consumed, but rather elsewhere in the grid. There are different emissions factors for different electricity supply areas (i.e. BC Hydro).

Boundaries: What's in, what's out?

Each community offers different services, via a different mechanism to its residents. Counting the carbon footprint can be complicated because of how services are delivered and who's 'carbon balance sheet' they might appear on. The Province, through a joint provincial-UBCM committee is developing guidance for the boundaries of what to include when estimating the emissions included in the Climate Action Charter commitment. To ensure equity between communities, these are being defined around services that are considered to be "**traditional municipal services**."[2] Traditional services included in the inventory are:

- Administration and governance
- Drinking, storm, and waste water
- Solid waste collection, transport and diversion
- Roads and traffic operations
- Arts, recreation, and cultural services
- Fire protection

[1] The emissions factors do not account for the carbon released to extract, process, and deliver the fuel to the point of use – the "Carbon intensity" of the fuel. There are however efforts under way in BC to reduce these 'upstream' emissions. Under the Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act (Bill 16- 2008), the Province is aiming to reduce the carbon intensity of fuels by 10% by 2020.

2 The precise requirements are under development through a joint working group of the Climate Action Secretariat (of the Ministry of Environment), and the Union of BC Municipalities (UBCM). Further information is available at the "Toolkit" website (www.toolkit.bc.ca) and search for "carbon neutral government". The draft protocol document is available at: www.toolkit.bc.ca/sites/default/files/Carbon%20Neutral%20Workbook%20Draft%20Final-1.pdf

In the traditional services approach, the focus is on services funded by the local government – most specifically *what* service is delivered, and not on *who* delivers it.[3] The expectation is that energy intensive contracted services will have to be included within community inventories (and thus tracked through contracts) from about 2012 onward. Local governments will be expected to define the emissions that occur from these services and they will form part of the inventory, which will need to be negated through the purchase of carbon offsets.

Inventory protocol documents are still under development by the Climate Action Secretariat within the BC Ministry of Environment. The data collection in this project aimed to cast a 'wide net' and capture as much information as possible. As the inventory guidance material is revised, there may be additions or deletions to this information.

CORPORATE ENERGY AND GHG EMISSIONS INVENTORY (2009)

Inventory Summary

A summary of the operations energy consumption is shown in Table B-1. The energy consumption and GHG emissions are broken down by the type of fuel and the end use in Figure B-1 and Figure B-2.

Table B-1: Corporate Energy and Greenhouse Gas Summary 2008

End-Use	Energy	Units of Purchase	Energy (in units purchased)	Energy (as GJ)	GHG Emissions (as CO_2e)	Approximate Value ($)
Buildings	Electricity	kWh	677,502	2,439	18	$44,000
	Natural Gas	GJ	1,644	1,644	84	$20,000
Fire Halls	Electricity	kWh	213,420	768	6	$14,000
Parks	Electricity	kWh	32,580	117	1	$2,000
Water / Sewer	Electricity	kWh	92,507	333	2	$6,000
Lighting	Electricity	kWh	442,785	1,590	12	$29,000
Fleet	Gasoline	L	51,329	1,850	122	$51,000
	Diesel	L	35,552	1,350	99	$36,000
Total				**10,090**	**340**	**$202,000**

3 If the service is not offered at all, then it does not have to be included. Other items not included are capital works and new construction, employee commuting, and the background emissions from producing goods and services.

