

# A SUSTAINABLE BUSINESS CASE



**Regional District of  
Central Okanagan**

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## Authority Signatures

*This section contains the signatures of key stakeholders, indicating that they agree with the presentation or proposal as it appears in the business case.*

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*Full name* \_\_\_\_\_ *Date* \_\_\_\_\_

*Executive Sponsor*

*Position, client organization*

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*Full name* \_\_\_\_\_ *Date* \_\_\_\_\_

*Project Sponsor*

*Position, client organization*

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*Project Manager*

*Position, client organization*

## Executive Summary

Climate change is becoming the new normal, increasing wildfires, floods, and even drought in various parts of Okanagan. These challenges have overwhelmed local infrastructure, caused economic losses and posed health concerns within communities. We can expect hotter and longer summers and shorter and warmer winters if we continue on this path<sup>1</sup>. This scenario not only affects humans but completely disrupts the natural ecosystems. Canada is one of the largest per-capita producers of greenhouse gases<sup>2</sup>, mainly because of our inefficient energy management methods. Fortunately, there are ways to increase energy efficiency and address climate change with many environmental, health and economic benefits. In the RDCO's case, GHG reduction can be managed on two levels, observed and anticipated. Various adaption measures can be undertaken to tackle climate change challenges both on the corporate and the community level, investments in education programs, community outreach related to waste management, energy conservation and constructing energy-efficient homes.

How much adaptation might cost and how significant its benefits might be, are increasingly relevant issues both for on-the-ground projects and in a global context where trade-offs need to be considered between the costs of climate policies and the residual damages resulting from climate change. This document will analyze various cost streams and direct-indirect benefits for the solutions identified to control and potentially reduce GHG emissions. It also moves the discussion beyond cost estimation to examining the market and regulatory mechanisms that can be used to incentivize adaptation actions. Such mechanisms have so far received little attention in the context of adaptation.

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<sup>1</sup> [https://www.regionaldistrict.com/media/279459/OK\\_Climate\\_Projections\\_Report\\_Final.pdf](https://www.regionaldistrict.com/media/279459/OK_Climate_Projections_Report_Final.pdf)

<sup>2</sup> <https://ourworldindata.org/per-capita-co2>

## Phase 1: The Strategic Context

### 1 Business Needs and Desired Outcomes

The Regional District of Central Okanagan (RDCO) is a signatory of the BC climate action charter and is committed to reducing greenhouse gas emissions (GHG). The RDCO has a huge potential for implementing energy-efficient programs (community and corporate). The region also has a great geographical advantage in having creative energy generation solutions (Solar, Wind, geothermal, etc.).

In alignment with the 2019-2023 Regional Board Strategic Plan and the RDCO Regional Growth Strategy, RDCO staff have identified various projects and funding streams to reduce emissions. The RDCO's recent partnership with Fortis BC under the Climate Action Partner Program has led to hiring a Senior Energy Specialist. The Energy Specialist will help the RDCO achieve a reduction of GHG emissions.

This document will focus on the following community and corporate emission reduction and energy conservation projects.

1. Developing a Corporate GHG reduction strategy
2. Developing Community energy and emissions plan (CEEP)
3. Implementing BC energy step code
4. Identifying and quantifying various waste streams in the region
5. Community engagement in terms of Fortis's rebates/ C&EM programs
6. Identifying RNG growth opportunities based on a biomass study

Integrating these measures with the regional growth strategy and strategic plan will strengthen local economies, reduce current and future energy costs, mitigate the adverse effect on the environment, and create jobs by investing in integrated approaches to energy used at regional and individual communities.

## 1.1 Strategic Environment

### 1.1.1 Organizational Overview

The Regional District of Central Okanagan (RDCO) includes the two unincorporated Electoral Areas of Central Okanagan East and Central Okanagan West and the member municipalities of the City of Kelowna, the District of Lake Country, the District of Peachland and the City of West Kelowna. The Regional District Board of Directors includes 13 elected and appointed representatives from the Electoral Areas and member municipalities. In addition, Westbank First Nation Council appoints a non-voting representative.

The RDCO is located in the picturesque Okanagan Valley in British Columbia's Southern Interior. The RDCO covers over 314,000 hectares that straddle the shoreline of Okanagan Lake. Over 194,000 people call the region home, making it the third-largest urban area in the province. The region is diverse, including thriving urban centres and vibrant rural communities nestled between orchards, vineyards and agricultural lands. Set against the backdrop of surrounding mountains and the pristine Okanagan Lake, this alluring geography attracts over 1.9 million visitors annually and is a popular destination for a wide range of businesses. As a form of local government unique to BC, the Regional District provides recreation, community park facilities, fire protection and garbage collection to homes and businesses located within the Electoral Areas. The RDCO is also responsible for a wide range of regional services such as 9-1-1, dog control, parks and waste reduction for both the Electoral Areas and the member municipalities. In addition, the RDCO provides wastewater treatment services for the City of West Kelowna, District of Peachland and Westbank First Nation.

The 2019-2022 Strategic Priorities document outlines our mission, vision, strategic priorities, implementation and progress measurement, including key actions required over the next four years.

**Mission** - The RDCO brings together member municipalities and Electoral Areas to plan for the future by identifying shared needs and opportunities and delivering cost-effective services.

**Vision** - The RDCO is a vibrant and resilient region characterized by interconnected urban centres, robust rural communities and a stunning natural environment. Member municipalities and Electoral Areas work together to address shared needs and pursue joint opportunities in a spirit

of respect and collaboration. The Syilx/Okanagan people are true partners, helping interpret the past, shaping the present, and defining a shared future. Citizens across the region are engaged in governance and invested in efforts taken to strengthen the broader community.

**Strategic Priorities** - RDCO's strategic priorities, developed by the Regional Board, speak to essential goals, services and needs on which the board wishes to focus the organization's attention and resources.

- 1. Transportation & Mobility** - Promoting transportation and land use approaches that enhance movement throughout the region and reduce our collective reliance on vehicles.
- 2. Sustainable Communities** - Initiating and supporting efforts to create a healthy built environment where all people throughout the region enjoy a high quality of life with access to safe neighbourhoods, including diverse housing options.
- 3. Economic Development** - Supporting economic development through the Central Okanagan Economic Development Commission, municipalities, Syilx/ Okanagan people, and others to build the regional economy.
- 4. Environment** - Initiating and supporting efforts to reduce our environmental footprint, adapt to climate change and connect with nature.

*(Back row, left to right)*

Luke Stack, James Baker, Cindy Fortin, Colin Basran, Tom Konek, Stephen Johnston, Brad Sieben, Wayne Carson, Gord Milsom

*(Front row, left to right)*

Charlie Hodge, Loyal Wooldridge, Gail Given, Maxine DeHart, Mark Bartyik



**Values –**

<b>Relationships</b>	We build strong relationships with our member municipalities, the syilx/Okanagan people and partners.
<b>Collaboration</b>	We seek opportunities to partner with others in addressing shared needs and pursuing common interests.
<b>Regional Perspective</b>	We recognize the broader regional community and the importance of a regional perspective in planning and service delivery.
<b>Transparency</b>	We are open and transparent in our decision-making and actions.
<b>Resiliency</b>	We anticipate, prepare for and adapt to challenges and changing circumstances.
<b>Good Governance</b>	We develop practical and innovative solutions based on evidence and analysis.

Its member jurisdictions determine a regional district’s primary role. Regional districts act only in response to the expressed needs, interests and instructions of their members and address issues that cross political boundaries. Regional districts serve three primary roles, with the relative importance of each role varying from region to region:

- To serve as the local government for their unincorporated (electoral) areas;



- To provide services to, and on behalf of, different combinations of member municipalities and electoral areas; and,
- To provide services to, and on behalf of, their entire regions (i.e., all member jurisdictions)

Refer to [Appendix A](#) for the detailed organizational structure of RDCO.

### 1.1.2 Business Need

Ensuring sustainable growth aligned with environmental, social and governance (ESG) metrics. And managing the roadmap towards a net-zero emissions community by ensuring compliance for Regional strategic priorities (2019-2022), Regional growth strategy and provincial GHG reduction targets. The need is to focus on environment, economic development, sustainable communities, transportation and mobility.

### 1.1.3 Drivers for Change

*‘Drivers’ are anthropogenic inertial forces – social, economic, ecological, technological, and political. They are inertial forces because they have their own rules of motion, and reversing them will require time and effort. (Tariq Banuri)*

In the case of the RDCO, the main drivers for change are population growth, Urbanization, Economic development, technology, climate change and commitment of political authorities.

**Population** – The Okanagan region is estimated to house more than 60,000 new residents by the year 2030. And it is likely to peak higher as the increase in migrants and refugees, due to heightened conflicts and environmental degradation in underdeveloped or developing nations<sup>3</sup>.

**Urbanization** – Real estate is booming throughout the region. New migrants face barriers as to the cost to live in more favoured regions as Vancouver is statistically high. So, they are moving to

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<sup>3</sup> [https://www.investkelowna.com/application/files/7715/3815/6564/2018\\_Central\\_Okanagan\\_Economic\\_Profile\\_-\\_RSPDF.pdf](https://www.investkelowna.com/application/files/7715/3815/6564/2018_Central_Okanagan_Economic_Profile_-_RSPDF.pdf)

areas like Okanagan to afford a house<sup>4</sup>. It has created a high demand for effective land management in the [region](#).

**Economic Development** – The global economy is coming through a slow recovery<sup>5</sup> after the Covid-19 pandemic. Global economic concerns include debt crisis, income inequality, and emerging insatiability due to trade wars. Offsetting factors include the increasing role and contribution of emerging economies and adopting the [Sustainable Development Goals](#) (SDGs) as a new global aspiration and orientation for development. The COEDC<sup>6</sup> priorities of RDCO identifies developing a skilled resource pool to cater to the growing business environment.



