

# Comox Valley Regional District Rural Areas

Community Climate Action Plan

Partners for Climate Protection Milestone 3

April 6, 2015

## Contents

Introduction	2
Impetus for Action on Climate Change	2
CVRD Rural Areas Background	3
Local context	3
Energy and Emissions in the CVRD	6
CEEI Data	6
CVRD Rural Areas Energy and Emissions Predictions	6
CVRD Rural Areas Energy Options	7
CVRD Rural Areas Climate Change Policy Direction	8
Regional Growth Strategy Targets	8
CVRD Sustainability Strategy Targets	10
CVRD Rural Areas Simple Energy and Emissions Projections	11
Climate Change Action Plan	14
Conclusions	38
References	39
Appendix A: CVRD CEEI Data	40

## Introduction

This document serves as the Comox Valley Regional District Rural Areas Partners for Climate Protection Milestone 3 document. The CVRD is committed to action on climate change, as shown by our Regional Growth Strategy and Sustainability Strategy completed in 2010, and by the recent update to our Official Community Plan. We recognize our role in climate change mitigation and adaptation in our community and on the global scale. The rural areas include Unincorporated Areas A, B and C (Maps 1 and 2).

## Impetus for Action on Climate Change

The Earth's climate is determined by its ability to both trap and reflect heat from the sun and to circulate it through the atmosphere and the oceans. When this capacity is altered, the Earth's climate can change. The term "climate change" refers to a change in the average state of the climate. Annual climate data has shown noticeable temperature highs and lows, but over longer periods of time there has been a discernible warming trend across the globe.

The global average temperature over the first decade of the 21st century was significantly warmer than any preceding decade on record over the past 160 years. The overwhelming majority of scientists agree that this is due to rising concentrations of heat-trapping greenhouse gases in the atmosphere caused by human activities. The increase in these gases alter the Earth's ability to naturally regulate the climate.

The impacts of climate change are becoming more apparent. There is increased species migration, extreme weather events are increasingly common and severe, and sea level is expected to rise significantly in most coastal areas over the coming decades, to name a few. The scientific community has concluded that some climate change is inevitable even if action is taken to reduce greenhouse gas emissions.

The *Stern Review on the Economics of Climate Change* was released in 2006. The report stresses that the benefits of strong and early action on climate change (i.e.: mitigation efforts) far outweigh the economic costs of inaction. The Review estimates that if action is not taken, base climate change costs and risks will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, damage estimates could rise to 20% of GDP or more. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year.

For all these reasons and more, it is important that the Comox Valley take climate change mitigation actions (e.g.: conserving energy and reducing greenhouse gas emissions) and adaptation actions (e.g.: agricultural and infrastructure preparedness) to lessen and be prepared for expected climate change impacts.

## CVRD Rural Areas Background

### Local context

The Comox Valley Regional District (CVRD) comprises three electoral areas and three municipalities providing sustainable services for residents and visitors to the area. The members of the regional district work collaboratively on services for the benefit of the diverse urban and rural areas of the Comox Valley.

The geography of the CVRD includes rural agricultural, vibrant urban, meandering coastline and dramatic mountains. It covers an area of 2,425 square kilometres, of which 1,725 square kilometres is made up of land (the remainder is water), and serves a population of 63,538 according to the 2011 Census.

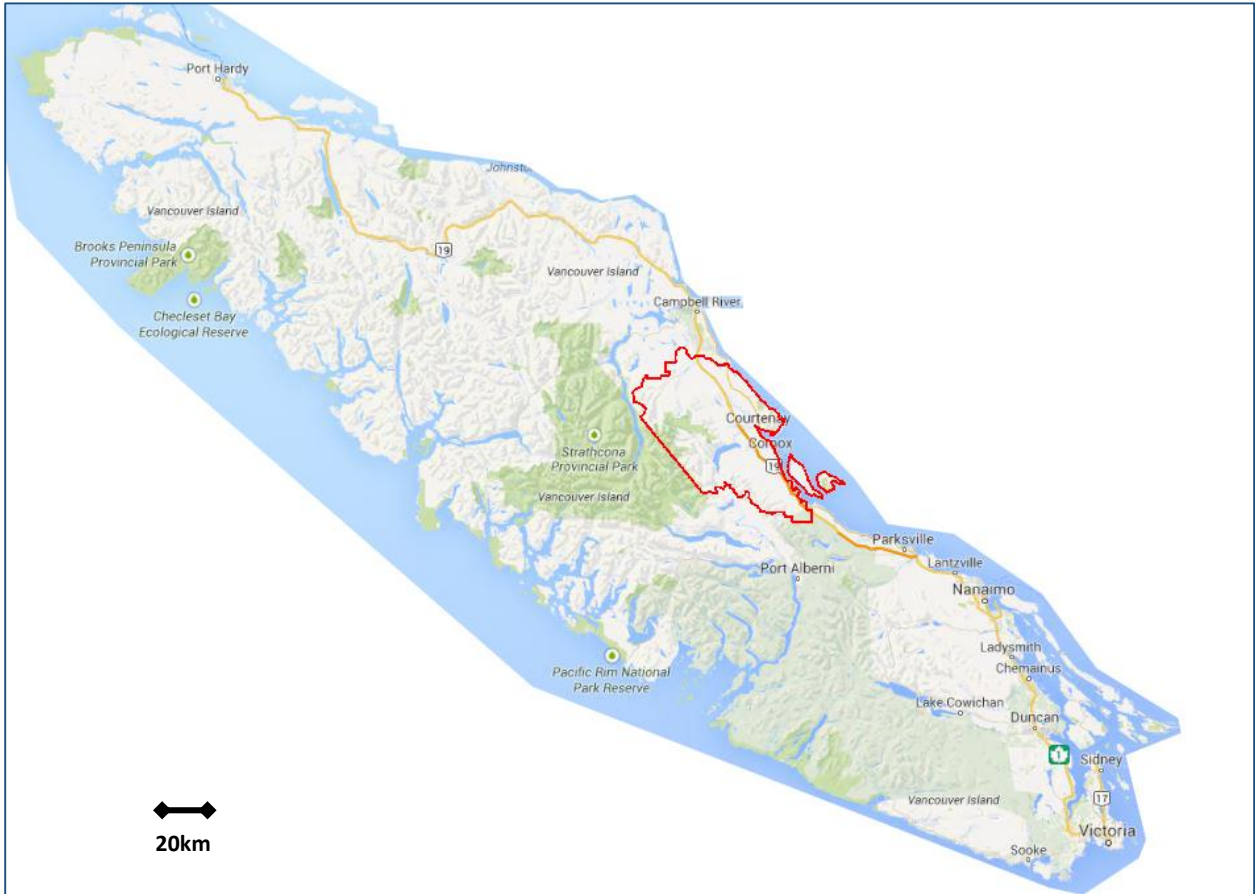
CVRD's borders extend from Cook Creek in the south to the Oyster River in the north, west to Strathcona Park, and east to take in Denman and Hornby Islands (Maps 1 and 2).