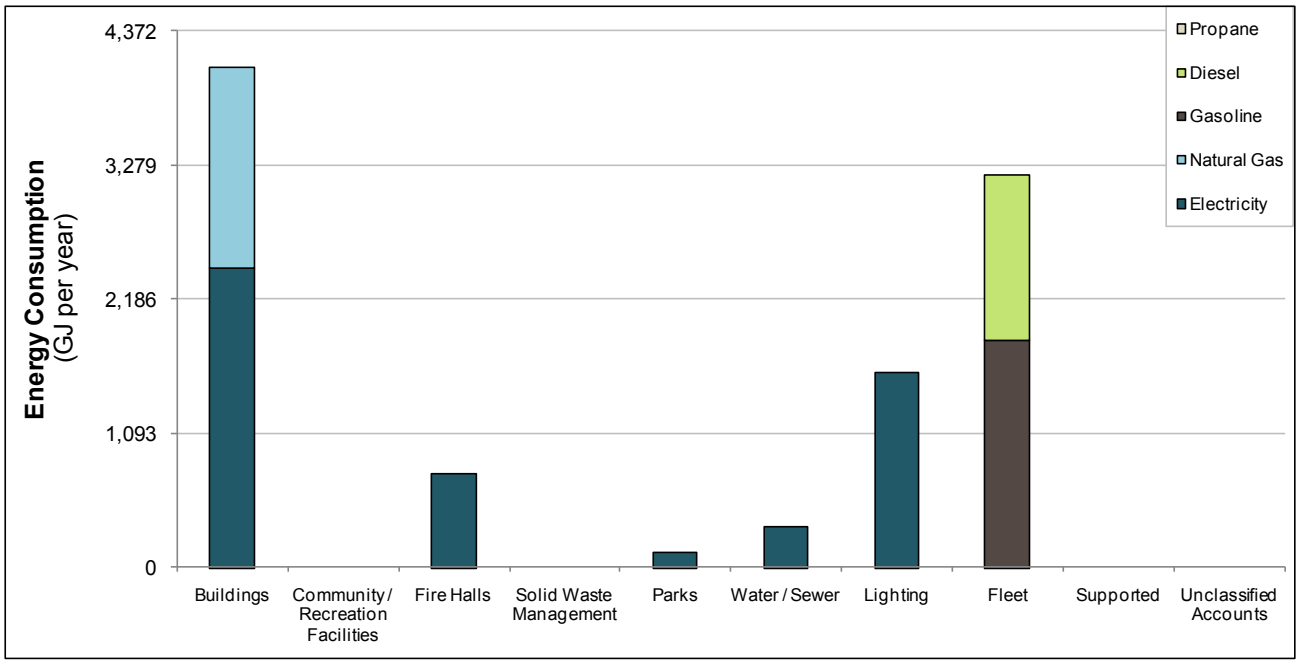


Figure B-1: Energy Consumption by Fuel Type

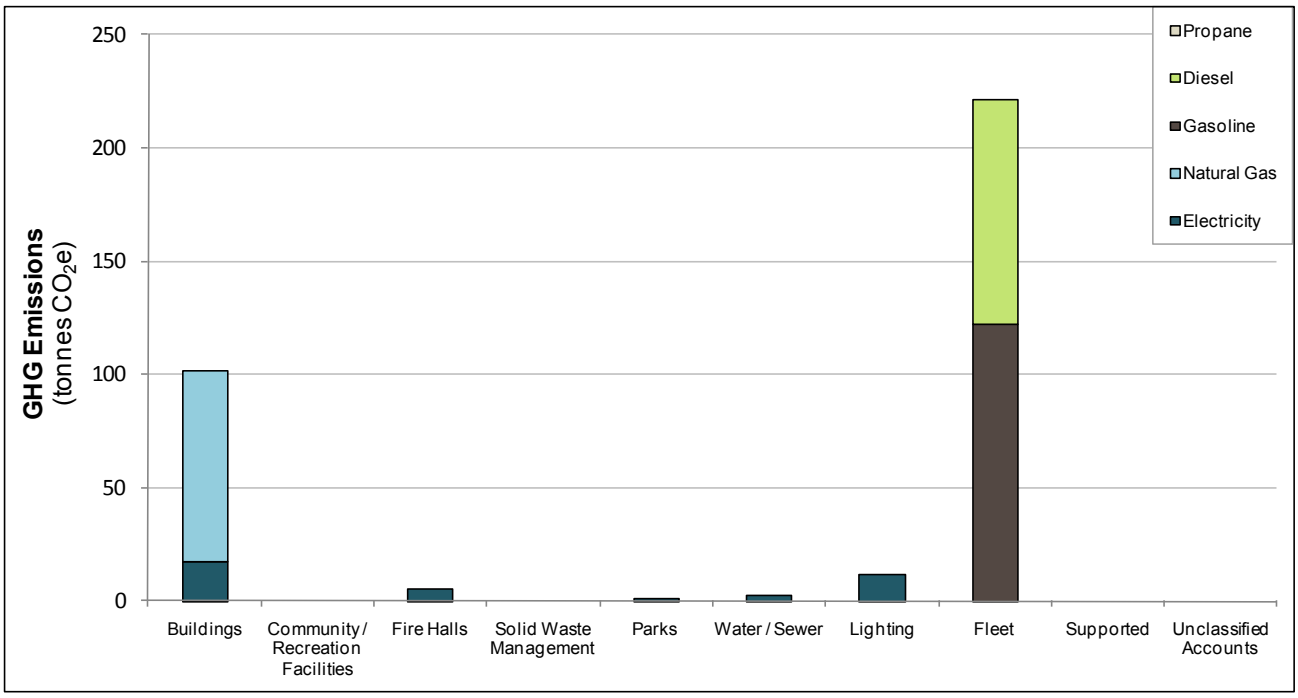


Figure B-2: GHG Emissions by Fuel Type

Data Tables

Table B-2: Accounts List

Facility	Location	ToS Folio #	Account		
			Electricity	Natural Gas	Propane
Buildings					
Downtown Beautification - Ardwell Ave	2013 ARDWELL AVE	62410 62410 53840	2646257		
Iroquiois Clubhouse	2287 OCEAN AVE	62110 62110 53840	99995326461		
Iroquiois Clubhouse	2295 OCEAN AVE (CLUB HS 1)	62110 62110 53840	99995326401	1414894	
Town Hall Building	2440 SIDNEY AVE	12620 12620 53840	99995517701	1409009	
Beacon Ave Wharf	2540 BEACON AVE		99995525851		
Beacon Ave Wharf	2552 BEACON AVE	36050 36050 53840	99995525753		
Workshop Yards	9296 EAST SAANICH RD		99990811101		
Workshop Yards	9312 E SAANICH RD - VLV HSE	81620 81620 53840	99995112601		
Courthouse	9884 3RD ST	23620 23620 53840	6135895		
RCMP Building	9895 4TH ST	22610 22610 53840	99995520051		
Concrete shed	MCTAVISH RD AT CANORA	21690 21690 53840	99991605701	1409008	
Public Works	2285 OCEAN AVE	31620 31620 53840	99995326351	1431997	
Tourist Information Centre	2281 BEACON AVE		5605804		
Museum	2423 BEACON AVE 103		1382037		
Marine Centre	9801 SEAPORT PL		99995525951		
Marine Centre	9821 3rd St - Parkade Lighting		99995500051		
Sidney Harbour	SYDNEY WHF-FLTS 8624		99995525702		
Sidney Harbour	2540 BEACON AVE		99995516652		
Temporary Construction Trailer	9559 LAPWING PL TEMP		99995302451		
Public Washrooms	9831 4TH ST	82210 82210 53840	99995512711		
Parking Lot	2ND ST		99995301451		
Community Centres					
Fire Services					
Fire Hall Building	9837 3RD ST	31510 31510 53840	99995511751		
Solid Waste Management					
n/a					
Parks					
Tulista Park (7th St Park)	7th St Park - 9565 5TH ST	6101928	6101928		
Tulista Park (7th St Park)	7th St Park - 9565 5TH ST		3289597		
Tulista Park (7th St Park)	7th St Park - 9565 5TH ST	6125226	6125226		
Tulista Park (7th St Park)	7th St Park - 9565 5TH ST		5311081		
