



District of Summerland Community Energy and Emissions Reduction Plan

February 2020



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Abbreviations

BAU	Business as Usual
CARIP	Climate Action Revenue Incentive Program (administered through the Province of BC)
CCAP	Community Climate Action Plan: the 2011 plan created by the District
CDD	Cooling Degree Day
CEA	Community Energy Association
CEEI	Community Energy and Emissions Inventory (inventories created by the Province of BC for each local government)
CEERP	Community Energy and Emissions Reduction Plan
CLIC	Community Lifecycle Infrastructure Costing
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
DCC	Development Cost Charge
DPA	Development Permit Area
EV	Electric Vehicle
FCM	Federation of Canadian Municipalities
GHG	Greenhouse Gas (there are several different anthropogenic GHGs and they have different relative impacts. When tonnes of GHGs are stated in the document the standard practice of stating this in equivalent of tonnes of carbon dioxide is followed.)
GJ	Gigajoules (one of the standard measures of energy)
GMF	Green Municipal Fund (administered by FCM)
HDD	Heating Degree Day
ICABCCI	Integrated Climate Action for BC Communities Initiative (part of Simon Fraser University's Adaptation to Climate Change Team)
IPCC	Intergovernmental Panel on Climate Change (an intergovernmental body of the United Nations dedicated to providing the world with an objective science-based view of climate change, its possible impacts, risks, and response options)
KPI	Key Performance Indicator
kWh	kilowatt hours (standard measure of energy, typically used with electricity)
LCR	Low Carbon Resilience (a term to describe integrated climate change mitigation & adaptation, created by Simon Fraser University's Adaptation to Climate Change Team)
LED	Light Emitting Diode
OCP	Official Community Plan
PCP	FCM-ICLEI's Partners for Climate Protection

PV	Photovoltaics (solar panels that generate electricity)
RCP	Representative Concentration Pathway (four RCPs were adopted by the IPCC as scenarios for the 2014 Fifth Assessment Report, depending on how much GHGs are emitted in future years)
RDOS	Regional District of Okanagan-Similkameen
RGS	Regional Growth Strategy
RTE	Revitalization Tax Exemption
SAEC	Sustainability / Alternative Energy Coordinator (a staff position at the District)
TOTA	Thompson Okanagan Tourism Association

Executive Summary

Our changing climate

The climate is changing in British Columbia (BC) and around the world. The average global temperature has already increased by 1 degree Celsius (°C) above pre-industrial levels and is expected to reach 1.5°C between 2030-2052 based on the current rate, according to the Intergovernmental Panel on Climate Change.

Summerland is predicted to experience certain changes according to publicly available climatic data:*

- increases in annual mean temperatures
- increase in temperature of the hottest day
- a greater number of days over 30°C
- higher number of frost-free days

More extreme weather events such as floods, landslides, storms and wildfires can also be expected similar to those in 2017 and 2018. These changes to our local climate can affect our buildings and infrastructure, physical safety and health, water supply, agricultural resources, and natural environment. Thus, it is important to adapt to climate impacts as well as take action to lower our greenhouse gas (GHG) emissions. Several measures can help us achieve both goals.

Our role in climate action

Climate action consists of both reducing emissions, or *mitigation*, and preparing for the impacts of a changing climate, or *adaptation*.

Although senior levels of government are conducting climate action, the District of Summerland plays a key role in community climate action through building infrastructure, community planning, and conducting educational activities to influence changes in areas such as land use, energy use in buildings, transportation choices, solid waste diversion, and water use. Residents and local businesses play a vital role through their choices and decisions, but these are often shaped by government.

This document is one piece of an in-progress low carbon resiliency (LCR) strategy for the District, and while it covers both adaptation and mitigation, there is a recognized need for a more robust adaptation component. The LCR strategy will include a risk and vulnerability assessment to establish baseline conditions and highlight key risks under projected climate changes and priority adaptation strategies for the District to undertake over time. It will also include an updated Corporate Energy and Emissions Reduction Plan.

The case for climate action

Through Bill 27, the *Local Government (Green Communities) Statutes Amendment Act*, the Province of BC amended the *Local Government Act* and *Community Charter* to require local governments to set GHG reduction targets in addition to outlining actions and policies for achieving those targets in their Official Community Plans and Regional Growth Strategies. Therefore, this Community Energy & Emissions Reduction Plan (CEERP) helps the District be compliant with legislation.

* climatedata.ca

Beyond environmental benefits, reducing GHG emissions offers economic, social, and health benefits to communities. Reducing community energy expenditures can help to keep money in people’s pockets thus helping to stimulate the local economy, or the promotion of Summerland as a green tourism destination could increase visitor numbers. Many strategies to address climate change also improve physical and mental health such as active transportation and access to local, healthy food.

Summerland leading the way

Since adopting the 2011 Community Climate Action Plan, the District has implemented many climate initiatives in different action categories to work towards its GHG reduction targets of 33% below 2007 levels by 2020 and 80% below by 2050.

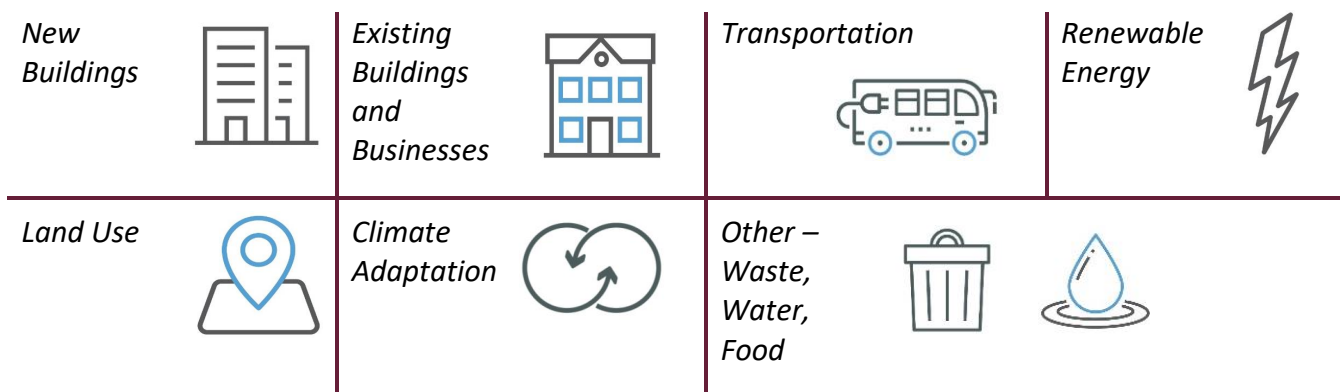
In transportation, the District has successfully lobbied for increased public transit, expanded active transportation infrastructure, and installed electric vehicle charging stations. In community buildings, the District has promoted energy efficiency rebates and has notified the Energy Step Code Council that we have started to consult on the BC Energy Step Code. In renewable energy, Summerland is a pioneering community in BC, developing a 1 MW solar PV farm with battery storage, and encouraging residents to install solar. In solid waste, the District has reduced the volume of organic waste going to landfill through a number of initiatives.

Summerland’s current emissions

Summerland’s GHG emissions in 2016 (the last full inventory year) are very similar to their 2007 levels at just under 60,000 tonnes, with emissions from all sectors being about the same. Between 2007 and 2016 there were significant fluctuations in the emissions from all sectors due to weather patterns and economic factors. Based on business as usual projections, which assumes no additional actions by the District but takes into account the policies of higher levels of government as well as other factors such as a warming climate, GHG emissions are expected to be approximately 13% below 2007 levels by 2025, and about 50% below by 2050.

Priority climate actions

Based on input from municipal staff consultation, stakeholder and public engagement, and best practices, 26 priority actions were identified to implement to help Summerland lower its community GHG emissions and adapt to climate impacts. For the CEERP, these actions fall within the following 7 categories:



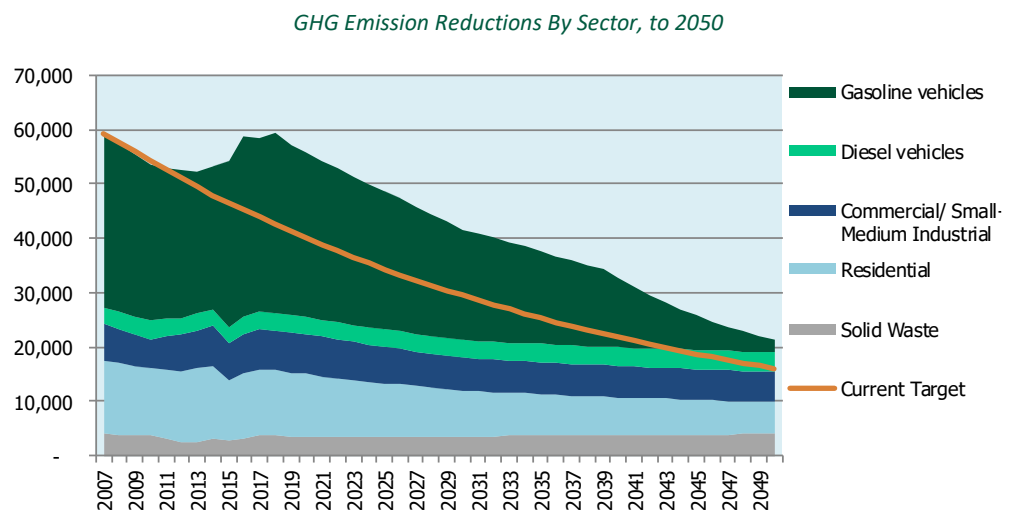
The full, detailed list of actions is featured in this plan. The timeframe for implementation, department or position responsible for implementation, and possible partners or funding sources for each action are also noted. From this list, a number of priority actions were identified by CEA to be implemented within 5 years, based on a combination of considerations: economic impacts, GHG reductions, low in cost or easy to implement, and high public support.

The actions outlined in this plan will need to be investigated through a LCR lens, ensuring a co-evaluation in each category and strategy between emissions reduction and ability to adapt over time under projected climate impacts. The actions will need to address areas where Summerland is most vulnerable to climate impacts, and in particular those areas where adaptation strategies may influence the District’s emissions profile and where emissions reduction strategies account for changing conditions over time (e.g. heat). Identifying synergies where joint mitigation and adaptation benefits exist will help to streamline actions and policies and transition the District toward low carbon resilience. Examples include:

- Implement BC Energy Step Code education suite
- Promote electricity, natural gas, and other energy conservation incentive programs
- Lifecycle infrastructure costing for new developments
- Implement electric vehicle actions suite
- Implement active & assisted transportation actions
- Enhance organics diversion & recycling
- Increase water conservation
- Continue expanding urban tree cover and green space/parklands

What our actions can achieve, and reduction targets

Based on modelling of the priority climate actions, GHG emissions are expected to decline by over 18% below 2007 levels by 2025, 30% by 2030, and 64% by 2050 (if low priority actions are also conducted, 20% by 2025, 33% by 2030, and 68% by 2050 are possible targets). By 2025, the community energy savings over Business as Usual are estimated to be approximately \$1.7 million per year, which would far exceed the District’s expenditures.

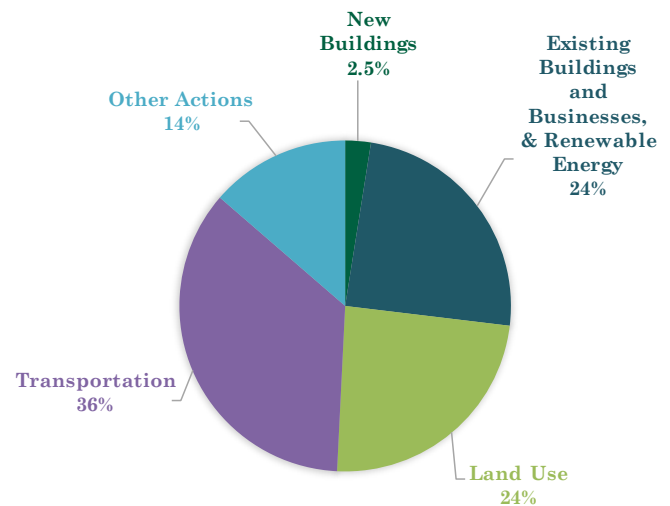


Considering this modelling as well as community and staff engagement, the District of Summerland has set a new short-term target that is realistic and pragmatic and will maintain a long-term target that demonstrates strong municipal leadership. The District will aim to achieve a 18% GHG emission reduction target from 2007 levels by 2025. This target is an update to the 2020 target in the 2011 Community Climate Action Plan and Official Community Plan.

The District of Summerland will continue to work towards an 80% GHG emission reduction target from 2007 levels by 2050. The District will need to conduct additional planning work and actions in the future in order to help it achieve its 2050 target.

The top three types of actions that will achieve the most GHG reductions by 2025 are: the electric vehicle actions suite; promoting electricity, natural gas, and other energy efficiency programs; and lifecycle infrastructure costing for complete compact communities. Transportation, buildings and other types of action categories are expected to contribute to the 2025 emission reduction target in varying degrees, which are highlighted in the pie-chart.

GHG Emissions Reductions from Each Action Category in 2025



Implementation for success, and monitoring & evaluation

In order to successfully implement actions within this CEERP, broad political, staff and community support is needed, along with staff and financial capacity and the institutionalization of the plan. Summerland has strong support and a dedicated staff person, the Sustainability / Alternative Energy Coordinator, as well as a policy on funding for GHG emissions reductions to implement actions. The Community Climate Action Advisory Committee also helps facilitate community-wide climate action. The District of Summerland would benefit, however, from additional institutionalization of climate action. There are many direct and indirect benefits to integrating a LCR lens into all District decisions. In addition to being prudent and responsible for levels of service under a changing climate, and anticipating key capacity needs to address key risks, vulnerabilities, and emissions targets, there are also broader community benefits to undertaking integrated climate actions.

Recommendations on how to further embed climate action are noted in this plan, such as including climate action implications in reports to Council, incorporating climate action into job descriptions of District staff, and monitoring and reporting on indicators to ensure progress is being made. In 2017, Summerland joined FCM-ICLEI's Partners for Climate Protection program - moving through the program milestones will also help as a way to institutionalize climate action within the District.

For monitoring and reporting, fourteen key performance indicators (KPIs) have been noted. By monitoring the KPIs regularly, Summerland can determine how to best allocate resources to support implementation and the success of different actions. Annual reporting on progress and accomplishments to Council should continue. In five years, it is advisable to renew this plan.

Letter from the Mayor



The District of Summerland is a proud climate action leader. We are a pioneering solar community, operate electric vehicle charging stations, have conducted energy and environmental outreach activities for many years, and have been careful with managing our growth.

Demonstrating our commitment to climate action, Summerland is one of the very few communities of its size to have a dedicated resource working on climate action, the Sustainability / Alternative Energy Coordinator. Our dedication to taking action on climate change has helped the District to leverage substantial sources of external funding into the community, is helping with economic growth, and has firmly put the community on the map as a leader in alternative energy. Our work on climate action brings numerous benefits to the community while still preserving our agricultural and rural character, and is helping to enhance our image as an excellent destination both for tourism and for businesses and families to call home.

The District is proud of our history and wishes to conserve our unique identity. At the same time, we have an eye on the future. We are adapting to coming changes, taking advantage of new opportunities, and are doing our part to ensure that future generations will have at least the same quality of environment and life as we have today. This Community Energy and Emissions Reduction Plan aims to guide us in accomplishing this task by balancing environmental, social, and economic interests while preparing us for the changing climate.

I ask that the community join the District to make this plan a success. We can work together to continue creating a bright future for Summerland.

A handwritten signature in black ink that reads "Toni J. Boot". The signature is written in a cursive, flowing style.

Mayor Toni J. Boot

Introduction

Our Changing Climate

The climate is changing in British Columbia and around the world. The average global temperature has already increased by 1 degree Celsius (°C) above pre-industrial levels and is expected to reach 1.5°C between 2030-2052 based on the current rate, according to the Intergovernmental Panel on Climate Change (IPCC).^{*} Summerland will experience changes to its climate in the coming decades, and is committed to being part of the global movement to try to mitigate these impacts.

Publicly available climatic data summarises changes in different climate variables for Summerland based on different scenarios projected by the IPCC. The following table illustrates the historical mean and some projections, based on a conservative future climate change scenario (changes are likely to exceed this):

Table 1 – Projected Climate Changes Based on RCP 4.5 scenario median values

Climate Variable	1976-2005	2021-2050	2051-2080
Hot Days (no. of, +25°C)	60.0	80.1	93.1
Very Hot Days (no. of, +30°C)	20.4	33.2	44.1
Frost Days (no. of)	141.1	110.0	90.9

Source: climatedata.ca

While temperatures are also expected to increase in each season, precipitation levels are expected to decline in summer and increase in other seasons. Based on this data, more extreme temperatures and limited water availability should be anticipated in summer months, while flooding, landslides and storms could occur more frequently in other seasons with greater precipitation.

The expected changes in temperature and precipitation are likely to impact the built environment and infrastructure, alter energy use on a seasonal basis (e.g. more cooling in summer and less heating in winter), and affect human health and safety. More frost-free days could extend growing seasons for agricultural crops, although other factors (e.g. forest fires, scarce water, pests), could result in declines in production. Given these anticipated changes, it is important to adapt to climate impacts and also try to reduce greenhouse gas (GHG) emissions to try to mitigate future impacts.

Our Role in Climate Action

Climate action consists of both reducing emissions, or *mitigation*, and preparing for the impacts of a changing climate, or *adaptation*.

This CEERP is one piece of an in-progress low carbon resiliency (LCR) strategy for the District, and while it covers both mitigation and adaptation, it is focused primarily on mitigation. The LCR strategy will include

^{*} [Summary for Policy Makers](#). In: Global Warming of 1.5 degree C. An IPCC Special Report on the impacts of global warming of 1.5 degree C above pre-industrial levels and related global GHG emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

additional work on adaptation, such as a risk assessment, and will also include the District's Corporate Energy and Emissions Reduction Plan.

Communities play an important role in climate action. They influence approximately 50% of emissions nationally,^{*} and also own and operate many of the assets that will be impacted by a changing climate. Local governments build infrastructure, implement policies, and conduct education and outreach activities to affect changes in land use, transportation, buildings, water and wastewater, and solid waste.

As shown in Figure 1, senior levels of government have recognized the need for strong climate action (particularly on mitigation), and provide support to local governments. In 2016, the Federal Government introduced the Pan Canadian Framework on Clean Growth and Climate Change to help reach its target of reducing national GHG emissions by 30% below 2005 levels by 2030 and 80% by 2050, and to build resilience to a changing climate.[†]

In December 2018, the Province of BC released the CleanBC plan which focusses on mitigation and will support local governments in their actions. CleanBC outlines bold actions to lower emissions in buildings, transportation, waste, and industry to achieve a 40% emissions reduction target below 2007 levels by 2030, 60% by 2040, and 80% by 2050.[‡] The Province of BC has also committed to developing an adaptation strategy by 2020 based on a province-wide climate risk assessment.

Both the Federal and Provincial levels of government have also devoted considerable funding for local government climate action. The CleanBC Communities Fund in BC[§] and the Low Carbon Economy Fund at the Federal level are two examples.^{**}

* Community Energy Implementation Framework, <https://questcanada.org/project/getting-to-implementation-in-canada/?dc=framework>

† Pan Canadian Framework on Clean Growth and Climate Change, <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/climate-change-plan.html>. In addition, through the Climate Lens, Infrastructure Canada is ensuring that proponents of large-scale projects are considering both emissions and vulnerability reduction strategies into the future, increasing the emphasis placed on both mitigation and adaptation considerations at the project scale.

‡ CleanBC, https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf

§ CleanBC Communities Fund, <https://www2.gov.bc.ca/gov/content/transportation/funding-engagement-permits/funding-grants/investing-in-canada-infrastructure-program/green-infrastructure/cleanbc-communities-fund>




** Low Carbon Economy Fund, <https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund.html>

Figure 1 – BC Climate Action Planning Through the Three Levels of Government – Supporting Local Government Targets

The federal government uses national standards and funding in climate action because provinces have constitutional jurisdiction over both energy and local governments.

Local governments are the front lines of climate action because communities are where the buildings, vehicles & infrastructure are.



	Plans	Authority	Actions/Levers
Federal 	Pan-Canadian Framework on Clean Growth and Climate Change	<ul style="list-style-type: none"> • National standards • Funding • International commitments • Taxation 	<ul style="list-style-type: none"> • Vehicle fuel efficiency standards • Infrastructure funding • Model national building codes • Energy ratings & tools (e.g., EnerGuide) • Green infrastructure bank • National carbon price • CCS (Carbon Capture & Sequestration) • Information sharing
Provincial 	CleanBC (mitigation) Adaptation Strategy coming in 2020	<ul style="list-style-type: none"> • Constitutional authority for Energy and for Municipalities • Taxation 	<ul style="list-style-type: none"> • Codes ie Building code (including Step Code) • Data (e.g., Community Energy & Emissions Inventory) • Green infrastructure (e.g., EV charging) • Provincial roads & transit funding • Direction to BCUC on BC Hydro, FortisBC, ICBC • Municipal regulation & authority • Carbon neutral government operations • Carbon tax • RNG (Renewable Natural Gas) • ZEV (Zero Emissions Vehicle Mandate)
Local 	<ul style="list-style-type: none"> > 120 Community Energy & Emissions Plans > Multiple Adaptation Plans 	<ul style="list-style-type: none"> • Land-use / community form • Local infrastructure • Local engagement • Waste management 	<ul style="list-style-type: none"> • New / adjusted community infrastructure • Restricting land use in key areas • Sidewalks/bike & scooter lanes • Complete compact walkable communities • Transit • EV Strategy • BC Energy Step Code • Local engagement • Energy retrofit programs • Organics diversion • Natural assets • Water management • Extreme climatic event / disaster preparation



Governments set the stage, but it is residents and businesses who reduce their emissions and adapt to climate change through individual choices:

- where you locate/live/work
- heating / cooling
- vehicle & travel choices
- extreme climatic event / disaster preparedness
- landscaping choices
- water management

Residents and businesses also have an important role in climate action, such as individual choices on where to live, how to heat or cool, how to travel, how to handle household waste, preparing for extreme events such as extreme heat, making landscaping choices that affect the urban tree canopy and are wildfire smart, and being careful with water use. Meanwhile, businesses’ decisions regarding their current operations and future plans as well as factors such as leadership and innovation also impact community-based emissions and affect a community’s resilience to a changing climate. Residential and business decisions are shaped by other levels of government, including local government, creating an opportunity for governments to influence those choices in a way that addresses environmental issues and climate action.