**Technology** - The environmental crisis is creating new incentives for countries and businesses to resort to environmentally friendly solutions. It includes technological advances in renewable

<sup>4</sup> <https://www.mortgagesandbox.com/okanagan-real-estate-forecast>

<sup>5</sup> <https://www.reuters.com/business/global-economy-stage-vigorous-recovery-jobs-growth-lag-2021-04-23/#:~:text=The%20global%20economy%20will%20recover,polls%20of%20over%20500%20economists.&text=%22A%20synchronised%20global%20economic%20recovery,continuing%20battle%20against%20COVID%2D19.>

<sup>6</sup> <https://notlux.com/2020/05/29/living-in-the-okanagan-valley-canada-what-its-like/#:~:text=The%20Okanagan%20is%20a%20large,advantage%20of%20the%20job%20market.>

energy, energy efficiency, energy storage, and waste-to-energy options. These advances are supporting the move from conventional energy practices towards more creative energy portfolios.

### **Climate Change –**

*‘The warming of the climate system is unequivocal, as evidenced by observations of increases in global temperatures, widespread melting of snow and ice and rising sea level.’ Human influence on the climate system is clear, and that ‘many aspects of climate change and associated impacts will continue for centuries, even if anthropogenic emissions of greenhouse gases are stopped’*  
*([Tariq Banuri](#)).*

The Climate Projections Report for the Okanagan, published in 2020, clearly identifies that summer and winter will be warmer and maximum temperatures in the region can reach 44°C by 2050.

**Commitment from stakeholders** – RDCO’s strategic plan (2019-2022) outlays the commitment of all board members representing various stakeholders. Their interest and availability of funds are vital drivers of the local green economy, and they have a direct bearing on the proper implementation of environmentally friendly, economically viable and resource-efficient initiatives. Non-governmental organizations are also fundamental drivers (Fortis BC, BC hydro, etc.) of the green economy as they often focus on climate change, ecological agriculture, natural resource management, etc.

### **1.1.4 Business Outcomes**

The RDCO being part of the 2007 BC climate action charter,<sup>7</sup> is striving to align with the provincial goals (CleanBC) of achieving 40% GHG reduction by 2030 and 80% reduction by 2050. By pursuing

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<sup>7</sup> <https://www2.gov.bc.ca/gov/content/governments/local-governments/climate-action/bc-climate-action-charter#:~:text=Under%20the%20Charter%2C%20local%20government,compact%2C%20more%20energy%20efficient%20communities>

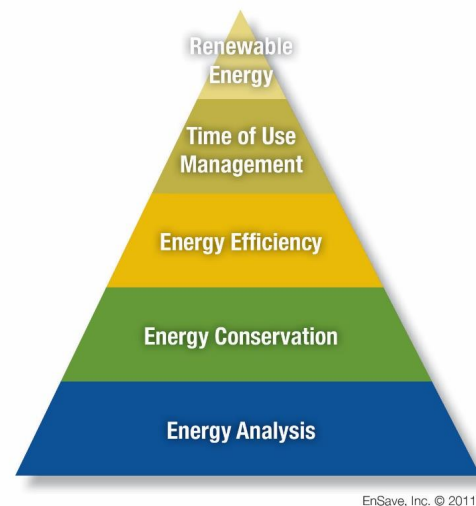
the green economy roadmap, RDCO will create new revenue streams and employment opportunities<sup>8</sup>.

## 1.2 Strategic Fit –

The RDCO being a signatory of the BC climate action charter, is moving towards more sustainable approaches in service delivery. The Regional Board has clearly outlined the priority areas they want to focus on in the Strategy Priorities Plan (2019-2022).

This sustainable business plan offers various solution streams which would target the strategic priorities and other identified challenges. Helping to ensure a cleaner future for the region and encourage collaboration and engagement of multiple community partners and stakeholders.

The opportunities and challenges outlined in this case are interconnected and interdependent with the Regional Growth Strategy, Solid waste plan, official community plans, air quality plan and others. This case uses an approach and methodology informed by various case studies throughout Canada and abroad (listed in Appendix A). Also, multiple toolkits are made available by provincial and federal governments. Incorporating these sources will help us achieve efficient outcomes. The GHG reduction and energy efficiency approach outlined, in this case, include:



The GHG reduction and energy efficiency approach outlined, in this case, include:

1. Developing A Community Energy and Emissions Plan (CEEP)
2. Developing A Corporate GHG Reduction Strategy

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<sup>8</sup> <https://pwp.vpl.ca/sic/industry-profiles/fastest-growing-industries-green-economy/>

3. Region Wide BC Energy Step Code Implementation
4. Pursuing Renewable Natural Gas Production Opportunities

## **1.3 Detailed Description of the Business Needs**

### **1.3.1 Opportunity Statement**

As outlined earlier in section 1.1.2, the Sustainable growth of any region or organization is defined by three factors which are environmental, social and governance (ESG). RDCO has an opportunity to be an environmental leader by focusing on quantifying its emissions. The community energy and emissions plan will help define a roadmap towards energy efficiency. The energy pyramid explains the need for energy conservation before jumping into renewable options to control emissions.

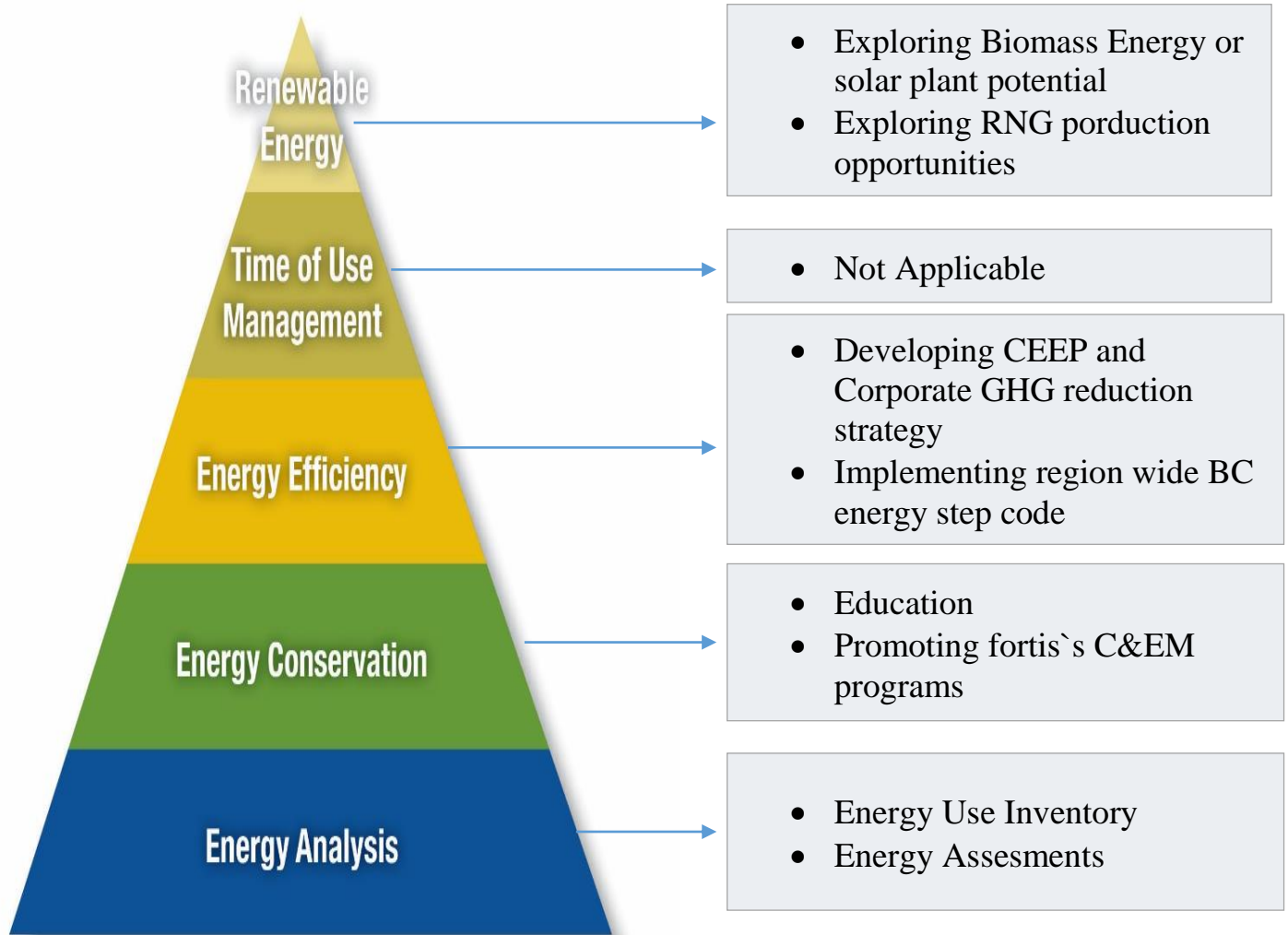
The first step, energy analysis, is done by reviewing region-wide energy usage data. The energy use data will cover natural gas usage, electricity usage, fuel usage. It should cover both the service provider and end-user.

Having identified the problem areas, we can move to the next step of energy conservation (residential and corporate level). It can promote the Fortis BC conservation and energy management (C&EM) program, organize behavioural change and energy management education campaigns, and encourage cycling and walking.

Now moving up the energy pyramid, the steps involved are practical but require initial investments. Energy efficiency will focus on retrofitting and upgrading already built dwellings and administrative buildings and installing new energy-efficient or higher energy star rating equipment. Communication of user benefits, such as rebates and subsidies, is recommended to implement it effectively.

“Time of use management” does not apply in our region as electricity pricing is based on a fixed tariff with a monthly consumption capping. The final step of the pyramid, which should also be the last step of the energy efficiency process, explores new renewable energy generation

opportunities. This business case proposes that the scope of the RDCO's CEEP should focus on Energy analysis, Energy conservation, Energy efficiency.



EnSave, Inc. © 2011

## 1.3.2 Prioritized Requirements (High Level)

### 1.3.2.1 Community energy and emission plan (CEEP)

The CEEP will present a comprehensive long-term framework to achieve breakthrough reductions in energy use and GHG emissions within the community. The CEEP will be integrated into all other municipal planning and infrastructure documents (e.g. Sustainability Plans, Official Community Plans, Local Area and Neighbourhood Plans, Infrastructure Plans, Economic Development Strategies, etc.).

