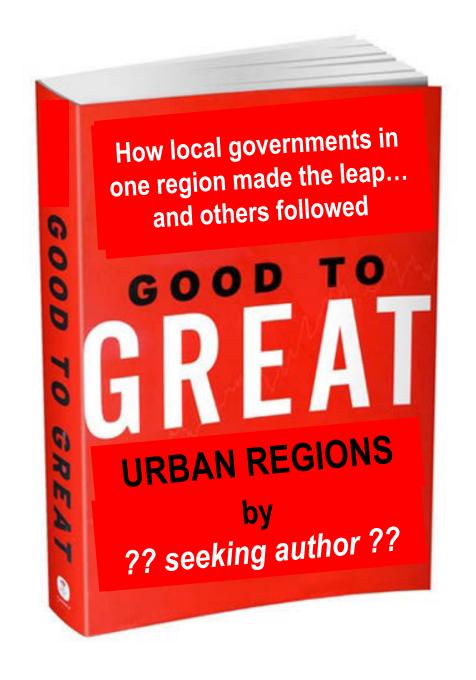




Alex Boston
Executive Director





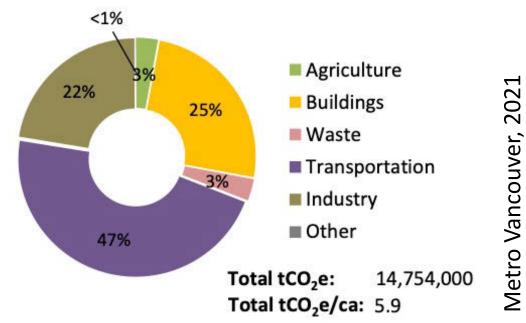








### **Metro Vancouver GHGs**





# **Zero Carbon Transportation Pillars**



Renewable Fuels



Carbon Tax



ZEV & Efficiency



Integrated Land Use & Transportation



Vision Zero Safety



Only one country in the world has driven GHGs below 1990 levels: Sweden! These are the pillars raised comprehensively across Sweden nationally and locally.

# **Zero Carbon Transportation Pillars**



\* \* \*

Key AuthorityFuelsLocal $\sqrt{}$ Provincial $\sqrt{}\sqrt{}\sqrt{}$ 

**BC/MV** Action



Carbon Tax √ √√√√



ZEV & Efficiency  $\sqrt{\phantom{a}}$ 

\* \*



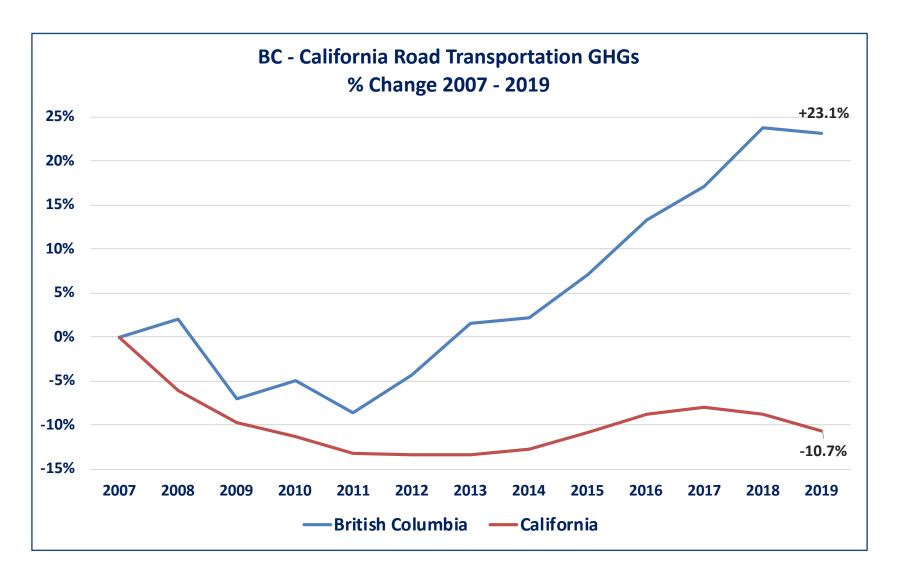




Vision Zero
Safety
√√√
√√√

\*

## N America's Most Successful Jurisdiction on Transpo GHGs



California has raised the first four pillars, including integrated land use and transportation. (It hasn't raised the Vision Zero safety pillar, notably, reducing vehicle speeds.)





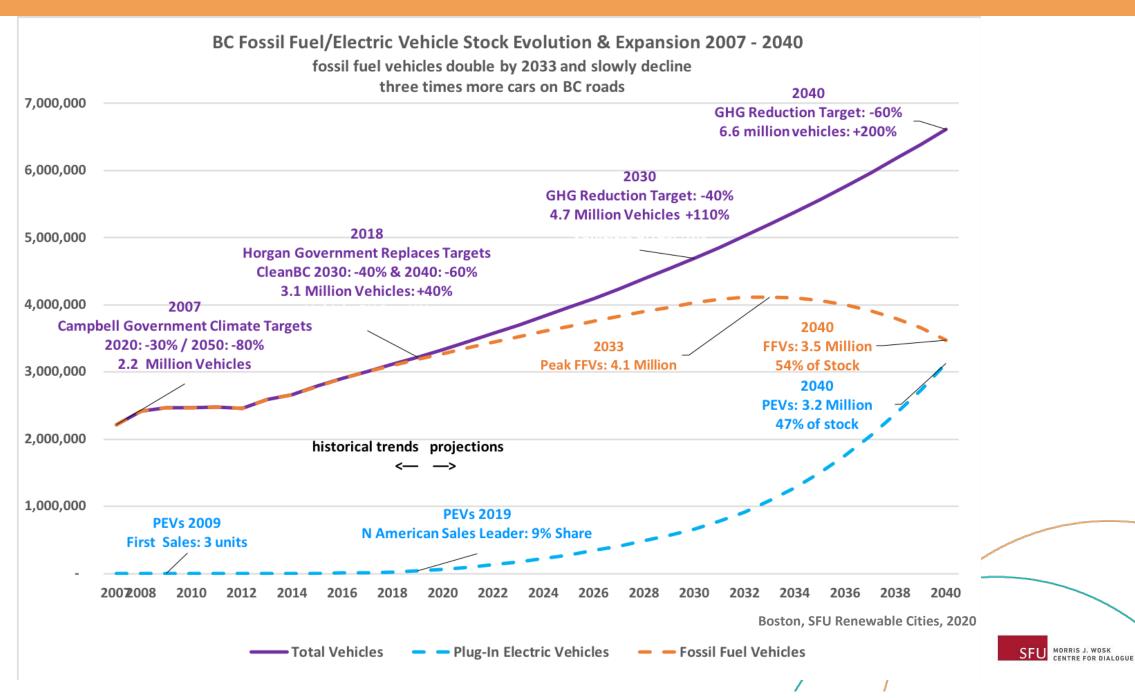
# Sustainable land use is the lowest cost strategy wedge with the highest co-benefits:

congestion management,
transit revenue & ridership,
affordable housing & affordable transportation,
diverse public health benefits,
civic infrastructure cost savings,

resilience to climate impacts, avoiding catastrophic costs to property, infrastructure, human life & ecosystems



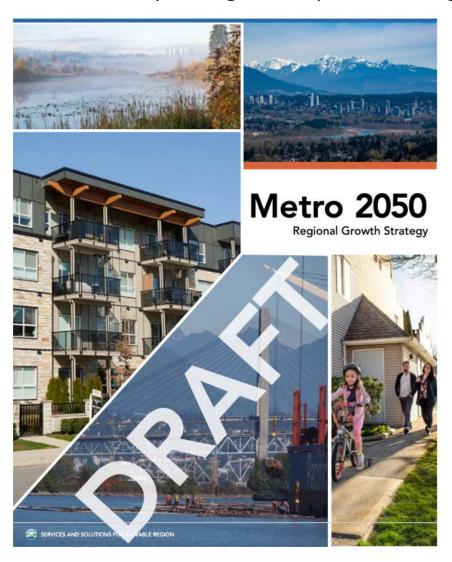
#### BC GHGs 2007 - 2017



## Metro Vancouver Policy Non-Alignment

Metro Vancouver GHG reduction target: -45% by 2030

Clean Air Plan passenger transportation target: -65% by 2030



Metro 2050 will sustain high transportation GHGs, increased congestion and growing vulnerability to climate change impacts.

#### **Metro Vancouver Vision**

Metro Vancouver embraces collaboration and innovation in providing sustainable regional services that contribute to a livable and resilient region and a healthy natural environment for current and future generations.

# Transit Hub Housing on underutilized public land

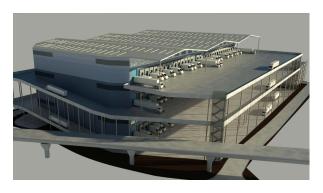
Consolidation Centre Network & Zero Emission Freight Vehicle Revolving Fund

Multi-Storey Warehousing Industrial Intensification

General Urban Gentle Intensification around centres and corridors













# WORKING RESOLUTION FOR MV CLIMATE ACTION COMMITTEE

#### WORKING RESOLUTION ON METRO 2050, CLIMATE, CONGESTION, AFFORDABILITY & PROSPERITY

**Whereas** a series of unprecedented, multi-billion-dollar disasters across our province attributed in part to climate change have exposed the vulnerability of B.C. communities to climate change impacts.

Whereas projected climate change impacts, sustained, high levels of greenhouse gas emissions and an escalating affordability crisis are inconsistent with Metro Vancouver's vision:

Metro Vancouver embraces collaboration and innovation in providing sustainable regional services that contribute to a livable and resilient region and a healthy natural environment for current and future generations.

Whereas the Intergovernmental Panel on Climate Change has underscored that a central focus for local government action to reduce greenhouse gas emissions is sustainable urban land use and that such actions can be delivered at low cost with high co-benefits, including increased resilience to climate change impacts, affordable transportation and congestion management.

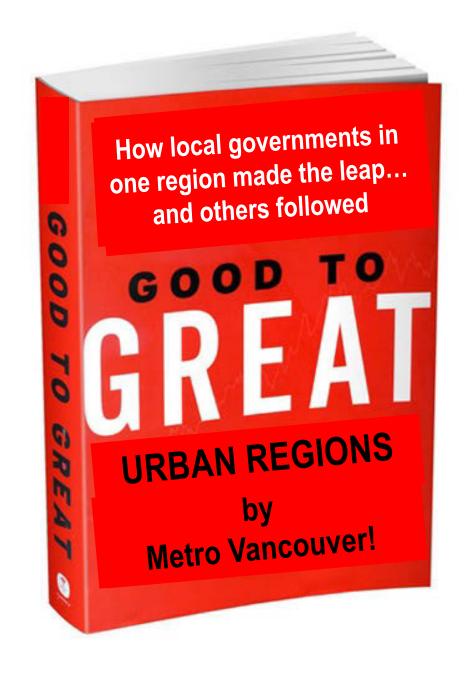
Whereas Metro Vancouver has adopted IPCC recommended targets and it is uncertain if the draft regional land use agenda—Metro 2050—makes a meaningful contribution to reducing greenhouse gas emissions.

# WORKING RESOLUTION FOR MV CLIMATE ACTION COMMITTEE

#### Be it resolved that:

The Climate Action Committee solicits analysis from MV staff on the contribution of Metro 2050 to GHG reductions and congestion to help elected officials and the public better understand the land use planning implications of this important agenda, specifically:

- 1. Estimate the change under Metro 2050 to total passenger vehicles and total driving by 2030 and ascertain if Metro can meet the provincial government's 2030 targets in the CleanBC Roadmap to "reduce distances travelled in passenger vehicles by 25%"?
- 2. Estimate the contribution of Metro 2050 to Metro Vancouver's 2030 GHG reduction commitments of 45% across the community and 65% in passenger vehicles?
- 3. Coarsely evaluate increased or reduced vulnerability in the region to climate change impacts as *a* result of Metro 2050 land use policy, e.g. to people, property, infrastructure, food production, key ecosystems.
- 4. Coarsely identify a half dozen land use strategies for passenger and regional urban freight vehicles that would increase Metro 2050's odds of meeting 2030 GHG targets, reduce driving demand consistent with provincial targets, reduce vulnerability to climate change impacts, increase affordable housing and transportation, and/or reduce upwards pressure on property taxes, utility fees and transit fares.
- 5. Establish leading targets that drive transportation GHG reductions such as mode shift, driving distance reductions (vehicle km travelled) that are attributable to integrated land use and transportation to evaluate annually in RGS reporting along with RGS coarse correction recommendations, if required.









