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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
AIR QUALITY AND CLIMATE COMMITTEE

MEETING

Friday, November 7, 2025
9:00 am
28th Floor Committee Room, 4515 Central Boulevard, Burnaby, British Columbia
Webstream available at https://www.metrovancouver.org

A G E N D A

A. ADOPTION OF THE AGENDA

1. November 7, 2025 Meeting Agenda
That the Air Quality and Climate Committee adopt the agenda for its meeting scheduled for November 7, 2025 as circulated.

B. ADOPTION OF THE MINUTES

1. October 10, 2025 Meeting Minutes *pg. 5*
That the Air Quality and Climate Committee adopt the minutes of its meeting held October 10, 2025 as circulated.

C. DELEGATIONS

D. INVITED PRESENTATIONS

E. REPORTS FROM COMMITTEE OR CHIEF ADMINISTRATIVE OFFICER

1. 2025 Air Quality Warning Season *pg. 10*

Executive Summary
Metro Vancouver issues Air Quality Warnings and updates for Metro Vancouver and the Fraser Valley Regional District to help protect residents' health during periods of degraded air quality. This year's wildfire season had the second-highest area burned on record in Canada, with fires burning across much of the Canadian landscape. Metro Vancouver issued Air Quality Warnings on seven days in the summer of 2025. Smog warnings were issued on August 24 and 26, due to a combination of local emission sources and hot, sunny weather. A fine particulate matter warning was also issued on August 24 due to wildfire smoke. On September 3 wildfire smoke

covered the region, and a warning was issued in Metro Vancouver and Central Fraser Valley for four days, and in Eastern Fraser Valley for five days. Wildfires near Hope, Whistler, and many fires in both the Cariboo region and Washington State contributed smoke.

Recommendation
That the MVRD Board receive for information the report dated October 16, 2025, titled "2025 Air Quality Warning Season".

2. Prioritization Matrix for Flood-related Capital Projects *pg. 18*

Executive Summary
The development of a Prioritization Matrix for Flood-related Capital Projects is part of the work Metro Vancouver is undertaking to support member jurisdictions in prioritizing a list of projects across the region for funding advocacy. The prioritization matrix was developed using existing provincial and federal criteria for flood project grants and has been turned into an Excel-tool that allows users to evaluate future flood risk reduction capital projects by scoring and weighting different criteria. The criteria are grouped into six categories:

1. Risk Assessment and Reduction
2. Financial and Funding
3. Community Equity and Benefits
4. Environment and Climate Change Adaptation
5. Indigenous Leadership and Culture
6. Project Management

Staff are seeking feedback from the Committee and MVRD Board, and subsequently will finalize the matrix and share it with member jurisdictions and local First Nations to utilize and identify a list of upcoming flood-related capital projects that require provincial or federal funding to be viable. This would enable staff and advisors to prioritize the list of projects using the tool and other considerations (e.g., regional equity). The list would then be brought back to the Committee and MVRD Board for discussion and endorsement along with a funding strategy. This approach presents an opportunity to strengthen regional coordination by putting together a unified package of projects for infrastructure funding.

Recommendation
That the MVRD Board receive for information the report dated October 23, 2025, titled "Prioritization Matrix for Flood-Related Capital Projects".

3. Evaluating EV-Ready Bylaws in New Residential Buildings *pg. 54*

Executive Summary
EV-ready bylaws are expanding access to charging in new single family and multi-unit buildings across the region. A new study, *Charged and Ready: EV-Ready Residential Building Experiences,* evaluated municipal EV-ready bylaws for new buildings across BC including five Metro Vancouver communities. The study included a survey and interviews with residents as well as focus groups with industry professionals to understand the effectiveness of existing bylaws, and to provide recommendations on strengthening these bylaws to meet growing demand for EV charging.

The majority of respondents living in EV-ready single-family and multiplex housing are generally satisfied with their access to charging. However, EV drivers living in multi-unit residential buildings are less satisfied with their home EV charging experience. Improvements in bylaw design and implementation could address challenges faced by residents in multi-unit buildings. The study was funded by BC Hydro after being identified by member jurisdiction staff as an important topic for evaluation, and was co-led by Metro Vancouver and the City of New Westminster. The findings and recommendations will be shared with local government staff to improve EV-ready bylaw implementation across the region.

Recommendation
That the Air Quality and Climate Committee receive for information the report dated October 10, 2025, titled “Evaluating EV-Ready Bylaws in New Residential Buildings”.

4. Manager's Report *pg. 73*

Recommendation
That the Air Quality and Climate Committee receive for information the report dated October 16, 2025, titled “Manager’s Report”.

F. INFORMATION ITEMS

1. Lower Fraser Floodplains Dialogue for Regional Action *pg. 77*

G. OTHER BUSINESS

H. RESOLUTION TO CLOSE MEETING

Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

I. ADJOURNMENT

That the Air Quality and Climate adjourn its meeting of November 7, 2025.

Membership:

Dominato, Lisa (C) – Vancouver
Marsden, Dennis (VC) – Coquitlam
Baillie, Tim – Langley Township
Berry, Ken – Lions Bay
Dueck, Judy – Maple Ridge
Elford, Doug – Surrey
Gu, Alison – Burnaby
Lahti, Meghan – Port Moody
McCutcheon, Jen – Electoral Area A
McNulty, Bill – Richmond
Ross, Jamie – Belcarra
Ruimy, Dan – Maple Ridge
Wallace, Rosemary – Langley City
Watt, Linda – West Vancouver

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
AIR QUALITY AND CLIMATE COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Air Quality and Climate Committee held at 9:00 am on Friday, October 10, 2025 in the 28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Director Lisa Dominato, Vancouver
Vice Chair, Councillor Dennis Marsden, Coquitlam
Councillor Tim Baillie, Langley Township
Director Ken Berry, Lions Bay* (arrived at 9:01 am)
Councillor Judy Dueck, Maple Ridge*
Director Doug Elford, Surrey*
Councillor Alison Gu, Burnaby*
Director Meghan Lahti, Port Moody*
Director Jen McCutcheon, Electoral Area A
Director Bill McNulty, Richmond
Director Jamie Ross, Belcarra
Director Dan Ruimy, Maple Ridge
Councillor Rosemary Wallace, Langley City*
Councillor Linda Watt, West Vancouver*

*denotes electronic meeting participation as authorized by the *Procedure Bylaw*

STAFF PRESENT:
Conor Reynolds, Director, Air Quality and Climate Action Services
Jacque Killawee, Deputy Corporate Officer
Satbir Aujla, Division Manager, Financial Planning & Business Support, Financial Services
Morgan Braglewicz, Air Quality Planner, Air Quality and Climate Action Services
Heather McNell, Deputy CAO, Policy and Planning
Edward Nichol, Senior Regional Planner, Regional Planning and Housing Services
Linda Sabatini, Director Financial Operations, Financial Services
Julie Saxton, Program Manager, Enforcement and Regulation – Air Quality, Environmental Regulation and Enforcement

A. ADOPTION OF THE AGENDA

1. October 10, 2025 Meeting Agenda

It was MOVED and SECONDED
That the Air Quality and Climate Committee adopt the agenda for its meeting scheduled for October 10, 2025 as circulated.

CARRIED

B. ADOPTION OF THE MINUTES

1. September 12, 2025 Meeting Minutes

It was MOVED and SECONDED
That the Air Quality and Climate Committee adopt the minutes of its meeting held September 12, 2025 as circulated.

CARRIED

C. DELEGATIONS

No items presented.

D. INVITED PRESENTATIONS

1. Dr. Matthew Mitchell, Ph.D., Assistant Professor, Faculty of Foresty, University of British Columbia

Subject: Flood Prevention Benefits Provided by Natural Ecosystems

9:01 am Director Berry arrived at the meeting.

Dr. Matthew Mitchell provided a presentation titled "Flood Prevention Benefits Provided by Natural Ecosystems", which outlined how natural ecosystems in strategic locations can mitigate downstream risk of flooding. Dr. Mitchell provided details of their work creating a Canada-wide map to identify optimal locations for natural ecosystems to protect urban areas, and mentioned their current work on a details map of the Fraser River watershed. It was noted that this is a cost-effective method of flood mitigation, with multiple benefits for both the ecosystem and residents.

E. REPORTS FROM COMMITTEE OR CHIEF ADMINISTRATIVE OFFICER

1. 2026 Budget and 2026 – 2030 Financial Plan Overview

Heather McNell, Deputy Chief Administrative Officer, and Linda Sabatini, Director Financial Operations, Financial Services, gave a presentation titled "2026 - 2030 Financial Plan Overview", which provided the high-level context and details of the 2026-2030 Financial Plan.

Deputy CAO McNell introduced the context of the plan, noting past Boards decisions, the extensive public engagement undertaken, and the major cost drivers of capital projects, including inflation, population fluctuations, climate change challenges, and economic financial risks. Linda Sabatini presented the details of the 2026-2030 Financial Plan, including a breakdown of household impact by legal entity, highlighting $364 million in operating budget savings and $1.1 billion in capital expenditure reductions for 2026-2030.

2. 2026 Budget and 2026 – 2030 Financial Plan – Air Quality & Climate Action

Report dated September 29, 2025 from Conor Reynolds, Director, Air Quality and Climate Action Services, presenting the 2026 Budget and 2026 — 2030 Financial Plan for Air Quality and Climate Action for consideration by the Air Quality and Climate Committee.

Conor Reynolds and Julie Saxton, Program Manager, Enforcement and Regulation, provided the committee with a presentation titled "2026 Budget and 2026-2030 Financial Plan – Metro Vancouver Regional District – Air Quality and Climate Action", outlining the goals for 2026 and the sources of operating funds, noting that 50% is generated from permitting and regulation fees, and that the 2026 budget has been reduced by 8.5%.

It was MOVED and SECONDED

That the Air Quality and Climate Committee endorse the 2026 Budget and 2026 — 2030 Financial Plan for Air Quality and Climate Action as presented in the report dated September 29, 2025, titled "2026 Budget and 2026 – 2030 Financial Plan – Air Quality and Climate Action", and forward it to the Board Budget Workshop on October 22, 2025 for consideration.

CARRIED

3. Local Government Toolkit for Streamlining Public EV Charging Approvals

Report dated September 17, 2025 from Morgan Braglewicz, Air Quality Planner, providing an update to the Air Quality and Climate Committee and MVRD Board about a new toolkit to support local governments in BC seeking to streamline review and approval of applications for public EV charging stations.

Morgan Braglewicz provided a presentation titled "Local Government Toolkit for Streamlining Public EV Charging Approvals", informing the committee that there remains strong demand for public EV charging networks and that the toolkit is designed to assist municipal councils in streaming EV charging infrastructure approvals.

It was MOVED and SECONDED

That the MVRD Board:

a) receive for information the report dated September 17, 2025, titled "Local Government Toolkit for Streamlining Public EV Charging Approvals"; and
b) direct staff to forward a copy of the report dated September 17, 2025, titled "Local Government Toolkit for Streamlining Public EV Charging Approvals" to member jurisdiction staff with an offer of a presentation to Council upon request.

CARRIED

4. Regional Hazard, Risk, and Vulnerability Analysis: Project Update

Report dated September 17, 2025 from Edward Nichol, Senior Regional Planner, Regional Planning and Housing Services, providing an update to the Air Quality and Climate Committee on the Regional Hazard, Risk, and Vulnerability Analysis project.

Edward Nichol, Senior Planner, provided the committee with a brief overview of the report.

It was MOVED and SECONDED

That the Air Quality and Climate Committee receive for information the report dated September 17, 2025, titled "Regional Hazard, Risk, and Vulnerability Analysis: Project Update".

CARRIED

5. Manager's Report

Report dated September 17, 2025 from Conor Reynolds, Director, Air Quality and Climate Action Services, providing the committee with an update on the small gas-powered equipment consultation, which concluded that regulatory action would be impractical due to current economic conditions and performance of some types of equipment. Conor Reynolds mentioned that staff will continue to explore supportive measures that can be completed within existing resources. In addition, he informed the committee about grant funding opportunities for climate adaptation work from the FCM Green Fund.

It was MOVED and SECONDED

That the Air Quality and Climate Committee receive for information the report dated September 17, 2025, titled "Manager's Report".

CARRIED

F. INFORMATION ITEMS

No items presented.

G. OTHER BUSINESS

No items presented.

H. RESOLUTION TO CLOSE MEETING

No items presented.

I. ADJOURNMENT

It was MOVED and SECONDED
That the Air Quality and Climate Committee adjourn its meeting of October 10, 2025.

CARRIED
(Time: 10:53 am)

Hadir Ali,
Legislative Services Coordinator

Lisa Dominato,
Chair

79667252

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Air Quality and Climate Committee

From: Geoff Doerksen, Air Quality Planner, Air Quality and Climate Action Services
Ken Reid, Superintendent Environmental Sampling and Monitoring, Air Quality and Climate Action Services

Date: October 16, 2025 Meeting Date: November 7, 2025

Subject: **2025 Air Quality Warning Season**

RECOMMENDATION
That the MVRD Board receive for information the report dated October 16, 2025, titled "2025 Air Quality Warning Season".

EXECUTIVE SUMMARY
Metro Vancouver issues Air Quality Warnings and updates for Metro Vancouver and the Fraser Valley Regional District to help protect residents' health during periods of degraded air quality. This year's wildfire season had the second-highest area burned on record in Canada, with fires burning across much of the Canadian landscape. Metro Vancouver issued Air Quality Warnings on seven days in the summer of 2025. Smog warnings were issued on August 24 and 26, due to a combination of local emission sources and hot, sunny weather. A fine particulate matter warning was also issued on August 24 due to wildfire smoke. On September 3 wildfire smoke covered the region, and a warning was issued in Metro Vancouver and Central Fraser Valley for four days, and in Eastern Fraser Valley for five days. Wildfires near Hope, Whistler, and many fires in both the Cariboo region and Washington State contributed smoke.

PURPOSE
To provide the Air Quality and Climate Committee and the MVRD Board with information about Air Quality Warnings issued by Metro Vancouver during the summer of 2025, historical trends, and implications for future air quality.

BACKGROUND
The Air Quality and Climate Committee 2025 Work Plan includes a report on the 2025 air quality warning season. The air quality warning program is operated under Metro Vancouver's delegated authority to manage air quality in the Metro Vancouver region and through a shared service agreement with the Fraser Valley Regional District (FVRD).

METRO VANCOUVER WARNING PROGRAM IN 2025
Metro Vancouver's comprehensive air quality warning program includes issuing Air Quality Warnings for the entire Lower Fraser Valley airshed, including Metro Vancouver and the FVRD, when air quality is degraded or expected to degrade. The program is delivered in collaboration with Environment and Climate Change Canada, the BC Ministry of Environment and Parks, FVRD, Vancouver Coastal Health Authority, Fraser Health Authority, First Nations Health Authority, and the BC Centre for Disease Control.

Real-time data from Metro Vancouver's air quality monitoring network is available on AirMap.ca (Reference 1) and informs the warning program. Air contaminants of primary concern are those with greatest potential to reach levels in the region that may be harmful to human health:

- **ground-level ozone**, or smog, is produced by a chemical reaction between nitrogen oxides and volatile organic compounds on hot and sunny days, and
- **fine particulate matter**, from sources including wildfire smoke, residential wood smoke, vehicle exhaust, industrial processes, and chemical reactions.

These contaminants are measured against Metro Vancouver's ambient air quality objectives, which are benchmarks for acceptable air quality.

Metro Vancouver uses social media and webpages to provide residents with information to help reduce their exposure to air contaminants and protect health during an air quality warning. Social media posts also provided early notification this summer of the name change from "Air Quality Advisories" to "Air Quality Warnings". This change aligns with ongoing collaboration between Metro Vancouver and provincial and federal partners to improve public understanding and communication of Air Quality Warnings.

Air Quality Warnings are used to inform decision making in the region to protect vulnerable populations, especially at schools, daycares and within sports organizations. For example, school districts may adjust activities by moving outdoor activities indoors, while sports associations might cancel practices or games to reduce exposure.

