

Climate Change Dialogue

BCRPA Symposium
May 2024

What are we hoping to achieve in this session?

- Share projects, ideas, challenges, successes
- Reflect on the following questions:
 - Does this topic continue to resonate with your municipality?
 - What can BCRPA/RFABC do to support your municipality in advancing action on climate change?
 - What do you want to learn more about regarding climate change?
- Anything else (from the group?)

Why are we talking about Climate Change?

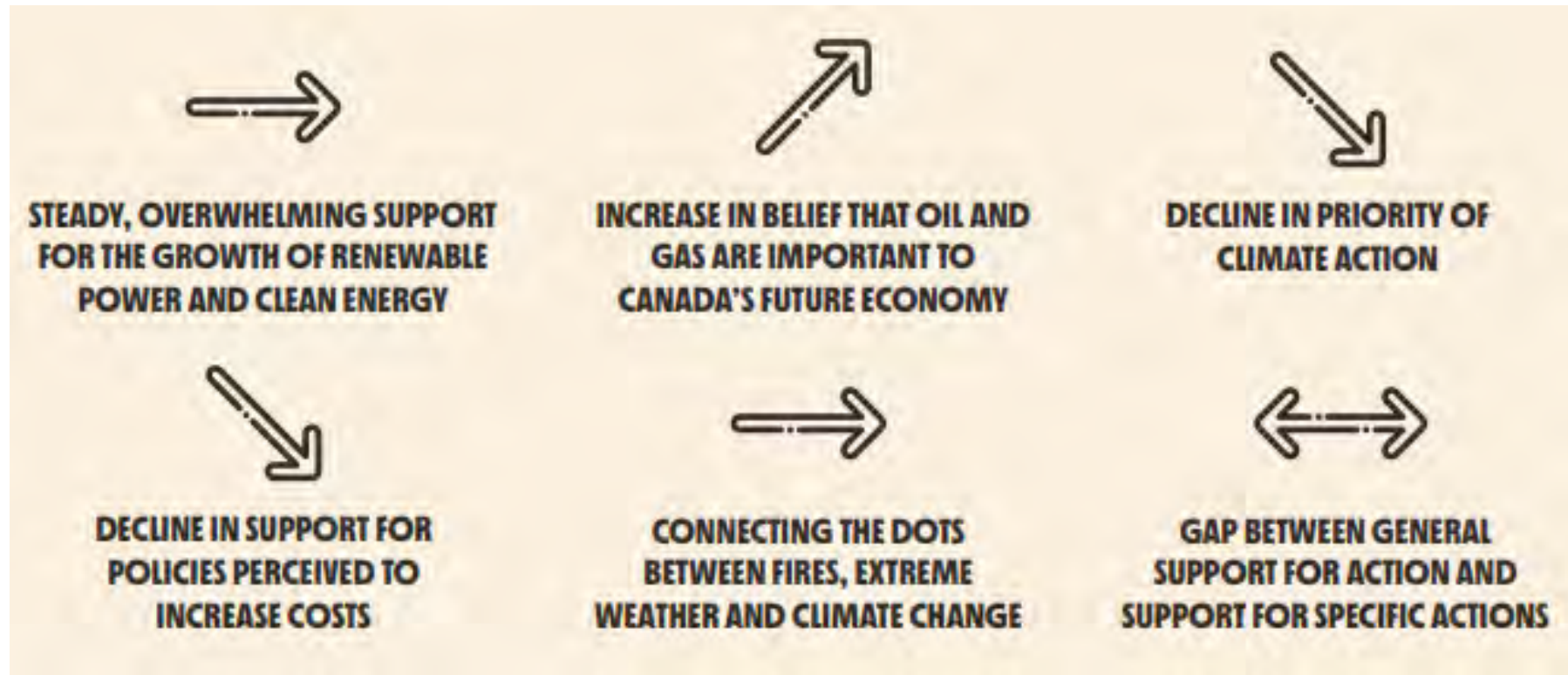
- Climate change is the defining issue of our time
- Our planet is generally getting warmer
- Climate change does not have the same effects everywhere and in BC we are seeing:
 - Floods
 - Sea level rise
 - Extreme weather (drought, rainfall, freezing)
 - Wildfire
 - Urban Heat

Why are we talking about Climate Change?

