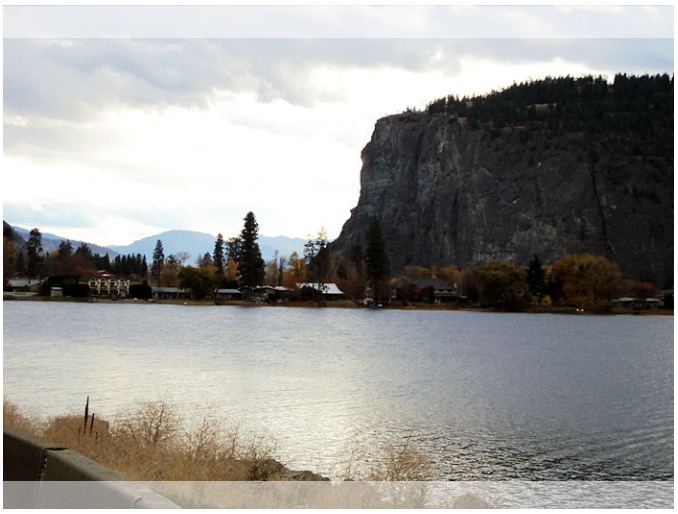
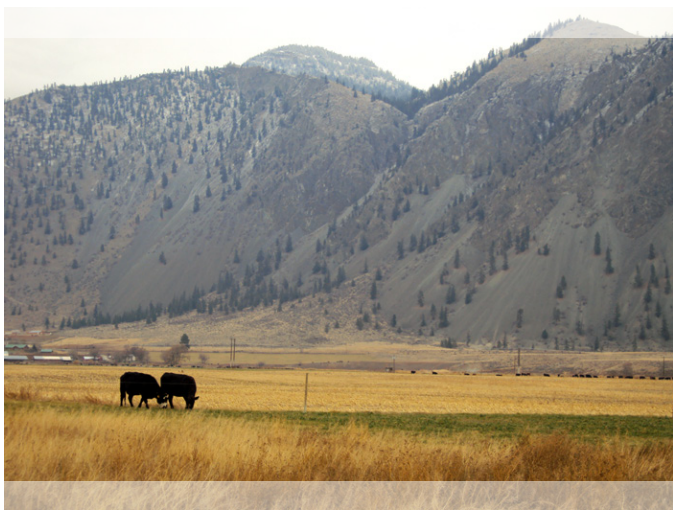

Regional District of Okanagan Similkameen Electoral Areas

COMMUNITY CLIMATE ACTION PLAN

Prepared by Stantec Consulting Ltd.

January 2011

FINAL

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1 INTRODUCTION

The Regional District of Okanagan-Similkameen (RDOS), in partnership with Keremeos, Oliver, Osoyoos, Penticton, Princeton, and Summerland, have developed regionally coordinated Community Climate Action Plans (CCAP) for the region, member municipalities and rural areas. The CCAPs provide strategic guidance on how to reduce community energy use and greenhouse gas (GHG) emissions.

Each community has its own CCAP which includes 8 regional strategies and several local actions to address how to reduce each community's energy use and GHG emissions. The regional strategies provide the framework for achieving reductions in energy use and GHGs. The local actions define how the strategies will be implemented in each community. Each community has their own list of local actions that reflects the community's needs and resources. The plans also include community specific GHG reduction targets that will be included in the Official Community Plans. A regional GHG reduction target is included in the regional CCAP and will be included in the Regional Growth Strategy.

Each community has taken on the responsibility to reduce community energy use and GHG emissions. The combination of local action and regional coordination will help to ensure the success of these plans.

1.1. Why reduce energy use and GHG emissions?

Managing community energy use and emissions has many benefits including:

- **Reduced energy costs** – energy costs can be substantially reduced by being more energy efficient;
- **Reduced vulnerability to energy markets** - reducing the dependence on fossil fuels helps to decrease the vulnerability to fluctuating energy supply and pricing;
- **Reduced impacts to climate change** - managing carbon emissions helps to minimize impacts on the global ecosystem;
- **Job creation and business opportunities** – promoting a green economy (clean technologies, renewable energies, water services, green transportation, waste management, green buildings and sustainable agriculture and forests) can open up new job and business opportunities; and
- **More sustainable communities** – the activities that support energy conservation are aligned with other sustainable community objectives such as

building compact, complete communities, more efficient infrastructure, walkable neighbourhoods, and protection of farmland and natural areas.

Beginning in 2007, the Province of BC has moved forward with a number of legislated and policy actions designed to encourage energy efficiency and reduce emissions of GHGs. These are driven by a legislated target to reduce the total GHG emissions in the Province by 33% from 2007 levels by 2020, and 80% by 2050.[1]

Of specific relevance to local governments is the *Local Government (Green Communities) Statutes Amendment Act (Bill 27, 2008)*. "Bill 27" amends the Local Government Act to read:

- LGA 877 (3) - An official community plan must include targets for the reduction of greenhouse gas emissions in the area covered by the plan, and policies and actions of the local government proposed with respect to achieving those targets (by May 31, 2010)
- LGA 850 - Required Content of a Regional Growth Strategy:
  (2)(d) to the extent that these are regional matters, targets for the reduction of greenhouse gas emissions in the Regional District, and policies and actions of the local government proposed for the Regional District with respect to achieving those targets (by May 31, 2011)

In addition, Bill 27 provides some additional enabling powers to local governments intended to assist them in achieving reductions of community-wide emissions.

Above all, it is important to remember that the policies and actions required for energy conservation and GHG emissions reductions are consistent with many other local government policy directions. **Climate action** therefore strengthens the desired outcomes of OCPs and the RGS – it **does not create a different direction**.

1.2. What is a Community Climate Action Plan (CCAP)?

A Community Climate Action Plan provides strategies and actions that will assist our communities and the region as whole in reducing energy consumption and greenhouse gas (GHG) emissions throughout the community. The purpose of creating a plan is to provide strategic guidance for future decision making in the community. It defines community's key climate action strategies, actions, target, performance measures along with an implementation strategy.[2,3]

[1] This target is defined in the Greenhouse Gas Reduction Targets Act (Bill 44, 2007)

[2] Summerland participated in the development of the CCAP but created a Climate Action Plan independently of this effort. A Climate Action Plan was therefore not prepared for Summerland. Summerland did provide its GHG reduction target for inclusion in developing the regional GHG reduction target.

[3] The methodology for the development of the plan is provided in Appendix A

1.3. CCAP Objectives

Preparation of this CCAP was undertaken to meet the following objectives:

- Review energy and GHG emission profiles created by the Province for each community in the RDOS, and create rural profiles for each electoral area;
- Generate business-as-usual forecasts for each municipality, electoral area and the Regional District as whole;
- Recommend strategies and actions to reduce community energy and emissions
- Develop GHG emissions reduction potential targets for municipalities, electoral areas, and the region as whole;
- Identify performance measures for tracking progress towards the reduction potential targets

1.4. Plan Outline

The key sections of the plan include:

- **Section 2: Energy Use and Emissions Baseline and Forecast**. This section describes the community's current energy use and GHG emissions and a business as usual forecast of energy and GHG emissions from the baseline year 2007 to 2030. The forecast illustrates the trajectory that we are headed in if we continue to live our lives in a similar pattern.
- **Section 3: Regional Strategies and Local Climate Actions**. This section outlines regional strategies and associated local actions for climate action. The regional strategies describe what the Regional District and member municipalities will collaboratively undertake to improve the communities' energy efficiency and reduce GHG emissions. The local actions outline how the strategies in will be implemented. These are specific actions the community will explore and implement over the course of the next 5 years.
- **Section 4: GHG Emissions Reduction Potential**. This section describes the scoping level, GHG reduction potential for each of the 8 strategies based on the types of actions the plans to implement as part of this CCAP. The community's recommended GHG reduction targets are also outlined in this section.
- **Section 5: Implementation**. This section describes details on how the plan will be implemented and monitored. This includes an implementation timeline, high level estimated costs and staff responsibilities.
- **Appendix A: Methodology**. This appendix describes the methodology used for the energy use and emissions baseline and forecast provided in Section 2.
- **Appendix B: Detailed Actions**. This appendix describes the details for each of the actions in Section 3.

2 ENERGY AND GHG EMISSIONS BASELINE & FORECAST

2.1. Electoral Area A

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area A are shown in Table 1. Total GHG emissions in 2007 are estimated at 10,231 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 1,931 residents, this is about 5.3 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $4.2 million. This is equivalent to spending approximately $2,100 per person annually to pay for energy services.

Table 1. Energy consumption and GHG emissions in Electoral Area A (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	111,414	1,695
Commercial/Small-Medium Industrial	33,277	817
Transportation		
Personal	81,768	5,676
Commercial	14,414	997
Solid Waste		1,047
Total	**240,873**	**10,231**
Per capita values	**125**	**5.3**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than those from vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

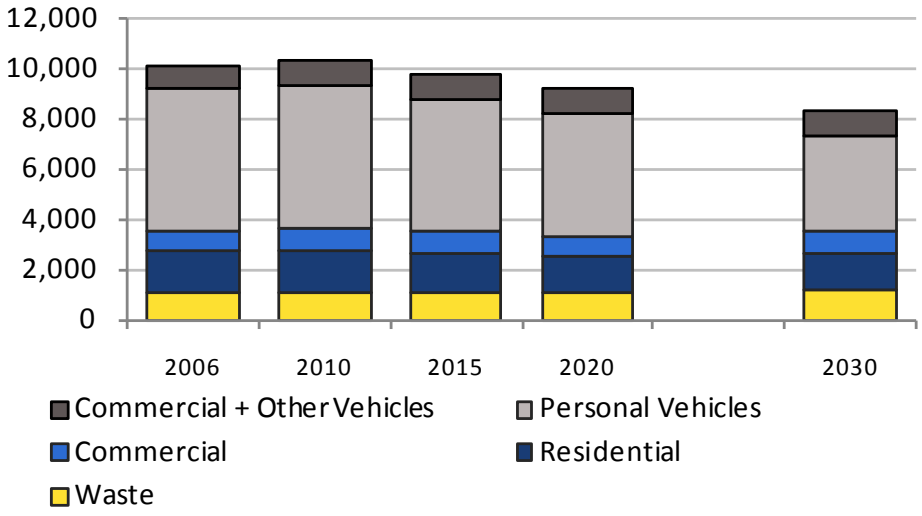
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 19% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details).Table 2 and Figure 1 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 2. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	99,965	1,520
Commercial/Small-Medium Industrial	33,963	834
Transportation		
Personal	55,024	3,819
Commercial	14,041	971
Solid Waste		1,174
Total	**202,993**	**8,319**
Per capita values		**3.8**

Figure 1. Forecasted BAU GHG emissions



2.2. Electoral Area B

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area B are shown in Table 3. Total GHG emissions in 2007 are estimated at 5,418 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 1,095 residents, this is about 4.9 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $2.2 million. This is equivalent to spending approximately $2,000 per person annually to pay for energy services.

