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METRO VANCOUVER REGIONAL DISTRICT
CLIMATE ACTION COMMITTEE

REGULAR MEETING

Friday, July 8, 2022
1:00 p.m.
Meeting conducted electronically pursuant to the Procedure Bylaw
28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia
Webstream available at http://www.metrovancouver.org

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 July 8, 2022 Regular Meeting Agenda
That the Climate Action Committee adopt the agenda for its regular meeting scheduled for July 8, 2022 as circulated.

2. ADOPTION OF THE MINUTES

2.1 June 10, 2022 Regular Meeting Minutes ***pg. 4***
That the Climate Action Committee adopt the minutes of its regular meeting held June 10, 2022 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects ***pg. 10***
That the Climate Action Committee receive for information the report dated June 13, 2022, titled "Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects", as the environmental assessment process is still underway.

5.2 MVRD Open Burning Emission Regulation Bylaw No. 1355, 2022 ***pg. 18***
That the MVRD Board:
a) give first, second, and third reading to *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*; and

[1] *Note: Recommendation is shown under each item, where applicable.*

b) pass and finally adopt *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*.

5.3 Air Quality and Climate Action Initiatives in Caring for the Air 2022 ***pg. 60***

That the Climate Action Committee receive for information the report dated June 13, 2022, titled "Air Quality and Climate Action Initiatives in *Caring for the Air* 2022".

5.4 Metro Vancouver Climate 2050 Snapshot 2021/2022 ***pg. 87***

That the Climate Action Committee receive for information the report dated June 8, 2022, titled "Metro Vancouver Climate 2050 Snapshot 2021/2022".

5.5 2022 Update on Water Sustainability Innovation Fund Projects ***pg. 122***

That the Climate Action Committee receive for information the report dated June 13, 2022, titled "2022 Update on Water Sustainability Innovation Fund Projects."

5.6 Metro Vancouver Membership in the BC Building to Electrification (B2E) Coalition ***pg. 129***

That the MVRD Board authorize Metro Vancouver to become a member of the BC Building to Electrification Coalition (B2E).

5.7 Manager's Report ***pg. 135***

That the Climate Action Committee receive for information the report dated June 28, 2022 titled "Manager's Report".

6. INFORMATION ITEMS

7. OTHER BUSINESS

7.1 ICLEI World Congress 2021 – 2022: The Malmö Summit

Verbal Update

Designated Speakers:

Adriane Carr, Chair, Climate Action Committee and

Sav Dhaliwal, Vice-Chair, Climate Action Committee and Chair, Metro Vancouver Board

7.2 Committee Members Roundtable

Verbal Update

8. BUSINESS ARISING FROM DELEGATIONS

9. 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.

10. ADJOURNMENT/CONCLUSION

That the Climate Action Committee adjourn/conclude its regular meeting of July 8, 2022.

Membership:

Carr, Adriane (C) – Vancouver
Dhaliwal, Sav (VC) – Burnaby
Arnason, Petrina – Langley Township
Baird, Ken – Tsawwassen First Nation
Dupont, Laura – Port Coquitlam
Hocking, David – Bowen Island
Kruger, Dylan – Delta
McCutcheon, Jen – Electoral Area A
McIlroy, Jessica – North Vancouver City
McLaughlin, Ron – Lions Bay
Patton, Allison – Surrey
Royer, Zoë – Port Moody
Steves, Harold – Richmond
Wilson, Chris – Coquitlam
Yousef, Ahmed – Maple Ridge

METRO VANCOUVER REGIONAL DISTRICT
CLIMATE ACTION COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Climate Action Committee held at 1:02 p.m. on Friday, June 10, 2022 in the 28th Floor Boardroom, 4515 Central Boulevard, Burnaby, British Columbia.

MEMBERS PRESENT:
Chair, Councillor Adriane Carr, Vancouver
Vice Chair, Councillor Sav Dhaliwal, Burnaby
Councillor Petrina Arnason*, Langley Township
Chief Ken Baird*, Tsawwassen (arrived at 1:07 p.m.)
Councillor Laura Dupont*, Port Coquitlam
Councillor David Hocking*, Bowen Island
Director Jen McCutcheon*, Electoral Area A
Councillor Jessica McIlroy*, North Vancouver City
Mayor Ron McLaughlin*, Lions Bay
Councillor Allison Patton*, Surrey
Councillor Zoë Royer*, Port Moody
Councillor Harold Steves*, Richmond
Councillor Chris Wilson*, Coquitlam
Councillor Ahmed Yousef*, Maple Ridge

MEMBERS ABSENT:
Councillor Dylan Kruger, Delta

STAFF PRESENT:
Roger Quan, Director, Air Quality and Climate Change, Parks and Environment
Natalia Melnikov, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 June 10, 2022 Regular Meeting Agenda

It was MOVED and SECONDED
That the Climate Action Committee:

a) amend the agenda for its regular meeting scheduled for June 10, 2022 by varying the order of the agenda by moving Item 6.1 Process to Consider Stronger Climate Action Language and Policy for *Metro 2050* before Item 5.1 2022 Update on Regional District Sustainability Innovation Fund Projects; and
b) adopt the agenda as amended

CARRIED

*denotes electronic meeting participation as authorized by Section 3.6.2 of the *Procedure Bylaw*

2. ADOPTION OF THE MINUTES

2.1 May 13, 2022 Regular Meeting Minutes

It was MOVED and SECONDED
That the Climate Action Committee adopt the minutes of its regular meeting held May 13, 2022 as circulated.

CARRIED

3. DELEGATIONS

3.1 Tasha Murray, Executive Director, Invasive Species Council of Metro Vancouver, and Kevin Li, Chair, Regional Invasive Species Working Group

Tasha Murray, Executive Director, Invasive Species Council of Metro Vancouver, and Kevin Li, Chair, Regional Invasive Species Working Group, spoke to the Climate Action Committee regarding the Regional Invasive Species Management Support program, highlighting the Metro Vancouver's historical leadership role in the regional coordination of the invasive species control and requesting that Metro Vancouver explore innovative ways to better support the regional invasive species management.

1:07 p.m. Chief Baird arrived at the meeting.

In response to a question regarding the Metro Vancouver budget implications for the invasive species control management and sub-committee collaborations, members were informed that this will be further discussed and explored with the Regional Planning staff.

Presentation material titled "Regional Invasive Species Management Support" is retained with the June 10, 2022 Climate Action Committee agenda.

It was MOVED and SECONDED
That the Climate Action Committee refer the issue raised by the delegation from the Invasive Species Council of Metro Vancouver and the Regional Invasive Species Working Group, at the June 10, 2022 meeting, to staff to bring forward to the Regional Planning Advisory Committee for consideration and report back to both the Regional Planning and Climate Action Committees.

CARRIED

4. INVITED PRESENTATIONS

4.1 Fern Stockman, Project Assessment Director (Oil, Gas, and Industrials Team) and Kimberly Walters, Executive Project Director, BC Environmental Assessment Office

Fern Stockman, Project Assessment Director, Oil, Gas, and Industrials Team, and Kimberly Walters, Executive Project Director, BC Environmental Assessment

Office, provided the Climate Action Committee with a presentation on the Environmental Assessment Office review process and an overview of Tilbury Phase 2 LNG Expansion and Tilbury Marine Jetty projects, highlighting the regulatory requirements for the assessment processes for both projects, project participant, and outlining the next steps.