- BCRPA's Strategic Plan (2022-2024) identifies 4 key topics affecting our sector:
 - Reconciliation
 - Physical inactivity
 - Equity, Diversity and Inclusion
 - Climate Change
- BCRPA is committed to being a thought-leader, conversation convener and action initiator on these topics

Recent Public Opinion Research

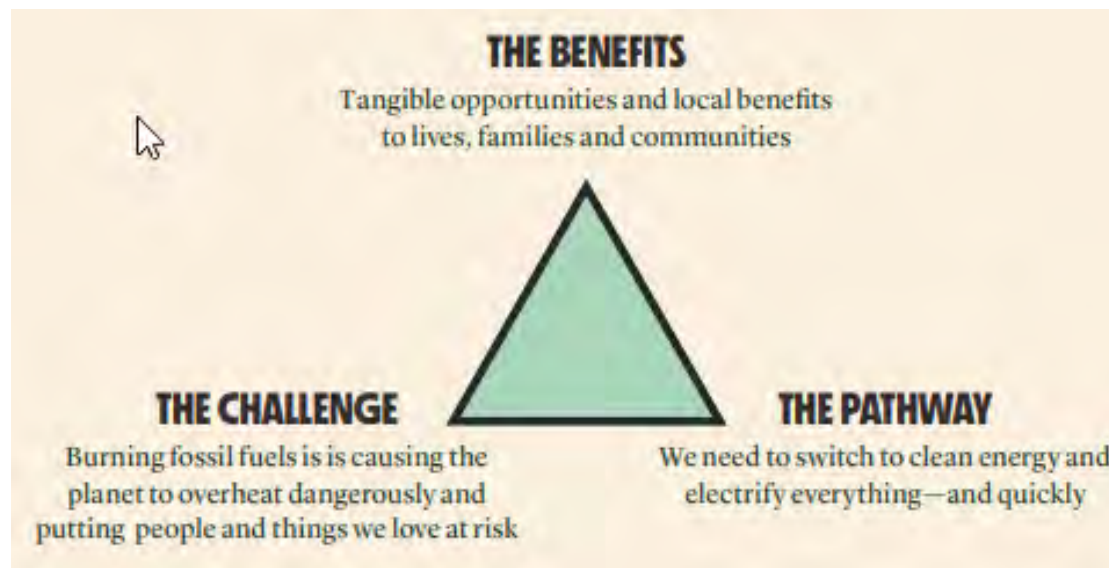
Re.Climate: What do Canadians Really Think About Climate Change?



Source: Hatch, C., Alrasheed, G., Granados, M., & Aldakkak, R.(2024). What Do Canadians Really Think About Climate Change? Re.Climate.

Recommendations for Communicators

- Use plain language and speak to values, not just facts.
- Don't try to win over climate skeptics
- Amplify trusted messengers, especially scientists and doctors.
- Consider using a message triangle:



Source:

Hatch, C., Alrasheed, G., Granados, M., & Aldakkak, R. (2024). What Do Canadians Really Think About Climate Change? Re.Climate.

Surrey's Climate Change Action Strategy

Community GHG Emissions



Corporate GHG Emissions



Surrey's Climate Action Framework



Resilient Zero-Carbon Buildings

GOAL 1

Avoid carbon pollution and improve energy efficiency and resilience to climate impacts in new buildings

Where We Are Now



"Getting Started"

Strengths to Build On

- > Surrey was an early adopter of Energy Step Code
- > Rapid growth rate creates opportunity for new construction standards to make an impact
- > Strong leadership

Shifts* – What is needed to reach this Goal?