FCM-ICLEI Partners for Climate Protection Program

The District joined the FCM-ICLEI Partners for Climate Protection (PCP) program in 2017, and intends to use the CEERP and Corporate Plan to help it progress through the program milestones. PCP is *mitigation specific*.

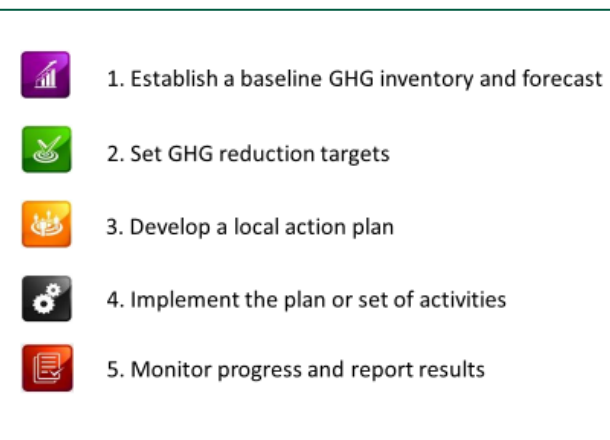
PCP is a network of Canadian municipal governments that have committed to reducing GHGs and to acting on climate change. Since the program's inception in 1994, over 350 municipalities have joined PCP, making a public commitment to reduce GHG emissions. PCP membership covers all provinces and territories and accounts for more than 65 per cent of the Canadian population.

The PCP program is managed and delivered by FCM and ICLEI Canada. FCM and ICLEI Canada form the PCP Secretariat, which provides administrative and technical support, develops tools and resources, and delivers capacity building activities to support members in reducing local GHG emissions. The Secretariat also provides national recognition for member achievements.

The program empowers municipalities to take action against climate change through a five-milestone process that guides members in creating GHG inventories, setting GHG reduction targets, developing local action plans, implementing actions to reduce emissions, and monitoring and reporting on results.

Under PCP, there are five milestones for mitigation, under both corporate and community categories. The five milestones are set out in the following figure.

Figure 2 – Partners for Climate Protection program milestones



For Milestones 1-3, this report with its appendices will be sufficient, although to achieve milestone 2 the report will need to be adopted by Council.

For Milestone 4, the District will need to implement actions in the CEERP, and report on this activity in its annual CARIP reports. Then it will need to submit these reports to FCM-ICLEI.

For Milestone 5, the District will need to create a rigorous document with updated inventory information, and that quantifies the impacts of actions that have been conducted.

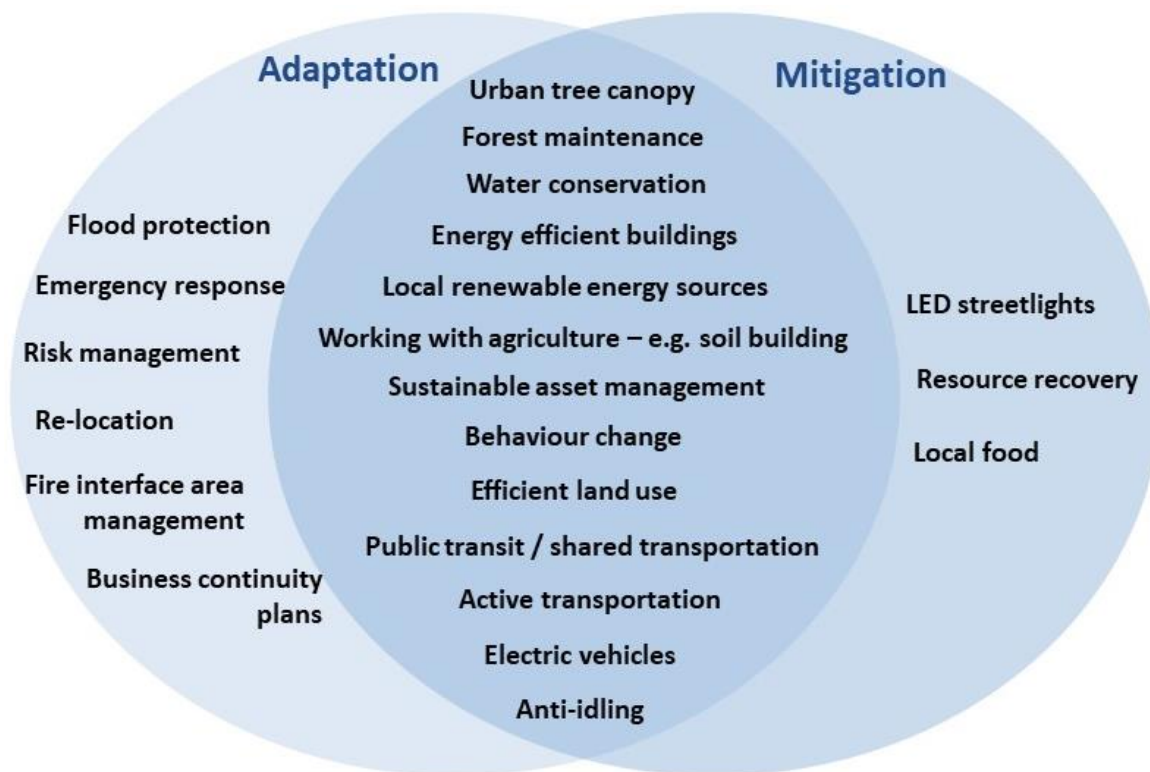
Source: PCP

Adapting to a Changing Climate

As highlighted earlier in this document, the climate is changing and will continue to change in the future, and Summerland will experience a variety of local impacts. Within its limited resources, the District should both work to reduce its GHG emissions and adapt to a changing climate.

Fortunately, many actions can accomplish both of these, as shown in Figure 3. These are good actions to conduct, in addition to actions that only adapt or only mitigate.

Figure 3 – Intersection Between Climate Change Mitigation and Adaptation Actions



Source: Community Energy Association

As previously outlined, Summerland is expected to see changes in the number very hot days, days with frost, and so on. While temperatures are expected to rise in each season, precipitation levels are expected to decline in summer and increase in other seasons. Thus, more extreme temperatures, wildfires, and droughts could occur in summer months. Flooding, landslides and storms may also happen more frequently, and with greater severity.

The Regional District of Okanagan-Similkameen (RDOS) and Interior Health have also reviewed how the region has recently been affected by climate change, particularly extreme weather events.

The RDOS documented the large number of wildfires, floods and landslides in 2017 and 2018*:

- 93 wildfires and 40,185 hectares burned
- About 6 wildfires required the RDOS' Emergency Operations Centre to issue alerts and evacuation orders
- RDOS wildfire related costs totalled \$318,723
- More than 9 lakes flooded and over 21 creeks and rivers caused flooding
- Over 10 incidents of landslide or debris flow occurred
- RDOS flood related costs to the Province of BC totalled \$7.5 million

During the 2017 wildfire season, Interior Health reported the following statistics for July and August†:

- More than 48,000 people were evacuated in the BC Interior and 880 Interior Health patients/clients were evacuated
- Over 80 alerts or evacuation orders were issued
- 52.37 air quality health index was reached (the highest on record)
- \$2.7 million in costs for Interior Health and 32,013 staff hours on wildfire response



Okanagan wildfire. Source: Interior Health

These recent and anticipated climate changes will impact community buildings and infrastructure, human safety and health, natural resource sectors (e.g. agriculture), and the water supply in Summerland; anticipating adaptation strategies now, and where possible, complementary low emissions strategies, will help to advance the District's overall resiliency, and ability to respond and thrive over the short and long-term.

A wide range of strategies can be instituted by local governments and their partners to enhance resiliency and adapt to potential impacts, such as:

- Defining land-uses and bylaws to better protect buildings from lake and river flooding, hard stabilization structures (e.g. walls), soft measures (e.g. wetland restoration), vertical or lateral setbacks, and flood-proofing of buildings can be adopted. Higher building standards and maintenance also safeguard against extreme weather and weathering processes.
- More buffer zones and the reduction of wood fuel in the urban-wildland interface can help to minimize risks from wildfires.
- Diversification or upgrading community infrastructure like drinking water, storm water and wastewater systems helps to withstand heavy precipitation and extreme weather events. Natural assets like wetland restoration can also minimize storm water run off. Storing excess water during heavy precipitation and instituting water conservation or water efficient technologies can address increased water stress.

* [Regional District of Okanagan-Similkameen Presentation at Making the Links Symposium 2018](#)

† @Interior Health – September 2017,

<https://www.interiorhealth.ca/AboutUs/MediaCentre/PublicationsNewsletters/Documents/Edition%20179%20-%20September%202017.pdf>

- Encouraging the use of sustainable agricultural practices such as planting climate tolerant species and increasing the carbon content of soil (e.g. by promoting compost produced through organics diversion) could improve production levels considering changes in temperature and precipitation levels.
- The addition of more natural vegetation can help to cool communities.
- Early warning systems and emergency response plans alert residents to extreme heat, poor air quality, wildfires, and floods in advance in order to move them to safer locations. This also helps to minimize stress and anxiety and possible injuries or illnesses.

A National Roundtable on the Environment and the Economy report explains that the climate change costs for Canada could rise from \$5 billion/year in 2020 to \$21-43 billion/year by the 2050s, or higher. Finding ways to adapt to climate change will help to reduce these costs.*

Applying a Low Carbon Resilience Lens

Mitigation and adaptation have often been planned separately, but both aim to minimize the threat and damage of climate change. Using a Low Carbon Resilience (LCR) lens or approach ensures that priority strategies to reduce both emissions and vulnerability are coordinated, co-evaluated, and integrated.

An LCR approach streamlines resources and capacity, aligns policies across departments, and helps to identify and pursue strategic co-benefit opportunities, advancing other municipal priorities such as health and wellbeing. In short, applying an LCR lens on planning and decision-making has the potential to increase coherence and achieve systemic levels of change. Whereas all strategies and plans can be evaluated using an LCR lens, there are a number of areas where it is clear that emissions and vulnerability are managed at the same time, as shown in Figure 3. These are examples of integrated LCR actions.

In addition to considering vulnerability to a changing climate, an LCR approach also promotes the co-benefits of actions taken. Therefore, all of the actions in this plan achieve at least one of the co-benefits shown in Figure 4.

* Paying the Price: The Economic Impacts of Climate Change for Canada, <http://nrt-trn.ca/climate/climate-prosperity/the-economic-impacts-of-climate-change-for-canada/paying-the-price>

Figure 4 – Co-benefits to a Low Carbon Resilience Approach

 Improves biodiversity/ habitat creation	 Improves cost savings	 Enhances local autonomy
 Optimizes energy savings	 Creates jobs	 Reduces risk to property values
 Reduces waste; optimizes resources	 Improves human health & well-being	 Reduces congestion
 Improves water retention/absorption	 Increases carbon storage/sequestration	 Reduces burden on grey infrastructure
 Improves air and/ or water quality	 Reduces extreme temperatures	 Captures pollutants
 Improves equity /improvements for vulnerable populations	 Improves green space/ recreation	 Supports clean energy transition
 Improves community livability/vitality	 Supports local food security initiatives	 Improves water and/or energy efficiency

Source: *Integrated Climate Action for BC Communities Initiative, Adaptation to Climate Change Team, Simon Fraser University (2019)*

LCR approaches are being developed by the Integrated Climate Action for BC Communities Initiative (ICABCCI) at ACT – Adaptation to Climate Change Team, Simon Fraser University (2018-2021). LCR approaches apply decision criteria that aim to reduce emissions and vulnerability to projected climate impacts at the same time, helping communities build the resilience needed to effectively respond to the emerging challenges and transitions that a changing climate brings. Examples of this include social connectedness. In the principal actions table, Table 5, this is represented through the “Adaptation / resilience linkages”.

The Case for Reducing Greenhouse Gas Emissions

Although every community contributes only a small part of global emissions, there are many reasons that a community would want to reduce their GHG emissions, including legislative requirements, reducing energy costs, attracting environmentally-minded residents and businesses, improving air and water quality, providing positive physical and mental health outcomes, and protecting wildlife and biodiversity, among others.

Climate change can be seen as an example of a “tragedy of the commons”. This is defined as a situation where individual users, in pursuing self-interest in the exploitation of a shared resource, act in a way that is detrimental to the interests of the whole. Individually, people may have limited incentive to reduce their emissions and can actually be incited to increase emissions (e.g., air travel / vacations); however, from a perspective of ethical behaviour and responsibility, it is important for individuals and their community to consider how lowering emissions can have a positive impact on a broader scale.

Fortunately, the vast majority of communities and countries around the world are working to control their emissions, with varying degrees of effort and success. In BC alone, over 120 communities have a plan to reduce emissions.

Not taking steps to limit emissions locally is projected to lead to significant damages to community infrastructure due to increasing frequency and severity of projected climate impacts over time. These costs will ultimately be transferred to future generations, who will also be experiencing the direct health and economic hardships that high emissions scenarios are expected to cause. Alternatively taking action now to build low carbon and resilient communities will have positive legacy effects into the future.

Legislative

Through Bill 27, the *Local Government (Green Communities) Statutes Amendment Act*, the Province of BC amended the *Local Government Act* and *Community Charter* to require local governments to set GHG reduction targets in addition to actions and policies for achieving those targets in their Official Community Plan (OCP) / Regional Growth Strategy (RGS)*.

In 2011, the District of Summerland adopted its first Community Climate Action Plan (CCAP) to support this legislation. The plan included emission reduction targets for 2020 and 2050 and a broad range of climate actions. Since 2020 is approaching, it is important for Summerland to assess its progress to date and update its plan to reflect changes over the past eight years.

The Province of BC also established a voluntary Climate Action Charter. By signing it, local governments acknowledge that they and the provincial government have an important role in addressing climate change. Municipalities make a commitment to create complete, compact, and energy efficient communities; measure and report on their community emissions; and progress towards becoming carbon neutral in their own operations. Summerland is a signatory to this charter, along with almost every local government in BC.†

* *Local Government (Green Communities) Statutes Amendment Act*, <https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/legislation#green-communities>

† *Climate Action Charter*.

Economic

There are two main ways that reducing GHG emissions can benefit Summerland economically.

First, it can reduce the number of energy dollars exported from the community. In 2016, approximately \$3,000 was spent on energy for each person in Summerland, with most of this money leaving the community. This equates to about \$34 million for the community as a whole. Measures to reduce energy consumption and generate energy locally can clearly benefit the community economically by keeping dollars local. Investment in energy efficient building technologies and renewable energy supports local economic development opportunities and jobs. In addition, reducing energy expenditures helps to reduce the risks that the community may face as energy prices fluctuate.

The second way is through promotion of Summerland as a “green” community and tourism destination. Many tourism communities do this in order to boost their tourism numbers, such as Whistler (see inset). Pollution and a degraded natural environment are obvious deterrents to tourism. The Thompson Okanagan Tourism Association has been working with partners for several years to deliver sustainable tourism in the region. To this point, Summerland’s 2018 *Parks & Recreation Master Plan* notes that trails and recreation facilities encourage tourism and stimulate the economy, and that walking is the most popular recreation activity of Summerland residents, followed closely by cycling.

“Beautiful mountain vistas, ancient forests, crystal clear lakes and rivers, and fresh, clean air. Much of what makes Whistler such a unique and memorable destination lies in its awe-inspiring and pristine natural surroundings. The Whistler community cares deeply for the environment and strives to preserve the area’s natural beauty by taking meaningful steps towards the resort’s vision of sustainability.” Tourism Whistler website

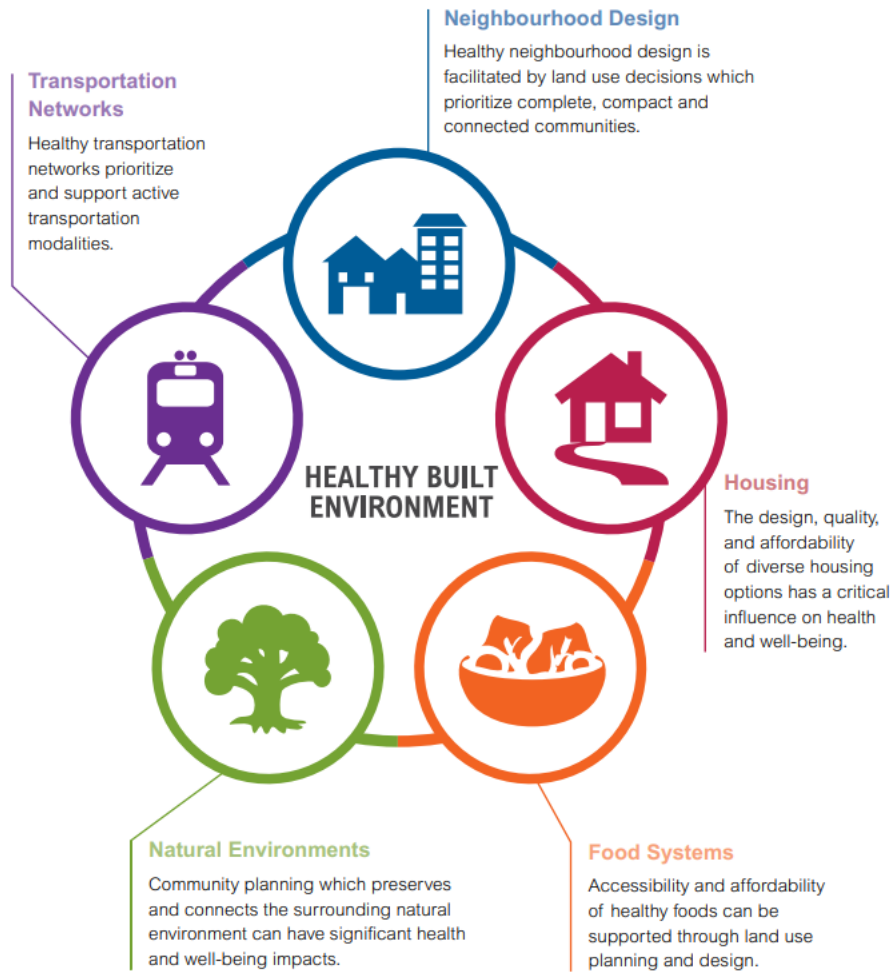
Health

Many strategies that address climate change can also improve physical and mental health. For example, compact, walkable communities and active transportation choices can reduce obesity and improve mental health. The protection of local agriculture increases access to healthy, local food. Planting more trees in urban areas provides protection from extreme heat, which is important for people with respiratory and cardiovascular illnesses. Reduced air pollutants and improved air quality also helps to decrease these types of health issues.

According to [research by Canadian economist Kirk Hamilton](#), the health benefits of lowering GHG emissions could be worth \$100 US/ tonne of CO₂ in countries like Canada, while the cost of abating a tonne of carbon in 2015 was on average \$36 US/ tonne.

Health authorities across BC have recognised the linkages and are working to encourage communities with climate mitigation and adaptation options. Through careful research, the BC Centre for Disease Control has identified what comprises a healthy built environment (see Figure 5), and almost every single measure is consistent with a low GHG community.

Figure 5 – Constituents of a Healthy Built Environment



Source: Healthy Built Environment Linkages Toolkit, BC Centre for Disease Control

Social

From a social perspective, transportation and housing costs represent the two largest expenditures for most working households. Reducing these costs is key to creating affordability for residents. The creation of compact and complete communities in the District’s urban core can increase proximity to workplaces and amenities, and reduce the need for vehicle ownership. Enhanced public transportation within Summerland and to/from neighbouring communities can also reduce reliance on automobiles. Improving the energy efficiency of homes can reduce monthly energy bills. The promotion of FortisBC’s free conservation programs for income qualifying households can help lower-income households save money on their energy bills.

Local Environment

There can also be many local environmental benefits to climate action, in addition to global environmental benefits. By reducing GHG emissions and air pollutants, air quality improves in communities, which naturally also has positive health benefits. Actions that address climate change can also foster healthier and more resilient ecosystems, such as increasing parklands, urban tree canopy, creating habitat corridors, or helping to

protect or re-establish wetlands. A good natural environment also benefits the livability / desirability of a community, and hence the wish for people to move to and visit it.

Adaptation

Emissions reduction actions will reduce climate change impacts in the long-term. Therefore, they can be viewed as a long-term adaptation strategy – *the best way to start dealing with a hole is to stop digging it*. By Summerland and other communities around the world taking the lead on reducing GHG emissions, it builds momentum toward a local, national, and international low carbon economy, which is necessary to minimize overall climatic changes, impacts, and damages into the future.

Summerland – A Leading Community

In 2011, the District of Summerland released its first Community Climate Action Plan (CCAP). The Development Services Department coordinated the initiative with input from a Community Climate Action Advisory Group, comprised of nine community stakeholders. Ten staff from the District also played a key role in the plan’s development by reviewing and prioritizing specific climate actions and subsequently implementing numerous actions.

The 2011 CCAP and Summerland’s OCP have the following GHG emission reduction targets, which were in alignment with the Province of BC targets at the time:

- 33% below 2007 levels by 2020 and
- 80% below 2007 levels by 2050

The CCAP outlined seven major goals and seventy actions to reduce community GHG emissions, as well as an implementation and monitoring strategy. The following table summarizes climate actions that have been implemented since 2012, which demonstrates Summerland’s progress and leadership in addressing climate change.