In response to questions, members were informed about the health and safety concerns addressed as part of the environmental assessment review and the greenhouse gases data to be included in the strategic assessment of climate change.

Presentation materials titled "Tilbury Marine Jetty Environmental Assessment" and "Environmental Assessment Process for Tilbury Phase 2 LNG Expansion" are retained with the June 10, 2022 Climate Action Committee agenda.

Agenda Order Varied
Pursuant to Item 1.1 of the agenda, the order of the agenda was varied to consider Item 6.1 at this point.

6. INFORMATION ITEMS

6.1 Report to Regional Planning Committee dated May 19, 2022, titled "Process to Consider Stronger Climate Action Language and Policy for Metro 2050"

Members were provided with an update on the proposed scope of work and engagement plan to explore opportunities for stronger climate action language and policy for *Metro 2050* with regards to greenhouse gas emissions reductions and the development of the *Climate 2050 Land Use and Growth Management Roadmap.*

In response to questions, members were informed about the phased work and further active engagement with other Metro Vancouver Standing Committees, including the Climate Action Committee.

Agenda Order Resumed
The order of the agenda resumed with Item 5.1 being before the Committee.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 2022 Update on Regional District Sustainability Innovation Fund Projects

Report dated June 1, 2022, from Roger Quan, Director, Air Quality and Climate Change, Parks and Environment, providing the Climate Action Committee with an update on projects funded under the Regional District Sustainability Innovation Fund.

Members were provided with a presentation on the status of the Sustainability Innovation Fund projects, outlining their purpose and outcomes.

Presentation material titled "2022 Update on Sustainability Innovation Fund Projects" is retained with the June 10, 2022 Climate Action Committee agenda.

It was MOVED and SECONDED
That the Climate Action Committee receive for information the report dated June 1, 2022, titled "2022 Update on Regional District Sustainability Innovation Fund Projects."

CARRIED

A Committee member commented on the need to further develop a natural asset assessment and economic accounting model for natural assets in our parks to examine the ecologically-sensitive areas across the region.

It was MOVED and SECONDED
That the Climate Action Committee direct staff to work with municipal partners to develop a Sustainability Innovation Fund application in order to build upon the work already underway and to integrate natural assets into and beyond regional parks asset management and sensitive ecological systems areas, in furtherance of developing a natural assets management framework and economic accounting model for natural assets across Metro Vancouver.

CARRIED

5.2 BC Lung Foundation – Contribution Agreement 2023-2025

Report dated May 23, 2022, from Roger Quan, Director, Air Quality and Climate Change, Parks and Environment, providing the Climate Action Committee with a presentation on the three-year Contribution Agreement with the BC Lung Foundation for the MVRD Board's approval.

It was MOVED and SECONDED
That the MVRD Board approve a three-year Contribution Agreement for Metro Vancouver to provide funding to the BC Lung Foundation in the amount of $35,000 per year for the term January 1, 2023 to December 31, 2025, as presented in the report dated May 23, 2022, titled "BC Lung Foundation – Contribution Agreement 2023 – 2025."

CARRIED

5.3 Air Quality Permitting Process

Kathy Preston, Director, Environmental Regulation and Enforcement, provided the Climate Action Committee with a verbal update on the air quality permitting process, highlighting the applicable *Air Quality Management Bylaw No. 1082, 2008* prohibitions and exemptions, and outlining the steps to obtain an Air Quality Permit.

Presentation material titled "Metro Vancouver Air Quality Permitting Process" is retained with the June 10, 2022 Climate Action Committee agenda.

5.4 Best Management Practices for Invasive Species: Garlic Mustard, Poison Hemlock and Spurge Laurel

Report dated May 16, 2022, from Laurie Bates-Frymel, Senior Planner, Regional Planning and Housing Services, providing the Climate Action Committee and the MVRD Board with three new invasive species best management practices documents and accompanying fact sheets for information.

Members were provided with a presentation on the Best Management Practices for Invasive Species outlining the identification features and disposal practices.

Presentation material titled "Best Management Practices for Invasive Species" is retained with the June 10, 2022 Climate Action Committee.

It was MOVED and SECONDED

That the MVRD Board:

a) receive for information the report dated May 16, 2022, titled "Best Management Practices for Invasive Species: Garlic Mustard, Poison Hemlock and Spurge Laurel"; and

b) direct staff to forward these Best Management Practices and accompanying fact sheets to member jurisdictions for information.

CARRIED

5.5 Manager's Report

Report dated May 30 2022, from Roger Quan, Director, Air Quality and Climate Change, Parks and Environment, providing the Climate Action Committee with an update on the Local Government Climate Action Program, City of Vancouver adopted emissions requirements for new and existing buildings, and updates on the air quality management fees and *Climate 2050*.

Discussion ensued regarding the need to explore the alternative energy sources such as solar, wind and biofuel.

It was MOVED and SECONDED

That the Climate Action Committee receive for information the report dated May 30, 2022 titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

6.1 Report to Regional Planning Committee dated May 19, 2022, titled "Process to Consider Stronger Climate Action Language and Policy for Metro 2050"

This item was previously considered.

6.2 Media Release by BC Centre for Innovation and Clean Energy dated May 26, 2022 re Hydrogen Investment Blueprint to Stimulate BC's Promising Hydrogen Sector Beginning with Metro Vancouver Region

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

No items presented.

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED

That the Climate Action Committee conclude its regular meeting of June 10, 2022.

CARRIED

(Time: 3:33 p.m.)

_____ _____

Natalia Melnikov,
Legislative Services Coordinator

Adriane Carr, Chair

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To: Climate Action Committee

From: Derek Jennejohn, Lead Senior Engineer
Nicole Chan, Project Engineer
Parks and Environment Department

Date: June 13, 2022 Meeting Date: July 8, 2022

Subject: **Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated June 13, 2022, titled "Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects", as the environmental assessment process is still underway.

EXECUTIVE SUMMARY

Tilbury Jetty Limited Partnership (jointly owned by Fortis LNG and Seaspan) is proposing a marine jetty project that would provide berthing and loading facilities for liquefied natural gas carriers and bunker vessels. At the same time, FortisBC is proposing an expansion to their adjacent existing natural gas liquefaction facility. The environmental assessment process for the Tilbury Phase 2 LNG Expansion Project is in the early stages, while the Tilbury Marine Jetty Project assessment is nearing completion. In a global context, the IPCC, International Energy Agency, and the World Bank note that LNG plays a limited role in a net-zero future and that expansion of LNG infrastructure carries considerable risk with respects to locking in greenhouse gas emissions. For the jetty project, staff have submitted comments that upstream and downstream greenhouse gas emissions should be included in the assessment, however, as these emissions occur outside Metro Vancouver, they are not within Metro Vancouver's mandate to manage air contaminant emissions, including GHGs.

PURPOSE

To provide the MVRD Board with an assessment of the proposed Tilbury Marine Jetty Project and Tilbury Phase 2 Liquefied Natural Gas (LNG) Expansion Project from the perspective of Metro Vancouver's mandate on air quality and climate change.