2025 AIR QUALITY WARNINGS

Air Quality Warnings were issued on seven days during three periods in the summer of 2025:

August 24 - an Air Quality Warning was issued in Metro Vancouver Southeast, Metro Vancouver Northeast, Central Fraser Valley and Eastern Fraser Valley due to elevated **smog**. In the Eastern Fraser Valley the warning was also due to **fine particulate matter**. Elevated smog was caused by local emissions in combination with hot and sunny weather. Smoke from the Sailor Bar wildfire burning north of Yale in the Fraser Canyon resulted in elevated levels of fine particulate matter in the Eastern Fraser Valley.

August 26 - an Air Quality Warning was issued in Central Fraser Valley and Eastern Fraser Valley due to elevated **smog**. Elevated smog was caused by local emissions in combination with hot and sunny weather.

Widespread lightning across BC, combined with extremely dry forest fuel conditions, resulted in ignition of a significant number of wildfires in BC and Washington State near the end of August and beginning of September.

September 3 to 7 - an Air Quality Warning was issued for the entire Metro Vancouver and Fraser Valley due to elevated levels of **fine particulate matter** caused by wildfire smoke. Wildfires contributing smoke to the region included those just east of Hope, near Whistler, a large complex of fires in the Cariboo region, and fires in Washington State. The warning lasted four days throughout the region, with the exception of the Eastern Fraser Valley where the warning lasted five days. Air quality improved when southerly winds brought cleaner air into the region.

2025 OUTREACH STATISTICS

Metro Vancouver maintains a subscription list of media outlets, key stakeholders, and members of the public who have subscribed to receive information about Air Quality Warnings and air quality status updates. Air quality status updates are posted to Metro Vancouver's website (Reference 2) to inform the public of air quality conditions during warnings and outside of warning times as air quality conditions change. Table 1 shows outreach statistics that supported the air quality warning program during the 2025 season. Table 2 includes a count of the number of local media stories related to the Air Quality Warnings, wildfires in general, and ground-level ozone.

Table 1: Air quality warning outreach statistics (April to September, 2025)

Air quality status updates	36
Air quality status update subscribers	1,676
Air quality status update emails sent	60,336
Media warning subscribers	215
Public warning subscribers	5,384
Warning media releases issued	9
Warning emails sent	50,391
Media interviews conducted by warning program staff	8
Social media posts	108

Table 2: Count of local media stories, including radio and television broadcast, related to air quality and wildfires (April to September, 2025)

Air Quality Warnings	1128
Wildfires	2064
Ground-Level Ozone	191

In the last twenty years, the number of days on which Air Quality Warnings were in effect in the Lower Fraser Valley has ranged from zero to twenty-two days annually (Figure 1). This Figure also indicates the reason for the warning being issued: wildfire smoke (elevated fine particulate matter) or local emissions (elevated ground-level ozone and/or elevated fine particulate matter). Metro Vancouver has a performance indicator that aims for zero warning days due to local emissions (sources located within the Lower Fraser Valley airshed). In the last 5 years there have been on average 3.8 days with such warnings each year. Actions to reduce local emissions that contribute to ground-level ozone are outlined in the *Regional Ground-Level Ozone Strategy* which is currently undergoing an update.

2025 WILDFIRE SEASON AND REGIONAL SMOKE IMPACTS

To date, 2025 has had the second-highest area burned on record in Canada due to wildfires. In fact, the last three wildfire seasons are among the ten worst since 1972, according to Natural Resources Canada. The worst year on record was 2023 with 17.3 million hectares burned, while 2024 experienced 5.3 million hectares burned and this year 8.9 million hectares has burned (as of September 29, 2025). This year saw significant wildfire activity across much of the Canadian landscape with the most area burned in the following order: Saskatchewan, Manitoba, Northwest Territories, British Columbia, followed by Alberta. The majority of area burned occurred in Canada's northern boreal forests. The BC Wildfire Service reported there have been 1,327 wildfires started and 886,450 hectares burned in BC (as of September 29, 2025). The total area burned in 2025 is above BC's 10-year average.

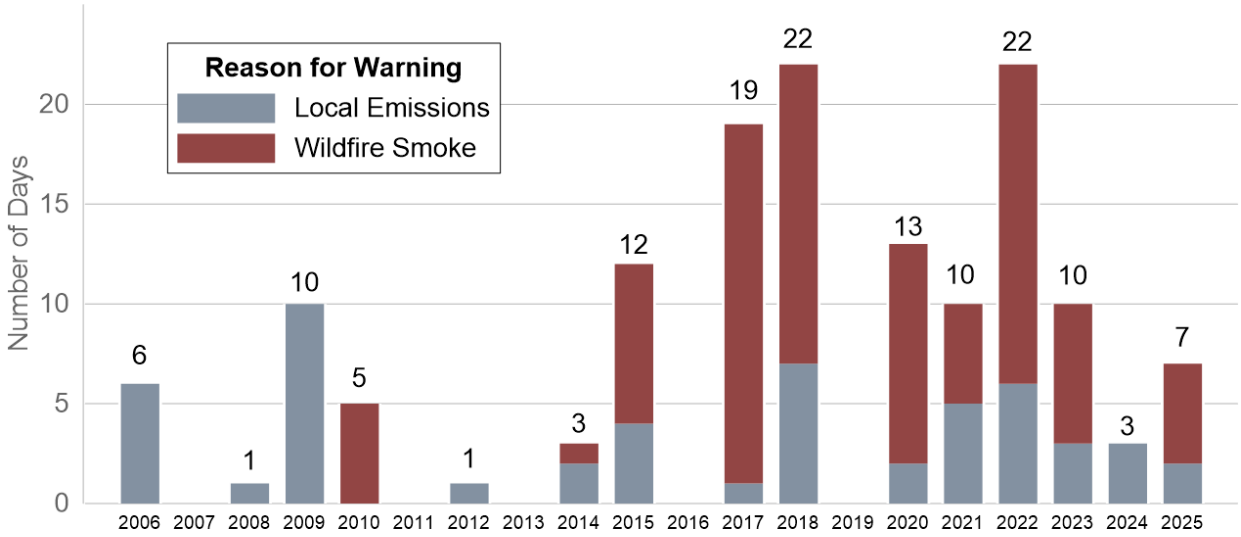

Figure 1: Number of air quality warning days in the Lower Fraser Valley airshed
Note: Trigger levels for warnings have changed over the years; care must be taken when interpreting warning trends.

IMPLICATIONS FOR FUTURE AIR QUALITY

Human-induced climate change contributes to extreme temperatures, increased wildfire risk, and the amount of area burned by wildfires. The combined effects of climate-induced changes and altered wildfire fuels is causing more frequent years of intense and prolonged wildfire activity. With a changing climate, the region can expect warmer, drier summers, and longer periods of drought, which can lead to more frequent and severe impacts from wildfire smoke and ground-level ozone.

Public awareness of air quality and health is growing as the public becomes more impacted by wildfire smoke and smog. Metro Vancouver continues to work with local health authorities, BC Centre for Disease Control, Health Canada, BC Ministry of Environment and Parks, FVRD and experts from outside BC to improve public outreach on smog and wildfire smoke health impacts and how residents can protect themselves.

Metro Vancouver's *Clean Air Plan* outlines strategies for continuous improvement in regional air quality and actions for the public to reduce their exposure to health harming air contaminants. These actions include better protections against wildfire smoke (such as clean air spaces), developing resources to help residents and businesses manage indoor air quality, and providing high quality information to the public during air quality warnings.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
Staff time for the air quality warning program is included in annual operating budgets. Increased resource levels may be needed as wildfire activity continues to increase in the future, and have been considered in long term financial planning.

OTHER IMPLICATIONS
The air quality warning program provides notification about changing air quality that member jurisdictions and First Nations can use in preparing and implementing air quality readiness plans.

CONCLUSION
Canada has faced the second-worst wildfire season this year with smoke being experienced across much of the Canadian landscape. In 2025, Metro Vancouver issued Air Quality Warnings on seven days. Local emissions combined with hot and sunny weather in August resulted in a smog warning in the Central and Eastern Fraser Valley for two days. Wildfire smoke resulted in fine particulate matter warnings on six days in August and September. Throughout the summer, Metro Vancouver kept residents informed of air quality conditions and staff actively provided outreach material, through social media, email and on Metro Vancouver's webpages, which included preparedness information to help reduce exposure to air contaminants during Air Quality Warnings. Collaboration with local health authorities and other partners ensures ongoing improvement to the air quality warning program to protect public health. As Metro Vancouver experiences increasing climate impacts it is important to continue to accelerate actions to reduce greenhouse gas emissions, adapt to a changing climate, and improve regional air quality.

ATTACHMENT
1. Presentation re: "2025 Air Quality Warning Season", dated November 7, 2025.

REFERENCES
1. Metro Vancouver. (2025). Air Map. Accessed 2025, October 8. Retrieved from: https://gis.metrovancouver.org/maps/Air
2. Metro Vancouver. (2025). Air Quality Data and Warnings. Accessed 2025, October 8. Retrieved from: https://metrovancouver.org/services/air-quality-climate-action/air-quality-data-and-advisories

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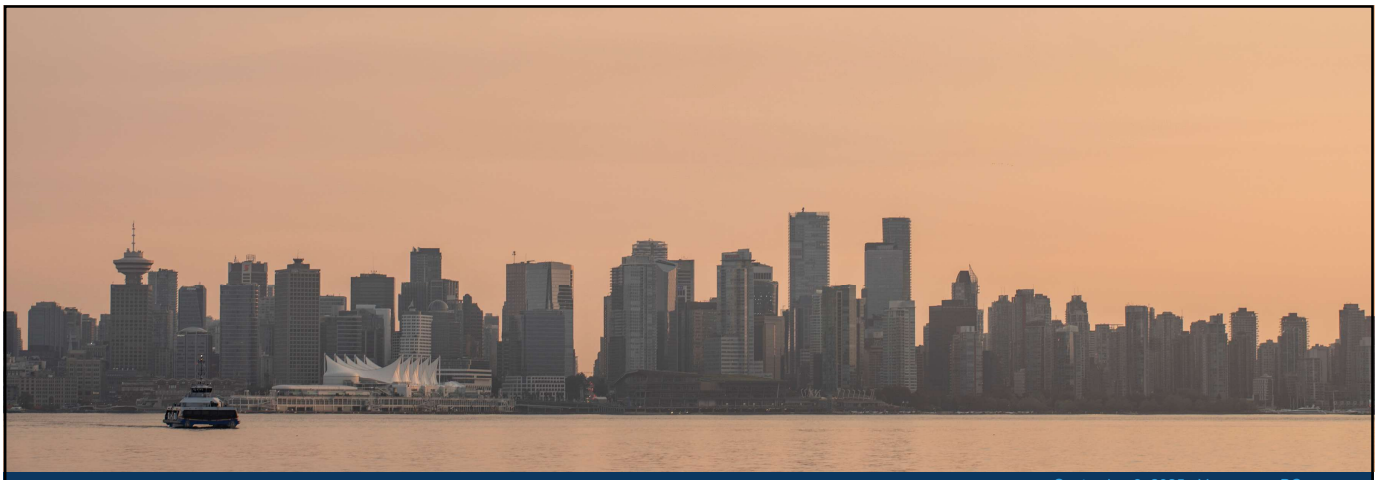

September 3, 2025 - Vancouver, BC

2025 Air Quality Warning Season

Ken Reid, M.Sc.
Superintendent, Environmental Sampling and Monitoring

Geoff Doerksen, M.Sc.
Air Quality Planner

Air Quality and Climate Committee Meeting, November 7, 2025
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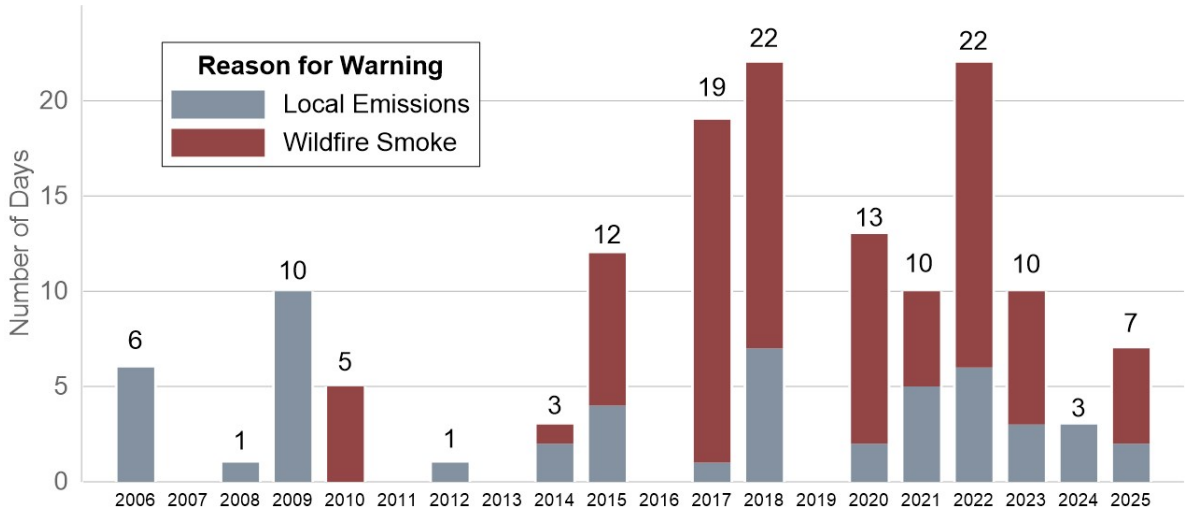
AIR QUALITY WARNINGS 2006-2025



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AIR QUALITY WARNINGS 2025

Aug. 24 — O_3 $PM_{2.5}$ — Hot and sunny with wildfire smoke and local emissions

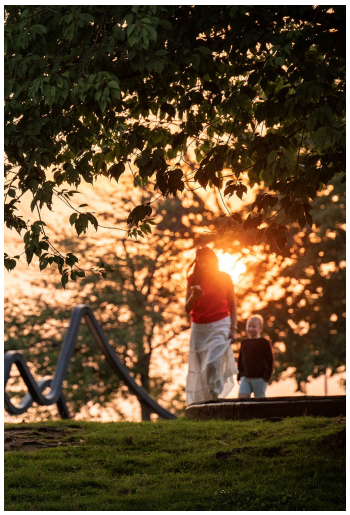
Aug. 26 — O_3 — Hot and sunny with local emissions

Sept. 3-7 — $PM_{2.5}$ $PM_{2.5}$ $PM_{2.5}$ $PM_{2.5}$ $PM_{2.5}$ — Wildfire smoke

3

PUBLIC OUTREACH AND COLLABORATION

- Continuous improvement in communication to the public and partner agencies
- Climate change impacts on Air Quality Warning type, duration, and frequency
- Outreach through Air Quality Updates, social media, and email notifications



North Vancouver, BC

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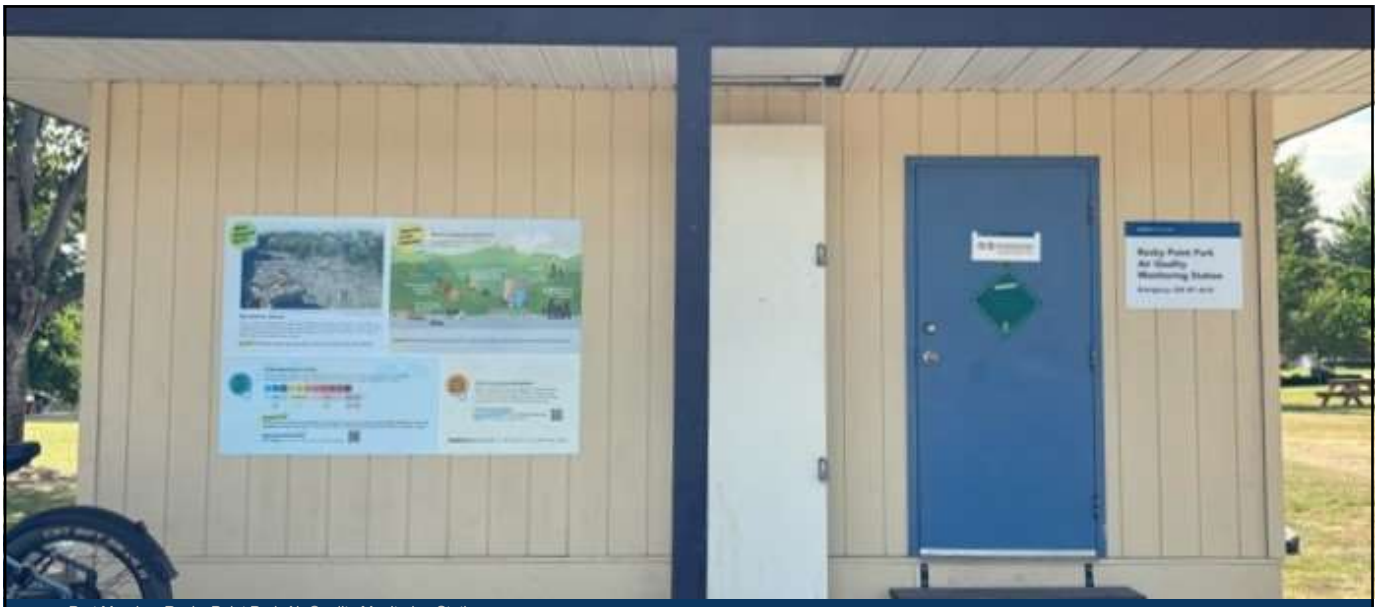

Port Moody – Rocky Point Park Air Quality Monitoring Station

Thank you! Questions?