Table 3. Energy consumption and GHG emissions in Electoral Area B (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	67,676	972
Commercial/Small-Medium Industrial	6,705	98
Transportation		
Personal	46,056	3,197
Commercial	8,119	562
Solid Waste		590
Total	**128,556**	**5,418**
Per capita values	**117**	**4.9**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

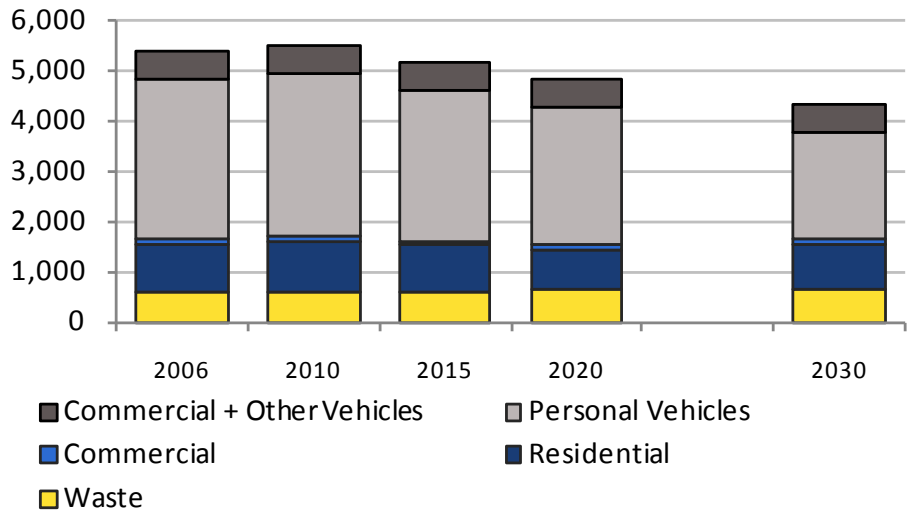
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 20% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 4 and Figure 2 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 4. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	60,721	872
Commercial/Small-Medium Industrial	6,844	100
Transportation		
Personal	30,992	2,151
Commercial	7,909	547
Solid Waste		662
Total	**106,466**	**4,331**
Per capita values		**3.5**

Figure 2. Forecasted BAU GHG emissions



2.3. Electoral Area C

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area C are shown in Table 5. Total GHG emissions in 2007 are estimated at 18,807 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 3,946 residents, this is about 4.8 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $7.6 million. This is equivalent to spending approximately $1,900 per person annually to pay for energy services.

Table 5. Energy consumption and GHG emissions in Electoral Area C (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	210,475	3,113
Commercial/Small-Medium Industrial	15,323	26
Transportation		
Personal	165,962	11,520
Commercial	29,256	2,024
Solid Waste		2,125
Total	**421,017**	**18,807**
Per capita values	**107**	**4.8**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

BUSINESS AS USUAL FORECAST (2030)

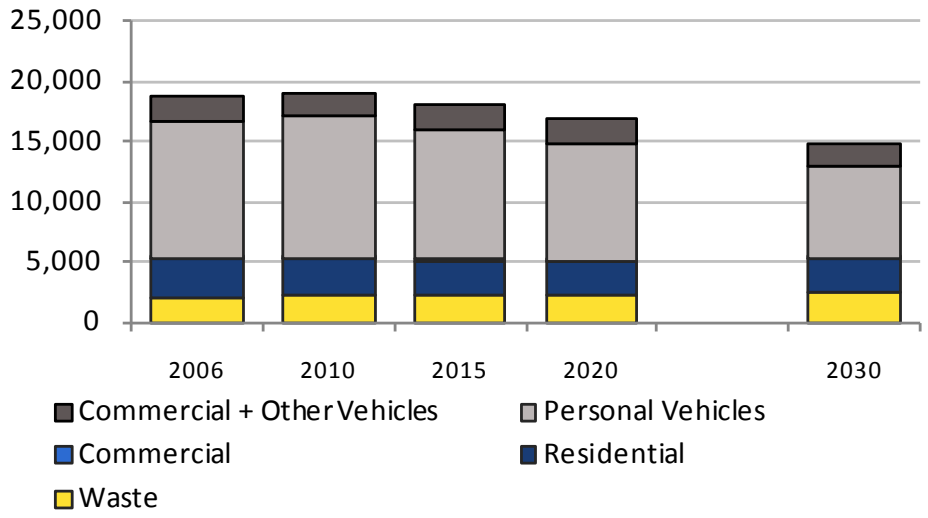
Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 21% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more

details). Table 6 and Figure 3 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 6. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	188,847	2,793
Commercial/Small-Medium Industrial	15,639	26
Transportation		
Personal	111,681	7,752
Commercial	28,500	1,971
Solid Waste		2,384
Total	**344,667**	**14,926**
Per capita values		**3.4**

Figure 3. Forecasted BAU GHG emissions



2.4. Electoral Area D

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area D are shown in Table 7. Total GHG emissions in 2007 are estimated at 32,512 tonnes of CO_2e, excluding emissions from large industrial buildings. For an approximate population of 5,955 residents, this is about 5.5 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $13.2 million. This is equivalent to spending approximately $2,200 per person annually to pay for energy services.

Table 7. Energy consumption and GHG emissions in Electoral Area D (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	320,162	7,789
Commercial/Small-Medium Industrial	63,833	960
Transportation		
Personal	251,689	17,470
Commercial	44,368	3,070
Solid Waste		3,223
Total	**680,052**	**32,512**
Per capita values	**114**	**5.5**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

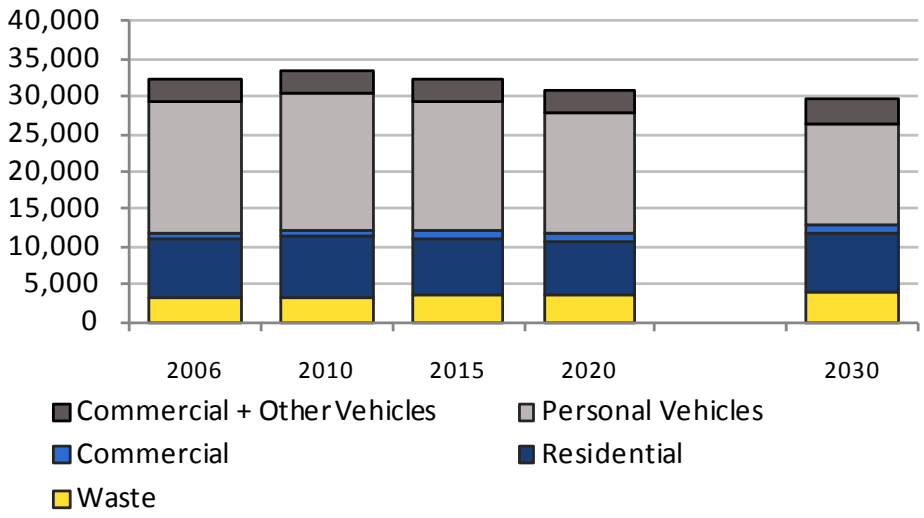
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 1%, overall GHG emissions are forecasted to decrease by approximately 9% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 8 and Figure 4 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 8. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	321,997	7,834
Commercial/Small-Medium Industrial	73,026	1,098
Transportation		
Personal	189,848	13,178
Commercial	48,447	3,351
Solid Waste		4,052
Total	**633,318**	**29,512**
Per capita values		**3.9**

Figure 4. Forecasted BAU GHG emissions



2.5. Electoral Area E

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area E are shown in Table 9. Total GHG emissions in 2007 are estimated at 10,830 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 2,034 residents, this is about 5.3 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $4.3 million. This is equivalent to spending approximately $2,100 per person annually to pay for energy services.

Table 9. Energy consumption and GHG emissions in Electoral Area E (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	126,821	2,240
Commercial/Small-Medium Industrial	22,988	513
Transportation		
Personal	85,556	5,939
Commercial	15,082	1,043
Solid Waste		1,096
Total	**250,447**	**10,830**
Per capita values	**123**	**5.3**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

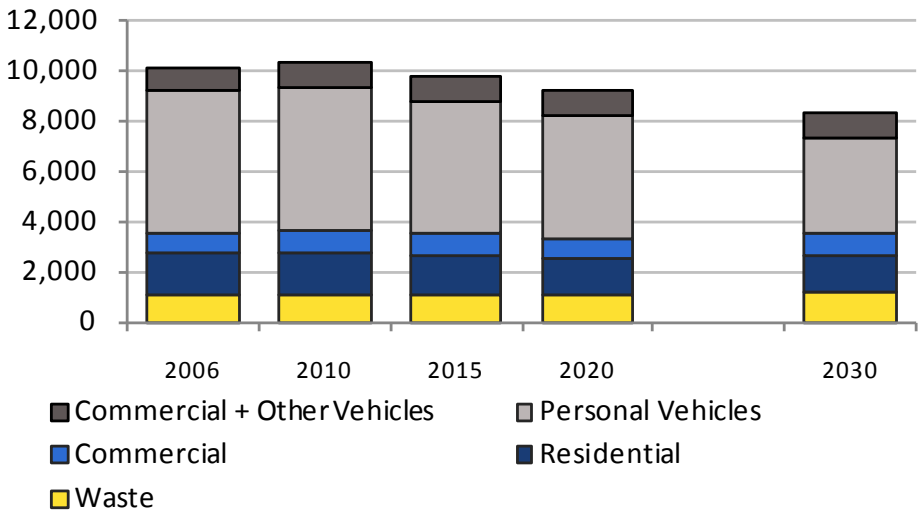
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 19% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 10 and Figure 5 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 10. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	113,789	2,010
Commercial/Small-Medium Industrial	23,462	523
Transportation		
Personal	57,574	3,996
Commercial	14,692	1,016
Solid Waste		1,229
Total	**209,516**	**8,774**
Per capita values		**3.8**

Figure 5. Forecasted BAU GHG emissions



2.6. Electoral Area F

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area F are shown in Table 11. Total GHG emissions in 2007 are estimated at 9,354 tonnes of CO_2e, excluding emissions from large industrial buildings. For an approximate population of 2,036 residents, this is about 4.6 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $3.7 million. This is equivalent to spending approximately $1,800 per person annually to pay for energy services.

Table 11. Energy consumption and GHG emissions in Electoral Area F (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	114,429	1,256
Commercial/Small-Medium Industrial	9,132	15
Transportation		
Personal	85,612	5,942
Commercial	15,092	1,044
Solid Waste		1,096
Total	**224,264**	**9,354**
Per capita values	**110**	**4.6**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

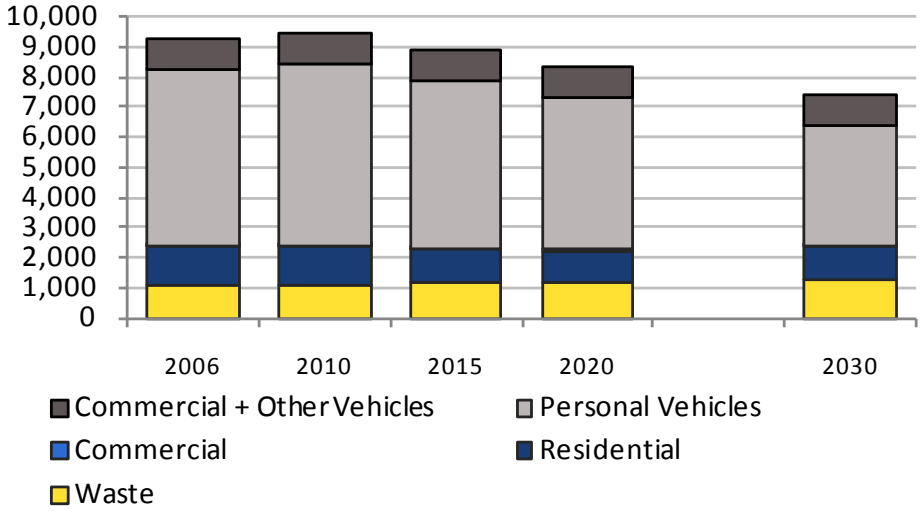
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 21% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 12and Figure 6 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 12. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	102,670	1,127
Commercial/Small-Medium Industrial	9,320	16
Transportation		
Personal	57,611	3,999
Commercial	14,702	1,017
Solid Waste		1,230
Total	**184,303**	**7,388**
Per capita values		**3.2**

Figure 6. Forecasted BAU GHG emissions



2.7. Electoral Area G

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area G are shown in Table 13. Total GHG emissions in 2007 are estimated at 12,076 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 2,336 residents, this is about 5.2 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $5.2 million. This is equivalent to spending approximately $2,200 per person annually to pay for energy services.

