

Roderick V. Louis

3.1

March 10-2023 MV RD “Planning Committee” mtg, agenda Item 3.1: “Metro 2050 Regional Growth Strategy”:

http://www.metrovancouver.org/boards/GVRD/RD_2022-Mar-25_AGE.pdf

➤ **“Metro 2050 RGS” development** (April-2019 to March-2022 when 1st & 2nd reading occurred)

->>> Did **not** comply with Local Govt Act **public consultation** requirements;

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section434

➤ **“Metro 2050 RGS” content:**

- Highly deficient;

- Unnecessarily vague;

- Bereft of specific, actionable objectives;

- Needlessly without any **“Implementation Agreements**”**

=====

** Local Government Act (RSBC) sections 435 and 451 re Implementation Agreements:

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section435

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section451

Local Government Act (RSBC)

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section434

434) Consultation during development of regional growth strategy

(1) During the development of a regional growth strategy,

(a) the proposing board must provide opportunity for consultation with persons, organizations and authorities that the board considers will be affected by the regional growth strategy,

(2) For the purposes of subsection (1)(a), as soon as practicable after the initiation of a regional growth strategy, the board must adopt a consultation plan that, in the opinion of the board, provides opportunities for early and ongoing consultation with, at a minimum, the following:

(a) its citizens;

(d) boards of education,... ;

(e) the Provincial and federal governments and their agencies.

Metro 2050 RGS Development

Metro 2050 RGS “**Consultation Plan**”:

- Adopted by the MV RD board in July and October-2019

<http://www.metrovancouver.org/services/regional-planning/PlanningPublications/Metro2050EngagementPlan-Oct2019.pdf>

http://www.metrovancouver.org/boards/GVRD/RD_2019-Oct-4_AGE.pdf (Item 2.2)

➤ “**Consultation Plan**” was DEFICIENT:

➤ Did **not** identify **any** “**advertisement**” **methods** for:

- “**Notifying**” MV citizenry (business owners, residents) of the Metro 2050 RGS development;

- **Inviting** **MV citizenry** to provide their views regarding potential content of the Metro 2050 RGS;

Metro 2050 RGS Development

MV RD responses to 6 Freedom of Information Requests confirmed:

During April-2019 to March-2022:

➤ Metro Vancouver **did not “notify” MV citizenry** (business owners, and residents) of the Metro 2050 RGS development...

... by posting advertisements in (or on) **any** of BC's **newspapers'** (paper and Internet versions), **radio** and **TV stations'** websites;

➤ Metro Vancouver **did not advertise** the Metro 2050 RGS development

... in (or on) **any** BC **newspapers** (paper and Internet versions), **radio** and **TV stations'** websites...

Requested Action #1

Recommend to the MV RD board that:

- The (February 24-2023 MV RD board mtg) motions that approved the Metro 2050 RGS... are promptly rescinded;

- Development of the Metro 2050 RGS is extended by at least 6- 12 months; and during this time,

- Metro Vancouver will facilitate a fulsome, transparent consultation with:

➤ **MV business owners,**

➤ **MV residents,**

➤ **k-12 school boards, k-12 parent-teacher associations & advocacy groups;**

➤ **The region's police agencies, departments and RCMP detachments....**

... regarding potential amendments to and content of the Metro 2050 RGS;

Requested Action #2

Recommend to the MV RD board that:

- The Metro 2050 RGS is amended so that it contains statistics, objectives and actions- and **Implementation Agreements**- regarding:

a) The Region's **k-12 school services** 2023- 2050;

b) The severe and worsening inadequacies of k-12 schools' student capacities 2011- 2023... and resultant **"portable classrooms" problems**- in MV's "South of Fraser" sub-region (over 300 portable classrooms as of March-2023);

c) **Crime levels** (2011- 2023);

.. & **strategies that, during 2023- 2050**, will be implemented by the region's police agencies and related services... to prevent/ reduce crimes- and prevent and reduce specific types of crimes such as Metro Vancouver's **severe and worsening-for-many-years guns and illicit drugs crimes**;

d) The Region's police services and agencies, and RCMP detachments;

Requested Action #2 continued

Recommend to the MV RD board that:

The Metro 2050 RGS is amended so that it contains **statistics, objectives and actions-** and **Implementation Agreements**- regarding:

e) The potential benefits of the establishment of a *Metro Vancouver Police Department*- that would replace all of, or most of, the Metro Vancouver Regional District's police agencies and member municipalities' police departments and RCMP detachments;

And... the financial, logistical and other resources- and the legislative and administrative actions- that potentially would be required to establish such a ***Metro Vancouver Police Department***;

f) The region's major **bridges and tunnels (especially **Massy Tunnel**), their adequacies & inadequacies during 2011- 2023, current and future needed capacities, and the estimated remaining years before existing bridges and tunnels must be replaced;**

Requested Action #2 continued

Recommend to the MV RD board that:

The Metro 2050 RGS is amended so that it contains **statistics, objectives and actions-** and **Implementation Agreements**- regarding:

g) The region's rail rapid-transit lines (2011- 2023): *Expo, Millennium, Evergreen, Broadway* and *Canada Line* SkyTrain lines; and the *West Coast Express* "Heavy Rail" line,... their adequacies & inadequacies during 2011- 2023, Current and future needed capacities, and estimated remaining service years;

h) The performance of Metro Vancouver's water, liquid waste, and solid waste services' infrastructure during 2011-2023; ... Projected needed increases in capacities of, upgrades to & replacements during 2023- 2050... to accommodate MV's commercial facilities & population increases;

->>> Why has MV's 2011 (10-year) Liquid Waste Management Plan not been replaced?? <http://www.metrovancouver.org/services/liquid-waste/projects-initiatives/lwmp/Pages/default.aspx>

->>> Consequences of not replacing MV's 2011 Liquid Waste Management Plan during 2021- 2023... and afterwards??

Requested Action #3

Recommend to the MV RD board that: the Metro 2050 RGS is amended to include **Metro Vancouver 2040 RGS policy 5.1.2:** <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAdoptedbyGVRDBoard.pdf> , (Page #52 (#58 in Acrobat Reader):

Policy 5.1.2:

... Metro Vancouver's priorities for the expansion of the Frequent Transit Network and other transit services are:

*i) staging **rapid transit expansion** (busways or rail), in the following priority corridors*

Priority 2:

*- Connecting **Surrey Metro Centre** to one or more of the following **Urban Centres south of the Fraser River:** Fleetwood Municipal Town Centre, Guildford Municipal Town Centre, Newton Municipal Town Centre, and Langley Regional City Centre;*

ii) enhancing or extending the Frequent Transit Network and other transit services in the following regional corridors to reinforce Urban Centres and Frequent Transit Development Areas:

*- **enhanced service linking** Maple Ridge Regional City Centre and Langley Regional City Centre to each other, to Port Coquitlam Municipal Town Centre and to Coquitlam Regional City Centre and to other **Urban Centres south of the Fraser River;***

*- **enhanced service linking** Semiahmoo (White Rock) Municipal Town Centre to other **Urban Centres south of the Fraser River;***

- Implementation Agreements -

**** **An *Implementation Agreement* (IA) is a legally enforceable contract between a Regional District and senior level(s) of govt (a contract between Metro Vancouver and the BC and or Canada govts)...**

An IA could require specific actions from the govt of BC and or govt of Canada to enable and facilitate the implementation of a Regional Growth Strategy, and or an RGS's objectives and actions...

... such as the govts of BC & or Canada regularly providing \$\$ funding to pay for:

- **Construction of k-12 schools;**
- **Construction of specifically identified major infrastructure projects;**
- **Implementation of crime prevention programmes;**
- **The establishment of a “Metro Vancouver Police Dept” (to replace the MV RD's member cities' police depts and RCMP detachments);**

Local Government Act (RSBC) sections 435 and 451 re Implementation Agreements:

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section435

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section451

BC govt Regional Growth Strategy booklet:

https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/local-governments/planning-land-use/rgs_explanatory_guide_2005.pdf

Local Government Act (RSBC)

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section451

451) **Implementation agreements**

- (1) ... a **local government** may enter into agreements respecting the coordination of activities relating to the implementation of a regional growth strategy...
- (2) For the purposes of this section, **the Provincial government may enter into (implementation) agreements... to take actions necessary to implement a regional growth strategy...**
- (3) ... (implementation) agreements under subsection (1) may be made with **the federal government and its agencies, ... boards of education** (k-12 school boards), ... the South Coast British Columbia Transportation Authority, and other local authorities...

Local Government Act (RSBC)

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section435

435) Facilitation of agreement during development of regional growth strategy

(1) The minister may appoint facilitators for the purposes of this Part, whose responsibilities are

(a) to monitor and assist local governments in reaching agreement on the acceptance of regional growth strategies during their development by

(i) facilitating negotiations between the local governments,

(iv) facilitating the involvement of the Provincial and federal governments and their agencies, ... boards of education (k-12 school boards), ..., and

(b) to assist local governments in entering into implementation agreements under section 451...

Local Government Act (RSBC)

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section435

435) *Facilitation of agreement during development of regional growth strategy*

*(3) At any time until the end of the period for acceptance or refusal of the proposed regional growth strategy under section 436 (4) (b), **the facilitator is to provide assistance referred to in subsection (1) (a) of this section if requested to do so***

(a) by the proposing board or an affected local government, or

*(b) by **an electoral area director of the proposing board**, if the request is supported by at least 2 other directors...*

(4) Once a facilitator becomes involved under subsection (3), the proposing board and affected local governments must provide information as requested by the facilitator and must otherwise cooperate with the facilitator in fulfilling his or her responsibilities...

During 2011-23 Metro Vancouver staff should have provided copies of this BC govt-produced RGS resource to MV board members & member cities' councils:

https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/local-governments/planning-land-use/rgs_explanatory_guide_2005.pdf

REGIONAL GROWTH STRATEGIES

An Explanatory Guide



Regional Growth Strategies

BC govt explanatory guide

https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/local-governments/planning-land-use/rgs_explanatory_guide_2005.pdf

Page #2 (10 in Acrobat Reader):

*"The modernized planning system introduces three important tools to local government- **regional growth strategies**, regional context statements and **implementation agreements**.*

"Although these are separate documents, they are closely connected...."

Page #3 (11 in Acrobat Reader):

*"An **implementation agreement** (IA) is a partnership agreement between a **regional district and other levels of government**, their agencies or other bodies (such as **k-12 school boards**)*

"... which spells out the details of how certain aspects of a regional growth strategy will be carried out. "...

*"For example, **an agreement (IA) may relate to the construction and funding of new or upgraded highways, sewers, hospitals or regional parks..... (or k-12 schools)** "*

Regional Growth Strategies

BC govt explanatory guide

Page #5 (13 in Acrobat Reader):

" Principles Underlying the (Regional Growth Strategy) Legislation

"5. Broad based consultation ...

" ... early and often

"Everyone who has to live with the outcome should have a say in the development of plans.

"This principle supports the early and ongoing participation of municipalities, community groups and other interested parties... "

Regional Growth Strategies

BC govt explanatory guide

Page #7 (15 in Acrobat Reader):

*"... The purpose of a regional growth strategy, established in **section 428**,*

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section428

"... is to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources

*"The RGS should also be comprehensive, including **social, economic** and environmental **matters**.*

"In addition, population and employment projections must be prepared.

A list of **actions** to meet projected needs completes the provincial governments requirements...

Regional Growth Strategies

BC govt explanatory guide

Page #14 (22 in Acrobat Reader):

*"... **Intergovernmental Advisory Committees***

*" Once a growth strategy has been initiated, the regional district would form an intergovernmental advisory committee (IAC), as required under **Section 450**.*

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section450

*"... This committee would include senior local government staff and senior provincial staff from appropriate ministries and agencies, **plus invited others**.*

*"Representatives of other authorities, such as the federal government or **school districts** **can be invited to sit on an IAC**, fostering broad involvement on an **early and ongoing basis**.*

*"**The role of the IAC is to** advise a regional district on the development of an RGS and to **help coordinate provincial and local government actions, policies and programs** as they relate to the strategy...*

Regional Growth Strategies

BC govt explanatory guide

Page #14 (22 in Acrobat Reader):

*"... **Intergovernmental Advisory Committees***

*"A key aspect of the IAC is to inform the local government process by providing a forum for provincial and local government senior staff to come to the table at the beginning of the process to **discuss provincial interests***

and the tools the provincial government is prepared to use to support particular outcomes

*and **to develop strategies for implementing common provincial/ local objectives.... "***

Regional Growth Strategies

BC govt explanatory guide

Page #28 (36 in Acrobat Reader):

*"... Achieving **Implementation Agreements***

*"The legislation also provides for **implementation agreements** (IAs) between the regional district and other bodies where cooperation is required to implement the strategy (Section 451:*

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section451)

*"The primary focus will be on **provincial ministries** and agencies.*

*"However, it could include others, such as the regional district's member Municipalities... or other local bodies such as airport or port authorities (or **k-12 school boards**, police departments)*

*"**Implementation agreements** are an important tool designed to promote coordinated local/ provincial actions.*

"... IAs can deal with a wide range of matters...."