Tulista Park (7th St Park)	7th St Park - 9843 4TH ST		5028178		
Tulista Park (7th St Park)	7th St Park - BEVAN AND 5TH ST N/E		99995402402		
Tulista Park (7th St Park)	7th St Park (Tulista Park) - 9565 5TH ST		3431257		
Tulista Park (7th St Park)	7th St Park - 2261 BEACON AVE		5411933		
Water / Sewer					
10147 3RD ST - Storm Drain Repairs	10147 3RD ST - Storm Drain Repairs	37220 37220 53840	99995801201		
10215 SURFSIDE PL - Pump Stn	10215 SURFSIDE PL - Pump Stn	82210 82210 53840	99995900701		
10231 5TH ST - Pump Stn	10231 5TH ST - Pump Stn	82210 82210 53840	99995903601		
10335 RESTHAVEN DR - Pump Stn	10335 RESTHAVEN DR - Pump Stn	82210 82210 53840	99996306951		
10427 RESTHAVEN DR - Pump Stn	10427 RESTHAVEN DR - Pump Stn	82210 82210 53840	99996308151		
10520 ALLBAY RD - Pump Stn	10520 ALLBAY RD - Pump Stn	82210 82210 53840	99996302301		
2050 FROST AVE - Pump Stn	2050 FROST AVE - Pump Stn	82210 82210 53840	99995201351		
2330 HARBOUR RD - Pump Stn	2330 HARBOUR RD - Pump Stn	82210 82210 53840	99996312401		
2351 AMELIA AVE - Pump Stn	2351 AMELIA AVE - Pump Stn	82210 82210 53840	99996011451		
2523 ROTHESAY AVE - Pump Stn	2523 ROTHESAY AVE - Pump Stn	82210 82210 53840	99995800851		
9821 SEAPORT PLACE - Pump Stn	9821 SEAPORT PLACE - Pump Stn	35670 35670 53840	99995526401		
9344 LOCHSIDE DR - Sewer Pump	9344 LOCHSIDE DR - Sewer Pump	82210 82210 53840	6384076		
Bowden Rd - Water Valve House	2305 / 2323 BOWDEN RD		99996303701		
Lighting					
Ornamental Street Lighting	ORNAMENTAL STREET LTG	33170099611	33170099611		
Overhead Street Lighting	OVERHEAD STREET LTG	33170099621	33170099621		
Crosswalk - 2353 BEVAN AVE	2353 BEVAN AVE - Crosswalk	32080 32080 53840	2203217		
Street Light - 5TH ST/BEACON AVE	5TH ST/BEACON AVE	32080 32080 53840	99995402502		
Street Light - 7TH ST/BEACON AVE	7TH ST/BEACON AVE	32080 32080 53840	99991602901		
Street Light - Webster Pl	WEBSTER PL		99995104201		
Traffic signal - Resthaven / Beacon	RESTHAVEN BEACON	62410 62410 53840	3033677		