The CVRD was established in February 2008, following the restructuring of the Comox Strathcona Regional District into two: Comox Valley Regional District and the Strathcona Regional District. The boundaries of the Comox-Strathcona Regional Hospital District (CSRHD) are the same as those two combined regional districts and have the same board of directors as the CVRD and SRD combined.

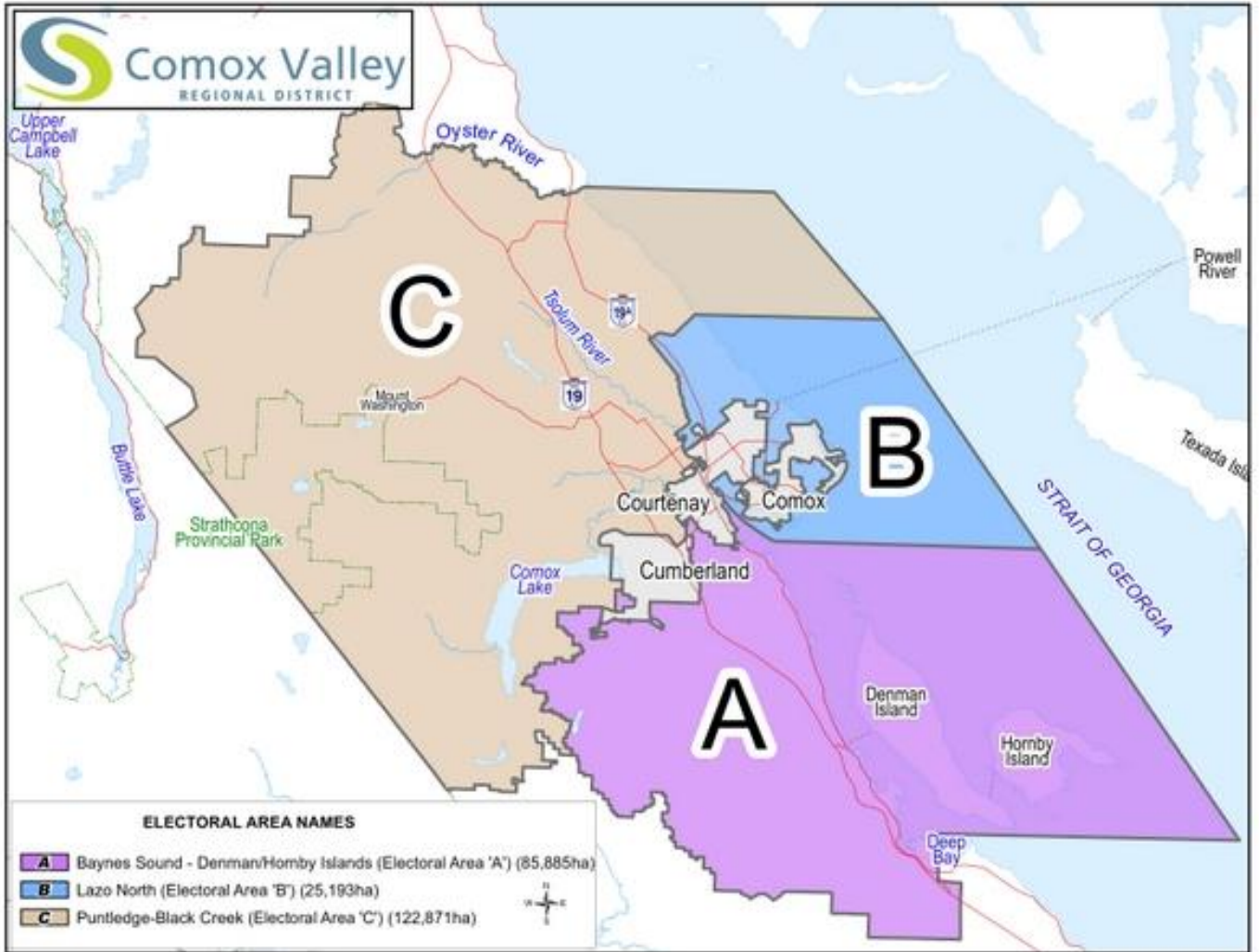
The CVRD rural areas include everything inside the CVRD boundary on Vancouver Island, excluding the K'ómoks First Nation reserve lands, Town of Comox, City of Courtenay and Village of Cumberland. This Climate Change Action Plan applies to these rural areas only. The current population of the Rural Areas is 22,163 (BC Stats).

The CVRD Rural Areas are expected to experience very little population growth, as almost all growth in the CVRD is being focused in the urban centres and settlement nodes. The consistent population coincides with very little land-use changes or housing development.

**Map 1: Vancouver Island**  
CVRD indicated by red boundary.



Map 2: CVRD



## Energy and Emissions in the CVRD

### CEEI Data

British Columbia's Community Energy and Emissions Inventory (CEEI) collects data from GHG source sectors such as utilities, public agencies and other trusted partners, in order to calculate the size of each sector's carbon footprint in each local government jurisdiction across B.C. Additionally, the CEEI monitors supporting indicators from core sectors and other sources to help track the progress of local government efforts to reduce GHG emissions across their communities. The data represents energy consumption and greenhouse gas emissions from community activities in on-road transportation, buildings and solid waste. The CEEI data effectively achieves the requirements of PCP Milestone 2 for all BC communities.