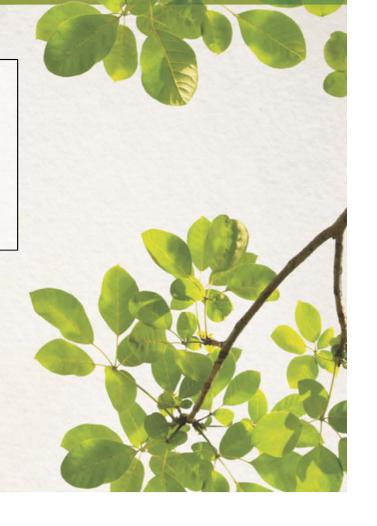
#### Metro Vancouver Climate Action Committee

2022 Work Plan - Climate 2050

Roadmaps for nature and ecosystems & land use and growth management

Christy Juteau, RPBio christy.juteau@arocha.ca 14 January 2022









### Climate Emergency



greater urgency...

### Metro2040 Goal 3: Environment & Climate Change

Protect and enhance natural features and their connectivity, reduce greenhouse gas emissions, and mitigate and prepare for climate change

#### Climate 2050:

Protecting and enhancing natural areas and their connectivity are essential in assisting the region's communities to adapt to climate change

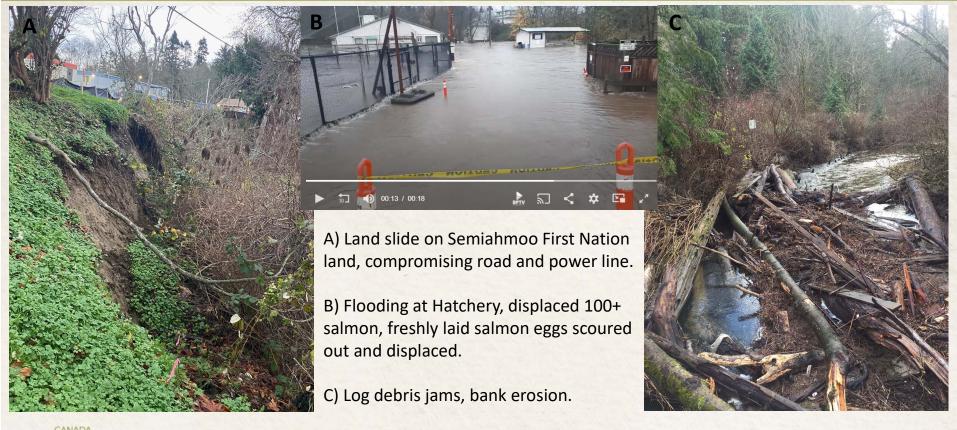


#### **Urban Containment Boundary:**

to establish a **stable**, **long-term**, regionally defined area for urban development... reinforces the **protection of agricultural**, **conservation and rural areas**, and provides predictability for locating urban uses, major regional transportation and infrastructure investment.

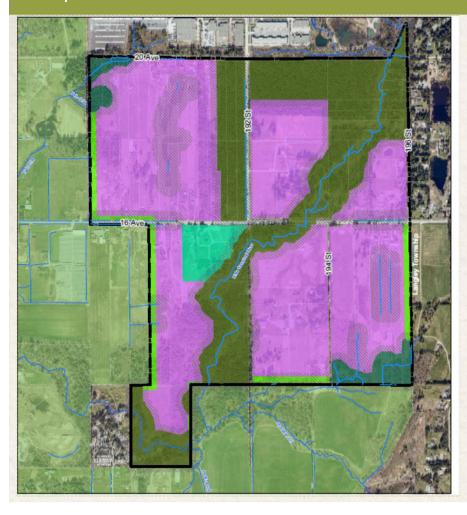


#### Nov 2021 Flood damage in the TA'TALU/Little Campbell River





#### Aquifer Vulnerabilities – Forest loss – Stream health



# Relationship of percent impervious surface to stream health

Bauer and Loeffelholtz (2004)

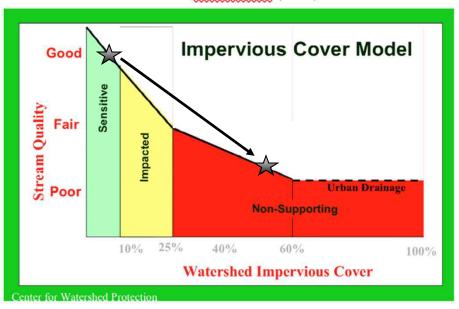
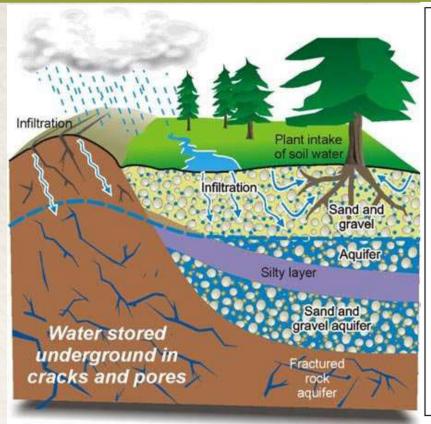
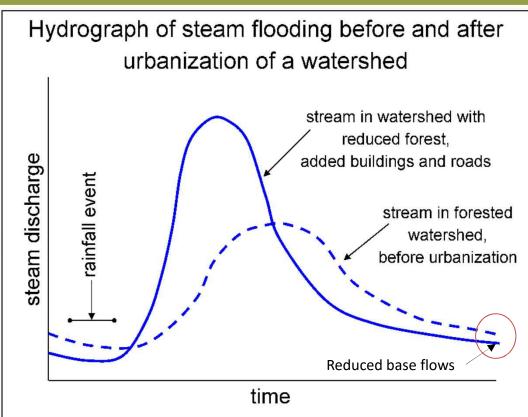


Figure 1. Model of impact of impervious surface on stream quality.

