BrightSide Presentation to Metro Vancouver CAC Re Highest and Best Use of Renewable Natural Gas

9 March 2023

BrightSide
an anew company

Agenda

- BrightSide Introduction
- RNG GHG reductions HD Transport vs Buildings
- BC LCF Program – Incentives for adoption of LCF
- Consequences of FortisBC RNG Program Changes

Creating value for clients from Canada's low carbon fuel programs

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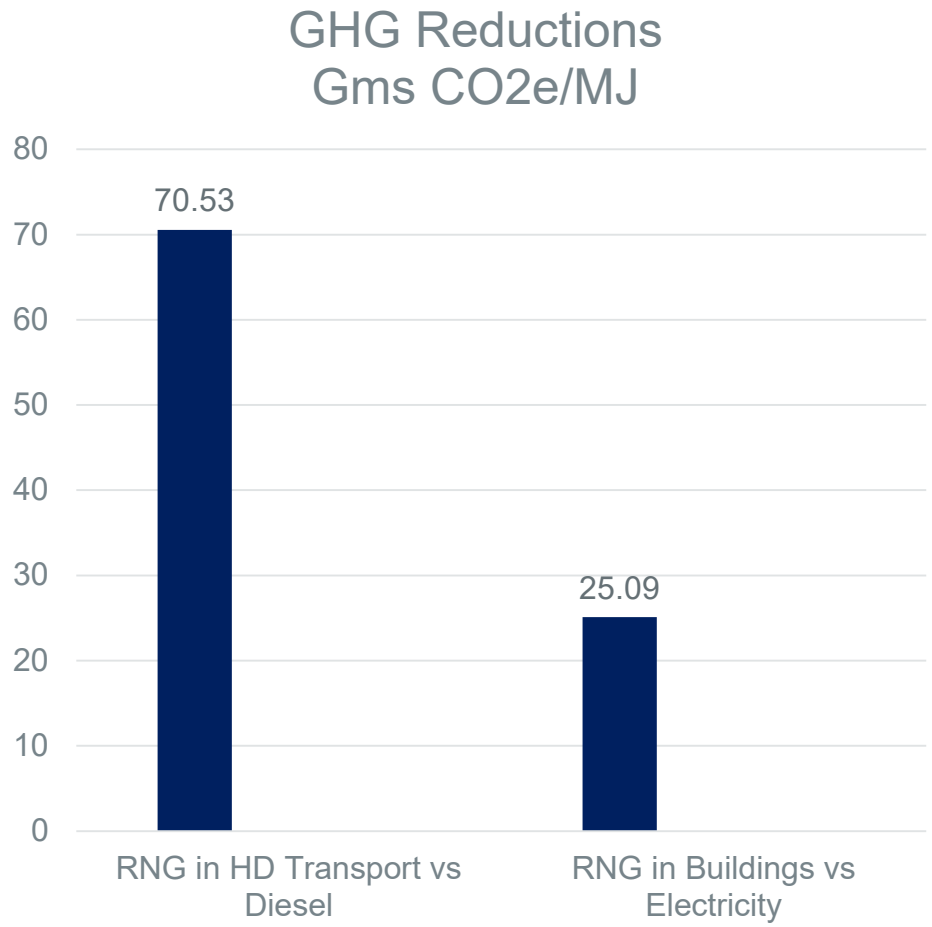
Highest and Best Use of RNG is in HD Transport



- Use of RNG for Transportation produces 2.8 times greater GHG Reductions than use of RNG for building heating applications
- Source: FortisBC Response to BC Hydro IR1 1.6

BC's Low Carbon Fuel Standard

Stick

- Requires Fuel Suppliers to reduce the carbon intensity of the fuels they sell in BC.
- 30% reduction by 2030
- Monetary penalties for non-compliance $600/te

Carrot

- Debits opposite the target can be offset by LCF Credits generated from use of LC Fuels
- Purchased at market price (~$450 today)
- LCF Credits to encourage greater use of Low Carbon Fuels. Price is set by market. Money comes from Oil companies. (Not tax based)

- System helps support business case for investment in trucks, buses and ships that use LC Fuels
- High credit values are needed to compensate for additional costs and risks associated with adoption of new fuels (New trucks and vessels)

FortisBC RNG Program Changes

Discriminatory Pricing

- Transportation customers to pay a rate that is ~ double the rate for residential and commercial building use
- Pricing approach violates long established principles of utility rate making practice

Pricing Rationale

- Utility charging transportation users more because they can generate LCF Credit
- Mistaken assumption is that they can afford to pay more. (Does not factor in Capital Cost of new trucks and vesse
- This effectively transfers credit value from the transportation users, to RNG users in the “built environment”
- The change guts the intent of the BC Low Carbon Fuel Standard
- Will frustrate the achievement of LCF objectives

2 Fatal Flaws In FortisBC’s Logic

- LCF Credit revenue needed for business case of acquiring new ships and trucks
- RNG use for transportation only generates LCF credits if RNG is BC sourced
  - >70% of FortisBC’s existing and planned RNG supply comes from out of Province
  - Increase in RNG price will not be offset by LCF credit revenue
- Therefore, RNG use in Transportation will not be economically viable
- And GHG reductions will not be achieved.