The energy and emissions profile for the CVRD Rural Areas is depicted in the information in Appendix A: 2010 Community Energy and Emissions Inventory. The CEEI covers energy use and emissions resulting from transportation, building energy and solid waste activities. Highlights of this information include:

- The CVRD Rural Areas consumed 2,340,068 GJ of energy in 2010 and produced 109,540 tCO<sub>2</sub>e.
- Buildings were responsible for 27% of emissions, transportation for 58% and solid waste for 15%.
- Gasoline consumption is responsible for 53% of emissions from all fuel sources.
- Residential heating oil is responsible for 50% of all building emissions.
- Trucks, vans and SUVs are responsible for 48% of vehicle emissions.
- Commercial vehicles are responsible for 18% of vehicle emissions.
- Between 2007 and 2010 overall vehicle emissions increased by almost 2,500 tCO<sub>2</sub>e. This is largely due to an increase in light trucks, vans and SUVs, as well as an increase in commercial vehicle traffic.
- Between 2007 and 2010 overall building energy use decreased by over 32,000 GJ. Building emissions decreased by 1,416 tCO<sub>2</sub>e.
- 1,284 tonnes more waste was produced in 2010 than 2007, resulting in 1,432 additional tCO<sub>2</sub>e.

### CVRD Rural Areas Energy and Emissions Predictions

Outside of the settlement nodes, population and land-use in the CVRD Rural Areas is projected to be somewhat similar decades from now as it is today. In a business as usual scenario, the energy consumption and GHG emissions production of the area would be similar to what they are currently (i.e.: as those documented in Appendix A). Some reductions are expected as a result of three factors universal to BC communities:

1. Increased fuel efficiency standards in automobiles;
2. Lower carbon content of fuels mandated by provincial and federal authorities; and
3. Increasing energy efficiency requirements in the BC building code.

These universal reductions will be helpful but do not reduce the responsibility of the CVRD and its residents to take a proactive approach to energy use and emissions production and will be insufficient in achieving the CVRD energy and emissions targets set out in the Sustainability Strategy and Regional Growth Strategy.

## CVRD Rural Areas Energy Options

Given the low projected population growth for the foreseeable future, energy efficiency requirements in new housing will be of limited assistance in meeting targets in the rural areas outside of the settlement nodes. With low growth in these rural areas, the CVRD will largely depend on urban area policies and actions to achieve its GHG reduction goals. For the rural areas, emissions reductions will require different approaches.

Key among these will be energy and water efficiency measures and renewable energy production. The Canadian Wind Energy Atlas indicates that average wind speeds in Comox Valley are less than 20km/hr.<sup>1</sup> A 2000 BC Hydro province-wide wind power study also determined Comox Valley to have poor to fair wind speeds (<20km/hr).<sup>2</sup> The highest wind speeds are in the mountainous regions in the western part of CVRD. Typical wind farm-scale wind turbines activate at minimum wind speeds of 13km/hr, and operate optimally above 28km/hr.<sup>3</sup> The wind speeds in the CVRD are generally too low for any sizeable wind farm operation or small-scale residential installations, although there may be some exceptions along the coast or higher up in the mountains.

Solar power shows some promise in the CVRD with an average photovoltaic (PV) potential of 1100kWh/kW (kilowatt hours per kilowatt of installed PV solar panels).<sup>4</sup> The solar conditions in the valley are suitable for solar PV and solar hot water installations. The CVRD operates four solar PV installations in the rural areas, and data from the first full year of use has verified the Comox Valley's PV potential.

CEEI data for the rural areas of the CVRD indicates a large proportion of rural building emissions are attributed to home heating oil. Program options that offer lower emissions alternatives to home heating oil could assist with reducing GHG emissions in the rural building sector.

---

<sup>1</sup> Canadian Wind Energy Atlas for Vancouver Island: [www.windatlas.ca/en/nav.php?field=EU&height=50&season=ANU&no=55](http://www.windatlas.ca/en/nav.php?field=EU&height=50&season=ANU&no=55)

<sup>2</sup> BC Hydro British Columbia Predicted Wind Speed Map:

[www.bchydro.com/content/dam/hydro/medialib/internet/documents/environment/pdf/environment\\_wind\\_energy\\_resource\\_map\\_pdf.pdf](http://www.bchydro.com/content/dam/hydro/medialib/internet/documents/environment/pdf/environment_wind_energy_resource_map_pdf.pdf)

<sup>3</sup> Wind power information can be found on the Canadian Wind Energy Association website (CanWEA): [www.canwea.ca](http://www.canwea.ca)

<sup>4</sup> Natural Resources Canada PV potential and insolation mapping: <http://pv.nrcan.gc.ca>

## CVRD Rural Areas Climate Change Policy Direction

CVRD has two provincial policy obligations related to addressing climate change. The first is the BC Climate Action Charter, to which CVRD is a signatory. It commits municipalities to three actions:

1. Being carbon neutral with respect to operations by 2012;
2. Measuring and reporting on community GHG emissions; and
3. Creating complete, compact, more energy efficient rural and urban communities.

The second requirement comes from the provincially-legislated Green Communities Act (Bill 27). In May 2008 this act amended the Local Government Act and Community Charter to include legal obligations to include GHG targets, and actions and policies for achieving those targets, in Official Community Plans (OCPs) by 2010. New powers are also assigned to municipalities to support mechanisms to reduce energy, personal vehicle trips and water consumption.

As part of the provincial Climate Action Revenue Incentive Program (CARIP), the CVRD publicly reports annually on its climate action plans and progress towards meeting the goals, objectives and targets that have been adopted.

The CVRD has made a strong commitment to climate action, including joining the Partners for Climate Protection program in 2006 and adopting a Climate Change Toolkit in 2008. In 2009-2010 the Comox Valley Sustainability Strategy was completed and has adopted a long-term target of 80 percent reduction of GHG emissions from 2007 levels by 2050, with a mid-term target of 50 percent reduction by 2030. The Regional Growth Strategy has adopted the same GHG reduction target as the Comox Valley Sustainability Strategy. In March 2011 the CVRD Board approved a corporate energy plan with a target of reducing corporate emissions by 10% by 2015.

### Regional Growth Strategy Targets

The CVRD Regional Growth Strategy (RGS) sets direction on sustainability targets. Selected targets and their timelines are collected here.