Table 13. Energy consumption and GHG emissions in Electoral Area G (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	182,856	2,591
Commercial/Small-Medium Industrial	15,258	210
Transportation		
Personal	98,241	6,819
Commercial	17,318	1,198
Solid Waste		1,258
Total	**313,672**	**12,076**
Per capita values	**134**	**5.2**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

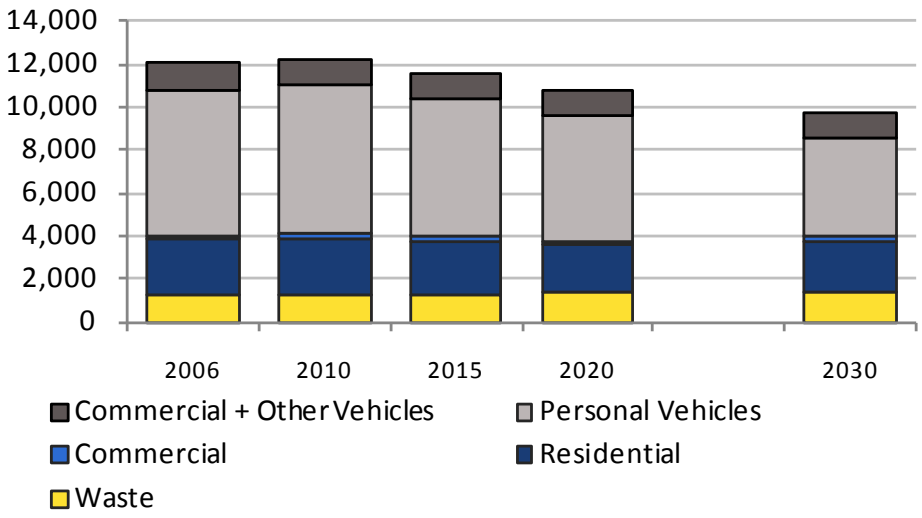
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 20% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 14 and Figure 7 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 14. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	164,066	2,324
Commercial/Small-Medium Industrial	15,572	214
Transportation		
Personal	66,109	4,589
Commercial	16,870	1,167
Solid Waste		1,411
Total	**262,617**	**9,705**
Per capita values		**3.7**

Figure 7. Forecasted BAU GHG emissions



2.8. Electoral Area H

ENERGY USE AND GHG EMISSIONS BASELINE (2007)

Estimated community energy consumption, and associated GHG emissions in Electoral Area H are shown in Table 15. Total GHG emissions in 2007 are estimated at 12,470 tonnes of CO_2e, excluding emissions from large industrial buildings. For a population of 2,235 residents, this is about 5.6 tonnes per person. The approximate retail value of the energy spent in the community for 2007 was $5.4 million. This is equivalent to spending approximately $2,400 per person annually to pay for energy services.

Table 15. Energy consumption and GHG emissions in Electoral Area H (2007)

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	284,067	3,569
Commercial/Small-Medium Industrial	16,649	28
Transportation		
Personal	93,984	6,524
Commercial	16,568	1,146
Solid Waste		1,204
Total	**411,269**	**12,470**
Per capita values	**184**	**5.6**

Note: Includes commercial, small and medium industrial buildings. Large industrial data are not reported in the CEEI.

Buildings consume the majority of energy; however, when looking at GHG emissions, the contribution from buildings is a much smaller proportion than vehicles. This is because the electricity consumed in BC is mostly hydro-electric and has low carbon emissions for each unit of energy consumed, while vehicles use fossil fuels.

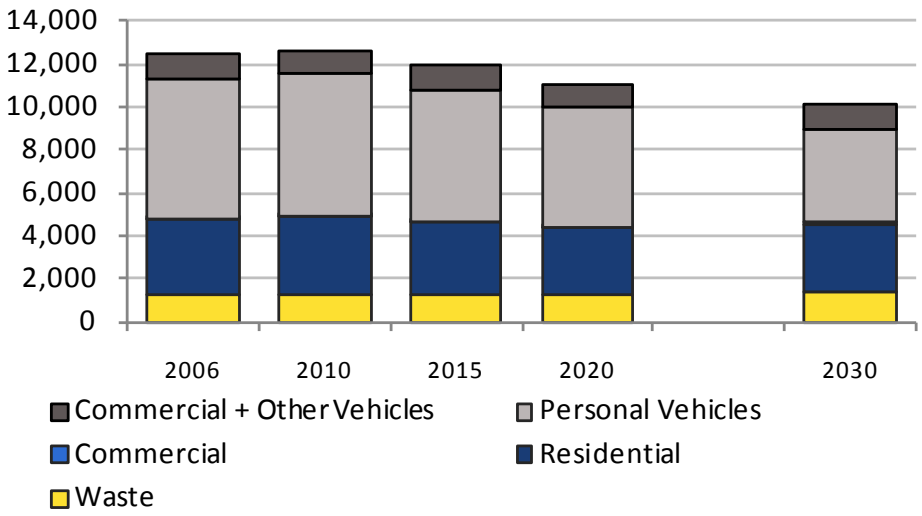
BUSINESS AS USUAL FORECAST (2030)

Based on a projected annual population growth of 0.5%, overall GHG emissions are forecasted to decrease by approximately 19% by 2030. This includes efficiency improvements expected as a result of senior government policy (see Appendix A for more details). Table 16 and Figure 8 below provide detail on the forecasted energy use and GHG emission for each sector.

Table 16. Estimated BAU energy and GHG forecast, 2030

Sector	Energy Consumption (GJ)	GHG Emissions (tonnes CO_2e)
Buildings		
Residential	254,877	3,202
Commercial/Small-Medium Industrial	16,992	28
Transportation		
Personal	63,245	4,390
Commercial	16,139	1,116
Solid Waste		1,350
Total	**351,254**	**10,086**
Per capita values		**4.0**

Figure 8 Forecasted BAU GHG emissions



3 REGIONAL STRATEGIES & LOCAL CLIMATE ACTIONS

This section outlines regional strategies and associated local actions for climate action. The regional strategies describe what the Regional District and member municipalities will collaboratively undertake to improve the communities' energy efficiency and reduce GHG emissions. The local actions outline how the strategies in will be implemented. These are specific actions the community will explore and implement over the course of the next 5 years.[4]

Regional Strategies: There are eight regional strategies that the Regional District and member municipalities will collaboratively undertake to improve the communities' energy efficiency and reduce GHG emissions. The strategies have a strong focus on buildings, land use and transportation since those are the largest contributors to the communities' energy use and emissions.

Local Actions: The details of how these strategies will be implemented are defined by local actions that outlined under each strategy.[5] The actions are organized into three categories: 1) education & outreach, 2) incentives, and 3) policy & regulations. Actions for each category will have different impacts on improving energy efficiency and reducing GHG emissions:

- *Education & Outreach* are programs used to raise awareness and interest. These measures alone have a low impact on improving energy efficiency and reducing GHG emissions. They are however a key step for implementing strategies and they require less effort or resources than the other categories.
- *Incentives* are any factor (financial or non-financial) that enables or motivates a particular course of action. They are commonly voluntary such as rebates for builders or homeowners to purchase energy efficient appliances and materials. Incentives have a moderate impact on improving energy efficiency and reducing GHG emissions.
- *Policy & Regulation* are rules and requirements that are used to encourage or enforce certain practices. They have a high impact on improving energy efficiency and reducing GHG emissions (if they are enforced). Strong policy and regulatory

[4] This plan focuses on energy efficiency and reducing carbon emissions.The scope of the strategies and actions does not include carbon sequestration. Carbon sequestration is an emerging strategy to reduce carbon emissions while also protecting ecosystems. Carbon sequestration has not been included because the science behind the quantification of sequestration is evolving. Sequestration may play a greater role in the future of climate action planning once the methodology for quantification is better understood and validated.

[5] The actions in this section are presented in short form. Additional detail about each of these actions can be found in Appendix B.

measures, combined with incentive programs, will have the highest effect on the strategy and the most potential to minimize energy use and GHG emissions in the community. Presently, not all of the outcomes can be accomplished through regulation, so strong incentives would be required.

The success of each of these strategies and local actions lies in a meaningful collaboration between the Regional District and member municipalities. The collaboration between governments will not only reduce implementation costs but will also streamline the messaging on how best to reduce energy use and GHG emissions.

3.1. Buildings

STRATEGY 1. BUILD ENERGY EFFICIENT BUILDINGS

DESCRIPTION

The energy used in buildings account for a large portion of the community's energy use and GHG emissions. Encouraging higher standards of sustainability and energy performance in new construction, particularly in new subdivisions, multi-family, institutional, commercial, industrial, etc can reduce future increases in community energy consumption and GHG emissions. Recent improvements to the BC Building Code will result in significant reductions in energy demand for both residential and commercial buildings.

This strategy outlines ways to complement the provincial improvements in Building Code, in an effort to improve building energy efficiency above the code standards in RDOS communities.

EXAMPLES OF POTENTIAL SAVINGS

Homes built to EGH 85 (EnerGuide for Homes) can reduce energy demand by an additional 30% from those built to the Building Code standards.

Commercial buildings can achieve an additional 40-60% savings if built to high efficiency standards.

This would include building practices such as:

- High-efficiency windows and insulation in walls, ceilings, and floors,
- Passive solar building design,
- Onsite generation of renewable energy, and
- Green roofs, which can reduce energy demand for cooling by 25%.

IMPLEMENTATION CONSIDERATIONS

This strategy can be led by the municipalities, as each municipality has its own approach to development and, through issuance of permits for development and building, has an established process for working with those constructing new buildings. The Regional District can support the municipalities and the electoral areas with regionally coordinated education and outreach programs. Municipalities may first want to focus on developing educational tools and exploring appropriate incentives before moving to changes in policies and regulations. This way the building community will be well informed before any requirements are imposed.

EXAMPLE BEST PRACTICES

Energy Efficient Design Guidelines: Hobart, Australia has developed guideline for buildings.

Building Labelling Program: The City of Guelph, in Ontario has established energy rating system standards for new residential development.