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Air Quality and Climate Committee

From: Marcin Pachcinski, Division Manager, Electoral Area, Planning and Analytics
Regional Planning and Housing Services

Date: October 23, 2025 Meeting Date: November 7, 2025

Subject: **Prioritization Matrix for Flood-related Capital Projects**

RECOMMENDATION

That the MVRD Board receive for information the report dated October 23, 2025, titled "Prioritization Matrix for Flood-Related Capital Projects".

EXECUTIVE SUMMARY

The development of a Prioritization Matrix for Flood-related Capital Projects is part of the work Metro Vancouver is undertaking to support member jurisdictions in prioritizing a list of projects across the region for funding advocacy. The prioritization matrix was developed using existing provincial and federal criteria for flood project grants and has been turned into an Excel-tool that allows users to evaluate future flood risk reduction capital projects by scoring and weighting different criteria. The criteria are grouped into six categories:

1. Risk Assessment and Reduction
2. Financial and Funding
3. Community Equity and Benefits
4. Environment and Climate Change Adaptation
5. Indigenous Leadership and Culture
6. Project Management

Staff are seeking feedback from the Committee and MVRD Board, and subsequently will finalize the matrix and share it with member jurisdictions and local First Nations to utilize and identify a list of upcoming flood-related capital projects that require provincial or federal funding to be viable. This would enable staff and advisors to prioritize the list of projects using the tool and other considerations (e.g., regional equity). The list would then be brought back to the Committee and MVRD Board for discussion and endorsement along with a funding strategy. This approach presents an opportunity to strengthen regional coordination by putting together a unified package of projects for infrastructure funding.

PURPOSE

To present the substantially completed Prioritization Matrix for Flood-related Capital Projects for feedback and next steps.

BACKGROUND

Metro Vancouver has actively participated in ongoing flood resiliency planning processes for many years. Staff have routinely brought forward updates on the various groups and initiatives that are working on flood resiliency to the Flood Resiliency Committee (until March 2025) and the Air Quality and Climate Committee (starting in April 2025).

Since the release of the *BC Flood Strategy* in spring 2024, the MVRD Board's direction has focused on advocating to the BC Government to prioritize implementation of the strategy, as reflected in the resolution below passed in July 2024.

> "*That the MVRD Board write letters to the Honourable Nathan Cullen, Minister of Water, Land and Resource Stewardship, and the Honourable Bowinn Ma, Minister of Emergency Management and Climate Readiness, requesting that the implementation of the BC Flood Strategy be prioritized, expedited, and adequately resourced as it relates to the Metro Vancouver region."*

At the same July 2024 meeting, the MVRD Board also passed the following resolution:

> *"That the MVRD Board receive for information the Regional Flood Resiliency Initiatives Scan and Prioritization Matrix Scope of Work, as presented in the report dated June 18, 2024, titled "Regional Flood Resiliency Initiatives Scan and Prioritization Matrix – Scope of Work"."*

As noted in the scope of work staff report, the scan and prioritization matrix are intended to support the ongoing work to implement the *BC Flood Strategy*. The prioritization matrix is on the 2025 Committee work plan, and is now presented for review and feedback.

PRIORITIZATION MATRIX FOR FLOOD-RELATED CAPITAL PROJECTS

The following section presents the prioritization matrix developed to support the evaluation and ranking of flood-related capital projects across the Metro Vancouver region. These criteria, organized into six thematic categories, reflect provincial and federal funding priorities and allow for scoring and weighting through a customizable Excel-based tool. The matrix is intended to guide decision-making by helping to identify projects that deliver the greatest benefit across the region, support equity and environmental goals, and demonstrate strong feasibility and governance.

Criteria (Reference 1, see section 4.3.2)
The draft report includes a description of each criteria and the sub-criteria that would be scored. Below are excerpts of both.

1. Risk Assessment and Reduction
   This category forms the technical core of the assessment, focusing on a project's primary function to reduce flood risk. It evaluates the quality of the underlying risk assessment, the quantifiable improvement in community risk reduction (e.g., reduction in people affected or economic loss), the project's rationale against other alternatives, and its ability to mitigate risk to critical community lifelines.

1.1 Foundational Risk Assessment
This criterion ensures projects are based on robust evidence that includes clearly defined and quantified flood risk.

1.2 Project Effectiveness
This criterion measures the tangible risk reduction a project claims to achieve and confirms it is the most appropriate and effective solution among alternatives, while ensuring it does not transfer risk elsewhere.

1.3 Scale of Benefit
This criterion evaluates the project's scale in terms of its benefit to the larger region. It aims to prioritize projects that provide greater value to the Metro Vancouver region as a whole.

2. Financial and Funding

This category addresses the economic viability of a project. Criteria include the cost-effectiveness or return on investment (ROI), and the project's ability to leverage other funding sources to maximize public investment.

2.1 Cost-Effectiveness
This criterion ensures the prudent use of public funds by prioritizing projects that demonstrate a high value for money or return-on-investment (ROI), comparing the cost of the project to the value of damages avoided.

2.2 Funding Leverage
This criterion prioritizes projects that maximize the impact of investment by leveraging funds from multiple partners.

3. Community Equity and Benefits

Recognizing that flood impacts are not distributed equally, this category evaluates the project's social outcomes. It considers whether a project benefits diverse and vulnerable populations, promotes regional equity across Metro Vancouver, strengthens community connection, and is a result of collaboration across a diversity of interests.

3.1 Social Equity
This criterion was selected to ensure that investments are distributed equitably and prioritize the protection of communities and populations most vulnerable to flood impacts (e.g., equity-denied populations).

3.2 Community Engagement
This criterion promotes projects that are developed with broad stakeholder collaboration, ensuring they are well-supported by the communities they serve and are more likely to succeed long-term.

3.3 Community Co-Benefits
This criterion assesses the project's additional social and recreational benefits to the community such as creating green space, educational opportunities, or involving youth voices.

4. Environment and Climate Change Adaptation

This category ensures projects are forward-looking and provide broad benefits. It includes criteria for how a project considers future climate change impacts (e.g., sea-level rise), avoids decision lock-ins, incorporates nature-based or hybrid solutions, avoids the transfer of risk to downstream or upstream areas, and provides co-benefits such as environmental enhancements, or fish-friendly design.

4.1 Environmental Benefit

This criterion encourages innovative, multi-benefit projects that incorporate nature-based solutions and is a net positive for the local ecosystem.

4.2 Climate Change and Adaptability

This criterion ensures infrastructure investments remain effective over their design lifespan by explicitly accounting for future climate change projections and avoid decision lock-ins.

5. Indigenous Leadership and Culture

Acknowledging the critical importance of reconciliation, this category assesses the quality of engagement with First Nations. Criteria were drawn from nearly all modern funding guides, particularly the Watershed Security Fund and Disaster Resilience and Innovation Funding (DRIF). It moves beyond simple consultation to evaluate the incorporation of Indigenous Knowledge, alignment with UNDRIP principles affirmed in the Declaration on the Rights of Indigenous Peoples Act (DRIPA) and in the Indigenous Engagement Requirements (IER) of the Emergency and Disaster Management Act (EDMA); protection of cultural assets; and opportunities for First Nations leadership and its contribution to local jobs and training opportunities.

5.1 Indigenous Partnership and Leadership

This criterion was selected to align with provincial and federal commitments to reconciliation and the principles of DRIPA and UNDRIP, ensuring projects are developed in true partnership with First Nations.

5.2 Protection of Indigenous Culture and Heritage

This ensures projects respect Indigenous values by actively protecting cultural sites and incorporating Indigenous Knowledge, moving beyond simple harm avoidance.

6. Project Management

A successful project requires a proponent with the ability to deliver it. This category assesses the technical and administrative capacity of the applicant, the existence of a clear governance structure for the project's lifecycle, and whether appropriate approaches or milestones have been identified to monitor project progress.

6.1 Project Workplan

This criterion prioritizes projects that are well-developed and feasible, ensuring that funding is allocated to initiatives that are ready for efficient implementation.

6.2 Long-Term Governance

This criterion evaluates whether a clear and sustainable plan is in place for the long-term ownership, operation, maintenance, and eventual decommissioning of the infrastructure, ensuring its effectiveness over its lifetime.

The Excel-tool (Reference 1) is pre-populated with the criteria above. Additional criteria can be added by users, making it customizable for local circumstances.

Scoring (Reference 1, see section 4.3.1)
The general approach to scores that is used for each sub-criteria in the Excel-tool is as follows:

Score 0: No information provided or not applicable.
*Score 1***:** Limited / Acknowledged. The criterion is mentioned or acknowledged, but with little detail, no supporting evidence, or no plan for implementation. The information or benefit is not quantified.
Score 2: Good / Meets Expectations. Project provides clear, justified, and well-described approach. There is a specific plan with supporting details. The information or benefit is quantified.
Score 3: Excellent / Exceeds Expectations. Project provides exemplary approach. The approach is highly details, well-integrated into the overall project philosophy, demonstrates leadership or innovation, is well-supported by evidence. The information or benefit is quantified.

To help guide users in scoring projects, in the Excel-tool, each sub-criterion contains a description for each score (0-3), and the scoring is done automatically. Users simply review the scoring guide for each criterion and select the description that best matches their project.

Weighting (Reference 1, see section 4.4)
Recognizing that each user or community may weigh the criteria differently, the Excel-tool allows users to customize the weight for criteria, including inputting 0 for criteria that is deemed not applicable.

Other Considerations
The prioritization matrix and accompanying Excel tool are designed to support, but not solely determine, how the MVRD Board and other users identify priority flood-related capital projects. While the tool offers a standardized, transparent, and user-friendly method for comparing projects across a consistent set of criteria, it is not intended to capture all factors that may influence decision-making. The matrix should therefore be viewed as a foundational tool to inform, rather than dictate, prioritization outcomes.

From a regional perspective, giving extra weight to projects that have broader regional benefit may mean that projects that are very important for a member jurisdiction or local First Nation, but only benefit an area inside its borders, would not score as highly. It also may be the case that the majority of projects that score high are concentrated in one portion of the region. Therefore, staff recommend using the tool as a starting point, then applying additional considerations, like projects that are top priorities for individual member jurisdictions or local First Nations, and regional equity (i.e., making sure that the distribution of projects is across the region).

NEXT STEPS

After receiving input from the Committee and MVRD Board, staff will:

1. Incorporate feedback received
2. Refer the updated draft to the following staff advisory groups:
    a. Regional Administrators Advisory Committee
    b. Regional Engineers Advisory Committee
    c. Regional Planning Advisory Committee
    d. Regional Emergency Advisory Group
3. Finalize the report and tool based on the feedback received.
4. Send a letter with the final report and tool to member jurisdictions and local First Nations with a request that they provide a list of upcoming flood-related capital projects that require provincial or federal funding. (Staff would develop a short form that could be used to provide project information). The FVRD would also be invited to participate, and staff discussions would determine see how they would like participate.
5. Work with member jurisdiction staff and others (e.g., technical experts) to prioritize the lists of projects received using the Excel tool. All scoring and weighting will be transparent and provided via a staff report to the Committee and Board to consider. Likewise, the report will include information related to other considerations (e.g., regional equity) that were used to prioritize projects.
6. Present the recommended list of prioritized projects, including all background information, to the Committee for discussion and to the MVRD Board for consideration of endorsement.
7. The board-endorsed list of projects would be the basis for a funding request package and strategy that would be put forward to provincial and federal governments.

ALTERNATIVES

As this is an information report, no alternatives are provided.

FINANCIAL IMPLICATIONS

The budget for completing the two projects (scan and prioritization matrix) is approximately $60,000, which was funded from the Board-approved 2024 and 2025 Regional Planning budgets.

OTHER IMPLICATIONS

The prioritization matrix and Excel tool present an opportunity to strengthen regional coordination of flood-related capital projects across Metro Vancouver. By inviting member jurisdictions and local First Nations to submit project lists and participate in a shared prioritization process, the process of using the tool can help foster a more collaborative and strategic approach to flood resiliency planning. This may reduce competition for limited provincial and federal funding by enabling the region to present a unified package of high-priority projects. It also supports transparency and equity by applying consistent evaluation criteria while allowing for local customization. Ultimately, the tool could serve as a foundation for ongoing regional collaboration, helping to align efforts and advocate collectively for infrastructure investments in the region.

CONCLUSION

This report presents a draft prioritization matrix and Excel-based tool developed to support the evaluation of flood-related capital projects across Metro Vancouver. The tool offers a standardized and transparent framework for assessing projects based on provincial and federal funding. By inviting member jurisdictions and local First Nations to submit project proposals, the matrix enables a coordinated regional approach to identifying and prioritizing investments that enhance flood resiliency. While the tool provides a strong foundation for comparison, it is intended to complement other strategic considerations such as regional equity and local priorities. The end goal is to develop a collaboratively endorsed list of projects that can be advanced collectively for senior government funding.

ATTACHMENT

1. Metro Vancouver Flood Risk Reduction Projects: Review and High-level Prioritization Matrix Draft Report.

REFERENCES

1. Metro Vancouver. (2025). *Flood-related Capital Project Evaluation Matrix Tool*. Retrieved from: https://metrovancouver.org/_layouts/download.aspx?SourceUrl=https://metrovancouver.org/services/regional-planning/Documents/flood-related-capital-project-evalutation-matrix-tool.xlsx

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Metro Vancouver Flood Risk Reduction Projects: Review and High-level Prioritization Matrix Draft Report

17 October 2025

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Cover Photo: Metro Vancouver – Metro Vancouver Electoral Area A and North Shore. Ebbwater Consulting Image. 2018

Disclaimer

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Pursuant to Engineers and Geoscientists of British Columbia requirements, Ebbwater's permit to practice information is as follows:

- Permit Number: 1000929
- Issued: 1 July 2025
- Expires: 30 June 2026

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Certification

Name, Qualifications, and Project Role	Organization	Signature
Tamsin Lyle, M.Eng., MRM, P.Eng. Senior Reviewer	Ebbwater	*(Signature and Stamp provided in original document)*
Linda Fang, MSc, P.Eng., PE Project Manager	Ebbwater	*(Signature provided in original document)*

Revision History

Revision No.	Date	Description	Remarks
1.0	24 September 2025	Draft	Draft to client for comment. This version was only of Section 4 for review of the high-level prioritization framework.
2.0	17 October 2025	Draft	Shared with client. This version includes Sections 1-3, and updates to Section 4 incorporating MV comments.

Acknowledgements

Territorial Acknowledgements

Ebbwater acknowledges that our office is situated on the unceded traditional territories of the following First Nations: xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh), we are grateful to be guests of these Nations.

Additionally, Ebbwater would like to acknowledge that the project area encompasses the shared territories of many Indigenous peoples, including 10 local First Nations: q̓ićəy̓ (Katzie), q̓ʷɑ:ńƛ̓əń (Kwantlen), kʷikʷəƛ̓əm (Kwikwetlem), máthxwi (Matsqui), xʷməθkʷəy̓əm (Musqueam), qiqéyt (Qayqayt), se'mya'me (Semiahmoo), Sḵwx̱wú7mesh Úxwumixw (Squamish), scəẃaθən məsteyəxʷ (Tsawwassen) and səlilwətaɬ (Tsleil-Waututh).