The CEEP will be a high-level framework with sufficient precision to establish energy and emissions-related priorities for the community and define overall goals and direction against an established baseline. The CEEP should have a 25-year time horizon, with a clear, robust set of priorities for the first ten years that will set the course of action in a permanent direction. It will be a living document that can be updated as strategies are implemented, and new opportunities arise.

The overall objective of the CEEP is to provide the local government with a clear plan of action in developing its land-use patterns, energy infrastructure and utility systems into the future. The CEEP should recognize the following legislation that the Provincial Government and local governments have adopted:

1. **Bill 44 – Greenhouse Gas Reduction Targets [Act](#):**
  - a) Provincial GHG reduction target of 33% by 2020 and 80% by 2050 compared to a 2007 baseline.
2. **Bill 27- Local Government (Green Communities) Statutes Amendment [Act](#):**
  - a) Requirement for local governments to include GHG emission targets, policies, and actions in their Official Community Plans (OCP) and Regional Growth Strategies (RGS).
3. **2010 Clean Energy [Act](#):**
  - a) Implement demand-side measures to conserve energy and meet the expected increase in electricity demand by at least 66% by 2020.

- b) Foster the development of innovative technologies in British Columbia that support energy conservation and efficiency and the use of clean or renewable resources;
- c) Encourage communities to reduce greenhouse gas emissions and use energy efficiently; and
- d) Reduce waste by encouraging the use of waste heat, biogas and biomass.

Stakeholder Name	Organization	Title & Role	Interest	Influence	Expectations	Stakeholder Engagement
<b>BC Climate action charter</b>	Government	Formulate policies to tackle climate change	High	High	GHG reduction target of 50% of 2007 levels by 2050	Following up on any changes made to policies related to GHG reduction
<b>Regional Board</b>	RDCO Board members	Approve CEEP Budget	High	High	To be completed within budget and incorporates all member municipalities	Quarterly update on the progress of the project
<b>Brian Reardon</b>	RDCO	CAO, Approves funding	High	High	Project to be completed within Budget	Timely updates and engage in important decision making
<b>David Komaike</b>	RDCO	Director of Engineering Services, Allocates Funding	High	High	Project to be completed within Budget	Frequent updates and involvement in brainstorming session related to any important decisions
<b>Todd Cashin</b>	RDCO	Director of planning, Initiate dialogue with their team related to CEEP	High	High	CEEP is interlinked with RGS, Regional priorities	Frequent meetings to update on CEEP development
<b>Residents</b>	External	Voice there feedback related to CEEP	Low	Low	To have a sustainable and safe environment	Can have quarterly engagement as the project moves forward
<b>Consultant</b>	External	Develop CEEP for RDCO	High	Low	-To complete the project within the given budget and timeframe - incorporate or engage all surrounding regions within RDCO boundary	Regular updates related to project activities and scope of work



<b>Organization Environment</b>	<b>Regional Strategic priorities Defined</b>
<b>CEEP Objectives and Outcomes</b>	<b>Provincial legislative compliance and detailed understanding of energy profile for the Regional District of Central Okanagan</b>
<b>Organization Need</b>	<b>Reduce their carbon footprint</b>
<b>Key Requirements</b>	<b>Stable funding stream and stakeholder engagement</b>

### 1.3.2.2 Developing A Corporate GHG Reduction Strategy

Greenhouse gas emissions are the main culprit for climate change. In this step we will be looking into corporate emissions.

**Corporate emissions** - those that the local government creates through its activities (and which it has control over) such as municipal building operations, parks, Fire halls, wastewater treatment facilities, solid waste management system, Vehicle fleets, and utility services.

While Implementing a corporate GHG reduction strategy is imperative to develop a GHG inventory that can provide energy use comparisons over time. Various energy streams have their emission factors conversions to get a baseline in terms of CO<sub>2e</sub>. Some of the [factors](#) are –

Fuel Source	Emission Factor	Units
Electricity - BC Hydro - Fortis BC	10.67 2.587	tCO <sub>2e</sub> / GWh
Diesel	0.002760	t CO <sub>2e</sub> /L
Natural Gas	0.051000	t CO <sub>2e</sub> /GJ

GHG reduction has the benefit of both reducing emissions and reducing energy costs. Although these benefits are related, they are not interchangeable. For instance, GHG emissions produced from burning natural gas are pretty higher than that of electricity, so if we try to control our natural gas usage, it will help in GHG emission reduction but will not have much impact on energy cost savings since electricity is more expensive compared to natural gas. So, a balanced approach will help in optimizing these benefits.

A roadmap for an effective corporate GHG reduction strategy would start with staff engagement. Energy savings workshops can help educate staff and even get feedback on areas where behaviour change won't be enough. Annual discussions will be held to incorporate staff's input towards the future sustainable pathway for the organization.

Moving forward, energy-intensive buildings will be identified using asset management software. These buildings will go through energy audits. Fortis BC and BC hydro have free-of-charge programs to aid these audits. These audits will help in streamlining our approach towards retrofitting practices.

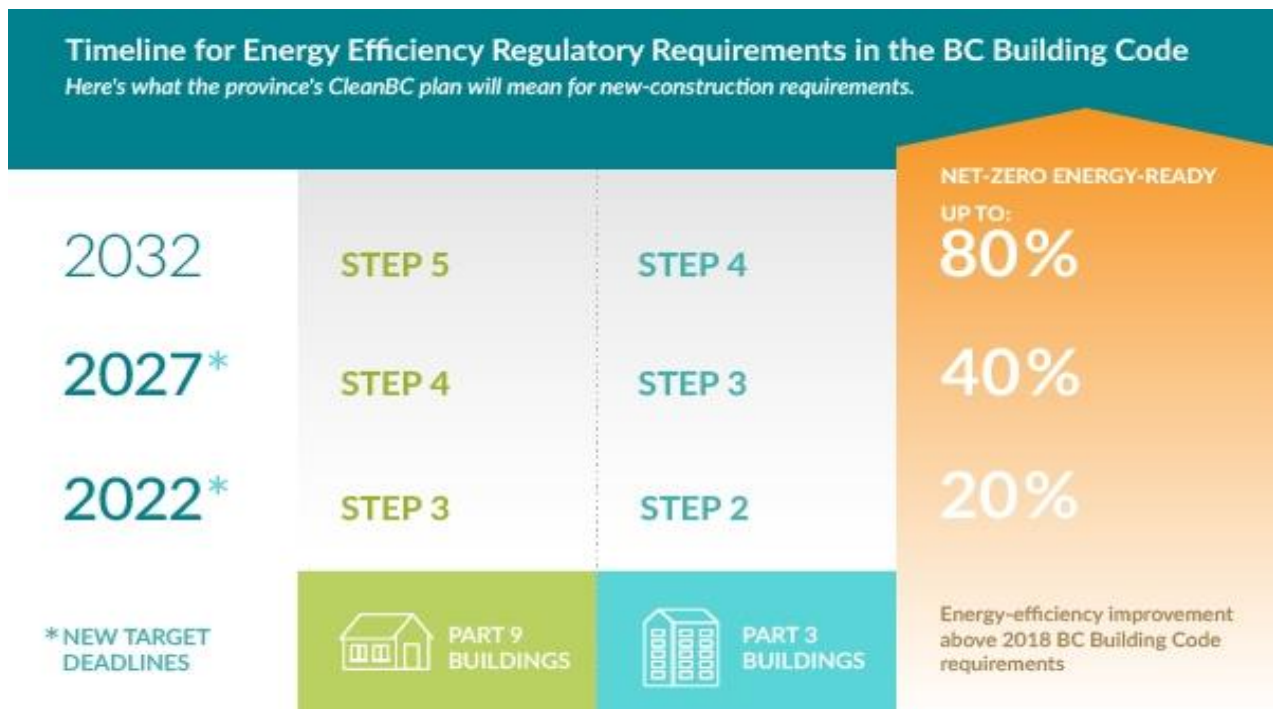
Stakeholder Name	Organization	Title & Role	Interest	Influence	Expectations	Stakeholder Engagement
<b>BC Climate action charter</b>	Government	Formulate policies to tackle climate change	High	High	GHG reduction target of 50% of 2007 levels by 2050	Following up on any changes made to policies related to GHG reduction
<b>Regional Board</b>	RDCO Board members	Approve Budget	High	High	To be completed within budget and incorporates all member municipalities	Quarterly update on the progress of the project
<b>Brian Reardon</b>	RDCO	CAO, Approves funding	High	High	Project to be completed within Budget	Timely updates and engage in important decision making
<b>David Komaika</b>	RDCO	Director of Engineering Services, Allocates Funding	High	High	Project to be completed within Budget	Frequent updates and involvement in brainstorming session related to any important decisions
<b>Mimi Miller</b>	RDCO	Asset manager, Identify Energy-intensive assets	High	High	Energy assessments are carried out for the most energy-intensive buildings	Frequent meetings to update on Energy assessments and available funding opportunities

					-Energy retrofits are installed at minimum cost -Electrifying Fleet	
<b>Senior Leadership Team</b>	RDCO	Identify equipment's and service that can benefit from retrofits	High	High	To be part of the GHG reduction pathway and help Achieve the BC GHG reduction target	Quarterly follow up to identify energy-saving opportunities
<b>Fortis BC/BC Hydro</b>	External	Provide grants for retrofit projects	High	Low	Help Communities and corporations reduce their carbon footprint	Frequently checking with them for new grant and funding programs
<b>Residents</b>	External	Identify GHG reduction opportunities in their houses	Low	High	To have a sustainable and safe environment	Frequent workshops related to energy savings at a residential level
<b>Staff</b>	RDCO	To practice energy-efficient approaches	Low	High	To have a sustainable and safe workplace environment	Frequent workshops related to energy savings at a residential and corporate level

<b>Organization Environment</b>	<b>Outdated Building operation procedure</b>
<b>GHG reduction Objectives and Outcomes</b>	<ul style="list-style-type: none"> <li>- <b>Reduced GHG emissions and energy cost savings.</b></li> <li>- <b>Aid towards the target of reducing emission to 40% of 2007 levels by 2030</b></li> <li>- <b>Targets of zero-emission vehicles (ZEVs) reaching 10% of light-duty vehicles sales by 2025, 30% by 2030 and 100% by 2040</b></li> </ul>
<b>Organization Need</b>	<b>Operate Energy-efficient buildings</b>
<b>Key Requirements</b>	<ul style="list-style-type: none"> <li>- <b>Educating staff members</b></li> <li>- <b>Energy audits - prioritizing high energy-intensive buildings</b></li> </ul>

### 1.3.2.3 Region Wide BC Energy Step Code Implementation

Aligning with CEEP and corporate GHG reduction strategy next step in our business framework is BC energy step code implementation. Until now, BC Energy Step Code is an optional compliance path in the BC Building Code that local governments may use, if they wish, to incentivize or require a level of energy efficiency in a new construction that goes above and beyond the requirements of the BC Building Code. Builders may voluntarily use the BC Energy Step Code as a new compliance path for meeting the energy-efficiency requirements of the BC Building Code. Through the BC energy step code, the province aims to achieve net-zero energy-ready buildings by 2032. And to achieve that target, there are small milestones put in place. The first upcoming



milestone is Step 3 compliance for part 9 (residential) and step 2 compliance for part 3 (commercial buildings).