Regional Growth Strategies

BC govt explanatory guide

Page 28 (36 in Acrobat Reader):

*"... Achieving **Implementation Agreements***

*"These agreements are the primary means for the regional district and the provincial government to commit to **actions** on implementation of the RGS- for example, **infrastructure investments**, programs and policies.*

"The content of these agreements vary by region...

"For example, in the GVRD a primary focus is transit infrastructure investments and supportive land use patterns...

"... the minister-appointed facilitator, under section 435

https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/r15001_13#section451

*"... could provide assistance to the regional district and its member municipalities in entering into **implementation agreements** with each other, the provincial government and others (such as **k-12 school boards**)... "*

How land-use planning and urban form can support climate action

Overview of key concepts

Stephanie Chang

University of British Columbia

School of Community and Regional Planning (SCARP) and
Institute for Resources, Environment and Sustainability (IRES)



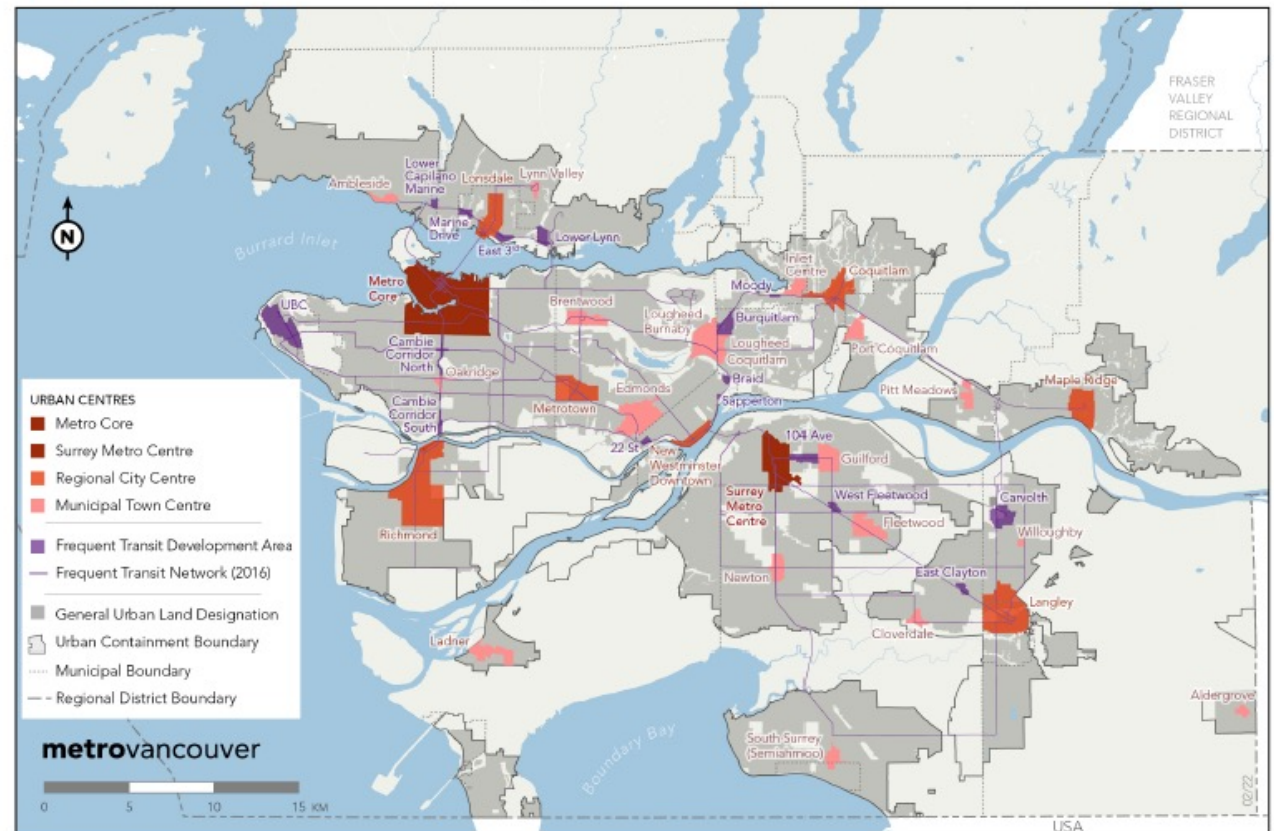
(photo: S. Chang)

Land Use Planning and Urban Form – Metro 2050

“where and how we build”

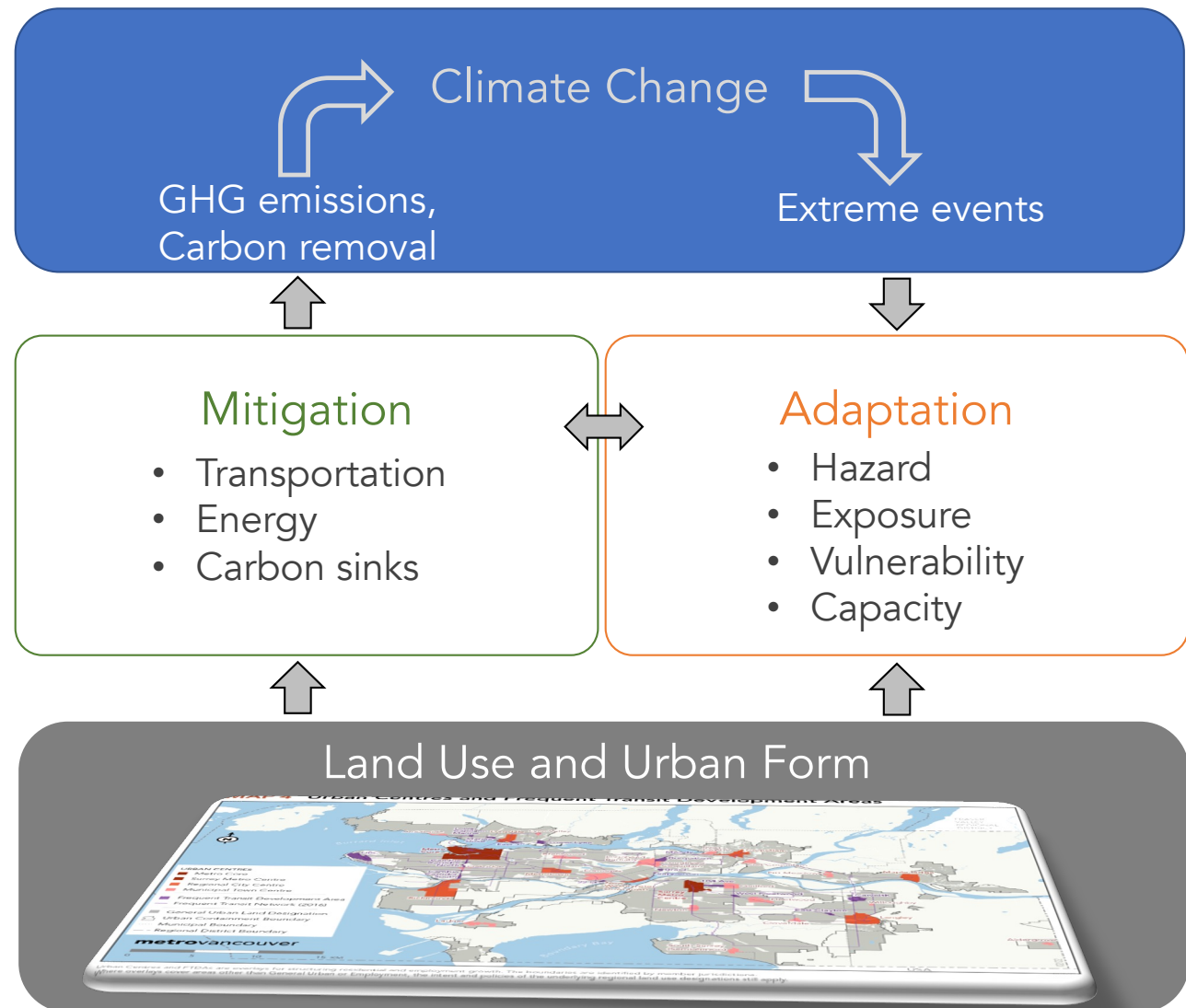
- Urban Containment Boundary
- Urban Centres, Frequent Transit Development Areas
- Complete Communities
- Coordinate transportation and land use planning
- Support sustainable transportation

MAP 4 Urban Centres and Frequent Transit Development Areas



Urban Centres and FTDAs are overlays for structuring residential and employment growth. The boundaries are identified by member jurisdictions. Where overlays cover areas other than General Urban or Employment, the intent and policies of the underlying regional land use designations still apply.

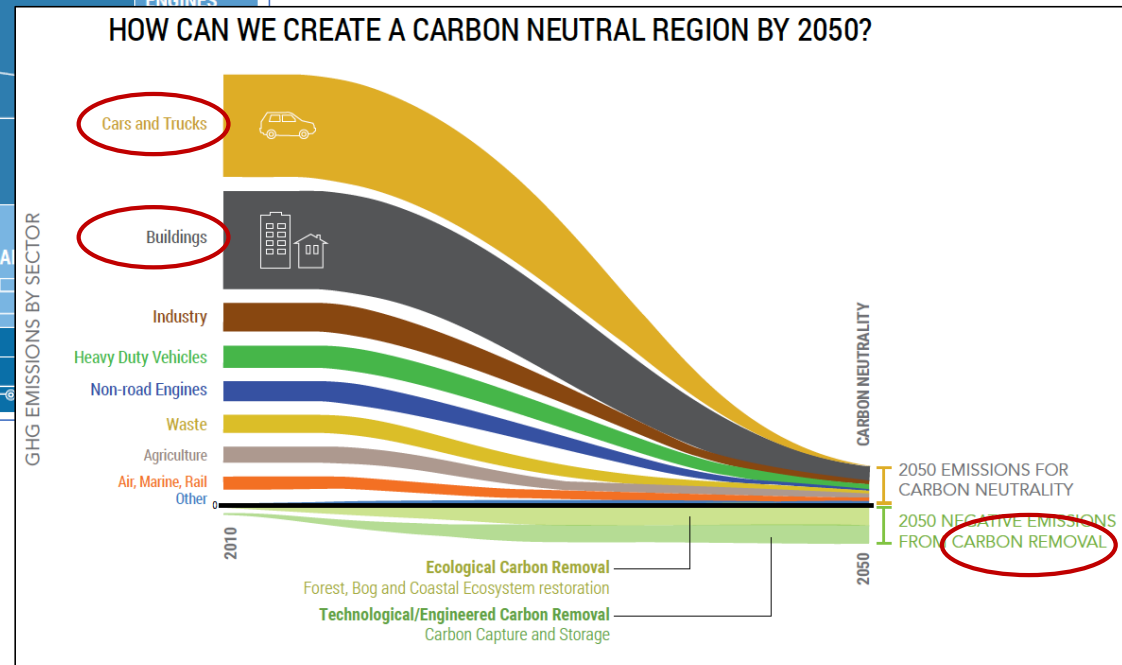
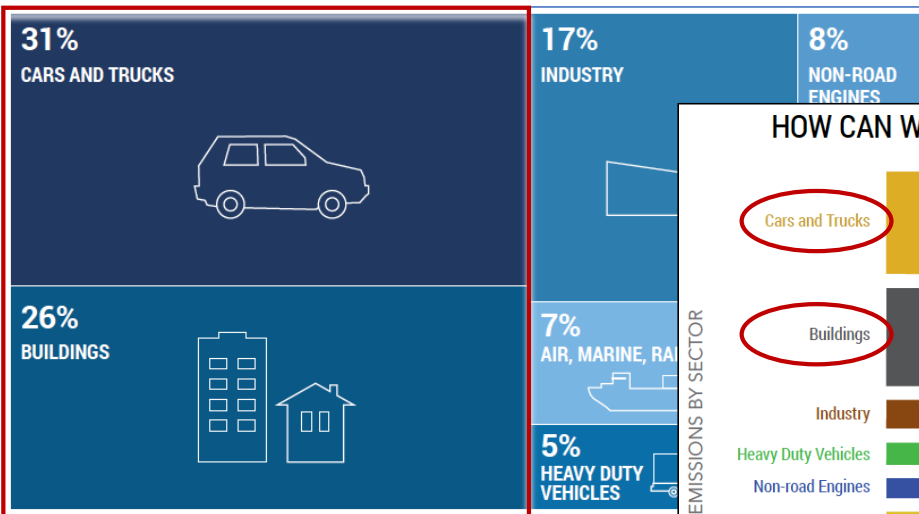
(Source: Metro Vancouver)