#### Aquifer Protection – Critical Recharge Areas



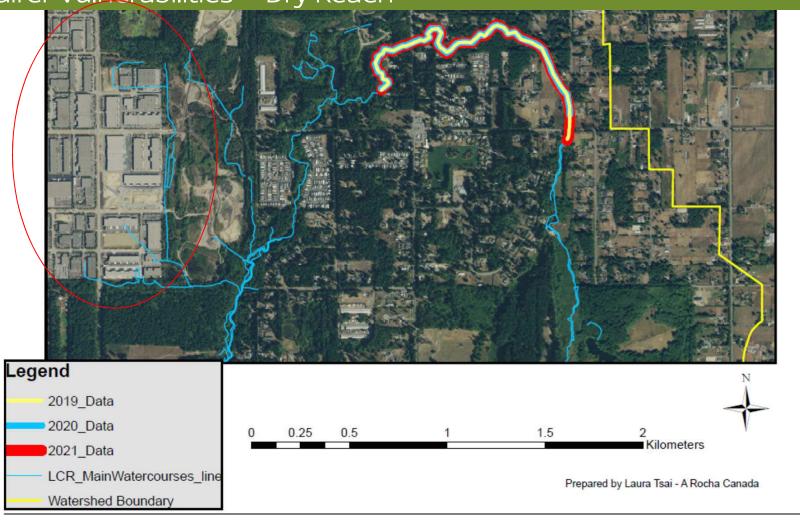




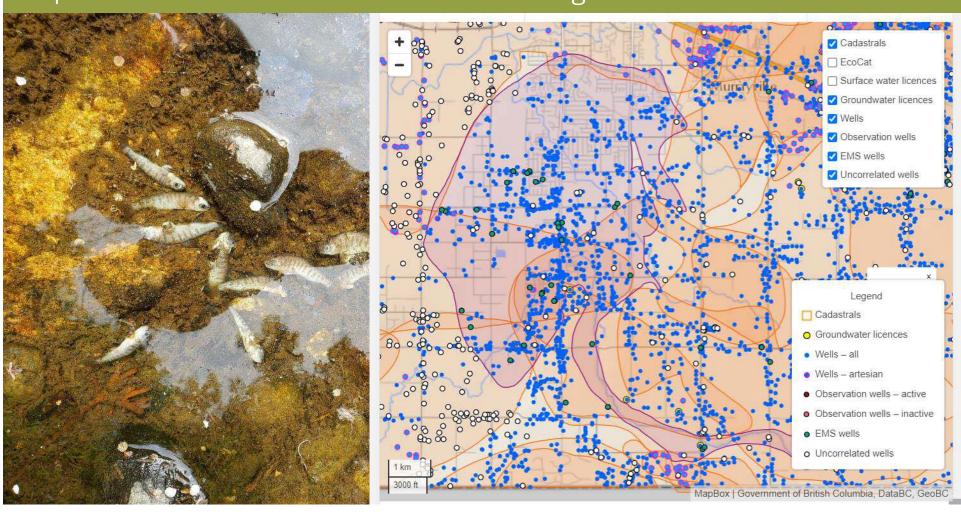
Inspiring Hope. Caring for Creation.