Various municipalities and jurisdictions have incorporated the BC step code into their bylaws to a certain extent. To implement the step code in the RDCO electoral areas, the RDCO will need to apply for a notice to consultation submitted to the BC energy step code council. The

recommended pathway and timeframe for BC energy step code implementation within the organization is -

Notice to consult initiation	April 2021
Identify a pathway for implementation	April end 2021
Begin stakeholder consultation	May 2021
Launch Online survey	May end 2021 or June 2021
No updates	July – August 2021
Finalize the results from surveys and feedbacks	September – October 2021
Enforce Step 1 for all new residential and commercial buildings ( Part 9 and Part3)	January 1 <sup>st</sup> 2022
Enforce Step 2,3 for residential Buildings(part 9)	August 1 <sup>st</sup> 2022
Enforce Step 2 for Commercial Buildings(part 3)	August 1 <sup>st</sup> 2022

Following up with other jurisdictions on lessons learned and partnering with various public organizations to ensure maximum outreach. Stakeholder engagement and community discussions are imperative to avoid any discrepancies in the process.

Stakeholder Name	Organization	Title & Role	Interest	Influence	Expectations	Stakeholder Engagement
<b>BC Climate action charter</b>	Government	Formulate policies to tackle climate change	High	High	-Net Zero Building target by 2032 -GHG reduction target of 50% of 2007 levels by 2050	Following up on any changes made to policies or deadlines related to BC energy step code implementation
<b>Regional Board</b>	RDCO Board members	Approve Budget	High	High	To be completed within budget and incorporates all member municipalities	Quarterly update on the progress of the project
<b>Brian Reardon</b>	RDCO	CAO, Approves funding	High	High	Project to be completed within Budget	Timely updates and engage in important decision making
<b>David Komaik</b>	RDCO	Director of Engineering Services, Allocates Funding	High	High	Project to be completed within Budget	Frequent updates and involvement in brainstorming session related to any important decisions
<b>Todd Cashin</b>	RDCO	Director of planning, Initiate dialogue with building inspectors about step code incorporation into building bylaw	High	High	The transition from conventional BC building law towards BC energy step code is seamless	Frequent meetings to identify various challenges related to step code implementation within the region - Updating building bylaws as required
<b>Senior Leadership Team</b>	RDCO	Promote Step code adoption	High	High	The provincial deadlines are met	Update them with any information related to change in deadlines
<b>Building Inspectors</b>	RDCO	Understand about step code and initiate voluntary compliance	Low	High	To educate people to apply for building permits in electoral areas	Conduct regular learning workshops related to Step Code
<b>Residents</b>	External	Identify GHG reduction opportunities in their homes	Low	High	To have a sustainable and safe environment	Frequent workshops related to energy savings at a residential level


























<b>Organization Environment</b>	<b>Outdated Building Bylaws</b>
<b>BC Energy step code Objectives and Outcomes</b>	<ul style="list-style-type: none"> <li>- <b>Reduced GHG emissions and energy cost savings.</b></li> <li>- <b>Induce Climate leadership opportunity</b></li> <li>- <b>Developing healthier, sustainable communities</b></li> </ul>
<b>Organization Need</b>	<b>Achieve the first milestone of step 3 for part 9 and step 2 for part 3 buildings compliance</b>
<b>Key Requirements</b>	<ul style="list-style-type: none"> <li>- <b>Community engagement and workshops</b></li> <li>- <b>Targeting builder organizations to promote step code on the ground level</b></li> <li>- <b>Staff hours required to conduct presentations for various target groups</b></li> </ul>







### 1.3.2.4 Renewable Natural Gas Opportunities

Moving up the energy triangle, that is the final step of renewable energy. This step would help diversify the region's energy portfolio by adding or increasing the RNG capture. The partnership with Fortis BC will play a vital role in this category. Okanagan valley produces a high quantity of waste with high energy value for biomass energy potential. Learning more about the various organic waste streams will help identify the best technology for RNG production. Aligning with RDCO's CODEC and strategic priorities, RNG can not only provide substantial GHG reduction but has much potential to create revenue and employment growth opportunities in the region<sup>9</sup>.

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<sup>9</sup> <http://www.energybc.ca/naturalgas.html>

Drivers	Opportunities	Benefits
Abundance of domestic natural gas reserves	Cost-effective widespread adoption of natural gas; energy security through increased fuel choice	     
Domestic and international climate change commitments	Coordinated transition to low-carbon transportation; increased use of RNG; public/private partnerships	
Emerging carbon credit markets	Improved business case for switching to natural gas/RNG	  
Competitive costing with other technologies	Shared infrastructure and business models; price of natural gas remains low	   
Competitiveness in technology development and commercialization	Targeted and collaborative Canadian technology investments; collaborative high-hp engine development; transfer of technology to broader markets	  
Diverse energy use needs across expansive geography	Shared infrastructure models; targeted regional development	  
Job growth and transitioning, i.e. replacement of 'old-economy' jobs	Natural gas infrastructure build-out; 'New-economy' workforce in manufacturing, installation and operation	 
Urgency for practical, implementable low-carbon transportation solutions	Awareness raising/demonstration of natural gas as a technology that can be implemented today with long-lasting benefits	  

Legend:  = savings;  = energy efficiency;  = greenhouse gas reductions;  = job creation;  = productivity improvements;  = research and development

[https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeo/pdf/transportation/alternative-fuels/resources/pdf/NRCan\\_NGRoadmap\\_e\\_WEB.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeo/pdf/transportation/alternative-fuels/resources/pdf/NRCan_NGRoadmap_e_WEB.pdf)

All levels of government in Canada and around the world have signalled a strong commitment to combat climate change. Carbon pricing and other complementary measures such as more stringent regulations to reduce the carbon intensity of fuels and vehicles, and clean technology deployment, are at the forefront of policy development. Significant work and collaboration should continue to ensure that natural gas benefits such as lower energy costs, energy efficiency,



job growth, Canadian-led R&D and evolution of Canadian clean transportation technologies are widespread.

Stakeholder Name	Organization	Title & Role	Interest	Influence	Expectations	Stakeholder Engagement
<b>BC Climate action charter</b>	Government	Formulate policies to tackle climate change	High	High	GHG reduction target of 50% of 2007 levels by 2050	Following up on any changes made to policies related to GHG reduction
<b>Regional Board</b>	RDCO Board members	Approve Budget	High	High	To be completed within budget and incorporates all member municipalities	Quarterly update on the progress of the project
<b>Brian Reardon</b>	RDCO	CAO, Approves funding	High	High	Project to be completed within Budget	Timely updates and engage in important decision making
<b>David Komaik</b>	RDCO	Director of Engineering Services, Allocates Funding	High	High	Project to be completed within Budget	Frequent updates and involvement in brainstorming session related to any important decisions
<b>OSLC</b>	External	Project Sponsor	High	High	Have a Waste to energy facility in the Okanagan region	Update them on studies related to Biomass inventory
<b>Residents</b>	External	Efficient waste segregation	Low	High	To have a sustainable and safe environment	Frequent workshops related to Waste management
<b>Fortis BC</b>	External	Provide grants for RNG opportunities	High	High	Increase RNG percentage in their gas composition	Frequently checking with them for new grant and funding programs
<b>City Of Kelowna</b>	External	Upgrading Glenmore landfill	Low	High	Not to disrupt landfill operations	- Update them with Biomass inventory results - Based on results, initiate feasibility talks for new waste to energy facility to increase RNG capture

<b>Organization Environment</b>	<b>No RNG capture</b>
<b>Renewable Natural Gas Objectives and Outcomes</b>	<ul style="list-style-type: none"> <li>- <b>Reduced GHG emissions and energy cost savings.</b></li> <li>- <b>Improve Organic waste utilization</b></li> <li>- <b>Neutralize Natural gas emissions</b></li> </ul>
<b>Organization Need</b>	<b>Diversifying Energy portfolio</b>
<b>Key Requirements</b>	<ul style="list-style-type: none"> <li>- <b>Comprehensive Biomass inventory study of Okanagan valley</b></li> <li>- <b>Identifying public-private partnerships for waste to energy facility</b></li> <li>- <b>Ensuring a stable funding stream for the project</b></li> </ul>

### 1.3.3 Assumptions

To better understand the critical requirements of a project, we have to outline some fundamental assumptions. These can potentially impact a project based on its reliability level. The impact can be in terms of investment (Whether positive or negative) and timelines to achieve provincial or federal targets for climate action. These are high-level assumptions and are not based on cost analysis. The assumptions identified are –