Buses vs Buildings

Impact on Transportation Customers

Transit
- Transition to RNG from CNG will be more costly
- Availability of RNG for transportation use diminishes as RNG is directed to the built environment
- Credit revenues that support green initiatives in general will decline

Seaspan
Planned transition to R-LNG threatened

BC Ferries
Planned transition to R-LNG threatened

Carbon Emissions
Loss of 140,000 te per year of carbon emission reductions

Cost
Increase >$30 million/year

BrightSide's Ask of Metro Vancouver CAC

BCUC and FortisBC

- Support RNG program expansion
- Oppose discriminatory pricing for Transportation customers

BC Ministry of Energy, Mines and Low Carbon Innovation

- Support recognition of "delivery by displacement" for out of Province RNG supply and allow such supply to generate LCF Credits. (Same as other fuels such as electricity)

BC Ministry of Environment

- Support Amendment of Clean BC Objectives to allow FortisBC to gain credit for Carbon emissions in the transportation sector (Level the playing field)
- Support use of RNG in HD transportation (Highest and best use of resource)

Thank you.

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Climate 2050 Engagement and Public Education

CLIMATE 2050 ENGAGEMENT AND PUBLIC EDUCATION STRATEGY 2023 TO 2025

Ann Rowan
Division Manager, External Relations

Lucy Duso
Engagement Lead, Climate Change

Climate Action Committee, March 9 2023
Orbit

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OPPORTUNITIES

- Research into public attitudes
- Best practices in climate engagement and communication
- Shift from policy to implementation
- Need to align with others in the climate space
- Climate action is a trending topic
- Climate change is happening now

s caught in a landslide near Agassiz, B.C., on Monday. (Susana da Silva/CBC News)

STRATEGY TABLE OF CONTENTS

Climate 2050 Engagement and Education Strategy

- Introduction
- Background
- Engagement and Public Education Supports Action
- Three Spheres of Engagement
- Approach to Public Education
- Considerations

Climate Action – Effective and Meaningful Engagement, 3 spheres

Climate Action Consistent Messaging

Climate 2050 Initiative
goals, collaboration, implementation, considerations etc.

Climate 2050 Roadmaps
relevance to climate action, key actions, expected outcomes etc.

Climate Actions
-both adaptation and emissions reductions
challenges, benefits, pathway forward

Questions welcome

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Colony Farm Regional Park

2023 Sustainability Innovation Fund Applications

MARCH CAC MEETING

Presenters: Roger Quan (RD), Paul Kadota (LWS), Linda Parkinson (WS)
SIF Coordinators: Ivy Yuen (ERL) and Tim Singh (LWS)

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Sustainability Innovation Funds (SIF)

- Reserve set up in 2004 to fund projects “based on the principles of sustainability”
- Meet strategic objectives and pilot innovative ideas
- Policies amended in 2021 to further accelerate climate action
- 2023 SIF coordination team:
  - Cross departmental steering committee
  - Ivy Yuen (new)
  - Tim Singh (new)

Circular Economy / Resource Recovery

Emissions Reduction

Environmental Protection

Annual SIF review process

Winter 2022/Early Spring 2023	Spring 2023 (March)	Summer/Fall 2023
Project proposals and internal review • Internal staff steering committee • Senior management approval	**Climate Action Committee and Board approval** CAC considers staff proposals and recommends projects to Board for approval	**Annual update to CAC** Status of projects that have received funding Fund balances

2023 Applications

- **Regional District**
  - 9 applications, totaling $3,736,779
  - Projected fund balance at end of 2023: $7.66 million

- **Liquid Waste Services**
  - 1 application, totaling $625,000
  - Projected fund balance at end of 2023: $11.21 million

- **Water Services**
  - 5 applications, totaling $1,700,000
  - Projected fund balance at end of 2023: $10.34 million

Regional District Applications

Belcarra Regional Park

Future Carbon Storage and Greenhouse Gas Emissions at Burns Bog under Different Management and Climate Scenarios

2023 – 2025: $184,779

Purpose: To evaluate the potential effects of climate change on the ability of Burns Bog to absorb carbon from the atmosphere and to guide management actions to mitigate negative effects.