Regional GHG Emissions

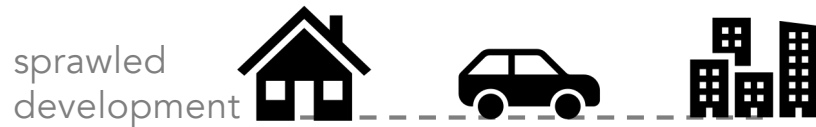
Metro Vancouver (2019) Climate 2050 Strategic Framework

Emissions Sources



Land use / urban form & Transportation

"travel is derived demand"



Doubling density associated with 48% reduction in CO₂ emissions from household travel

- Lee and Lee (2014) in *Energy Policy*

GHG emissions



TRAVEL DEMAND

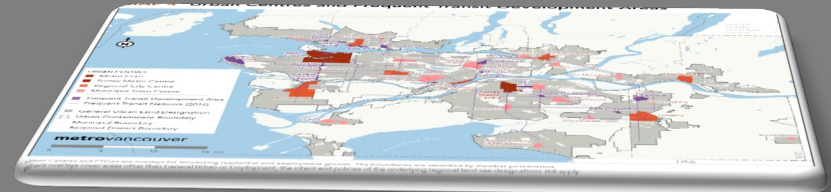
(vehicle kilometres traveled, VKT)



- Number of trips by origin
- Trip destinations
- Mode choice
- Route choice



Land Use and Urban Form



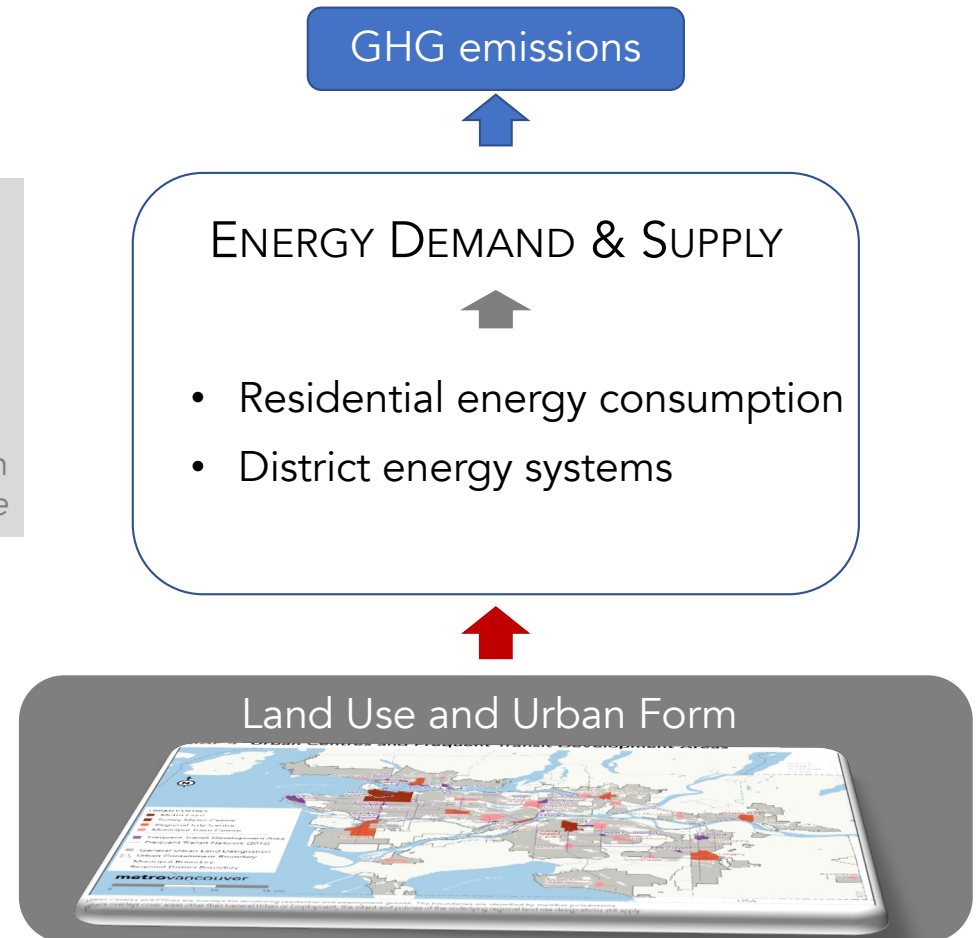
Land use / urban form & Energy

Energy efficiencies – multi-unit structure types

(US) Comparable households in single-family detached units consume 54% more energy for heating and 26% more for cooling than those in multi-family dwellings.

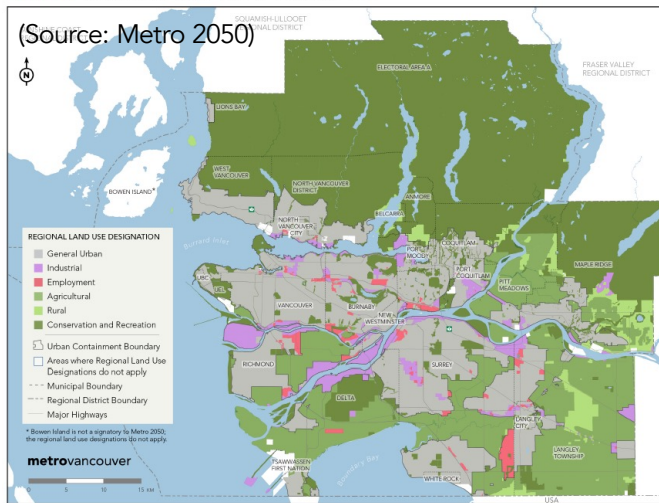
Energy for heating, cooling, and all other uses increases with house size.

- Ewing and Rong (2008) in
Housing Policy Debate



Land use / urban form & Greenspace

MAP 2 Regional Land Use Designations



(Photo: City of Vancouver, 2018)