<b>Number</b>	<b>It is assumed that:</b>	<b>Effects on investment:</b>	<b>Reliability Level: High/Medium/Low</b>
<b>Assumption 1</b>	RDCO will be collaborating with other regions for the sustainable steps identified	Will reduce costing related to feasibility studies, implementations, staff hours, other resources	Medium
<b>Assumption 2</b>	Staff hours will be consistently available	Ensure projects deadlines are met	High

<b>Assumption 3</b>	The pandemic will not affect business	Funding won't be diverted towards pandemic management	High
<b>Assumption 4</b>	Climate projections report data is accurate	Scope of work remains unchanged	Low
<b>Assumption 5</b>	BC Energy step code will be implemented in 2022	Increase the demand of energy saving kits and energy assessments	Medium
<b>Assumption 6</b>	Multi-family dwelling size will by 20% or more	Reduce energy needs and increase savings	Medium
<b>Assumption 7</b>	The regional board has a leadership imperative to upgrade the energy efficiency of its buildings	The initial investment can be high for retrofitting city buildings	Medium
<b>Assumption 8</b>	Waste diversion system will be more efficient	Improve the feasibility of waste to energy facility	High
<b>Assumption 9</b>	RDCO collects all industries and residential buildings waste	Increase waste to energy facility efficiency	High
<b>Assumption 10</b>	All city Fleet will be electrified by 2035	Managing a spatially distributed charger network will be cost-intensive	Medium

### 1.3.4 Constraints

Constraints are identified challenges in a project and have to be recognized throughout the project. Identifying these will help in establishing scope boundaries to manage investment better. Constraints can be internal (Resources, Expertise, Legal, etc.) and external (Social factors, political reasons, economic factors, etc.). Identified constraints are -

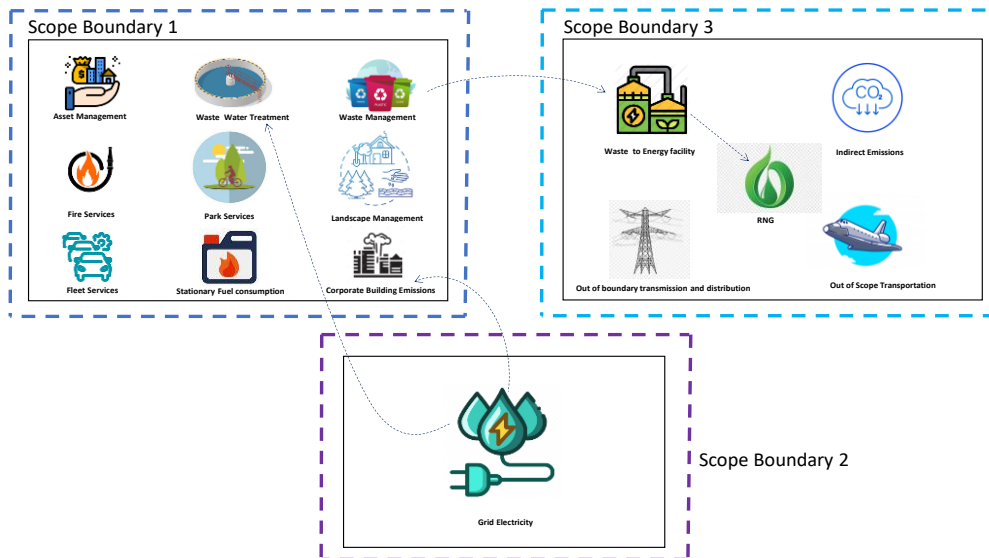
Number	Internal :	External :
<b>Constraint 1</b> BC Energy Step Code	<ul style="list-style-type: none"> <li>• Lack of interest</li> <li>• No defined policies/By-Laws</li> <li>• Building inspectors not familiar with the code</li> </ul>	<ul style="list-style-type: none"> <li>• Engaging community for education</li> <li>• Rebates and incentives amount to a smaller percentage of total building cost</li> </ul>
<b>Constraint 2</b> CEEP	<ul style="list-style-type: none"> <li>• Integrating with Regional growth strategy, official community plan and other established plans</li> <li>• Accuracy of GHG Inventory</li> </ul>	<ul style="list-style-type: none"> <li>• Public engagement for planning future land use and transportation requirements</li> </ul>
<b>Constraint 3</b> Corporate GHG reduction strategy	<ul style="list-style-type: none"> <li>• Availability of the building for retrofitting</li> </ul>	<ul style="list-style-type: none"> <li>• Public services will be halted for the building going through retrofitting</li> </ul>
<b>Constraint 4</b> Pursuing RNG opportunities	<ul style="list-style-type: none"> <li>• Unidentified waste streams</li> <li>• Internal policies to move towards other green initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate education on waste segregation</li> <li>• Substantial funding requirements</li> </ul>

## 1.4 Scope

### 1.4.1 Boundaries

RDCO has complex regional boundaries – it comprises of City of Kelowna, the City of West Kelowna, District of lake country, District of Peachland, Westbank first nation, Electoral area A & B. So, Defining the scope boundary for the business case is essential. The primary services and emissions related to RDCO are covered in scope boundary 1. The approach identified in section 1.2 of this business case will focus on services and emissions inside boundary 1 bubble, with the exception of pursuing RNG growth opportunities. The Waste to energy facility can be a collaborative effort between surrounding municipalities and the regional board. So, it will be drawing parallels from boundaries 1 & 3.

For this business case, we will not be focusing on energy generation or grid electricity. The energy portfolio in British Columbia is mainly hydro. In the future, if there are areas identified which are running diesel generators to cater to their energy needs, then Grid electricity and transmission will be included in our scope. But for this business case, boundary 2 is out of scope.



### Business Needs and Desired Outcomes Summary:

- ▶ *RDCO being part of the BC climate action charter, understands the adversities related to emissions from the services provided for the needs of citizens. The approaches identified in this case will help achieve CleanBC targets and align with its goal of a Net-Zero future for the region.*

### Phase 1 Checklist:

- Where are we now?** – *RDCO has regional strategic priorities defined, focusing on a greener future for the entire Regional District of Central Okanagan.*
- Where do we want to be?** – *RDCO wants to be a clean energy leader in the province and around Canada.*
- What is the business need?** – *RDCO needs to allocate funds and staff hours to advance on the approaches.*
- What has triggered the need for change?** – *RDCO climate projections report identifies the future adversities of rising temperatures in the region. And to fulfill their obligations towards the BC climate action charter.*
- What are we trying to achieve?** – *A greener ecosystem and closed economy to ensure a healthy and safe living lifestyle of central Okanagan residents*
- What is the strategic fit?** – *Pursuing the sustainable approaches and integrating them with already in place frameworks related to regional growth strategy, solid waste management plans, land management, Green vehicle and equipment policies and others. And ensuring the regional strategic priorities and CODEC policy outcomes are supported through these approaches.*

## Phase 2: Analysis and Recommendation

### 2 Preliminary Options Analysis

#### 2.1 Evaluation Criteria

Any consultants or contractors will have to score high based on the evaluation matrix. It will help us identify the most appropriate consultant for any sustainable options specified in this business case.

Evaluation Matrix\* -

<b>Total Fixed Lump Sum Contract Price</b>
<b>Suitability of Methodology &amp; Timeline</b>  Evaluation Factors: Suitability of the methodology outlined for performing the Services; <ul style="list-style-type: none"><li>• Demonstration that the Respondent understands the work required and factors to be considered during the Services;</li><li>• Suitability of the schedule/timeline proposed;</li><li>• Level of effort and hours proposed for the Fixed Lump Sum;</li></ul>
<b>Suitability of Team &amp; Sub consultants</b>  Evaluation Factors: Suitability of experience and expertise of the proposed team members; and Ease of working with the proposed team considering the organization set up and physical office locations of team members.

**Suitability of Experience**

Evaluation Factors:

- Suitability of Respondent and proposed Project Manager experience with similar work and projects. References deemed most similar in nature and scope to the Services and references that have the same proposed Project Manager will receive a higher score.
- Feedback from Client references, if the Regional District chooses to contact references; and
- The Regional District’s own experience.

**Ease of Accepting any Exceptions to Contract**

Evaluation Factors:

- Ease for the Regional District in accepting any proposed exceptions to the terms and conditions.

\* This is a general template and can be changed based on the scope of work and the RFP.

**2.2 Listing the Possible Options**

**2.2.1 Developing a CEEP**

Category of Choice	Description
<b>Status Quo</b>	Not having CEEP in RDCO’s framework will affect the GHG target deadlines as the current Regional Growth Strategy and other plans do not address GHG reduction on the community level.
<b>Implementation</b>	Phased— Development of CEEP takes 12-14 months. The funding can be dispersed in phases.



Category of Choice	Description
<b>Service Delivery (Outsource)</b>	A consultant such as Sustainability solutions group, Community energy association etc., will be hired to develop CEEP for RDCO.
<b>Re-engineering</b>	Regional Strategic Priorities has focus areas outlined for GHG reduction. CEEP will focus on those priorities and be interdependent with other frameworks such as COEDC, RGS, Official community plan, Climate projection report and others.
<b>Build</b>	Not Required.
<b>Buy</b>	Not Required.
<b>Lease/Rent</b>	Not Required.

### 2.2.1 Developing a Corporate GHG reduction Strategy

Category of Choice	Description
<b>Status Quo</b>	Being part of the BC climate action charter, not having a corporate GHG reduction strategy will affect RDCO's participation targets.
<b>Implementation</b>	Phased— GHG reduction can not happen overnight. The approach will identify the most energy-intensive buildings, reduce their carbon footprint,

Category of Choice	Description
	and subsequently move forward with other corporate buildings. Simultaneously working on implementing green fleet policy.
<b>Service Delivery (Outsource)</b>	Free energy assessments program offered by Fortis BC, BC hydro, FCM other organizations will help analyze energy savings opportunities and reduce our GHG emissions.
<b>Re-engineering</b>	Having deep retrofits installed in office buildings and service buildings will help in energy savings. And educating staff on effective energy usage practices will be impactful in achieving GHG reduction targets.
<b>Build</b>	Not required.
<b>Buy</b>	Updating asset planner to include energy and sustainability in its module and start benchmarking buildings.
<b>Lease/Rent</b>	Not Required.