- Develop computer models that predict greenhouse gas exchange levels at Burns Bog under varying climate and management scenarios
- Develop new tools to monitor ecosystem health at Burns Bog in conjunction with impacts of climate change
- Develop an application with a simple user interface to help guide management decisions in the Burns Bog Ecological Conservancy Area to mitigate climate change effects

1-in-50 Year Deep Energy Retrofits for Existing MURB's

2023-2025: $970,000

Purpose: To upgrade the seismic restraint and densify existing MURB's in the Metro Vancouver region that are considering deep energy retrofit projects.

- Capitalize on a 1-in-50-year opportunity to make buildings safer and more resilient
- Provide affordable housing density to the region where the current housing crisis limits availability
- Leverage involvement in Pembina Reframed Initiative to upgrade other buildings in region

Crown Manor in New Westminster

Prefabricated Mass-Timber Panels in Existing MURB's

2023-2025: $692,000

Purpose: To upgrade the seismic resiliency of existing MURB's in the Metro Vancouver region using prefabricated mass-timber panels.

- Capitalize on a 1-in-40-year opportunity to make buildings safer and more resilient
- Normalize and replicate prefabricated construction solutions for existing buildings undergoing major rehabilitation within the region

Le Chateau Place in Coquitlam

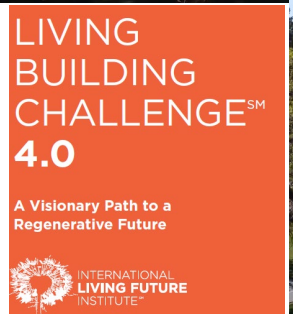
LBC for Existing Affordable Housing Projects

2023-2024: $200,000

Purpose: To advance sustainability and regenerative construction of MURBs in the region and be the first to achieve LBC certification of such in Canada.

- To position Metro Vancouver region as a leader in sustainability and build the first LBC multi-family residential retrofit project in Canada.
- Understanding the feasibility of strategies specified in the Living Building Challenge on an affordable multi-unit residential building retrofit project.
- Obtain a clear and measurable pathway towards re-building existing buildings to become resilient and regenerative.

Somerset gardens in Surrey



Decarbonized On-Demand Domestic Hot Water System

2023-2026: $370,000

Purpose: To implement, monitor and report on the domestic hot water system identified in the previous SIF project “Welcher NetZero Feasibility Study”.

- Implement a decarbonized domestic on-demand hot water system in the Welcher Affordable Housing development. Reduce energy use by 14% and GHG emissions by 45% from Step Code 4 baseline.
- Establish monitoring for this project and one existing MVHC building for comparison to quantify performance.
- Report findings to the regional development community.

SmartFlow On-Demand DHW system with energy metering

AirCnC: Cool ‘n’ Clean Air Centres

2023-2024: $200,000

Purpose: To develop a guidance document for municipalities on the use of cool, clean air centres, with a focus on availability for vulnerable populations.

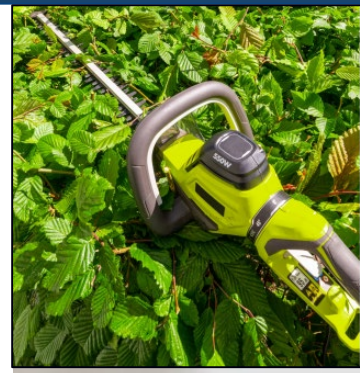
- Develop a consistent typology of “cool” and/or “clean” air centres, and characterize different services provided by different types of centres.
- Identify public and private facilities that could serve as cool, clean air centres and overlay resident vulnerability metrics.
- Develop a guidance document for local governments and others that provides recommendations on how to expand the availability of cool, clean air centres in their communities, particularly for vulnerable residents.

Revving Up the Shift to Green Machines

2023-2024: $240,000

Purpose: To accelerate early adoption of low- or zero-emission mobile or handheld equipment in construction, landscaping, and more within the public and private sectors.

- Identify procurement policies and tools that encourage novel technologies, and lead to greater market share and mandated use through regulations.
- Develop a business casing tool that reflects costs and incentives that apply in the region.
- Develop and promote policies, practices, and tools in collaboration with member municipalities, fleet managers, other governments, and public and private institutions.
- Conduct a demonstration project of a policy, practice, or tool with a partner organization.