BACKGROUND

At its April 8, 2022 meeting, the Climate Action Committee received a delegation related to the proposed Phase 2 LNG Expansion and Tilbury Marine Jetty projects, and requested that staff arrange presentations from the proponent, City of Delta, City of Richmond, and the BC Environmental Assessment Office, which were heard at the May 13, 2022, and June 10, 2022 meetings. The Committee passed the following motions:

> *That the Climate Action Committee direct staff to review the information from the April 8, 2022 delegation from Friends of Tilbury, and report back from the perspective of Metro Vancouver's mandate on climate and air quality by June 2022.*

That the Climate Action Committee request staff to consider the information from the May 13, 2022 delegation from the BC Branch of the Canadian Association of the Physicians for the Environment in the preparation of a staff report on the Tilbury LNG project for the June 2022 meeting.

This report responds to the Committee's direction.

PROPOSED TILBURY MARINE JETTY AND PHASE 2 LNG EXPANSION PROJECTS

There are two proposed projects that combined would produce, store, and supply LNG from a production facility through an adjacent marine jetty: the Tilbury Marine Jetty Project, and the Tilbury Phase 2 LNG Expansion Project.

Tilbury Jetty Limited Partnership is proposing to construct and operate the Tilbury Marine Jetty Project, located on Tilbury Island in Delta, adjacent to and in the Fraser River. The Marine Jetty Project would include a new marine jetty providing berthing and loading facilities for LNG carriers and bunker vessels with a carrying capacity of up to 100,000 cubic metres, for a minimum of 30 years. The jetty would transfer LNG from the existing adjacent FortisBC Tilbury LNG liquefaction plant to carriers and bunker vessels berthed at the jetty. With the Tilbury Phase 2 LNG Expansion Project, FortisBC is proposing to increase LNG production at the existing Tilbury natural gas liquefaction plant by more than 50%, which would include an additional storage tank and liquefaction facilities.

ENVIRONMENTAL ASSESSMENT PROCESS AND OTHER AUTHORIZATIONS

Major projects in British Columbia are assessed for potential environmental, social, economic, health, and cultural effects by the BC Environmental Assessment Office (EAO). A project proponent must assess and describe the project's potential positive and negative direct and indirect effects and adverse cumulative effects on the environment for each phase of the project. The proposed Phase 2 LNG Expansion Project and Marine Jetty Project are both undergoing a substituted Environmental Assessment (EA) review, where the BC EAO leads a review on behalf of the Impact Assessment Agency of Canada.

The review process for the Marine Jetty Project is nearing completion and is scheduled to conclude following a 30-day public comment period on updated draft referral materials from the EAO, during July 14 – August 15, 2022. Provincial and federal ministers will then have 45 days to either approve, reject, or order further assessment. Staff have provided comments throughout the process, and will review and comment on the updated draft referral materials.

The Phase 2 LNG Expansion Project is in the application development and review phase. The Proponent is expected to submit a draft application to the EAO later in 2022 (expected around the third quarter), and a decision on the project is expected by late 2023 or early 2024, depending on how the review process proceeds. Staff plan to conduct a detailed assessment of the project with respect to the project's impact and proposed mitigation measures, once the proponent has submitted an application.

FortisBC has also submitted an application to the BC Utilities Commission for a certificate of public convenience and necessity. Additionally, the existing LNG production, storage, and truck loading

facility holds a permit from Metro Vancouver to discharge air contaminants. As the permit term ends June 30, 2022, FortisBC is seeking authorization from Metro Vancouver to continue discharging air contaminants from the facility. It is expected that FortisBC will apply for authorization from Metro Vancouver for a series of expansion projects, although the timing of those applications is uncertain.

GREENHOUSE GAS ASSESSMENT

For the Marine Jetty Project, the EAO had determined in their initial draft summary assessment report that the project would not have significant adverse effects on greenhouse gases within the study area. However, staff have noted limitations in the scope of evaluation for greenhouse gases, most notably the exclusion of upstream and downstream GHG emissions from the characterization of effects and determination of significance, as an upstream GHG assessment was not mandated under the *Canadian Environmental Assessment Act, 2012*.

Staff have completed a greenhouse gas assessment of the Marine Jetty Project for the purposes of this report, including both upstream and downstream emissions (see Attachment). Total associated greenhouse gas emissions associated with the Marine Jetty Project are approximately 11.5 million tonnes CO_2e per year. While the operational emissions from the marine jetty itself are approximately 15,000 tonnes CO_2e per year, upstream and downstream emissions associated with LNG production and use are much more significant. Upstream GHG emissions associated with the Marine Jetty Project are estimated at 1.8 - 2.2 million tonnes CO_2e per year, which would likely constitute a significant portion of BC's greenhouse gas emission target for the oil and gas sector in 2030, which is 7.6 – 8.2 million tonnes CO_2e.

Based on reported throughput at the facility, staff have estimated that downstream GHG emissions associated with the project could be in the range of approximately 9.4 million tonnes CO_2e/year. While the proponent has reported that use of LNG would result in lifecycle emission reductions relative to use of coal and diesel, staff noted that there is significant uncertainty associated with the climate benefits of LNG and in the worst case scenario, could result in increased lifecycle GHG emissions.

The Phase 2 LNG Expansion Project is in early stages of the environmental assessment process. Estimates of GHG emissions will be available as the project progresses through the process. Staff will continue to participate in the environmental assessment process, including review of GHG estimates and proposed mitigation measures. As the LNG from the liquefaction facility will likely be exported through the jetty, the upstream and downstream emissions associated with the liquefaction facility are encompassed within the estimates for upstream and downstream emissions related to the jetty.

AIR QUALITY ASSESSMENT

For the Marine Jetty Project, the EAO had determined in their initial draft summary assessment report that the project would not have significant adverse residual effects on surrounding air quality. However, staff have noted limitations in the assessment methodology, which for example, did not include consideration of other foreseeable projects such as the adjacent Tilbury Phase 2 LNG expansion. Even with those limitations, the assessment indicated the potential for exceedances of regional air quality objectives in the vicinity of the projects, and the potential for adverse effects on

air quality remains. Additionally, the proponent notes the potential for reduced emissions of health-harming air contaminants elsewhere in the region, in cases where marine vessels are fueled by LNG.

As the environmental assessment for the Phase 2 LNG Expansion Project progresses, estimates of impacts on air quality will be made available, and staff will continue to review and comment.

***CLIMATE 2050* AND THE GLOBAL CONTEXT – CARBON NEUTRAL BY 2050**

The IPCC, the International Energy Agency, and the World Bank (References 1-3) note that LNG plays a limited role in a net-zero future and that expansion of LNG infrastructure carries considerable risk with respect to locking in GHG emissions (see Attachment). In addition, the World Bank has noted considerable risk in investing in LNG infrastructure, including "unnecessary capital expenditures, stranded assets, and technology lock-in", and has recommended that countries not provide public policy support to LNG as a bunker fuel.

Metro Vancouver's *Climate 2050* and *Clean Air Plan* identify goals, targets, and strategies to guide our region's policies and collective actions to transition to a carbon neutral and resilient region over the next 30 years, in alignment with the Intergovernmental Panel on Climate Change (IPCC) goal of limiting global warming to 1.5 degrees Celsius to avoid the worst impacts of climate change. However, while upstream and downstream greenhouse gas emissions associated with this project are likely significant, these emissions are not directly located within the Metro Vancouver region.