### 2.2.1 Implementing BC energy step code

Category of Choice	Description
<b>Status Quo</b>	Current Building Bylaws do not outline minimum energy savings requirements. If we do not pursue the BC energy step code, the Building permit system will be disrupted when step 3 is mandated (December 2022).
<b>Implementation</b>	<p>Phased— we have more than 18 months till the step code becomes a mandate. We can begin with a notice of consultation and start educating builders and homeowners about the new building policies. Starting next year, January 2022, we can make step 1 mandatory and depending upon the feedback from the industry, we can slowly move to step 2 and finally step 3 to meet the first deadline.</p> <p>— Building upon the feedback and risk mitigation, RDCO can smoothly transition into Step 4 and 5 of the code till 2027.</p>
<b>Service Delivery (Outsource)</b>	Various Seminars and workshops available online conducted by BCIT, Fortis BC, other cities and regions that have already incorporated Step code. Training sessions of RDCO’s building inspectors and builders can be outsourced by partnering with nearby regions and municipalities. And learn from their approach and challenges that they faced during implementation.
<b>Re-engineering</b>	Based on the feedback gathered from stakeholder engagement, amending the existing building bylaw to incorporate step code.

Category of Choice	Description
<b>Build</b>	Partnering with trade schools to build labs related to building sciences would help builders learn how to achieve compliance outlined in various step code levels.
<b>Buy</b>	Buy 3D Lidar cameras that builders or energy advisors can lease from RDCO to effectively improve their building analysis results.
<b>Lease/Rent</b>	Not Required.

### 2.2.1 Identifying RNG growth opportunities

Category of Choice	Description
<b>Status Quo</b>	Currently, No RNG capture and waste streams are being diverted to various landfills/locations.
<b>Implementation</b>	Delay— can be looked upon next year(2022) based on the Okanagan Biomass inventory study scheduled to happen this year.
<b>Service Delivery (Outsource)</b>	—Outsourcing consultants to conduct feasibility studies on a waste to energy facility (Anaerobic digester) in the Okanagan region or at Glenmore landfill site.

Category of Choice	Description
	—The Biomass inventory study is being outsourced to be completed by the end of this year (2021).
<b>Re-engineering</b>	The waste management system will be amended for effective biomass collection and waste diversion to one chosen site.
<b>Build</b>	Maintaining a comprehensive biomass database.
<b>Buy</b>	Not required.
<b>Lease/Rent</b>	Private players are looking at a similar waste-to-energy facility. RDCO can partner with them to minimize their cost.

**Milestone Achieved**

*Preliminary options analysis has been completed.*

**Phase :3 Financial Factors**

**3.1 Costs**

Sustainable Business plan option	Investment Required* (CAD)	Time Required
Developing CEEP	80k-100k	12-15 Months
Developing Corporate reduction strategy	20k-30k	3-4 Months
BC energy Step code Implementation	45,000	6-8 Months for first Mandate
Identify RNG growth opportunities	80k-100k	~14 Months (including Biomass study)

**\*Costs acquired through contacting relevant consultants and can change without notice**

In partnership with the Federation of Canadian municipalities (FCM), federal and provincial governments have funding and grant opportunities that can help us cover some of these costs. Apart from FCM, various utilities and private organizations have constantly evolving programs and increasing the outreach of their loan or grant programs. Some of the current grant opportunities are listed below. These are subject to change without notice, and some of the funding has a yearly disbursement cap.

Without any funding, the cost to RDCO -

<b>Developing CEEP</b>	<b>\$80k-\$100k</b>	<b>12-15 Months</b>
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- There are currently no funding opportunities available for developing CEEP. In the past, FCM provided around 75-80% of the total cost. And since a new federal budget is released, FCM will likely renew their funding for CEEP.

- Till March 2021, BC hydro provided grants up to 75% of the cost incurred for developing CEEP, but it has been discontinued.
- Fortis BC has verbally confirmed that they can provide some funding to RDCO for CEEP through a climate action partner program. But the exact amount or percentage has not been verified.

With Funding, the cost to RDCO -

<b>Developing CEEP</b>	<b>~\$20k-\$25k</b>	<b>12-15 Months</b>
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Developing CEEP		Without Funding/Grants	Contingency (15%)	Internal Staff hours (Based on 50/hr)	Overhead cost (10%)	Total Cost to RDCO (CAD)	With Funding/Grants (Approx. 75%)
		100,000	15000	15000	10000	140,000	35000
<b>Consultants Contacted-</b>							
	<b>Sustainability Solution Group</b>	<b>\$100,000-\$150,000</b>					
		<i>Includes Comprehensive CEEP and community engagement</i>					
		<i>Includes designing, modelling and mapping</i>					
		<i>Periodic forms and surveys to include various stakeholders</i>					
		<i>Include pathways to low carbon future for the communities</i>					
		<i>Will have GHG inventory for the region</i>					
	<b>Community Energy Association</b>	<b>Basic package for \$15,000</b>					
		<i>Includes Comprehensive CEEP and community engagement</i>					
		<i>Includes basic designing, modelling and analysis</i>					
		<i>Two Engagements sessions for staff and key stakeholder</i>					
<b>Potential Funding Options -</b>							
	BC hydro, Fortis BC	<b>Custom package for approx. \$100,000</b>					
	FCM						
	NRCAN	<i>Includes Comprehensive CEEP and community engagement</i>					
		<i>Includes designing, modelling and mapping</i>					
		<i>Periodic forms and surveys to include various stakeholders</i>					
		<i>Include pathways to low carbon future for the communities</i>					
		<i>Will have GHG inventory for the region</i>					
<p><b>Note -</b></p> <ol style="list-style-type: none"> <li>1. The values are rounded off to whole numbers for ease of understanding</li> <li>2. The values presented are approximate costs</li> <li>3. Consultants provided high level costing estimates</li> <li>4. Staff hours - 300 Hours (approx.)</li> </ol>							



Without any funding, the cost to RDCO -

<b>Developing Corporate GHG reduction strategy (plan)</b>	<b>\$20k-\$30k</b>	<b>3-4 Months</b>
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- There is currently no funding available for having a GHG reduction strategy. But various pathways that will be outlined in the strategy have various funding opportunities.
- The federal budget has allocated funds for deep retrofitting studies, which can take some while to show up on the FCM website.
- Various funding opportunities available for having green fleet infrastructure (Fortis BC, PluginBC, etc.).
- Corporate energy assessments are available through Fortis BC without any cost. For larger industries, 50% funding is available for an energy assessment.
- Deep retrofitting fundings are available through Fortis BC if solutions provided in energy assessments are followed.

With Funding, the cost to RDCO –

<b>Developing Corporate GHG reduction strategy (plan)</b>	<b>\$12,000</b>	<b>3-4 Months</b>
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<b>Developing Corporate GHG reduction Strategy</b>		<b>Without Funding/Grants</b>	<b>Contingency (15%)</b>	<b>Internal Staff hours (Based on 50/hr)</b>	<b>Overhead cost (10%)</b>	<b>Total Cost to RDCO (CAD)</b>	<b>With Funding/Grants (Approx. 50%)</b>
		15,000	2250	6000	1500	24,750	12375
<b>Consultants Contacted-</b>							
	<b>GHG accounting</b>	<b>Base Price -\$5,000</b>					
		<i>GHG Inventory Evaluation</i>					
		<i>Prepare pathways and solutions</i>					
		<i>Review with internal stakeholders in workshops format</i>					
		<i>Draft Corporate GHG reduction strategy</i>					
		<i>Client review meeting to finalize the draft</i>					
	<b>Community Energy Association</b>	<b>Basic package for \$15,000</b>					
		<i>GHG Inventory Evaluation</i>					
		<i>Prepare pathways and solutions</i>					
		<i>Review with internal stakeholders in workshops format</i>					
		<i>Draft Corporate GHG reduction strategy</i>					
		<i>Client review meeting to finalize the draft</i>					
<b>Potential Funding Options -</b>							
	BC hydro, Fortis BC	<i>Review with internal stakeholders in workshops format</i>					
	FCM	<i>Draft Corporate GHG reduction strategy</i>					
	NRCAN	<i>Client review meeting to finalize the draft</i>					
	Plugin BC for green fleet						
<b>Note - 1. The values are rounded off to whole numbers for ease of understanding</b> <b>2. The values presented are approximate costs</b> <b>3. Consultants provided high level costing estimates</b> <b>4. Staff hours - 120 Hours (approx.)</b>							

Without any funding, the cost to RDCO -

<b>Implementing BC Energy step code (region-wide)</b>	<b>\$45,000</b>	<b>6-9 months for the first mandate</b>
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- For the BC Energy step code, there are rebates and subsidies available for homeowners and builders to pursue any level of step code.
- Fortis BC, BC hydro and clean BC outline various funding programs on their website.
- Fortis BC may provide some funding for community engagement to conduct workshops and help provide printed materials and digital materials to stakeholders.
- Partnering with other regions, municipalities, and education boards will help in reducing workshops related costs.