Fleets and Equipment

Fleet information includes the type and nature of the fleet vehicles, as well as the consumption data.

Table B-3: Vehicle and Equipment Overview

Vehicle	Number
Total	70
Passenger	1
Truck / SUV	29
Heavy Machinery	12
Other	21
Garbage	3
Fire	4

Table B-4: Vehicle Fuel Consumption

Fuel Type	L	GJ
Gasoline	55,521	1,999
Diesel	39,109	1,486
Propane	0	0

Supported and Contracted Services

Some of the "traditional municipal services" that are subject to the Climate Action Charter reporting and must be included in the local government inventory are executed by an agent other than the local government. As a guideline, if the local government is providing funding to a traditional municipal service, then it is likely to be included in the emissions inventory. This section compiles the known services that are funded by the local government that are delivered by another organization.

Table B-5: Contracted Services

Facility	Location	Description	Electricity Acct	Natural Gas Acct
Vancouver Island Regional Library - Sidney branch	10091 Resthaven Dr	ToS share utilities 50% with N. Saanich	99995702751	
Shoal Centre - Beacon Community Services	10030 Resthaven Dr	ToS owns BCS and common areas of strata	Multiple	Multiple
Community Arts Council of Saanich Peninsula	9565 5th St	ToS owns building and leases to CACSP	6771213	1551480 (old) 1780197 (new)

Facility	Location	Description	Electricity Acct	Natural Gas Acct
Mary Winspear Centre	2243 Beacon Ave	ToS provides partial funding along with N. Saanich		
Sidney Museum and Archives	2423 Beacon Ave	ToS provides space and annual operating grant (utilities paid by strata fees)		
Panorama Recreation Centre				

Note: Additions and corrections to this information are welcomed.

Leased Facilities

There are also occasions where buildings are owned by the local government and leased out to other agencies (e.g. heritage society, seniors centre, etc) wherein the leasee operates the facility independently, or where the local government does not own or operate the building but provides funds for annual operations.

Facilities owned by the municipality, but independently operated by others are shown below.

Table B-6: Owned Facilities, leased to others

Facility	Operator	Who Pays Utilities?

Note: Additions and corrections to this information are welcomed.

Solid Waste

The decomposition of organic material in landfills, results in methane gas emissions. Methane is a potent greenhouse gas and so is included in many inventory protocols.

The Climate Action Charter does not include the emissions from waste decomposition. However, this information is included in other protocols. For example, the FCM Partners for Climate Protection program includes solid waste emissions.

For information only, this section presents the estimated solid waste generated at local government facilities only (i.e. does not include community waste).

Table B-7: Solid Waste Generation

Location	Bin			Estimated Waste (tonnes / year)
	Number	Volume (yd^3)	Pick-Up Frequency (weekly)	
Town Yard*	1	6	3	114
Library	1	3	1	19
Total Waste				**134**
Total GHGs (tonnes CO_2e/yr)				**65**

*The Town picks up solid waste from public bins (5 times during the week and once on weekends) and empties it into the bin at the Town Yard. As a result, it is difficult to distinguish between solid waste from corporate operations and community solid waste. The Town should consider resolving this issue for future inventories.

Emissions Factors

Table B-8: Emissions Factors for converting energy consumption to GHG Emissions

Energy Source	GHG Emission Factor	Units	Source
BC Hydro	26	tonnes CO_2e / GWh	Province of BC SmartTool
Natural Gas	0.050	tonnes CO2e / GJ	Towns for Tomorrow Greenhouse Gas Emissions Assessment Guide – used by Climate Action Charter
Propane	0.062	tonne CO2e / GJ	
	0.025	GJ / L	
Gasoline	0.00234	tonne CO2e / L	
	0.036	GJ / L	
Diesel	0.00269	tonne CO2e / L	
	0.038	GJ / L	
Solid Waste (SW)	0.484	tonne CO2e / tonne SW	Metro Vancouver

Notes about this Inventory

[1] The inventory is in draft form and subsequent review may define further information.