Extended Reality Modelling Platform for Metro Vancouver

2023, 2024, $400,000/YEAR

Purpose: This project is a strategic exploration of XR technology (VR/MR) to identify software and testing prototypes to better understand how to make this part of Metro Vancouver's corporate digital toolbox. The project will provide residents of Metro Vancouver experiential interactions and engagement with information about Metro Vancouver services

- Identify tools and technology
- Develop a strategy to communicate Metro Vancouver key messages experientially
- Connect and leverage operational data and modelling with communications focused approaches

Metro Vancouver Events Sustainability Audit

2023: $80,000

Purpose: To reduce the carbon footprint of ERL services and events produced by ERL and find ways to integrate circularity and waste prevention into all our operations.

- Develop a best practices guide for sustainable event production.
- Identify opportunities for operational changes.
- Develop trackable sustainability metrics for Multimedia operations in order to track the effectiveness of implemented strategies.

Nine Regional District Applications

Regional Parks	Years	Budget
Future Carbon Storage and Greenhouse Gas Emissions at Burns Bog under Different Management and Climate Scenarios	2023-2025	$184,779

Housing	Years	Budget
Living Building Challenge for Existing Affordable Housing Projects	2023-2024	$200,000
Decarbonized On-Demand Domestic Hot Water System	2023-2026	$370,000
Prefabricated Mass-Timber Panels in Existing Multi-Unit Residential Buildings	2023-2025	$692,000
1-In-50 Year Deep Energy Retrofit Project for Existing Multi-Unit Residential Buildings	2023-2025	$970,000

Nine Regional District Applications

Air Quality and Climate Change	Years	Budget
AirCnC: Cool ‘n’ Clean Air Centres	2023-2024	$200,000
Revving Up the Shift to Green Machines	2023-2024	$240,000

External Relations	Years	Budget
Metro Vancouver Events Sustainability Audit	2023	$80,000
Extended Reality (XR) Modelling Platform for Metro Vancouver	2023-2024	$800,000

Total budget: $3,736,779

Projected fund balance at end of 2023: $7.66 million

Liquid Waste Services Application

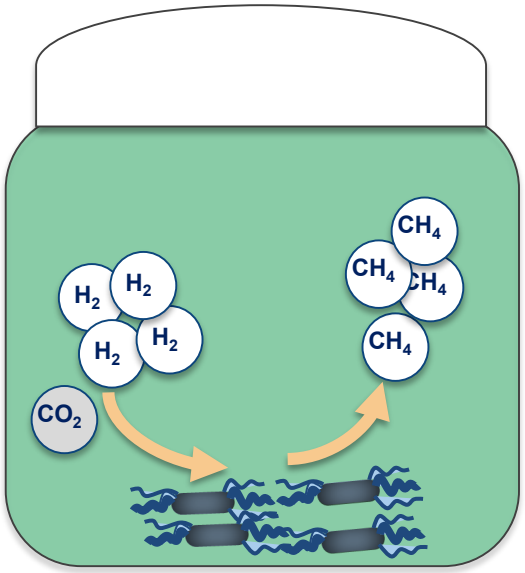
Lulu Island WWTP

Hydrogen System Integration at LIWWTP (Phase 1)

2023-2024: $625,000

Purpose: Produce green hydrogen from wastewater by-products and increase renewable natural gas (RNG) produced in wastewater treatment by using microbial activity in the presence of hydrogen.

- Determine feasibility of onsite generation of green hydrogen from wastewater by-products.
- Design and build a novel hydrogen injection system and test its effectiveness in increasing RNG production.
- Evaluate costs and benefits, including sale of RNG and associated GHG reductions.



One Liquid Waste Services Application

Project name	Years	Budget
Hydrogen System Integration at LIWWTP (Phase 1)	2023-2024	$625,000

Projected fund balance at end of 2023: $11.21 million

Water Services Applications

Coquitlam Water Treatment Plant

Reducing Oxygen Use and Increasing Resiliency at the Coquitlam Water Treatment Plant

2023-2024: $150,000

Purpose: To investigate the feasibility of two emerging and innovative technologies to reduce costs and increase resiliency associated with liquid oxygen supply.

- Review applicability of Onsite Oxygen Generation and
  Oxygen Recovery technologies
- Evaluate operational complexity, anticipated payback period, and GHG savings
- Implementation Strategy for Future Demonstration Study (if successful)

Ozone Generator at the Coquitlam Water Treatment Plant

Studying the Preliminary Feasibility of Green Hydrogen Production from Hydropower at Cleveland Dam

2023-2024: $250,000

Purpose: to assess if hydrogen and oxygen produced by electrolysis is a feasible end use option for potential hydropower generated at Cleveland Dam.