#### Transportation

MEASURES	Baseline (2006)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
Increase transit mode share	1%	1.5%	2%	2.5%	BC Transit
Increase % of bicycle & pedestrian commuters	9%	10%	11%	20%	Census Canada

MEASURES	Baseline (2007)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
Reduce on-road transportation GHG emissions	199,311 CO2e(t)	20% Reduction	33% Reduction	50% Reduction	CEEI



## Water Conservation

MEASURES	Baseline (2008)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
Reduce daily total water consumption per capita	500-600 litres	20% reduction	30% reduction	40% reduction	CVRD water services

## Waste

MEASURES	Baseline (2010)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
Increase solid waste diversion rate	48%	55%	65%	75%	CVRD
Reduce solid waste GHG emissions	61,605 CO2e(t)	20% Reduction	33% Reduction	50% Reduction	CEEI

## Local Food Production

MEASURES	Baseline (2010)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
No net loss of zoned farmland in the ALR	23,059 hectares	= or > 23,059 hectares	= or > 23,059 hectares	= or > 23,059 hectares	Agricultural Land Commission, Local governments

## Buildings

MEASURES	Baseline (2007)	TARGETS			Data sources
		Short-term (2015)	Medium-term (2020)	Long-term (2030)	
Reduce building GHG Emissions	33,662 tonnes CO2e	20% Reduction	33% Reduction	50% Reduction	CEEI

## CVRD Sustainability Strategy Targets

The CVRD Sustainability Strategy designates high-level targets for the year 2050 in the areas of:

- Energy
  - -50% use per capita.
  - 50% of energy supplied by clean, renewable energy for new building energy demand.
- Water use (non-agricultural)
  - -50% per capita.
- Wastewater
  - 100% treated to tertiary or reuse standards.
- Ecosystems
  - 100% sensitive ecosystems and riparian areas conserved.
  - 70% degraded ecosystems are restored.
- Waste
  - 90% diversion rate.
  - All new landfills are designed to maximize methane capture and reuse.
  - All existing landfills are reviewed for viability of landfill gas capture and reuse by 2012.
- Local food
  - 60% of fruits and vegetables consumed are produced on Vancouver Island.
  - 100% of dairy consumed is produced locally.
  - 45% of protein products consumed are produced locally.
- Urban residents
  - 80% of CVRD residents.
- Transportation
  - 80% of residents live within a 400m walk of transit.
  - 100% of residents within 400 m of dedicated bicycle and pedestrian pathways.
  - 80% reduction in automobile related GHG emissions.
  - 24% mode share for private vehicles.
  - 30% small, low-speed mobility vehicles (total vehicle mode share: 54%).
  - 15% mode share for cycling.
  - 16% mode share walking.
  - 15% mode share for public transit.
- Jobs and school seats:
  - 80% located along major transit corridors and in designated employment centers.
- Housing
  - 60% of multi-family residential and attached in housing stock (units).
- Buildings
  - 95% of residential units built in 2008 or earlier have undertaken an energy retrofit or replacement to achieve a rating of EnerGuide 73 or above, or a 25% reduction in energy use.
- Infrastructure
  - 40% decrease in net energy intensity of infrastructure systems and equipment including water, wastewater, and street lighting, from 2008 levels.

In addition to these targets, the Sustainability Strategy details interim targets, usually for the years 2020 and 2030. The targets in the Sustainability Strategy and the Regional Growth Strategy are reflected in the policies and actions of the 2014 Rural Comox Valley Official Community Plan. These targets serve as sustainability performance measures and indicators.

## CVRD Rural Areas Simple Energy and Emissions Projections

A simple energy and emissions projection was performed using the open source land-use energy and emissions model GHGProof to estimate a business as usual (BAU) Scenario and a Scenario in which energy saving and emissions reduction actions were taken (S2). In keeping with the Sustainability Strategy, a target year of 2050 was set for Scenario 2. The targets in the Sustainability Strategy (SS) and Regional Growth Strategy (RGS) were used to guide the following assumptions for both scenarios:

	BAU	S2	In S2, by 2050...
<b>Population</b>	23,156	23,156	The population remains unchanged, as per rural OCP direction.
<b>Transportation</b>			
Trip length	6.3	6.3	Avg. trip length does not change.
Mode share			
Vehicle	92.0%	54.0%	Vehicle trips decline 38%. (SS target: 54% mode share)
Walk	4.0%	16.0%	Walking trips increase 12%. (SS target: 16% mode share)
Cycle	2.0%	15.0%	Bike trips increase 13%. (SS target: 15% mode share)
Public transit	2.0%	15.0%	Transit trips increase 13%. (SS target: 15% mode share)
Private transport fuel efficiency (km/l)	9.8	9.8	Fuel efficiency standards increase for both. (Federal standard)
Private transport fuel emissions factor (kg CO2e/l)	2.50	1.25	Fuel emissions factor decreases by half. (Due to electric vehicle uptake assumption)
Walking: # of dwellings <400m to CBD	4%	4%	# of dwellings close to CBD unchanged.
Cycling: # of dwellings <1000m to CBD	21%	21%	# of dwellings close to CBD unchanged.
Transit: # of dwellings <400m to transit stop	21%	24%	# of dwellings close to transit increases 15%. (SS and RGS targets of offering more transit stops and service)
Walking: Proportion of trips <400m to CBD	24%	27%	Walking trips to CBD increase 3%. (Related to SS mode share target)
Cycling: Proportion of trips <1000m to CBD	24%	27%	Cycling trips to CBD increase 3%. (Related to SS mode share target)
Transit: Proportion of trips <400m to transit stop	15%	17%	Transit trips increase 15%. (Related to SS mode share target)
Public transit fuel efficiency (km/l)	30.0	30.0	Transit fuel efficiency increases for both. (Federal/Provincial standard)
Public transit fuel emissions factor (kg CO2e/l)	1.92	1.92	Transit fuel emissions factor decreases for both. (Federal/Provincial standard)
Commercial transportation, annual fleet energy reduction	10%	10%	Energy reduction of 10% for both. (Federal/Provincial standard)

## Agriculture and forest

Area of local farms
Intensity of production (hectares/capita)
Percent of production locally consumed
Area of forest

BAU	S2	In S2, by 2050...
23,342	23,342	Farm area (ALR) stays the same.
0.58	0.80	Production intensity increases by 0.22ha/capita. (SS and RGS local food targets)
5%	60%	Locally produced goods that are locally consumed increases 55%. (SS and RGS local food targets)
15,015	15,015	Forest area remains unchanged.