[2] The protocols for defining the inventory boundaries are still under development and review by the Climate Action Secretariat of the Ministry of Environment. The required information may evolve as these protocols are further developed.

[3] Energy costs cited in this report are estimates and are not based on actual utility invoices.

[4] Costs for offsets are estimated assuming $25 per tonne of offsets. Estimated CARIP rebates are based on the total applicable inventory and $30 per tonne carbon tax (as expected to become effective on July 1, 2012).

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APPENDIX C: CEEI Review (2007)

Community Energy and Emissions Inventory (CEEI) Review

RESIDENTIAL

Residential sector GHG emissions from the 2007 Community Energy and Emissions Inventory (CEEI), developed by the Province of BC, were compared with estimates using Statistics Canada 2006 Census of Canada data and energy use intensities from BC Hydro 2007 Conservation Potential Review (CPR) studies[1].

The total number of dwellings in the Town of Sidney was obtained from the 2006 Census of Canada and compared to the number of utility connections in the CEEI report. The most direct correlation can be made between the Census dwelling counts and the number of electricity connections as most housing units are individually metered. The discrepancy where there are more electricity connections reported by the CEEI than the number of dwelling units may be attributed to instances where individual households have more than one electricity connection. The number of natural gas connections reported by the CEEI is far lower than the number of Census dwelling counts reported.

Data Source	Number of Units
Statistics Canada 2006 Census Dwellings Counts	5,195
CEEI Electricity Connections	5,509
CEEI Natural Gas Connections	1,416

Residential energy consumption was estimated based on Census dwelling counts broken out by structural type and corresponding average energy use intensities for those structural types on Vancouver Island from the BC Hydro CPR.

	# Units	Electricity (kWh)	Natural Gas (GJ)	GHG Emissions (tonnes CO_2e)
TOTAL	5,160	74,396	242	10,675
Single-family/Duplex Dwelling, Pre 1976	1,295	15,146	57	4,207
Single-family/Duplex Dwelling, Post 1976	1,335	16,746	48	3,750
Row, Pre 1976	50	11,657	37	13
Row, Post 1976	395	11,580	31	728
Low-rise Apartment Units	1,965	4,808	17	1,881
High-rise Apartment Units	120	3,914	16	96
Mobile	0	10,544	36	0

[1] Marbek Resource Consultants Inc, Residential Sector Conservation Potential Review, BC Hydro, 2007

The average number of rooms in single family homes was obtained from Statistics Canada's 2006 Census, and the ratio between the Town of Sidney's value (6.0) and that of the Capital Regional District (6.2) was used to scale down the energy use intensities to reflect the lesser heating demands of smaller dwellings. The estimates of electricity consumption correlated closely with the CEEI values; 55,167,000 kWh/year as compared to 71,342,293 kWh/year. However, the method of estimation assumes that all dwellings use both electric and non-electric heat and as a result, there is a greater discrepancy between estimated natural gas consumption and CEEI values.

	kWh/yr	GJ/yr	CO_2e/yr
CEEI Electricity Consumption	71,342,293	62,810	4,782
Total	55,167,000	187,000	10,756
Single-family/Duplex Dwelling, Pre 1976	18,981,000	74,300	4,207
Single-family/Duplex Dwelling, Post 1976	21,635,000	64,200	3,750
Row, Pre 1976	564,000	1,800	104
Row, Post 1976	4,426,000	12,300	725
Low-rise Apartment Units	9,144,000	32,800	1,874
High-rise Apartment Units	417,000	1,700	96
Mobile	0	0	0

COMMERCIAL

Commercial sector energy and emissions reported in the CEEI could not be verified as there was insufficient data with which to develop a methodology to estimate natural gas consumption in the commercial sector.

INDUSTRIAL

The energy consumptions and GHG emissions reported by the CEEI could not be verified as there was insufficient data with which to develop a methodology to estimate natural gas consumption in the industrial sector.

SUMMARY

The CEEI provides a reasonably accurate reporting of Sidney's energy use and emissions attributed to residential electricity consumption. Given the poor agreement between the CEEI data and the residential natural gas estimate, additional analysis is warranted. Utility data and data from commercial and industrial activity represent potential data sources for further analysis.

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