https://courses.lumenlearning.com/cuny-lehman-geo/chapter/human-impact-floods/

### Aquifer Vulnerabilities – Dry Reach



#### Aquifer Vulnerabilities – Human health – Drinking water – Salmon



#### Reconciliation



#### Recommendation





# Thank you









# Retrofitting on Retrofitting Opportunities

for GHG Emission Reductions and Job Creation

**Presentation to Metro Vancouver Climate Action Committee** 

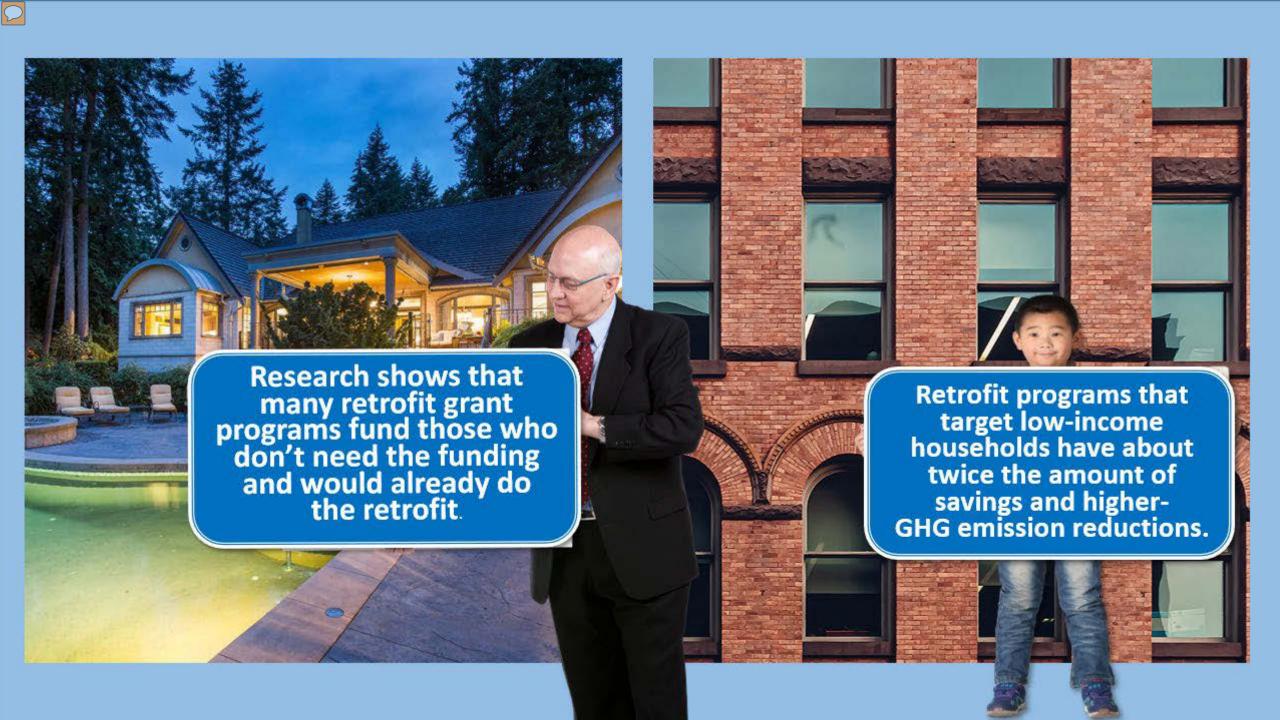


















Retrofitting can be complicated.

Let's make it easy.

















#### **RETROFIT FACTS**

Investments in Building Retrofits will create substantial



tax revenue for BC.

For every \$1 invested in retrofitting, government can see anywhere from \$2 to \$5 returned in taxes.

Investments in Building Retrofits will increase our GDP and create jobs.



For every \$1 spent on retrofits there is a \$2.3 growth in GDP.

So \$1 billion dollars invested would see a:

- → \$2.3 billion growth in GDP
- Create 9,500 new goodpaying jobs.
- Generate between \$2 \$5 billion in taxes for government.

Pembina Institute, 2021







# **THANK YOU**





Above the fog

#### 2022 Work Plan

**CLIMATE ACTION COMMITTEE** 

#### Roger Quan

Director, Air Quality and Climate Change

Climate Action Committee January 14, 2022

**metro**vancouver

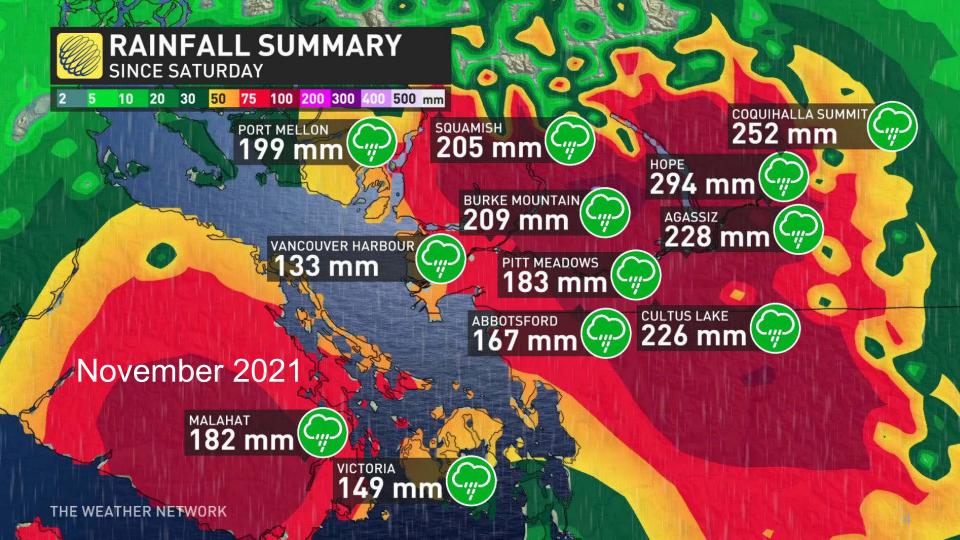
#### CLIMATE ACTION COMMITTEE TERMS OF REFERENCE

#### **PURPOSE**

The Climate Action Committee is the standing committee of the Metro Vancouver Board that provides advice and recommendations on policies, bylaws, plans, programs, budgets, and issues related to climate action, air quality, energy, environment, and the sustainability innovation funds.

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# Climate Action and Energy

- initial Climate 2050 roadmaps
- online reporting and communications tool
- performance monitoring
- partnering on implementation
- action while planning



## Corporate Climate Action

GHG reductions and credits

new provincial program to

replace CARIP

corporate policies



#### Clean Air

- Implementation of the Clean Air Plan
- new bylaws and regulations
- monitoring upgrades
- air quality advisory service



# Sustainability Innovation Funds

- advise Board on three SIF areas:
  - Regional District
  - Liquid Waste
  - Water
- support innovative climate action





Thank you

**metro**vancouver

Together we make our region strong

# METRO VANCOUVER ZERO EMISSIONS INNOVATION CENTRE (ZEIC)

Metro Vancouver
Climate Action Ctte
January 14, 2022

Dir. Jen McCutcheon
ZEIC Board Member and
Metro Vancouver Representative
Zero Emissions Innovation Centre

Melina Scholefield, P. Eng.
Executive Director
Zero Emissions Innovation Centre







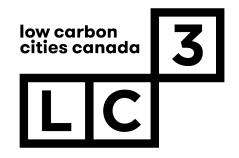
Image: Pre-fab high performing building systems being constructure for Reframed Lab initiative has projects across Metro Vancouver in Coquitlam, New Westminster, North Vancouver and Vancouver



Image: City of Surrey district energy network expansion project - Mobile Thermal Energy Storage (M-TES) can be a viable and cost-effective way to harvest waste energy from industrial sources

Credit: https://pics.uvic.ca/research/m-tes-can-deliver-low-carbon-energy-harvesting-industrial-waste-heat

# Low Carbon Cities Canada (LC3): National initiative to catalyze, accelerate & scale climate innovation



Canada

Nationally Determined Contribution (June 2021)