## Buildings

Electricity emissions factor (kgCO <sub>2</sub> e/GJ)
Energy mix- residential
Electricity
Gas
Heating oil
Propane
Wood
Energy mix- commercial
Electricity
Dwelling mix
Single Detached
Attached
Apartment<5 storeys
Apartment> 5 storeys

BAU	S2	In S2, by 2050...
6.90	4.00	The electricity emissions factor decreases. (Related to SS target for renewable energy)
54%	79%	
4%	1%	Residential gas use decreases to 1%. (SS & RGS building & energy targets)
18%	1%	Residential heating oil use decreases to 1%. (SS & RGS building & energy targets)
3%	1%	Residential propane use decreases to 1%. (SS & RGS building & energy targets)
21%	16%	Residential wood heating use decreases 5%. (SS & RGS building & energy targets)
100%	100%	Commercial building energy mix is unchanged at 100% electricity supplied.
94%	94%	# of housing types remain unchanged.
5%	5%	# of housing types remain unchanged.
1%	1%	# of housing types remain unchanged.
0%	0%	# of housing types remain unchanged.

### Residential and Commercial Building Energy – all dwelling and building types

Energy reduction for new buildings
% of existing buildings upgraded
Energy savings in existing buildings
Solid Waste (production rate unchanged)
Solid waste diversion rate

25%	60%	New buildings are 35% more efficient. (SS & RGS building targets)
0%	80%	80% of current building stock is retrofitted. (SS & RGS building targets)
10%	50%	40% greater energy efficiency is achieved. (SS & RGS building targets)
58%	90%	Solid waste diversion increases by 32%. (SS target)

These assumptions result in a 24% GHG emissions reduction by 2020 and a 75% reduction by 2050 – close to the Sustainability Strategy’s 80% reduction goal.

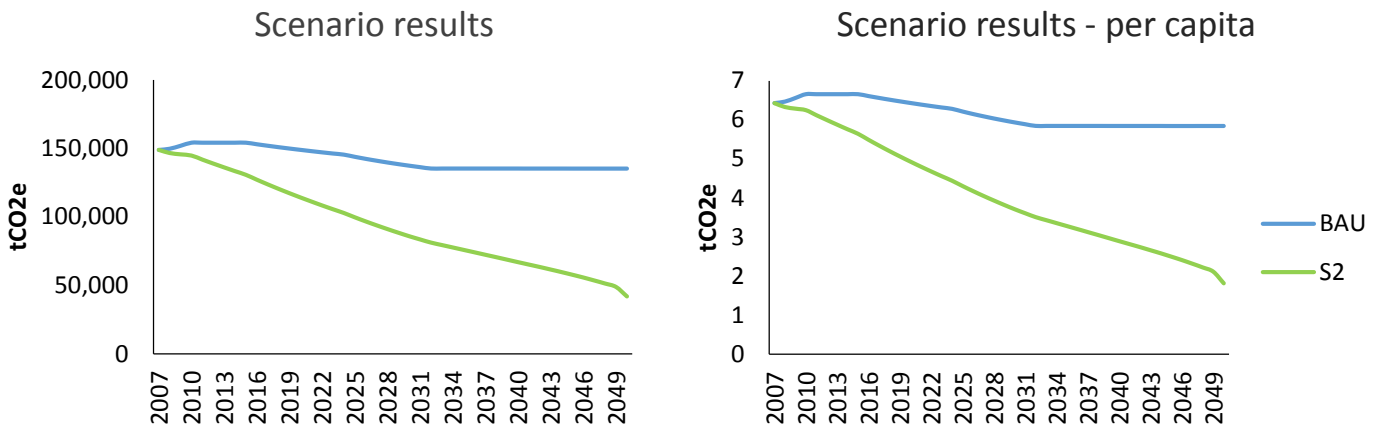


Figure 1: Emissions comparisons between a Business as Usual scenario and a scenario in which emissions reduction actions have been taken to meet CVRD’s energy and emissions targets (S2).

The modelling demonstrates that the Sustainability Strategy targets are ambitious. A variety of aggressive actions are required to achieve them, as presented in the Climate Change Action Plan on the following pages.

## Climate Change Action Plan

The CVRD Climate Change Action Plan (CCAP) serves as the action plan for the targets set out by the Regional Growth Strategy and the Sustainability Strategy, and refined in the OCP. The Action Plan is aligned with the CEEI data, with actions in three major categories: transportation, land-use and buildings, and solid waste. Although not currently included in the CEEI data, agricultural and forestry related actions recommendations have also been made. In support of these recommendations, financing recommendations have also been made. *This document should be treated as a living document, with information added as it becomes available, especially for costs and potential funding sources.*

### Transportation

Sustainability Strategy transportation targets for the year 2050:

- 80% of residents live within a 400m walk of transit.
- 100% of residents within 400 m of dedicated bicycle and pedestrian pathways.
- 80% reduction in automobile related GHG emissions.
- Modal split: 24% for private vehicles, 15% for cycling, 16% for walking, and 15% for public transit.

Regional Growth Strategy targets for the year 2030:

- Increase public transit use to 2.5% of transit mode share.
- Increase the percentage of bicycle and pedestrian commuters to 20%.
- Develop and maintain an inter-regional transportation system.

<b>1</b>	<b>Provide for holistic transportation planning within the CVRD in order to facilitate wide collaboration and stakeholder action.</b>			
<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Investigate feasibility of a trip diary survey in CVRD rural areas to provide baseline data on personal transportation patterns</li> <li>ii. Investigate rural taxibus transit system viability as part of the community bus service review</li> <li>iii. Continue and enhance the Alternative Transportation education program</li> <li>iv. Implement transportation demand management projects as identified in the Rural Comox Valley OCP, including service centres, public transit, carsharing, carpooling, active transportation, active and safe routes to school, cycling facilities, employer incentive programs</li> <li>v. Allocate existing staff resources to implementation of above programs</li> </ul>			<b>Timeline:</b> Short-term: 0-5 years
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Community Services. Planning and Development Services Integrated Transportation Advisory Committee?	Integrated Transportation Advisory Committee BC Transit MOTI ICBC Community organizations	TBD	FCM, Gas Tax	<b>Baseline:</b> Modal split. Transportation GHGs.  <b>Monitor:</b> Modal split. Transportation GHGs.