Green Roof Bylaw: The City of Toronto is the first City in North America to have a bylaw to require and govern the construction of green roofs on new development. The Bylaw requires green roofs on new commercial, institutional and residential development with a minimum Gross Floor Area of 2,000m2 as of January 31, 2010. Starting January 31, 2011, the Bylaw will require green roofs on new industrial development.

Building Checklists have been established in several BC municipalities, including Penticton, Kelowna and Parksville.

DCC bylaw revisions to include cost charge reductions for developments that consider sustainability and the environment: Vernon and Penticton.

LOCAL ACTIONS

Table 17. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Promote existing education and incentive programs • Train building inspectors in LEED for new construction or EnerGuide Rating for homes • Post information and guidelines for energy efficient building practices on the regional website • Create an energy efficient building checklist • Explore offering 'Building Practices for Energy Savings' Info Sessions, in partnership with other organizations
Incentives	• Establish a building permit rebate program for new construction • Provide development cost charge (DCC) reductions to developers, where DCCs exist
Policy & Regulation	• Amend building bylaw to require completion of an energy efficient building checklist prior to issuing the permit

STRATEGY 2. IMPROVE ENERGY EFFICIENCY OF EXISTING BUILDINGS

DESCRIPTION

Older buildings are prone to having compromised air sealing from windows and doors, poor or no insulation of walls, inefficient furnaces and water heating appliances, all of which contribute to increased energy consumption and GHG emissions. These buildings represent a significant opportunity to improve energy efficiency and reduce emissions.

This strategy looks at ways to encourage homeowners, landlords, commercial building owners and property managers to retrofit their buildings so that they perform at a higher standard, and result in reduced energy consumption and GHG emissions.

EXAMPLES OF POTENTIAL SAVINGS

Energy efficient building improvements can reduce energy demand by 20-30% or even more if the buildings were built before 1976.

This would include improvements such as installing:

- High-efficiency windows,
- Insulation in walls, ceilings, and floors,
- Air sealing of windows and doors,
- Onsite generation of renewable energy (e.g. solar panels), and
- Energy efficient appliances.

IMPLEMENTATION CONSIDERATIONS

Similar to the previous strategy, this strategy can be led by the municipalities, as each municipality has its own approach to development. The Regional District can support the municipalities and the electoral areas with regionally coordinated education and outreach programs. A regional program could enhance awareness of the benefits and incentives available for making our current building stock more energy efficient, while reducing duplication of effort between municipalities.

EXAMPLE BEST PRACTICES

Revitalization Tax Exemptions: The District of Maple Ridge and the City of Victoria have bylaws for Revitalization Tax Exemptions that meet sustainable building standards (LEED) or that produce power from alternative energy.

Building permit fee rebates: The District of Saanich has a Green Home Building Rebate Program where building permit fees are rebated for attaining various energy efficiency standards, or for installing solar hot water systems.[6]

LOCAL ACTIONS

Table 18. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Promote existing education and incentive programs, to both with Regional District staff and the public • Post information and guidelines for energy efficient renovations on the regional website • Create an energy efficient building checklist • Explore offering 'Energy Saving' Info Sessions on building retrofits, , in partnership with other organizations
Incentives	• n/a
Policy & Regulation	• Amend the building bylaw to require the completion of an energy efficient building checklist

STRATEGY 3. INCREASE USE OF ALTERNATIVE ENERGY

DESCRIPTION

Energy used to heat and power buildings currently comes from a combination of electricity (primarily from hydro), wood, propane and heating oil. Encouraging use of alternative energy systems in new and existing buildings will reduce the community's collective reliance on fossil fuel energy sources, particularly for heating.

Diversifying energy sources can also lead to a more resilient community, particularly when energy comes from local sources. In addition to solar, wind and geo-exchange, local sources may also include waste heat from industrial operations, as well as waste agricultural material, etc. Many of these technologies are not yet widely deployed (though many are fully commercialized). The major barrier is a real or perceived financial cost associated with incorporating these technologies which may not be recovered by the developer in the sale of the units.

This strategy focuses on decreasing barriers to installing alternative energy systems by providing opportunities to tie the cost of the system to the home or building.

[6] http://www.saanich.ca/living/natural/greenrebate.html

EXAMPLES OF POTENTIAL SAVINGS

Alternative energy supply, for a single building or as part of local distribution system can lead to substantial reductions in energy demand. Examples include:

- Solar water and air heaters can provide a 25-49% savings in building energy demand,
- Ground source heat pumps can reduce energy consumption from fossil fuel sources by 20-70%,
- 60% reduction in natural gas demand when connected to a district energy (DE) node, and
- 70% savings in natural gas demand when connected to a geoexchange system.

IMPLEMENTATION CONSIDERATIONS

Similar to the previous strategies, this strategy can be led by the municipalities, as each municipality has its own approach to development. The Regional District can support the municipalities and the electoral areas with regionally coordinated education and outreach programs. A key to successfully implementing this strategy will be for the Regional District and member municipalities to work together to gain a better understanding of the most suitable alternative energy sources for the region, as well potential sites for district energy.

EXAMPLE BEST PRACTICES

Alternative Energy System Bylaw: The Corporation of the City of Delta has enacted a solar energy bylaw.[7]

Alternative Energy Supply: Abbotsford has the first anaerobic digester for agriculture in B.C.; the Revelstoke Community Energy Corporation (RCEC) has a biomass fired DE system that uses locally produced wood residue; the South East False Creek development (including the 2010 Olympic village) is supplied by a DE system using sewer heat recovery.

LOCAL ACTIONS

Table 19. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Post information on alternative energy supply options on the regional website • Pilot an alternative energy supply project in the region to help promote alternative energy supply technologies

[7] http://www.deltaviews.com/contentengine/launch.asp?ID=20300

	Actions
	• Promote solar thermal energy • Include criteria on alternative energy sources in the energy efficient building and development checklists • Identify and promote "eco-industrial networking" opportunities
Incentives	• n/a
Policy & Regulation	Investigate the creation of development permit areas (DPAs) that include guidelines for the provisions of alternative energy supply • Consider enacting an alternative energy system bylaw

3.2. Land Use and Transportation

STRATEGY 4. BUILD ENERGY EFFICIENT DEVELOPMENTS

DESCRIPTION

The way our communities grow and develop is directly related to our building and transportation energy use and GHG emissions. Low-density residential development is more energy intensive compared to more compact forms of development. Medium-density development accommodates more housing units on less land; reducing building energy use, making district energy and infrastructure services more efficient and cost effective, and contributing to greater housing choice, flexibility and affordability. Development also influences the way and the amount we travel. An increase in lower density developments increases the amount of travel to daily destinations and reduces the feasibility of alternative transportation options such as public transit, walking and cycling.

Local governments can encourage more compact development, where appropriate, and affect the amount of vehicle use in the community through land use decisions (e.g. rezoning and development application approvals, development areas, focusing growth at nodes of services and amenities), by providing pedestrian and cycling friendly alternatives, and increasing transit opportunities.

This strategy outlines ways to promote energy efficient development through land use decisions.

EXAMPLES OF POTENTIAL SAVINGS

Energy efficient land use and development practices can:

- Reduce travel by up to 10-40%[8], and

[8] Victoria Transport Policy Institute

- Reduce infrastructure costs (sewer and water) by approximately 25%[9].

IMPLEMENTATION CONSIDERATIONS

Similar to the previous strategies, this strategy can be led by the municipalities, as each municipality has its own approach to development and, through re-zoning and issuance of development permits, has an established process for working with those undertaking new development. The Regional District can support the municipalities and the electoral areas with regionally coordinated education and outreach programs. This strategy is closely linked to the Regional Growth Strategy, as it defines where growth will be focused in the region, as well as promoting compact, complete development practices across the region.

EXAMPLE BEST PRACTICES

Energy efficiency checklist for developments: Campbell River created one for developments that require a development permit or rezoning.

Development Permit Areas: The City of Dawson Creek OCP (2009) includes a development permit system with sustainability guidelines for energy conservation and renewable energy. Saanich and North Vancouver also have DPA guidelines for energy efficiency.

Density Bonusing: Density bonusing has been employed by several local governments in BC, including: Whistler, Quesnel, Salmon Arm, Sidney, Port Alberni, Salt Spring Island and North Vancouver. See the West Coast Environmental Law website for additional information about these communities and bylaw references.

Sustainable Development Checklists have been established in Vernon and Port Coquitlam.

LOCAL ACTIONS

Table 20. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Post information and guidelines for energy efficient development practice on the regional website • Explore offering 'Development Practices for Energy Savings' Info Sessions, in partnership with other organizations • Create an energy efficient development checklist to accompany development permit and rezoning applications [in accordance with the RGS]. This includes guidelines on: o Solar orientation, density, water conservation, landscaping
Incentives	• Allow density bonusing, where applicable

[9] Environmental Protection Agency

	Actions
	• Provide development cost charge (DCC) reductions to developers, where applicable
Policy & Regulation	• Create policies to cluster development in nodes [COMPLETED in RGS]

STRATEGY 5. IMPROVE ALTERNATIVE TRANSPORTATION AMENITIES

DESCRIPTION

Vehicle travel is currently the primary way of getting to work, shopping, and recreation. Alternative transportation options need to be more attractive to residents in order to reduce personal vehicle use and associated emissions. Activities in this strategy include improvements to amenities (e.g., bus shelters, benches, sidewalks, bike lanes, street lighting, end-of-trip facilities, etc) and outreach and incentives to encourage residents to take advantage of alternative options.

This strategy focuses on elements of transportation infrastructure and amenities that the community can control in an effort to improve the overall transportation experience and encourage greater public transit ridership, more cycling, walking and so on.

EXAMPLES OF POTENTIAL SAVINGS

People typically drive 5-15% less in communities with good walking and cycling conditions than in more car-oriented areas.[10]

IMPLEMENTATION CONSIDERATIONS

It will be challenging to encourage people in the Okanagan Similkameen to use alternative transportation options since the region is made up of mostly small communities and rural areas. People are accustomed to driving. A key success to this strategy will be to make alternative transportation options more obvious, safer and more attractive to encourage people to drive less. The Regional District can support the municipalities and the electoral areas with regionally coordinated education and outreach programs.

This strategy is supported by the Regional Board who places a high priority on a Plan for inter-regional transit – between local communities and municipalities. Another key asset in the region for alternative transportation is the Regional Trail Network, including the Kettle Valley Trail and Trans Canada Trails. Ongoing improvements to our trails are a priority.

[10] Victoria Transport Policy Institute

EXAMPLE BEST PRACTICES

Pedestrian and Cycling Master Plans: Town of Ajax, Town of Richmond Hill.

LOCAL ACTIONS

Table 21. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Distribute information about locally available transportation alternatives
Incentives	• Improve pedestrian, cycling and public transit infrastructure and amenities
Policy & Regulation	• Lobby the Ministry of Transportation to include wide or separated lanes for safe pedestrian and cycling access • Develop an alternative transportation network plan & map – Master Plans

STRATEGY 6. PROMOTE MORE EFFICIENT VEHICLE USE

DESCRIPTION

Motorized transportation will always be a part of our future, but how efficiently the vehicles are driven (i.e. "green driving" habits) and how often we drive, can have a big impact on the community's emissions. There are several opportunities to be more efficient in how and how often we drive our vehicles. Actions such as idling reduction, alternative commuting, carpooling, trip planning, and even purchasing more fuel efficient vehicles require individuals to rethink their attitudes toward vehicle travel and change their behaviours accordingly.