Co-benefits

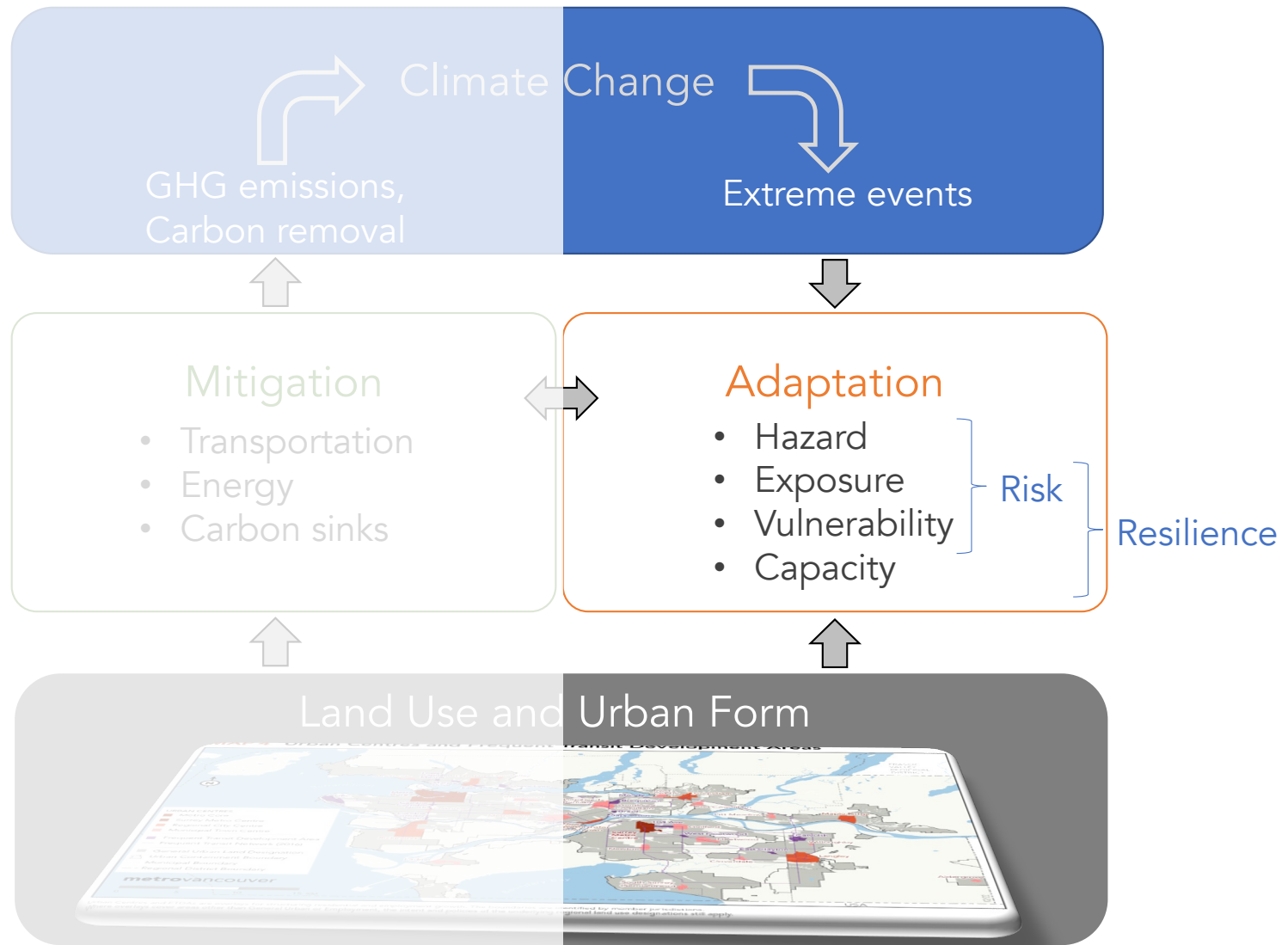
Carbon removal

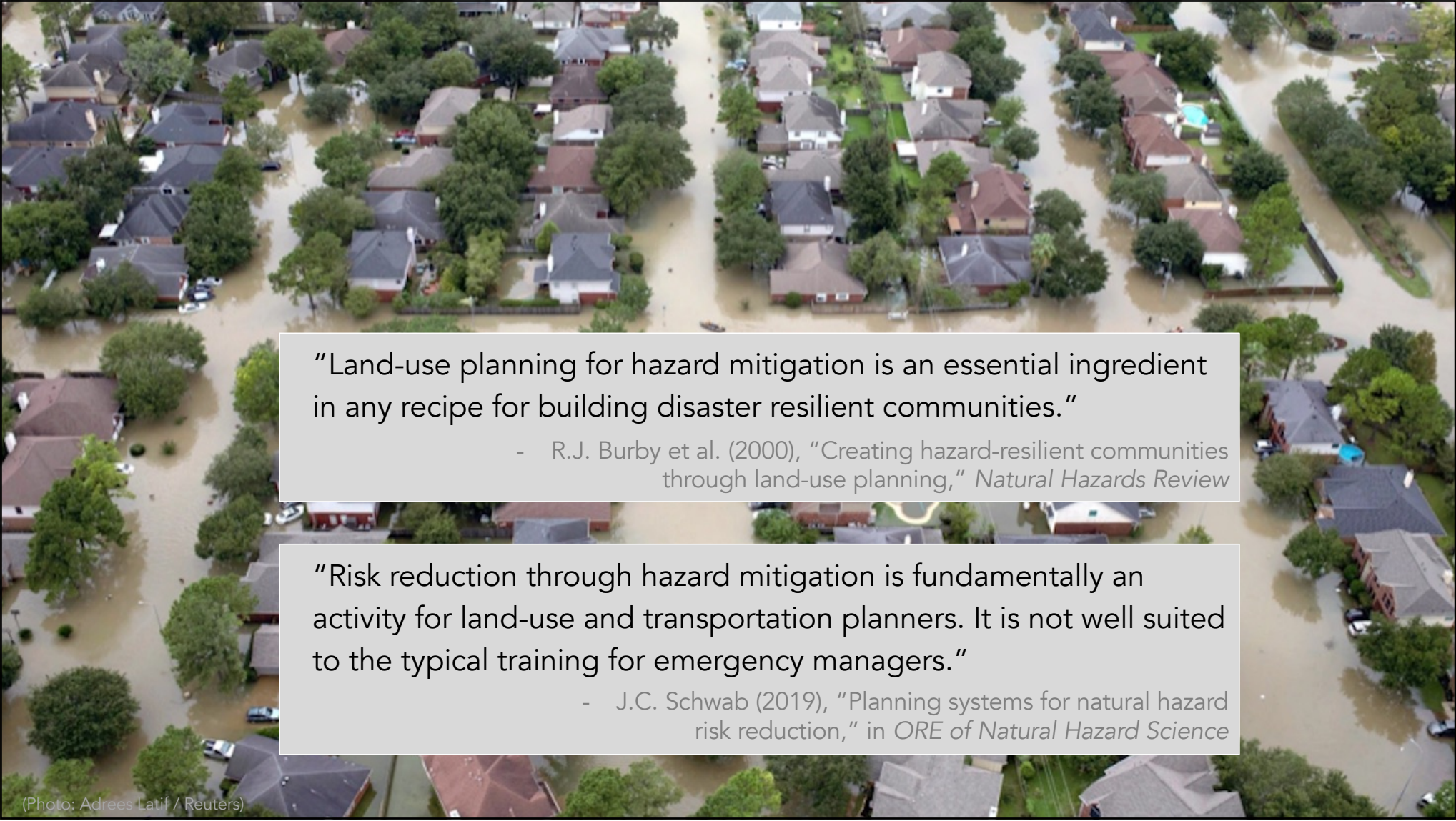
CARBON SINKS

- Forest, bog, and coastal ecosystem restoration
- Street trees, parks

Land Use and Urban Form







"Land-use planning for hazard mitigation is an essential ingredient in any recipe for building disaster resilient communities."

- R.J. Burby et al. (2000), "Creating hazard-resilient communities through land-use planning," *Natural Hazards Review*

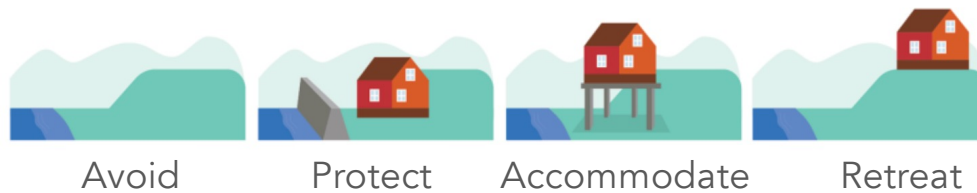
"Risk reduction through hazard mitigation is fundamentally an activity for land-use and transportation planners. It is not well suited to the typical training for emergency managers."

- J.C. Schwab (2019), "Planning systems for natural hazard risk reduction," in *ORE of Natural Hazard Science*

(Photo: Adrees Latif / Reuters)

Land use / urban form & Exposure

SLR adaptation strategies*



Caution

Levee effect



Extreme events



EXPOSURE



- Development on floodplain
- Land use restrictions on floodplain



Land Use and Urban Form



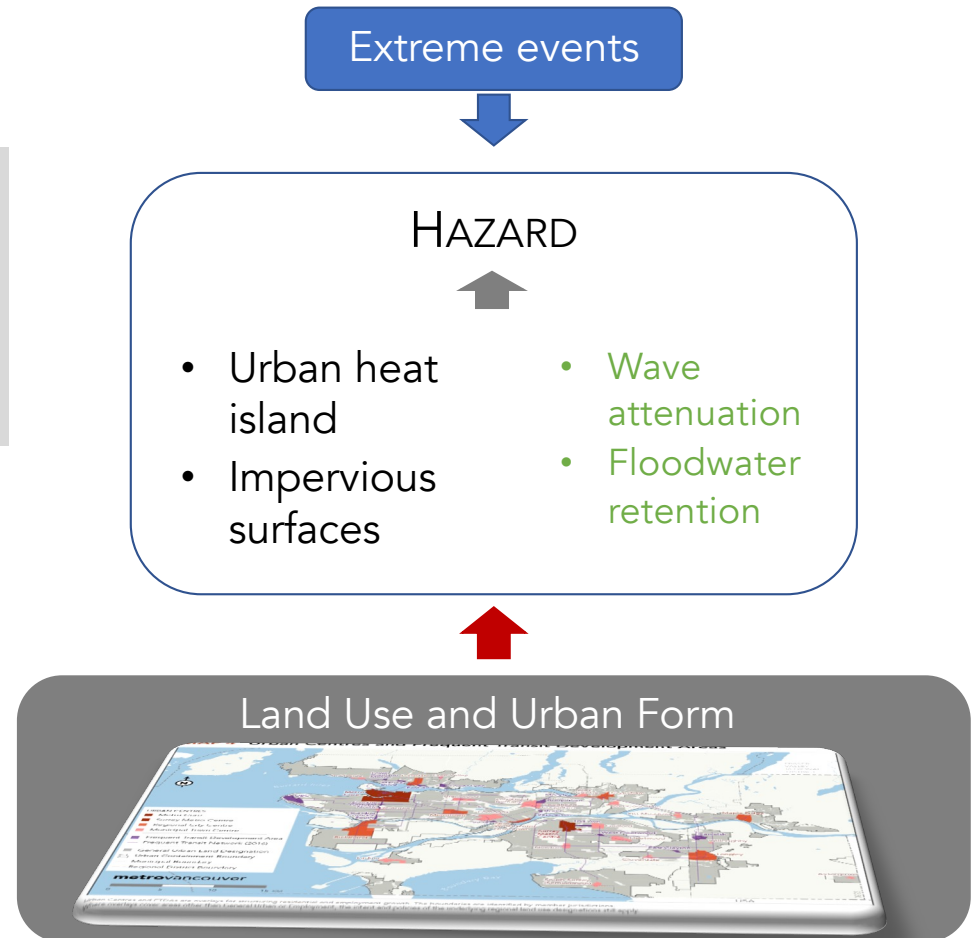
(*Figure: New Zealand Ministry for the Environment)

Land use / urban form & Hazard

(US, 1956~2005) Rate of increase in annual extreme heat events in the most **sprawling** metropolitan regions was more than double the rate of increase in the most **compact** metropolitan regions.

- Stone et al. (2010) in
Environmental Health Persp.

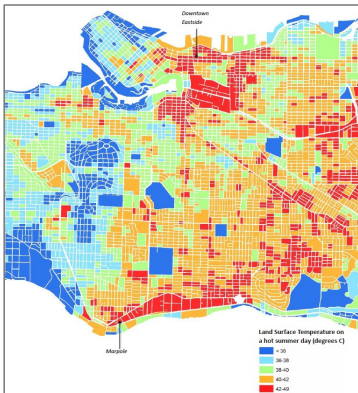
Green infrastructure



Land use / urban form & Vulnerability and Capacity

The key interventions needed to address social vulnerability [to disasters] are **generic** and include measures such as strong social safety nets, access to health services, and community cohesion.

- CCA (2022) *Building a Resilient Canada*



City of Vancouver (2018) *Urban Forestry Strategy*

Urban resilience is shaped by who defines the agenda, whose resilience is being prioritized, and **who benefits** or loses as a result.

- Meerow et al. (2016) in *Landscape and Urban Planning*

Extreme events



VULNERABILITY --- CAPACITY



- Building codes and standards
- Equitable access to greenspace
- Community cohesion
- Food security
- Housing affordability



Land Use and Urban Form



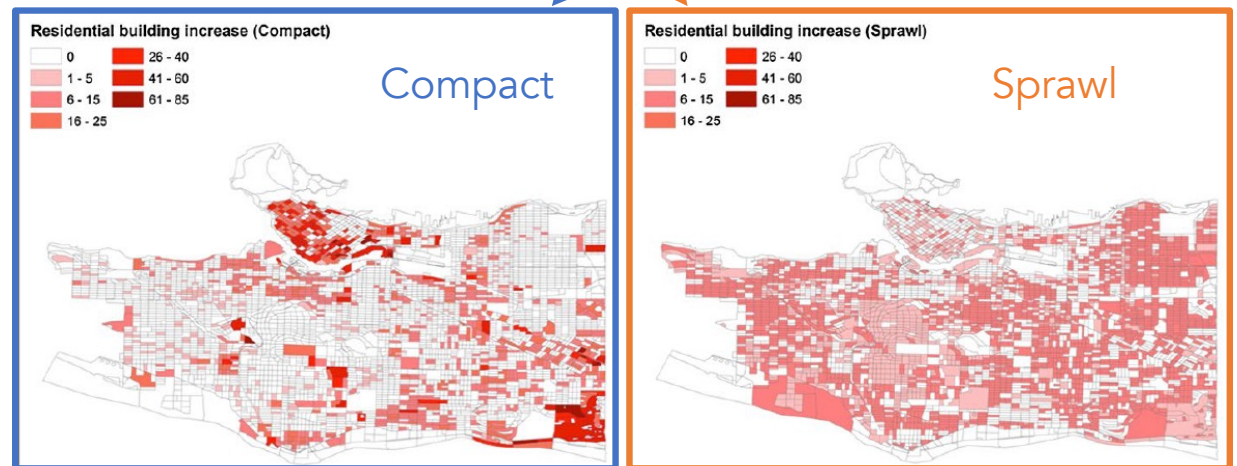
Conflicts and Trade-offs

+ projected population increase to 2041

There is **no clear “winner”** in terms of a development pattern that is best for minimizing future risk. Nonetheless, most of the comparisons suggest that compact development would exacerbate disaster risk...

In promoting compact development, planners must pay attention to and address the implications for natural hazard risk.

- S.E. Chang, J. Yip, W. Tse (2019) in *Natural Hazards*



Coastal flooding
(from 1:50 year storm + 1m SLR)

- more building debris
- more vulnerable population affected

Key Concepts

Land use and urban form can support climate action by

- Reducing travel demand
- Reducing energy demand
- Facilitating renewable energy sources
- Increasing carbon sinks
- Reducing hazards
- Reducing exposure to hazards
- Reducing vulnerability
- Enhancing capacity

Climate change mitigation and adaptation actions may

- Provide co-benefits
- Be synergistic
- Entail trade-offs or conflicts



Regional Planning Environment Portfolio

AN INTRODUCTION AND 2023 PRIORITIES

Laurie Bates-Frymel

Senior Planner (Environment), Regional Planning and Housing Services

Edward Nichol

Planner (Environment), Regional Planning and Housing Services

Regional Planning Committee | March 10, 2023

58419010

metrovancouver

OUTLINE

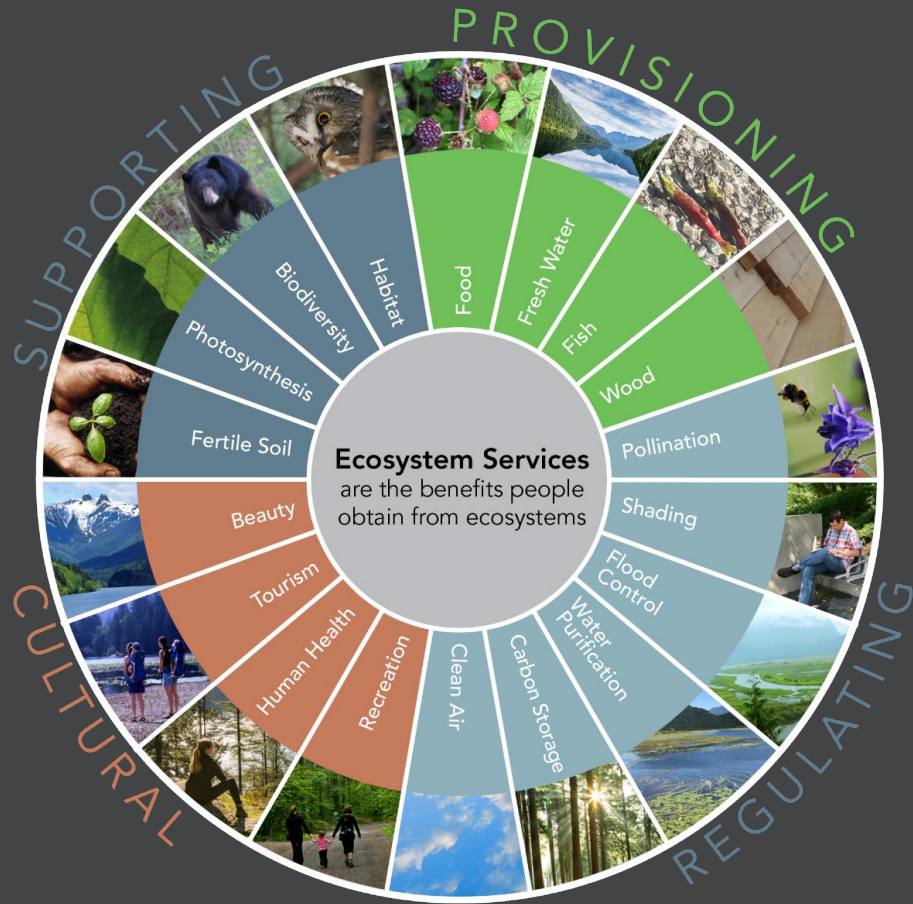
- *Metro 2050* Goal 3
- Major Projects
 - Sensitive Ecosystem Inventory
 - Tree canopy cover dataset + regulations toolkit
 - Natural Hazard Data Inventory (NEW)
 - *Climate 2050* Nature and Ecosystems Roadmap (NEW)
 - Regional Green Infrastructure Network (NEW)
- Coordination with member jurisdictions