Reduce GHGs from 2005 levels by 40-45% by 2030

Net Zero by 2050

ZEIC is one of 7 regional centres across the country to share a

\$185M

**Federal Endowment Investment** 

# Low Carbon Cities Canada (LC3): Centres in seven most populous cities, representing 43% of population



#### Calgary

Climate Innovation Fund, hosted by the Alberta Ecotrust Foundation

#### **Halifax Region**

Halifax Climate Investment Innovation and Impact Fund

#### **Edmonton**

Climate Innovation Fund, hosted by the Alberta Ecotrust Foundation

# Greater Toronto & Hamilton

The Atmospheric Fund

#### **Metro Montreal**

Greater Montreal Climate Fund

#### Ottawa

Ottawa Climate Action Fund, incubated by the Ottawa Community Foundation

#### **Metro Vancouver**

Metro Vancouver Zero Emission Innovation

\$21.7M endowment

# LC3 STRATEGIES + TOOLS FOR ACTION

Image: B.C. partners with City of Vancouver to create cargo e-bike micro hub project
Credit: https://www.vancouverisawesome.com/local-news/bc-partners-with-city-of-vancouver-to-create-cargo-e-bike-micro-hub-project-3796450

# Low Carbon Cities Canada (LC3) Network: Strategies

### Strategy 1:

#### Go where public and private dollars can't

- Both public and private investors can be risk averse, creating a 'valley of death' between ideas, pilots and implementation at scale
- Help de-risk and overcome barriers
- Build confidence, capability and know-how

### Strategy 3:

#### Go where the ideas are

- Impact investing in for-profit entities
- Grant-making (public and non-profit sectors)
- Local programs (internally-led initiatives)

### **Strategy 2:**

#### Go where the emissions are

- Focus on major emissions source to 'follow the carbon'
- Across the country, most urban carbon is from buildings, transportation and landfill waste

### **Strategy 4:**

#### Unlock co-benefits for communities

- Collaborate with diverse local organizations for local solutions
- Reduce carbon + maximize benefits for climate adaptation, resilience, equity, public and ecological health and well-being, job creation and economic development, reconciliation with Indigenous peoples

# Low Carbon Cities Canada (LC3) Network:

### Tools and focus areas

### Tools

#### **Grants**

Give min 20% of annual endowment payout

# Impact Investments

Use endowment as fund for loans, financing, loan guarantees

# **Programs**

Deliver programs, partnerships & collaborations to support policy innovation, research, capacity-bldg

# **Focus Areas**



**Green** buildings





# Low Carbon Cities Canada (LC3) Network: Obligations for LC3 Centres across country

Reporting

Annual reporting of projects, fundraising and contributions towards GHG emissions in the region

Endowment Matching

Within 10 yrs, match Federal Government's endowment contribution of \$21.7M



Image: Tsleil-Waututh Nation unveils Metro Vancouver's biggest solar power project

# Metro Vancouver Zero Emissions Innovation Centre:

### Vision, mission and board of directors

#### Vision (working)

Metro Vancouver has achieved zero emissions by 2050 through mass, transformative innovations in buildings, transportation, energy supply and other GHG-intensive sectors.

#### Mission (working)

To advance policy innovation, facilitate capacity building and collaboration, and catalyse market investments to accelerate zero emissions innovation in collaboration with local governments.

#### **Board of Directors**

**Dr. Peter Robinson**Chair

**Cllr. Adriane Carr**City of Vancouver

Andrew Broderick
New Market Funds

**Brenda Knights**Seyem, Kwantlen Nation
Economic Development

Chris Gilmore
Province of BC Climate
Secretariat

**Colin Doylend**Nexii Building Solutions

Chih-Ting Lo
Vice Chair
EELO Solutions

Cllr. Curtis Thomas
Tsleil-Waututh Nation,
Warrior Plumbing

**Dir. Jen McCutcheon**Metro Vancouver

Karen Tam Wu Pembina Institute

**Kira Girwing**Sacha Investments

# CONTEXT WITHIN THE REGION

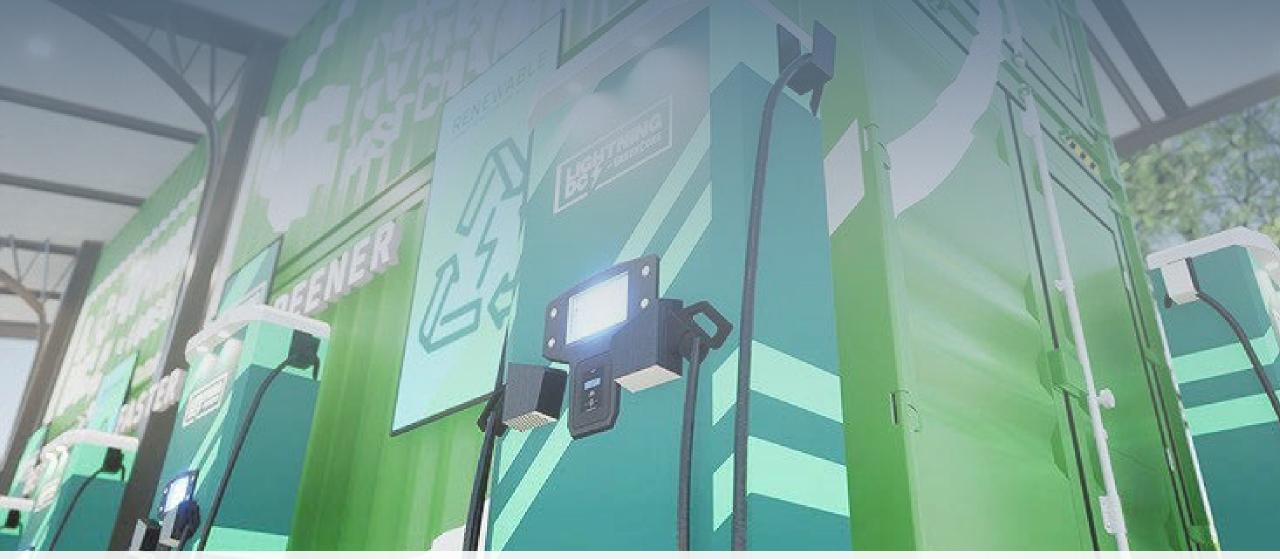


Image: Burnaby-based Loop Energy and GreenCore Partner on Next Generation, Hydrogen-Powered EV Chargers ZEIC 13