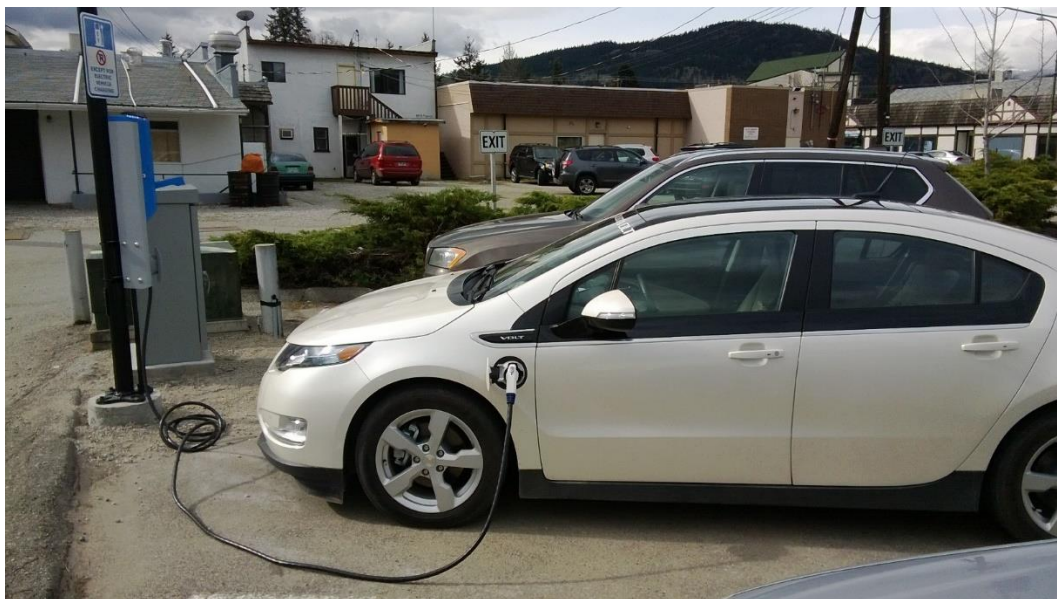
To aid in the CCAP’s implementation and community awareness, a Community Climate Action Committee was formed to work with District staff.

Table 2 – Summary of Existing Climate Actions

Minimizing urban sprawl and promoting compact development with access to amenities within walking / cycling distance	<ol style="list-style-type: none"> 1. Reviewed the OCP and Land Use Map to limit urban sprawl and promote smart growth. 2. Increased densities in 1999 Zoning Bylaw. 3. Updated the OCP to integrate land use, transportation, and energy planning into one document. 4. Implemented OCP policies related to growing compact and diverse neighbourhoods. 5. Amended zoning bylaw to enable more properties within existing neighbourhoods to add secondary suites and carriage homes. This policy has led to more of these types of housing units. 6. Supported the expansion of the number of infill (1 and 2 lot) subdivisions within current neighbourhoods.
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<p>Improving transportation efficiency and supporting sustainable transportation alternatives</p>	<ol style="list-style-type: none"> 1. Lobbied BC Transit for better transit service. Through engagement, BC Transit implemented a fixed bus service between Summerland and Penticton and will add both a new service to Kelowna and increased service to Penticton in fall 2019. 2. Installed three electric vehicle charging stations in downtown. 3. Supported and participated in Bike to Work Week, Car-Free Day programs, Commuter Challenge and carpooling promotions. 4. Added bike lanes along Garnet Valley Road, developed Dale Meadows Bike Path, and began design of new bike lane on a section of Giants Head Road. 5. Completed Parks & Recreation Master Plan in 2018, which encourages improving walking and cycling connections and opportunities. 6. Completed Sidewalks, Cycling & Trails Master Plans in 2019 to expand active transportation infrastructure. 7. Developed Giants Head Mountain Trails Master Plan to enhance trail network. 8. Built 1 km trail adjacent to Highway 97 for pedestrians and cyclists. 9. Investigated the construction of a multi-use trail between Lower Town and Trout Creek. 10. Added anti-idling signage in some areas of downtown core.
<p>Promoting Energy Efficient Buildings</p>	<ol style="list-style-type: none"> 1. Provided information to residents about FortisBC energy efficiency rebates/programs to encourage citizens to conserve energy at home and conduct energy retrofits. 2. Participated in the FortisBC Energy Diet Program where 83 residents registered for home energy audits. 3. Promoted community participation in Earth Hour to encourage residents and businesses to turn off lights. 4. Organized community workshops on energy efficiency and solar energy to inspire greater adoption in community buildings.
<p>Encouraging Renewable Energy Technologies</p>	<ol style="list-style-type: none"> 1. Investigated opportunities for alternative renewable energy generation (e.g. geothermal, wind farms, micro-hydro, solar) by conducting a study on possible options. 2. Developing a 1 MW solar PV farm with 2 MW / 4.5 MWh of battery storage. 3. Updated net metering program for small-scale renewable energy to encourage residents and businesses to install renewable energy. 4. Revised zoning and fees & charges bylaws to facilitate low-barrier approach to solar panel installation and reduce costs for residents interested in installing renewable energy.
<p>Promoting solid waste diversion from the landfill</p>	<ol style="list-style-type: none"> 1. Working with the private sector to increase the diversion of construction and demolition materials from the landfill. 2. Cooperating with the business community to reduce the use of plastic bags and increase the use of cloth bags for purchases. 3. Conducted Earth Week (10 years in a row) and Waste Reduction Week (2 years) outreach activities, and hired student recycling ambassadors to promote waste reduction and recycling. During both Earth and Waste Reduction Week, a 1-day recycling depot is available for community members to bring depot-only items for drop off. School programs also regularly educate students on waste diversion.

	<ol style="list-style-type: none"> 4. Participated in RecycleBC (formerly Multi Material BC Recycling) program and offered opportunities to drop off old electronics for recycling. 5. Updated Solid Waste Management Regulation Bylaw and Fees & Charges Bylaw to encourage more waste diversion. 6. Implemented actions from PPP Contaminated Operation Plan to lower contamination in curbside recycling. 7. Transitioned to automated collection for curbside solid waste, yard waste, and recycling via carts to reduce blue bags from waste stream and vehicle idling times. 9. Promoted and participated in sale of discounted compost bins to residents.
<p>Enhancing urban ecosystems / greenspaces and fostering water conservation</p>	<ol style="list-style-type: none"> 1. Hosted Earth Day planting events (13 years in a row) and coordinated other tree planting projects to increase the number of urban trees. 2. Increased parkland protection by dedicating parklands. 3. Instituted development permits for ecologically sensitive areas and riparian areas to protect these locations. 4. Created Parks and Recreation Master Plan. 5. Collaborated with Friends of Summerland Ornamental Gardens on community courses related to invasive species, xeriscaping, and water conservation. 6. Created xeriscape park at Darke Road right of way. 7. Instituted water restriction program/campaign and sold rain barrels to promote conservation. 8. Developed water billing program to utilize new water meters to reduce water use. 9. Developed Powell Beach Management Plan and created a conservation zone which includes environmental solutions for flood mitigation. 10. Established Woodbridge Nature Preserve. 11. Amended the Terms of Reference for Environmental Assessments to provide stronger information, clarity, and mitigation and restoration.



Electric vehicle charging in Summerland. Source: District of Summerland

Electric vehicle charging stations in Summerland

In 2013, electric vehicle charging stations were installed by the District of Summerland. Usage of the stations has increased rapidly each year. The number of sessions in 2018 increased by almost 2,000% compared to 2013, and the amount of electricity provided to vehicles increased by almost 10,000%. Visits to the charging stations encourage people to visit and enjoy downtown Summerland, supporting local businesses and the community.

Community Energy & Emissions Reduction Plan Development

In early 2019, the District of Summerland, in collaboration with the Community Energy Association, began the process of creating a Community Energy and Emissions Plan (CEERP). The planning process consisted of four main steps, as illustrated in Figure 6.

Figure 6 - Development of the Summerland Energy and Emissions Reduction Plan

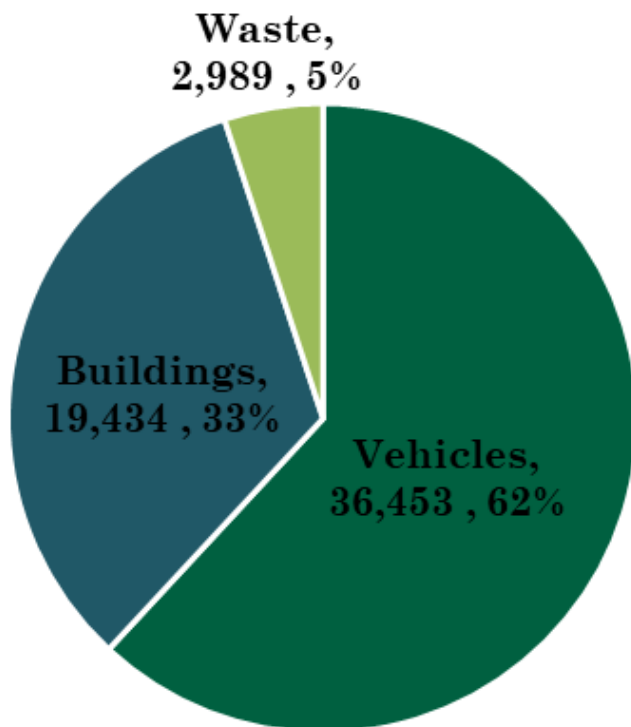


Energy & Emissions – Where We Are Now

Using modelling and analysis, Summerland’s community-wide emissions from 2007 to 2016 and emissions projections to 2050 were all calculated. More details on the modelling and analysis are in *Appendix A: Details on Community Energy & Emissions Inventory & Projections*.

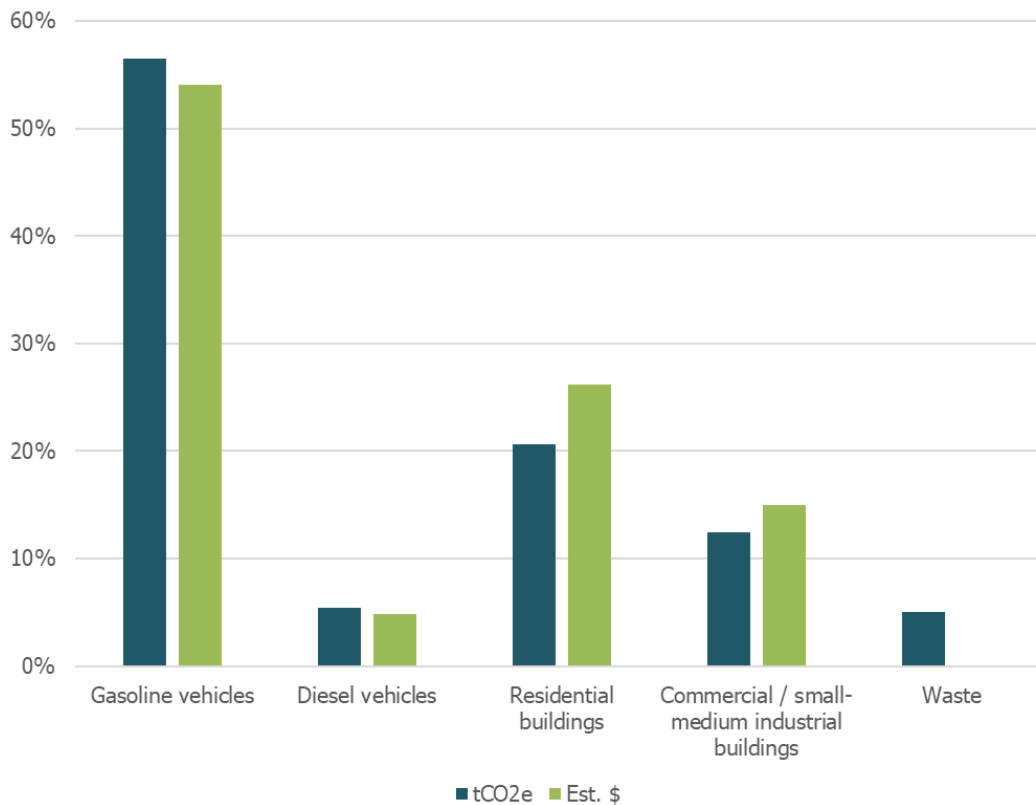
In 2016, the latest year for which a full inventory could be calculated, the community of Summerland emitted about 58,876 tonnes of GHGs and spent about \$34 million on energy. Figure 7 and Figure 8 shows how GHG emissions and estimated energy expenditures split between the different sectors. Transportation related emissions and estimated energy expenditures are the most important sources at over 60%. Buildings are also important at just over 30% of emissions and 45% of energy expenditures. Waste is smaller but still significant at about 5% of emissions.*

Figure 7 – Proportion of Emissions by Sector, 2016



* Note that there is no energy expenditure associated with waste, as it is not a form of energy. Any of the energy costs associated with waste, e.g. with its transportation and processing, will already be included elsewhere in the inventory and will not be possible to separate. More broadly, there are other costs associated with waste, such as land, labour, compliance with regulations, and equipment. These have not been included here.

Figure 8 – Proportion of Emissions and Energy Expenditure by Sector, Energy Only (i.e. excluding waste), 2016



Data was collected from several sources to summarize Summerland’s energy use and GHG inventory at the community level for buildings, transportation, and solid waste since 2007 (see footnote below)*.

Figure 9 and Figure 10 illustrate overall and sectoral GHG emissions since 2007 and business as usual (BAU) projections to 2050.

* For buildings, the Province of BC’s Community Energy & Emissions Inventories for 2007, 2010 and 2012, and its BC utilities energy data at the community level for 2016 were utilized. For waste, although data was provided by the Province of BC using their “waste in place” model, it was decided to use the “waste commitment” method as that immediately displays the impacts of actions that reduce waste going to landfill. For transportation, Kent Marketing Group’s vehicle fuel sales for gas stations in Summerland for the years 2007, 2010 and 2012-2018 was used.

Figure 9 – Summerland’s GHG Emissions Inventory and Modelled BAU Projection, and Comparison with Target

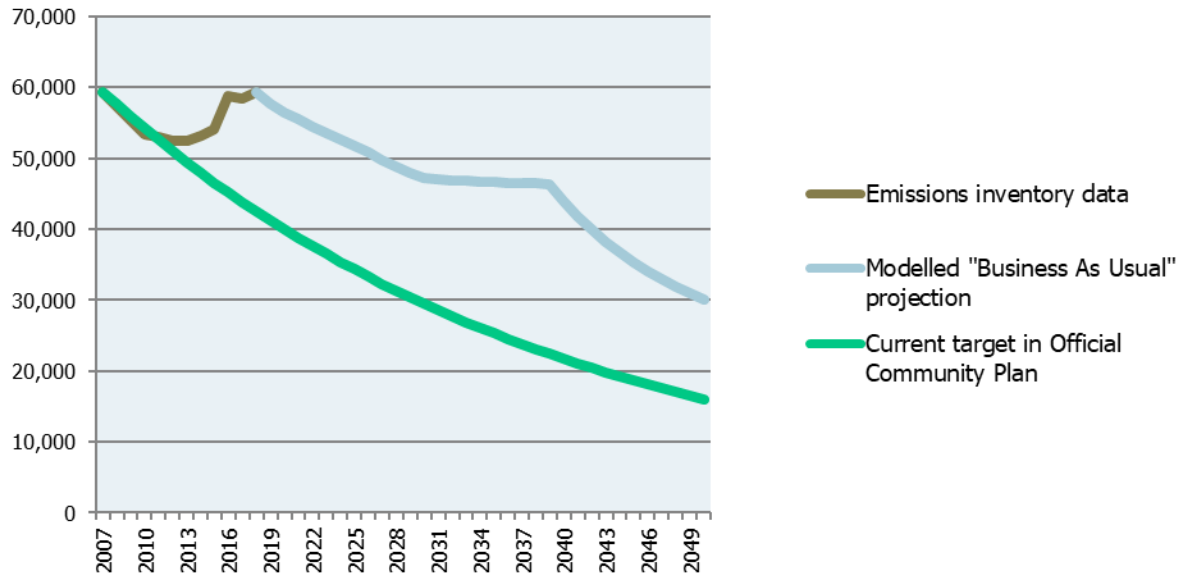
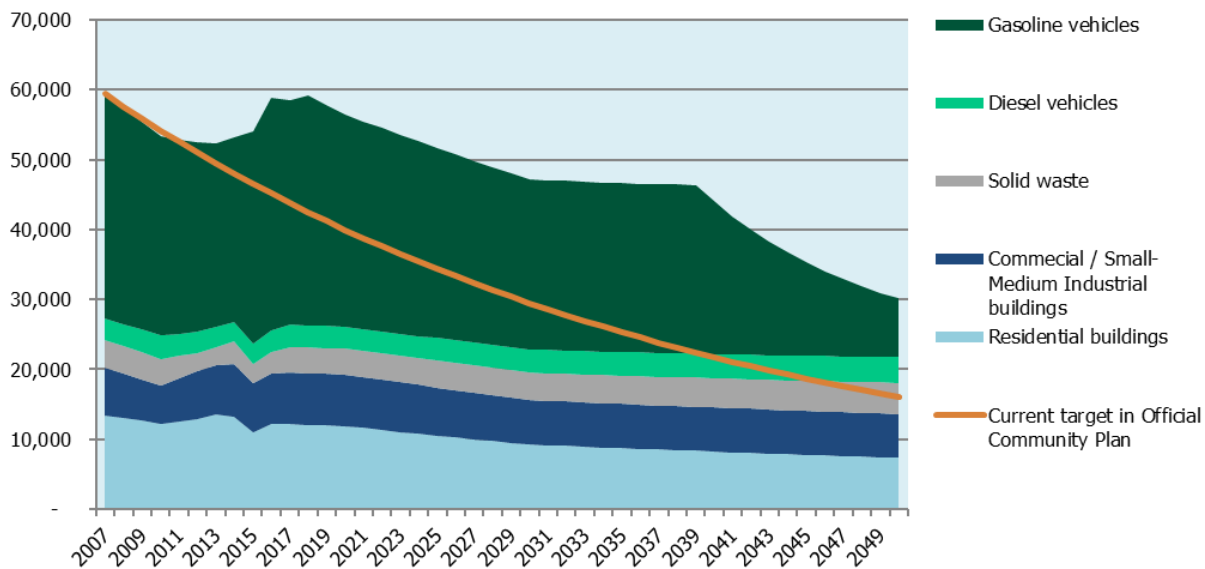


Figure 10 – Summerland’s GHG Emissions Inventory and Modelled BAU Projection by Sector, and Comparison with Target



Summerland’s GHG emissions in 2016 (the last full inventory year) are very similar to their 2007 levels at just under 60,000 tonnes, with emissions from all sectors being about the same. Between 2007 and 2016 there were significant fluctuations in the emissions from all sectors due to weather patterns and economic factors.

Based on BAU projections, GHG emissions are expected to be approximately 13% below 2007 levels by 2025, and about 50% below by 2050. There will however be significant year-to-year variations, as was seen from 2007-2016, and for the same reasons. Vehicles comprise more than 50% of Summerland’s GHG emissions and will likely continue to do so until nearly 2050. Residential buildings make up the next highest percentage of Summerland’s emissions. Based on the present trend, more planning work and climate actions will be necessary to achieve the current long-term emissions reduction target of 80% below 2007 levels by 2050.

What does Business as Usual mean?

Business as Usual, or BAU, is a way of describing what is estimated to happen if the District does not try to reduce emissions going forward. A number of factors are taken into account. Population growth is a very important consideration. As the number of people increase in a community, more buildings are needed, and more vehicles are driven on roads. Other things that are taken into account include:

- Changing climate patterns, as warmer winters and hotter summers change the way that energy is consumed in buildings
- Impacts of policies already adopted by higher levels of government, such as:
 - Renewable and low carbon fuel standards
 - Vehicle emissions standards
 - Purchases of electric vehicles by the public, especially those driven by the Zero Emissions Vehicles mandate
 - The greening of the BC Building Code (progressive steps towards net zero energy ready buildings by 2032)

Engagement

To ensure that the CEERP was shaped by stakeholders and members of the public, the District of Summerland provided opportunities for ideas on future climate actions to be shared. *Appendix B: Stakeholder and Community Engagement* outlines in detail the feedback from the engagement activities undertaken during the development of this plan. A brief summary is provided below.










Stakeholder Workshop

On April 5, 2019, fourteen stakeholders representing twelve organizations were consulted during a half-day workshop to receive their input on possible climate actions and GHG emission reduction targets for the CEERP. Participants shared their opinions on specific actions the District could adopt, and how their organizations could collaborate with the municipality based on existing climate related initiatives within their organizations. Actions covered six topic areas. Key themes from each area are listed below.



Example solar farm with battery storage. Source: District of Summerland

Table 3 – Summary of Themes from Stakeholder Workshop

<p>New Buildings</p> 	<ul style="list-style-type: none"> • Use incentives (e.g. reduced building permit fee, utility rebates for the BC Energy Step Code) to promote the construction of more energy efficient, sustainable buildings.
<p>Existing Buildings</p> 	<ul style="list-style-type: none"> • Educate home and building owners on the tools and incentives available to support a greater number of energy retrofits in existing buildings. Possibly offer additional support mechanisms.
<p>Renewable Energy</p> 	<ul style="list-style-type: none"> • Further investigate geothermal energy, hydropower, and energy from waste (organics) and pursue new renewable energy sources when viable once the District’s Solar+Storage project is fully operational.
<p>Land Use</p> 	<ul style="list-style-type: none"> • Limit new building construction in certain areas (e.g. environmentally sensitive areas, steep hillsides, flood plains, areas not currently served by municipal services). • Adopt various policies to create a vibrant downtown core, contain urban development and densify in particular areas.
<p>Transportation</p> 	<ul style="list-style-type: none"> • Expand electric vehicle charging capability (add more EV stations in downtown Summerland and/or enhance capability in new multi-unit residential buildings). • Improve cycling infrastructure and possibly add an e-bike program to expand bike use in the community. • Support increased public transit frequency within Summerland and between Summerland and Penticton/Kelowna to address the needs of various demographic groups, using appropriate size/style of buses.
<p>Other - Solid Waste</p> 	<ul style="list-style-type: none"> • Support more composting (e.g. organics collection service or space in newer neighbourhoods for composting or community gardens). • Ban certain products from the landfill (e.g. plastics). • Offer more agricultural waste round ups to safely dispose of chemicals. • Continue advocating for satellite recycling stations for items to be dropped off.
<p>Other - Water</p> 	<ul style="list-style-type: none"> • Enhance water conservation by using policies to encourage xeriscaping and incentives to convert to improved irrigation systems. • Increase water storage capabilities for times of drought.
<p>Other – Urban Forest</p> 	<ul style="list-style-type: none"> • Plant more trees and drought tolerant ones to reduce the urban heat island effect and conserve water.
<p>Other – Education</p> 	<ul style="list-style-type: none"> • Increase engagement activities with high school and elementary school students as they are generally concerned about climate change and can influence their parents’ behaviour.