## 2

**Partner with local not-for-profits and businesses (bike retailers and car dealerships) in encouraging uptake of the BC Scrap-It program (a car trade-in program that provides alternative transportation incentives).**

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Establish partnerships with local community organizations, auto recyclers, car dealerships and bike shops.</li> <li>ii. Investigate feasibility of offering Comox Valley transit passes as an approved incentive.</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years		
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Community Services Public Affairs and Information Systems	Community organizations. Car dealerships. Bike Shops. BC Scrap-It.	\$15,000	N/A	<b>Baseline:</b> EV sales  <b>Monitor:</b> Trade-in instances

## 3

**Dedicate funding to alternative transportation planning, design, construction and maintenance, focusing on “service centres” and transit-integrated infrastructure.**

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Establish a CVRD service to fund construction, operation and maintenance of alternative transportation infrastructure, including greenways/bikeways, EV charging infrastructure and rural transit infrastructure.</li> <li>ii. Inventory current and planned expenditures on active transportation infrastructure.</li> <li>iii. Assess active transportation projects in the Regional Sustainability Strategy, Regional Growth Strategy, Rural Comox Valley OCP and CVRD Parks and Greenways Plan and allocate budget to priority projects. Include in future local area plans for settlement nodes of Saratoga Miracle Beach, Union Bay and Mt Washington.</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years		
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Community Services Financial Services. Engineering Services.	N/A	TBD	CVRD, MoTI BikeBC	<b>Baseline:</b> Active transportation infrastructure and maintenance budget.  <b>Monitor:</b> Change in active transportation infrastructure and maintenance budget.

# 4

## Promote electric vehicle charging stations in new and existing homes and install electric vehicle charging stations in rural “service centres”.

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Research and develop a policy to secure the installation of EV charging stations or ‘EV ready’ for new development, or recognize community EV charging station as a community amenity contribution during development application review.</li> <li>ii. Work with businesses and community groups in rural “service centres” (as identified in settlement node local area plans) to identify partnership opportunities for EV charging stations, and develop draft contract terms for EV charging station hosts. Alternatively, consider CVRD ownership of charging infrastructure.</li> <li>iii. Incentivize residential EV charging installations through bylaw amendments &amp; rebates.</li> <li>iv. Develop and promote an electric vehicle awareness event.</li> </ul>	<p><b>Timeline:</b> Short-term: 0-5 years</p>
-------------------	---	---

<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
<p>Planning and Development Services Community Services</p>	<p>Car dealerships. EV charging station companies. Fraser Basin Council. Plug in BC.</p>	<p>TBD, ~\$2,500 per charging station, \$2,500 for electric vehicle awareness event</p>	<p>CVRD, BC Hydro, developers, residents</p>	<p><b>Baseline:</b> Usage of existing EV charging stations. Number of EV charging stations - public and private. Fuel consumption baseline.</p> <p><b>Monitor:</b> Number of EVs. Percentage change in fuel consumption per capita. Percentage change in EV charging station usage. Number of charging stations.</p>



# 5

## Installation of cycling & pedestrian infrastructure, including Bikeways, Roadside & Off-Road Greenways, cycling storage and signage.

<b>Next Steps</b>	i. Install cycling network improvements as identified in item #3 ii. Identify and work with partners to install cycling storage facilities at rural “service centres” and other community hubs.			<b>Timeline:</b> Short-term: 0-5 years
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Engineering Services. Planning and Development Services.	Community organizations. MoTI.	Approximately \$18 million for 86km of 1.5m width (x2) cycling lanes	CVRD, MoTI	<b>Baseline:</b> Kilometres of trail. Number of facilities. Cycling modal split.  <b>Monitor:</b> Kilometres of trail. Number of facilities. Cycling modal split.

# 6

## Installation of rural transit infrastructure, including ‘park and ride’, ‘bike and ride’, and bus stop and shelter locations.

<b>Next Steps</b>	i. Identify ‘park and ride’ locations in “service centres” as part of local area planning process in settlement nodes, and determine ownership & operations model. ii. Per direction from Comox Valley Transit service analysis, identify rural bus stop locations, based on rural transit routes, residential housing densities & BC Transit rural bus stop guidelines.			<b>Timeline:</b> Short/medium-term: 0-10 years
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Community Services. Planning and Development Services. Engineering Services.	MoTI. BC Transit	\$500 per bus stop, \$10,000 per bus shelter	CVRD, MoTI, BC Transit	<b>Baseline:</b> Number of facilities. Transit modal split.  <b>Monitor:</b> Number of facilities. Transit modal split.

## Land-use, Buildings and Infrastructure

Sustainability Strategy targets for the year 2050:

- Energy
  - -50% use per capita.
  - 50% of energy supplied by clean, renewable energy for new building energy demand.
- Buildings
  - 95% of residences built before 2009 have undertaken energy retrofits or replacements to achieve a rating of EnerGuide 73 or above, or a 25% reduction in energy use.
- Infrastructure
  - 40% decrease in net energy intensity of infrastructure systems and equipment including water, wastewater, and street lighting, from 2008 levels.

Regional Growth Strategy targets for the year 2030:

- 90% of new housing units will be in core settlement areas.
- 40% water use reduction per capita.
- 90% of new growth is serviced by sanitary sewer.

**1**

**Continue the Home Energy Incentive Program and Green Building Education Program, and consider offering program incentives for water heater upgrades, energy efficient window replacements, heat pump retrofits, low flow toilets, insulation upgrades and solar photovoltaic and solar hot water energy systems, with the aim of retrofitting 2% of the building stock annually (~185 homes per year; ~75% of building stock by 2050).**

### Next Steps

- i. Investigate opportunities in home energy products, bulk purchasing and grant availability.
- ii. Partner with local organizations and utilities in the delivery of audit and retrofit programs.
- iii. Consider offering financing via a Green Revolving Loan financing mechanism, described below.
- vi. Review all building renovation permit applications for energy efficiency improvements

### Timeline:

Short-term: 0-5 years

### Lead & Support

Building Services.  
Planning and Development Services.  
Community Services.

### Partners

Community partners and financial organizations.  
BC Hydro.  
Fortis BC.  
Elemental Energy Advisors.  
Building Supply Retailors.

### Costs

\$100,000/year (185 homes/year at \$500/home)

### Potential Funding

Government, financial institution or other organization grants.  
CVRD.

### Monitoring Metric

#### Baseline:

Number of home energy upgrades to date.  
Number of homes.

#### Monitor:

Number of home energy upgrades.  
Grant funding.  
Number of energy system purchases.