NEW IN GOAL 3 METRO 2050

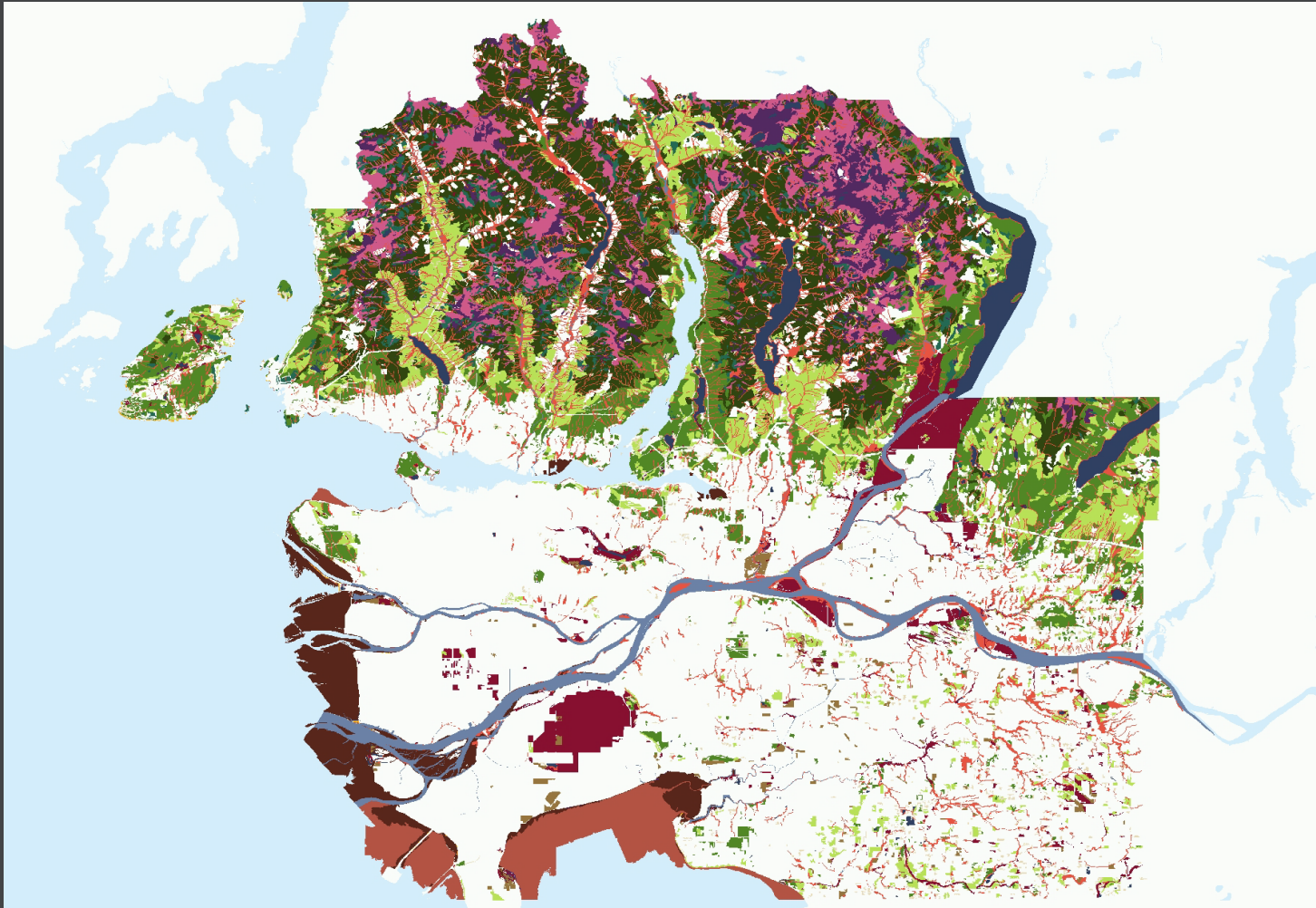
- Ecosystem Services
- Sensitive Ecosystem Inventory
- Regional urban tree canopy cover and nature protection targets
- Regional Green Infrastructure Network
- Natural Hazard and Risk Data

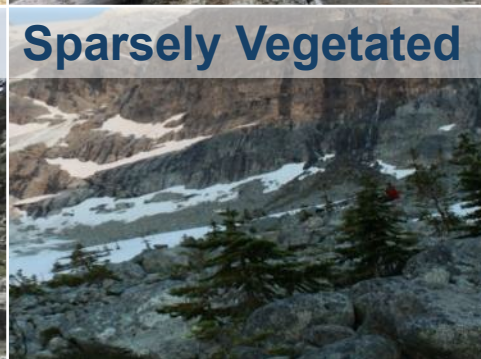
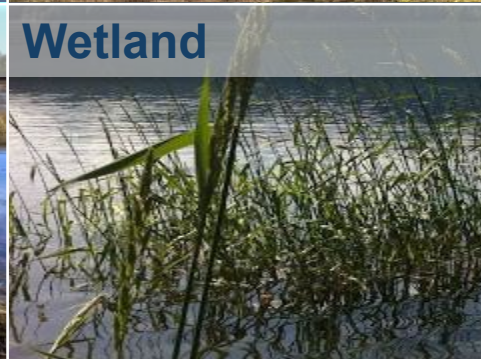


Ecosystem Services



Sensitive Ecosystem Inventory

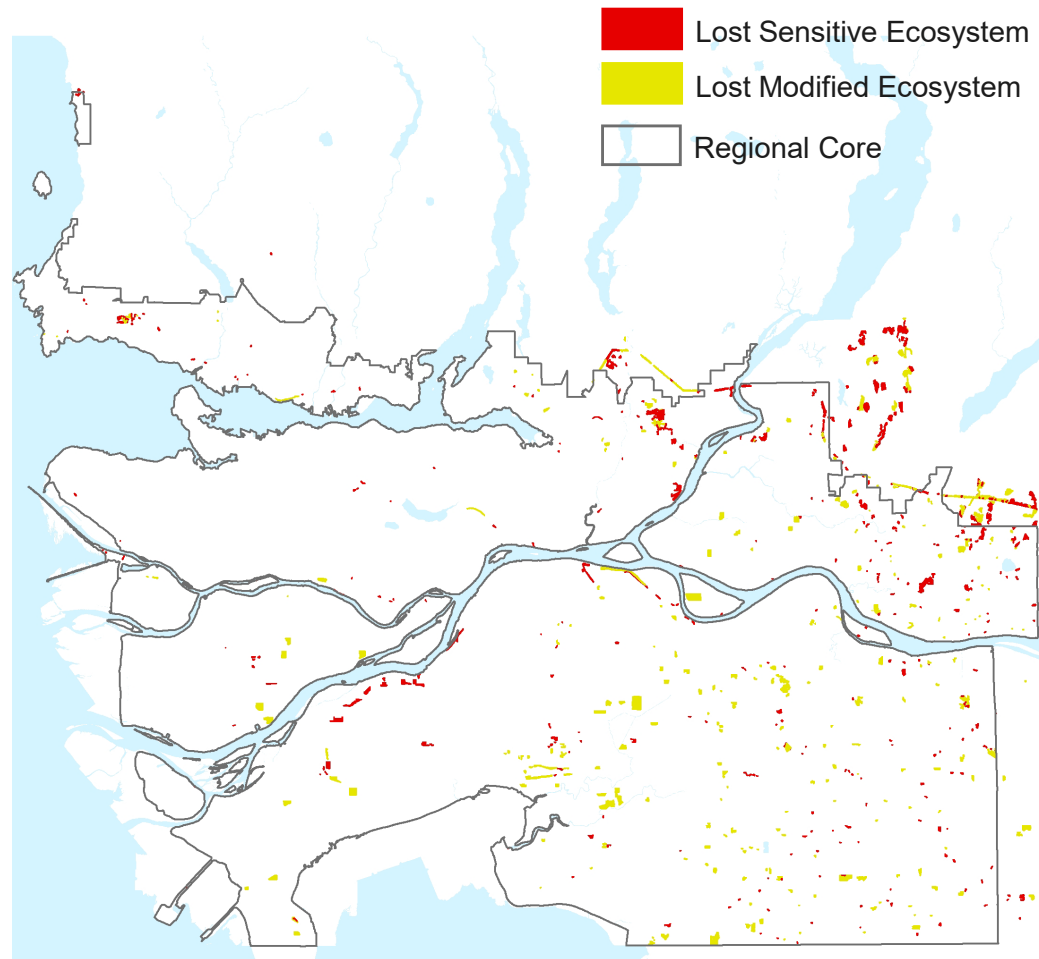




SENSITIVE ECOSYSTEM CHANGE

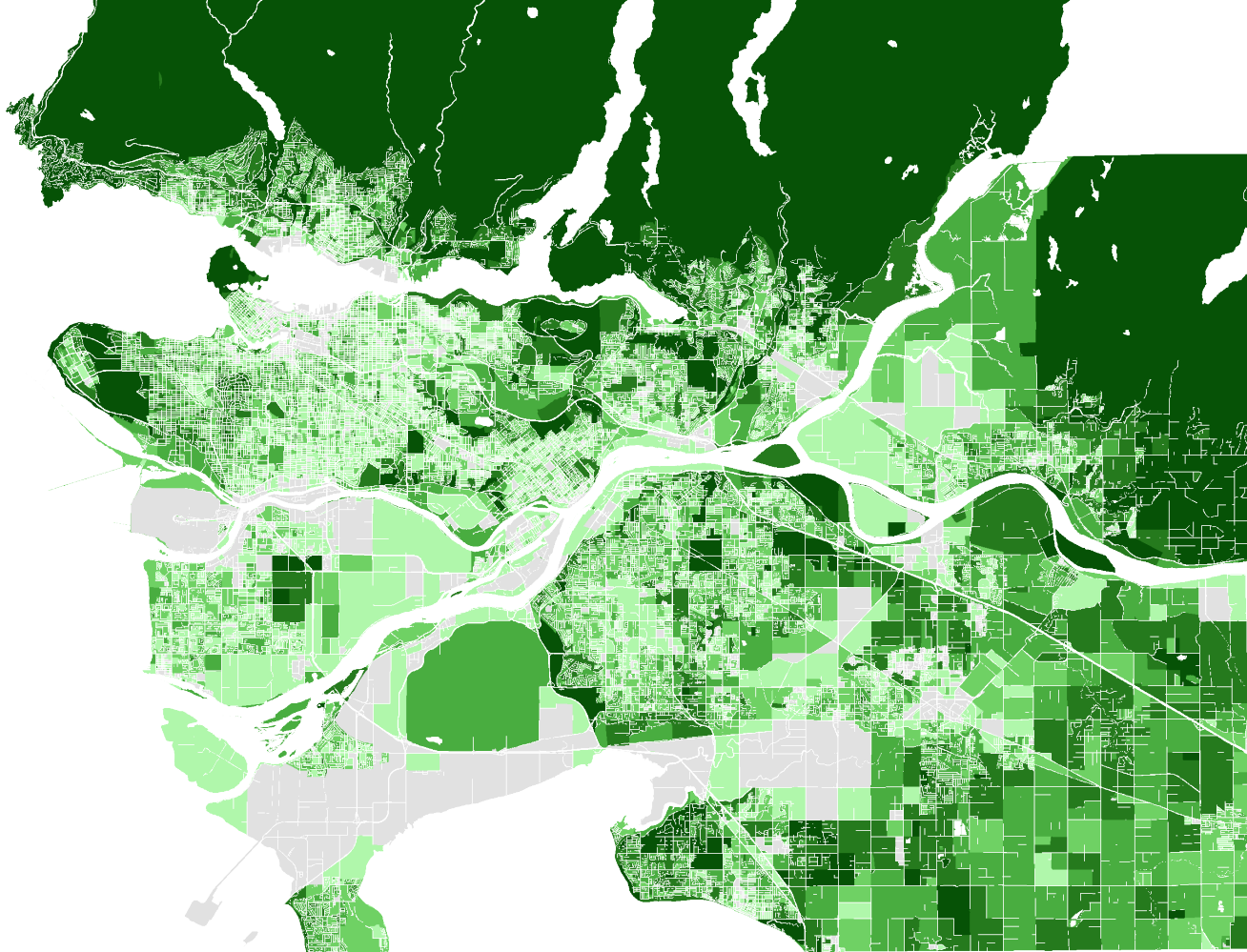
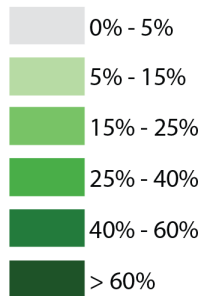
From 2009 to 2014