- B1** Update City policies and bylaws to rapidly phase out fossil fuel their energy efficiency and climate resilience.
- B2** Align City zoning, policies, processes, and permitting to reduce construction of new resilient zero-carbon buildings.
- B3** Advocate to senior levels of government, BC Hydro, and other the resilient zero-carbon building industry.
- B4** Implement policies for zero-carbon resilient buildings through c

GOAL 2

Phase out carbon pollution and improve energy efficiency of existing buildings.

Where We Are Now



"Preparing to Start"





Strengths to Build On

- > Strong regional collaboration and leadership
- > Aligned provincial and federal policies
- > Strong and engaged local construction industry

Shifts* – What is needed to reach this Goal?

- B5** Advocate for and implement programs and policies to accelerate affordable and inclusive zero-carbon resilience retrofits.

Resilient Zero-Carbon Buildings

Shift B2. Align City zoning, policies, processes, and permitting to reduce barriers to and enable the rapid construction of new resilient zero-carbon buildings.		 	
	<i>Lead Div.</i> <i>Support Div</i>	Quick Start	Supporting City Policy
B2.1. (QS) Undertake a scan to identify existing or potential barriers to resilient zero-carbon buildings in City policies and/or bylaws (e.g., urban design, floor area, and setbacks).	P&D – CP P&D – AP Eng – SES		SC; BBL; OCP; NCPs
B2.2. (QS) Replace the Sustainable Development Checklist with a tool to encourage resilient zero-carbon buildings and sustainability features.	Eng – SES P&D – AP P&D – CP		
B2.3. Provide training opportunities for City staff in the current and emerging technologies and practices needed to deliver resilient zero-carbon buildings.	P&D – Building HR		
B2.4. Consider zoning approaches to encourage resilient zero-carbon building forms (e.g., heights conducive to mass timber buildings).	P&D – CP P&D – AP Eng – SES	ZB; OCP	
B2.5. Demonstrate leading energy and climate performance in new City buildings and recognize local industry leaders.	P&D – Facilities Eng – SES		SC; BBL; OCP; NCPs

Climate-Positive Resilient Ecosystems

GOAL 1

Protect, connect, and restore ecosystems

Where We Are Now



"Progressing"

Strengths to Build On

- > Leadership
- > Policy
- > Partnerships
- > Planning

GOAL 2

Explore opportunities for regenerative agriculture and negative emissions

Where We Are Now



"Preparing to Start"

Strengths to Build On

- > 30% of the city's lands are agricultural lands
- > Strong partnerships with academia
- > Interest and leadership from agricultural operators

Shifts* – What is needed to reach this Goal?

- E1** Explore opportunities to further protect, manage, and restore infrastructure on City-owned lands, to improve ecological resilience.
- E2** Implement policies and practices to manage natural asset resilience.
- E3** Review opportunities to strengthen environmental review and infrastructure projects to better support climate resilience.
- E4** Inventory, assess, and monitor ecosystems and green infrastructure and compliance.
- E5** Manage rainwater to improve ecological and climate resilience.

Shifts* – What is needed to reach this Goal?

- E6** Explore opportunities and partnerships to support ecologically regenerative agriculture and land use practices in the Agricultural Land Reserve for GHG reduction, carbon sequestration, and improved climate resilience.
- E7** Explore opportunities for negative emissions, especially through ecosystem restoration, to remove carbon from the air and store it in plants and soil.

Climate-Positive Resilient Ecosystems

Shift E2. Implement policies and practices to manage natural assets and biodiversity for ecological and climate resilience.