The strategy focuses on identifying ways residents can reduce their GHG emissions, find alternatives, and embrace behavioural shifts away from energy and carbon intensive transportation.

EXAMPLES OF POTENTIAL SAVINGS

- Fuel efficient driving result can increase energy efficiency by 10-15%, and
- Transportation demand management strategies such as carpooling and trip planning can reduce travel by 2-12%.[11]

[11] Victoria Transport Policy Institute

IMPLEMENTATION CONSIDERATIONS

The Regional District can lead this strategy through regionally coordinated education and outreach programs. Currently, there are few incentives and policies that are suitable for the area. A key success of this strategy will be for municipalities to build awareness internally of the benefits of efficient vehicle use while also encouraging staff to follow these practices outside of work. An additional success strategy will be building partnerships with major employers to encourage alternative commuting methods in the workplace.

EXAMPLE BEST PRACTICES

Green Driver Training: Township of Langley has a Driver Awareness Program.

Green Fleets Program: Fraser Basin Council has a program dedicated to improving the fuel efficiency of fleets.

Priority Parking: Several businesses are establishing priority spots for green vehicles, including the Wholefoods, Ikea and Home Depot.

LOCAL ACTIONS

Table 22. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach	• Post information on efficient vehicle use on the website
Incentives	• n/a
Policy & Regulation	• Implement and enforce an idling reduction bylaw

3.3. Solid Waste

STRATEGY 7. REDUCE & DIVERT WASTE FROM LANDFILLS

DESCRIPTION

Management of solid waste is undertaken by regional and municipal governments. RDOS has a very active Solid Waste Service and operates 4 regional landfills. Waste recycling, sorting and composting are significant programs. There is also residential curb side recycling as well yard and wood waste composting throughout the region.

The Regional District is currently updating its Solid Waste Management Plan; however it is the joint responsibility of the Regional District and member municipalities to promote waste reduction and diversion of waste from landfills.

This strategy focuses on reducing waste and diverting it from landfills to reduce the direct emissions coming from the breakdown of the waste, and reduce the emissions resulting from the transportation of waste.[12]

EXAMPLES OF POTENTIAL SAVINGS

Organics diversion can reduce GHG emissions by 30%.

IMPLEMENTATION CONSIDERATIONS

The Regional District can lead this strategy, however several municipalities will play a key role in setting up the appropriate services required to reduce waste production and diversion from landfills.

EXAMPLE BEST PRACTICES

Reuse it Depot: Whistler has a "Reuse-It" centre.

Garbage Pricing: Burnaby and Vancouver have developed pricing structures based on the size of garbage bin used.

LOCAL ACTIONS

Table 23. Climate Actions for RDOS (Note: details for each action are in Appendix B)

	Actions
Education & Outreach, Incentives and Policy	• Implement the various measures identified in the 2011 Solid Waste Management Plan (SWMP) to reduce and divert waste

[12] Landfill gas management is not being recommended as a strategy to reduce emissions from solid waste because according to recent studies completed by the Regional District, most landfills in the Regional District will not meet the threshold defined in the landfill gas regulation. The Regional District is currently exploring the most feasible option for managing the landfill gas from those landfills that require capture.

3.4. Agriculture

STRATEGY 8. MAXIMIZE VALUE FROM AGRICULTURAL WASTES

DESCRIPTION

Currently, agriculture emissions are only reported in the 'Regional' Energy and Emissions Baseline and not at a local scale. These emissions are from methane gas that is released by animals as they digest their food and from the decomposition of manure. These emissions do not include GHGs produced from the decomposition of crop residue.

Efforts to reduce the reported regional agricultural emissions should be focused in areas in the South Okanagan Similkameen with farm animals and feed lots. These emissions can be reduced through manure management. Factors that affect GHG emissions from manure include temperature, oxygen level (aeration), moisture, and sources of nutrients. It is important to note that proper manure management is essential for any agricultural operation because improper use of manure can lead to negative impacts on the environment.[13]

There is also significant crop farming in the region. The associated emissions from crops are included in solid waste. Reducing agricultural waste will result in reductions in the regions solid waste emissions. It is common practice for farmers to reuse empty containers, repair machinery and replace goods by recycling or adapting waste materials, but there is more that can be done to improve waste management on farms. In doing so, farmer can minimize their contribution of solid waste to landfills. Options to reduce agricultural waste include wood chipping, use of wood waste for alternative products (firewood, furniture, food smokers), composting of agriculture waste products, biomass production.

This strategy focuses on identifying opportunities for reducing GHG emissions from agricultural practices, and encouraging the agricultural industry to pursue those opportunities.

EXAMPLES OF POTENTIAL SAVINGS

Anaerobic digesters can reduce GHG emissions up to 80%.

Onsite composting has several benefits:

- Reduce agricultural energy demand: the application of compost can reduce the need for irrigation by 30-70%; a substantial decrease in water consumption would significantly reduce energy consumption. [14]
- Diverting organics from landfills can reduce GHG emissions by 30%.

[13] For more information on manure management see: Government of Alberta, Agricultural and Rural Development - Manure Management and Greenhouse Gases - Things You Need To Know.

[14]Composting: A Greenhouse Gas Mitigation Measure, http://www.cawrecycles.org/issues/ghg/compost

IMPLEMENTATION CONSIDERATIONS

The Regional District can lead this strategy; however several municipalities will play a key role in coordinating with the local farmers and producers in their municipalities. A key success to this strategy will be to monitor production in the area, identify innovative opportunities to manage waste more efficiently, and engage the agriculture industry in pursuing identified opportunities. There are a growing number of examples in North America of agricultural operators using the waste from their operations and turning it into energy. The Regional District will play a key role in building an awareness of the potential promoting energy recovery from agricultural waste.

EXAMPLE BEST PRACTICES

Anaerobic Digesters: Abbotsford has the first anaerobic digester for agriculture in B.C. In Niagara, BC, Vandermeer Greenhouses is using grape pomace to feed a biogas anaerobic digesters. The digester powers a generator for the greenhouse.

LOCAL ACTIONS

Efforts to reduce agricultural emissions are focused at the regional scale. For more details on agriculture actions, please refer to the Regional Community Climate Action Plan. Visit the RDOS website at http://www.rdos.bc.ca/index.php?id=703.

4 GHG EMISSIONS REDUCTION POTENTIAL

Three reduction scenarios were developed for the electoral areas: 1) Areas A & C; 2) Areas D, E & F, and 3) Areas B, G & H. The electoral areas were grouped according to the types of actions that are most suited to each electoral area.

The reduction scenarios reflect the scoping level, GHG reduction potential for each of the 8 strategies based on the types of actions the Regional District will implement in the electoral areas as part of this CCAP. The scenarios are intended to help define what might be reasonable given directed effort to reduce energy and emissions.

Reduction Scenario for Electoral Areas A & C

	Strategy	**GHG Emissions Reduction Scenario** "By 2030…"
Buildings	Build energy efficient buildings	…10% of our new residences are built to high energy efficient standards (exceeding current building code by 30% on average). …10% of our new commercial buildings are built to high energy efficient standards (exceeding current building code by 40% on average).
	Improve energy efficiency of existing buildings	…40% of our existing dwellings and commercial buildings have had an energy efficient renovation that reduces each building's energy use by an average of 30%.
	Increase use of alternative energy	…10% of our existing buildings will have solar panels for hot water (reducing emissions by an average of 10% per building).
Land Use & Transportation	Build energy efficient developments	…10% of our residents will be living in development nodes that allow them to reduce their travel in vehicles (reducing emissions from their vehicles by 15% on average)
	Improve alternative transportation	…5% of our residents will use alternatives to vehicles one or more times per week to access work, shopping, and recreation (reducing emissions from their vehicles by 5% on average).
	Promote more efficient vehicle use	…50% of our residents will not idle their vehicles (reducing emissions from their vehicles by 5% on average) …5% of our residents will reduce vehicle emissions through efficient driving habits (reducing emissions from their vehicles by 10% on average)

	Strategy	GHG Emissions Reduction Scenario "By 2030…"
		…5% of residents will have purchased electric vehicles (reducing emissions from their vehicles by 100%)
Solid Waste	Reduce & divert waste from landfills	…70% of our residents will be actively participating in the organics collection programs (reducing landfill emissions from these residents by 30%).

Reduction Scenario for Electoral Areas D, E & F

	Strategy	GHG Emissions Reduction Scenario "By 2030…"
Buildings	Build energy efficient buildings	…15% of our new residences are built to high energy efficient standards (exceeding current building code by 30% on average). …15% of our new commercial buildings are built to high energy efficient standards (exceeding current building code by 40% on average).
	Improve energy efficiency of existing buildings	…40% of our existing dwellings and commercial buildings have had an energy efficient renovation that reduces each building's energy use by an average of 30%.
	Increase use of alternative energy	…15% of our existing buildings will have solar panels for hot water (reducing emissions by an average of 10% per building).
Land Use & Transportation	Build energy efficient developments	…20% of our residents will be living in development nodes that allow them to reduce their travel in vehicles (reducing emissions from their vehicles by 15% on average)
	Improve alternative transportation	…10% of our residents will use alternatives to vehicles one or more times per week to access work, shopping, and recreation (reducing emissions from their vehicles by 5% on average).
	Promote more efficient vehicle use	…50% of our residents will not idle their vehicles (reducing emissions from their vehicles by 5% on average) …15% of our residents will reduce vehicle emissions through efficient driving habits (reducing emissions from their vehicles by 10% on average) …10% of residents will have purchased electric vehicles (reducing emissions from their vehicles by 100%)

	Strategy	GHG Emissions Reduction Scenario "By 2030…"
Solid Waste	Reduce & divert waste from landfills	…80% of our residents will be actively participating in the organics collection programs (reducing landfill emissions from these residents by 30%).

Reduction Scenario for Electoral Areas B, G & H

	Strategy	GHG Emissions Reduction Scenario "By 2030…"
Buildings	Build energy efficient buildings	…10% of our new residences are built to high energy efficient standards (exceeding current building code by 30% on average). …5% of our new commercial buildings are built to high energy efficient standards (exceeding current building code by 40% on average).
	Improve energy efficiency of existing buildings	…40% of our existing dwellings and commercial buildings have had an energy efficient renovation that reduces each building's energy use by an average of 30%.
	Increase use of alternative energy	…15% of our existing buildings will have solar panels for hot water (reducing emissions by an average of 10% per building).
Land Use & Transportation	Build energy efficient developments	…0% of our residents will be living in development nodes that allow them to reduce their travel in vehicles (reducing emissions from their vehicles by 15% on average)
	Improve alternative transportation	…5% of our residents will use alternatives to vehicles one or more times per week to access work, shopping, and recreation (reducing emissions from their vehicles by 5% on average).
	Promote more efficient vehicle use	…50% of our residents will not idle their vehicles (reducing emissions from their vehicles by 5% on average) …5% of our residents will reduce vehicle emissions through efficient driving habits (reducing emissions from their vehicles by 10% on average)
Solid Waste	Reduce & divert waste from landfills	…25% of our residents will be actively participating in the organics collection programs (reducing landfill emissions from these residents by 30%).