Project Acknowledgement

Section pending.

Executive Summary

Section pending.

Contents

Figures

List of Abbreviations and Acronyms

Section pending.

1 Introduction

Floods are among the most commonly occurring natural hazard in Canada as well as its costliest (Public Safety Canada, 2022). Mitigating flood risks is key to increasing the resilience of affected communities and reducing pressures on the public purse. By proactively investing in flood mitigation activities, a community secures practical investments for its future growth and prosperity, reducing the risk of significant disaster recovery costs, productivity losses, economic losses, destruction of non-monetary cultural assets, environmental damage, injuries, and deaths. Mitigation measures can provide significant return on investment in terms of saved recovery costs (Public Safety Canada, 2020, AECOM Canada Ltd., 2021).

1.1 Project Context and Need

1.1.1 Metro Vancouver Jurisdiction and Mandate

Metro Vancouver is composed of 21 municipalities, one Electoral Area and one Treaty First Nation, and it "collaboratively plans for and delivers regional-scale services"[1]. Metro Vancouver has started laying the groundwork to conduct risk reduction and resilience-building work regionally, in terms of policy and planning and hazard analyses completed by the regional planning department. Metro Vancouver also conducts risk-related activities through initiatives completed by the air quality and climate change department, utility departments, and emergency management group.

Metro 2050[2], the regional federation's regional growth strategy (RGS), was developed by Metro Vancouver's regional planning department in collaboration with member jurisdictions and TransLink. Strategy 3.4 of this document is to "Advance land use, infrastructure, and human settlement patterns that improve resilience to climate change impacts and natural hazards."

Policy action 3.4.2 directs Metro Vancouver to "Work with the IPREM, the Federal Government, the Province, First Nations, TransLink, member jurisdictions, adjacent regional districts, and other stakeholders to…" conduct a series of activities. And, activity 3.4.2(a) directs Metro Vancouver to take a more proactive role in working with regional partners to collaboratively develop and share information and data related to hazards, risks, and vulnerabilities. Other key activities are summarized below.

- Plan for climate change impacts and natural hazard risks when extending utilities and transportation infrastructure that support development.
- Support the integration of emergency management, utility planning, and climate change adaptation in land use, transportation, and growth management plans.
- Research and share information related to the impacts of climate hazards on vulnerable populations and focus resilience actions on equitable outcomes.

[1] From metrovancouver.org. Accessed 9 June 2024.
[2] Weblink: https://metrovancouver.org/services/regional-planning/regional-growth-strategy. Accessed 17 December 2024.

1.1.2 Flood and Flood Management in the Region

Flooding is one of multiple natural hazards in Metro Vancouver. Evidence suggests that the damages from events such as coastal and riverine floods is relatively high[3], and with the changing climate and dynamic nature of the region, this will change (nominally get worse) with time. Further, Metro Vancouver's population is increasing rapidly (including in floodplains), with about 35,000 new residents each year. This is exposing more people to flooding. Therefore, there is a need to reduce the risk from flooding.

Flood management, especially in the context of a changing climate is a complex problem. The uncertain nature of climate change, the linkages with other hazards, the unknown timelines, the intangibility of many—and cross-jurisdictional—impacts makes decision-making, including prioritization, very challenging.

Although a number of regional scale initiatives have been initiated in recent years (e.g., Lower Fraser Floodplains Coalition, Metro Vancouver Regional Multi-Hazard Mapping Project, Lower Mainland Flood Management Strategy), jurisdiction for flood management activities continues to mostly lie at the municipal level, resulting in fragmentation of approaches, and competition for scarce resources (Ebbwater Consulting Inc., 2021).

Metro Vancouver's Flood Resiliency Committee (now the Air Quality and Climate Committee[4]), which was formed in part to address issues related to the November 2021 Atmospheric River Event, has undertaken this project to leverage existing work and knowledge of flood management with the goal to encourage collaboration across the region and support the prioritization of flood risk reduction projects.

1.2 Project Goal and Scope

The scope of this project is to develop a transparent and systematic tool, which will be used by Metro Vancouver as one of the ways to evaluate and prioritize flood risk reduction projects for future funding and advocacy efforts. This is achieved through the approach described in Section 2.

[3] The potential damages associated with flooding for one scenario within Phase 1 of the Lower Mainland Flood Management Strategy was approximately $30 billion.
[4] This project started under the auspices of the Flood Resiliency Committee. This committee was dissolved in early 2025, and its mandate moved under the Air Quality and Climate Committee.

2 Overview of Project Approach

The project includes two main tasks: (1) a scan of flood-related capital projects and (2) a high-level prioritization framework:

- The first task involves creating an inventory of projects with a focus on flood related capital projects that address coastal and riverine flood risk at a regional scale, consistent with Metro Vancouver's regional interest and aligned with the project's goal of creating a prioritization framework for significant risk reduction investments and address flood risks that have a regional consequence.
- The second task involves developing a high-level prioritization framework that is a systematic and transparent tool to evaluate and prioritize risk reduction projects. The framework builds upon the significant body of knowledge that already exists within the evaluation criteria of key federal and provincial grant programs.

The workflow of the project and how these two tasks relate to one another is shown in Figure 2-1. The details of the methodologies and results for each task is provided in Sections 3 and 4, respectively.

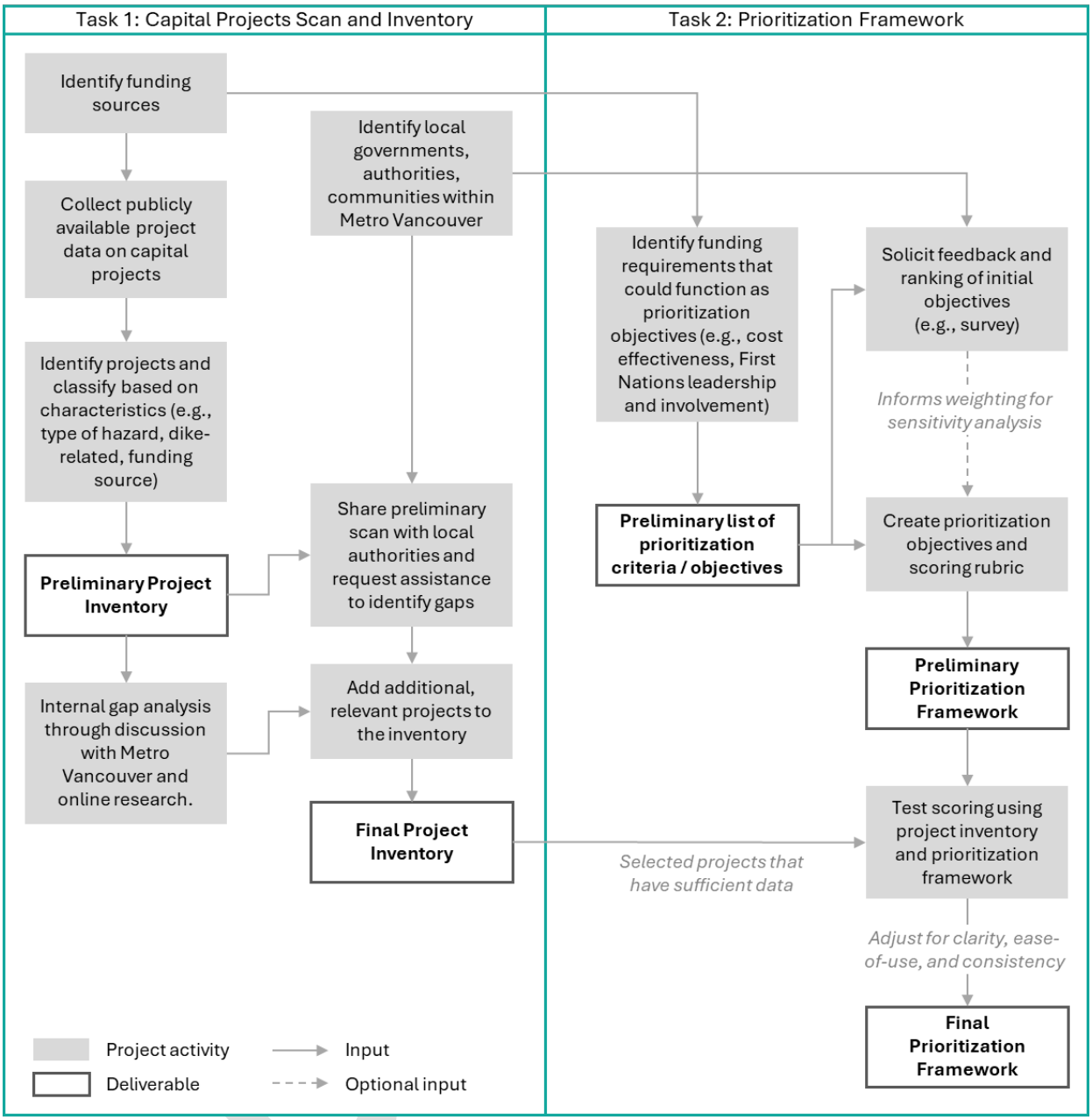

Figure 2-1: Project workflow showing the main steps and interrelated activities of the project

3 Inventory of Capital Flood Projects

Metro Vancouver is a large region with diverse landscapes and communities, resulting in a diversity of flood hazards and correspondingly a variety of flood management projects of different scales (smaller, larger), types of flood hazards addressed (riverine, coastal), funding sources (federal, provincial, private), and data availability (easy-to-access public data vs private or restricted data). This diversity poses a challenge for data collection as there does not exist a sole source of data.

In order to compile a project inventory, this project took a stepwise approach as shown in Figure 2-1:

- Funding sources were identified and public data is collected or requested (data sources are described in Section 3.1). The data was reviewed and documented based on available information such as project location, value, type of flood hazard addressed, start and completion dates, etc.
- A preliminary project inventory database and map were created from the previous step. This preliminary inventory was used first for an internal gap analysis to identify missing capital projects through discussions with Metro Vancouver and online research of major projects.
- The preliminary project inventory was then shared by Metro Vancouver with local authorities with a request for assistance to identify gaps in flood related capital projects. The responses from the municipalities were incorporated into the inventory.

Throughout the process, some project types were identified as being less relevant for the overall project goal and therefore excluded from the inventory. Section 3.2 describes the reasoning behind why certain types of projects were not included in the inventory.

3.1 Funding Sources for Preliminary Project Inventory

Multiple funding sources were reviewed to determine if the funded projects were relevant for inclusion in the project inventory. This project primarily focused on federal and provincial funding data, as many of the capital work projects have funding from either the Government of Canada or the BC government. This project also reviewed funding sources not directly related to flood risk reduction, but could potentially reduce flood hazards, based on discussions with Ministry of Emergency Management and Climate Readiness (EMCR) staff[5]. The following funding sources were reviewed:

1. Infrastructure Canada Projects - Map Data
   This dataset provides geographical mapping of various infrastructure projects in Canada since 2016. It includes more detailed project descriptions, locations and cost estimations.

2. Infrastructure Canada Projects - Table data
   This dataset offers a tabular representation of infrastructure projects across Canada since 2001. It includes basic information like project title, funding program, province and category, etc.

[5] Direct correspondence between Ebbwater and EMCR staff, June 2024.

3. Disaster Risk Reduction Funding by the Ministry of Emergency Management and Climate Readiness (EMCR)
   The dataset includes projects that are funded by the Ministry of EMCR. It provides project titles, project proponent's administrative location, and value that are supplied by the Ministry of EMCR.

4. Community Emergency Preparedness Fund (CEPF)
   The CEPF is a suite of funding streams intended to enhance the resilience of local governments, First Nations and communities in responding to emergencies and to reduce risks from future disasters due to natural hazards and climate-related risks. There is a public list of projects from 2022/23, however they were not included as part of the inventory as they did not appear to be capital works-related.

5. BC Salmon Restoration and Innovation Fund
   This fund supports protection and restoration activities for Pacific salmon and other priority wild fish stocks. It also supports projects that will ensure the fish and seafood sector in B.C. is positioned for long-term environmental and economic sustainability. A review of the data shows that as the scheme is more ecologically focused and not flood-focused, these projects are not relevant for this project and therefore not included in the inventory.

A list of projects was shortlisted from dataset 1 to 3. As datasets 2 and 3 did not have detailed project descriptions, additional effort was used to supplement project information through online searches of public data.

3.2 Scoping Assumptions and Exclusions

The primary objective of the project scan is to identify flood related capital projects that address coastal and riverine flood risk at a regional scale, consistent with Metro Vancouver's regional interest. This focus is necessary to align the with the project's goals of creating a prioritization framework for significant risk reduction investments and addressing flood risks that have a regional consequence.

Consequently, several categories of projects that are excluded from the project inventory as described below:

1. **Non-capital projects** – the scan focused on capital works which included infrastructure such as dike upgrades, pump stations, road and bridge upgrades, etc. Non-capital projects such as land use planning, public awareness and education, amongst others, are not included in the inventory (Northwest Hydraulic Consultants Ltd., 2021).

2. **Stormwater projects** – As defined in the project scope, the hazards of concern are primarily riverine and coastal flooding. Stormwater or pluvial flooding, which results from intense rainfall overwhelming urban drainage systems, was considered a secondary hazard and not the focus for the project scan because if its local scale and jurisdiction. Riverine and coastal flooding are regional-scale issues often requiring multi-jurisdictional coordination, whereas pluvial flooding is more typically managed at the municipal level through Integrated Stormwater Management Plans.

3. **Geohazard and debris-flood[6] related projects** – Projects where the primary purpose was to address geohazards, such as landslide mitigation or standalone erosion control were excluded unless they were an explicit component of a larger flood mitigation project. While erosion and flooding are often linked, the driving hazard and mitigation approach can be different. To maintain a clear focus on projects related to flood risk reduction, those focused solely on geohazard or debris-flood were not included.
4. **Ecologically focused projects** – Projects where the primary goal was ecological restoration rather than flood risk reduction were also excluded. For example, the BC Salmon and Restoration Fund supports crucial environmental work, but its projects are not designed or prioritized on addressing flood risk. This distinction was necessary to ensure the final project inventory was composed of projects with a clear flood mitigation objective.

By applying these scoping assumptions, the project developed a relative consistent inventory of capital projects for Metro Vancouver. However, some inconsistencies within the data remain. Note that all capital projects identified in the preliminary project scan from funding sources' public data (Section 3.1) have been kept in the final project inventory, even if some fall within the excluded category, as Metro Vancouver is interested in projects that are of a scale or relevance such that they received provincial and/or federal funding. For example, some stormwater projects are still in the project inventory because they received funding through provincial or federal sources.

3.3 Summary of Final Project Inventory

Section pending.

[6] Debris flood is characterized by sediment-laden water, where sediment concentration can range from 20-47% by volume (Wilford et al., 2004).

4 Prioritization Framework

4.1 Framework Goal

The goal of creating the prioritization framework is to provide a systematic and transparent tool as one of the ways for Metro Vancouver to evaluate and prioritize flood risk reduction projects for future funding and advocacy efforts. It reflects key concepts in Metro Vancouver's Regional Growth Strategy (2022), such as preparing for climate change and natural hazards, including earthquakes, floods, landslides, and wildfires, which are often exacerbated by climate change. Examples of possible policy approaches involve avoiding siting new settlements and infrastructure in locations with known and unmitigated hazards, while mitigating risks in existing settlements. Additionally, Metro Vancouver recognizes that Indigenous knowledge can inform and complement regional resilience strategies (Metro Vancouver, 2022).

It is Metro Vancouver's intention that this framework be shared so that authorities or communities of any level can use the tool. To that end, Metro Vancouver requested the framework be designed as a "comprehensive" version that users can adapt. This ambition to create an adaptable framework does create complexities for the user and this is described in Sec. 4.4.

4.2 Framework Contents

The effectiveness of a prioritization framework relies on the quality of its evaluation criteria and metrics. To develop a transparent and relevant framework for Metro Vancouver, an extensive review of existing grant programs in flood risk reduction was conducted. The primary goal was to ensure that the criteria in the framework built upon the significant body of work already captured in the evaluation criteria of key federal and provincial grant programs. These funding programs and their standards were recognized as a collection of current perspectives on risk reduction, climate adaptation, and equitable project development and a good starting point for building a prioritization framework.