- Losses:
 - - 1,600ha (1%) for the region
 - - 1,200ha (3.4%) in the regional core
- No significant gains
- New data for 2020 soon



2014 Tree Canopy Cover

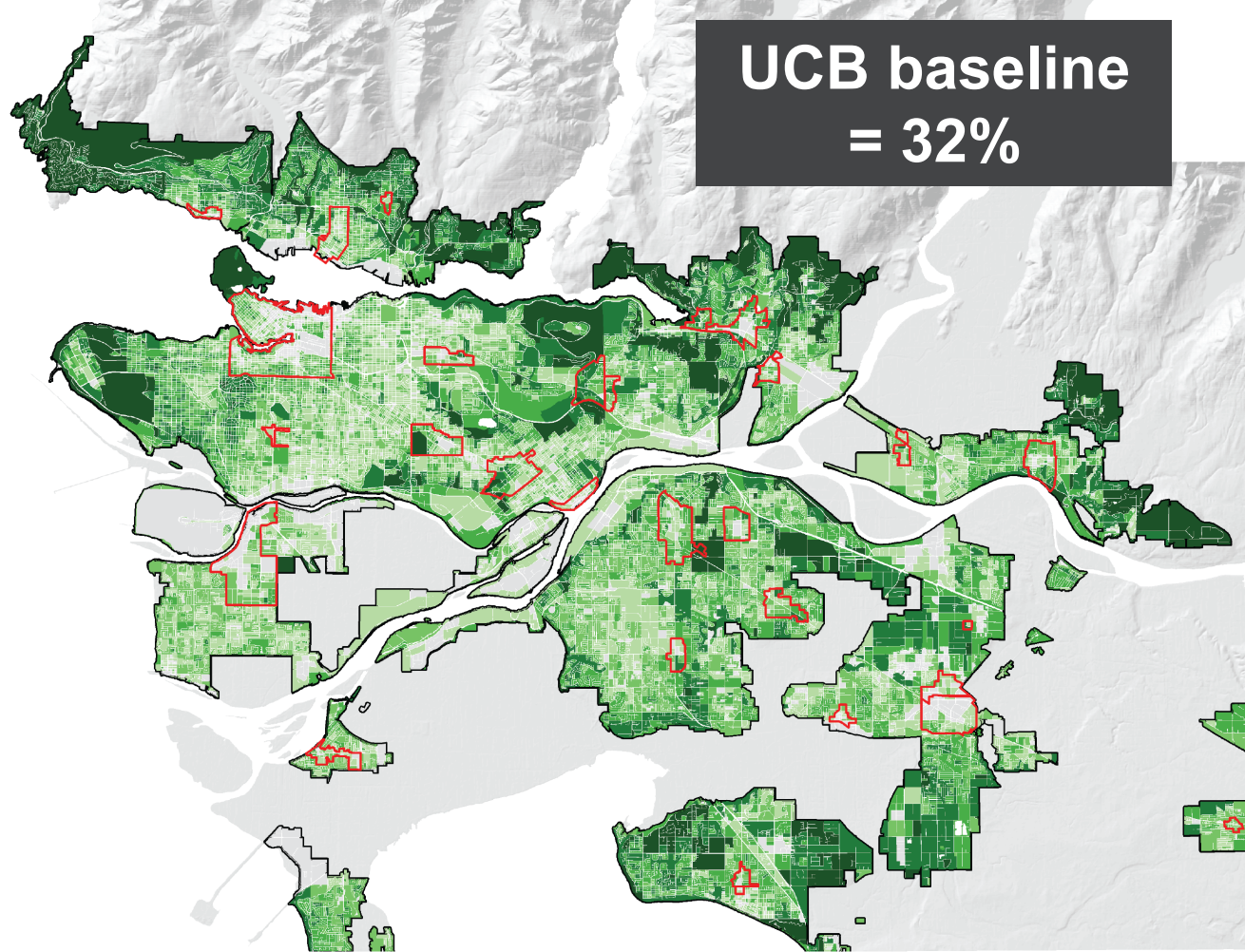
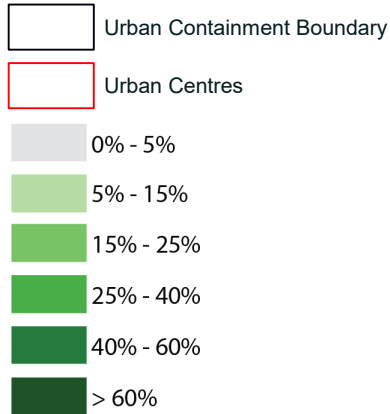
(percent by block)



**UCB baseline
= 32%**

2014 Tree Canopy Cover

(percent by block)





TREE REGULATIONS TOOLKIT UPDATE

- Support local efforts
- Guidance and best practices
- Emphasis on tree bylaws
- 2023 update
 - Strengthen content related to land use
- Suite of resources

NATURAL HAZARD DATA INVENTORY

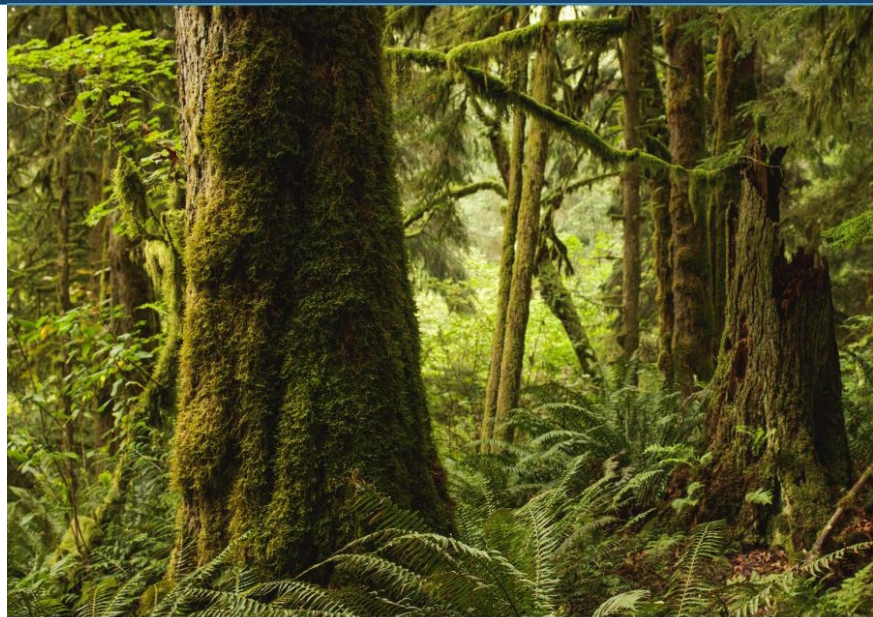
- Key information on hazard data
- Data gaps
- Considerations and best practices
- Shared understanding of risk
- Baseline to inform future work



NATURE & ECOSYSTEMS

Climate 2050 Roadmap

- Implement the regional vision
- Connection to *Metro 2050*
- Strategies
 - Protect, Restore Ecosystems
 - Connect Green Infrastructure
 - Integrate Natural Assets
 - Support the Urban Forest
 - Advance Nature-based Solutions



CLIMATE 2050 Roadmap

Nature and Ecosystems

A pathway to storing carbon and building a resilient future
with Nature and Ecosystems

April 2022
DRAFT

Regional Green Infrastructure Network

GREEN INFRASTRUCTURE

Natural Assets

- Wetlands
- Forests
- Parks
- Lakes/Rivers/Creeks
- Fields
- Soil



Enhanced Assets

- Rain Gardens
- Bioswales
- Urban Trees
- Urban Parks
- Biomimicry
- Stormwater Pond