During the discussion on proposed GHG emission reduction targets participants generally supported a long-term target that aligns with the Province of BC target (which the current target does) and having a new, short-term, pragmatic target.

At the end of the workshop, stakeholders were invited to complete a survey to gain additional insight on possible future climate initiatives, the results of which are summarised in *Appendix B: Stakeholder and Community Engagement*.

Public Open House 1



On June 17, 2019, over 40 community members attended a public open house to provide feedback on suggested key priority climate actions and GHG emissions reduction targets that were featured on display boards. People were also invited to share their ideas on where the District of Summerland should take a leadership role and how citizens can support climate action in the community.

Of the eighteen priority actions suggested, the actions with the most support included:

- Support active and assisted transportation (14)
- Expand organics diversion (12)
- Increase urban trees (11)
- Encourage electric vehicles (7)
- Encourage solar installations in the community (7)
- Market a [buildings energy] retrofit program (7)
- Use infrastructure lifecycle costing for new developments (7)

Participants noted several areas where they would like Summerland to lead on climate action. These range from supporting more cycling and walking, to expanding composting and recycling to providing incentives for solar and other types of alternative energy, to increasing forest fire mitigation.

With regards to Summerland's GHG emissions reductions targets, about half of participants supported a long-term target that is more ambitious than the current target, about one quarter prefer to maintain the existing target, and about one quarter would like to change the current target to be less ambitious. The current long-term target matches the Provincial target of 80% reduction below 2007 levels by 2050.

In addition to providing feedback on display boards, participants were invited to complete a survey to indicate their support for instituting certain actions in their own lives. Highlights from the survey results are featured below. A complete summary of community feedback from the first public open house is available in *Appendix B: Stakeholder and Community Engagement*.

- Over 75% of respondents would shift to walking and cycling around Summerland with the addition of further infrastructure
- Greater use of public transit and purchase of electric vehicles will depend on a number of factors, many of which are beyond the District's jurisdiction
- Half the respondents were likely to conduct an energy retrofit on their home or adopt other energy saving measures to improve energy efficiency in the next 5 years, while nearly one third would likely purchase a new home built to a higher energy efficiency standard
- Half of participants are likely to install solar photovoltaic or hot water systems in their homes in the next 5 years

Public Open House 2



On December 4, 2019, approximately 50 community members and several Council members attended a second public open house to provide feedback on the draft plan.

Overall, there was high support for the draft plan. Specific support was highlighted for actions on trees, electric vehicles, waste reduction, and active transportation. There was also some interest in additional actions.

What We Can Do: Recommended Climate Actions

Based on staff consultation, best practices, and feedback from stakeholder and public engagement sessions, 26 priority actions (some with sub-actions) were identified to implement over the next five years and beyond. They are described in this section. Low priority actions are described in *Appendix C: Low Priority Actions for Implementation*, and will only be implemented if there is the ability to do so.

These actions fall under the following seven categories:

1. **New Buildings:** Improving energy performance and lowering GHG emissions in new residential and commercial buildings
2. **Existing Buildings and Businesses:** Increasing energy efficiency and reducing GHG emissions in current residential and commercial buildings
3. **Renewable Energy:** Increasing the use of renewable energy in the community
4. **Land Use:** Concentrating growth in certain areas to limit sprawl and promote compact, transit and pedestrian oriented development
5. **Transportation:** Shifting vehicle travel to cycling, walking, public transit, and ride sharing; increasing the use of electric vehicles through expanded public EV charging stations and EV parking requirements
6. **Climate Adaptation:** Enhancing resiliency and ability to adapt to climate impacts through various actions (e.g. limiting development in at risk areas, working with the agricultural sector)
7. **Other – Waste, Water, Food:** Diverting a larger percentage of organics from the landfill; increase waste reduction and recycling; increase water conservation; local food

The CEERP actions support the achievement of the five objectives outlined in the climate change section of Summerland's OCP (see adjacent text box). The full list of CEERP actions are summarised in Table 4, and outlined in detail in Table 5 of this plan. They include a description, timeframe for implementation, the department or position responsible for implementation, and possible community partners and external funding sources. Furthermore, each action is assessed based on the amount of effort required, cost, and GHG and economic impacts.

Climate Change Objectives from OCP:

1. To pursue community-wide GHG emission reductions.
2. To encourage energy efficiency, conservation and renewable energy generation.
3. To reduce kilometres travelled in single occupant vehicles.

It should be noted that the categorisation of actions in this CEERP is different from the OCP; the suggested categories in the CEERP reflect more contemporary categories for action on climate change.

The priority actions were selected by staff, stakeholders, and in the first public open house as part of the planning process. They are actions that have high economic impacts, achieve considerable GHG reductions, deliver a strong return on investment or are low in cost to implement, and can be implemented with existing municipal processes and staff. They also address areas where Summerland is more vulnerable to climate impacts and where joint mitigation and adaptation benefits exists. Some actions have also been chosen primarily due to strong interest from the public engagement on this plan, or because they enable other actions.

In Table 5, all GHG and economic impacts are calculated for the year 2025. As time progresses, GHG and economic impacts for actions will increase, particularly for actions whose impacts will be cumulative, such as new buildings or electric vehicles.

How are action impact numbers calculated?

Action impact numbers are calculated through a number of assumptions. For example, the EV actions are calculated by using a separate EV model which takes into account the existing number of EVs in the community, and then makes assumptions about growth rates based on the strength of implementation of sub-actions (e.g. EV parking requirements in new construction).

The action #07 *Continue expanding tree cover and green space / parklands* has an assumption that each year this will increase the desirability for walking or cycling by another 0.5%, but this only affects 5% of the trips from light duty vehicles.

Impacts from all the actions are combined to produce estimates for community GHGs if they are implemented.

For impacts of individual actions, 2025 was selected as a specific year to calculate the impacts for. Economic impacts for actions are calculated in the same way that GHG savings are, by making estimates for energy saved, and then converting into reduced energy expenditures. Note that actions can have much further reaching economic impacts than are calculated here. Examples include:

- Benefits to local trades & businesses by conducting energy efficiency retrofits, installing solar and EV charging equipment
- Lifecycle infrastructure costing reducing the cost of District-owned infrastructure over the long-term
- Health benefits of many actions in reducing healthcare costs
- Organics diversion, waste reduction, and recycling prolonging the lifespan of the landfill
- Water use reduction deferring the need for the expansion of or new assets
- Promoting Summerland as a green tourism destination increasing tourism numbers

For some priority actions, GHG and energy expenditure reduction numbers are too difficult to estimate. In these cases, a simple colour coding has been used in Table 5.

What do the terms and colour coding mean in the actions tables?

In Table 5, the terms refer to the following:

- Effort = staff time
- Costs = municipal costs
- GHG & economic impacts = community GHG & economic impacts
- Adaptation / resilience linkages = capacity for increased efficiency and enhanced outcomes through linkages to climate adaptation / resilience. An example of a high resilience linkage is energy independence. Mild linkages to adaptation and resilience co-benefits (e.g. air quality) are orange

And where there are no numbers, there is colour coding to help communicate expected impacts and implications:

- **Green = low effort, high GHG and economic impacts, high adaptation / resilience linkages. Costs estimated to be \$0 - \$500.**
- **Yellow = medium for all attributes. Costs estimated to be in \$500-5,000 range.**
- **Red = high effort, low GHG and economic impacts, no adaptation / resilience linkages. Costs estimated to be \$5,000 or more.**

Table 4 – High Priority Climate Actions – Overview

	GHG Savings, tCO _{2e}	Ongoing	0-2 yr.	3-4 yr.	5+ yr.
NB1 Implement BC Energy Step Code suite	79				
NB1a Educate builders, developers, building officials, & trades on Energy Step Code	0.3		Y		
NB1b Reference BC Energy Step Code – requirement	74		Y		
NB1c Implement fee rebates to encourage improved energy performance	4			Y	
NB2 Implement a DPA to enhance energy performance	2			Y	
EBB1 Promote electricity, natural gas & other energy efficiency programs	598	Y			
EBB2 Remove rate increase for electric heat in electrical utility	111		Y		
EBB3 Educate realtors on energy efficiency & renewable energy	43			Y	
EBB4 Host a climate change program for businesses	26				Y
EBB5 Convert decorative streetlights to LED	6				Y
RE1 Explore offering investment opportunities in the solar storage project	0.9		Y		
RE2 Encourage non-residential solar installations	0.5			Y	
LU1 Lifecycle infrastructure costing for complete compact communities	547		Y		
LU2 Implement variable DCCs to promote downtown growth	221			Y	
T1 Raise awareness of ride sharing and guaranteed ride home programs	55	Y			
T2 Implement EV actions suite	692				
T2a Hold events to raise awareness and understanding of EVs	138	Y			
T2b Expand and facilitate electric vehicle charging station options	208	Y			
T2c Conduct low speed EV education and promote current bylaw	69	Y			
T2d Protect EV owners from higher electricity prices	69		Y		
T2e Expand EV Parking requirements for new construction, non-street	208			Y	
T3 Community anti-idling campaign/bylaw	276		Y		
T4 Implement active & assisted transportation actions	116				
T4a Improve active & assisted transportation infrastructure	49		Y		
T4b Encourage bike or e-bike share program (or similar)	67			Y	
T5 Implement public transit for special events	5				Y
A1 Restrict development in locations that will be affected by climate change	-	Y			
A2 Vulnerability Risk Assessment on climate adaptation	-		Y		
A3 Prepare for extreme heat events	-		Y		
O1 Enhance and promote organics diversion, waste reduction & recycling	383	Y			
O2 Increase water conservation	-	Y			
O3 Expand support for local food production	-	Y			
O4 Expand climate change education	-	Y			
O5 Collaborate with local organisations on climate action initiatives	-	Y			
O6 Continue expanding urban tree cover and green space/parklands	35		Y		
O7 Promote Summerland as a green tourism destination	21			Y	

Table 5 – High Priority Climate Actions



New Buildings

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
NB1: Implement BC Energy Step Code Suite		79 tCO₂e	\$77k					
a) Educate builders, developers, building officials, and trades on Energy Step Code	0-2 yr.	0.3 tCO ₂ e	\$0	High	Medium	Medium	FortisBC, BC Housing, Southern Interior Development Initiative Trust, CEA	SAEC and Development Services
<p>To help ensure a consistent understanding of code energy requirements and the Step Code for the whole local industry. Although it will reduce minimal GHGs on its own, it will help to stimulate more reductions. Builders can also be educated on other best practices such as anticipating climatic changes, and hence extreme heat and precipitation events.</p> <p>Outcome: This action will be continuous until it is felt that it is no longer needed (e.g. energy efficient construction has become standard practice).</p>								
b) Reference the BC Energy Step Code – requirement	0-2 yr.	74 tCO ₂ e	\$73k	Medium	Medium	Low	FortisBC’s New Home Program provides incentives for new buildings to be built to different levels of the Step Code, which can be stacked with potential municipal incentives.	Development Services and Sustainability / Alternative Energy Coordinator (SAEC)
<p>The District could reference the BC Energy Step Code ahead of the BC Building Code moving to Step 3 for Part 9 buildings in 2022. The District could make a Step mandatory, as many other communities in BC have done.</p> <p>The District has already provided its notice of consultation to the Province. This does not bind the District to any further action but is necessary if the Step Code will be referenced.</p> <p>By requiring the construction of more energy efficient buildings and higher performance building standards with the BC Energy Step Code, the District can support reduced energy use in new residential and/or commercial buildings. Buildings constructed to higher standards are also better able to withstand some of the impacts of climate change, such as extreme heat events. More efficient buildings built with Heat Recovery Ventilators (aka</p>								

“fresh air machines”) as is becoming normal, will have excellent health benefits for the community as well, particularly during wildfire and other such extreme events that effect air quality.

Suggested steps include:

1. Investigate barriers the District may have that impede the construction of more efficient buildings.
2. Consult with the building industry (e.g. through events and surveys). CEA has ready-made survey materials, workshop agendas and discussion questions. CEA may be able to leverage funding to support the District with consultations. This step can also be combined with education (see complimentary actions).
3. Create a plan for referencing the Step Code. For example, this plan could include education and awareness, incentives, moving towards increasing regulation combined with feedback / further consultation from the building industry, and implications with building inspections. Another consideration is that the District may wish to make public disclosure of energy labels mandatory. The District may also wish to relax Steps for buildings that will be built with a low GHG energy system, such as a heat pump, as these will produce far lower GHG emissions.

Outcome: This action would have a specific outcome of referencing the BC Energy Step Code as a requirement.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
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NB1 continued

c) Implement fee rebates to encourage improved energy performance	3-4 yr.	4 tCO ₂ e	\$4k	Medium	Medium	High		Development Services
<p>Fee rebates (e.g. building permit fees) can help to encourage building to levels of the Step Code. This incentive can be matched with utility incentives for new housing for improved effectiveness. The District could investigate focussing on the higher steps with its funds. Examples: Cities of Kimberley and Campbell River, Districts of Sparwood and Invermere, Township of Langley. Many communities that have implemented this have implemented caps on the maximum expenditure.</p> <p>Fee rebates could also be considered for new homes that install solar or electric vehicle charging stations.</p> <p>Outcome: Specific outcome of fee rebates.</p>								

NB2: Implement a Development Permit Area to enhance energy performance	3-4 yr.	2 tCO ₂ e	\$2K	High	Medium	Low		Development Services, SAEC
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Communities can use Development Permit Area (DPA) guidelines so buildings are oriented to be south-facing, thereby considerably reducing building energy costs. In addition, DPA guidelines can encourage or mandate water efficient landscaping, which helps to lower water consumption and associated electricity costs. Situating these DPAs in areas with minimal risks from climate events (e.g., flooding) should also be considered to further promote low-risk development. DPA guidelines that only affect the outside of a building will not be tied to the Step Code.

Outcome: Specific outcome of DPA guidelines incorporating energy / water considerations.



Existing Buildings & Businesses

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
EBB1: Promote electricity, natural gas, and other energy efficiency programs	On-going	598 tCO ₂ e	\$619K	High	Low	Medium	FortisBC, CleanBC Better Homes, First Things First Okanagan	SAEC, Development Services, and Electrical Utility
<p>The District and Community Climate Action Advisory Committee have already been promoting these programs.</p> <p>Research done by the Committee has reviewed effective ways to spread the word about programs and encourage more conservation (e.g. trusted sources such as community and church groups as well as block or neighbourhood parties). The District could also consider purchasing a thermal imaging camera and loan it out through the library to help people identify heat loss from their homes.</p> <p>The District and the Committee, in collaboration with partners, will be proactive in promoting these programs and their benefits to the residential and commercial sectors, and should consider implementing a cohesive program (e.g. Nelson or New Westminster). Improving efficiency in buildings can also have co-benefits such as health, and adaptation to climate change (e.g. improved attic insulation keeping people cooler in the summer).</p> <p>Building energy retrofit actions had strong support at the public open houses.</p> <p>Outcome: This action will be continuous.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>EBB2: Remove rate increase for electric heat in electrical utility</p> <p>This action would encourage heating with heat pumps, which have much lower GHG emissions than heating with natural gas. Presently, this surcharge is not applied to many customers as it is difficult to verify and enforce. Thus, removing a rate increase will have a negligible impact on revenues for the electrical utility.</p> <p>Heat pumps can also be used for cooling, and so there is a linkage to climate adaptation.</p> <p>Outcome: This action will have a specific outcome of the removal of the rate increase.</p>	0-2 yr.	111 tCO ₂ e	\$29k	Medium	Low	High		Finance
<p>EBB3: Educate realtors on energy efficiency and renewable energy</p> <p>Realtors help homeowners with their purchasing decisions, but many lack knowledge about energy efficiency. This education helps to create consumer demand for energy efficiency and can also help to set the stage for greater use of the Step Code. Example: Nanaimo. Education could also be expanded to other topics such as water efficiency / xeriscaping, and climatic changes.</p> <p>Outcome: This action will be continuous until it is felt that it is no longer needed (e.g. realtors are very familiar with these topics).</p>	3-4 yr.	43 tCO ₂ e	\$46K	High	Low	Medium	FortisBC, BC Housing, Southern Interior Development Initiative Trust, CEA	SAEC and Development Services
<p>EBB4: Host a climate change program for businesses</p> <p>Programs such as Climate Smart or green tourism programs can provide training, tools and technical assistance to small and mid sized businesses in order to help them lower their GHGs. Local governments can sponsor these programs in their community or facilitate them, as a way to support businesses with taking climate action. Expanding a program to also cover coming climatic changes and how to adapt to those is a natural fit.</p> <p>Outcome: Specific outcome of hosting a program. It could be revisited in the future if deemed successful and necessary.</p>	5+ yr.	26 tCO ₂ e	\$24K	High	High	Medium	Summerland Chamber of Commerce, TOTA	SAEC
<p>EBB5: Convert decorative streetlights to LEDs</p>	5+ yr.	6 tCO ₂ e	\$6K	Low	Low	High		Development Services, SAEC and Electrical Utility

The District has already converted its non-decorative streetlights to LED and is now considering upgrading the decorative lights, as well as updating the Subdivision Servicing Bylaw to require LEDs in new developments.

Although it is a corporate action, it could be used to leverage energy savings in other parts of the community such as local businesses. The District could promote these savings to the community through newsletter articles, press releases, etc.

Because electricity has such low GHGs, these impacts are negligible.

The current cost for this action is extremely high due to limited technologies available for this type of light. As such, the District may not wish to proceed until it receives a quotation it considers to be reasonable or external grant funding is obtained.

Outcome: Specific outcome of LED light conversion and promotion.



Renewable Energy

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
RE1: Explore offering investment opportunities in District owned solar projects	0-2 yr.	0.9 tCO ₂ e	\$49K	High	High	Low		SAEC and Electrical Utility
<p>The District is working on implementing a 1 MW solar PV farm with 2 MW of battery storage. This is a highly innovative project and will be one of the largest municipally-owned solar farms and the largest battery storage project in BC when completed.</p> <p>Opportunities for investment in the project (potentially to expand it), or in new projects by members of the public could be explored, just as the Cities of Nelson and New Westminster have done. The City of New Westminster has done this on one of their buildings, thus having no impact on land.</p> <p>This action could be cost neutral or even revenue generating. However, it will have low GHG impacts because it is displacing electricity that already has very low GHGs.</p> <p>This action will help the District move towards energy independence, which should help the District cope with extreme events that may disrupt power supplies. Many of these events are more likely to occur with climate change, e.g. wildfires, heavy snowfall, strong wind, ice storms, flooding.</p> <p>Outcome: This action may have a specific outcome of expanding solar projects in Summerland.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
RE2: Encourage non-residential solar installations	3-4 yr.	0.5 tCO ₂ e	\$26k	High	Medium	Medium	First Things First Okanagan	SAEC and Electrical Utility
<p>The District has already started work on encouraging residents to install solar PV systems. It has relaunched the distributed energy generation program and reduced barriers to installations. This work could continue by supporting businesses and institutions that wish to install solar.</p> <p>This action will have low GHG impacts because it is displacing electricity that already has very low GHGs. Since the District operates its own utility, there will be some lost revenue from customers that switch to solar energy. This action will help promote Summerland as a green community.</p> <p>This action will also help with energy independence, increasing business continuity and resilience under projected climate impacts.</p> <p>Actions on solar had strong support at the public open houses.</p> <p>Outcome: This action will be continuous unless otherwise directed by Council.</p>								



Land Use

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
LU1: Lifecycle infrastructure costing for complete compact communities	0-2 yr.	547 tCO ₂ e	\$355K	High	High	Low		Development Services
<p>The District could apply an infrastructure cost analysis such as the Community Lifecycle Infrastructure Costing (CLIC) tool to major land use planning decisions, thereby assessing both upfront capital costs and ongoing operational and maintenance costs to the District of Summerland. This action could be very impactful in helping to ensure reduced infrastructure costs and reducing upward pressure on tax rates. It would also help to ensure a compact community, and thus reduce transportation emissions. It can be time consuming to setup though.</p> <p>This action can also have adaptation linkages. Projected changes to the climate can be included with a life-cycle costing lens, while planning infrastructure that is less vulnerable and more adaptable over time. The benefits of natural assets can also start being considered.</p>								

This action had strong support at the first public open house.

Outcome: Specific outcome of deciding how to implement it. Then implementation would be continuous.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>LU2: Utilize Development Cost Charges to support downtown growth</p> <p>Development Cost Charges (DCCs) could be utilized to support densification in the downtown area, for example by offering a variable DCC for downtown development where existing infrastructure is already in place and does not need to be expanded (e.g., roads, streetlights).</p> <p>The capacity for some services (e.g., sewer) to support additional growth is currently unknown, however, and as such a servicing study should first be completed to confirm the capacity to add users and to inform the related Master Plans for future growth and expansion. Following this work, a DCC bylaw can be created that includes a strategy to encourage development near existing infrastructure and discourage sprawl, thereby reducing vehicle emissions.</p> <p>There is also capacity to utilise DCCs for green infrastructure and for accounting for flood risk and other risks.</p> <p>Although costs may be high, the program could be designed to limit costs.</p> <p>Outcome: Specific outcome of a DCC bylaw that supports downtown growth.</p>	3-4 yr.	221 tCO ₂ e	\$143k	Medium	High	High		Development Services, Works & Utilities, Finance



Transportation

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>T1: Raise awareness of ride sharing and guaranteed ride home programs</p>	On-going	55 tCO ₂ e	\$36k	Medium	Medium	Medium		SAEC and Community Development Coordinator

Carpooling is a simple way for local governments to begin transportation demand management while saving money and conserving energy and emissions along the way.

Ride sharing services exist such as carpool.ca. Local governments can promote these services.

Actions that improve air quality build resilience, and also have adaptation linkages because as summer temperatures increase, tailpipe emissions will also increase ground level ozone.