<p>E2.1. Apply leading standards and practices to plant and maintain structurally and biologically diverse, long-lived, healthy and climate-resilient trees in parks and street boulevards.</p>	<p>PRC – Parks <i>Eng – D&C</i></p>	<p>UFMS; BCS; BDG</p>
<p>E2.2. Increase public awareness and understanding of the value of the City's natural assets through communication and engagement. Ensure this information is accessible to the city's diverse and multi-lingual communities.</p>	<p>PRC – Parks <i>PRC – M&C</i> <i>Library</i></p>	
<p>E2.3. Explore opportunities to encourage retaining and planting trees on private land.</p>	<p>P&D – Trees & Landscape <i>PRC – Parks</i></p>	
<p>E2.4. Ensure that budgets and staffing are sufficient to implement the Urban Forest Management Strategy and Biodiversity Conservation Strategy.</p>	<p>PRC – Parks <i>Finance</i></p>	
<p>E2.5. Consider approaches to prioritize equity-seeking groups and vulnerable individuals in urban forestry and biodiversity policies and programs.</p>	<p>PRC – Parks</p>	<p>UFMS; BCS</p>

Examples of Climate Action Projects in Surrey

- Electric mowers
- Solar lights
- Passive house (Clayton Community Centre)
- Tree planting
- Shade structures
- Water re-use

Examples of Net Zero Facilities Projects in BC

- Cariboo Memorial Recreation Complex (Solar Energy System)
- Chilliwack Landing Leisure Centre (Energy Recovery)
- Tumbler Ridge Community Centre (Energy Recovery)
- UBC Thunderbird Sports Centre (Energy Recovery)
- Oliver & District Arena (Energy Recovery)

Cariboo Memorial Recreation Complex

The Cariboo Memorial Recreation Complex, in Williams Lake BC, is home to the local hockey arenas, pool, fitness centre, and other recreation amenities such as a community banquet space.

The multi purpose facility now hosts a 227.5kW rooftop solar panel array, 500 solar modules mounted on a flat roof ballasted racking system, offsets the facility's utility electrical consumption, by harnessing energy from the sun. The solar energy system is grid-interconnected, allowing the facility to access electricity from the grid when the sun is down.

Annual PV Energy Generation 234.5MWh

Total Peak Systems Capacity 225.5kW

Lifetime CO2 Offset 567 homes' electricity use for 1 year

In the first 2 months of use, the facility saved 7880.4 in CO2 emissions

Total cost of project = \$450K *used Green Municipal funds through the Cariboo RD

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Chilliwack Landing Leisure Centre Energy Recovery Dehumidifier

Polar Engineering worked closely with the city of Chilliwack to design and implement a large energy recovery system spanning between two of the city's recreation complexes. The ER system recovers waste heat from the Chilliwack Coliseum's ammonia refrigeration plant and sends it through underground piping to the neighboring Chilliwack Landing Leisure Center (CLLC). Inside the CLLC, a Polar-designed high temperature heat pump is used to boost the grade of this heat, allowing it to be used to meet facility's pool heating, space heating, and domestic water heating needs. This system greatly reduces facility operating costs, leading to **annual savings of over \$65,000 and a payback period of less than 10 years**, all while **reducing greenhouse gas emissions by 330 tonnes per year**. Because of these impressive savings, Chilliwack received a **grant award of \$725,000** through Fortis and CleanBC grant programs.

This heat pump has also been designed to provide simultaneous heating and cooling. This allows the system to continue to offset heating loads while also being used to provide supplemental cooling within the natatorium. This ensures that the City of Chilliwack can continue to maintain comfortable conditions within the pool, even during scorching summer days and crowded swim meet events.



GHG Reductions

Annual: 331 tCO₂e
Lifetime: 8,275 tCO₂e

Grant Funding

Clean BC and Fortis Funding
of \$725,000

Reduction in Operating Costs

Annual: \$72,866
Lifetime: \$ 1.8 M

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TUMBLER RIDGE COMMUNITY CENTRE ENERGY RECOVERY AND REFRIGERATION UPGRADES

Working with the District of Tumbler Ridge, Polar Engineering applied for and received over 1.1 million dollars in grant funding to upgrade the Tumbler Ridge Community Centre. This funding was used to install a site-specific energy recovery system which will integrate directly with the facility's boiler loop, providing over 60% of the heat required for pool, space, and domestic water heating. This system will reduce the facility's greenhouse gas emissions nearly 210 tonnes per year, leading to operating cost savings of over \$56,000 annually.