Scenario Results and Target Recommendations

The combined effects of implementing the scenario described above results in the following a GHG emissions reductions in the electoral areas from 2007 levels:

- Areas A & C:
  - Reducing total GHG emissions to 15% by 2020.
  - Reducing total GHG emissions to 30% by 2030
  - This results in a 20% *per capita* reduction by 2020 and a 35% *per capita* reduction in 2030.
- Area D:
  - Reducing total GHG emissions to 10% by 2020.
  - Reducing total GHG emissions to 20% by 2030
  - This results in a 20% *per capita* reduction by 2020 and a 35% *per capita* reduction in 2030.
- Area E & F:
  - Reducing total GHG emissions to 15% by 2020.
  - Reducing total GHG emissions to 30%.
  - This results in a 20% *per capita* reduction by 2020 and a 35% *per capita* reduction in 2030.
- Area B, G & H:
  - Reducing total GHG emissions to 15% by 2020.
  - Reducing total GHG emissions to 25% by 2030.
  - This results in a 20% *per capita* reduction by 2020 and a 30% *per capita* reduction in 2030.

5 IMPLEMENTATION

This section describes details on how the plan will be implemented and monitored. This includes an implementation timeline, high level estimated costs and staff responsibilities.

Timeline, Estimated Costs and Responsibilities

The table below outlines the key actions that will be implemented in the short term (i.e. over the next 1-2 years), timeframe for completion, high level cost estimates, strategy leads and partners.

Note: The high level cost estimates are based on the following assumptions: H = cost estimates over $500,000; M = cost estimates between $100,000 and $500,000; and L = under $100,000.

BUILDNGS

	Key Actions to Implement in Short Term (1-2 yrs)	Timeframe for Completion	Estimate of Budget Required (H, M, L)	Lead(s)	Key Partner(s)
STRATEGY 1 *Build Energy Efficient Buildings*	**Education & Outreach:** • Post information and guidelines for energy efficient building practices on the regional website • Create an energy efficient building checklist	2011	Low	RDOS	Municipalities
STRATEGY 2 *Improve energy efficiency of existing buildings*	**Education & Outreach:** • Post information and guidelines for energy efficient renovations on the regional website	2011	Low	RDOS	Fortis, Teresan and other Government Agencies and Non profit groups
STRATEGY 3 *Increase use of alternative energy*	**Education & Outreach:** • Post information on alternative energy supply options on the regional website	2011	Low	RDOS	Municipalities

LAND USE AND TRANSPORTATION

	Key Actions to Implement in Short Term (1-2 yrs)	Timeframe for Completion	Estimate of Budget Required (H, M, L)	Lead(s)	Key Partner(s)
STRATEGY 4 *Build energy efficient developments*	**Education & Outreach:** • Create an energy efficient development checklist to accompany development permit and rezoning applications [in accordance with the RGS]. This includes updating Community Plan policies and development guidelines on: Solar orientation, density, water conservation, landscaping	2011 Next 5 years	Low	RDOS	-
STRATEGY 5 *Improve alternative transportation amenities*	**Policy and Regulation:** • Develop an alternative transportation network plan & map – Master Plans o Develop Regional Trails and Cycle Network Plan o Complete Transit Plan with B.C. Transit	2012	Medium	RDOS	With Community Services Dept.
STRATEGY 6 *Promote more efficient vehicle use*	**Education & Outreach:** • Web page information on Efficient Vehicle use strategies	2012	Low	RDOS	-

SOLID WASTE

	Key Actions to Implement in Short Term (1-2 yrs)	Timeframe for Completion	Estimate of Budget Required (H, M, L)	Lead(s)	Key Partner(s)
STRATEGY 7 *Reduce and divert waste from landfills*	• Complete review of the Solid Waste Management Plan (SWMP) • Implement the various measures identified in the 2011 Solid Waste Management Plan (SWMP) to reduce and divert waste	2011 2011-2016	Low	RDOS	

Monitoring & Performance Measures

It is important to monitor changes in energy use and greenhouse gas emissions over time to gauge the effectiveness of the GHG policies and targets. To accomplish this, the RGS monitoring program needs to be updated. Proposed indicators to monitor progress are described in the table below. It is recommended that the Regional District report on these indicators every 5 years, to coincide with Census reporting years. Municipalities will support the Regional District by providing the required data.

There are 10 indicators recommended, of which 3 can currently be tracked as part of the South Okanagan Monitoring Program. These include:

- Population in Core Areas – where urban growth boundaries have been defined
- Housing Diversity
- Passenger vehicle travel in RDOS

The remaining measures do not have data available yet but it is assumed that these measures can be tracked if the proper reporting protocol is set up.

	Strategy	Indicators
Buildings	Build energy efficient buildings	1. New Energy Efficient Buildings: Percent of new buildings in RDOS built to or exceeding LEED equivalent standards
	Improve energy efficiency of existing buildings	2. Existing Energy Efficient (Residential): Percent of existing homes in RDOS renovated to high efficiency standards (exceeding EGH 80). 3. Existing Energy Efficient (Commercial): Percent of existing commercial buildings in RDOS renovated to high efficiency standards (exceeding ASHRAE 90.1).
	Increase use of alternative energy	4. Connections to Alternative Energy Supply (Residential): Percent of homes in RDOS that are connected to alternative energy supply 5. Connections to Alternative Energy Supply (Commercial): Percent of commercial buildings in RDOS that are connected to alternative energy supply
Land Use & Transportation	Build energy efficient developments	6. Population in Core Areas: Percent of RDOS population living in development nodes 7. Housing Diversity: Percent of RDOS dwellings that are apartments (either greater and less than 5 storeys)
	Improve alternative	8. Passenger Vehicle Travel in RDOS: Annual Average vehicle

	Strategy	Indicators
	transportation	kilometres travelled in RDOS for passenger vehicle (including: small and large passenger vehicles, and light trucks, vans and SUVs)
	Promote more efficient vehicle use	
Solid Waste	Reduce & divert waste from landfills	9. Diversion of Organic Waste: Annual tonnes of organics diverted from the landfills
Agriculture	Maximize value from agricultural wastes	10. Agriculture Waste Management: GHG manure management Number of farms/facilities with advanced agriculture waste management practices that reduce GHG emissions (e.g. anaerobic digester)

6 CONCLUSION

The Community Climate Action Plan includes a description of the 2007 baseline of community-wide energy consumption and GHG emissions, the business-as-usual forecasts, 8 strategies to address community GHG emissions over the longer term, and potential GHG emissions reduction targets.

This plan focuses on the GHG impact of specific actions and policy measures. There are many other benefits that are not explored in depth here. These include reduced expenditures within the community for energy, as well as contributing to other desired community objectives such as economic development, housing choice and social amenities, community stability and growth etc. These factors should all be considered when pursuing these activities to reduce energy use and GHG emissions.

APPENDIX A: METHODOLOGY

6.1. Review of the CEEI Inventory Data and Creation of Rural Profiles

The Province has developed community-wide energy use and emissions inventories for all municipalities and regional districts in BC. These Community Energy and Emissions Inventory (CEEI) reports provide the total energy consumed through electricity and natural gas in the community and an estimate of propane, heating oil, wood, and vehicle fuel consumed for the baseline year of 2007. The associated GHG emissions are also calculated for each energy consumption type, and for estimated waste emissions.[15]

CEEI reports are available for all municipalities in the RDOS, the unincorporated areas (as a combined total) and the Regional District (total including municipalities and unincorporated areas). They are not available for individual electoral areas.

Although CEEI is generally the best available data, it can have errors due to misalignment of municipal boundaries. As well, some data should only be considered rough estimates, particularly heating oil, propane, and wood. Where there are believed to be some questions as to the accuracy of the CEEI data, these have been noted below.

The following additions/adjustments to the CEEI data were performed:

- Reports were produced for individual electoral areas:
    - Residential electricity was pro-rated from the unincorporated areas total, by number of dwellings.
    - Residential gas was assigned based on data from Terasen Gas, with some pro-ration by number of dwellings where data overlapped electoral areas and First Nations reserves.
    - Heating oil, propane, and wood were pro-rated using a methodology similar to the CEEI calculations, where consumption is estimated by dwelling type, after subtracting natural gas and electricity heating.
    - Commercial electricity was pro-rated based on assessed value of commercial/institutional buildings.
    - Commercial gas was assigned based on data from Terasen Gas, with some pro-ration by on assessed value of commercial/institutional buildings where data overlapped electoral areas and First Nations reserves.

[15] Inventories are available at www.env.gov.bc.ca/epd/climate/ceei/index.htm. These Version 2 inventories were issued May 31, 2010. It is expected that subsequent inventories will be released for the year 2010, and bi-annually after that.

  - Vehicles were pro-rated based on population.
  - Solid waste was pro-rated based on population.
- Residential electricity consumption for Summerland and Penticton was obtained from their respective municipal utilities. Commercial electricity consumption was calculated by subtraction from Fortis wholesale data for the municipality.

Errors or questionable data:

- Heating oil sales were obtained from some local suppliers, including Barry Beecroft, believed to be the largest supplier of heating oil in the RDOS. Consumption was approximately 20,000 GJ. Although there are some additional suppliers, the total is likely to be considerably less than the 78,000 GJ estimated by CEEI. However, it should be noted that even the higher CEEI numbers amount to less than 4% of emissions from Buildings and less than 1% of total emissions.
- The number of vehicles assigned to Keremeos is very high on a per capita basis. This is probably due to residents living outside the City but have the local post office as their mailing address, and therefore a Keremeos postal code. CEEI is aware of this problem but at this time no solution has been found to correct it.

6.2. Projected Population Growth

Total community GHG emissions are directly linked to the size of the population. In order to complete a forecast of GHG emissions into the future, it is important to understand the potential population growth expected in each municipality, electoral area and the region as a whole. Projected population growth rates were developed for each community, based on a review of:

- Regional population growth projections developed by BC Stats, both the regional projections and the Local Health Area projections
- Annual population growth rates over the last 5 to 10 years (from Statistics Canada),
- Growth Strategy Report for the Okanagan Similameen Region, 2004 to 2031 prepared by Urban Futures in 2005.
- Population Projections for Oliver and Surrounding Area, 2005 -2041
- Osoyoos OCP Growth Needs, 2007
- City of Penticton, Comprehensive Development Plan, 2005 and
- Currently proposed developments in several of the areas

The results of this review are outlined in Table 1. These estimated population growth rates serve as the basis for developing the forecasted GHG emissions for each community.