Outcome: This action will be continuous for as long as deemed effective.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
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T2: Implement EV actions suite		692 tCO₂e	\$448k					
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a) Hold events to raise awareness and understanding of EVs	On-going	138 tCO ₂ e	\$90k	Medium	Medium	Medium	Emotive grants, First Things First Okanagan, local EV driver groups	SAEC
<p>The District has already conducted EV awareness raising events and will continue to do this. E-bikes and e-scooters should also be included where appropriate.</p> <p>Outcome: This action will be continuous.</p>								

b) Expand and facilitate electric vehicle charging station options	On-going	208 tCO ₂ e	\$135K	Medium	High	High	FCM Green Municipal Fund, Natural Resources Canada, CleanBC Communities Fund	SAEC, Works and Electrical Utility
<p>The District has already worked to install public EV charging stations and continues to work on this. The next phase could be the installation of a public fast charging option. Charging stations should be located close to amenities.</p> <p>This action has good economic impacts as it will help to enhance green tourism. An example is the Accelerate Kootenays project. GHG reduction potential is excellent. This action would have a large impact in making deep carbon emission reductions. Air quality / ozone co-benefits as well.</p> <p>Although this initiative may potentially have high costs, it is even more grant dependent than many of the other actions, and so costs are even harder to predict.</p> <p>Outcome: Specific outcome is the installation of additional charging stations, including fast charging options.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<i>T2 continued</i>								
c) Conduct low-speed EV education and promote current bylaw	On-going	69 tCO ₂ e	\$45K	Medium	High	Medium		SAEC, Works & Community Development Coordinator
<p>Low-speed EVs are an excellent option for reducing transportation emissions and for aging in place. The District already has a bylaw in place allowing these vehicles on its streets.</p> <p>The District could work on ensuring the current bylaw is promoted and there are more active and assisted lanes for safety. Qualicum Beach may be a good example community to replicate.</p> <p>Outcome: This action will be continuous.</p>								
d) Protect EV owners from higher electricity prices	0-2 yr.	69 tCO ₂ e	\$45k	Medium	Medium	High		SAEC, Works & Community Development Coordinator
<p>EV owners are likely to use enough electricity that it moves them into Tier 2, thus incurring higher electricity prices. Measures should be considered to not dis-incentivize potential EV owners, such as efficacy tiers, a tier 2 exemption, or providing them with a kWh allowance. Consideration must be given regarding administration of how this could be implemented. Although implementation costs may be high, this initiative could be designed to limit costs.</p> <p>Outcome: Specific outcome of implementing a measure that protects EV owners from higher electricity prices.</p>								
e) Expand EV Parking requirements for new construction, non-street (single family dwellings and MURBs)	3-4 yr.	208 tCO ₂ e	\$135k	Medium	High	Low	Local developers / builders	Development Services
<p>Most EV charging will be conducted at home. It is often more cost effective if residential EV charging is considered at the time of construction rather than retrofitted later, particularly for Part 3 buildings under the BC Building Code. Many communities in the Lower Mainland have already implemented EV parking requirements.</p>								

The District has indicated interest in pursuing requirements for Part 9 buildings. There are already requirements in the Zoning Bylaw for multi-unit residential buildings (townhomes and apartments), but the appropriateness of the standards should be addressed.

Example: The City of Richmond amended its Zoning Bylaw to require all new residential parking spaces feature an energized outlet capable of providing Level 2 EV charging.

This action would have a large impact in making deep carbon emission reductions.

Outcome: Specific outcome of implementing EV parking requirements for new construction.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
T3: Community anti-idling campaign/bylaw	0-2 yr.	276 tCO ₂ e	\$179k	Medium	Medium	Medium	n/a	SAEC, Corporate Services and Community Development Coordinator
<p>Natural Resources Canada has stated that idling for over 10 seconds uses more fuel, costs more money, and produces more CO₂ emissions than restarting your engine. There will also be health benefits through improving air quality, and a linkage to adaptation by helping prevent creation of ground level ozone when there are high temperatures.</p> <p>Many communities in BC have bylaws in place that prohibit idling at certain times of the year in certain places. Good places to target may be schools and daycares in order to help protect the health of children. Outside the municipal office can also set a good example and can be easy to enforce.</p> <p>Northern Rockies Regional Municipality has an innovative approach to encourage people not to idle. The municipality runs a campaign called “Idle-less October” in Fort Nelson with sweet treats left on the windshields of non-idling vehicles and labels saying “Thank you for not idling!”</p> <p>Outcome: This action has a specific outcome of implementing an anti-idling campaign/bylaw.</p>								

T4: Implement active & assisted transportation actions

116 tCO₂e \$75k

a) Improve active and assisted transportation infrastructure	0-2 yr.	49 tCO ₂ e	\$32k	High	High	High	Interior Health, BikeBC	Recreation & Community Development Coordinator
<p>Improving walking and cycling infrastructure as well as assisted transportation infrastructure is something the District can do over time and that will help with other community goals such as tourism, aging in place, helping people’s health (including mental health and air quality), reducing creation of</p>								

ground level ozone, and building overall community resilience. The external stakeholder workshop noted that additional bike lock-up facilities are needed, particularly downtown.

This action is strongly supported by Summerland’s 2018 *Parks & Recreation Master Plan* and 2019 *Trails, Cycling and Sidewalk Master Plans*. The realisation of this action is through the implementation of these plans. Costs for this action will likely be high, but external grant funding could assist.

This action had strong support at the public open houses.

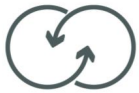
Outcome: This action will be continuous.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
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T4 continued

b) Encourage bike or e-bike share program (or similar)	3-4 yr.	67 tCO ₂ e	\$44k	High	Medium	Medium	Bike / e-bike share provider	SAEC and Community Development Coordinator
<p>In recent years, bike, e-bike, e-scooter and e-moped programs schemes have been instituted in many communities in North America. Despite some private funding, local government staff time is needed for smooth integration and some local government funds may need to be allocated. The District could signal its openness to having this in Summerland and ensure that it works with them when the opportunity arises.</p> <p>A challenge may be that Summerland may be too small for these companies.</p> <p>Outcome: This action has a specific outcome of managing to attract one or more of these businesses to operate in Summerland.</p>								

T5: Expand transit opportunities, including implement public transit for special events	5+ yr.	5 tCO ₂ e	\$3K	High	High	High	BC Transit	Community Development Coordinator
<p>The District already conducts a lot of work to expand public transit opportunities for the community, but additional ways could be explored that would result in benefits beyond its business as usual efforts. For example, local governments often promote transit for transportation to major community or sporting events in their area. Experience has shown that people will be more likely (or less reluctant) to use transit after having a good experience at a special event. The District could organise a shuttle bus to bring people from other communities to Summerland for special events, which provides the added economic development benefit.</p> <p>This action will also result in community resilience benefits.</p> <p>Outcome: Specific outcome of recommendations to support transit, e.g. organizing special transit service at one or more events.</p>								



Climate Adaptation

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>A1: Manage development in locations that will be affected by climate change</p> <p>The District has been taking into account wildfires, floods, steep slopes and unstable soils when considering new developments. However, OCP DPA guidelines are due for review and update. Also, elevation and setback regulations to control development in areas susceptible to flooding (e.g. Trout Creek and Okanagan Lake) should be implemented through either a Floodplain Bylaw or the Zoning Bylaw.</p> <p>While the OCP specifies that development should not occur on slopes with a grade higher than 30%, there is an opportunity to augment DPA guidelines to reflect current best practices and reflect risks from increasing rain events due to climate change.</p> <p>In wildfire hazard areas, buildings need to adhere to fire resistant design guidelines, fuel load management needs to occur around building, and neighbourhood and site design guidelines need to be met before final approval by the District. There is an opportunity to increase public awareness and compliance with DPA guidelines.</p> <p>Applications for development in high hazard and wildfire hazard development areas also require supporting technical reports to ensure hazards are appropriately addressed prior to development.</p> <p>This action will save the community a considerable amount of money in the future by helping to insulate the community from the impacts of climate change, but calculating this amount is beyond the scope of the CEERP.</p> <p>Outcome: The consideration of wildfires, flooding and landslides in development applications will be continuously improved upon.</p>	On-going	Low	Low	High	Medium	Low		Development Services, Fire Department, and SAEC
<p>A2: Risk and Vulnerability Assessment on climate adaptation</p> <p>This CEERP is primarily an energy & emissions reduction plan, not an adaptation plan, although it contains consideration of adaptation.</p> <p>The CEERP has identified the need for an adaptation companion document, to identify risks that the community faces with a changing climate. This could save the community a considerable amount of money in the future. Although costs may be high, it is likely to be covered by external grant funding.</p> <p>Outcome: A Climate Risk and Vulnerability Assessment document.</p>	0-2 yr.	Low	Low	High	High	High	Partners to be decided as work progresses	Works, SAEC

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
A3: Prepare for extreme heat & poor air quality events	0-2 yr.	Low	Low	High	High	Medium	Interior Health	Community Development Coordinator and Emergency Services
<p>Interior Health is conducting a pilot where it is working with an interior community to provide heat warnings in order to protect vulnerable people.</p> <p>As a southern Okanagan community with a large population of seniors, Summerland is a good candidate for looking at this for a pilot, or as it rolls out a similar system. The District could collaborate with Interior Health on establishing an early heat warning system and response plan.</p> <p>Poor air quality can also be a significant concern during wildfires, and this could also be explored.</p> <p>Costs are hard to estimate, as they are scope and grant dependent.</p> <p>Outcome: The establishment of this action would be a specific outcome in terms of figuring out how it would work but the implementation would likely be continuous.</p>								

Other – Waste, Water, Food



Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
O1: Enhance and promote organics diversion, waste reduction & recycling	On-going	383 tCO ₂ e	High	High	High	Medium	RDOS	Environmental Services
<p>The District has already been working to reduce the amount of organics being sent to landfill, and on recycling initiatives. The existing compost process is being assessed, with a goal to divert more residential food waste and wastewater bio-solids from the landfill. The District is pursuing grant funding to help it do this. Bear aware backyard composting could also be encouraged.</p>								

In the future, the District could collaborate with local businesses (e.g. agricultural, food sector) to increase their food waste composting.

This action had strong support at the public open houses.

Estimated costs for this action only include education / promotion. Cost for facilities would be considerable, but highly variable depending on scope and grants.

Centralised or decentralised composting can have a strong adaptation benefit. Compost added to soil can help the soil’s capacity to absorb water (e.g. during high precipitation events), and to retain it (e.g. during periods of drought).

Outcome: The adjustment of the existing composting process and improvement to the recycling processes are specific outcomes, but the implementation and promotion of both is continuous.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
O2: Increase water conservation	On-going	Medium	\$24k	High	Medium	Medium	Okanagan Basin Water Board, Friends of the Summerland Ornamental Gardens, Agriculture Advisory Committee	Water Utilities, Finance, and SAEC
<p>The District has already been enhancing water conservation in the community by encouraging xeriscaping through education and rainwater collection with rain barrels. This work will continue.</p> <p>To increase water conservation practices in buildings, the District could encourage the installation of low flow and water efficient technologies.</p> <p>The District could similarly work with the local agricultural sector to foster conversion from overhead to drip irrigation systems, where appropriate. Financial incentives could be provided to assist with this change, or through another partner.</p> <p>GHG impacts of this action may be low on the community level, and would likely be seen mostly as corporate building energy use reduction. However, the economic impacts will be good because the action will help to reduce the need for new or expanded facilities, and water costs for consumers.</p> <p>This action is excellent from a climate adaptation perspective because it will help to prepare Summerland for likely increased water stress.</p> <p>Outcome: This action will be continuous.</p>								

O3: Expand support for local food production	On-going	High	High	High	Medium	Medium	Agriculture Advisory Committee	SAEC and Community Development Coordinator
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Expand support for local food products through community gardens, and potentially a community greenhouse. Increase support for farmer’s markets and other agricultural events (such as Fall Fair).

This action will reduce GHGs by encouraging the consumption of local food rather than food that is transported large distances (although very little of this reduction will appear in the District’s community emissions inventory). The economic benefits of purchasing local food are high. Local food is also less likely to be processed, and more likely to be fresh and healthy, thus helping people’s health. This action is also excellent from a resilience perspective.

Example: Invermere has a community greenhouse.

Outcome: This action will be continuous.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>O4: Expand climate change education</p> <p>The District and partners have already been working on changing the local culture on climate action. Future actions could include involving school kids more and expanding Earth Week activities.</p> <p>Further education would focus on topics of interest to community members such as solutions currently available to reduce GHG emissions, individual actions that people can take, life cycle cost / benefit analysis of climate mitigation options, climate adaptation and LCR. The public provided a number of ideas on this in the first public open house survey, see <i>Appendix B: Stakeholder and Community Engagement</i>.</p> <p>Outcome: This action will be continuous.</p>	On-going	High	Low	High	Medium	Medium	School District, environmental NGOs	SAEC
<p>O5: Collaborate with local organisations on climate action initiatives</p> <p>The District could collaborate with local organisations to implement initiatives. Examples include working with local shops to use fewer plastic bags, working with restaurants to divert food waste from landfill, and working with local partners to encourage water efficient landscaping.</p> <p>Outcome: This action will have outcomes of specific initiatives implemented.</p>	On-going	Medium	Medium	High	Medium	Medium	Local organisations	SAEC
<p>O6: Continue expanding urban tree cover and green space/parklands</p>	0-2 yr.	35 tCO ₂ e	\$22k	High	High	High	TD Friends of Environment Foundation Grant Program	Development Services, SAEC and Works

The expansion of urban tree cover is part of Summerland’s 2018 Parks & Recreation Master Plan. Along with these measures, the District will continue to expand parklands and protect riparian areas.

Fire safety needs to be considered as well as the planting of the right type of trees (e.g. native and climate tolerant).

The District could adopt a Street Tree Program to require new developments to enhance the urban tree canopy, for example by including suitable street trees or maintaining trees already present on site, as a way to implement OCP DPA guidelines. This action would also help with overland water runoff issues, maintain wildlife habitat, and provide shade for pedestrians and buildings (lowering cooling requirements).

This action had strong support at the public open houses. This action will also benefit the health of the community by improving air quality (removing pollutants), and can also improve mental health by increasing access to nature. From an adaptation perspective, apart from air quality, it can also help cool the community with stormwater absorption. Costs for the action are hard to estimate and depend on scope.

Outcome: This action will be continuous.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
O7: Promote Summerland as a green tourism destination	3-4 yr.	21 tCO ₂ e	\$20k	High	High	Medium		Services, Chamber of Commerce
<p>The Thompson Okanagan Tourism Association (TOTA) is supportive of this approach and could be a good partner. It has worked with Green Step Solutions to develop a tourism strategy focused on sustainable tourism. In 2018, TOTA was awarded the World Travel and Tourism Council’s Tourism for Tomorrow Award for this work. FortisBC has also supported businesses with energy assessments in the past, and may be able to do so in the future. Water efficiency could also be included in this.</p> <p>Helping people consider a changing climate as part of this work could be important, to help people with making the linkages.</p> <p>Outcome: The establishment of this action would be a specific outcome but the implementation would likely be continuous.</p>								

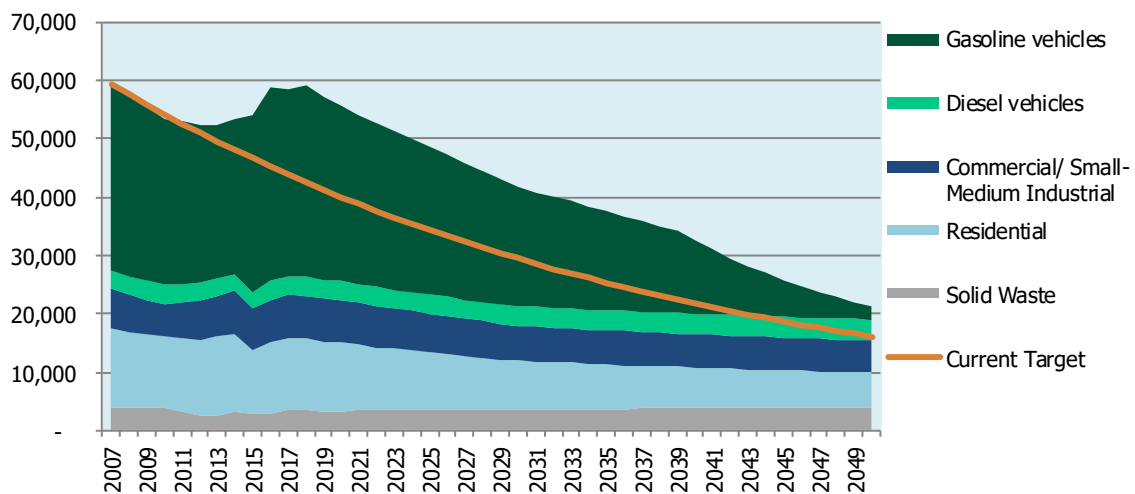
What We Can Achieve

Modelling Climate Actions

The priority climate actions were modelled to estimate the potential GHG emission reductions by sector and by action. More detail on the modelling is in *Appendix A: Details on Community Energy & Emissions Inventory & Projections*.

Total emissions are expected to decline by 18% below 2007 levels by 2025, 30% by 2030, and by 64% by 2050. (If low priority actions are also conducted, 20% by 2025, 33% by 2030, and 68% by 2050 are possible). Almost two thirds of these emission reductions can come from directly or indirectly reducing vehicle emissions, while the rest come from reducing emissions from buildings, infrastructure, and solid waste.

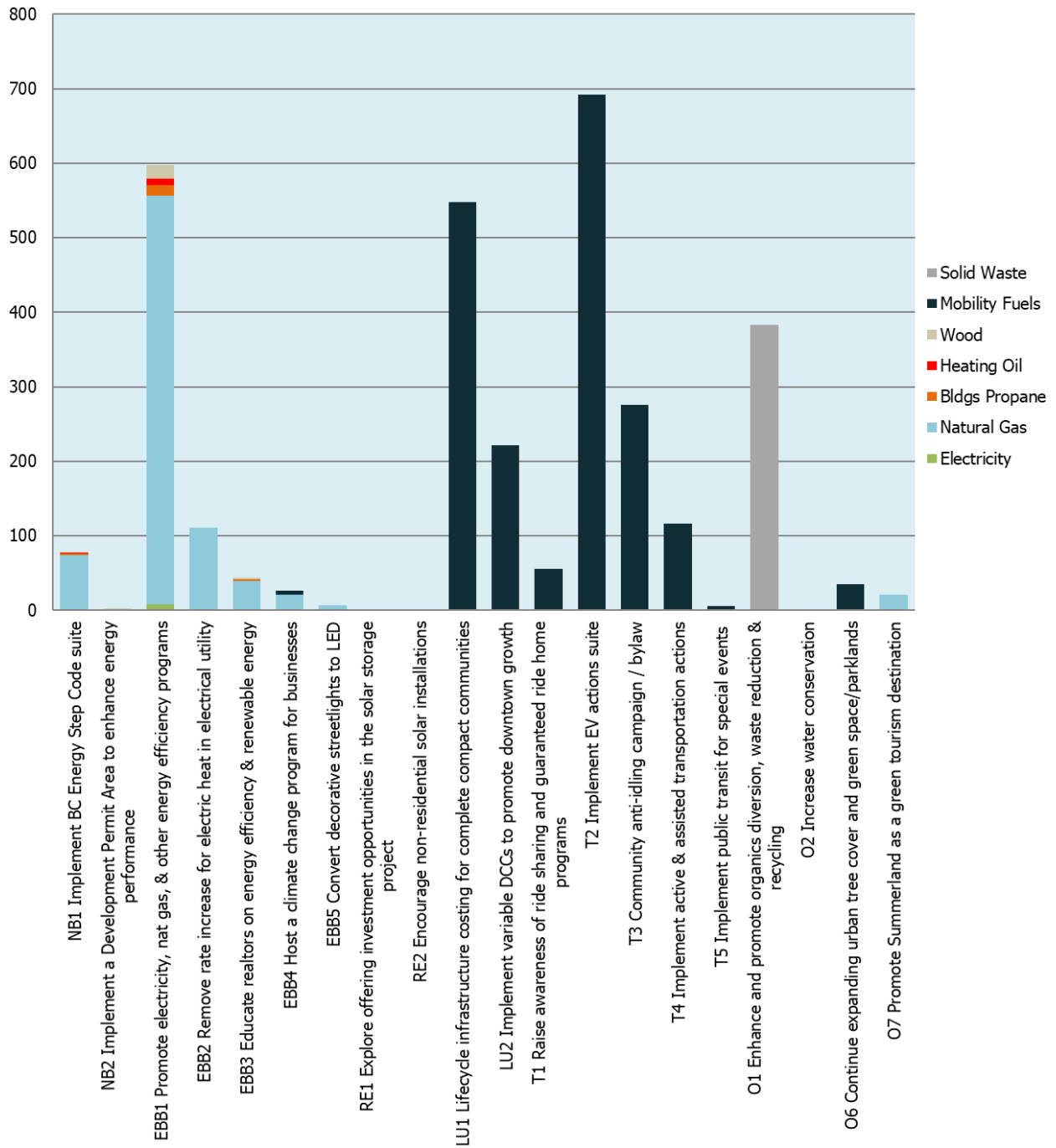
Figure 11 – Summerland’s Modelled GHG Emissions from Proposed Climate Actions by Sector



As depicted in Figure 12, the top three actions that will achieve the largest reductions in GHG emissions over the next five years are:

- #T2 Implement EV actions suite
- #EBB1 Promote electricity, natural gas, and other energy efficiency programs
- #LU1 Lifecycle infrastructure costing for complete compact communities

Figure 12 – GHG Emissions Savings for each Proposed Action, in 2025



Action impacts can also be represented in terms of how much each action category will contribute towards the 2025 emissions target. This information is shown in Figure 13.