Credit: https://www.bctechnology.com/news/2021/6/23/Burnaby-based-Loop-Energy-and-GreenCore-Partner-to-Develop-and-Build-Next-Generation-Hydrogen-Powered-EV-Chargers.cfm

# Supporting regional targets and plans: Working together to support collective action across sectors

# Metro Vancouver

#### Climate 2050

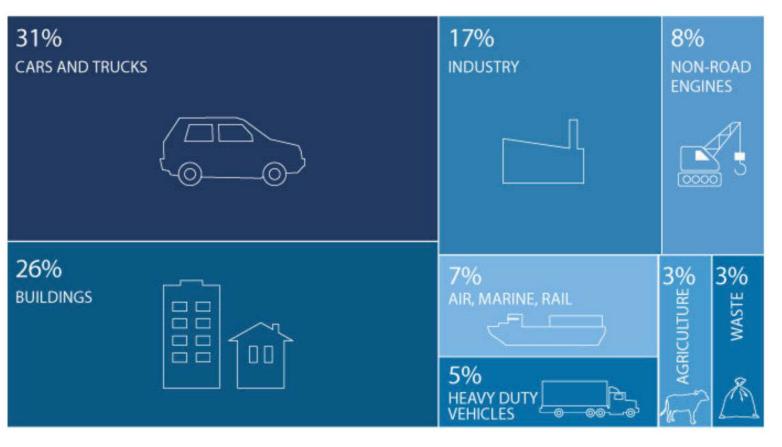
Reduce GHGs from 2010 levels by 45% by 2030

Carbon neutral by 2050









# Context & action across municipalities:

# Needs and opportunities around GHG emissions vary

2019 Region-wide GHGs from Buildings



Addressing building emissions is <u>essential</u> for many municipalities to meet their overall climate targets



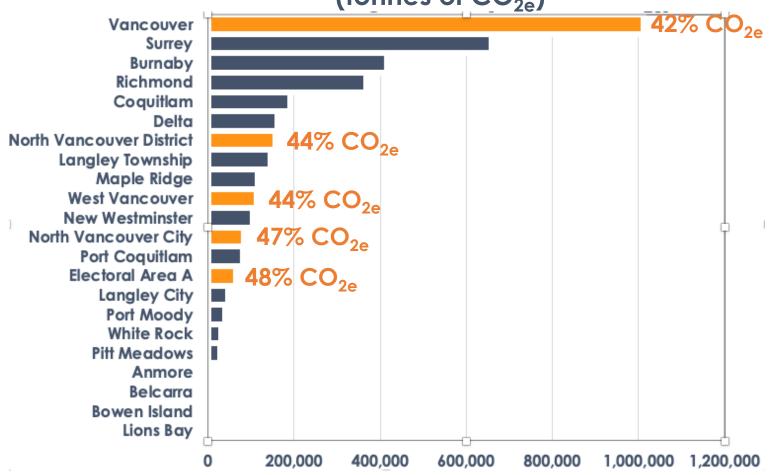




Image: Township of Langley Low Carbon Mobility Plan Enhances EV Options

ZEIC 16

# Key milestones and next steps for ZEIC: Setting positive foundations for the future



# How best can ZEIC support the region and its communities?

We'd love to hear from you!





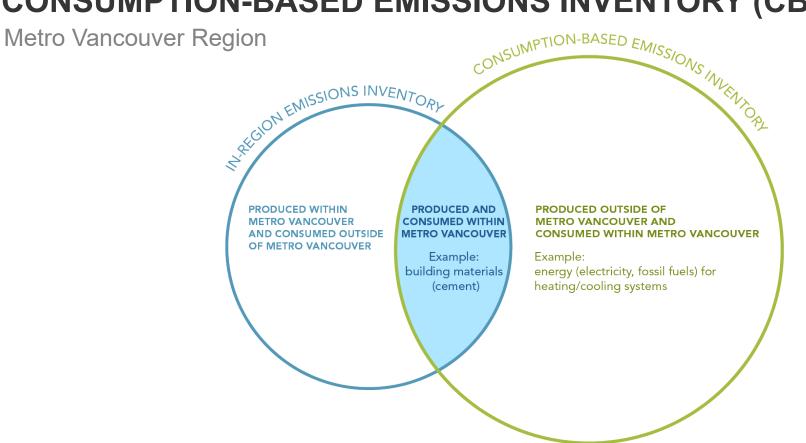
# A Regional Consumption-Based Emissions Inventory METRO VANCOUVER

Sheryl Cumming, P.Eng.