With funding, Cost to RDCO –

<b>Implementing BC Energy step code (region-wide)</b>	<b>\$38,000</b>	<b>6-9 months for first mandate</b>
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Implementing BC Energy Step Code	Without Funding/Grants	Contingency (15%)	Internal Staff hours (Based on 50/hr)	Overhead cost (10%)	Total Cost to RDCO (CAD)	With Funding/Grants (Approx. 15%)
	30,000	4500	7500	3000	45,000	38000
<b>Various Regional District and Municipalities Approach</b>	<b>\$30,000</b>					
<b>Based on Jodie foster's estimates for conducting workshops (virtually)</b>	<i>Public engagement Strategy - \$15000</i>					
Including-	<i>Implementing the strategy - \$15000 (for approx. 10 workshops)</i>					
Building inspectors	<i>-Assist planning department and building inspectors to increase step code awareness</i>					
Canadian Housing association	<i>-Update Building Bylaws</i>					
Homeowners	<i>-Add additional help resources for homeowners and builders</i>					
	<i>-Frequently updating RDCO's website for rebates and incentives available related to step code construction</i>					
<b>Potential workshop Funding Options -</b>						
Fortis BC						
<b>Note - 1. The values are rounded off to whole numbers for ease of understanding</b> <b>2. The values presented are approximate costs</b> <b>3. Consultants and various case studies provided high level costing estimates</b> <b>4. Staff hours - 150 Hours (approx.)</b>						

Without any funding, the cost to RDCO -

<b>Exploring RNG growth opportunities</b>	<b>\$100,000</b>	<b>~14 Months (including Biomass study)</b>
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- There are two parts to this solution (i) Okanagan Biomass inventory study (ongoing), (ii) Feasibility study for a waste to energy facility based on the results from the inventory study.
- FCM and Fortis BC will have funding available for waste-to-energy facility feasibility studies.

With Funding, Cost to RDCO –

<b>Exploring RNG growth opportunities</b>	<b>\$25000-\$30,000 (For waste-to-energy feasibility study)</b>	<b>~14 Months (including Biomass study)</b>
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RNG Growth Opportunities	Without Funding/Grants	Contingency (15%)	Internal Staff hours(Based on 50/hr)	Overhead cost (10%)	Total Cost to RDCO (CAD)	With Funding/Grants (Approx. 50%)
	100,000	15000	7500	10000	132,500	70000
There are two parts to this -	(Including Biomass inventory study)					
<b>Okanagan Biomass inventory study (ongoing)</b>	<b>\$45,000 Approx.</b>					
	<i>Identifying various organic waste streams in the region</i>					
	<i>Quality and quantity of those waste streams</i>					
	<i>Seasonal availability</i>					
	<i>High level idea of possible fuel generation opportunities from identified organic waste</i>					
<b>Waste to Energy facility</b>	<b>\$50,000 Approx.</b>					
	<i>Identify pathways and solutions for such a facility</i>					
	<i>Feasibility study based on different locations in the region</i>					
	<i>Identify available funding sources for having this facility</i>					
	<i>Identify partnership opportunities with Fortis on RNG usage</i>					
	<i>Streamline waste diversion to boost productivity for the system</i>					
<b>Note - 1. The values are rounded off to whole numbers for ease of understanding</b> 2. The values presented are approximate costs 3. Consultants provided high level costing estimates 4. Staff hours - 150 Hours (approx.)						



**Milestone Achieved**  
*The analysis of the viable options has been completed.*

## A General Perspective -

From an economic perspective, adaptation costs could be evaluated in terms of whether and how much the benefits of such actions exceed the costs incurred. There are, however, significant analytical and policy challenges associated with estimating adaptation costs and benefits. One reason is the nebulous nature of many adaptation actions, which are often embedded within responses to a broader set of social and environmental stimuli. It might, therefore, not be feasible to cost the climate component of such decisions that are also simultaneously conditioned by a whole range of other and often more influential factors<sup>10</sup>. Adaptation costs may also increase several-fold if, in addition to measures that directly reduce climate damages, efforts to improve baseline “adaptive capacity” are also included within the range of adaptation. Uncertainty about the specific effects of climate change will also influence adaptation costs and benefits, as will the timing of the undertaken actions. There might also be significant differences between direct and economy-wide consequences of adaptation measures. These considerations, therefore, need to be borne in mind while interpreting particular empirical estimates of adaptation costs and benefits.

The visualizations presented below are based on the community energy association’s [climate action planner tool](#) (free of cost). The various data inventories used are based on data from the Province of BC and natural resources of Canada (NRCAN). Cost assumptions are based on current prices, utility projections, and Community energy association (CEA) expertise. GHG emission reductions are based on academic literature and BC / global experience.

An optimistic approach in Urban areas of RDCO will help in reducing energy costs by ~\$11 million till 2030 if the targets mentioned in the calculations are achieved. If no steps are taken and the business continues as usual, energy costs will rise to ~\$100 million over the next ten years. The data presented provide a rough estimate of how even the most minor steps can positively impact economically and environmentally.

Similarly, for the unincorporated areas within RDCO, the potential energy savings would be again ~\$11 million. And total energy cost, if the business goes on, as usual, would be ~\$80 million. The

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<sup>10</sup> [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/perspective/pdf/report\\_e.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/perspective/pdf/report_e.pdf) ( Page 199-200)

solutions mentioned on this page help us achieve roughly 20% GHG reductions by 2030 of 2007 levels. So, this tells us that the steps outlined in this business case have to be on a larger scale and require positive stakeholder engagement. Aiming for lower energy savings and GHG reduction levels will not help us achieve the provincial targets.



Climate Action Planner

Central Okanagan Regional District

Community type: **Urban**. Selected scenario: **Optimistic**  
 2030 Target Reduction (below 2020 levels) **40%** : Use this scenario if trends on technology, funding availability, Provincial and Federal action, and public interest and pressure **accelerate**.

Big Moves

Shift Beyond the Car

**Active Transportation** 25%  
 For this Big Move, 100% implies a 4.5% VKT (vehicle km travelled) reduction over 10 years. Consult your OCP, transportation planning documents, or recent trends to see what targets your community (or similar communities) are aiming for (or may be able to achieve with additional action).

**Transit** 25%  
 For this Big Move, 100% implies a 5% VKT reduction over 10 years. Consult your OCP or transportation planning documents, or recent trends to see what targets your community (or similar communities) are aiming for or may be able to achieve.

**Land Use** 25%  
 For this Big Move, 100% implies a 5% VKT reduction over 10 years. Consult your OCP, planning department, or recent trends to see what your community (or similar communities) may be able to achieve. Note, the impact of this suite of actions is highly dependent on the growth rate of the community (i.e. there would be limited impact in a community with low or very limited growth).

Electrify Passenger vehicles

25%  
 For this Big Move, 100% implies that for a community with high acceptance and viability of EVs that ZEV-ready building requirements will be adopted, a ZEV charging network will be built and continuously enhanced, and that zero-emission car sharing / ride-hailing will be incentivized. This will result in 50% of all Vehicle Kilometres Travelled light duty vehicles (LDV) by 2030 are zero emissions.

Commercial Vehicles

25%  
 For this Big Move, 100% implies a 10% conversion over 10 years to zero emissions, or similar, over Business As Usual. When adjusting the slider, consider the rate at which your community is converting its own fleet, its support for conversion of other fleets in the community (e.g. BC Transit), and how likely your community is to try to influence contracting arrangements for services (e.g. garbage pick-up, snow removal).

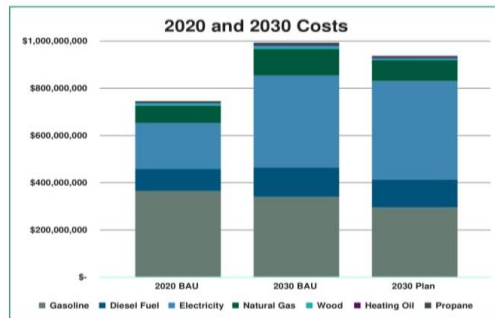
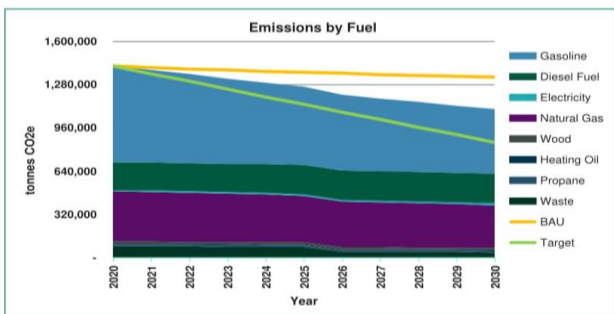
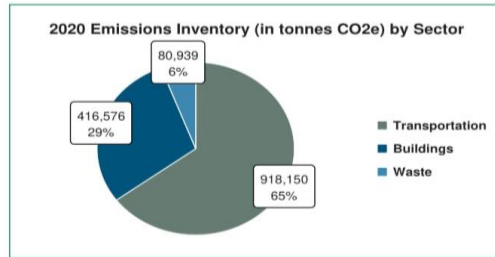
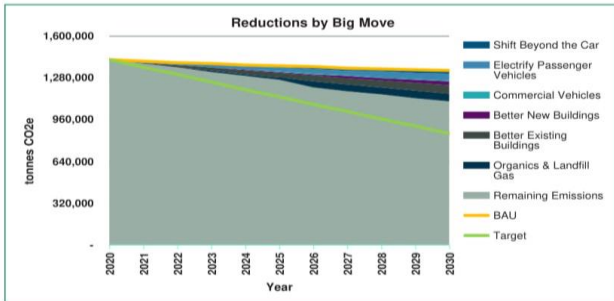
**Better New Buildings** 50%  
 For this Big Move, 100% implies that all new buildings will be built to upper steps of the Energy Step Code using zero carbon energy sources for space and water heating.

**Better Existing Buildings** 25%  
 Efficiency  
 For this Big Move, 100% implies that existing buildings representing 50% of emissions will undergo a 50% retrofit in 10 years.

**Fuel Switching** 25%  
 For this Big Move, 100% implies that existing buildings representing 50% of emissions will fuel switch to a zero emissions fuel in 10 years. This essentially means that their replacement heating systems will be zero carbon, or that there is a permanent 50% shift to Renewable Natural Gas, or a combination of the two.

**Waste** 50%  
 Organics  
 For this Big Move, 100% implies that the community will reach the Clean BC target of 95% of organics diverted from landfill by 2030, including from agricultural, industrial, and municipal sources. Consult your local government staff working on waste regarding feasibility.

**Landfill Gas** 50%  
 For this Big Move, 100% implies that 75% of landfill gas will be captured and either flared or used for energy purposes. Consult your local government staff working on waste regarding feasibility.



These overview inventories are based on data from the Province of BC. Cost assumptions are based on current prices, utility projections, and CEA expertise. GHG emission reductions are based on academic literature and BC / global experience.