Table 24. Estimated population growth rates

	Historical Growth (annual)	**Estimated Growth** (annual to 2030)	**Notes**
RDOS	0%	1.2%	Historical Growth from 1996 to 2006; informed by Forecast – BC Stats but adjusted to reflect the growth rates in each community.
Keremeos	0.7%	0.5%	Historical Growth from 1996 to 2006
Oliver	-0.1%	1.5%	Historical Growth from 1996 to 2006; The estimated growth is based on the municipal study but was lowered to reflect historical growth as well the regional studies.
Osoyoos	1.4%	1.5%	Historical Growth from 1996 to 2006; The estimated growth is based on the municipal study but was lowered to reflect historical growth as well the regional studies.
Penticton	0.1%	1.5%	Historical Growth from 1996 to 2006; The estimated growth is based on the municipal study but was lowered to reflect historical growth as well the regional studies.
Princeton	-0.9%	0.5%	Historical Growth from 1996 to 2006
Summerland	-0.01%	1.0%	Historical Growth from 1996 to 2006
EA A	0.3%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA B	-1.3%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA C	-0.7%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA D	0.7%	1.0%	Historical Growth from 2001 to 2006, Forecast – BC Stats. Reflects the anticipated growth in the area
EA E	0.1%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA F	0.3%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA G	2.4%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats
EA H	2.3%	0.5%	Historical Growth from 2001 to 2006, Forecast – BC Stats

6.3. Methodology for Business-as-Usual Forecast of GHG Emissions

A business-as-usual (BAU) forecast was developed for each community to 2030. The forecasts are driven by population growth (as outlined in Section 2.2 above), but consider efficiency improvements expected as a result of senior government policy, which will occur regardless of action taken by the Regional District and member municipalities. These efficiency improvements include:

- Reduce residential building energy demand by 20% by 2020[16] (e.g. building code improvements, appliance / equipment improvements, etc.)
- Reduce commercial building energy demand by 9% by 2020 (e.g. building code improvements, appliance / equipment improvements, etc.)
- Reduce passenger vehicle energy use by 40% by 2030[17] (e.g. general fleet turnover and improved efficiencies in vehicle design from existing policy initiatives)
- Reduce commercial vehicle energy use by 15% by 2030

The business as usual forecasts are presented the following section of this plan, Section 3.

6.4. Methodology for Setting a GHG Emissions Reduction Target

This section describes the methodology used to perform a scoping-level analysis of the potential for GHG emissions reductions relative to the BAU forecast for each community. This is not intended as a precise forecast, but rather an attempt to quantify "what could the future look like if these initiatives are pursued?" and "what is the GHG impact?"

The scenarios are developed in four steps:

STEP 1: Identifying **potential GHG emissions reduction opportunities**, or actions based on a review of best practices from other communities in the province and beyond and through discussions with municipal/RD staff on suitable opportunities.

STEP 2: Performing **scoping-level technical research and analysis** of each identified opportunity. This involves identifying the direct impact on energy and emissions, assuming the measure is fully implemented.

[16] Residential and commercial building targets from the BC Energy Efficient Buildings strategy

[17] Passenger and commercial vehicle efficiency improvements expected based on the federal government announcements to increase fuel efficiency requirements by 2016 (light duty) and 2018 (heavy duty).

For example, if a new commercial building meets LEED Gold standards, it is expected that the building will consume 40% less energy than a new commercial building that meets current building code.

STEP 3: Determining the **expected proportion of the population** or activity area ("level of uptake") that will be impacted by implementing each measure. This is based on expected levels of uptake for implementing different program types[18] (e.g. an education campaign will have a lower level of uptake than a financial incentive program).

Continuing with the LEED Gold example from above, if the Regional District embarks on an education campaign with a financial incentive to encourage building to LEED Gold standards, it is assumed approximately 30% of new buildings will participate.

STEP 4: Combining the first three steps to determine the **total expected impact of each measure** and calculate an expected reduction in GHG emissions for the affected sector.

For the above example, the total expected impact would be a 12% reduction in GHG emissions from the new commercial building sector, relative to the BAU forecast.

After suitable actions were identified for each community (Step 1), Steps 2 through 4 were used to create a reduction potential scenarios which were used to recommend targets for each community.

[18] Research indicates that different levels of uptake are expected for the different strategies. For example, Information & Education campaigns may result in 5-10%uptake; Financing & Incentive programs may result in 20 - 50% uptake (depends on level of incentive); and Regulation is likely to lead to 90% or more uptake.

APPENDIX B: DETAILED ACTIONS

This appendix describes the details for each of the actions in Section 4: Local Climate Actions. Note: This is a comprehensive of potential actions. The community will not be implementing all of these actions. Refer to Section 4 to clarify which actions will be pursued by our community.

Buildings

STRATEGY 1. BUILD ENERGY EFFICIENT BUILDINGS

ACTIONS

Education & Outreach

Promote existing education and incentive programs on the municipal website or through a Regional Climate Action website. Examples of existing programs include:

- FortisBC PowerSense
- LiveSmart BC
- EnerGuide

Post information and guidelines for energy efficient building practices on the municipal website. Information can also provide sample business cases for building to higher efficiency standards.

Explore offering 'Building Practices for Energy Savings' Info Sessions to the development community. The sessions will educate and promote energy efficiency construction, build awareness of the incentives available and outline the benefits and costs associated with energy efficient building construction practices. These info sessions can be held as part of series that also include a session on the building retrofits (see strategy B-2) and development practices (see strategy LUT-1). These info sessions can be organized through a partnership between the Regional District, the member municipalities and other interested organizations.

Explore developing an energy efficiency building labelling program for new buildings. The municipality in partnership with the Regional District will work with local real estate agents and developers to provide energy efficient information at the time buildings are sold.

Create an energy efficient building checklist, where building permits are required. The checklist provides a series of objectives or criteria, possibly with a score assigned to each objective, to assist the builder/developer in evaluating the energy efficiency of a building.

The checklist can be distributed with building permits. If a scoring structure is established, the checklist can be used to identify eligibility requirements for energy efficiency incentives (see next section). The checklist can include guidelines on energy efficient design, space heating, lighting and reduced heat loss (insulation, windows, air sealing), as well as appliance performance. The inclusion of alternative energy sources and green roofs should be included in the checklist.

Incentives

Establish a building permit rebate program for new construction, where building permits are required. Local and regional governments have the authority to implement rebate programs under the *Local Government Act*. This program can be organized through a partnership between the Regional District and the member municipalities.

The rebates will be provided to developers who meet the eligibility requirements outlined in the energy efficient building checklist (see previous section for details on the checklist). A key benefit to collaborating regionally on the rebate program is to establish region wide building energy efficiency eligibility requirements for the rebates. This will simplify matters for developers working in different communities.

Provide development cost charge (DCC) reductions to developers who meet the eligibility requirements outlined in the energy efficient building checklist (see previous section for details on the checklist). This requires the community to either amend the existing DCC bylaw to OR to establish a DCC bylaw and then reward developers with reduced charges for energy efficiency.

Fast track building permit processing, where building permits are required if the application includes energy efficiency upgrades above the building code. This will be implemented in association with an energy efficient building permit checklist that outlines the eligibility requirements (see previous section for details on the checklist).

Explore the creation of a Revitalization Tax Exemption that reduces property taxes for owners who purchase a new energy efficient home or building. This requires a revitalization bylaw to be in place (see regulation section below).

Policy & Regulation

Amend building bylaw to require completion of an energy efficient building checklist prior to issuing the permit.

Create a Green Roof Policy to encourage the construction of green roofs on new developments of certain sizes. The policy can apply to new commercial, institutional and residential development with a minimum floor area. Green roofs provide significant reductions in heating and cooling energy needs and reduce rainwater handling infrastructure.

STRATEGY 2. IMPROVE ENERGY EFFICIENCY OF EXISTING BUILDINGS

ACTIONS

Education & Outreach

Promote existing education and incentive programs on the community website or through a Regional Climate Action website. Examples of existing programs include:

- FortisBC PowerSense
- LiveSmart BC
- EnerGuide
- CMHC-eligible energy-efficient building program

Post information and guidelines for energy efficient renovations on the municipal website. This information will include how to arrange an energy audit, types of retrofits possible and technologies that are most suitable for buildings in this region. A directory of technologies and/or local contractors can also be created that outlines service providers available for improving building efficiency and installing alternative energy systems.

Create an energy efficient building checklist for renovations that require building permits. The purpose of the checklist is to build awareness of potential energy efficient upgrades and incentives available to support retrofitting buildings. This checklist would differ from the new building checklist, although some elements may be the same. The inclusion of alternative energy sources and green roofs should be included in the checklist.

Explore offering 'Energy Saving' Info Sessions on building retrofits for homeowners, landlords, commercial building owners and property managers that explain what is involved in retrofitting their buildings, what incentives are available and outline the benefits and costs associated with making changes. These info sessions can be held as part of series that also include a session on the new buildings (see strategy B-1) and development practices (see strategy LUT-1). These info sessions can be organized through a partnership between the Regional District, the member municipalities and other interested organizations.

Incentives

Develop a rebate program for energy audits and retrofits for residential and commercial building owners. This program can be organized through a partnership between the Regional District and the member municipalities. Rebates could include:

- Cash back for energy audits after retrofits are completed.

- Building permit fee rebates, if renovations that require building permits include energy efficiency upgrades. This will be implemented in association with an energy efficient building permit checklist that outlines the eligibility requirements (as outlined in the previous section).
- Fast track building permit processing, if renovations that require building permits include energy efficiency upgrades. This will be implemented in association with an energy efficient building permit checklist that outlines the eligibility requirements.

Explore the creation of a Revitalization Tax Exemption which provides property tax exemptions to residents and businesses for energy efficiency improvements. This requires a revitalization bylaw to be in place and include the provision of property tax exemptions for residents and business for energy efficiency improvements.

Policy & Regulation

Amend the building bylaw to require the completion of an energy efficient building checklist. The bylaw will require completion of an energy efficient building checklist prior to issuing a building permit for renovations. The bylaw amendment should also consider expanding the areas subject to building permits to encourage more energy efficient buildings in the community.

STRATEGY 3. INCREASE USE OF ALTERNATIVE ENERGY

ACTIONS

Education & Outreach

Post information on alternative energy supply options on the municipal website. This information will include types of technologies most suitable for buildings in this region. A directory of technologies and/or local contractors can also be created that outlines retailers and service providers available for installing alternative energy systems.

Pilot an alternative energy supply project in the region to help promote alternative energy supply technologies on the municipal website. There are many opportunities for harnessing alternative energy throughout the Okanagan Similkameen region. Opportunities include recovering energy from agriculture waste sources (e.g. winery by-products, orchard compost), heat and electricity generation from geothermal and solar, and distribution through district energy systems. The Regional District and member municipalities can take a leadership role by collaborating on leading a pilot project on a local government facility or in partnership with a community organization to demonstrate that alternative energy systems are feasible in the region. These projects can act as

catalyst for local economic development, fostering trust in new technologies and ways of doing business.

Promote solar thermal energy. There are several opportunities to promote solar thermal energy including:

- Becoming a Solar BC community (provides access to education resources).
- Promoting solar thermal roof top installations to developers and homeowners.
- Encouraging solar heating for all multi-family developments that include swimming pools.
- Adopting the provincial's proposed solar hot water ready requirement for all new single family dwellings to be built with a provision for a future solar hot water system.

Promote waste heat recovery. Waste heat is the thermal energy which is that is created as a by-product of industrial processes and working machinery of all kinds, such as large refrigeration systems.

To promote waste recovery, the community will promote waste heat recovery on their website and encourage the evaluation of waste heat recovery from large refrigeration systems (arenas, grocery stores) in all large developments.

Include criteria on alternative energy sources in the energy efficient building and development checklists. See Buildings and Land Use sections for details on the building and development checklists.

Identify and promote "eco-industrial networking" opportunities between industrial / commercial operations that can exchange materials between operations where one's waste is another's resource.