To support these upgrades, Polar Engineering designed several upgrades within the facility's ammonia refrigeration plant, including the installation of a new low-charge chiller, a plate and frame condenser, as well as a Guntner adiabatic fluid cooler. These upgrades have reduced the ammonia charge of the refrigeration system by over 70% and will also reduce the facility's water consumption by nearly 1.7 million litres each year.



NATURAL GAS SAVINGS

Annual: \$56,000
Over Lifetime: 1,400,000

GREENHOUSE GAS REDUCTIONS

Annual: 210t CO₂e/year
Over Lifetime: 5,250 tCO₂e

GRANT FUNDING

Polar worked with the District of Tumbler Ridge to apply for the Community Economic Recovery Infrastructure Program.

Funding Amount: \$1,100,000

Oliver & District Arena – built in 1969

Main scope of project: replacement of slab, dasherboards and secondary cooling system

Opportunity to address climate change through energy recovery, waste heat from ammonia plant will be captured through a heat pump and used to heat subfloor and domestic hot water system. Opportunity to update life safety systems and address accessibility within the facility.

	BASELINE	PROPOSED
GJ used annually	2711 GJ	1180 GJ
Energy per area	1.15 GJ/m ²	0.50 GJ/m ²

15% electrical savings from upgrades

100% fuel savings from upgrades

56% Total Arena Energy Savings



Overall cost of project \$3.9M

Grant Funding \$2.3M – ICIP (Community, Culture and Recreation)

Borrowing (MFA) \$400K

Capital Reserves \$1.2M

**would have been eligible for Green Municipal Fund Retrofit funding opportunity which is a stackable option to federal grant programs*

Project start date April 30 2024



MUNICIPAL AND COMMUNITY BUILDINGS

Capital project: Retrofit of existing municipal buildings

Available funding: Retrofit a municipal building or portfolio of municipal buildings for higher energy performance and significant GHG emissions reduction.

MAXIMUM AWARD

Combined grant and loan for up to 80% of eligible costs.
Combined grant and loan up to a maximum of \$10 million.
Grant up to 20%** of total loan amount.

Note: The grant contribution is determined as a function of the loan and cannot be separated.

[See Funding Opportunity](#) →



MUNICIPAL AND COMMUNITY BUILDINGS

Capital project: Construction of new sustainable municipal and community buildings

Available funding: Commission and construct a new high-efficiency municipal or community building.

MAXIMUM AWARD

Combined grant and loan for up to 80% of eligible costs.
Combined grant and loan up to a maximum of \$10 million.
Grant up to 15%** of total loan amount.
Additional 5% grant available if the project involves the remediation of a brownfield site.

Note: The grant contribution is determined as a function of the loan and cannot be separated.

[See Funding Opportunity](#) →



MUNICIPAL AND COMMUNITY BUILDINGS

Study: Retrofit pathway for municipal buildings

Available funding: Outline the design of a proposed retrofit of an existing municipal building or portfolio of existing municipal buildings.

MAXIMUM AWARD

Grant for up to 50%* of eligible costs.
Up to a maximum of \$65,000 for a single building, up to \$200,000 for multiple buildings.

[See Funding Opportunity](#) →

Green Municipal Fund's Community Buildings Retrofit initiative can assist your municipality to adopt sustainable community building practices using a GHG reduction pathway approach and reduce your GHG emissions by 50% in just 10 years or 80% in 20 years.

Read their guide to discover how: [Planning an Emissions Reduction Pathway for Community Buildings](#)

Let's talk!