Climate Action Planner

Central Okanagan Regional District Unincorporated Areas

Community type: **Urban**.

Selected scenario: **Optimistic**

Use this scenario if trends on technology, funding availability, Provincial and Federal action, and public interest and pressure **accelerate**.

2030 Target Reduction (below 2020 levels) **40%**

Big Moves

Shift Beyond the Car

**Active Transportation** 25%  
For this Big Move, 100% implies a 4.5% VKT (vehicle km travelled) reduction over 10 years. Consult your OCP, transportation planning documents, or recent trends to see what targets your community (or similar communities) are aiming for (or may be able to achieve with additional action).

**Transit** 25%  
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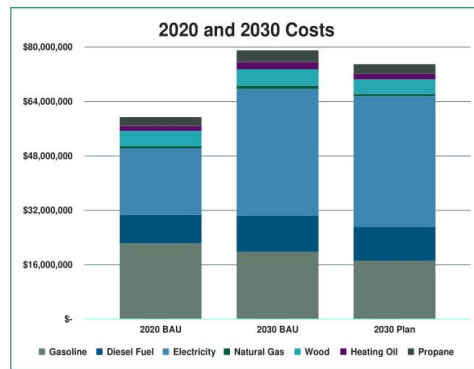
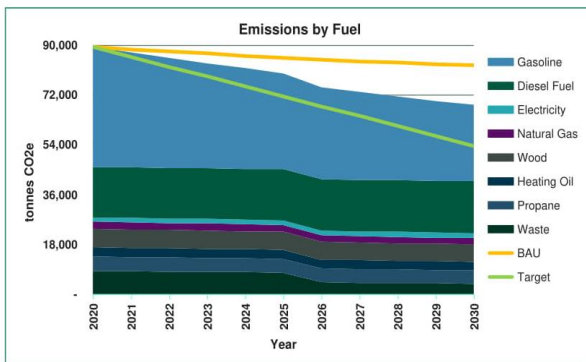
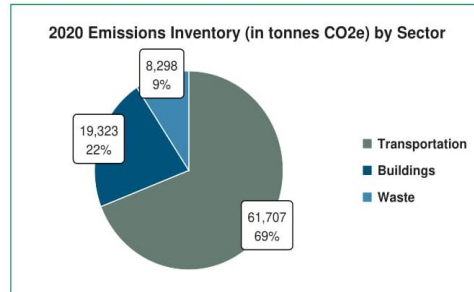
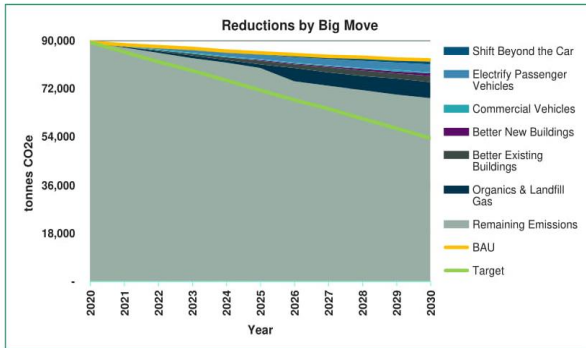
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**Documented by -**



Project Role: Divya will be responsible for developing the community engagement and education deliverables, developing the capacity-building path to action, and reviewing the project's data and technical aspects. He will also engage with consultants regularly to ensure the projects are on track.

With a specialty in energy systems and sustainability, Divya is a skilled energy specialist with five years' multidisciplinary experience in engineering and project delivery. At RDCO, Divya is responsible for ensuring the technical integrity of projects and programs, identifying and diagnosing energy efficiency opportunities; and continually reviewing and implementing best practices wherever possible.

Divya holds a Master of Engineering Leadership in Clean Energy Engineering from the University of British Columbia and a Bachelor of Technology in Electrical Engineering from India.

**Divya Gupta**  
Senior Energy Specialist

# Appendices

## Appendix A

### Regional District of Central Okanagan Organization and Responsibilities

<p><b><u>Corporate Services</u></b> <b>Brian Reardon, Chief Administrative Officer</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>▪ Corporate Records Board &amp; Committee Meetings</li><li>▪ Administrative Support Board Support Interagency Liaison</li><li>▪ Freedom of Information Act Elections, Referenda &amp; Alternative Approval Process</li></ul>
<p><b><u>Communication and Information Services</u></b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>▪ Communications &amp; Intergovernmental Affairs Website and Social Media</li><li>▪ Information Systems Geographic Information Systems Regional Waste Reduction Office</li><li>▪ Solid Waste Management</li></ul>
<p><b><u>Economic Development Commission and Bylaw Enforcement</u></b> <b>Director: Corie Griffiths</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>▪ Business Attraction Business Retention Business Facilitation Public Information</li><li>▪ Social Development Program</li><li>▪ Bylaw Enforcement</li><li>▪ Bylaw Adjudication Program</li><li>▪ Dog Control Noise Bylaw</li><li>▪ Smoke Control Bylaw Untidy Premises</li><li>▪ Insect &amp; Weed Control Sign Bylaw</li></ul>
<p><b><u>Human Resources</u></b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>▪ Staffing</li><li>▪ Wellness, Health &amp; Safety</li><li>▪ Employee Relations</li><li>▪ Training and Development</li><li>▪ Labour Relations Compensation and Benefits</li></ul>



**Community Services**

**Director: Todd Cashin**

**Planning**

*Responsibility Areas*

- Regional Planning Electoral Area Planning
- Subdivision & Rezoning
- Applications Development and Variance Permits Official
- Community Plans
- Joe Rich Rural Land Use Bylaw
- Environmental Planning Regional
- Growth Strategy Advisory
- Planning Commission

**Inspections**

*Responsibility Areas*

- RDCO Business Licenses
- Electoral Area Building Inspection & Permits

**Police and Community Support Services**

*Responsibility Areas*

- 9-1-1
- Crime Stoppers Program False Alarm Reduction Program
- Victim Services Program Regional Crime Prevention Program

**Financial Services**

**Director: Marilyn Rilkoff Deputy Chief Administrative Officer**

*Responsibility Areas*

- Financial Plan/Budget Treasury/Fiscal Services Financial Reporting Asset Management Payroll
- Utility Billing and Collection Accounts Payable
- Accounts Receivable Regional Transit Services
- Public Reception Services

**Purchasing**

*Responsibility Areas*

- Tenders / RFP's for Goods & Services Contracts & Agreements
- Purchase Orders Supplier Performance Management

**Environmental Services**

<p><b>Engineering Services</b> <b>Director: David Komaïke</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>• RDCO Water Systems</li><li>• Westside Regional Wastewater Treatment Plant</li><li>• Mosquito Control Subdivision Services</li></ul>
<p><b>Fire Services</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>• Burning Permits</li><li>• Electoral Area Paid On-Call Fire Departments Regional Rescue</li></ul>
<p><b>Facilities and Fleet</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>• Asset Management Manager RDCO Office Building</li><li>• Fleet Services</li></ul>
<p><b>Parks Services</b> <b>Director: Murray Kopp</b> <i>Responsibility Areas</i></p> <ul style="list-style-type: none"><li>• Regional Parks</li><li>• Central Okanagan East Community Parks</li><li>• Central Okanagan West Community Parks</li><li>• Joe Rich Community Hall</li><li>• Ellison Heritage School Community Centre</li></ul>

## Bibliography

1. Tariq Banuri, F. F. (n.d.). Retrieved from [https://wedocs.unep.org/bitstream/handle/20.500.11822/27654/GEO6\\_CH2.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/27654/GEO6_CH2.pdf?sequence=1&isAllowed=y)

## Analysis Methodology –

PESTLE Analysis					
Political Factors	Economic factors	Socio-cultural factors	Technological Factors	Legal Factors	Environmental Factors
<ul style="list-style-type: none"> <li>•Stability</li> <li>•Disagreements between policy makers</li> <li>•Support for regional development</li> <li>•Environmental Regulations</li> <li>•Public administration quality</li> <li>•Public private partnership development</li> </ul>	<ul style="list-style-type: none"> <li>•State of the economy</li> <li>•State of public finances</li> <li>•Economic cooperation between provincial, federal and local governments</li> <li>•Average income level</li> <li>•labour costs</li> <li>•Rate of unemployment</li> <li>•Interest rates</li> <li>•Taxes</li> <li>•Banking system quality</li> <li>• Credit accessibility</li> </ul>	<ul style="list-style-type: none"> <li>•Skilled worker immigration</li> <li>•Division of wealth in society</li> <li>•Social inequalities</li> <li>•Worker mobility</li> <li>•Lifestyle trends</li> <li>•Buying mechanisms</li> <li>•Development of NGO's</li> <li>•Influence of media on society</li> <li>•Events for society</li> <li>•Health and safety</li> <li>•Population growth rate</li> </ul>	<ul style="list-style-type: none"> <li>•Transport infrastructure development</li> <li>•Funds for research and development</li> <li>•Access to modern technologies</li> </ul>	<ul style="list-style-type: none"> <li>•Building Bylaws</li> <li>•Land Use agreements</li> <li>•Limited jurisdiction</li> <li>•Outdated Bylaws</li> </ul>	<ul style="list-style-type: none"> <li>•Geographical location</li> <li>•Pollution levels</li> <li>•Waste Streams</li> <li>•Potential renewable opportunities</li> <li>•Climate Change</li> </ul>

SWOT Analysis	
Strength	Weakness
Boards commitment towards climate action Regional strategic priorities defined Fortis BC's keen interest in promoting C&EM programs High quality of Biomass produced	Time commitment Public awareness Delayed funding Untrained Staff Poor transit systems Waste disposal system needs to be more efficient
Opportunities	Threats
Land use opportunities for new renewable technologies Community Learning and engagement Revising Bylaws (Building) Waste to energy facility option Available funding stream (provincial and federal) New employment Stabilize economy Sustainable communities	Increasing Cost of living discouraging new migrants Shortage of skilled labour Community resistance towards bylaws amendments Inter-department lack of collaboration/communication Lack of alignment among all key decision makers