ALTERNATIVES

1. That the Climate Action Committee receive for information the report dated June 13, 2022, titled "Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects", as the environmental assessment process is still underway.

2. That the MVRD Board:
   a) Express its opposition to the Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects, because of overall concerns related to upstream and downstream greenhouse gas emissions and inconsistency with Metro Vancouver climate targets;
   b) Authorize the Board Chair to write to the BC Minister of Environment and Climate Change Strategy, BC Minister of Energy, Mines and Low Carbon Innovation, federal Minister of Environment and Climate Change, BC Environmental Assessment Office, and the Impact Assessment Agency of Canada, to communicate this opposition; and
   c) Send copies of all letters and this staff report to Metro Vancouver member jurisdictions for their consideration in taking a similar position.

3. That the MVRD Board write to the BC Minister of Environment and Climate Change Strategy, BC Minister of Energy, Mines and Low Carbon Innovation, federal Minister of Environment and Climate Change, BC Environmental Assessment Office, and the Impact Assessment Agency of Canada, communicating its concerns relating to climate change and air quality associated with the Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects, and requesting that these issues be addressed prior to any approval of the projects.

FINANCIAL IMPLICATIONS

There are no financial implications to this report. Metro Vancouver staff from various departments already participate in the BC environmental assessment processes for the Tilbury Marine Jetty and Tilbury Phase 2 LNG Expansion Projects.

CONCLUSION

The Tilbury Marine Jetty project is nearing the completion of the environmental assessment process and the Tilbury Phase 2 LNG Expansion Project is in the application development and review phase for its environmental assessment. Staff have participated and provided comments throughout both processes. For the Tilbury Marine Jetty Project, staff have noted limitations in the scope of evaluation for greenhouse gases, most significantly, the exclusion of upstream and downstream emissions. Staff completed a GHG assessment of the project as part of this report, and have quantified the upstream and downstream greenhouse gas emissions. Leading global organizations, such as the IPCC, IEA, and the World Bank, note that LNG plays a limited role in a net-zero future and that expansion of LNG infrastructure carries considerable risk with respects to locking in GHG emissions. However, these upstream and downstream emissions do not occur within the Metro Vancouver region, and are not within Metro Vancouver's mandate to manage the discharge of air contaminant emissions, including GHGs.

Attachment

Greenhouse Gas Assessment of the Tilbury Marine Jetty Project

References

1. Intergovernmental Panel on Climate Change, Climate Change 2022: Mitigation of Climate Change
2. International Energy Agency, Net Zero by 2050
3. The World Bank, The Role of LNG in the Transition Toward Low- and Zero-Carbon Shipping

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Greenhouse Gas Assessment of the Tilbury Marine Jetty Project

GLOBAL NET ZERO

Within the Intergovernmental Panel on Climate Change's (IPCC) report, *Climate Change 2022: Mitigation of Climate Change*, it is noted that the world will need to at least halve emissions by 2030 to limit the worst impacts of climate change, which will require "a substantial reduction in fossil fuel use" (Reference 1). The IPCC further outlines that countries looking to reduce greenhouse gas emissions will need to switch from "fossil fuels to energy carriers [electricity or hydrogen] with little or no carbon footprint". Net zero energy systems will share common characteristics including net zero or net negative electricity systems, widespread electrification, and substantially lower use of fossil fuels, such as fossil natural gas. Specific to the shipping sector, the IPCC states that "natural gas-based fuels are expected to be inadequate to meet stringent decarbonization goals for these segments (high confidence)." The report indicates that viable options for decarbonizing shipping are emerging, such as using advanced biofuels and ammonia.

The International Energy Agency, within their report *Net Zero by 2050*, has stated that for the world to achieve net zero, global natural gas demand needs to decline sharply, more than 5% per year on average during the 2030s (Reference 2). As a result, "not needed are many of the liquefied natural gas (LNG) liquefaction facilities currently under construction or at the planning stage." The IEA also points to ammonia and hydrogen as the main low-carbon fuels for low carbon shipping and states that policy makers should be aware of locking in gas-related emissions when building new gas infrastructure.

The World Bank has developed a series of reports related to decarbonizing marine transport, which have identified ammonia and hydrogen as the most promising zero-carbon bunker fuels for the shipping industry while noting that LNG will play a limited role, primarily in niche applications, in decarbonization of shipping (Reference 3). The World Bank notes considerable risk in investing in LNG infrastructure, including "unnecessary capital expenditures, stranded assets, and technology lock-in", and has recommended that countries not provide public policy support to LNG.

As the marine jetty is expected to operate for 30 years or more, construction of this project would lock in decades of fossil fuel production. Thus, liquefied natural gas will likely play a limited role in a net zero future and expansion of LNG infrastructure carries considerable risk with respect to locking in GHG emissions.

OPERATIONAL GHG EMISSIONS

The *Climate 2050 Transportation Roadmap* has set a target of a 35% reduction in greenhouse gas emissions from aircraft and marine vessels operating in the region by 2030, from 2010 levels (~575,000 tonnes CO_2e from marine vessels in 2010). The target for 2030 is approximately 375,000 tonnes CO_2e. The operational emissions associated with the Tilbury Marine Jetty Project are projected to be approximately 15,250 tonnes CO_2e/year, primarily from combustion of fossil fuels within marine vessels and from fugitive losses (Reference 4). Construction emissions were not included within the scope of the environmental assessment. Emissions from this project would constitute approximately 4% of the 2030 target for emissions for the marine sector.

UPSTREAM GHG EMISSIONS

Through the *Climate Change Accountability Act*, the provincial government requires the province to achieve GHG emission reduction targets of 40, 60, and 80 percent below 2007 emission levels by 2030, 2040, and 2050, respectively. In March 2021, the provincial government set sectoral emission targets for 2030, including a 33-38% reduction of emissions from 2007 levels for oil and gas emissions. In 2007, emissions from the oil and gas sector were 12.3 million tonnes CO_2e. Therefore, the targeted emissions for the oil and gas sector are 7.6 – 8.2 million tonnes CO_2e by 2030.

Upstream GHG emissions associated with the Tilbury Marine Jetty Project include all upstream activities from the point of resource extraction to the project under review, including extraction, processing, handling, transportation, and liquefaction. The proposed maximum throughput for the Tilbury Marine Jetty is 3.5 million tonnes LNG per annum. An upstream GHG emissions assessment was submitted to the BC Environmental Assessment Office (EAO) by the proponent for contextual purposes, however, the report was not considered by the EAO for the characterization of effects nor determination of significance (Reference 5). From the report, total upstream emissions would range from 1.75 - 2.16 million tonnes CO_2e in 2023 and 1.69 - 2.41 million tonnes CO_2e in 2053. These emissions are likely an underestimate – new research has indicated that methane emissions from oil and gas facilities in British Columbia are likely 1.6 - 2.2 times higher than current federal inventory estimates (Reference 6).

Lastly, while the proponent has noted that these emissions would not be incremental to existing upstream production, there was considerable stakeholder comment around the 'no project case', in which the Proponent had proposed that LNG would be shipped via containers if the project was not constructed. There were comments from stakeholders regarding the feasibility and economics of shipping via container and while the EAO concluded that the issue was adequately resolved, staff are of the view that more information is required to assess the proponent's claim.