Project Engineer, Parks & Environment

**metro**vancouver

#### **CONSUMPTION-BASED EMISSIONS INVENTORY (CBEI)**

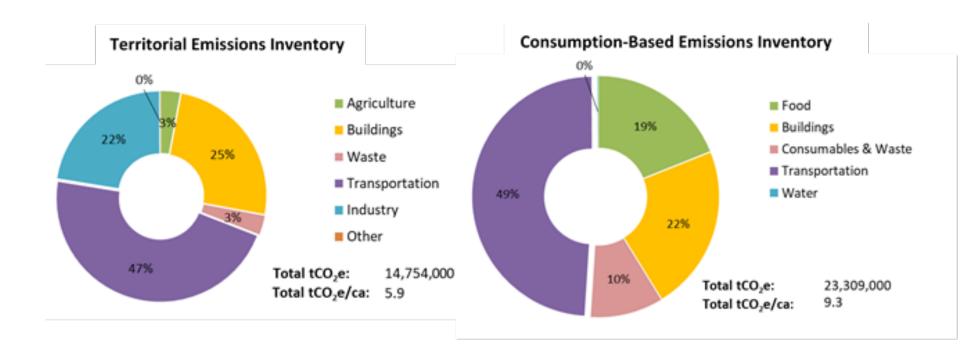




#### **CBEI GHG EMISSION SOURCES**

- Buildings
- Transportation
- Food
- Consumables and Waste
- Water

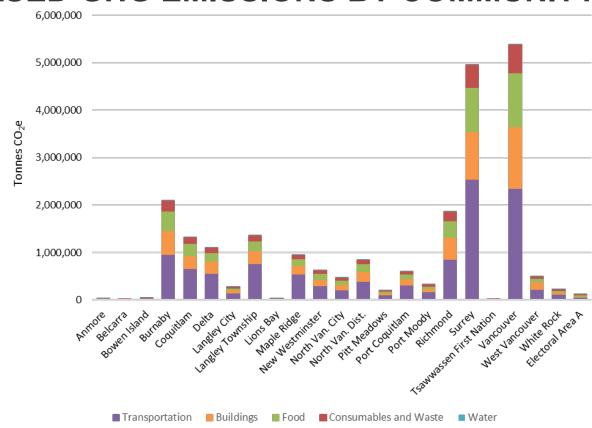
#### METRO VANCOUVER GHG EMISSIONS



#### CONSUMPTION-BASED GHG EMISSIONS BY COMMUNITY

Across Metro Vancouver

- Transportation and Buildings – major sources of GHGs (operating and embodied)
- Buildings 69% operating
- Transportation 66% operating
- Food 96% embodied
- Consumables & Waste –
   81% embodied emissions

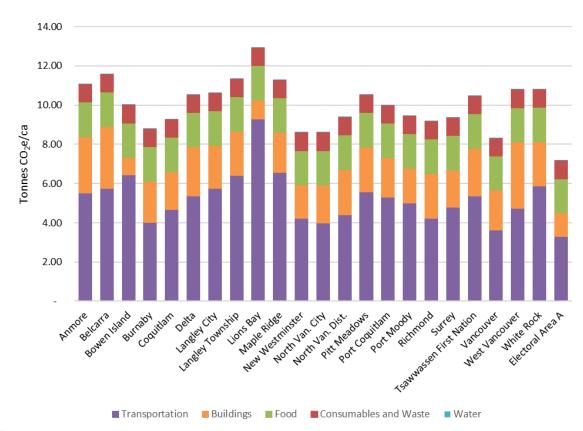


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#### CONSUMPTION-BASED GHG EMISSIONS PER CAPITA

Across Metro Vancouver

- Higher GHGs in communities reliant on larger vehicles
- Higher GHGs in communities with larger homes, low density housing
- Food GHGs primarily from production, food-miles small
- Consumables and Waste based on regional waste and recyclables



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#### IMPLICATIONS FOR REGIONAL GHG MANAGEMENT

- Operating emissions from Transportation and Buildings remains a priority
- Embodied emissions from Food, "Consumables & Waste" emerges in the CBEI
- Consideration of trade-offs, unintended consequences, and co-benefits of policy approaches on embodied emissions

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Questions

#### **metro**vancouver

Together we make our region strong

### INVEST V/NCOUVER

## Clean Transportation:

Findings and actions to strengthen the sector in the Metro Vancouver region

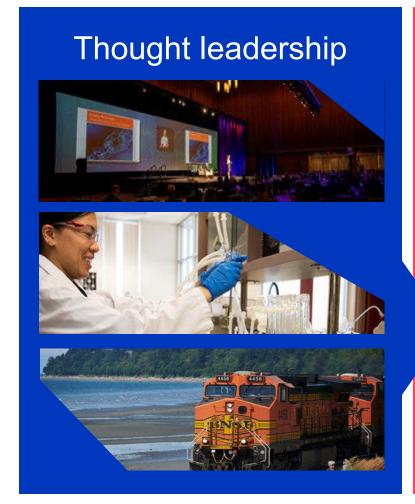
Gregory Freeman, Senior Economist Megan Gerryts, Senior Policy Advisor

January 14, 2022 Climate Action Committee Meeting



# Our Role as a Regional Service









## Invest Vancouver Approach



Positioning the region for success in a rapidly evolving global economy

PRIORITIES FOR ECONOMIC **DEVELOPMENT KEY INDUSTRIES** VALUE PROPOSITION FOR EACH **INDUSTRY** 

## Invest Vancouver Approach



Positioning the region for success in a rapidly evolving global economy

PRIORITIES FOR ECONOMIC DEVELOPMENT

**KEY INDUSTRIES** 

VALUE PROPOSITION FOR EACH INDUSTRY

**Agritech** 

**Apparel** 

**Digital Media & Entertainment** 

**Green Economy** 

**High-Tech** 

**Life Sciences** 

**Trade & Transportation** 

#### **Industry Cluster Selection Criteria**

- Growing
- Competitive advantages
- "Move the needle"
- Export-oriented
- Quality jobs
- Timely

# Invest Vancouver Approach



Positioning the region for success in a rapidly evolving the regio

PRIORITIES FOR ECONOMIC DEVELOPMENT

KEY INDUSTRIES

VALUE PROPOSITION FOR EACH INDUSTRY

### Clean Transportation:

Findings and actions to strengthen the sector in the Metro Vancouver region

November 2021

Gregory Freeman, Senior Economist, Invest Vancouver
Megan Gerryts, Senior Policy Advisor Invest Vancouver



Opportunity, Amplified. In a region like no other

# Understanding the Clean Transportation Value Proposition



What actions can policy-makers take to build capacity in the clean transportation sector?

- Identifying competitive advantages based on the firms who are here now
- 2 Strengthen advantages by identifying and remedying challenges faced by firms in the region

#### Research Approach

Primary, qualitative research through interviews with CEOs, founders, senior executives of clean transportation firms in the region, supplemented by secondary research

# Regional Advantages in Clean Transportation





Innovation Ecosystem

Hydrogen Cluster

# Three urgent actions to strengthen the regional value proposition in clean transportation





Permitting

Improve the permitting process to provide greater accountability, certainty, predictability and reduced risk



**Physical Spaces** 

Use a portion of the InBC fund to invest in industry-critical physical spaces to be leased to firms at below-market rates

Provincial action

Municipal action



Hydrogen Cluster Development

Launch a hydrogen hub in the region to co-locate hydrogen supply and demand

Multi-stakeholder collaboration

## Read the full report at investvancouver.ca

### **Clean Transportation:**

Findings and actions to strengthen the sector in the Metro Vancouver region



Opportunity, Amplified. In a region like no other.

# INVEST WANCOUVER

Opportunity, Amplified. In a region like no other.