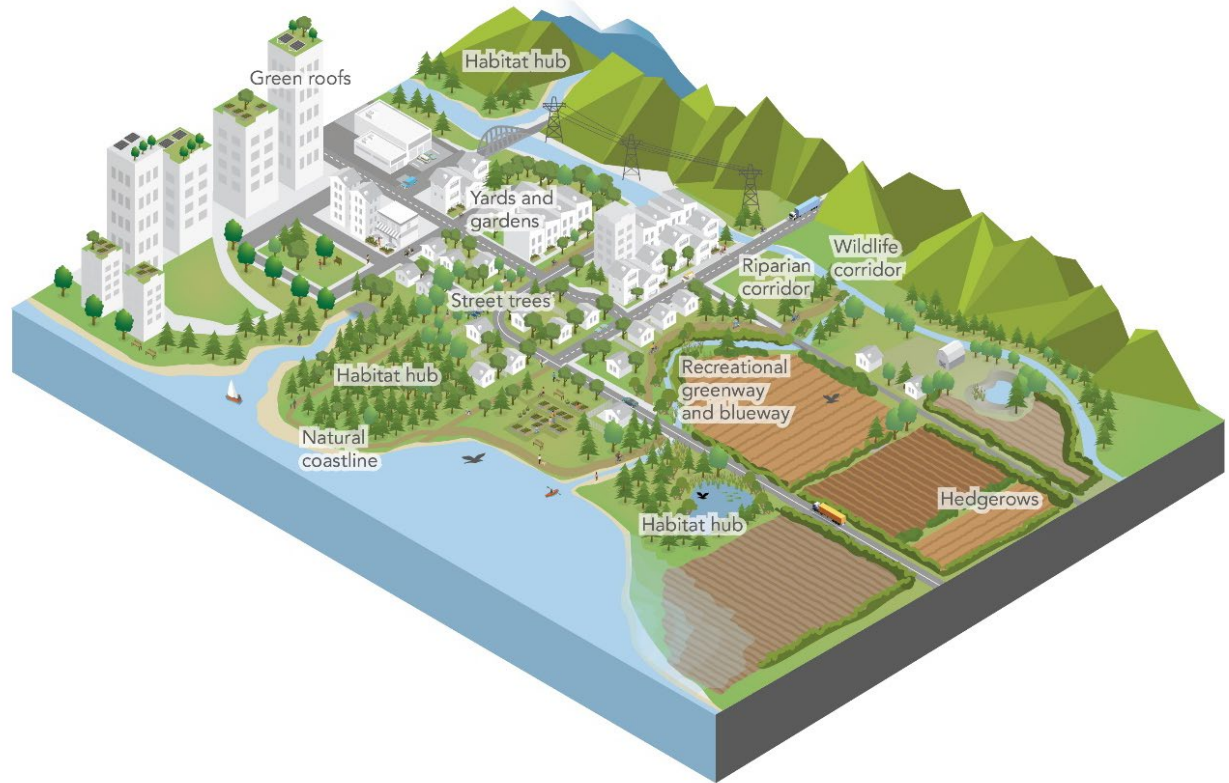


Engineered Assets

- Permeable Pavement
- Green Roofs
- Rain Barrels
- Green Walls
- Cisterns



Regional Green Infrastructure Network





Ecosystem restoration event in Maple Ridge



Thank you

metrovancouver



Social Equity Spatial Analysis Case Studies

FINAL REPORT

Erin Rennie

Senior Planner, Regional Planning and Housing Services

Regional Planning Committee | March 10, 2023

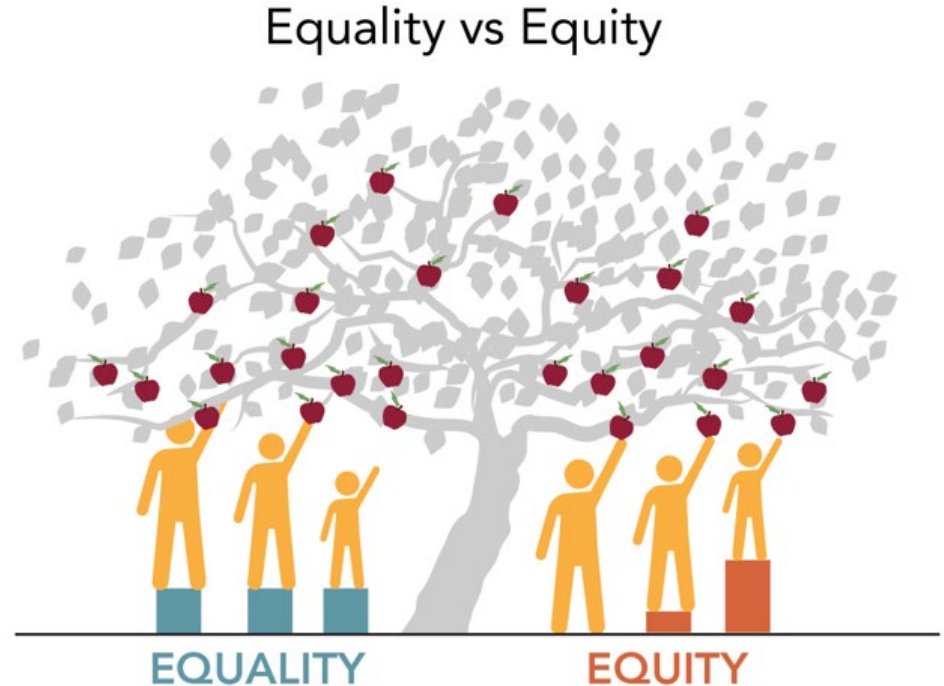
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EQUITY, DIVERSITY AND INCLUSION

Applying an equity, diversity, and inclusion (EDI) lens to all levels of planning practice is required to confront and address systemic racism and discrimination in the governance systems, practices, and policies that planners implement, create, and influence.

- Canadian Institute of Planners



PROJECT HISTORY

2019

Jurisdictional Scan
Metro 2040 Gap
Analysis

2020-2021

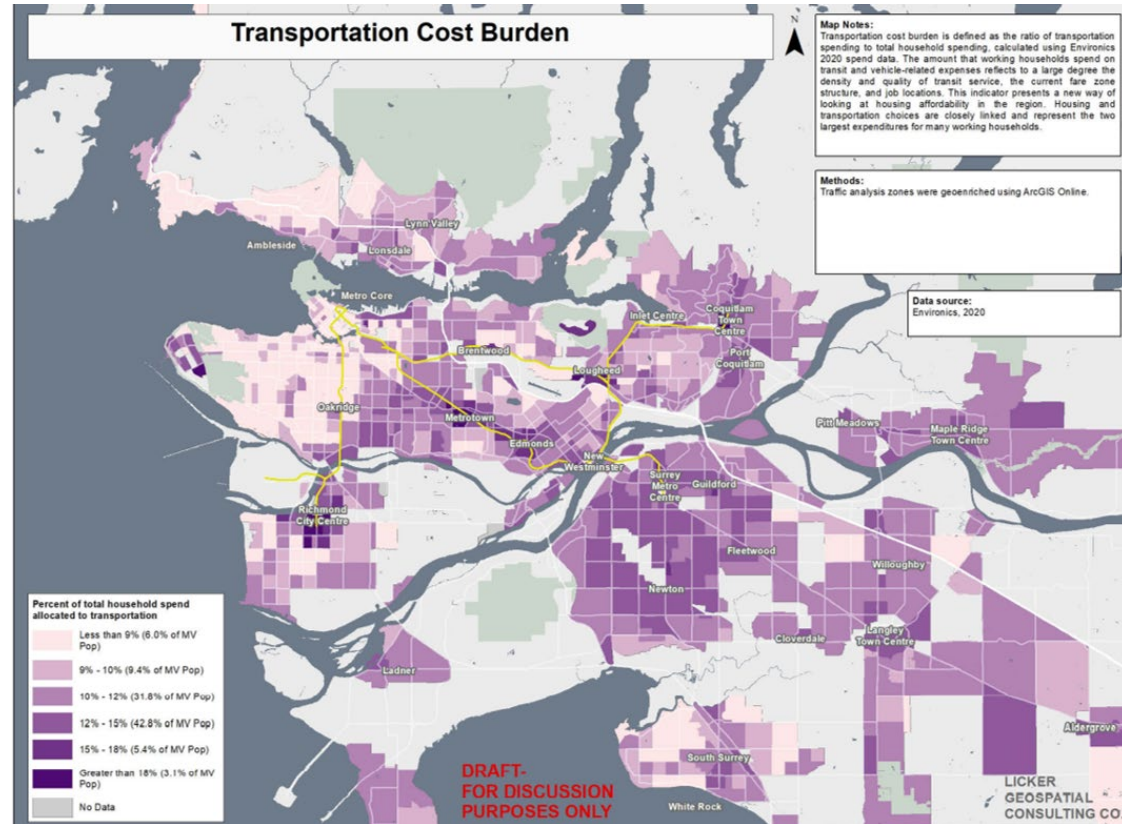
Inequity Baseline Data
Indicator Maps
Focus Groups
Social Equity Analysis
Tool
Performance Indicators
for *Metro 2050*

2022-2023

3 Case Study Maps
Webinar – member staff
Review *Metro 2050*
Update Inequity
Baseline Data Indicator
Maps

PHASE 2 – EQUITY INDICATOR MAPS

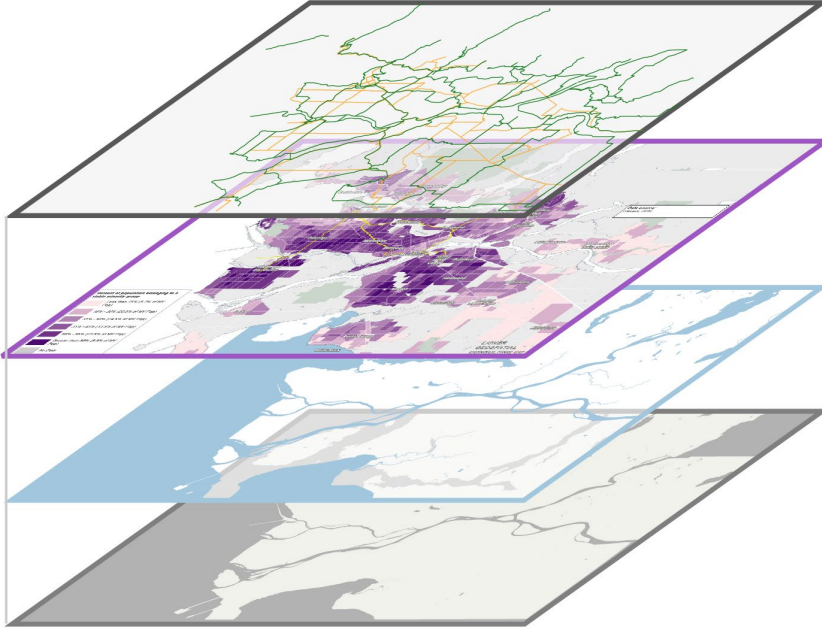
- 49 equity indicator maps
- Available as GIS data on request
- Request for more guidance on how to use



OBJECTIVES OF SPATIAL ANALYSIS PROJECT

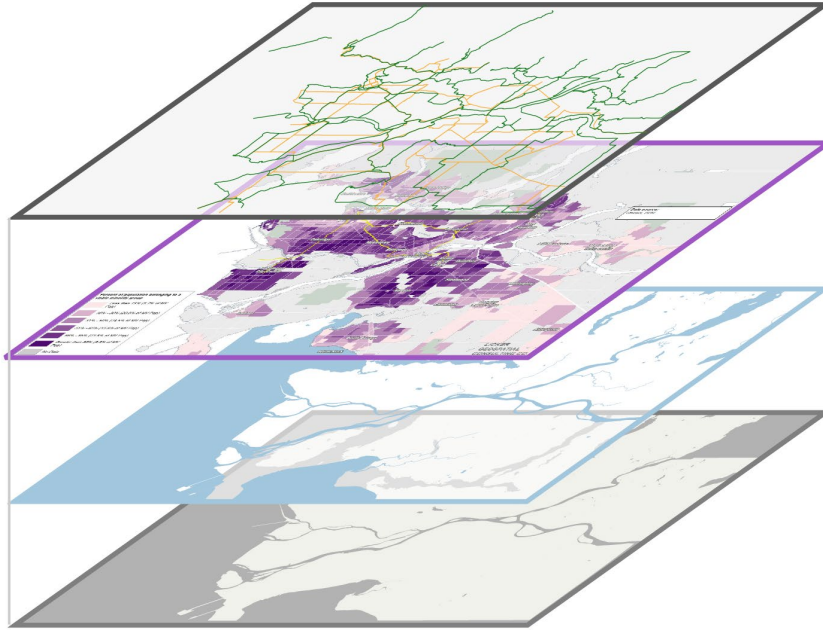
1. **Provide equity analysis** for practical, on-the-ground planning work in the region
2. **Demonstrate a process** of using social equity spatial analysis to support better more equitable decision-making
3. **Learn and improve** on the process and share what works

PUTTING THE EQUITY INDICATOR MAPS TO WORK



- Case study ideas survey
- Building the map:
 - Select indicators
 - Apply weights
 - Make index
- Steering Committee / Peer Review

CASE STUDY 1: TREE PLANTING PRIORITY



Tree Canopy Cover

**Extreme Heat Sensitivity and
Adaptive Capacity**

Extreme Heat Exposure

% in Multifamily Dwellings

Map 1A: Urban Tree Planting Priority

This map shows urban areas in which tree planting could improve extreme heat-related equity outcomes. We calculated an intervention priority index for each census dissemination block by weighting several measures and combining them (shown on right).

Planting trees in the darkest red areas on this map may have the highest potential to improve urban heat-related equity outcomes. Please read the attached map synopsis to aid interpretation.

Priority =
50.0% current canopy coverage (inverse) +
16.6% extreme heat exposure +
16.6% extreme heat sensitivity +
13.6% extreme heat adaptive capacity +
3.0% percent in multi-family dwellings (inverse)

Urban Tree Planting Priority

- Very High
- High
- Moderate
- Low
- Very Low
- Missing Data
- Municipal Boundaries
- Water
- Non-Residential Areas*

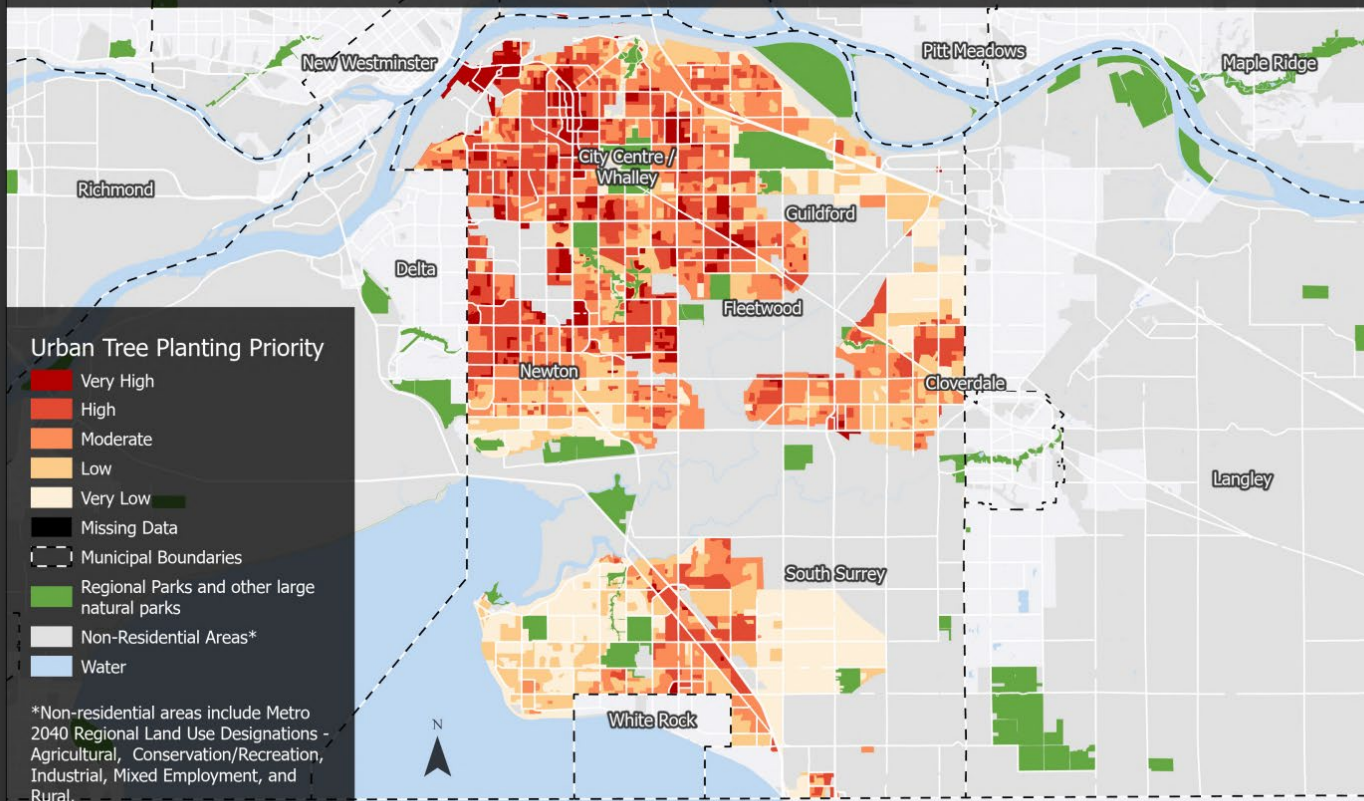
*Non-residential areas include Metro 2040 Regional Land Use Designations - Agricultural, Conservation/Recreation, Industrial, Mixed Employment, and Rural.