DOWNSTREAM GHG EMISSIONS

Downstream GHG emissions associated with the Tilbury Marine Jetty Project include all downstream activities from the project, which most significantly include transportation and end-use. Emissions associated with transportation of LNG to markets are highly dependent on the distance shipped, fuel consumed, type of engine, and size of the tanker. Both LNG carriers and bunkers are expected to call at the Tilbury Marine Jetty. LNG carriers would ship LNG predominantly to international markets, and LNG bunkers would ship predominantly to regional coastal markets, as well as transport LNG to fuel other vessels in the Port of Vancouver. Emissions associated with the transportation of LNG via tankers can range from 50,000 – 300,000 tonnes CO_2e/year, depending on the number of LNG tanker vessel calls.

Using the annual throughput of 3.5 million tonnes of LNG, staff estimate that the annual downstream combustion emissions would be approximately 9.4 million tonnes CO_2e/year, assuming that all the LNG is re-gasified and combusted. The proponent has claimed that use of LNG will reduce emissions associated with other fossil fuels such as coal and diesel. However, there is also the possibility that BC LNG would be replacing other sources of LNG or even renewable sources. In these scenarios, there would be no incremental downstream emission reductions associated with BC LNG, and there may

even be an increase in downstream emissions if renewable sources are displaced. Thus, it is difficult to definitively assess the impact on downstream emissions associated with use of BC LNG.

LIFECYCLE GREENHOUSE GAS EMISSIONS IMPACT OF LNG

In relation to the use of natural gas as a replacement for other stationary fuels (e.g., coal, natural gas), there is likely considerable underreporting of methane leakage within BC, and considerable uncertainty on whether LNG would be replacing coal, other sources of fossil gas, or renewable sources. Depending on what LNG is displacing downstream, use of BC LNG could result in an increase in lifecycle greenhouse gas emissions. Furthermore, because production of natural gas within BC is emissions intensive, traditional BC LNG is typically more emissions intensive than the global average (Reference 7), and this does not yet account for the underreporting of fugitive methane in BC. Thus, there is considerable uncertainty around whether use of LNG, either as a replacement for coal, other sources of fossil gas, or renewable sources, would result in global GHG reductions.

In relation to use of LNG as a bunker fuel as replacement for diesel, GHG reductions are highly dependent on the engine technology. In the best case scenario where LNG is used in high-pressure duel-fuel engines that control methane leakage, use of LNG would result in a 16% reduction in lifecycle GHG emissions compared to low-sulphur fuel oil. However, as of 2018, only 12% of all LNG vessels in operation use these engines, indicating that use of engines that do not control methane leakage adequately are prevalent. Over a 20-year timeframe, which is the critical timeframe where global GHG emissions must be drastically reduced, methane has a global warming potential of 84 - 87 times that of carbon dioxide. When the GHG impact is measured over a 20-year horizon, use of LNG as a replacement for traditional marine fuels increases lifetime GHG emissions by 2% (relative to low-sulphur heavy fuel oil) and up to 79% for cruise ships (Reference 2). Thus, there are significant uncertainties associated with LNG's lifecycle GHG benefits compared to traditional marine fuels.

References

1. Intergovernmental Panel on Climate Change, Climate Change 2022: Mitigation of Climate Change
2. International Energy Agency, Net Zero by 2050
3. The World Bank, Charting a Course for Decarbonizing Maritime Transport
4. Environmental Assessment Office, Draft Assessment Report for Tilbury Marine Jetty Project
5. WesPac Midstream – Vancouver LLC, WesPac Tilbury Marine Jetty Project – Section 4.4.3: Upstream GHG Assessment
6. Tyner et al., Where the Methane Is—Insights from Novel Airborne LiDAR Measurements Combined with Ground Survey Data
7. Delphi Group, prepared for BC Climate Action Secretariat, LNG Production in British Columbia: Greenhouse Gas Emissions Assessment and Benchmarking
8. The International Council on Clean Transportation, The Climate Implications of Using LNG as a Marine Fuel

To: Climate Action Committee

From: Julie Saxton, Air Quality Planner
Esther Berube, Division Manager, Air Quality Bylaw and Regulation Development
Parks and Environment Department

Date: June 8, 2022 Meeting Date: July 8, 2022

Subject: **MVRD Open Burning Emission Regulation Bylaw No. 1355, 2022**

RECOMMENDATION

That the MVRD Board:

a) give first, second, and third reading to *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*; and
b) pass and finally adopt *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*.

EXECUTIVE SUMMARY

Staff conducted two phases of engagement on a potential emission regulation to manage harmful emissions from open burning of vegetative debris in a simpler, more efficient, and less costly manner than the current Metro Vancouver approvals process. This report presents feedback from the second phase of engagement and seeks Board adoption of a proposed emission regulation that was developed with consideration of issues heard during engagement.

The proposed emission regulation is as stringent or more stringent than the BC *Open Burning Smoke Control Regulation*, and would protect human health and the environment from the impacts of smoke in the Metro Vancouver region, which is more densely populated than the rest of the province. The proposed option of a new emission regulation would result in a more streamlined mechanism for the authorization of controlled emissions from open burning of vegetative debris, such as leaves and branches, compared to the current time-limited approvals process for open burning.

PURPOSE

To seek Board adoption of *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022* (Bylaw 1355) (Attachment 1), to establish requirements to control emissions from open burning of vegetative debris and use alternatives to open burning where feasible.

BACKGROUND

At its meeting on June 25, 2021, the MVRD Board authorized staff to proceed with additional engagement on a potential emission regulation to control emissions from open burning of vegetative debris in Metro Vancouver. This report presents the feedback from engagement and a proposed emission regulation for MVRD Board consideration.

OPEN BURNING AND ITS IMPACTS

Open burning is burning that is conducted outdoors where the emissions do not vent through a chimney or stack. The term "open burning" is used in this report, rather than the previously used "open-air burning", to better align with provincial terminology within the scope of the BC *Open Burning Smoke Control Regulation* (OBSCR). In the Metro Vancouver region, open burning is used to dispose of vegetative debris generated by land clearing activities, agricultural land management, forestry practices, and residential property maintenance in some member jurisdictions.

Thousands of open burns of various sizes occur in the region each year. Open burning of vegetative debris can produce much more smoke than controlled, enclosed combustion. Exposure to fine particulate matter and other air contaminants found in smoke is associated with negative cardiac and respiratory health effects. Visual air quality can also be degraded, causing safety concerns for navigation or driving. Open burning may contribute to climate change due to the release of short-lived climate forcers such as black carbon (soot) particles, and to ground-level ozone, which can be formed from compounds found in smoke. Metro Vancouver has received complaints and requests for help from the public related to smoke emissions from open burning.

CURRENT EMISSION CONTROL REQUIREMENTS

The OBSCR, a regulation under the *Environmental Management Act* (EMA), describes the conditions and requirements for open burning to be conducted in the province. In addition, *GVRD Air Quality Management Bylaw No. 1082, 2008* (Bylaw 1082) prohibits the disposal of waste by burning unless the discharge is conducted in accordance with a permit, approval, order, or an emission regulation issued or adopted by Metro Vancouver, with some exemptions for specific circumstances related to compliance with requirements of the *Weed Control Act*, the *Wildfire Act,* and the *Fire Services Act*.