4.2.1 Review of Funding Programs and Best Practices

Ebbwater conducted a comprehensive scan of programs that fund structural and nature-based infrastructure for climate adaptation and disaster resilience. This review identified common themes, mandatory requirements, and emerging priorities in project evaluation. The following sources were analyzed, among others:

- **Federal Programs:**
    - Infrastructure Canada's **Disaster Mitigation and Adaptation Fund (DMAF)**, a primary source for large-scale infrastructure projects.
    - Natural Resources Canada's **Climate-Resilient Coastal Communities (CRCC) Program**, providing specific criteria related to coastal adaptation, project governance, and the use of adaptation pathways.
    - Crown-Indigenous Relations and Northern Affairs Canada's **First Nation Adapt (FNA) Program**, offering insights into criteria for Indigenous-led projects.

- The United States' **Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC)** program, which offers best practices in technical evaluation, including the requirement for a "Benefiting Area Map."

- **Provincial and Regional Programs:**
  - British Columbia's **Disaster Resilience and Innovation Funding (DRIF)** program, which outlines provincial priorities for risk mitigation funding.
  - The Union of BC Municipalities' **Community Emergency Preparedness Fund (CEPF)**, specifically the Disaster Risk Reduction category for smaller-scale structural projects.
  - The **Watershed Security Fund (WSF)**, a newer initiative that emphasizes nature-based solutions, collaboration, and alignment with the principles of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

4.2.2 Synthesis and Grouping of Criteria

The review of these sources identified 29 distinct evaluation criteria. To create a clear evaluation structure, these individual points were consolidated and organized into six thematic categories. The original criteria are provided in Appendix A. This structure allows for a balanced assessment that considers not only the technical and financial aspects of a project but also its social, environmental, and governance merits. The thematic categories are described below.

1. Risk Assessment and Reduction: This category forms the technical core of the assessment, focusing on a project's primary function to reduce flood risk. Heavily influenced by DMAF and FEMA requirements, it evaluates the quality of the underlying risk assessment, the quantifiable improvement in community risk reduction (e.g., reduction in people affected or economic loss), the project's rationale against other alternatives, and its ability to mitigate risk to critical community lifelines.

2. Environment and Climate Change Adaptation: This category ensures projects are forward-looking and provide broad benefits. It includes criteria for how a project considers future climate change impacts (e.g., sea-level rise), avoids decision lock-ins, incorporates nature-based or hybrid solutions, avoids the transfer of risk to downstream or upstream areas, and provides co-benefits such as environmental enhancements, or fish-friendly design.

3. Indigenous Leadership and Culture: Acknowledging the critical importance of reconciliation, this category assesses the quality of engagement with First Nations. Criteria were drawn from nearly all modern funding guides, particularly the Watershed Security Fund and DRIF. It moves beyond simple consultation to evaluate the incorporation of Indigenous Knowledge, alignment with UNDRIP principles affirmed in the Declaration on the Rights of Indigenous Peoples Act (DRIPA) and in the Indigenous Engagement Requirements (IER) of the Emergency and Disaster Management Act (EDMA); protection of cultural assets; and opportunities for First Nations leadership and its contribution to local jobs and training opportunities.

4. Community Equity and Benefits: Recognizing that flood impacts are not distributed equally, this category evaluates the project's social outcomes. It considers whether a project benefits diverse and vulnerable populations, promotes regional equity across Metro Vancouver, strengthens community connection, and is a result of collaboration across a diversity of interests.

5. Financial and Funding: This category addresses the economic viability of a project. Criteria include the cost-effectiveness or return on investment (ROI), and the project's ability to leverage other funding sources to maximize public investment.

6. Project Management: A successful project requires a proponent with the ability to deliver it. This category assesses the technical and administrative capacity of the applicant, the existence of a clear governance structure for the project's lifecycle, and whether appropriate approaches or milestones have been identified to monitor project progress.

4.3 Selected Criteria and Scoring

The initial 29 criteria identified through the review of funding programs (see in Section 4.2.1) include duplication and overlaps. Therefore, these criteria were streamlined into a new set of 14 detailed criteria to eliminate redundancy and create a clear and logical evaluation structure as presented below. The detailed criteria fall into the six groups identified in Section 4.2.2 and similar wording was kept where possible from the original criteria. The proposed scoring rubric for these detailed criteria is also provided here.

4.3.1 General scoring philosophy

The general scoring philosophy uses a 0 to 3 point scale based on the ability of the project to address the different criteria. The general scoring guide is as follows and will be further developed for each criteria in the next section:

Score 0: No information provided or not applicable
Score 1: Limited / Acknowledged. The criterion is mentioned or acknowledged, but with little detail, no supporting evidence, or no plan for implementation. The information or benefit is not quantified.
Score 2: Good / Meets Expectations. Project provides clear, justified, and well-described approach. There is a specific plan with supporting details. The information or benefit is quantified.
Score 3: Excellent / Exceeds Expectations. Project provides exemplary approach. The approach is highly details, well-integrated into the overall project philosophy, demonstrates leadership or innovation, is well-supported by evidence. The information or benefit is quantified.

4.3.2 Selected Detailed Criteria and Scoring Guide

This section provides the proposed streamlined set of criteria, including a scoring guide following the general scoring philosophy.

For each detailed criteria, we provide a reference to the reviewed funding program(s) described in Section 4.2.1 that contain similar requirements

1. Risk Assessment and Reduction

1.1 Foundational Risk Assessment: This criterion ensures projects are based on robust evidence that includes clearly defined and quantified flood risk. This is based on similar criteria found in DMAF, CEPF, DRIF, CRCC, and FNA

Score 0	No risk assessment is mentioned or referenced.
Score 1	A general flood hazard is mentioned (e.g., "coastal flooding") with little specific data. The benefiting area is vaguely defined ("the community"). The risks are not quantified.
Score 2	The proposal is based on a specific, referenced flood hazard assessment (e.g., 200-year flood map). It quantifies key risks (e.g., number of properties, key infrastructure at risk) and provides a clear map of the benefiting area.
Score 3	The proposal is based on a detailed, site-specific risk assessment using multiple hazard scenarios (e.g., current and future climate). It quantifies risk across multiple indicators (social, economic, environmental) and clearly identifies risks to critical facilities (e.g., hospitals, emergency response facilities) and/or basic services (e.g., roads, telecommunication services).

1.2 Project Effectiveness: This criterion measures the tangible risk reduction a project claims to achieve **and** confirms it is the most appropriate and effective solution among alternatives, while ensuring it does not transfer risk elsewhere. This is based on similar criteria found in DMAF, CEPF, DRIF, WSF, CRCC, and FNA.

Score 0	No mention of how the project will reduce risk.
Score 1	The proposal makes a general statement that the project will reduce risk, with no quantified outcomes or comparison to alternatives.
Score 2	The proposal quantifies the expected risk reduction (e.g., "removes X properties from the floodplain," "protects Y km of road"). It includes a clear rationale comparing the chosen project to at least one other alternative (including "do nothing") and explicitly confirms it will not transfer risk to other areas
Score 3	The proposal provides a robust options analysis comparing multiple alternatives (including non-structural and/or nature-based solutions). It quantifies risk reduction across several indicators and demonstrates a clear, measurable, contribution to community-wide risk reduction.

1.3 Scale of Benefit: This criterion evaluates the project's scale in terms of its benefit to the larger region. It aims to prioritize projects that provide greater value to the Metro Vancouver region as a whole. This is based on similar criteria found in DMAF, CEPF, DRIF, WSF, and CRCC.

Score 0	No mention of the project's regional context or scale of benefit.
Score 1	The project provides a neighbourhood-level benefit for one or more neighbourhoods within a single local jurisdiction.
Score 2	The project provides a benefit to most or all of a single local jurisdiction (e.g., an entire municipality).
Score 3	The project provides a benefit to more than one local jurisdiction (e.g., a sub-region).

Criterion 1.2 assesses the quality of a project's rationale and its ability to quantify the risk reduction, but it does not assess the relative scale of the benefit (e.g., does it reduce flood risk for 10 houses or 100

houses). This risk benefit is considered as a key component of Criterion 4.1 as part of the projects overall cost-effectiveness. We do not want to penalize a project that only benefits 10 houses compared to one that benefits 100 houses as what is really important should be the cost effectiveness.

We propose that Criterion 1.1 and 1.2 be used as screening criterion (must-haves) so that projects that do not achieve at least a score of 2 or above should be disqualified or returned to the proponent for revision before it is scored further. This signals that Group 1 criteria are fundamental to risk reduction projects. We propose that Criterion 1.3 should not be used as a screening criterion to not penalize smaller projects.

2. Financial and Funding

2.1 Cost-Effectiveness: This criterion ensures the prudent use of public funds by prioritizing projects that demonstrate a high value for money or return-on-investment (ROI), comparing the cost of the project to the value of damages avoided. A ROI of 7:1 is proposed as the differentiator between a score of 2 and 3 based on findings from (Public Safety Canada, 2019) and (Cross et al., 2024). This criteria is based on similar criteria found in all reviewed funding programs.

Score 0	No mention of project cost or benefits
Score 1	A project cost is provided, but there is no analysis of the financial benefits or losses avoided or there is an analysis and the ROI is less than 1:1.
Score 2	The proposal provides a clear benefit-cost analysis (qualitative or quantitative) comparing the project cost to the value of damages or losses avoided. ROI is between 1:1 and 7:1.
Score 3	The proposal includes a detailed ROI calculation or a comprehensive, quantitative benefit-cost analysis, demonstrating exceptional value for money. ROI is greater than 7:1.

2.2 Funding Leverage: This criterion prioritizes projects that maximize the impact of investment by leveraging funds from multiple partners. This is based on similar criteria found in DRIF and CRCC.

Score 0	No mention of other funding partners or economic benefits.
Score 1	The proposal mentions the possibility of other funding but provides no commitments.
Score 2	The proposal includes letters of intent or other evidence of secured/potential funding from partners.
Score 3	The proposal has formal, confirmed funding commitments from one or more partners, significantly leveraging the requested investment.

3. Community Equity and Benefits

3.1 Social Equity: This criterion was selected to ensure that investments are distributed equitably and prioritize the protection of communities and populations most vulnerable to flood impacts (e.g., equity-denied populations). This is based on similar criteria found in CEPF, DRIF, WSF, and CRCC.

Score 0	No mention of the social characteristics of the benefiting area.
Score 1	The proposal describes the benefitting vulnerable community in general terms (not quantified) or the project does not benefit any specific vulnerable population.

Score 2	The proposal quantifies specific vulnerable populations or areas within the benefiting area (e.g., using SoVI data[7], identifying seniors' homes) that will be protected.
Score 3	The proposal prioritizes the protection of socially vulnerable populations by meaningfully engaging them in the design process, ensuring the proposed solution effectively addresses both their specific needs and a known gap in regional flood risk reduction equity..

3.2 Community Engagement: This criterion promotes projects that are developed with broad stakeholder collaboration, ensuring they are well-supported by the communities they serve and are more likely to succeed long-term. This is based on similar criteria found in all funding programs.

Score 0	No mention of community engagement.
Score 1	The proposal states that the community was informed (one-way communication) about the project.
Score 2	The proposal provides evidence of collaboration (two-way communication) with the community and groups within the community and that their input shaped the project.
Score 3	The project is the result of a formal, collaborative process and has strong, documented support from the community. The project has also engaged stakeholders (e.g., rail operators) where relevant.

3.3 Community Co-Benefits: This criterion assesses the project's additional social and recreational benefits to the community such as creating green space, educational opportunities, or involving youth voices. This is based on similar criteria related to social co-benefits found in DMAF, UBCM, DRIF, and CRCC.

Score 0	No mention of project co-benefits.
Score 1	A potential co-benefit is mentioned in passing but not detailed.
Score 2	The proposal identifies one specific community co-benefit (e.g., recreational paths, public art, social gathering places) that are an outcome of the project.
Score 3	The project is intentionally designed to deliver multiple, significant, and well-integrated community co-benefits.

Regional equity (i.e. equitable sharing of resources across member municipalities) has not been considered in this set of detailed criteria, however Metro Vancouver recognizes that regional equity also has a role in project prioritization and this will be considered as part of Metro Vancouver's decision making process.

4. Environment and Climate Change Adaptation

4.1 Environmental Benefit: This criterion encourages innovative, multi-benefit projects that incorporate nature-based solutions and is a net positive for the local ecosystem. This is based on

[7] SoVI refers to the Social Vulnerability Index. This index combines social-economic variables that can impact an individual or population's vulnerability to events such as flooding or other hazards. Natural Resources Canada developed an index for Canada with census data (Journeay et al., 2022).

similar criteria related to fish friendly design found in DRIF and environmental co-benefits found in DMAF, UBCM, DRIF, and CRCC.

Score 0	No mention of environmental impacts or benefits.
Score 1	The project meets minimum environmental regulations (e.g., identifies permitting work or timing windows).
Score 2	The project incorporates specific features to enhance environmental outcomes (e.g., fish-friendly design, habitat creation).
Score 3	The project is a leading example of a nature-based or hybrid solution. It provides significant, quantified environmental benefits (e.g., provides X ha of critical habitat) and is designed to be a net positive for the local community.

4.2 Climate Change and Adaptability: This criterion ensures infrastructure investments remain effective over their design lifespan by explicitly accounting for future climate change projections and avoid decision lock-ins. This is based on similar criteria related to consideration of climate change impacts found in DMAF, CEPF, DRIF, CRCC, and FNA, as well as consideration of adaptive pathways approach found in CRCC.

Score 0	No mention of future climate change.
Score 1	The proposal acknowledges climate change as an issue but does not integrate specific projections into the project design.
Score 2	The project design explicitly incorporates relevant, accepted future climate change projections (e.g., designs to a 2100 sea level rise).
Score 3	The project is explicitly designed to allow for future modification ("adaptation pathways" approach). It considers a range of future climate scenarios in its design and demonstrates robustness under uncertainty.

5. Indigenous Leadership and Culture

5.1 Indigenous Partnership and Leadership: This criterion was selected to align with provincial and federal commitments to reconciliation and the principles of DRIPA and UNDRIP, ensuring projects are developed in true partnership with First Nations. This is based on criteria related to Indigenous Leadership found in CRCC and FNA, and less stringent criteria for Indigenous Engagement found in DMAF, CEPF, DRIF and WSF.

Score 0	No mention of engagement with First Nations.
Score 1	The proposal states that First Nations were informed in one-way communication (e.g., via a letter) but provides no evidence of two-way dialogue or how feedback was incorporated.
Score 2	The proposal provides a clear record of meaningful engagement (e.g., meeting summaries, key decisions), describes how First Nations' interests were addressed in the project design.
Score 3	The project is formally co-developed with, or has a formal letter of support from, a First Nation partner. It demonstrates alignment with DRIPA and UNDRIP principles and includes First Nations in a leadership role.

5.2 Protection of Indigenous Culture and Heritage: This ensures projects respect Indigenous values by actively protecting cultural sites and incorporating Indigenous Knowledge, moving beyond simple harm avoidance. This is based on similar criteria found in DMAF and DRIF.

Score 0	No mention of cultural heritage.
Score 1	The proposal acknowledges the potential for cultural sites but provides no evidence of a formal assessment or partnership with First Nations to identify them.
Score 2	The proposal confirms a cultural heritage or archaeological assessment was completed in partnership with the relevant First Nation(s) and describes clear measures to mitigate any negative impacts.
Score 3	The proposal demonstrates that Indigenous Knowledge was incorporated into the project's design. The project actively protects or restores a known cultural site, practice, or value, as identified by the local First Nation partner.

6. Project Management

6.1 Project Workplan: This criterion prioritizes projects that are well-developed and feasible, ensuring that funding is allocated to initiatives that are ready for efficient implementation. This is based most strongly on the CRCC Criteria #2 Methodology and Workplan.

Score 0	No mention of project workplan.
Score 1	The proposal provides a rough timeline (e.g., completion in X years) and budget (e.g., lump sum), but no detailed breakdown such as milestones or tasks and no mention of key risks or constraints.
Score 2	The proposal includes a developed workplan with a detailed schedule of milestones (e.g., Gantt chart) and budget breakdown (e.g., budget shown by tasks). There is mention of key risks and constraints.
Score 3	The proposal provides a detailed workplan with detailed schedule and budget (e.g., identifies task dependencies, contingencies) with clear success metrics, and identifies realistic mitigation measures for key risks and strategies for managing constraints.