Map 1B: Surrey Urban Tree Planting Priority

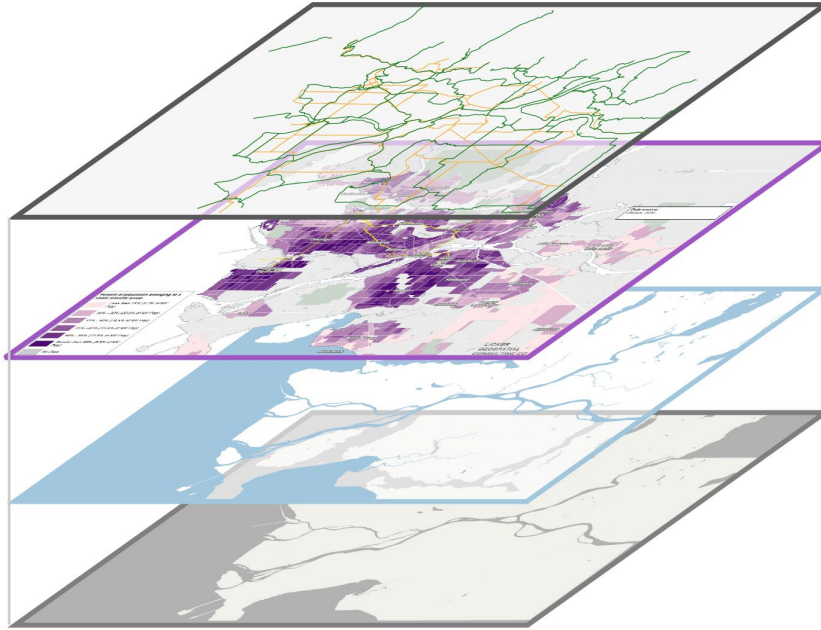
This map shows urban areas in which tree planting could improve extreme heat-related equity outcomes. We calculated an intervention priority index for each census dissemination block by weighting several measures and combining them (shown on right). The index was recalculated only including Surrey for this map.

Planting trees in the darkest red areas on this map may have the highest potential to improve urban heat-related equity outcomes. Please read the attached map synopsis to aid interpretation.

Priority =
50.0% current canopy coverage (inverse) +
16.6% extreme heat exposure +
16.6% extreme heat sensitivity +
13.6% extreme heat adaptive capacity +
3.0% percent in multi-family dwellings (inverse)



CASE STUDY 2: PARK LAND ACQUISITION PRIORITY



Per person park area access
(5min walk)

Social equity measures:

- Low Income Measure
- %paying >30% on shelter
- Canadian Index of Multiple Deprivation
- Health outcomes

Projected population growth

% in Multifamily Dwellings

Map 2A: Park Acquisition Priority

This map shows areas where acquiring land for parks could improve equity outcomes. We calculated an intervention priority index for each dissemination area by weighting several measures and combining them (shown on right). Areas in darkest red are the highest priority: the top 20% of dissemination areas by index score. Please read the attached map synopsis to aid interpretation.

Priority =
40.0% Poor park area access per person +
12.5% Percent single-detached dwellings (inverse) +
10.0% Percent under the Low Income Measure +
10.0% Percent paying $\geq 30\%$ on shelter +
10.0% Canadian Index of Multiple Deprivation +
10.0% Poor health outcomes +
7.5% Predicted future growth

All parks are included (local, regional, federal, and provincial). Access is measured as the total area of parks accessible by a 5-minute walk from the center of the dissemination area.

Park Acquisition Priority

- Very High
- High
- Moderate
- Low
- Very Low
- Missing Data
- Parks
- Municipal Boundaries
- Non-Residential Areas*
- Water

*Non-residential areas include Metro 2040 Regional Land Use Designations - Agricultural, Conservation/Recreation, Industrial, Mixed Employment, and Rural.

Map 2B: Port Moody Park Acquisition Priority

This map shows areas where acquiring land for parks could improve equity outcomes. We calculated an intervention priority index for each dissemination area by weighting several measures and combining them (shown on right). The index was recalculated only including Port Moody for this map.

Areas in darkest red are the highest priority: the top 20% of dissemination areas by index score. Please read the attached map synopsis to aid interpretation.

Priority =
40.0% Poor park area access per person +
12.5% Percent single-detached dwellings (inverse) +
10.0% Percent under the Low Income Measure +
10.0% Percent paying $\geq 30\%$ on shelter +
10.0% Canadian Index of Multiple Deprivation +
10.0% Poor health outcomes +
7.5% Predicted future growth

All parks are included (local, regional, federal, and provincial). Access is measured as the total area of parks accessible by a 5-minute walk from the center of the dissemination area.

Park Acquisition Priority

- Very High
- High
- Moderate
- Low
- Very Low
- Missing Data
- Parks
- Municipal Boundaries
- Non-Residential Areas*
- Water

*Non-residential areas include Metro 2040 Regional Land Use Designations - Agricultural, Conservation/Recreation, Industrial, Mixed Employment, and Rural.

Burnaby Mountain / SFU

Belcarra

Ioco

Anmore

Pleasantville

Heritage Woods

Noons Creek
Mountain Meadows

Coquitlam

Westwood Plateau

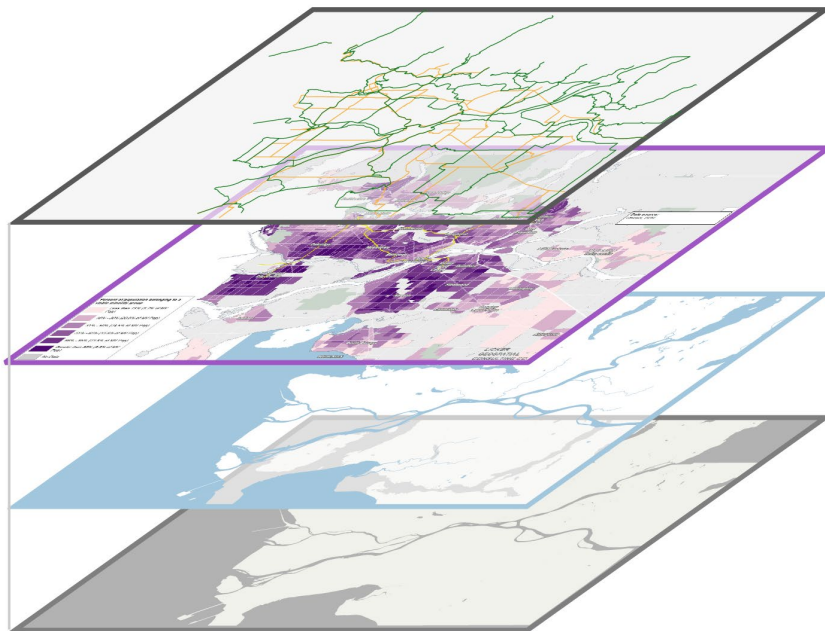
Inlet Centre

Coronation Park

Glenayre

Moody Centre

CASE STUDY 3: LARGE PARK TRANSIT IMPROVEMENT PRIORITY



Per person park area access
(60 min on transit)

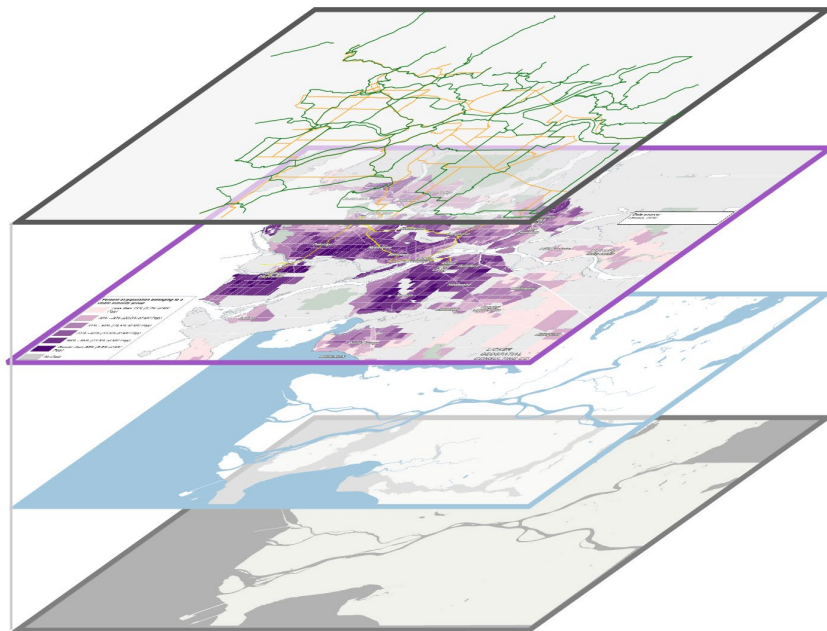
Social equity measures:

- Low Income Measure
- %paying >30% on shelter
- Canadian Index of Multiple Deprivation
- Health outcomes

Projected population growth

% in Multifamily Dwellings

CASE STUDY 4: SCHOOL ACTIVE TRAVEL IMPROVEMENT PRIORITY (BY DISTRICT)



- % aged 5-18
- Low Income Measure
- %paying >30% on shelter
- Canadian Index of Multiple Deprivation
- ICBC ped/cycle collisions
- driving mode share
- sidewalk continuity
- cycle safety metric
- density of major roads

Map 4: School Active Transportation Priority By District

This map shows schools where active transportation safety and infrastructure should be improved to make walking, cycling, and rolling to school safer and easier. We calculated an intervention priority index for each school by weighting several measures and combining them (shown on right). The index represents priorities within each district, rather than for the entire region. Circles in darkest red are the highest priority; the top 20% of schools by index score. This map includes all K-12 schools in Metro Vancouver, both public and independent. Please read the attached map synopsis to aid interpretation.

Priority =
52.0% Percent children between 5 and 18 (inclusive) +
10.0% Canadian Index of Multiple Deprivation +
7.5% ICBC cyclist or pedestrian collisions +
6.5% Households commuting by car +
6.5% Physical inactivity rates +
5.0% Percent under the Low Income Measure +
5.0% Percent paying $\geq 30\%$ on shelter +
3.75% Sidewalk continuity index (walking only) +
3.75% Cycling safety metric (inverse, cycling only) +
3.75% Density of major roads

Values were calculated within the area students could reach with a 15-minute walk or bike, then weighted together, 50% walking and 50% biking. Census variables were estimated within these areas using population weighting.

School Active Transportation Safety Priority By District

- Very High
- High
- Moderate
- Low
- Very Low
- School Districts
- Water

LESSONS LEARNED AND NEXT STEPS

- Need for more community engagement to improve quality of the studies
- Additional local analysis and engagement needed
- Report with maps to be published on website
- Data available on request





TOGETHER
WE MAKE OUR REGION
STRONG

Thank you

metrovancouver