Source: Accelerate Kootenays

Figure 13 – GHG Emissions Reductions from Each Action Category in 2025

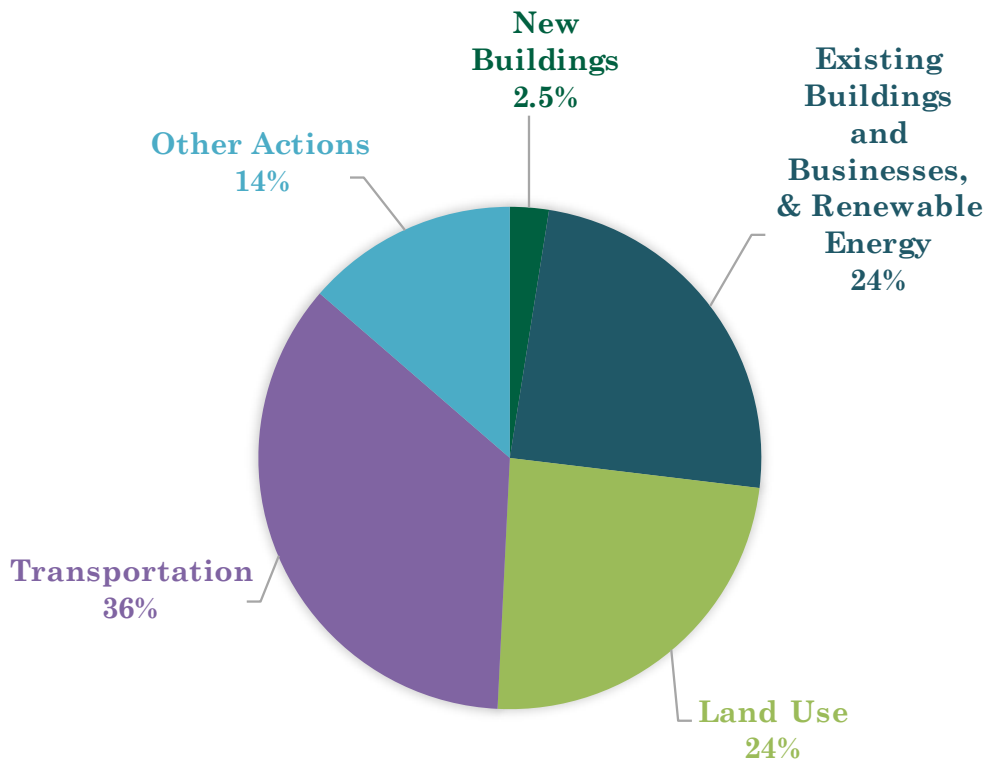
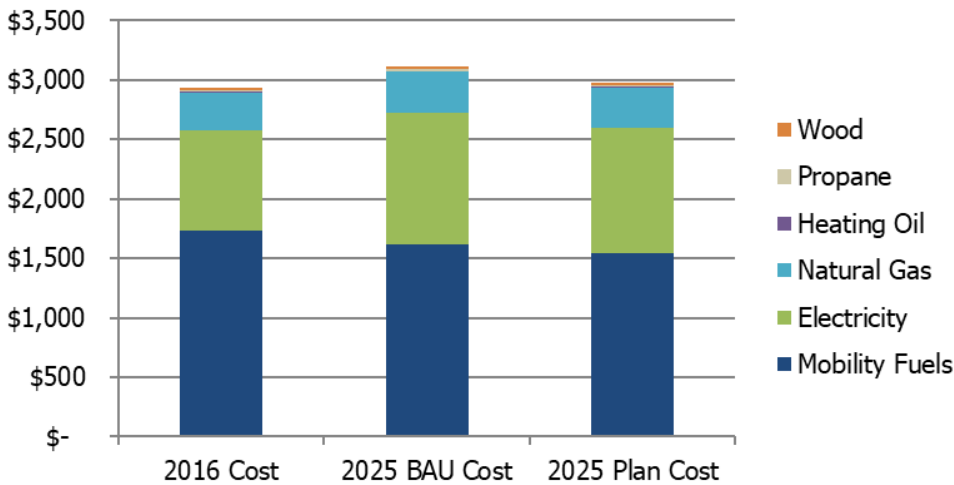


Figure 14 – Summerland Per Capita Community Energy Costs in 2016 & 2025



In addition to reducing emissions, the planned climate actions will lower energy expenditures compared to BAU levels in 2025, as illustrated in Figure 14. Total community energy costs in Summerland are forecasted to be about \$38.1 million in 2025 compared to \$34.1 million in 2016. With the planned actions, this is expected to be \$36.4 million in 2025, or a saving of about \$1.7 million per year. This would far exceed the District’s expenditures on these items.

Greenhouse Gas Emissions Reductions Targets

The District of Summerland has decided to set a new short-term target that is realistic and pragmatic to ensure that the community can achieve it in addition to maintaining a long-term target that demonstrates strong municipal leadership. Based on the modelling of existing and proposed climate actions as well as feedback from stakeholder and public engagement sessions and staff consultation, the following GHG emission reduction targets have been established:

- 18% below 2007 levels by 2025;
- 80% below 2007 levels by 2050

The new short-term target is an update to the target of 33% below 2007 levels by 2020, which was outlined in the 2011 CCAP. The above long-term is a continuation of the 2050 target featured in the previous plan and remains in line with the Provincial and Federal 2050 targets.

Although the current action plan is unlikely to be sufficient to achieve the 2050 target, at 64% it will set the District on the correct path. More planning and actions will need to be conducted in the future to achieve this target, and this plan should be refreshed at least every 5 years to ensure that planning is complete.

If the actions currently indicated as being low priority are implemented, that would help to achieve more ambitious targets. A 20% reduction by 2025 is possible.

What do these GHG targets mean for a typical household?

To reduce emissions by just over half, for example, a one-car household in Summerland could replace its vehicle with an electric one, or they could switch to a combination of walking/biking/carpooling/transit instead. A household that goes further and conducts a deep home-energy retrofit (condensing furnace + insulation + draft-proofing) and composts half of its organic waste, may have reduced its emissions by 70-80%. Heating the home with a heat pump would allow even deeper reductions.

Naturally, for the community as a whole the situation is more complex, but this gives a sense of what is achievable for a household today. To achieve Summerland's 2050 target, every household needs to make the changes that are within their means and help to promote environmental stewardship across our community.

Implementation for Success

Several key factors are important for the successful implementation of community energy and emission reduction plans based on research conducted by CEA, QUEST, and Smart Prosperity.* Among others, they include establishing broad support for implementation, building staff and financial capacity for implementation, and institutionalizing the plan in order to withstand political and staff turnover.

The District of Summerland is fortunate to already have political, staff, and community / stakeholder support for climate action. It also has a dedicated staff position, the SAEC, to implement actions, a policy on funding GHG emissions reductions, and the District has partially institutionalized climate action. However, the District would benefit from further integrating climate action across the corporation and community.

Funding sources that communities typically use for climate action are shown in Table 6. The District has taken great strides to fund climate action by setting aside .001% of the annual operating budget in addition to its annual Climate Action Revenue Incentive Program (CARIP) rebate, and also has a green revolving fund for corporate projects; however, external funding sources should be pursued where available to accelerate action. The internal funding sources that the District has set aside can be used to leverage external funding to great effect.

* Community Energy Implementation Framework, <https://questcanada.org/project/getting-to-implementation-in-canada/?dc=framework>

Table 6 – Funding Sources BC Local Governments Typically Use for Climate Action

Internal Funding Sources	External Funding Sources
<ol style="list-style-type: none"> 1. CARIP rebate allocated for climate action 2. Allocation from operating budget (Summerland has already allocated 0.001% annually) 3. Climate/carbon fund (Summerland has a green revolving fund for corporate actions) 4. Forgone revenue (charge less for a municipal service to use the difference to fund a climate initiative) 5. General revenue (e.g. property taxes) 6. Recycling and solid waste user fees 7. Building permit fees and other service fees charged by Development Services 8. Electrical utility and water user fees 	<ol style="list-style-type: none"> 1. UBCM Gas Tax Agreement Funds 2. FCM’s Green Municipal Fund supports plans, studies, capital projects and pilot projects for environmental initiatives in a number of focus areas 3. Southern Interior Development Trust grants for community economic and educational initiatives in nine economic sectors 4. Federal government programs such as the Low Carbon Economy Challenge and Clean Energy Innovation Program 5. Provincial government programs such as the Clean Energy Vehicle Program, BikeBC Program, and CleanBC Communities Fund 6. Emotive grants for EV educational events to foster greater EV adoption 7. FortisBC energy efficiency incentives for new home construction and FortisBC and CleanBC Better Homes incentives for increasing energy efficiency in existing buildings 8. BC Housing and FortisBC for education or demonstration projects to encourage the building industry to construct low energy and GHG emission homes.

With regards to institutionalization, ideas on how this can be done are shown in Table 7.

The District already:

- Incorporates climate action into some documents like the OCP and Asset Management Strategy.
- Convenes a Community Climate Action Advisory Committee.
- Has a dedicated staff position working on climate action.
- Dedicates funds to climate action annually as part of the operating budget and maintains a reserve fund for larger climate action projects.
- Reports annually on climate action to Council as part of the CARIP reporting.
- Has joined PCP, and progressed through some milestones.
- Renews its plan, as this is a renewal of the older plan.

In addition to these actions, the District should consider:

- Discussing climate action implications in all reports to Council.
- Incorporating climate action into job descriptions of other District staff. Climate action is the responsibility of all departments, and there is greater chance of success if responsibility is formally shared.
- Monitoring indicators that are easy to track to help ensure that progress is being made.
- Reporting on indicators as part of annual report to Council.

- Progressing through more PCP milestones.
- Renewing this plan again in five years.

Table 7 – Ways Local Governments Can Institutionalize a Community Energy and Emissions Plan

Incorporate	Embed climate action into other planning documents such as the OCP, bylaws and policies, and departmental/master plans. Climate action could also be incorporated into District staff job descriptions. Some communities report on climate action or sustainability implications in reports to Council.
Budget	Embed climate action into the budgeting process.
Monitor	Monitor indicators as outlined in the Monitoring and Evaluation section.
Convene	Host regular meetings to discuss implementation with internal and/or external stakeholders.
Report	Report regularly to Council on progress and accomplishments. Annual reporting is recommended. It can be integrated with CARIP reporting.
Renew	Prepare for plan renewal approximately every five years.

Monitoring and Evaluation

Monitoring and evaluating the implementation of the CEERP is critical for its success. Key Performance Indicators (KPIs) enable communities to measure the outcomes of a plan’s implementation. When KPIs are monitored regularly, communities can determine how to best allocate resources to support implementation, and what success different actions are having.

Suggested indicators are shown in Table 8. Two types of indicators are recommended. Primary indicators measure community energy consumption and GHG emissions, while secondary indicators can quantify the indirect success of various actions. The following table provides a description of these indicators, the measures of success, data sources for each indicator, and frequency of reporting. Annual progress reporting should be planned by the SAEC.

Table 8 – Ways Local Governments Can Monitor and Evaluate Climate Action Progress

	Indicators	Measures of Success	Data Sources
Overall	1. Community GHG emissions	17% reduction in emissions from 2007 levels by 2025 80% reduction in emissions from 2007 levels by 2050	Provincial energy & emissions data at the community level, and Kent Marketing Group fuel sales data for area gas stations converted into emissions using latest factors from the Province
Overall	2. Per capita energy usage	Average household and commercial energy use declines over time to 2050 Annual fuel sales (gas & diesel) decreases over time to 2050	Provincial energy & emissions data at the community level, Kent Group fuel sales data for area gas stations, Summerland electrical utility usage data

	Indicators	Measures of Success	Data Sources
Existing buildings	3. # of energy efficiency incentives distributed for building efficiency upgrades	Average increase in incentive use	Summary data from FortisBC (and other entities as applicable, e.g. Province)
New buildings	4. # of buildings at each level of the BC Energy Step Code	Increase in number or percentage of new buildings constructed to various levels of the Step Code	Permit applications <i>(Notes: suggest setting this up in advance for GIS; Some builders may currently be building to Step Code and getting FortisBC rebates without the District knowing, by following the prescriptive pathway. Advising local builders and front counter staff of the Step Code compliance pathway in the building code should solve this.)</i>
Renewable Energy	5. # of renewable energy buildings installations	Increase in percentage of buildings adding solar and other renewable energy sources	Distributed Generation Program applications <i>(Note: this only covers renewable energy systems that generate electricity. Others will not be possible to track.)</i>
Transport	6. kWh/year used recharging EVs at public charging stations	Increase in number of kWh/year of charging at EV stations	Usage data already available to the District
Transport	7. Infrastructure to promote active transportation	Progress towards outcomes of the following plans: <ul style="list-style-type: none"> • Parks & Recreation Master Plan • Trails Master Plan • Cycling Master Plan • Sidewalk Master Plan 	Public Works & Recreation
Transport	8. Commuting / personal travel mode split	Increase in travel around Summerland and between Summerland and Penticton / Kelowna by ride share, public transit, walking or cycling	BC Transit ridership data, and Census
Other	9. Amount of organics diverted from landfill	Increase in organics at composting facility	District of Summerland – Environmental Services

	Indicators	Measures of Success	Data Sources
Other	10. Recycling rates	Increase in recycling rates	District of Summerland – Environmental Services
Other	11. Tonnes of waste per capita to landfill	Decrease in waste per capita sent to landfill	District of Summerland – Environmental Services
Other	12. Urban tree canopy cover	Increase in canopy	Development applications; Public Works tree planting data <i>Note: due to complications with GIS, this indicator will only be possible to track in the medium-term, if at all.</i>
Other	13. Per capita water consumption	Decline in water use	Usage data on water utility bills / metering system
Other	14. # of participants at building community & citizen educational events / workshops	High participation levels at events	Registration/Attendee lists for events
Adaptation	<p>Adaptation indicators will be determined by the climate risk and vulnerability assessment.</p> <p>Urban trees and per capita water consumption will also benefit adaptation.</p>		

Appendix A: Details on Community Energy & Emissions Inventory & Projections

This appendix contains details on the community energy & emissions inventory and projections for Summerland.

Inventories

Summerland's inventories were created using data for buildings and waste obtained from the Province of BC, and data on gasoline and diesel sales from Summerland gas stations obtained from Kent Group. Based on the data compiled, full inventory years are: 2007, 2010, 2012, 2014, 2015, and 2016. Partial inventory information was also obtained for 2013, 2017 and 2018, which was also factored into the model.

Emissions factors for inventory years are shown in the following table, and are sourced from the Province of BC.

Table 9 – Emissions factors used for inventory years

GHG/GJ, by Year	2007	2010	2012	2013	2014	2015	2016	2017	2018
Gasoline	0.068	0.064	0.064	0.064	0.064	0.064	0.064	0.062	0.061
Diesel	0.071	0.070	0.068	0.068	0.068	0.068	0.068	0.068	0.067
Mobility fuels	0.068	0.065	0.065	0.065	0.065	0.065	0.065	0.063	0.061
Electricity	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Natural gas	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Wood	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Heating oil	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
Propane	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.061

As can be seen, some of the emission factors have changed over time. The emission factors for mobility fuels have decreased as a result of the Renewable and Low Carbon Fuel Requirements Regulation. The emissions factor for electricity has decreased as a result of ongoing efforts to decarbonise the electricity grid.

The buildings and waste data sources have been the Province of BC's Community Energy & Emissions Inventory (CEEI) data,^{*} and utilities and landfill waste data at the utility level.[†]

Assumptions made with respect to the inventories are as follows:

^{*} <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei>

[†] <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>

- The Province of BC made a series of standard assumptions in the creation of the CEEI data, which are outlined on the CEEI webpage: <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/ceei>. The CEEI inventory years in the preceding charts are 2007, 2010, and 2012.
- The Province of BC made other assumptions for the the other buildings and landfill waste emissions information, which are outlined in the community level spreadsheets on the Provincial Inventory webpage: <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>
- In creating the inventories, CEA made other assumptions in addition to these:
 - Because the Province had removed transportation data from its most recent release of the 2007, 2010, and 2012 CEEI data, and has not provided any for any other year either, CEA had to obtain gas station sales information from Kent Group.

In addition to some methodological challenges to using fuel sales data*, a major drawback is fuel sales through card lock stations are not included with the data. This means that many commercial diesel vehicles are excluded. Based on a previous release of the CEEI data, and making assumptions based on population growth, commercial vehicles may have accounted for 10,000 tonnes in 2012. If that is approximately accurate, then that would constitute a considerable omission as Summerland's 2012 GHG emissions are estimated at 56,000 tonnes of CO₂e excluding most commercial vehicles.

Despite a data request to ICBC, it was not possible to obtain data on the number of vehicles of different types that are registered within municipal boundaries. This data would have been useful to compare with the gasoline and diesel vehicle fuel sales, and also to identify trends (e.g. vehicle ownership per capita, and types of vehicles including growth in electric or hybrid vehicles).

Emissions from Land Use, Land Use Change, and Forestry are not included.

Projections

CEA's QuickStart model was used both to calculate the BAU trajectory, and to estimate the potential GHG reductions that could be achieved. Developed in 2010 on behalf of BC Hydro and used by approximately 65 communities to date, the model builds on information including population and community energy and emissions inventory data.

The model uses formulas both to calculate the BAU trajectory, and to estimate the impacts of each action.

* The fuel sales approach to estimating transportation energy consumption and emissions is different to the one that the Province has taken with CEEI before. It will include tourism and through-traffic, while the Province's approach would have only included vehicles registered in the community. For a discussion on the pros and cons of the different approaches see 'Assessing vehicular GHG emissions, a comparison of theoretical measures and technical approaches' by Pacific Analytics.

<https://www2.gov.bc.ca/assets/gov/environment/climate-change/z-orphaned/ceei/ceei-comparison-study.pdf>

The BAU trajectory was calculated by using available inventory data, and then projecting forwards using a population increase of 0.59% per year (the average annual increase between the last two census years).

As previously described, there are full or partial inventory years that describe the community's emissions profile from 2007-2018. From 2019 onwards, all of the data is an estimate as a BAU projection.

For the BAU projection modelling, the assumption is that energy consumption and emissions will increase proportionally with increases to population, although the impact of policies from higher levels of government are also incorporated, and other assumptions. Only policies that have already been adopted and that will have quantifiable impacts are incorporated. Assumptions are:

- The Province's incremental steps to net zero energy ready buildings by 2032.
- Tailpipe emissions standards.
- Renewable & low carbon transportation fuel standards.
- An average annual decrease of 1.2% in natural gas consumption per residential connection is included, as FortisBC does in its planning.
- How the impacts of a changing climate will affect building energy consumption, as outlined below.

The final assumption had the following methodology:

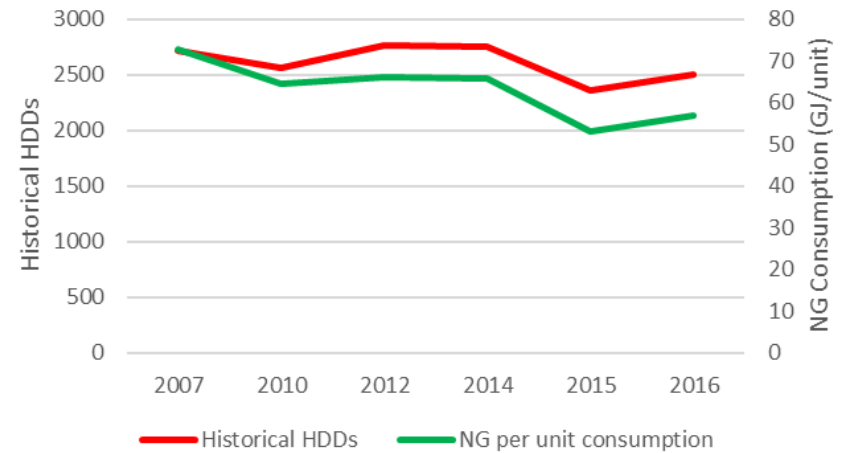
- Climate change data for the region obtained from ClimateData.ca.
- Projected global emissions to 2030 currently places the world in the range for the IPCC's Fifth Assessment Report's Representative Concentration Pathway (RCP) 6.0 scenario.
- RCP 6.0 scenario not available on ClimateData.ca, therefore RCP 4.5 (high impact scenario) used as a proxy.
- Decreases in residential heating oil and propane consumption assumed to be proportional to projected decreases in Heating Degree Days (HDDs).
- Decreases in residential and commercial natural gas consumption assumed to be proportional to decreases in HDDs and the proportions of natural gas consumed for space heating for each sector, and that proportion obtained from the Navigant 2017 Conservation Potential Review for FortisBC Gas.
- Decreases in residential and commercial electricity consumption assumed to be proportional to decreases in HDDs and the proportions of electricity consumed for space heating for each sector. However, for residential this is partially offset by, and for commercial more than offset by, the proportions of electricity consumed for space cooling for each sector and how this will increase proportional to projected increases to Cooling Degree Days (CDDs). These proportions obtained from the Navigant 2016 Conservation Potential Review for FortisBC Electric.

Annual variability affecting projections

Although CEA’s model assumes that projections will be linear, there will be annual variability due to factors such as economic conditions (particularly on mobility fuels) and climatic variations (particularly on building energy consumption). These variations mean that it may often be necessary to collect several years of data before one can see the success or lack of it in implementation of an action, in the primary indicators.

Figure 15 demonstrates this, showing the annual variation in natural gas consumption, per residential unit, with the changes in Heating Degree Days (HDDs). Residential natural gas consumption tracks the changes in HDDs quite well, and as HDDs have decreased, so has the natural gas consumption per unit. The divergence between the lines however has increased over the years perhaps demonstrating improvements in building energy efficiency.

Figure 15 – Annual Variability in Natural Gas Consumption With Changes in Heating Degree Days



Action impacts

To take into account the impact of implementing a climate action plan, the modelling tool estimates the impacts of actions compared to the BAU trajectory. It calculates the individual and combined impact of actions.

The impacts of individual actions can vary greatly between communities, and depend on the assumptions made. CEA has conducted research on the impacts that different actions can have.

Details on the impacts of individual actions on GHGs are described in the main body of this report, in the sections What We Can Do: Recommended Climate Actions, and What We Can Achieve.

Appendix B: Stakeholder and Community Engagement

Stakeholder Workshop Facilitated Discussions on Climate Actions & Targets April 5, 2019

Participating Organizations

Interior Health Authority, Friends of the Summerland Ornamental Gardens, Trail of the Okanagans Society, BC Transit, FortisBC, Summerland Chamber of Commerce, Summerland Agricultural Advisory Committee, Regional District of Okanagan-Similkameen, Summerland Environmental Science Group, First Things First Okanagan, Summerland Secondary School, and members of Summerland's Council.