6.2 Long-Term Governance: This criterion evaluates whether a clear and sustainable plan is in place for the long-term ownership, operation, maintenance, and eventual decommissioning of the infrastructure, ensuring its effectiveness over its lifetime. This criterion is created for this framework, but based key concepts of governance and collaboration found in CRCC and WSF.

Score 0	No mention of long-term management.
Score 1	A general statement is made about future maintenance (e.g., "The asset will be maintained") without identifying a responsible party, funding source, or schedule.
Score 2	The proposal clearly identifies the entity responsible for long-term ownership and provides a credible plan for operations and maintenance, including a likely funding source.
Score 3	The proposal includes a detailed, funded long-term asset management plan that outlines specific maintenance schedules, inspection protocols, and a sustainable, secured budget for the asset's full lifecycle.

4.4 Framework Application

As stated in section 4.1, Metro Vancouver intends to share this framework so that other authorities or communities of any level can use it to support transparent decision making when evaluating their own internal projects for funding.

The entire framework is implemented as an Excel spreadsheet, a format chosen for its widespread availability and familiarity, eliminating the need for specialized software. This tool is intended to be shared with communities and authorities to support them in evaluating potential flood risk reduction projects and prioritizing them for funding or further development. The ultimate goal is to provide a structured, transparent, and defensible process for making complicated investment decisions.

A key design principle is the recognition that each community has unique needs and strategic priorities. To accommodate this diversity, the tool is designed to be flexible and user-centered:

- The spreadsheet tool allows users to customize the weighting of each of the 14 evaluation criteria, empowering them to align the scoring with what matters most to their community. By default, all criteria are weighted equally, providing a balanced and neutral starting point for evaluation.
- Furthermore, to keep the focus on the substance of the projects rather than on numerical scores, the tool is designed for a rubric-based evaluation. Users simply review the scoring guide for each criterion and select the description that best matches their project; the corresponding score is then applied automatically by the spreadsheet.

While this flexibility is a significant strength, users should be aware of potential challenges inherent in the design. The ability to customize weights for 14 different criteria is a powerful feature, but it also introduces complexity. This can lead to potential decision paralysis for the user or inadvertently minimizing or maximizing the impact of certain criteria in ways that were not intended. Consider organizing an evaluation committee or group to discuss and agree upon a weighting scheme *before* beginning the scoring process. Additionally, the functionality built into the spreadsheet to enable these features may initially appear intimidating to some users. To mitigate this, clear instructions are provided, and users are encouraged to begin by using the default equal-weighting setting to familiarize themselves with the tool's core functions before attempting customization. Ultimately, the framework is a decision-support tool intended to guide and structure conversations, not replace professional judgment.

Screenshot of tool (to be updated at the end with latest version)

Figure 4-1: Screenshot of the prioritization tool implemented in Excel. The tool allows the user to read and select the scoring criteria that best describes the project and assigns the corresponding score for each criteria.

5 Glossary

Term	Definition	Source
Assets, Asset-At-Risk, (exposed and vulnerable element)	Refers to those things that may be harmed by hazard (e.g., people, houses, buildings, or the environment).	RIBA
Climate Change	A change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer.	IPCC
Flood	Overflowing of water onto land that is normally dry. It may be caused by overtopping or breach of banks or defenses, inadequate or slow drainage of rainfall, underlying groundwater levels, or blocked drains and sewers. It presents a risk only when people and human assets are present in the area where it floods.	Royal Institute of British Architects (RIBA)
Hazard	A potentially damaging physical event, phenomenon, or human activity that may cause the loss of life, injury, property damage, social and economic disruption, or environmental degradation. Hazards can include latent conditions that may represent future threats, and can have different origins: natural (geological, hydrometeorological, and biological) or be induced by human processes. Hazards can be single, sequential, or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency, and probability.	UNDRR
(Natural) Hazard	Natural process or phenomenon that may cause loss of life, injury, other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.	UNDRR
Hazard Assessment	Acquiring knowledge of the nature, extent, intensity, frequency, and probability of a hazard occurring.	Modified (NDMP)
Mitigation	Relates to strategies or measures that are used to directly reduce risk from natural hazards.	
Resilience	The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.	UNDRR
Risk	The combination of the probability of an event and its negative consequences.	UNDRR
Risk Assessment	A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods, and the environment on which they depend.	

Term	Definition	Source
	Risk assessments (and associated risk mapping) include: a review of the technical characteristics of hazards, such as their location, intensity, frequency, and probability; the analysis of exposure and vulnerability, including the physical, social, healtha economic, and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities, with respect to likely risk scenarios. This series of activities is sometimes known as a risk analysis process.	
Risk Management	The systematic approach and practice of managing uncertainty to minimize potential harm and loss.	UNDRR
Scenario	The specifications of a modelled event (e.g., hazard type, temporal and spatial extent, magnitude, likelihood). In this project, relates to flood hazards, which are loosely attributed to likelihoods and associated scores to calculate risk.	
Vulnerability	The characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard.	UNDRR

References

AECOM Canada Ltd. (2021). Fraser Basin Council Investigations in Support of Flood Strategy Development in British Columbia - Issue D1 Resources and Funding. Retrieved from https://www.fraserbasin.bc.ca/_Library/Water_Flood_BC/D-1_Resources-Funding.pdf

Cross, B., Doberstein, B., & Lueck, V. (2024). Economic Assessment and Decision-Making for Community-led Managed Retreat in British Columbia: Approaches, Challenges, and Case Studies of Cost-Benefit Analysis and Multi-Criteria Decision Analysis. LivingwithWater Project.

Ebbwater Consulting Inc. (2021). Investigations in Support of Flood Strategy Development in British Columbia – Issue A: Flood Risk Governance. Prepared for the Fraser Basin Council and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. Retrieved from https://www.fraserbasin.bc.ca/_Library/Water_Flood_BC/A-1_Flood_Risk_Governance.pdf

Journeay, M., Yip, J. Z. K., Wagner, C. L., Lesueur, P., & Hobbs, T. (2022). *Social vulnerability to natural hazards in Canada*. Geological Survey of Canada, Open File 8902, 1 .zip file. https://doi.org/10.4095/330295.

Metro Vancouver. (2022). Metro 2050 - Metro Vancouver's Regional Growth Strategy.

Northwest Hydraulic Consultants Ltd. (2021). Investigations in Support of Flood Strategy Development in British Columbia. Issue B-6: Non-Structural Flood Management Approaches. Prepared for the Fraser Basin Council. Retrieved from https://www.fraserbasin.bc.ca/_Library/Water_Flood_BC/B-6_Non-structural_Approaches.pdf

Public Safety Canada. (2019). *Evaluation of the National Disaster Mitigation Program - Evaluation Report*. Retrieved from https://www.passengerprotect-protectiondespassagers.gc.ca/cnt/rsrcs/pblctns/vltn-ntnl-dsstr-mtgtn-prgrm-2019/vltn-ntnl-dsstr-mtgtn-prgrm-2019-en.pdf

Public Safety Canada. (2020). *Evaluation of the National Disaster Mitigation Program*.

Public Safety Canada. (2022). *Adapting to Rising Flood Risk An Analysis of Insurance Solutions for Canada A Report by Canada's Task Force on Flood Insurance and Relocation*.

Wilford, D. J., Sakals, M. E., Innes, J. L., Sidle, R. C., & Bergerud, W. A. (2004). Recognition of debris flow, debris flood and flood hazard through watershed morphometrics. *Landslides*, *1*(1), 61–66.

Appendix A Inventory of Capital Flood Projects

Section pending.

Appendix B Funding Program and Criteria

No.	Objective / Criteria	Grouping	DMAF	UBCM	DRIF	WSF	CRCC	FNA	FEMA	Reference
1	Risk assessment	Risk Assessment and Reduction	x	x	x		x	x		1, 2, 3, 5, 6
2	Community resilience	Risk Assessment and Reduction	x	x	x	x	x	x		1, 2, 3, 4, 5, 6
3	Cost effectiveness	Financial and Funding	x	x	x	x	x	x		1, 2, 3, 4, 5, 6
4	Project rationale	Risk Assessment and Reduction	x		x	x	x	x		1, 3, 4, 5, 6
5	Innovation	Others/ General	x		x		x			1, 3, 5
6	Natural hazard risk transfer	Risk Assessment and Reduction	x							1
7	Strategic alignment	Others/ General	x	x	x	x	x			1, 2, 3, 4, 5
8	Co-benefits	Sustainability and Climate Change Adaptation	x	x	x		x			1, 2, 3, 5
9	First Nations engagement	Indigenous engagement and leadership	x	x	x	x	x	x		1, 2, 3, 4, 5, 6
10	Benefit to diverse populations	Community Equity		x	x		x		x	2, 3, 5, 7
11	Climate change impacts considered	Sustainability and Climate Change Adaptation	x	x	x		x	x		1, 2, 3, 5, 6
12	Support for small and rural communities	Community Equity			x					3
13	Leverage other funding sources	Financial and Funding			x		x			3, 5
14	Protect areas of cultural significance	Indigenous engagement and leadership	x		x					1, 3
15	Fish friendly design	Sustainability and Climate Change Adaptation			x					3
16	UNDRIP priorities	Indigenous engagement and leadership				x				4
17	Free, Prior, Informed Consent	Indigenous engagement and leadership				x				4
18	Regional equity	Community Equity		x		x				2, 4
19	Community connection	Community Equity				x	x			4, 5
20	Economic resiliency and jobs/training	Indigenous engagement and leadership				x		x		4, 6
21	Diversity of interest and collaboration	Community Equity				x	x			4, 5
22	Apply adaptation pathways approach	Sustainability and Climate Change Adaptation					x			5
23	Sustainable governance structure	Capacity and Project Management					x			5
24	Project progress measures	Capacity and Project Management					x			5
25	Capacity to deliver the project	Capacity and Project Management					x			5
26	First Nations leadership and involvement	Indigenous engagement and leadership					x	x		5, 6
27	Benefiting area map	Risk Assessment and Reduction							x	7
28	Incorporates nature based solutions	Sustainability and Climate Change Adaptation							x	7
29	Mitigates risk to one of more lifelines	Risk Assessment and Reduction							x	7

References

1. DMAF https://www.infrastructure.gc.ca/dmaf-faac/applicant-guide-demandeur-eng.html

2. UBCM - CEPF DRR-CA https://www.ubcm.ca/sites/default/files/2023-06/LGPS_CEPF_DRR-CA_2023_24%20ProgGuide_2023-06.pdf

3. DRIF https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/mitigation/drif-program_guide.pdf

4. Watershed Security Fund https://watershedsecurityfund.ca/wp-content/uploads/2024/06/Guide-to-Grants-Program-Application-2024-June.pdf

5. CRCC https://natural-resources.canada.ca/sites/nrcan/files/climate-change/CoastalCommunities-ApplicantGuide-en.pdf

6. FNA https://www.rcaanc-cirnac.gc.ca/eng/1520877017867/1594751383101#cp4

7. FEMA https://www.fema.gov/grants/mitigation/learn/building-resilient-infrastructure-communities/before-apply , https://www.fema.gov/sites/default/files/documents/fema_hma-bric-fma-benefitting-area_fy23.pdf

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Air Quality and Climate Committee

From: Johann Zerbe, Senior Policy and Planning Analyst, Air Quality and Climate Action Services

Date: October 10, 2025 Meeting Date: November 7, 2025

Subject: **Evaluating EV-Ready Bylaws in New Residential Buildings**

RECOMMENDATION
That the Air Quality and Climate Committee receive for information the report dated October 10, 2025, titled "Evaluating EV-Ready Bylaws in New Residential Buildings".

EXECUTIVE SUMMARY
EV-ready bylaws are expanding access to charging in new single family and multi-unit buildings across the region. A new study, *Charged and Ready: EV-Ready Residential Building Experiences,* evaluated municipal EV-ready bylaws for new buildings across BC including five Metro Vancouver communities. The study included a survey and interviews with residents as well as focus groups with industry professionals to understand the effectiveness of existing bylaws, and to provide recommendations on strengthening these bylaws to meet growing demand for EV charging.

The majority of respondents living in EV-ready single-family and multiplex housing are generally satisfied with their access to charging. However, EV drivers living in multi-unit residential buildings are less satisfied with their home EV charging experience. Improvements in bylaw design and implementation could address challenges faced by residents in multi-unit buildings. The study was funded by BC Hydro after being identified by member jurisdiction staff as an important topic for evaluation, and was co-led by Metro Vancouver and the City of New Westminster. The findings and recommendations will be shared with local government staff to improve EV-ready bylaw implementation across the region.

PURPOSE
To provide an update to the Air Quality and Climate Committee on a recently completed study examining the effectiveness of EV-ready bylaws in new residential buildings.

BACKGROUND
The *Charged and Ready: EV-Ready Residential Building Experiences* study was approved as part of the 2024 Air Quality and Climate Action Committee workplan. The study is complete, and it is timely to provide an update to the Committee.

EV-READY BYLAWS STATUS ACROSS THE REGION
Fifteen of Metro Vancouver's member jurisdictions have adopted electric vehicle (EV) ready bylaws, and many of them have been in place for over 5 years. As part of BC Hydro's Sustainable Communities program, several member jurisdictions identified a need to better understand the effectiveness of these bylaws and to develop recommendations to improve their implementation.

The study findings and recommendations are directly relevant to member jurisdictions, including those that have implemented such bylaws and those that are considering adopting new bylaws. Local government staff (including representatives from eight member jurisdictions) identified this as an important topic for evaluation at an annual BC Hydro Ideation workshop in October 2024. BC Hydro funded the project, and staff from Metro Vancouver and City of New Westminster co-managed the project with a staff advisory committee from District of Saanich, City of Nanaimo, University of British Columbia, and the Community Energy Association.

HOME CHARGING IS CRITICAL TO ELECTRIC VEHICLE ADOPTION

Reliable access to home EV charging is a critical factor in supporting EV adoption. Home charging remains the most convenient and affordable option for EV owners, accounting for about 75 per cent of all charging activity according to studies. However, home charging is not equally available to all households. Installing EV charging in multi-unit residential buildings (MURBs) can be especially challenging, due to legal, financial, technical and logistical barriers. This can impede EV adoption, as shown in a recent Clean Energy Canada Study that found 75 per cent of people living in MURBs in Canada identified access to home charging as a barrier to switching to an EV (Reference 2). MURBs make up about 43 per cent of households and represent the vast majority of new construction in the Metro Vancouver region (Reference 3).

As of 2025, 15 Metro Vancouver member jurisdictions have implemented EV-ready Bylaws. These bylaws typically require new single-family homes and MURBs to include energized electrical outlets in parking stalls capable of providing Level 2 EV charging. Installing EV charging infrastructure at the time of construction is three to four times less expensive than retrofitting an existing building later, helping homeowners to avoid unnecessary future costs (Reference 4). In the Metro Vancouver region, at least 10 local governments have adopted the best practice of requiring 100 per cent of residential parking spaces to be EV-ready in new developments. This standard ensures equitable access to EV charging for all building residents at occupancy.

EVALUATING EV-READY BYLAWS

The *Charged and Ready: EV-Ready Residential Building Experiences* study evaluated the experience of residents in EV-ready buildings and identified challenges and barriers with EV-ready bylaw implementation. The study included a survey and follow-up interviews of residents, strata council members, building professionals, and municipal staff responsible for EV-Ready bylaws. The study covered seven BC communities, including five from the Metro Vancouver region (City of Vancouver, City of Richmond, Township of Langley, City of New Westminster, and University of British Columbia). Participating communities were selected based on several criteria, including availability of EV-ready building data, the proportion of stalls that are required to be EV-ready under the bylaw, and to reflect a diversity of geographies and populations. The study also included workshops with stakeholders representing building officials, property managers, strata associations, developers, and EV support non-profits, to help inform the findings and recommendations.

Study Findings
The main findings are summarized below. More detail on these findings can be found in the *Summary for Policymakers* (Attachment 1), as well as the full technical report (Reference 1).