**2 Periodically review the OCP and other bylaws and consider bylaw amendments that encourage GHG reductions**

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Create a development permit area for GHG reductions and water conservation, potentially focussed on Union Bay and Saratoga Beach settlement nodes</li> <li>ii. Research a renewable energy policy framework (e.g.: all new developments must generate 10% of their required energy on-site)</li> <li>iii. Develop zone in settlement node to offer additional density in return for community amenity contributions such as district energy</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years Medium-term: 5-10 years
-------------------	--	--

<b>Lead &amp; Support</b>  Planning and Development Services. Building Services. Engineering Services.	<b>Partners</b>  Developers	<b>Costs</b>  TBD	<b>Potential Funding</b>  CVRD.	<b>Monitoring Metric</b> <b>Baseline:</b> Are any of these policies in place?  <b>Monitor:</b> How many of these policies have been implemented?
--	-----------------------------------	-------------------------	---------------------------------------	---

**3 Review and update DP Guidelines, Zoning Bylaw, and other bylaws for flood risk, sea level rise (SLR), wildfire risk and extreme weather event risk. (climate change adaptation measure)**

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Develop Climate Change Resiliency Plan that includes projections on climate change impacts, including sea level rise, wildfire hazard &amp; extreme weather events such as intense rain and wind storms</li> <li>ii. Review fire hazard mapping and guidelines and consider land use implications</li> <li>iii. Review and update DP guidelines and zoning bylaws.</li> <li>iv. Consider climate-related drought requirements for new development including use of alternative sources of water (rainwater, greywater) to meet outdoor water demand and landscaping using drought-resistant native plants</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years
-------------------	--	---

<b>Lead &amp; Support</b>  Planning and Development Services	<b>Partners</b>  MOE	<b>Costs</b>	<b>Potential Funding</b>  CVRD	<b>Monitoring Metric</b>  Yes/No
--	----------------------------	--------------	--------------------------------------	--

# 4

Review and revise, if needed, CVRD subdivision and infrastructure standards to offset climate change impacts and reduce energy consumption in design, construction and maintenance including:

- i. Active transportation
- ii. Service levels and subdivision standards
- iii. Development Cost Charges
- iv. Green infrastructure standards including green roofs, open storm water channels, ecological wastewater treatment ponds, rain gardens and limiting total impervious area
- v. Landscaping standards including xeriscaping, planting of drought-tolerant varieties and species appropriate to local soils and adaptable to future climate
- vi. Energy efficient municipal infrastructure and utilities

## Next Steps

- i. Review associated plans and standards.
- ii. Research green infrastructure standards.
- iii. Ensure that standards align with updated policies and bylaws.
- iv. Amend CVRD engineering design, construction and operations RFP templates to include clauses relating to greenhouse gas reductions, district energy, integrated resource recovery, energy efficiency and climate change adaptation, and amend proposal ranking criteria to allocate points to proposals based on their merits in these criteria.

## Timeline:

Short-term: 0-5 years

## Lead & Support

Engineering Services.  
Planning and Development  
Services.  
Community Services.

## Partners

BC Transit.  
Local municipalities.  
Consultants.

## Costs

N/A

## Potential Funding

ICBC, MoTI

## Monitoring Metric

### Baseline:

Current infrastructure elements.

### Monitor:

Change in infrastructure elements, effectiveness of sustainable infrastructure elements.

<b>5</b>	<b>Establish an incentive of achieving Passive House design standard for new homes and major renovations.</b>
----------	---

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Review effectiveness and lessons learned from similar policy implementation in other jurisdictions.</li> <li>ii. Revise bylaws per updated BC Building Act.</li> <li>iii. Offer prioritized application review and reduced application fees for new homes and major renovations engineered to Passive House design standard.</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years
-------------------	---	---

<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Building Services. Engineering Services. Planning and Development Services.	Developers. Community organizations.	N/A	N/A	<b>Baseline:</b> Number of developments achieving a green building standard.  <b>Monitor:</b> Number of developments registered for the adopted green building standard.

<b>6</b>	<b>Continue to implement the Water Efficiency Plan for rural homes connected to municipal water systems.</b>
----------	--

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Monitor effectiveness of the Water Efficiency Plan and modify approach where necessary (ie identify and pursue partnering opportunities for water-efficient appliance incentives, require rezoning applications to include rainwater and/or greywater re-use).</li> <li>ii. Include linkages to Water Efficiency Plan during Local Area Plan development</li> </ul>	<b>Timeline:</b> Short-term: 0-5 years
-------------------	---	---

<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Community Parks. Building Services. Community Services.	Developers. School districts. Landscape companies. Resident/Community Associations. Building Supply Retailors.	N/A	N/A BC Hydro	<b>Baseline:</b> Water use per capita.  <b>Monitor:</b> Change in water use per capita.

7

**Develop a Community Energy and Emissions Plan with program implementation details and costing components.**

**Next Steps**

i. Sign up for BC Hydro’s Community Energy and Emissions Plan Quickstart program (<https://www.bchydro.com/powersmart/business/programs/sustainable-communities/ceep/quickstart.html>)

**Timeline:**

Short-term: 0-5 years

**Lead & Support**

Community Services.

**Partners**

BC Hydro

**Costs**

N/A

**Potential Funding**

BC Hydro

**Monitoring Metric**

Yes/No

## Waste

Sustainability Strategy targets for the year 2050:

- 90% diversion rate.
- All new landfills are designed to maximize methane capture and reuse.
- All existing landfills are reviewed for viability of landfill gas capture and reuse by 2012.
- 100% wastewater treated to tertiary or reuse standards.

Regional Growth Strategy targets for the year 2030:

- 75% solid waste diversion rate.

<b>1 Reduce GHG emissions associated with landfilling of organic waste by offering organics diversion options for rural CVRD residents.</b>				
<b>Next Steps</b>	i. Estimate the amount of organic matter currently going to landfill. ii. Estimate the costs and benefits of a landfill organics collection service. iii. Investigate the costs and uptake of offering subsidized backyard composters. iv. Investigate offering curbside organics collection in the Royston service area			<b>Timeline:</b> Short term: 0-5 years
<b>Lead &amp; Support</b>  Community Services. Engineering Services (CSWM)	<b>Partners</b>  Compost education centres. Community organizations.	<b>Costs</b>  TBD	<b>Potential Funding</b>  TBD	<b>Monitoring Metric</b>  <b>Baseline:</b> Landfill tonnage.  <b>Monitor:</b> Landfill tonnage. Backyard composters purchased.