Currently, in Metro Vancouver, open burning emissions are authorized using approvals, for a cumulative period of up to 15 months for any given site, after which authorization under a permit is required. The process of applying for an approval can be time-consuming and costly, and once issued, the approval provides no guarantee that conditions conducive to dispersing smoke, which are required for open burning to proceed, will occur within the validity of the approval. Staff engaged on this potential emission regulation, as a means to streamline and simplify authorization of open burning by pre-defining requirements and conditions to protect public health and the environment.

ENGAGEMENT

Metro Vancouver staff engaged affected and interested audiences, other governments including First Nations, member jurisdictions, and the public on the potential bylaw. Initial engagement took place from November 2019 to August 2020 and was reported to the Climate Action Committee and MVRD Board in July 2021 (Reference 1). Refined proposals were developed to support a second phase of engagement, which was conducted between August 2021 and February 2022. This report provides information about the second phase of engagement. Details are provided in Attachment 2.

Engagement activities followed Metro Vancouver's public engagement policy. Staff promoted opportunities for providing feedback through various channels, including a postcard mail out to all of the agricultural postal codes in the region and water-access communities in Electoral Area A, social media posts, advertisements in association publications, and email invitations. Letters were sent to

local First Nations to provide information about the potential regulation and to offer an opportunity to provide input on the revised proposals. Information, resources, and options for providing feedback were posted on the project webpage.

Staff received feedback at 24 meetings and three webinars as well as through phone calls, emails, and feedback forms. The issues raised and how they have been addressed in the development of the proposed emission regulation are presented in Reference 2. These issues broadly spanned four themes: elements of the proposed emission regulation, the legal framework for authorizing emissions, communication considerations, and topics not directly related to the requirements of the potential emissions regulation. Feedback shared included:

- Questions and concern about restrictions on where, when, and for how long open burning can be conducted
- Questions and concern about restrictions on the materials that can be open burned in general or near neighbouring properties
- Requests for exemptions from the proposed emission regulation under a range of circumstances
- Concern about impacts of the proposed emission regulation on managing wildfire risk, diseased vegetative debris, and ditch maintenance for flood protection
- Questions and concern about proposed administrative requirements, including notification of neighbours, site registration, and record keeping
- Concern about the perceived redundancy of the proposed emission regulation with existing provisions under provincial government and member jurisdictions regulatory requirements
- Questions about the availability and cost of alternatives to open burning for managing vegetative debris, and declarations of increased reliance on alternatives to open burning
- Concern about the effects of smoke on occupants of neighbouring properties
- Support for restrictions and requests for the prohibition of open burning.

PROPOSED BYLAW AND RESPONSE TO FEEDBACK

The OBSCR defines the minimum requirements and conditions for open burning in a High Smoke Sensitivity Zone such as the Metro Vancouver region. The region is generally more densely populated than other parts of the province, resulting in a greater potential for exposure and associated health impacts. To address the health risks associated with higher population density, the proposed emission regulation applies to burning of a broader range of sizes of vegetative debris, with some exceptions for special circumstances posing a higher risk to health or the environment. The feedback received was taken into consideration in drafting the proposed emission regulation, in conjunction with upholding the need to be at least as stringent as the requirements of the OBSCR.

Proposed Scope

Feedback from engagement informed the development of the proposed emission regulation. The proposed emission regulation would allow emissions from open burns of any size of material in up to two piles, each no larger than 2 metres in height and 3 metres in width, as well as open burning conducted using air curtain technology, if the conditions and requirements of the emission regulation are met. Open burning conducted to dispose of vegetative debris that cannot meet the conditions and requirements of the proposed emission regulation, including open burns involving large piles of material or more than two piles, will continue to require authorization under a permit or approval.

General Requirements

The proposed emission regulation is always as stringent and in some cases more stringent than the OBSCR. Open burning is proposed to only be allowed when conditions are forecast to be favourable for smoke dispersion and do not cause negative impacts on neighbours or a navigation hazard, for up to six days in any calendar month and a maximum of 12 days per calendar year. Each open burn conducted would have to be completed within two days of starting the burn. More stringent conditions are to be placed on burning within larger specified distances of hospitals, schools, and community care facilities compared to the specified distances from residences and businesses. Vegetative debris would have to be allowed to dry before open burning, and piled to maximize air flow and reduce emissions. Any soil content in the vegetative debris would have to be minimized. The burning of salt-laden wood would not be allowed under the proposed emission regulation.

Special Circumstances

In response to feedback, the proposed emission regulation sets out some special circumstances in which general requirements have been relaxed, to address increased risk from specified hazards, while maintaining the level of stringency required by the OBSCR.

The use of air curtain technology, which reduces emissions by burning more efficiently, is incentivized by allowing the disposal of larger sizes and amounts of vegetative debris at smaller specified distances from residences, businesses, hospitals, and other sensitive receptors, and when conditions are forecast to be less favourable for smoke dispersion.

Feedback identified wildfire risk management as a concern. The proposed regulation allows the disposal of vegetative debris within smaller specified distances from residences and other sensitive receptors for communities that submit a plan for community wildfire risk reduction endorsed by the government, a local government, a band council, or a Treaty First Nation. For properties accessible by water only, smaller material could be disposed of with fewer requirements than on properties served by roads, which can more easily access alternative forms of vegetative debris management.

The agriculture sector emphasized the need to dispose of diseased vegetative debris by open burning in order to prevent the spread of a pathogen or disease. The proposed emission regulation exempts the burning of diseased vegetative debris from some requirements that apply in general to the burning of vegetative debris, in accordance with the OBSCR.

The agriculture sector expressed the need for farmers and others to manage vegetative debris growing in the drainage ditch system used for flood protection. The proposed regulation provides exemptions from some requirements, to allow open burning of material less than 3 centimetres in diameter, which can include invasive species, for routine ditch maintenance. During emergencies, the proposed emission regulation includes additional exemptions to support the prevention of hazards.

Administrative Requirements

Registration requirements are proposed that mirror the location and contact information collected through Metro Vancouver's current open burning approval applications. The proposed initial fee for the first year of registration ($50-$250) and reduced renewal fees ($25-$100) reflect the reduced cost of administering the emission regulation compared to individual applications for every approval

($100-$1000). There are potential savings for people conducting open burning since the annual fee covers any number of burns in a 12-month period up to the maximum allowed of 12 days per year.

The inclusion of neighbour notification requirements mirrors requirements in the OBSCR. Providing notification in advance of open burning will allow people to prepare for potential smoke and take protective measures. The additional requirements to notify Metro Vancouver and to keep records will enhance staff's ability to address enquiries and conduct inspections efficiently.

ALTERNATIVES

1. That the MVRD Board:
   a) give first, second and third reading to *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*; and
   b) pass and finally adopt *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*.

2. That the MVRD Board receive the report titled "*MVRD Open Burning Emission Regulation Bylaw No. 1355, 2022"*, dated June 8, 2022 for information and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

Under Alternative 1, adoption of the proposed emission regulation, the costs for implementation have been included in long-term budget forecasts. The existing regulatory database used to manage open burning approvals will be used to retain the administrative records associated with the emission regulation. The staff costs of supporting the emission regulation are expected to be partially offset by the reduction in costs for processing open burning authorization under approvals.