Incentives

Provide incentives for installing alternative energy systems, similar to those described for energy efficient new buildings and retrofits.

Explore the creation of tiered consumption rates for electricity. Tiered consumption rates charge consumers a lower price for the electricity they consume up to a prescribed base amount and a higher price for the electricity used that exceeds the base amount. Under a tiered pricing policy, consumers are incentivized to conserve their electricity consumption so that it remains below the base amount.

Explore implementing net metering or a feed-in tariff. Net metering is an electricity policy for producers of green power (generally small) such as wind, solar power or home fuel

cells. Under net metering, a system owner receives credit from the local utility for at least a portion of the electricity they generate. A report prepared by Wildstone Construction and Engineering (2009) for the City of Penticton, outlines various approaches to establishing electrical interconnect agreements that would allow producers of green power to sell their excess power to the local electrical utility.

Policy & Regulation

Define development permit areas (DPAs) that include guidelines for the provisions of alternative energy supply. For example, the guideline may state that all new developments must evaluate the potential to provide 20% of the building's energy through alternative energy sources.

Require re-zoning applications to evaluate for the potential to use alternative energy sources prior to development.

Consider enacting an alternative energy system bylaw to define what types of systems are desirable, exempt them from height calculations and include them as a permitted use in all zones. The bylaw can encourage new buildings in certain areas to connect to district energy systems or be "district energy ready". In developing the policy it will be imperative to establish and make available 'district energy ready' standards for all areas with potential district energy so that developers have clear guidance when constructing new buildings.

Land Use and Transportation

STRATEGY 4. BUILD ENERGY EFFICIENT DEVELOPMENTS

ACTIONS

Education & Outreach

Post information and guidelines for energy efficient development practice on the municipal website.

Explore offering 'Development Practices for Energy Savings' Info Sessions to the development community. The sessions will educate and promote energy efficiency development practices, build awareness of the incentives available and outline the benefits and costs associated with energy efficient developments practices. These info sessions can be held as part of series along with the building practice sessions described in the buildings strategy. These info sessions can be organized through a partnership between the Regional District, the member municipalities and other interested organizations..

Create an energy efficient development checklist to accompany development permit and rezoning applications. The checklist provides a comprehensive assessment of a

development project's energy efficiency. It could be a part of sustainable development checklist. Evaluation categories could include:

- land use – mix of uses, density, infill, water conservation, and tree planting and landscaping
- building design – as per the building checklist
- transportation – transportation options, proximity to service and amenities
- servicing - requirements for municipal infrastructure

Incentives

Allow density bonusing for large new developments. The community can allow a higher level of density (where sewer and water infrastructure allow) in exchange for green development features, including high energy efficiency building designs, improved pedestrian, cycling and transit amenities. This allows the developer to increase the density of the development than is not normally allowed under existing zoning while the community receives a desired amenity that furthers public policy goals. This requires a bylaw amendment.

Fast track rezoning and development permit processing, if the application includes energy efficiency upgrades if the development meets the eligibility requirements outlined in the development checklist (see previous section for details on the checklist).

Provide development cost charge (DCC) reductions to developers who meet the eligibility requirements outlined in the energy efficient development checklist (see previous section for details on the checklist). This requires the community to amend the existing DCC bylaw OR to establish a DCC bylaw and then reward developers with reduced charges for energy efficiency.

Policies and Regulations

Create policies to cluster development in nodes where homes can be closer to basic shopping facilities and transit opportunities, and avoid sprawling development. These policies can be included in the OCP, Zoning Bylaws and Subdivision Bylaws. Key objectives to consider in the policy updates:

- Encourage neighbourhood 'nodes' (a more distributed network of smaller nodes to access amenities and basic needs)
- Encourage greater mix of housing types (alternatives to single family housing)
- Encourage infill and densification of the community. This includes allowing secondary suites or cottages in nodal locations, where sewer and water systems allow.

Define Development Permit Areas (DPA) in the OCP that include guidelines for more energy efficient new developments. A range of criteria can be applied including, but not limited to, guidelines for passive solar design, green roofs, orientation, landscaping, renewable energy generation, solar hot water readiness, and district energy readiness. DPA guidelines cannot address components within a building, such as low flow fixtures and efficient appliances – these are subject to the building code.

Develop energy efficiency rezoning policy. This policy will define the type of activities that Council would desire in a rezoning such as highest energy efficiency, incorporation of innovative alternative energy sources, etc. While formally this policy statement does not have the strength of the OCP or zoning bylaws, it is a soft measure for encouraging innovation.

Explore the creation of policies to encourage green boulevards and xeriscaping. There are a variety of ways to reduce heat gain from pavement and other hardscapes. This includes reducing street rights-of way and pavement widths to pre-WWII widths (typically 22-34 ft for local streets and 30-35 for collectors); using parkway strips and plant shade trees; planting shade trees on south and west facing sides of structures; using low-water landscaping instead of hardscaping around road infrastructure. Key steps in developing policies to encourage boulevards and xeriscaping include a) establishing standards that provide for pervious pavement options; and b) removing obstacles to xeriscaping, edible landscaping and low-water landscaping.

STRATEGY 5. IMPROVE ALTERNATIVE TRANSPORTATION AMENITIES

ACTIONS

Education & Outreach

Distribute information about locally available transportation alternatives. This can include trail and path maps, safe travel routes to bike or walk to schools. This information can also be available on the municipal website.

Communicate the lifestyle and financial benefits of public transit and active transportation, through promotion of programs such as the "Commuter Challenge" and "Bike to Work Week," and the "Walking School Bus." This information can also be available on the municipal website.

Incentives

Improve pedestrian, cycling and public transit infrastructure and amenities. This will encourage walking and cycling, particularly in nodal developments and make public

transit a more attractive option. This could be accomplished through the following activities:

- Adding bike lanes to the road network or designating certain streets (not main streets) for bicycle traffic;
- Improving the existing trail network and creating linkages so residents can use it to get from A to B, rather than just for recreational purposes;
- Providing bicycle racks and end-of-trip facilities (e.g., lockers, showers, etc) at municipal facilities, and encouraging others to do the same via the Building and Development Checklists;
- Improving bus shelters, lighting and seating around bus stops (to provide greater year-round comfort and accessibility to public transit users).
- In partnership with BC Transit, explore opportunities to increase transit availability in the region, focusing on making improvements to existing transit services (rather than reallocating services) and adding services strategically as opportunities arise.

Explore creating an alternative transportation infrastructure reserve fund to provide transportation infrastructure that supports walking, bicycling, public transit or other alternative forms of transportation. As a result of Bill 27, 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". This requires a bylaw.

Policy & Regulation

Establish pedestrian- and biking-friendly standards and guidelines in the Subdivision Bylaw, in DPAs and in zoning. The objective is to create environments that are less focussed on cars, so road widths, sidewalks, street trees, etc. are important aspects of inviting alternative modes. Key features of the standards may include requirements for alternative transportation infrastructure, such bike lanes, racks, etc.

Revise Parking Bylaw with a maximum amount of off-street parking rather than a minimum.

Lobby the Ministry of Transportation to include wide or separated lanes for safe pedestrian and cycling access when new highways are built or existing highways are expanded by the provincial government.

Develop an alternative transportation network plan & map that identifies necessary routes and connectivity challenges. A coordinated plan and map can be used to encourage

residents to use non-vehicular means of travel. This could be done as a part of a Parks and Trails Master Plan for the community. The map can be a useful communication tool for people to know where they can find trails and connections to their destinations.

STRATEGY 6. PROMOTE MORE EFFICIENT VEHICLE USE

ACTIONS

Education and Outreach

Develop and implement an education campaign on energy-efficient driving, in partnership with the Regional District and member municipalities. The program can focus on:

- reducing idling,
- efficient driving techniques,
- encouraging trip planning, and
- purchasing more fuel efficient vehicles (note that currently only 30% of personal vehicles are "small" and over 50% are trucks, SUVs and vans, on average across the region).

Develop a green driver training program for both residents and commercial operations in the region. A resident program will build awareness on efficient driving techniques, proper tire pressure, etc. A commercial fleet program would encourage E3 Fleet[19] principles that focused on fleet right-sizing, idling reduction, efficient driving techniques for commercial drivers.

Incentives

Investigate opportunities to provide preferential parking for low-emission / car co-op vehicles (e.g., compact cars, hybrids, car co-op vehicles, car or van pools, etc) throughout the downtown area and work in partnership with large retailers and property owners to do the same in private parking lots. This provides a reward to residents that choose carbon-friendly modes of transportation, as opposed to a more punitive approach such as increasing parking fees in the downtown area to discourage residents from driving downtown.

[19] E3 Fleet is an initiative of the Fraser Basin Council and provides a national standard for green fleet rating. See http://www.e3fleet.com.

Policy & Regulation

The community will:

Implement and enforce an idling reduction bylaw. To be most effective, the Regional District and all member municipalities should adopt a similar bylaw. The bylaw can apply to certain zones where idling is common, such as schools, drive-throughs, downtown etc.

Solid Waste

STRATEGY 7. REDUCE & DIVERT WASTE FROM LANDFILLS

ACTIONS

Implement the various measures identified in the 2011 Solid Waste Management Plan (SWMP) to reduce and divert waste. These include a combination of education, incentive, policy and pricing mechanisms. The SWMP is a regional plan but its success is dependent on the participation of municipalities in both planning and implementation. The Regional District already has in place several waste reduction initiatives. Key opportunities for collaboration are in developing a region-wide waste reduction campaign that focuses on education and incentives for residents, businesses and institutions to reduce waste and increase recycling through:

- Exploring an increased pick up service for recyclables.
- Increasing access to product stewardship drop-off locations that encourage recycling, reuse, and composting.
- Education about composting at home and provision of (or discounts on) backyard composters.
- Exploring the feasibility of organics collection.
- Promoting Industrial Materials Exchange.
- Implementing a business award system to recognize businesses that reduce waste.

Agriculture

STRATEGY 8. MAXIMIZE VALUE FROM AGRICULTURAL WASTES

ACTIONS

Education & Outreach

Promote energy recovery from agricultural waste. Currently, most farm operators are managing their agricultural waste onsite as this is the most economical practice. As agriculture production grows in the region there may be opportunities to use anaerobic digesters to help manage the volume of waste while also creating an alternative source of energy through methane capture.

Promote agricultural waste reuse and recycling: Currently, the Regional District has several programs to support agricultural waste management, including: wood chipping, use of wood waste for alternative products (firewood, furniture, food smokers), composting of agriculture waste products. These programs should continue to be supported.

Promote best practices in manure management in the agricultural community. Current best practices include:

- **Aerating manure** allows microorganisms to breakdown organic material through the addition of oxygen (O2). Aerobic decomposition of manure lowers or eliminates methane emissions, but may increase nitrous oxide emissions.
- **Filtering** exhaust air from animal houses to remove odour-causing gases, GHGs and dust particles may provide a way to reduce methane emissions. However, more research is needed.
- **Composting** solid manure produces a stabilized product that can be stored or spread on agricultural land with minimal odour, pathogens and weed seeds. Exposure to oxygen will reduce methane emissions, however, it can lead to increased nitrous oxide emissions. More research is needed to determine whether the process of composting emits more GHGs than the application of fresh manure.