- Assess hydrogen and oxygen production at CLD
- Conduct a market scan for hydrogen
- Will investigate production and distribution options of hydrogen and oxygen
- Determine if and how much revenue could be created to offset the costs associated with hydropower generation at CLD

Capilano River Runners and Fish Hatchery – Spring 2021

Evaluation of Biofiltration at the Seymour Capilano Filtration Plant

2023-2025: $300,000

Purpose: To assess and test biofiltration at the SCFP

- Understand the current research on drinking water biofiltration and specific considerations for SCFP
- Conduct a full-scale biofiltration demonstration study at SCFP
- Determine if operating with biofiltration is beneficial for SCFP
    - If so, implement with a long-term plan including operational training and monitoring
- Potential environmental benefits (reduction in chemical & energy use, wastewater production)

Filters at the Seymour Capilano Filtration Plant

Next Generation Snowpack Monitoring – Phase 3

2023-2025: $450,000

Purpose: To move the tools and products developed during phase 1 and 2 from a research and development stage to fully operational components in the snowpack monitoring program.

- Increase the spatial and temporal density of snow observations
- More accurately estimate stored water volume in the snowpack for water supply planning, research, climate change monitoring, and education
- Incorporate snow data into newly developed hydrological models of the Seymour and Capilano watersheds
- Reduce reliance on helicopter transportation for manual snow data collection, reducing GHG emissions

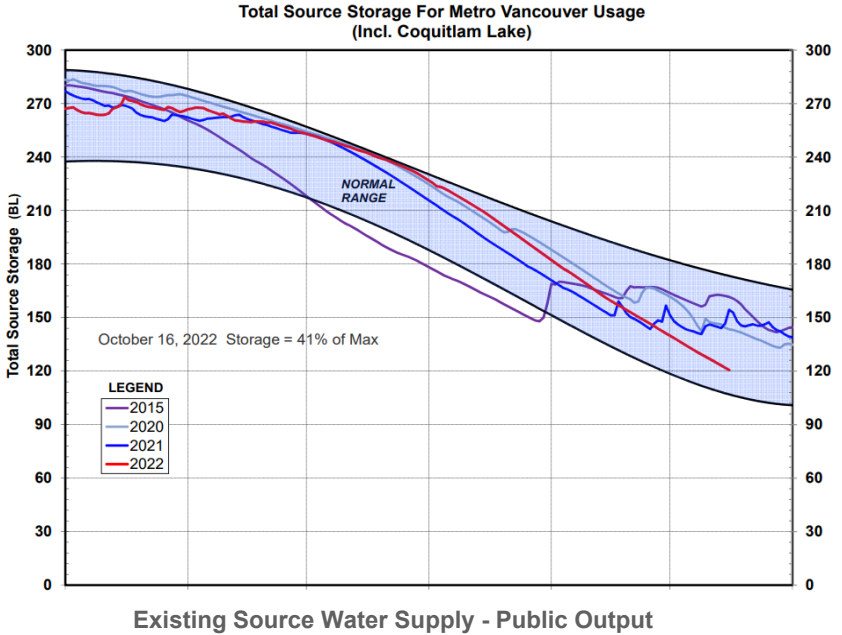
Manual snow surveys

Building the Next Generation of Seasonal Water Supply & Demand Planning Tools

2023-2024: $550,000

Purpose: To advance the existing source water supply model and develop a public facing Drinking Water Stress Index to inform the region of water supply availability.

- More accurately forecast the water supply through the high demand period
- Improve the Corporation's analytical capabilities to make informed decisions about the water supply and the need for watering restrictions
- Improve the Corporation's ability to communicate the status of water supply to the media, member jurisdictions and public



Five Water Services Applications

Project name	Years	Budget
Reducing Oxygen Use and Increasing Resiliency at the Coquitlam Water Treatment Plant	2023-2024	$150,000
Studying the Preliminary Feasibility of Green Hydrogen Production from Hydropower at Cleveland Dam	2023-2024	$250,000
Evaluation of Biofiltration at the Seymour Capilano Filtration Plant	2023-2025	$300,000
Next Generation Snowpack Monitoring – Phase 3	2023-2025	$450,000
Building the Next Generation of Seasonal Water Supply & Demand Planning	2023-2024	$550,000

Total budget: $1,700,000

Projected fund balance at end of 2023: $10.34 million

Pacific Spirit Regional Park

Thank you

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Together we make our region strong