CONCLUSION

Metro Vancouver staff engaged affected and interested audiences between August 2021 and February 2022 on a potential emission regulation to control emissions from open burning of vegetative debris in the Metro Vancouver region. Issues raised were considered in the development of the proposed *MVRD Open Burning Emission Regulation Bylaw No. 1355, 2022*. If adopted, the proposed emissions regulation would create a more efficient, simpler mechanism for authorizing controlled emissions from open burning of vegetative debris. It would replace the need for a majority of people conducting open burning to make time-consuming applications for an approval every time they need to conduct open burning. The proposed emission regulation is as restrictive as the provincial *Open Burning Smoke Control Regulation*. Because of the larger population and associated risk of exposure to harmful smoke in the region compared to the rest of the province, the proposed emission regulation includes provisions that are more stringent to protect human health, with some exceptions for special circumstances of higher risk to health or the environment.

Staff recommend Alternative 1, to adopt Bylaw 1355 presented as Attachment 1.

Attachments

1. *Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022*
2. Proposed Open Burning Emission Regulation Bylaw: Engagement Summary

References

1. Report titled "Next Phase of Engagement on an Open-Air Burning Emission Regulation", dated May 18, 2021 <http://www.metrovancouver.org/boards/ClimateAction/CAC_2021-Jun-11_AGE.pdf>
2. Proposed Open Burning Bylaw: Issues-Response Table

49264707

METRO VANCOUVER REGIONAL DISTRICT
OPEN BURNING EMISSION REGULATION BYLAW NO. 1355, 2022
A Bylaw to Regulate Open Burning of Vegetative Debris

WHEREAS:

A. The *Environmental Management Act* authorizes the Metro Vancouver Regional District to provide the service of air pollution control and air quality management and, for that purpose, the Board of Directors of the Metro Vancouver Regional District may, by bylaw, prohibit, regulate and otherwise control and prevent the discharge of air contaminants;

B. The *Environmental Management Act* authorizes the Board of Directors of the Metro Vancouver Regional District to establish different prohibitions, regulations, rates or levels of fees, conditions, requirements, and exemptions for different persons, operations, activities, industries, trades, businesses, air contaminants, or works, and for different classes of persons, operations, activities, industries, trade, businesses, air contaminants, or works;

C. The Metro Vancouver Regional District has enacted the "Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008", which contemplates that the Board of Directors of the Metro Vancouver Regional District may establish emission regulations; and

D. The Board of Directors of the Metro Vancouver Regional District has determined it is desirable to regulate the discharge of air contaminants from open burning of vegetative debris.

NOW THEREFORE the Board of the Metro Vancouver Regional District enacts as follows:

Citation

1. The official citation of this bylaw is "Metro Vancouver Regional District Open Burning Emission Regulation Bylaw No. 1355, 2022". This bylaw may be cited as "Metro Vancouver Regional District Open Burning Emission Regulation Bylaw".

General

2. This Emission Regulation is an emission regulation for the purposes of section 26 of the "Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008" ("Bylaw 1082") and is deemed to be an integral part of Bylaw 1082.

3. Terms defined in Bylaw 1082, or incorporated by reference into Bylaw 1082, have the same meaning in this Emission Regulation.

4. Every person who complies with Bylaw 1082 and this Emission Regulation is exempt from the application of sections 5 and 6 of Bylaw 1082 and from section 6 (3) of the *Environmental Management Act*, SBC 2003, c. 53 in relation to the discharge of air contaminants from open burning, if the person also complies with any further restrictions or conditions imposed by Bylaw 1082, the *Environmental Management Act*, or a regulation, permit, order, or approved waste management plan under the *Environmental Management Act*.

5. References in this Emission Regulation to an enactment include the enactment as it may be amended or replaced from time to time.

Effective Date

6. This Emission Regulation will come into effect on May 15, 2023.

Schedules

7. The following Schedules are attached to and form part of this Emission Regulation:
Schedule "A", Registration Fees.

Definitions

8. In this Emission Regulation:

"accelerant" means a substance used to aid ignition or accelerate open burning, but does not include materials listed in paragraphs (a) to (x) of the definition of "burning or incineration of prohibited material" in section 2 of Schedule 1 of the Waste Discharge Regulation, B.C. Reg. 320/2004;

"air curtain incinerator" means a device that is designed to aid combustion and reduce emissions by directing a flow of air across the

(a) open chamber in the device, or

(b) trench

in which the combustion occurs, in such a manner as to re-circulate air and smoke in the open chamber or trench;

"ambient air quality objective" means the ambient concentration of an air contaminant that has been established by Metro Vancouver to protect human health and the environment;

"**burnt surface area"** means the area that is underneath or surrounding the remains of a fire and covered by charred or smoldering vegetative debris;

"burn pile" means a mound of vegetative debris created for the purpose of open burning;

"campfire" means an open burn that burns vegetative debris in one burn pile not exceeding 60 centimetres high and 75 centimetres wide;

"community care facility" has the same meaning as in the *Community Care and Assisted Living Act*;

"day" means a calendar day from midnight to midnight;

"diseased vegetative debris" means vegetative debris that is verified or confirmed under section 47 of this Emission Regulation as being infested with a plant pathogen or insect;

“end”, with regard to when open burning ends, means when each burn pile of vegetative debris has ceased flaming and is emitting smoke from no more than 10% of its burnt surface area, or when the fire in an air curtain incinerator is emitting smoke from no more than 10% of the base of the air curtain incinerator;

“extinguished” means burning that has been put out such that there is no vegetative debris flaming and there is no visible smoke being emitted;

“flood management ditch” means a ditch forming part of the flood management drainage infrastructure and serving the parcel on which open burning is being conducted;

“flooding emergency” means flooding that is causing or is forecast to cause damage to agricultural land, buildings, power lines, or transportation infrastructure;

“**notification**” means a notification available to neighbours by email, mail, phone, hand delivery, social media or posting a notice on the property line at the nearest publicly accessible location to the planned open burning;

“opacity” means the degree to which smoke obscures the view of an object in the background, expressed numerically from 0% (transparent) to 100% (opaque), as determined in accordance with the United States Code of Federal Regulations, Title 40, Part 60, Chapter 1, Appendix A-4, Method 9, as amended from time to time;

“open burning” means combustion of vegetative debris that is conducted outside a building and does not use a stack or chimney to vent the emitted products of combustion to the atmosphere;

“operator” means a person conducting open burning;

"parcel of land" means a lot, block, or other area in which land is held or into which land is subdivided;

“person” includes an individual, firm, company, association, society, partnership, sole proprietorship, corporation, government body, land owner, owner, operator, resident, occupier, and any director, officer, employee, or agent of a person;

"plan for community wildfire risk reduction" means a plan, or an addendum to a plan, developed or endorsed by the provincial government, a local government, a band council, or a treaty first nation that:

(a) describes the risks to a community related to a fire starting outside of the community and threatening the community,

(b) identifies the measures necessary to mitigate the risks referred to in paragraph (a) of this definition,

(c) outlines a plan of action to implement the measures referred to in paragraph (b) of this definition, and

(d) identifies the geographic areas to which the plan applies;

"population" means a group of more than two residences or a place of work;

"registered site" means a site within the Metro Vancouver Regional District registered for open burning;

"registration" means the submission to the Metro Vancouver Regional District of all information required and payment of fees under Part 2;

"residence" means a private residential dwelling or unit;

"salt-laden wood" means vegetative debris, of any species, that contains salt;

"seasoned" means, in reference to vegetative debris, having a dry basis moisture content of 30% or less, having been piled for a period of at least four months, or originating from standing dead timber;

"smoke" means any of the gases, particulate matter, or other products of combustion emitted into the atmosphere from open burning;

"start", with regards to when open burning starts, means,
(a) if using an air curtain incinerator, the point in time when the fire in the air curtain incinerator is first ignited, and
(b) for all other open burning, the point in time when the first burn pile of vegetative debris is ignited;

"vegetative debris" means disturbed or undisturbed vegetative matter targeted for disposal, and excludes salt-laden wood whether targeted for disposal or not;

"ventilation index" means the ventilation index forecast issued by Environment and Climate Change Canada as interpreted and communicated each day by Metro Vancouver.