Representatives from the above organizations were invited to share what they are currently doing with respect to climate action, how they could collaborate with the District of Summerland, and specific actions the municipality should implement or continue. Comments are listed below and grouped according to six main topic areas.

Topic 1 – New Buildings

- FortisBC is providing incentives for all steps of the BC Energy Step Code and has funding to support demonstration projects (e.g. UBCO in Kelowna). Building tours and training are important for contractors and municipal staff. RDOS is encouraging the Step Code by providing info and leading by example (e.g. LEED Silver building).
- Architects are talking about sustainable buildings (e.g. good design, passive design, use of solar PV, wood first design) so there seems to be interest.
- Some stakeholders think that the District should move ahead on energy efficient new buildings and Step Code. A sustainability checklist could possibly be used too.
- A reduced building permit fee could be established for new buildings constructed to Step Code 3 or ones that install solar panels or EV charging stations (raised at subsequent Chamber of Commerce meeting on April 11).
- There can be health concerns with new buildings. Radon levels can be high and have been in the past. Installing radon ventilation systems can alleviate this. Buildings are required to be roughed in now.
- The high school in Summerland did a significant geothermal upgrade. People could replicate it in their home or business. There could be an article about this to encourage people to do it, just as there were articles about the solar PV system on the school in Penticton.
- Land use is important in the context of new buildings.
 - RDOS turned down a flood plain variance and is looking at new flood construction levels. Summerland is disallowing development in interface areas and flood plains.
 - Environmentally sensitive development permit areas are critical. They can trigger analysis and requirements for new buildings outside of certain habitats.
 - It is important to recognize the importance of agricultural land and protect it as community has a finite source of arable land. Therefore, no development in ALR.

- We should think about where development is permitted and incentivize it (e.g. closer to downtown vs. Trout Creek and fringes, multiple properties on one lot - infill, build up vs. out). We need a mixture of different housing types, consider the character of the community, and the ability of existing infrastructure to handle increased density.

Topic 2 – Existing Buildings

- The RDOS and FortisBC funded Okanagan Energy Diet had good participation from Summerland.
- The Community Climate Action Advisory Committee developed an education program for homeowners and produced brochures to encourage energy efficiency in high energy use/older homes/buildings (promoted window and door sealing plus envelope improvements). Many older homes are in need of upgrades. We need to help people understand the tools and money available (e.g. grants/incentives).
- A University of Alberta paper focused on how to engage with the community on this topic. Target groups are seniors and low income earners. Info from trusted sources is key for action (e.g. churches, community groups). Block parties could be another channel. FortisBC noted that 55-75 year olds are the people that make the most upgrades to their homes.
- District is creating an energy map.
- Multi-unit residential buildings need to be considered for retrofit opportunities too.
- An Energy Advisor needs to do energy assessment before energy efficiency measures are taken.
- District could purchase thermal imaging camera and loan out through library to help people identify heat loss in buildings.
- Energy efficiency may enhance radon levels due to greater air tightness unless ventilation is considered (e.g. Heat Recovery Ventilation).
- We need to consider preservation of heritage buildings while doing energy efficiency upgrades.
- It needs to make business sense to do retrofits. There are business opportunities. Should the District be incentivizing financially in this area?
- A stakeholder wants to consider economics of retrofits vs. new builds. What tools are available to encourage redevelopment? Rezoning?
- Property assessed clean energy (PACE) financing and local improvement charges (LIC) can be important for energy efficiency and renewable energy projects.
- Some stakeholders had comments on solar production/use for existing buildings. Local governments could lease solar panels, particularly with having own utility. First Things First Okanagan partnered with Summerland on a BC Sustainable Energy Association program (was its liaison) so could do it again on a new program (need technical topic area support). It recommends establishing an association with several communities, doing branding and community based social marketing. RDOS may be able to provide venues.

Topic 3 – Renewable Energy

- The District's solar project is underway. The District has also done feasibility studies in other areas (e.g. wind). It will consider other technologies after the solar project is completed.
- A lake source heat pump could be an option worth investigating.

- Hydroelectric turbines in the drinking water system could be something to consider (consider as the District twins its pipes).
- Methane from agricultural waste (organics) could be a good opportunity, if possible. The District currently does not have enough material to support it but will reconsider as technology changes.
- The farming industry uses solar energy at weather stations.
- To fully embrace renewable energy, it needs to become more affordable.
- The local agricultural sector should reconsider burning tree stumps. A community wood chipper could be shared by the sector. Mulch could then be applied to land.
- There was discussion on banning outdoor burning of garbage [*note: this is not permissible currently within the District*].
- First Things First Okanagan has been promoting renewable energy for a while (e.g. solar, wind) at symposium events and markets. It obtained a list of names of people interested in community solar power. Summerland could possibly install a solar garden similar to Nelson.
- If pursuing wind energy, consider the science and environmental costs of wind turbines and include all stakeholders in discussions.
- Local First Nations should be engaged on renewable energy. Council to Council meetings have started. The relationship needs to be built over the long term. They can be brought in early to conversations about renewable energy projects.

Topic 4 – Land Use

- Summerland has a welcoming and walkable downtown.
- It is important to have vibrant downtown businesses. There are cases where businesses and storefronts are empty. RDOS mentioned grants are available for street beautification. Storefront bylaws could be imposed. A downtown plan is underway. One issue with leased spaces is owners may refuse to do necessary upgrades. Although many businesses are downtown, some people have home based businesses. RDOS recommends bylaws that restrict how big home based businesses can be.
- A stakeholder suggested having an urban containment boundary and imposing conditions on developers (e.g. add a greenway, include multi-use lanes).
- The Agricultural Advisory Committee mentioned that we may need to communicate to new residents more about what it means to live in an agricultural community (e.g. may be odours and noise but people have a right to farm). There are buffers between urban/farming areas but not always enforced.
- A stakeholder noted that a number of people move to Summerland to have a 0.5-acre lot.
- A stakeholder noted that it's important to feel comfortable in a community/neighbourhood and not need to go elsewhere to get what you need (e.g. low traffic, shops/services, walking/cycling paths to downtown, quality environment, low cost housing). Summerland is well positioned.
- It is important to consider demographics of the community, how this may change, and changing expectations. Young people may change their vision of what kind of home they want in the future (e.g. ability to walk to work). Seniors are not necessarily able to take care of large properties.
- Interior Health can support the District with strategic planning, particularly health linkages to land use and transportation (e.g. Healthy Built Environment Linkages Toolkit).
- Higher densities could be added in transit corridor areas.

Topic 5 – Transportation

- E-bikes would be a good way to get around town considering some parts of the community are hilly. (e.g. City of Nelson employees purchase e-bikes and deduct cost off wages over time).
- Additional bike lock-up infrastructure is needed to enhance bike use, especially downtown.
- Streets have been narrowed to slow traffic down, which may be providing less space for bikes. Pros and cons of this could be looked at. It would be good to redesign roads to be multi-use. Multi-use lanes would be needed for scooters, wheelchairs, strollers and bikes as about 30% of the community is <35 and 30% is 65+ years.
- It's a good idea to have EV charging capability in new multi-unit residential buildings (stations or parking pre-wired for level 2 charging). More EV stations downtown would be most beneficial for tourists and they could spend money while charging. Grants from higher levels of government could help to support EV stations.
- An improved bus service or shuttle to help transport seasonal agricultural workers to/from Penticton is needed so they can do errands (expanded hours/frequency, pick up locations). Currently, many workers hitchhike or use bikes provided by agricultural businesses. A mini transport shuttle has been successful in other communities and could be used here. It could even be an on call service. Seniors could use it too.
- Additional public transit services are coming in early September. A route will be added between Penticton and Kelowna that offers two trips a day. This will increase the current frequency between Summerland and Penticton. Then two more will be added in the future. It would be good to know percentage of bus use locally vs. inter-community. It may be valuable to have a trial, free service for transit within Summerland to assess demand and encourage use.
- It is important to right size buses. They do not need to be 40 metres in length. Bus service could be more dynamic too. Bowen Island, BC and Belleville, ON are testing this format. An e-bus, uber-style service could be valuable.
- Car co-ops could be considered.
- Compressed Natural Gas (CNG) could be explored for the trucking industry.

Topic 6 – Solid Waste, Water, Adaptation, Awareness Raising/Education

- District is working on fixing/rebuilding composting site to reduce food going to garbage. More work to promote compost could be done. The District is applying for a grant for organics collection.
- District could mandate space in newer neighbourhoods for composting or community gardens (would need proper management with bears/rodents nearby).
- We may want to consider less plastics and other products in landfill and follow other jurisdictions by passing bylaws to ban certain items.
- Mini recycling stations/depots could be created in cooperation with businesses for items to be dropped off. Multi-family dwellings need more recycling/organic options too.
- Agricultural waste round ups could happen more frequently to safely dispose of chemicals.
- RDOS funds going into schools to teach kids to recycle.
- Fire safety should be considered with increasing forest fires. Some homes are not permitted to have combustible materials on roof/side of house and certain types of trees (e.g. a property may have a

covenant on title for wildfire). [*note: The OCP requires that new developments located within wildfire development permit areas comply with FireSmart construction and landscaping*]

- Tree cover is important to avoid the urban heat island effect. Deciduous trees are good.
- Farmers are good at managing water use with meters (some gaps with water metering in irrigation). Incentives for conversion from overhead to drip irrigation would be helpful. FortisBC has incentives for variable speed pumps.
- Water efficient gardening is useful to conserve water (Friends of the Garden promotes it.) The District could encourage xeriscaping with tools (e.g. Development Permit Area / bylaw) but needs to enhance capacity to enforce.
- We need adequate storage and proper planning as the climate changes and affects water supply.
- The three Okanagan Regional Districts could collaborate on food security (e.g. Okanagan bio-region food system project) to look at scenarios of agricultural land plus impacts on health, environment and society).
- At the high school, the leadership students are really into climate change (as are many of the kids there), but they had no awareness of the Sustainability / Alternative Energy Coordinator role at the District.
- Most young people use Instagram now, so the District should be promoting its events through Instagram, not just Facebook and other social media channels.
- Earth Week in Summerland could potentially be expanded, and involve young people more.
- It would be good to have young people at the Open House.
- Young people could be involved in helping to get their parents to do more on climate change, e.g. in the same way as the culture around recycling changed.
- District could consider sponsoring a UBCM resolution to ask the Province to put climate change in the school syllabus.

Greenhouse Gas Emission Reduction Targets Conversation

Following the main discussion on climate actions, participants were asked to share their opinion on whether the District of Summerland should adopt a new short-term GHG emission reduction target or focus on the 2050 target once the 2020 target passes. In addition, they were invited to comment on how ambitious the long term target should be.

Most stakeholders supported a long-term target that aligns with the Province of BC target (80% reduction from 2007 levels by 2050), which is the current Summerland target. A short-term pragmatic target could be considered too.

Stakeholder Survey Results Summary April 5, 2019

About You

Are you a resident of the District of Summerland?	Yes	8
	No	6
Do you work in the District of Summerland?	Yes	5
	No	9
If not, where do you live/work? <ul style="list-style-type: none"> - Live: Kelowna, Penticton (x3) and Naramata (x2) - Work: South Okanagan Similkameen region, retired (x4), Penticton (x2) and Naramata 		
Which sector/profession do you represent? Public sector, health, non-profit (x3), local government (x2), transportation, consultant, and cherry grower		

Transportation Actions

How many trips do you use a car for per week within Summerland?	5 or under	4
	6-10	3
	11-15	4
	Over 15	1
How many trips per month do you make to Kelowna or further?	5 or under	12
Expand the bike, trail and sidewalk network (# and connectivity) to increase active transportation. (Level of Support: 1=low; 5=high)	1	
	2	
	3	
	4	6
	5	8
Approximately what % of “around town” trips do you think you would shift to walking or cycling if additional infrastructure was in place?	20%	5
	30%	2
	50%	1
	70%	1
	100% (if safe)	1
Collaborate further with BC Transit to enhance transit service between Summerland and Penticton as well as add transit service between Summerland and Peachland/Kelowna and within Summerland. (Level of Support: 1=low; 5=high)	1	1
	2	1
	3	1
	4	5
	5	6
What % of trips would you shift to public transit if this service were available with a regular schedule?	0%	3
	10%	2
	20%	2
	50%	1
	80%	1
	Regularly	1

Initiate a car sharing/carpooling service with a private organization. (Level of Support: 1=low; 5=high)	1	1
	2	1
	3	4
	4	5
	5	2
What % of trips would you shift to car sharing/carpooling if this service were available?	0%	2
	10%	1
	15%	1
	20%	1
	30%	1
	80%	1
	When possible	1
Install additional Level 2 or DCFC electric vehicle charging stations in the community. (Level of Support: 1=low; 5=high)	1	
	2	1
	3	2
	4	5
	5	5
Set minimum requirements for charging stations in new residential and commercial buildings. (Level of Support: 1=low; 5=high)	1	
	2	
	3	1
	4	2
	5	9
Reduce speed limits and redesign streets so low speed electric vehicles or golf carts are safe to travel in. (Level of Support: 1=low; 5=high)	1	1
	2	2
	3	1
	4	5
	5	4
<p>Where would you prefer new EV stations to be located?</p> <ul style="list-style-type: none"> - lakeshore, downtown - near highway - SSV, IGA, near Nester's Market - all new construction, all major retrofits - in town (x2) - MURBs (x2), schools, hospital, district hall - downtown, mall - wineries, downtown, beaches - gas stations to provide Level 3 chargers 		
<p>What needs to happen for your next vehicle to be an electric vehicle?</p> <ul style="list-style-type: none"> - vehicles need to improve their range - price subsidy (x2) - reduce cost (x5) (use carbon tax noted in 1 answer) - old car to no longer be serviceable, cost of EV - significant cost benefit (x2) - choice of EV (light truck), cost competitive with gas 		

Buildings & Energy Generation Actions

Collaborate with neighbouring Okanagan communities in adopting a lower step (e.g. 2 or 3) of the BC Energy Step Code within the next 2 years. (Level of Support: 1=low; 5=high)	1 2 3 4 5	1 1 2 6
Initiate a community-wide home retrofit campaign (insulation, weather-proofing, heat-pumps), which may include municipal top-up incentives. (Level of Support: 1=low; 5=high)	1 2 3 4 5	1 4 7
How likely are you to do an energy retrofit on your home in the next 5 years if the District could offer additional support to improve its energy efficiency?	Unlikely Likely Not Applicable	3 5 3
Support industry (e.g. tourism, agriculture) in lowering its energy and emissions through incentives and policies. (Level of Support: 1=low; 5=high)	1 2 3 4 5	1 1 1 6 3
Expand the use of renewable energy sources (e.g. solar, wind) in Summerland’s electrical supply. (Level of Support: 1=low; 5=high)	1 2 3 4 5	 4 7
Through which other ways can the District enable higher energy efficiency in new buildings? <ul style="list-style-type: none"> - lead by example with municipal buildings - codes & standards; incentives - bylaws - grants - insulation; build up, not out 		
How else can the District enable residential and commercial retrofits? <ul style="list-style-type: none"> - promote businesses who can do the work - education to public (x3) - encourage existing FortisBC programs as it already promotes home retrofits - education on benefits in partnership with FortisBC - incentives, big demonstratable ones - require efficiency assessments for resale, possibly renovation building permits 		

Waste Actions

Increase the frequency and locations for the recycling of e-waste and other non-traditional products. (Level of Support: 1=low; 5=high)	1 2 3 4	1 3 4
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	5	4
Upgrade the composting facility to process residential and agricultural waste. (Level of Support: 1=low; 5=high)	1 2 3 4 5	4 7
Would you support the exploration of biogas options?	Yes No	5 2
How else can the District support waste diversion? <ul style="list-style-type: none"> - become environmentally sensitive and protect water - compost, agricultural wood chipping - mandate recycling in multi-family buildings 		

Other Comments

What other actions should the District of Summerland explore for the CEERP? <ul style="list-style-type: none"> - expand focus - riparian/tree protection - geothermal at lake - keep Sustainability / Alternative Energy Coordinator - density in downtown, walking spaces, urban forest - improve zoning for higher density buildings near core
What is your organization currently doing to help lower energy and emissions in the community? <ul style="list-style-type: none"> - supporting district with health data and evidence - supporting bike use - public education re: xeriscaping and water use reduction - anti-idling policy, lobbying for more transit service - planting trees - advising council on climate programs, supporting action on older home efficiency improvements
How could your organization collaborate with the District in further reducing community wide energy and emissions? <ul style="list-style-type: none"> - engagement and participation in these types of events - long-term bike use - public education - develop programs and incentives - stronger collaboration - more transit service - discussion on actual impacts of agriculture and farming and what we are doing - support education and events
What actions would you like to see implemented to enhance community resiliency and minimize the impacts of climate change (e.g. flooding, heat waves, forest fires)? <ul style="list-style-type: none"> - look at what we can do to protect our watershed - many of those talked about today

- create redundancy of utilities (water & electrical)
- public education re: what the key issues are and what individuals can do
- urban canopy, water use
- fire smart, development policy changes
- provide free wood chipping to orchards
- smart planning for future (not status quo)

First Public Open House Feedback on Display Boards June 17, 2019

Key Priority Actions

At the first public open house, participants were asked to indicate their support for proposed climate actions. The following table summarizes the results for each action.

Climate Action	Total Number
Support Active and Assisted Travel	14
Expand Organics Diversion	12
Increase Urban Trees	11
Encourage Electric Vehicles	7
Encourage other Solar Installations in the Community	7
Use Infrastructure Lifecycle Costing for New Developments	7
Market a Retrofit Program	7
Develop Complete Streets	6
Complete Solar Farm & Battery Storage Project	6
Encourage Water Conservation	5
Educate on Climate Change	5
Support Downtown Growth	5
Implement the new BC Building Code	5
Support Local Food Production	3
Use Policy Tools to Encourage More Efficient Buildings	2
Promote Energy Saving Programs	2
Introduce Anti-Idling Campaign/Bylaw	1
Prepare for Extreme Heat Events	1

GHG Emission Reduction Target Options

Community members were advised to state their preference on maintaining or updating Summerland's current greenhouse gas emissions reduction targets, which are 33% below 2007 levels by 2020 and 80% by 2050. These targets align with the former provincial target.

Change its target to be <u>more</u> ambitious than the provincial target	7.5
Keep its current target	3.5
Change its target to be <u>less</u> ambitious	4

Open Suggestions

What can I do to support climate action?

- Support education and properly educate myself
- I can plant more trees, and make sure I water them enough. I won't plant drought tolerant ones in case they become invasive species → Comment on this note: Native plants aren't invasive and are likely drought tolerant.

I would like Summerland to take a leadership role on

Transportation:

- Increase number of bike racks around town to promote cycling and provide incentive for biking to work
- Look at providing electric bikes for hire
- Connect neighbourhoods with paths/trails, etc. (road side walks); paths/trails are multi-use while sidewalks are not
- Need more and better walking areas and sidewalks for walkers
- More public transportation

Land Use:

- Co-housing
- Make developers pay and thus discourage sprawl
- Community gardens
- Create more green space and gardens (promotes more pollinators)

Waste Reduction:

- Expand on food waste composting (even a small start like veggies/fruits)
- Downtown drop-offs for hard to recycle plastic (not just at dump) such as plastic bags, batteries, etc.
- Promoting reusable products (e.g. straws, containers, bags), especially in schools
- Sorted recycling/returnables/trash receptacles in town and schools to promote recycling (look at Vancouver & airlines)
- Eliminate plastic bags

Renewable Energy:

- Provide financial opportunity for individuals who would like to have solar energy
- Move on multiple tracks to plan, establish and finance alternative energy
- Consider having new developments be "solar ready"
- Incentives for residential solar arrays

Forest Fire Mitigation:

- Wildfires will create more carbon emissions than we can mitigate

- Forest/urban buffer zones (fire protections)
- Summerland is under fire threat on 3 sides – we must put more resources into wildfire mitigation

Other:

- Understand and be prepared for climate change, be a leader in climate adaptation
- Investigate the ideas behind GeoEngineeringwatch.org - “Climate Engineering/Solar Radiation Management operation are the primary causal factor fueling catastrophic wildfires” – Dane Wigington
- Celebrate parks – encourage more citizen hiking, walking, riding. Not tourists, residents!

Resident comment

Thank you for the opportunity to participate in the Community Climate Action Plan Open House. I found the information, presentation and feedback options helpful in understanding the scope of the issues facing Summerland and its future decisions to adapt to changing climate conditions.

Please continue to use every opportunity to educate your citizens, ask for their participation to modify over use of resources, and continue to encourage a positive outlook among our residents.

Your leadership has brought much needed resources to our town and I am encouraged when I see staff from District of Summerland departments working together to address issues that will come with a financial commitment from residents.