## 2

### Continue to implement the recommendations of the Integrated Resource Recovery Options for the Comox Valley Regional District report.

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Estimate integrated resource recovery project options for anticipated developments, including district energy and reclaimed water.</li> <li>ii. Continue to investigate opportunities for energy production through methane capture from landfills, cow manure and organic waste.</li> <li>iii. Investigate integrated resource recovery options for CVRD infrastructure during maintenance and upgrade planning, with a focus on micro hydro and waste heat utilization options.</li> </ul>	<b>Timeline:</b> Short-medium-term: 0-10 years.		
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Solid Waste Services. Sewer Services. Water Services.	BC Hydro. Fortis BC. Farmers.	TBD	N/A	Yes/No

## 3

### Plan for tertiary wastewater treatment upgrades, beginning with the outputs from the South Sewer Project.

<b>Next Steps</b>	<ul style="list-style-type: none"> <li>i. Use the information gathered and the implementation plan created as a result of the South Sewer Project process to inform a plan for future tertiary wastewater treatment upgrades and options for a reclaimed water distribution system.</li> </ul>	<b>Timeline:</b> Medium-long-term: 10-15 years.		
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Sewer Services. Water Services.	N/A	TBD	N/A	Yes/No



## Agriculture

Sustainability Strategy targets for the year 2050:

- 60% of fruits and vegetables consumed are produced on Vancouver Island.
- 100% of dairy consumed is produced locally.
- 45% of protein products consumed are produced locally.

Regional Growth Strategy targets for the year 2030:

- No net loss of zoned farmland in the ALR, equal to or greater than 23,059 hectares
- No net loss of aquaculture farm tenure, 470 hectares
- Improve farm access to irrigation water by 25%
- Increase farming activity to \$55,000,000 in farm receipts and to 9,071,847kg shellfish production.
- Raise awareness of the regional importance of the local food system

<b>1</b>	<b>Monitor efforts to enhance sustainable agricultural activities in the Comox Valley and facilitate where needed.</b>			
<b>Next Steps</b>	<p>i. Perform an inventory of existing and planned agricultural efforts by the CVRD, community groups, and local and regional farming organizations.</p> <p>ii. Engage the Agricultural Planning and Advisory Committee on sustainable agricultural efforts and coordination.</p> <p>iii. Monitor the uptake and successes of application of the Environmental Farm Plan.</p> <p>iv. Consider supporting farmers in on-site water storage and methane gas capture from dairy cow manure programs.</p> <p>v. Consider establishing an agricultural development centre - an entity that trains farmers, makes farmland available and produces and sells local food.</p> <p>vi. Coordinate with MOA to keep the agricultural land use inventory up to date.</p> <p>vii. Perform an agricultural processing services and facilities assessment with the intent of improving the opportunity, quality and quantity of local value-added food products.</p>			<p><b>Timeline:</b> Short-mid-term: 0-10 years.</p>
<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Planning and Development Services. Public Affairs and Information Systems.	Farmers. Ministry of Agriculture.	TBC	Investment Agriculture Foundation.	Yes/No

**1 Establish a Green Revolving Loan Fund**

<b>Next Steps</b>	i. Review Federation of Municipalities guidelines on establishing a Green Revolving Loan Fund. ii. Investigate the funding mechanisms to seed the fund (e.g.: property taxes, North Cowichan example)	<b>Timeline:</b> Short-term: 0-5 years
-------------------	--	---

<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Finances. Transit and Sustainability Services.	Business development organizations. Community organizations. Community Futures.	N/A	N/A	Yes/No  Number of grants awarded. Number of projects completed.

**2 Establish the CVRD Community Carbon Marketplace, as per the recommendations of Cowichan Energy Alternatives Society.**

<b>Next Steps</b>	i. Work with Cowichan Energy Alternatives and local partners to establish the marketplace. ii. Offer preliminary assessments to potential projects to determine their feasibility.	<b>Timeline:</b> Short-term: 0-5 years
-------------------	---	---

<b>Lead &amp; Support</b>	<b>Partners</b>	<b>Costs</b>	<b>Potential Funding</b>	<b>Monitoring Metric</b>
Finances. Transit and Sustainability Services.	Cowichan Energy Alternatives. Business development organizations. Community organizations.	TBD	TBD	Yes/No

## Conclusions

Through this suite of actions, the CVRD will pursue its sustainability targets. Full greenhouse gas and energy modelling will be done in the near future for community-side energy use and emissions production. The modelling will add rigour to the existing Community Energy and Emissions Inventory data by using actual data wherever available and adding energy and emissions considerations such as forestry, agricultural and liquid waste carbon sinks and sources. The modelling will more accurately determine the energy and emissions effects of the sustainability actions recommended.

Staff time and Regional District capital resources will be used to implement many of these actions. The CVRD has already approved budgets and begun work on several items, as described in Appendix B. The CVRD has also already completed a Corporate Energy Action Plan (2011) to address corporate-side energy and emissions.

## References

### **Regional Growth Strategy (2010)**

<http://www.comoxvalleyrd.ca/EN/main/community/regional-strategies/regional-growth-strategy.html>

### **Regional Growth Strategy 2012 Progress Report**

<http://www.comoxvalleyrd.ca/EN/main/community/regional-strategies/regional-growth-strategy/annual-report.html>

### **Sustainability Framework (2010)**

<http://www.comoxvalleyrd.ca/EN/main/community/regional-strategies/sustainability-strategy.html>

### **2014 Official Community Plan**

[http://www.comoxvalleyrd.ca/assets/Department/Documents/20150114\\_337\\_Rural\\_CV\\_OCP\\_Schedule\\_A.pdf](http://www.comoxvalleyrd.ca/assets/Department/Documents/20150114_337_Rural_CV_OCP_Schedule_A.pdf)

## Appendix A: CVRD CEEI Data

[http://www2.gov.bc.ca/assets/gov/environment/climate-change/reports-and-data/community-energy-and-emissions-inventory-ceei/2010-ceei-reports/ceei\\_2010\\_comox\\_valley\\_regional\\_district\\_uninc.pdf](http://www2.gov.bc.ca/assets/gov/environment/climate-change/reports-and-data/community-energy-and-emissions-inventory-ceei/2010-ceei-reports/ceei_2010_comox_valley_regional_district_uninc.pdf)