- The majority of survey respondents living in EV-ready single-family and multiplex housing are generally satisfied with their home EV charging experience. However, EV drivers living in MURBs are less satisfied with their home EV charging experience.
- Buildings that are not 100 per cent EV-ready (i.e., where some parking stalls are not EV-ready), create barriers for those residents who are not assigned an EV-ready parking stall and who wish to charge an EV.
- EV charging infrastructure may not be constructed to a compliant standard for some EV-ready developments due to:
    - Gaps and oversights during the development process
    - Lack of coordination or unclear division of responsibilities between authorities having jurisdiction (e.g., municipal plan reviewers; Technical Safety BC)
- Tenants living in strata properties lack the decision-making power to install EV chargers in EV-ready buildings.
- EV charging hardware incompatibility can prevent or make it cost-prohibitive for residents to install personal chargers of a different brand.
- Hiring an EV charging service provider prior to creation of the strata corporation can result in challenges for stratas and residents, locking them into restrictive contracts, fees, and hardware limitations.
- Residents and strata corporations may lack knowledge about EV charger installation and operation, and may not receive critical documentation on EV ready infrastructure upon handover from the developer.

Recommendations for Local Governments The report includes recommendations to ensure that EV ready bylaws are effective. These are described in more detail in the *Summary for Policymakers* (Attachment 1), as well as the full technical report (Reference 1). Below are the study's main recommendations for local governments:

- **Strengthen EV-ready requirements and design standards**
  Local governments should update bylaws to require 100 per cent EV-ready parking (or at least one stall per unit) with Level 2 outlets. Design guidelines should promote brand-agnostic hardware, installation specifications, and alignment with Technical Safety BC standards.
- **Enhance EV-ready permitting and review processes**
  Local governments should develop coordinated checklists, model drawings, and specifications, and ensure that required on-site field reviews are completed.
- **Establish an EV charging operational plan requirement for EV-ready buildings**
  Local governments should require developers to submit EV-ready preliminary and final operational plans authored by electrical engineers at the building permit and occupancy permit stages. These plans should detail EV charging system capacity and compatible chargers, ensuring strata corporations receive essential technical documentation.

- **Consult with EV charging service providers to improve EV charging service agreements and communications**
  Developers, strata associations, local governments and/or the Province should engage with EV charging service providers to identify how to improve flexibility in contracts and shift industry practices towards brand-agnostic hardware, allowing strata corporations to choose the most appropriate EV charging solutions that best serve the interest of strata owners.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
The study was funded by BC Hydro and had a cost of $50,000. Metro Vancouver provided in-kind staff time to co-manage this project with the City of New Westminster, under the approved departmental operational budget.

OTHER IMPLICATIONS
The results and recommendations of *Charged and Ready: Evaluating EV-Ready Residential Building Experiences* can inform ongoing work to improve EV-ready bylaws in member jurisdictions and across BC. The results will be communicated through the BC E-Mobility Peer Network (EMPN), as well as through other channels. The study findings can also support ongoing work by other organizations to assess the feasibility and implementation approach for a potential province-wide EV-ready requirement. The study complements other work led by Metro Vancouver to improve EV charging outcomes, such as the *Local Government Toolkit for Streamlining Public EV Charging Approvals*, and Metro Vancouver's *Regional EV Charging Analysis and Guidance* report.

CONCLUSION
The *Charged and Ready* study confirmed that EV-ready bylaws are generally effective in supporting home EV charging, but that EV drivers living in MURBs are less satisfied with their home EV charging experience compared to those living in single-family or multiplex housing. Further, gaps in bylaw design and implementation, and added technical and governance complexities in MURBs can limit equitable charging access for some residents. The report offers recommendations that can be implemented by various stakeholders to improve the EV-ready experience in residential buildings in member jurisdictions and across BC.

ATTACHMENTS
1. "Charged and Ready - EV-Ready Residential Building Experiences in BC - Summary for Policymakers", dated October 30, 2025.
2. Presentation re: Evaluating EV-Ready Bylaws in New Residential Buildings.

REFERENCES

1. Charged and Ready: EV-Ready Residential Building Experiences (full technical report). October 2025. https://metrovancouver.org/services/air-quality-climate-action/Documents/evaluating-ev-ready-bylaws-new-residential-buildings.pdf
2. Clean Energy Canada. (2025, September). *Empowering Households.* https://cleanenergycanada.org/wp-content/uploads/2025/09/Report_EmpoweringHouseholds_2025_V5.pdf
3. Metro Vancouver. (Feb 2025). *Metro Vancouver Housing Data Book.* Retrieved from: https://metrovancouver.org/services/regional-planning/Documents/metro-vancouver-housing-data-book-2025.pdf
4. Dunsky Energy and Climate Advisors. (n.d.) *Futureproofing Multifamily Buildings for EV Charging*. https://media.fcm.ca/sites/GMF/resources/Report/futureproofing-multifamily-buildings-for-ev-charging.pdf.

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Charged and Ready: EV-Ready Residential Building Experiences in BC

Summary for Policymakers

WATT CONSULTING GROUP and INTROBA
October 30, 2025

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1.0 INTRODUCTION

To support growing electric vehicle (EV) adoption in British Columbia, over 35 local governments have introduced EV-ready bylaws for new construction, requiring parking in new buildings to be equipped with infrastructure to support the future installation of EV charging. The Charged and Ready: EV-Ready Residential Building Experiences study evaluates the effectiveness of EV-ready bylaws in new residential buildings and provides recommendations to address barriers and challenges to successful implementation of these bylaws.

The study was conducted by WATT Consulting Group and Introba, with funding from BC Hydro. A project advisory team consisting of staff from City of New Westminster, City of Nanaimo, District of Saanich, Metro Vancouver, UBC, Community Energy Association, and BC Hydro, provided direction for the project. The study included a survey of EV-ready stakeholders in seven BC communities, and engagement workshops with industry and other relevant EV-ready stakeholders, to support the development of findings and recommendations.

This summary for policymakers is intended to share key information about the project. More information, including background on EV-ready bylaws, study methodology and limitations, and detailed results and recommendations, can be found in the full technical report.

2.0 BACKGROUND

2.1 Home EV Charging is Critical to EV Adoption

BC is among the leading jurisdictions in North America for EV adoption, with EVs accounting for over 20% of all new vehicle sales in 2024. Strong uptake is expected to continue, with the provincial Zero-Emission Vehicles Act legislating 100% of new light-duty vehicle sales to be zero-emission by 2035. Ensuring reliable access to home EV charging is a critical factor in supporting EV adoption. Home charging is the most convenient and affordable option, and plays the largest role in EV charging, with studies showing that about 75% of charging happens at home. In multi-unit residential buildings (MURBs), EV charging can be challenging to provide due to legal, financial, technical, and logistical barriers. This can impede EV adoption, with a recent study

finding that 75% of people living in MURBs in Canada identified access to home charging as a barrier to switching to an EV.[1]

The Summary for Policymakers and the full technical report assume the reader has a general understanding of EV charging infrastructure. Readers can find more background in the following resources:

- BC Hydro's *Charging Your EV at Home*: https://www.bchydro.com/powersmart/electric-vehicles/charging-at-home.html
- Metro Vancouver's *Keeping It Current: Primer on EV Charging Infrastructure*: https://metrovancouver.org/services/air-quality-climate-action/Documents/charging-technology-brief.pdf
- BC Local Government EV Peer Network's *EV Ready New Construction Requirements: A Best Practice Guide for Local Governments*: https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/power-smart/business/programs/ev-ready-requirements-for-new-buildings.pdf

The full technical report for *Charged and Ready* includes an overview of **types of strata plans in BC** and the variety of parking allocation methods in strata developments, which may add complexity to the implementation of EV-ready bylaws. The technical report also includes additional information on **EV-ready requirements in the BC context** and background information on **EV-ready permitting**.

2.2 EV-Ready Bylaws in BC

To support growing EV adoption and reduce these barriers, local governments across BC have implemented EV-ready bylaws for new developments. EV-ready bylaws typically require new developments to include energized electrical outlets capable of providing Level 2 EV charging for parking stalls. As of 2025, over 35 local governments in BC have adopted EV-ready bylaws to ensure new residential buildings have the

[1] Clean Energy Canada. (2025). *Empowering Households*. Retrieved from: https://cleanenergycanada.org/wp-content/uploads/2025/09/Report_EmpoweringHouseholds_2025_V5.pdf

electrical capacity and infrastructure to enable residents to charge their vehicles. A number of these bylaws meet the best practice of requiring 100% of residential parking spaces in new developments to be EV-ready. This standard ensures equitable access to EV charging for all building residents.

Research shows that equipping a parking space to be EV-ready during construction is three to four times cheaper than upgrading an existing parking space, highlighting the importance of EV-ready bylaws in helping homeowners to avoid unnecessary future upgrade costs.[2]

2.3 EV-Ready Stakeholder Groups

From building design to completion then occupancy, EV-ready infrastructure involves a diverse set of stakeholders to be successful:

- **Electrical engineers** design EV charging systems and oversee compliance, while **electrical contractors** handle installation, commissioning, and coordination with inspectors.
- **Municipal plan reviewers** and **building inspectors** ensure EV-ready elements meet code and bylaw requirements, with engineers assuming responsibility for complex buildings.
- **Electrical field safety representatives and safety officers** enforce provincial electrical safety standards but do not regulate municipal EV-ready bylaws. Technical Safety BC oversees regulated electrical work, including the installation of EV charging equipment, under the Safety Standards Act and the BC Electrical Code.
- **Residents and strata councils** are end-users and managers within residential buildings, with owners typically initiating EV charger installation and tenants requiring landlord approval. Strata councils govern EV charging through bylaws and rules by a vote of the owners.
- **EV charging service providers** support deployment and management of charging infrastructure, offering services like billing, maintenance, and energy management, to simplify implementation for developers and strata corporations.

[2] Low Carbon Cities Canada. (2024). *Futureproofing Multifamily Buildings for EV Charging*. Retrieved from: https://media.fcm.ca/sites/GMF/resources/Report/futureproofing-multifamily-buildings-for-ev-charging.pdf

3.0 STUDY OVERVIEW AND METHODOLOGY

The *Charged and Ready: EV-Ready Residential Building Experiences* study evaluated the experience of residents in EV-ready residential buildings and surveyed stakeholders to identify challenges and barriers to implementation of EV-ready bylaws. The study covered strata MURBs, as well as strata and non-strata single-family detached and multiplex homes. The research objectives were as follows:

1. Assess the level of EV infrastructure compliance and use in EV-ready residential buildings
2. Identify barriers and challenges to installing and operating EV charging in EV-ready residential buildings
3. Assess the level of awareness and participation in BC Hydro's demand-response program in EV-ready single-family and multiplex buildings
4. Document the current state of EV power management devices in EV-ready single-family and multiplex buildings

3.1 Survey of EV-Ready Building Stakeholders

The study included a survey of residents, strata council members, building professionals, and municipal staff responsible for EV-ready bylaws in seven BC communities: City of Nanaimo, City of Victoria, City of Vancouver, City of Richmond, Township of Langley, City of New Westminster, and the University of British Columbia. These communities were selected based on several criteria, including having an EV-ready bylaw in place since 2021 or earlier, the proportion of stalls that are required to be EV-ready, and to reflect a diversity of geographies and population, as well as availability of EV-ready building data.

Follow-up interviews were conducted with interested respondents of the survey questionnaires to provide an opportunity for them to share additional details on their EV-ready experience.

3.2 Industry Stakeholder Engagement

In addition to conducting a survey, the study included focus groups with industry representatives from organizations involved in EV-ready and charging infrastructure:

Building Officials

- Building Officials Association of BC
- Technical Safety BC

Property Management and Strata Associations

- Condominium Home Owners Association
- Vancouver Island Strata Owners Association
- Strata Property Agents of BC
- Professional Association of Managing Agents

Development Industry

- Canadian Home Builders Association of BC
- Urban Development Institute

Electrical Utilities

- BC Hydro

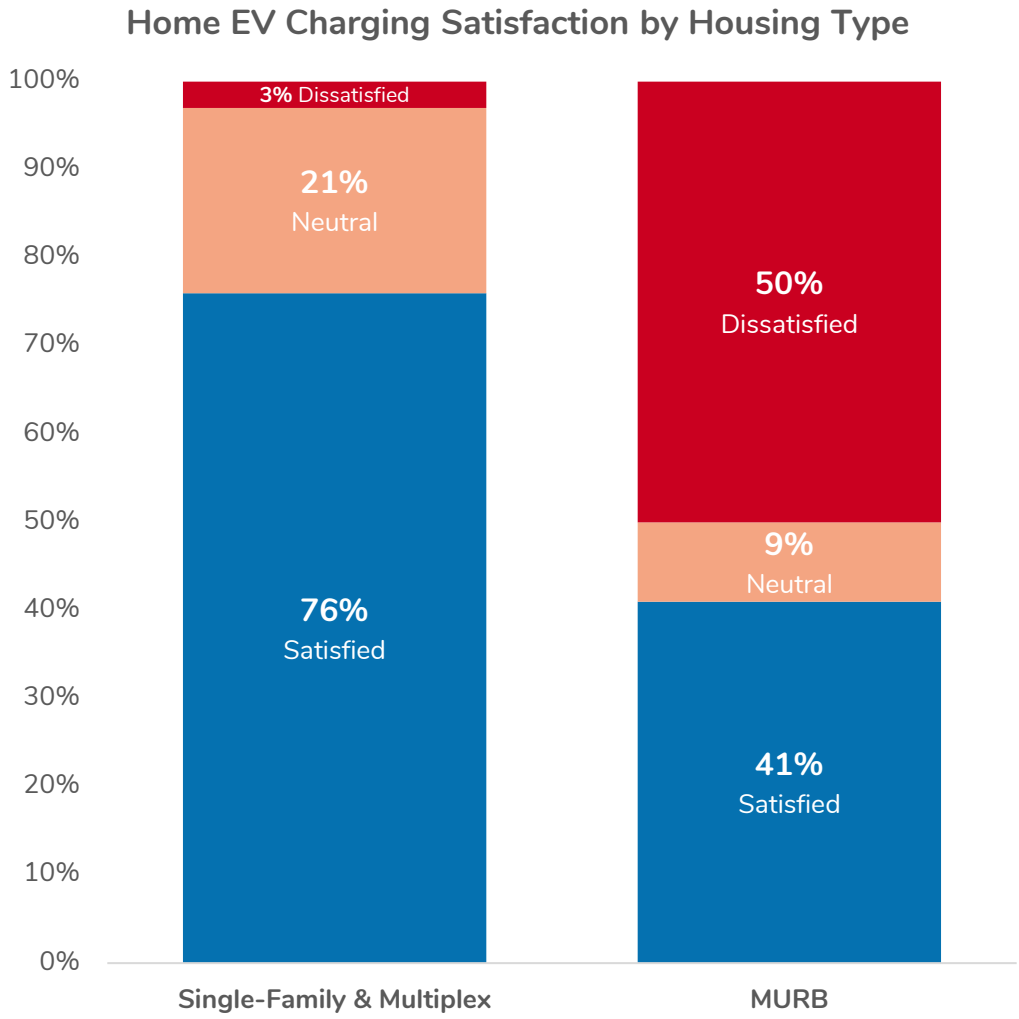
Non-Profit EV Support Industry

- Fraser Basin Council

The first round of engagement informed survey development and gathered initial insights on barriers, challenges, and opportunities for EV-ready requirements and EV energy management systems in new residential buildings. Follow-up engagement consisted of distributing draft findings and recommendations to study stakeholders for feedback.

4.0 KEY FINDINGS

1. The majority of survey respondents living in EV-ready single-family and multiplex housing are generally satisfied with their home EV charging experience, but EV drivers living in MURBs are less satisfied with their home charging experience.



2. Buildings that are not 100% EV-ready (i.e., where some residents do not have an EV-ready parking stall) create barriers for residents who are not assigned an EV-ready parking stall and who wish to charge their EV at home.