First Public Open House Survey Results Summary June 17, 2019

About You

Are you a resident of the District of Summerland?	Yes	18
	No	
Do you work in the District of Summerland?	Yes	6
	No	9
If not, where do you live/work?		
<ul style="list-style-type: none"> - Retired (5) - Penticton 		

Transportation

How likely are you to shift to walking or cycling around Summerland following the addition of further infrastructure (e.g. sidewalks, bike lanes, bike storage/lock up facilities)?	Unlikely	3
	Likely	14
	N/A	1
Additional comments: <ul style="list-style-type: none"> - No bike lanes in 2019 - Bike lanes and trails are huge - We will relocate to use less energy - Already walking as much as possible - Already biking 		
How likely are you to shift to travelling by public transit within Summerland and between Summerland and Kelowna/Penticton if this service is improved (e.g. more stops, more frequent)?	Unlikely	7
	Likely	11
	N/A	
Additional comments: <ul style="list-style-type: none"> - Needs to be accessible for students - Maybe a shuttle to tourism high areas during summer months - Little user numbers - Definitely more so from Summerland to Kelowna Airport - Would depend on access to outlets - Support the Okanagan Rapid Rail Initiative - Specifically times that work for students 		
What factors would encourage you to purchase an electric vehicle for your next vehicle? (e.g. price, better availability of charging stations, more vehicle options) <ul style="list-style-type: none"> - More affordable options (light truck or CUV) x3 - Price (x7) - Vehicle options (x4) - Infrastructure support - Reliability of recharging in a timely manner - Government and utility incentives and information (x5) - I have a Volt - Fuel costs 		

<ul style="list-style-type: none"> - Aging of current vehicle - Need a truck - Durability in cold/hot weather - In process of buying one, would appreciate better mileage on battery
<p>The District of Summerland has already installed some electric vehicle charging stations in town and is considering adding more stations. Where would you prefer new stations to be located? (e.g. downtown, along highway)</p> <ul style="list-style-type: none"> - Downtown (x5) - will attract passers by - Along highway (x4) - Home/resident infrastructure (homeowner grants), design on all new construction permits (x2) - Grocery store - Engage private sector (or regulate) – e.g. gas stations could be regulated to provide rapid charges (Level 3) - Trout Creek, Robinson and Highway 97 intersection - Municipal parking / highway pullouts / fruit stands - At new buildings for seniors - Close to condos - One for every parking space - Gas stations - Nearby

Buildings & Energy Efficiency

How likely are you to purchase a new home that is built to a higher energy efficiency standard in the next 5 years if more of these homes are available on the market?	Unlikely	7
	In between	1
	Likely	5
	N/A	4
How likely are you to do an energy retrofit on your home or adopt other energy saving measures to improve its energy efficiency in the next 5 years?	Unlikely	5
	In between	1
	Likely	9
	N/A	1
<p>If unlikely, why? What factors would persuade you to do these activities?</p> <ul style="list-style-type: none"> - Home and appliances are ~3 years' old - Already doing what I can (all LED lights, new furnace, new refrigerator) - May be moving - Looking to decrease harmful EMFs not increase them - Costs too much on an old home - Insulation, furnace, windows - I like lots of air flow in the house 		
What do you typically look for when considering an energy retrofit on your house? Circle all that apply.	<5-year payback	3
	<10-year payback	6
	Increased comfort	9
	Reduced emissions	11

	Other (noted as close to net zero as possible)	1
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Renewable Energy Generation

How likely are you to install a solar photovoltaic (e.g. electricity generating) or hot water system at your home in the next 5 years and why?	Unlikely	7
	Likely	5
	N/A	2

Additional comments:

- Downsizing
- Hydro power already cheap and clean (x2)
- Divert natural gas through heat-pump
- Need more reliable storage
- Uncertain housing situation (x2)
- Heat pump
- Tried to convince strata
- Don't want to pay for electricity utilities long term

Other than solar, have you considered any other renewable energy generation systems for your properties? Which?

- Covered, south facing deck has massive solar potential
- Prefer this be done at District composting office
- Ductless heat pump
- Composting
- Geothermal
- Wind (x2)
- Hydro (x2)

Other Actions

What would encourage you to compost more?

- Food waste composting/partnerships with local agriculture businesses in the area
- Already compost (x9)
- Fully into vegetable (no meat) composting
- Education (x2)
- City composting (x3)
- Resources
- My parents letting me

What would encourage you to install a rainwater barrel at home?

- Already looking at getting one (x2)
- Education program on how to set up properly
- Already using them (x4)
- Cost of barrels (x2)
- Someone to install
- Availability

What would encourage you to adopt more water efficient gardening techniques?

- Already xeriscape with mostly native plants
- Trying to → Summerland → Xeriscape plant sale
- We have drip/microjet on timers but also cannons
- Entire property is xeriscaped
- Education (x3)
- Incentives
- District-sponsored assessment staff to go out and help homeowners
- Responsibly irrigate and plant wisely (e.g. no more pyramid cedars)
- A major dam failure
- Very efficient already
- Water savings (x2)

What would encourage you to purchase more local food?

- We also look local so more availability
- Already grow my own garden and purchase as much as I can locally. Also freeze pickles and can.
- Already do (x4)
- Education
- Very interested
- Reduced costs especially for locals (x2)
- Loyalty card for farmers and business reward
- Already using local CSA
- Local meat production, local abattoir
- Availability
- Longer farmers market hours
- Zero packaging on local food

On climate change education, what are three things that you would like to know more about? (e.g. local impacts, latest science, solutions).

- What is happening (why climate changes, what adjustments are needed)
- Individual changes that can be made (x2)
- Life cycle environmental impact/benefit analysis
- Life cycle cost/benefit analysis of climate mitigation options (x2)
- Local progress on achieving targets
- Long-term weather impacts (still need to be determined)
- How can we get people to understand how rapidly we are moving to “no way back” point without alarming them?
- Geoengineering – the role it plays
- Solutions available today (x2)
- Shop local = give local
- More use of public meetings/forums and media other than “it’s on the municipal website” which is a cop out – too difficult for many to find the answers!
- Adaptation strategies for the change that’s coming
- What government is doing already
- Local impacts, science, and solutions

Additional Comments

Are there any actions that you did not see on the boards today that you think the District should explore for the CEERP?

- More native species, not water intensive, integrated to downtown environment
- Reduce urban sprawl, promote/encourage multi-use spaces in/closer to downtown for walkable/integrated commercial, residential, and leisure areas that may draw younger individuals to Summerland (approve projects that promote such ideas + educate community members)
- Need to educate hesitant/uninterested community members on climate
- More focus on climate change adaptation including:
 - Understanding potential climate change risk
 - Development of measures to manage risks
- Adding more residential density in downtown area, opening up height restriction
- No, I hope the land use and development policies and bylaws will help address our climate change challenges
- 60 years of geoengineering/solar radiation management
- Solar incentives for residents
- Land use, car fleets for ride share
- Energy efficient vehicles
- Proceeding on multiple streams simultaneously
- Food compost with yard waste
- Accessible recycling
- Expand education greatly with regular education in schools and community

What is your household/organization currently doing to help lower energy and emissions in the community?

- Less plastic use (x3)
- Home garden (x2)
- Using reusable products
- Recycling
- Xeriscaping (x2)
- Developing and promoting residential structure energy efficiency information and outreach program
- Less driving (x3)
- Composting (x3)
- Eating in season
- Small house
- Organization – RDOS → Community/corporate plan → Step Code
- Smart heating/cooling (automatic windows, programmable thermostats) (x3)
- Energy-efficient appliances and storm windows on single pane windows (which will be upgraded)
- Education (x2)
- Solar panels coming and some cold water washing
- LED lighting
- EVs/energy efficient vehicles (x2)

- Well maintained, energy efficient home
- Reduced water usage (x3)
- More walking
- In house management of consumption
- Reducing meat consumption
- Smart cooling systems
- Biking when possible
- Reducing personal waste where possible
- Use a clothesline

How could your household/organization collaborate with the District in further reducing community wide energy and emissions?

- Investing in District co-operative solar/wind generation projects
- Solar panel installation → if municipal incentive program provided
- Stay involved and support actions publicly
- Online interactive forum
- Recycle all waste
- Meal planning to reduce trips to store
- Plant more trees, help home owners water their trees
- (As strata) turning an energy sinkhole into an efficient energy producer
- Business policies to reduce emissions
- Education

What other actions would you like to see implemented to enhance community resiliency and minimize the impacts of climate change (e.g. flooding, heat waves, forest fires)?

- Education for people ignorant/unaware about climate change (forest fire education as a natural process and how it can be mitigated to keep the town safe)
- Forest fire awareness (x2)
 - Safe communities to be better able to avoid and control wildfires
- Bike infrastructure - e-bikes are coming and we need to plan for future changes in mobility.
- Trail connections need to be considered for commuting vs. recreation
- Interface buffer zones, complete fire bans
- Education:
 - The role geoengineering may play in local legislation – catastrophic wildfires, flooding
 - On new buildings and water efficiency (e.g. grey water storage)
 - Educational series with interesting activities and speakers who have solutions
- The city should take down some pine trees in Deer Ridge please
- Incentivize potential options
- Stop building permits in flood plains (i.e. Trout Creek)
- More interact/fuel reduction on municipal property
- Clear out dead wood on municipal/property boundaries
- Less reliance on “experts”, using community ideas to achieve a result instead of the idea that a successful outcome is someone else’s responsibility

- Invasive weed management – gravel pits and road allowances are spreading invasive species, dry gardens also invite invasive weeds
- Plant more deciduous trees
- Reward people for household changes
- Designate money to large public places (school) to reduce waste/emissions
- Efforts at local events like annual festivals to reduce waste
- Promote what we do have (e.g. thrift shops + benefits, farmers' markets, Earth Week)
- Stop single-use plastics
- Reduce gas usage

Appendix C: Low Priority Actions for Implementation

The following table shows low priority actions to be implemented.

What do the terms and colour coding mean in the actions tables?

- Effort = staff time
- Costs = municipal costs
- GHG & economic impacts = community GHG & economic impacts
- Adaptation / resilience linkages = capacity for increased efficiency and enhanced outcomes through linkages to climate adaptation and community resilience.

And where there are no numbers, there is colour coding to help communicate expected impacts and implications:

- **Green = low effort / costs, high GHG and economic impacts, high adaptation / resilience linkages.**
- **Yellow = medium for all attributes.**
- **Red = high effort / costs, low GHG and economic impacts, no adaptation / resilience linkages.**



New Buildings

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-NB1: Introduce a density bonus for energy performance</p> <p>This action may not be appropriate for Summerland if infrastructure does not allow for added density. But if infrastructure could allow, then it could be considered.</p> <p>Outcome: This action would have the outcome of a density bonus policy if a higher level of Step Code is met.</p>	3-4 yr.	High	High	Low	Medium	Low		Development Services
<p>M-NB2: Implement a demonstration project and/or design competition</p> <p>This action on its own will only have minimal GHG and energy savings so it should be used to help support other actions (e.g. industry training). Examples: District of Maple Ridge’s Step House demonstration project, which was also used for multiple education events.</p> <p>Costs assumed to be high but depend on scope. Climate adaptation considerations could be considered as part of this.</p> <p>Outcome: Specific outcome of demonstration project.</p>	5+ yr.	0 tCO ₂ e	\$0k	Medium	High	High	FortisBC, BC Housing’s Building Excellence Research & Education Grants, Farm Credit Canada’s AgriSpirit Fund, Okanagan College	SAEC, Works and Development Services



Existing Buildings & Businesses
Low Priority

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-EBB1: Implement voluntary or mandatory energy labelling of existing or new homes</p> <p>Local governments can encourage or mandate energy labelling of existing and/or new homes.</p> <p>Labelling can be encouraged or mandated as a condition of receiving a building permit (for existing homes this means at the point of renovation). Energy labelling can be conducted through Natural Resources Canada’s EnerGuide ratings, which are the most widely used form of residential energy labelling in Canada.</p> <p>EnerGuide ratings on homes can help a prospective homeowner compare different homes according to their energy efficiency, and thus allows the market to assign a value to this. It also provides encouragement to homeowners and builders to improve energy efficiency. EnerGuide ratings are also educational. They come supplied with reports that identify ways in which homes can have their energy efficiency improved.</p> <p>Local governments can choose to make this voluntary or mandatory. Voluntary applications should likely include incentives to reduce the cost of EnerGuide ratings in order to improve uptake. Both voluntary and mandatory applications should likely be coupled with education for realtors.</p> <p>Local governments may also choose what they do with the information received. They may choose to make it public.</p> <p>Note that better EnerGuide ratings will also generally correlate with homes that are more likely to be resilient in the face of a changing climate.</p> <p>Example: The City of Vancouver has made EnerGuide ratings mandatory for all homes undergoing renovations with a value of \$5,000 or greater (with some exemptions). The City of Victoria has received a legal opinion which states that local governments have the authority to require energy audits as a condition of obtaining a building permit (existing or new homes), provided it is done by bylaw.</p> <p>Outcome: Specific outcome of encouraging or mandating energy labelling.</p>	5+ yr.	Medium	Medium	Medium	High	Low	n/a	SAEC and Development Services

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
M-EBB2: Implement energy efficiency & low carbon heating program – financing and active deployment	5+ yr.	High	High	High	High	Medium	<p>FortisBC and CleanBC have incentives. FortisBC would be an excellent partner and potential funder.</p> <p>FCM’s Green Municipal Fund has new opportunities that could be considered.</p> <p>Southern Interior Development Initiative Trust is another possible funder.</p>	Utility, Finance and SAEC
<p>The District of Summerland could create and implement a program to promote energy efficiency and low carbon heating systems in existing buildings.</p> <p>There are many possible ways to implement such a program as the District of Summerland is one of the few local governments in BC with its own utility, it has unique opportunities on energy efficiency. Local governments that do not own their own utilities have substantial difficulties in providing financing to residents for energy efficiency improvements. BC Hydro and FortisBC used to provide financing to customers for energy efficiency improvements but no longer do. Their financing had higher interest rates than municipal utility financing.</p> <p>The City of Nelson is an excellent example of what is possible. For several years, it has run a successful energy efficiency program called Nelson EcoSave, which encourages home energy efficiency retrofits in the community. Part of the program offers very low interest financing for energy efficiency improvements, which stays with the house when someone moves. Approximately 25% of the retrofits in the community have used the energy efficiency financing provided by the utility. The City of Penticton also has a similar program. These could be replicated in Summerland.</p> <p>Radon may need to be considered as part of any retrofit program. Improving air tightness in a home may worsen radon levels but taking mitigation measures (e.g. installing a heat recovery ventilator) would improve it.</p> <p>Low carbon heating, e.g. cold climate heat pumps, should be considered as part of such a program due to the exceptional carbon saving benefits.</p> <p>This action or an action with similar impacts on existing buildings would be key to make deep carbon emission reductions. It’s possible that the program could be created to be revenue neutral, or close to revenue neutral. Some start up costs are assumed here.</p> <p>Improving efficiency in buildings can also have co-benefits such as health, and adaptation to climate change (e.g. improved attic insulation / high efficiency cooling systems keeping people cooler in the summer).</p> <p>Outcome: The establishment of this action would be a specific outcome, but the implementation would likely be continuous, as it has in Nelson.</p>								



Renewable Energy

Low Priority

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-RE1: Consider other renewable energy systems for Summerland’s utility</p> <p>The District has already conducted feasibility studies for other renewables (e.g. wind). The District could consider other projects once the Solar and Storage Project is completed.</p> <p>This action will have low GHG impacts because it is displacing electricity that already has very low GHGs, which is why it is listed here as low priority. It may have excellent economic and resiliency benefits.</p> <p>This action will help the District move towards energy independence, that should help the District cope with extreme events that may disrupt power supplies. Many of these events are more likely to occur with climate change, e.g. wildfires, heavy snowfall, strong wind, ice storms, flooding.</p> <p>Outcome: Specific outcomes to this action include the creation of other studies and a decision on what to pursue next.</p>	3-4 yr.	Medium	High	High	High	High	<p>Penticton Indian Band may be interested in partnering on a project.</p> <p>The federal and BC governments often have funding available for these projects.</p>	SAEC and Electrical Utility



Land Use
Low Priority

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-LU1: Implement enhanced land use measures</p> <p>The District could consider taking measures to further increase density within identified growth areas, such as clarifying or enhancing how different densities are applied to different areas through zoning and minimum lot sizes. Also, the type of growth could be further defined through establishing zones for transit-oriented development or pedestrian-oriented development.</p> <p>This can preserve the rural character outside of downtown while enabling more residents to live in proximity to services. It can also reduce transportation needs while developing areas that are most economically maintained by the local government (rather than sprawling infrastructure). This action can also help restrict development in places that are likely to be affected by climatic changes.</p> <p>Outcome: Establishment of this action would be a specific outcome.</p>	3-4 yr.	High	High	High	High	Low	Interior Health can be an excellent partner on this action with the health linkages to land use patterns.	Development Services

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-LU2: Flow RGS, OCP and local area plans through to zoning</p> <p>It is important to flow climate and energy-related statements from the Regional Growth Strategy (RGS) or Official Community Plan (OCP) through to local area/neighbourhood plans and zoning. Often, these statements in these plans just need to be implemented all the way through in a rigorous way.</p> <p>The Regional District’s 2017 Regional Growth Strategy includes the following objective: “7-A Plan for climate change adaptation and support ongoing mitigation efforts”. It then includes the following eight supporting policies, all of which are included in the CEERP and some of which should be covered in greater detail in Summerland’s OCP:</p>	0-2 yr.	High	Medium	Medium	High	Low	n/a	Development Services

“7A-1 Reduce regional greenhouse gas (GHG) emissions 15% from 2007 levels by 2030.

7A-2 Develop a green building policy for local government buildings.

7A-3 Work with local businesses to adopt and apply green energy technologies and energy efficiency practices.

7A-4 Work with agricultural stakeholders to adopt and apply green energy technologies and energy efficiency practices.

7A-5 Support rebate programs for energy efficient and water conservation fixtures and appliances.

7A-6 Consider climate change adaptation/resiliency measures in existing and proposed activities and development.

7A-7 Support climate change adaptation and the mitigation of greenhouse gas emissions in existing and proposed activities and development.

7A-8 Support public awareness and education on climate change and its current and likely potential future impacts in the region.”

The climate change section in Summerland’s OCP needs to be updated. The zoning bylaw also needs to be amended to remove barriers to growth in the downtown core. Presently, buildings are zoned for lower levels which limits densification. There could be a reduction in the number of zones but with much greater flexibility allowed in each zone.

Outcome: Specific outcome of flowing the plans through to zoning. To be revisited as climate and energy-related statements in RGS and OCP are updated.



Transportation

Low Priority

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-T1: Collaborate to implement low carbon fuel solutions for heavy duty vehicles</p> <p>This action targets heavy duty vehicles, which are a significant source of emissions.</p> <p>The implementation of low carbon fuel solutions may require collaboration. Options could include electricity, natural gas, renewable natural gas, increased renewable fuel content in gasoline or diesel, and potentially even hydrogen. There are pros and cons to each of these for heavy duty vehicles, and in a number of situations there is not a clear winner. In coming years, the situation should clarify.</p>	3-4 yr.	High	Medium	Medium	High	Medium	FortisBC would make an excellent partner as it encourages natural gas vehicles.	SAEC and Works

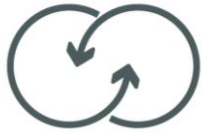
Some low carbon fuel solutions may need a critical mass of vehicles to make a refuelling station viable. In this case, collaborating with other local fleets (e.g. BC Transit, School District, waste haulers, and commercial operators) could provide the critical mass needed. This can lower the emissions from all of the participating entities.

Difficult to estimate costs as it depends on scope.

Actions that improve air quality are assumed to be orange for adaptation linkages, because tailpipe emissions combined with increased ground temperatures increase ground level ozone.

Outcome: The role that the District plays would depend on which is the optimal low carbon fuel solution, but may involve leading by example with its own fleet and allowing the installation of refuelling stations.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
<p>M-T2: Collaborate / joint planning with major employers on work related transportation</p> <p>Major employers are the District, Interior Health and the School District. Collaboration among major employers can uncover opportunities to reduce commuting-related transportation emissions.</p> <p>Opportunities may include encouraging employees to carpool, cycle or walk to work, and providing facilities for cyclists and EV and e-bike users.</p> <p>The District could consider setting an example through policy / mode split benefits for employees.</p> <p>This action will improve air quality and resilience.</p> <p>Outcome: This action will be continuous for as long as deemed effective.</p>	0-2 yr.	Medium	Low	Medium	Medium	Low	n/a	SAEC and Community Development Coordinator



Climate Adaptation

Low Priority

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
M-A1: Collaborate with agricultural sector on adaptation and mitigation	0-2 yr.	High	High	Medium	Medium	Medium	Agriculture Advisory Committee would be a good partner	SAEC and Community Development Coordinator
<p>The District could start working with the agricultural sector on practices for climate adaptation and mitigation.</p> <p>Regarding adaptation, the agricultural sector will need to consider how a changing climate will affect what and how it grows, through consideration of things like increasing growing degree days, reduction in number of frosts, reduced predictability of seasons, increased heat, likely increased prevalence of pests, increased water stress, etc.</p> <p>Regarding mitigation, there are measures that the sector can take such as finding farm equipment that does not consume fossil fuels. It is possible that the District may be able to play a role in facilitating this.</p> <p>Regarding adaptation and mitigation, an example of a measure that can achieve both is carbon sequestration within soils, i.e. soil building. Soil building may be possible through e.g. reducing tillage, soil management practices, planting more trees, encouraging chipping of agricultural waste rather than burning, or biochar / soil char. There are reported co-benefits to soil with higher carbon content, such as that it is better able to retain water, and therefore more drought resistant and less prone to flooding. Increased productivity can also be reported. The District's role in this would be limited to collaboration / facilitation, and potentially also leading by example.</p> <p>Example: The Regional District of the Central Okanagan provides a free wood chipping service to orchardists. This also has a benefit to local air quality. The mulch can be spread over the soil, thus improving the quality.</p> <p>Outcome: Training and collaboration with the agricultural community on climate adaptation measures is the specific outcome and will be continuous.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
M-A2: Protect existing buildings from flooding	3-4 yr.	n/a	High	High	Medium	Medium	n/a	Development Services and Works

The District should continue to educate homeowners and the building community on flood proofing approaches for buildings. Flood proofing primarily uses designs and materials to strengthen infrastructure and halt floodwater.

Updating OCP DPA guidelines to reflect current best practices would facilitate upgrades to shoreline and riparian areas (where possible) to include more vegetation, especially during private property development. Additional vegetation can help to safeguard buildings by minimizing flooding through wave dispersion, slowing rising water levels by lowering water flow, and stabilizing the shoreline. Natural approaches can be more cost effective than hard stabilizations structures such as walls. Regular maintenance would be necessary. The District is demonstrating leadership in this area by setting aside portions of municipal parkland for naturalization.

These actions would reduce the long-term costs associated with building damage from flooding.

Other – Waste, Water, Food

Low Priority



Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Effort	Cost	Possible Partner/ Funder	Staff Responsibility
M-01: Increase recycling in public spaces	0-2 yr.	High	Medium	Low	Medium	Medium	Potential partner: Summerland Chamber of Commerce	Environmental Services
<p>While the District already offers several ways for residents and businesses to recycle waste (e.g. curbside collection and pop-up satellite recycling depots), recycling facilities could be expanded in public spaces such as parks and recreation areas, the downtown core and major shopping areas. The District and businesses could establish mini recycling stations to drop off certain items.</p> <p>Outcome: The addition of recycling bins in public spaces is the primary outcome.</p>								