5. EV charging infrastructure may not be constructed to a compliant standard for some EV-ready buildings due to:
    a. Gaps and oversights during the development process
    b. Lack of coordination or unclear division of responsibilities between Authorities Having Jurisdiction (e.g., municipal plan reviewers, Technical Safety BC)
6. Tenants living in strata housing lack the decision-making power to install EV chargers in EV-ready residential buildings.
7. EV charging hardware incompatibility prevents or makes it cost prohibitive for residents to install EV chargers of a different brand.
8. Hiring an EV charging service provider prior to creation of the strata corporation can result in challenges for stratas and residents, locking them into restrictive contracts, fees, and hardware limitations.
9. Residents and strata councils may lack knowledge about EV charger installation and operation, and may not receive critical documentation on their EV charging system upon handover from the developer

More information on the study results and findings can be found in the full technical report.

5.0 RECOMMENDATIONS

The report includes seven recommendations to address barriers and challenges identified in the study that would help improve the EV charging experience for residents in EV-ready buildings. These actions could be led by various agencies and organizations, including local governments, the Province, electrical utilities, Technical Safety BC, Engineers and Geoscientists of BC, BC Local Government EV Peer Network, and others.

1. Strengthen EV-ready requirements and design standards

Local governments should update bylaws to require 100% EV-ready parking (or at least one stall per unit) with Level 2 outlets. Design guidelines should promote brand-agnostic hardware, installation specifications, and alignment with the Safety Standards Act and the BC Electrical Code.

2. Explore the feasibility of a province-wide EV-ready requirement

The Province should assess the feasibility and benefits of a BC-wide, EV-ready requirement for new residential buildings similar to the BC Energy Step Code, which could offer harmonized yet flexible implementation.

3. Enhance EV-ready permitting and review processes

The Province should work to clarify municipal authorities' and Technical Safety BC's role in EV-ready permitting. Local governments should develop coordinated checklists, model drawings, and specifications, and ensure required on-site field reviews are completed. Industry stakeholders can support by developing trade certifications and expanding education for contractors and inspectors, especially in rural and remote regions in BC.

4. Establish an EV charging operational plan requirement for EV-ready buildings

Local governments should require developers to submit EV-ready preliminary and final operational plans for strata MURBs authored by electrical engineers at the building permit and occupancy permit stages. These plans should detail EV charging system capacity and compatible chargers, ensuring strata corporations receive essential technical documentation.

5. Develop and enhance education on EV charging infrastructure for EV-ready stakeholders

BC Hydro, Technical Safety BC, Engineers and Geoscientists of BC, and strata associations (e.g., CHOA, VISOA) should develop outreach and training tailored for residents, strata councils, and professionals. Residents need clarity on what EV-ready means, how EV charging operates, and what costs to expect. Strata councils require governance support. Engineers and contractors will benefit from training on best practices and EV energy management systems.

6. **Consult with EV charging service providers to improve EV charging service agreements and communications**

Developers, strata associations, local governments, and/or the Province should engage with EV charging service providers to identify how to improve flexibility in contracts and shift industry practices towards brand agnostic hardware, allowing strata corporations to choose the most appropriate EV charging solutions that best serve the interest of strata owners. Improved communication between EV charging service providers and building professionals would streamline design and installation and support a better EV charging experience for residents.

7. **Conduct cost-benefit analyses of financial rebates for EV Energy Management Systems in new EV-ready single-family homes**

EV Energy Management Systems (EVEMS) help to optimize the timing and rate of EV charging to prevent overloading an electrical circuit and can help homeowners avoid costly electrical capacity upgrades. Uptake of EVEMS in single family homes is relatively low, potentially due to lack of information being available to residents. To determine if mandating the use of EVEMS as part of EV-ready requirements is more cost-effective than incentivizing use through rebates, BC Hydro should conduct a cost-benefit analysis to make an informed decision on potential program changes.

6.0 CONCLUSION

The *Charged and Ready: Evaluating EV-Ready Residential Building Experiences* study confirmed that EV-ready bylaws are generally effective in supporting home EV charging, but that EV drivers living in MURBs are less satisfied with their home EV charging experience compared to those living in single-family or multiplex housing. Further, gaps in bylaw design and implementation, added technical and governance complexities, and lack of knowledge or relevant documentation for residents and stratas in MURBs can limit equitable charging access for some residents. The report offers seven recommendations to improve the EV-ready experience in residential buildings and inform work to improve the EV-ready residential building experience across BC.

Evaluating EV-Ready Bylaws in New Residential Buildings

Johann Zerbe
Senior Policy and Planning Analyst, Regional Climate Action Services

Air Quality and Climate Committee Meeting – November 7, 2025
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HOME CHARGING IS CRITICAL TO EV ADOPTION

- Home charging is the most affordable and convenient option for most EV owners
- Multi-unit residential buildings (MURBs) face more barriers that limit access to charging
- EV-Ready bylaws ensure new buildings are equipped to provide charging, reducing costs by 3-4x compared to retrofitting later

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EVALUATING EV-READY BYLAWS

Objectives:

- Evaluate the effectiveness of EV-ready bylaws in new residential buildings
- Identify challenges and barriers
- Recommend improvements

Methods:

- Survey of 7 BC communities (5 in Metro Vancouver)
- Workshops with industry and other stakeholders

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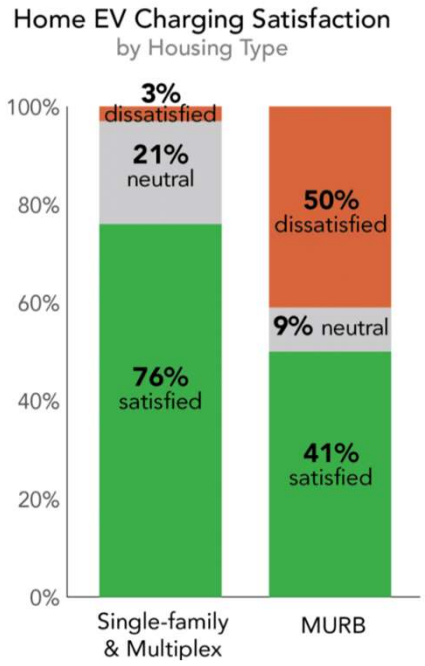
STUDY FINDINGS

- Residents in MURBs are less satisfied with home EV charging compared to single family/multiplex homes
- Buildings that are not 100% EV-ready create inequities in charging access



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STUDY FINDINGS

- Gaps and oversights, or lack of coordination between agencies during development can limit equitable charging access for residents
- Residents and strata corporations may lack knowledge and critical documentation

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RECOMMENDATIONS FOR LOCAL GOVERNMENTS

- Strengthen EV-Ready requirements and design standards
- Enhance EV-Ready permitting and review processes
- Establish an EV charging operational plan requirement for EV-ready buildings
- Consult with EV charging service providers to improve contracts and communications

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NEXT STEPS AND IMPLEMENTATION

- Project results communicated through BC E-mobility Peer Network and other channels
- Results and recommendations can support local governments and inform ongoing work to enhance EV-ready bylaws

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Thank you! Questions?

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Air Quality and Climate Committee

From: Conor Reynolds, Director, Air Quality and Climate Action Services

Date: October 16, 2025 Meeting Date: November 7, 2025

Subject: **Manager's Report**

RECOMMENDATION
That the Air Quality and Climate Committee receive for information the report dated October 16, 2025, titled "Manager's Report".

AIR QUALITY AND CLIMATE COMMITTEE 2025 WORK PLAN
Attachment 1 sets out the Committee's Work Plan for 2025. The status of work plan priorities is indicated as pending, in progress, or complete. The work plan is updated, as needed, to include new priorities that arise, items requested by the Committee, and changes to the schedule.

UPDATE ON THE BC RETROFIT ACCELERATOR (MVRD SIF 2023-2025)
As of October 2025, the Zero Emissions Innovation Centre's BC Retrofit Accelerator (BCRA) has been operating for a full year as a province-wide initiative designed to support the decarbonization of large existing buildings through a centralized resource hub and concierge-style services. Developed with seed funding from Metro Vancouver's Sustainability Innovation Fund (SIF), and operated by the Zero Emissions Innovation Centre (ZEIC), the BCRA is working with a growing network of delivery partners to offer four distinct retrofit programs for strata, market rental and non-market housing, and commercial buildings.

The BC Retrofit Accelerator's core objectives remain:

- Identifying gaps and opportunities in retrofit support for building owners;
- Co-developing tailored program offerings with sector stakeholders;
- Establishing a sustainable funding and financing model to support long-term delivery.

The BC Retrofit Accelerator has seen strong uptake, with over 700 multi-family residential and commercial buildings enrolled through the four retrofit programs. These buildings represent:

- Over 48,000 homes in strata, market rental, and non-market housing;
- Nearly five million square metres of floor space – the same area as nearly 3,000 NHL-sized ice rinks; and
- 37 municipalities across the province, with in-region participation in 12 municipalities: Vancouver, Burnaby, New Westminster, West Vancouver, City of North Vancouver, Richmond, Port Moody, Coquitlam, Surrey, Maple Ridge, City of Langley, and White Rock.

This level of engagement reflects growing awareness and urgency among building owners to address heat risks, upgrade ageing equipment, and improve energy performance.

The 3-year MVRD SIF project to establish the BC Retrofit Accelerator and the initial program offerings will conclude at the end of 2025. Metro Vancouver staff are working closely with ZEIC and regional partners to develop opportunities to grow the BCRA's scope and offerings, aligning with shared climate goals and supporting a resilient, low-carbon built environment across British Columbia. Staff intend to bring options for future collaboration with the BCRA to the MVRD Board for direction in 2026.

UPDATE ON THE REGIONAL GROUND-LEVEL OZONE STRATEGY REVIEW

Metro Vancouver staff are reviewing the Regional Ground-Level Ozone Strategy (Reference 1), which was endorsed by the MVRD Board in 2014 to provide policy direction for ozone management in the Lower Fraser Valley. There is a wealth of new information available since completion of the strategy, and a consulting study is underway to review and analyze air quality monitoring and emissions data, and updated scientific understanding related to ground-level ozone. The consultant is expected to complete their assessment by the end of December 2025. In 2026, findings from the consultant report and discussions with partner agencies will be used to inform whether the strategy should be updated, if it still represents best practice, or if a different approach is needed to manage ground-level ozone within the region.

WATER AND WASTEWATER CLIMATE 2050 PRIMER

The Air Quality and Climate Committee received the report "Climate 2050 Roadmap Update" at the May 9, 2025, meeting. The report presented a revised and streamlined approach for the remaining four Climate 2050 areas of focus, including water and wastewater, The streamlined approach integrates climate policy and actions into existing planning processes and strategic plans rather than having a standalone roadmap. In response, the Water and Wastewater Climate 2050 Primer has been developed. Actions formerly intended for inclusion in the roadmap will be integrated into updated Drinking Water and Liquid Waste Management Plans (Reference 2).

INVITATION TO MINISTER DIX, BC HYDRO, AND FORTISBC TO PRESENT TO MVRD BOARD

Following discussions on electricity and energy planning at the July 4, 2025 Air Quality and Climate Committee meeting, where committee members noted challenges in harmonizing information being conveyed from the gas and electrical utilities, the MVRD Board directed staff to send a request to Minister Dix, BC Hydro, and Fortis BC to present at a future Board meeting. Staff have been in contact with Minister Dix's office and are working on a date. Staff hope to have this confirmed in the coming weeks and will report back.

ATTACHMENT

1. "Air Quality and Climate Committee 2025 Work Plan", dated October 16, 2025.

REFERENCE

1. Fraser Valley Regional District, Metro Vancouver, BC Ministry of Environment, Environment Canada & Port Metro Vancouver. (2014). *Regional ground-level ozone strategy for the Canadian Lower Fraser Valley region*. Retrieved from: https://metrovancouver.org/services/air-quality-climate-action/Documents/regional-ground-level-ozone-strategy-2014.pdf.

2. Metro Vancouver. (2025). *Climate 2050: Water and Wastewater Infrastructure Primer*. Retrieved from: https://metrovancouver.org/services/water/Documents/climate-2050-water-wastewater-primer.pdf

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Air Quality and Climate Committee 2025 Work Plan

Report Date: October 16, 2025

1st Quarter Priorities	Status
Air Quality and Climate Committee 2025 Meeting Schedule and Work Plan	Complete
Metro Vancouver's Air Quality Management and Regulation Service	Complete
Amendment to Boilers and Process Heaters Emission Regulation Bylaw	Complete
Appointment of Enforcement Officers	Complete
2nd Quarter Priorities	
Outcome of BC Utilities Commission Decisions	Complete
Overview of Air Quality Advisory Program and Preparedness for 2025 Season	Complete
Community Wood Smoke Reduction Program - Update and New Retailers	In progress
Amendment to Notice of Bylaw Violation Enforcement and Dispute Adjudication Bylaw	Complete
Amendment to Ticket Information Utilization Bylaw Amendment Bylaw	Pending
Engagement on Amendments to Air Quality Management Fees Bylaw	Complete
Regional Air Contaminant Emissions Inventory and Trends	Complete
Transportation Emissions Policy Updates	Complete
Resilient Buildings Emissions Policy Updates	Complete
Industrial Emissions Policy Updates	In progress
Land Use Resilience Best Practice Guide – Flooding	Complete
Scan of Flood-related Capital Projects in the Metro Vancouver Region – Preliminary Results	Complete
Regional Flood Resiliency Planning Processes – Update	Complete
3rd Quarter Priorities	
Annual Regional Air Quality Report	Complete
Update to Regional Ground Level Ozone Strategy	In progress
BC Retrofit Accelerator Update	Pending
Approach for Reducing Air Contaminants From Small Gas-Powered Equipment	Complete
Engagement on Managing Air Contaminants from Wood Product Manufacturing	Pending
Climate 2050 – Solid Waste Issue Area Update	Complete
Climate 2050 Progress Report	Complete
Regional Flood Resiliency Planning Processes – Update	Complete
4th Quarter Priorities	
Report on 2025 Air Quality Advisory Season	In progress
Report on Corporate Energy and GHG Management	Complete
Update on Thermal Energy Networks in Metro Vancouver	Pending
Advocate for Long-Term Planning for Energy Transition	In progress
Update on Ecosystem Services on Agricultural Lands	Pending
Ecological Health Framework Progress Report	Pending
Annual Budget and Five-Year Financial Plan	Complete
Regional Flood Risk Reduction Priorities Criteria Matrix	In progress
Regional Flood Resiliency Planning Processes – Update	Complete

Dear Lower Fraser First Nations & Local Government Leaders,

The Lower Fraser region is at a turning point. Each season brings new reminders of our shared vulnerability —rising waters,aging infrastructure, and the growing impacts of climate change. But alongside these challenges, we've seen something powerful emerge: a collective will to act.

Over the past several years, First Nations and local governments have built relationships, shared knowledge, and defined a principled path forward and these gatherings have laid the foundation for a regional approach rooted in collaboration.

Since our last regional forum in June 2023, the Lower Fraser Floodplains Coalition (LFFC) has made significant strides in understanding and addressing flood risks. We completed a model to explore how water flowed pre-contact as an initial step in identifying room for the river, developed regional maps highlighting where human life, key ecosystems, critical infrastructure, and agriculture are exposed to flooding, and built a database of climate initiatives underway in local governments and First Nations. We also launched a pilot project on the Hope Slough in partnership with farmers and First Nations, brought stakeholders together to discuss critical infrastructure interconnections, and continue to scope out mapping and modeling for pluvial rainfall and critical infrastructure risk.

We invite you to the **Lower Fraser Floodplains Dialogue for Regional Action** to reaffirm our shared commitment to working together as a region. This includes supporting a **Statement of Solidarity** between First Nations and local governments and advancing a proposal for regional integrated floodplain management. For this proposal, the Lower Fraser Floodplains Coalition, will seek seed funding to map out the broader flood mitigation and risk strategy, identify what needs to be included in future phases, and estimate budgets to guide the work ahead. This is the essential next step toward a coordinated, region-wide approach to flood resilience.

This work is not just about flood management—it's about how we live together in this shared landscape. It's about building trust, moving forward together, and creating solutions that reflect the values of our region.

We hope you will join us in this important conversation. For questions, please contact **Mariah Mund, Resilience Lead, Emergency Planning Secretariat**, at **mariah.mund@emplans.ca**. Please feel free to share this invitation with colleagues who would benefit from participating.

Please register, by clicking here.

Sincerely,

Tyrone McNeil
Tribal Chief, Stolo Tribal Council & Chair of EPS