Part 1 – Application and Scope

9. All the provisions of this Emission Regulation apply to every person conducting open burning within the Metro Vancouver Regional District, except if:

(a) a person is conducting open burning in accordance with a permit or approval issued under Bylaw 1082,

(b) a person is conducting open burning pursuant to any of the circumstances described in sections 7(4) or (6) of Bylaw 1082;

(c) a provision of this Emission Regulation expressly indicates that one or more provisions of this Emission Regulation do not apply to the open burning, or

(d) a provision of this Emission Regulation expressly indicates that only one or more provisions of this Emission Regulation apply to the open burning.

10. Every person conducting a campfire is exempt from Parts 2 through 11 of this Emission Regulation.

11. Despite section 4, nothing in this Emission Regulation exempts from sections 5 and 6 of Bylaw 1082 or from section 6 (3) of the *Environmental Management Act* any person who discharges an air contaminant as a result of any of the following:

(a) open burning of more than two burn piles concurrently on a parcel of land;

(b) open burning without use of an air curtain incinerator of a burn pile that has dimensions that exceed either 2 metres in height or 3 metres in width;

(c) open burning of vegetative debris that originates from a different parcel of land, except from a flood management ditch;

(d) open burning of vegetative debris that originates from a location that is more than 5 kilometres away from the location of the open burning;

(e) open burning at a dry land sort;

(f) open burning at a facility that manufactures wood products, other than whole logs for export or whole logs for further manufacturing by another facility.

12. Nothing in this Emission Regulation authorizes open burning that is

(a) prohibited by a ban on igniting open burns imposed by

i. a fire department, as defined in the *Fire Services Act*, RSBC 1996, c. 144,

ii. a local government, or

iii. an improvement district, as defined in the *Local Government Act,* RSBC 2015, c. 1, or

(b) contrary to the *Wildfire Act,* SBC 2004, c. 31 or any other enactment.

Part 2 – Registration

13. Every person who discharges, causes, permits, or allows the discharge of an air contaminant into the environment from open burning on a parcel of land located within the regional district, must:

(a) register the parcel of land by providing all of the following information in the prescribed form to the district director:
   i. owner and operator name(s);
   ii. owner and operator contact information;
   iii. address for the parcel of land; and

(b) pay the initial registration or annual renewal fees, as prescribed in Schedule A.

Part 3 – Before Conducting Open Burning

14. Every person conducting open burning must notify Metro Vancouver by email at regulationenforcement@metrovancouver.org or by phone on 604-436-6777 no less than 24 hours before the open burning is planned to start.

15. Every person must, no later than 24 hours in advance of the start of open burning, give notification of the location of the open burning to the occupants of every residence, place of work, school, hospital, or community care facility within 500 metres of the location of the open burning, including to persons who manage the school, hospital, or community care facility, as applicable.

16. Every person must reduce, reuse, or recycle vegetative debris where possible, to minimize the amount of material to be open burned.

Part 4 – General Requirements for Open Burning

17. Every person must, on a day of open burning, and before open burning starts, obtain the ventilation index.

18. No person may start open burning, or continue open burning on a second day of open burning, except if:

(a) the ventilation index for the afternoon of each day of the open burning is "good", or

(b) the person conducting the open burning uses an air curtain incinerator in accordance with Part 7.

19. Every person must put vegetative debris for open burning into burn piles, and may concurrently burn no more than two burn piles per registered site, except if the open burning is subject to additional restrictions, as provided in section 26, or if the person conducting the open burning uses an air curtain incinerator in accordance with Part 7.

20. Each burn pile's dimensions must not exceed either 2 metres in height or 3 metres in width, except if the person conducting the open burning uses an air curtain incinerator in accordance with Part 7.

21. Every person must minimize the amount of smoke emitted by the open burning by:

(a) minimizing any soil content that may be mixed in with the vegetative debris,

(b) constructing each burn pile in a way that maximizes the air flow through the vegetative debris in the burn pile, and

(c) ensuring the vegetative debris is seasoned before open burning.

22. No person may start open burning if local atmospheric conditions are likely to cause the smoke emitted by the open burning to:

(a) negatively impact a nearby population, or

(b) be a navigation hazard at an airport or on a highway, by reducing visibility.

23. No person may add vegetative debris to ignited burn piles if smoke emitted by the open burning:

(a) negatively impacts a nearby population, or

(b) reduces visibility so as to cause a navigation hazard at an airport or on a highway.

24. Every person must, immediately upon the request of the district director or officer, provide proof of identity and any other information the district director or officer deems necessary to ensure compliance with this Emission Regulation.

Part 5 – Minimum Distances and Additional Restrictions

25. Open burning must be:

(a) at least 100 metres from any building that is a neighbouring residence or place of work, and

(b) at least 500 metres from the nearest property line of a hospital, school, or community care facility.

26. Every person conducting open burning in a location that is between 100 metres and 500 metres of any building that is a neighbouring residence or place of work, or between 500 metres and 1000 metres of the property line of a hospital, school, or community care facility, must meet all of the following additional restrictions for open burning:

(a) the vegetative debris must be in a single burn pile of which the largest horizontal dimension is not greater than twice the height;

(b) the vegetative debris must not include any stumps, and individual pieces must all be less than 10 centimetres in diameter;

(c) the open burning must be completed within one calendar day.

27. Despite section 26, every person conducting open burning using an air curtain incinerator in accordance with Part 7 is exempt from the additional restrictions listed in section 26.

Part 6 – Frequency and Duration of Open Burning

28. No person may conduct open burning on a parcel of land of any size in Metro Vancouver more than:

(a) 12 days or portions of days in any calendar year, or

(b) 6 days or portions of days in each calendar month.

29. No person may start open burning earlier than one hour after sunrise.

30. Except if using an air curtain incinerator under Part 7, every person must end open burning:

(a) by the later of 4 p.m. or two hours before sunset, on the day the open burning is started, if the open burning is required to be completed in one calendar day, or

(b) by 4 p.m. on the second day of open burning, in every other case.

Part 7 – Using Air Curtain Incinerators

31. The opacity of emissions from an air curtain incinerator used in open burning must not exceed 40% during the 30-minute period following the start of the open burning and must not exceed 15% for more than 5 consecutive minutes during any other 30-minute period during the open burning.

32. A person must not stack vegetative debris in an air curtain incinerator above the air outlet of the air curtain incinerator.

33. The blowers of all in-use air curtain incinerators must operate continuously until combustion of the vegetative debris has ceased or all of the vegetative debris in the air curtain incinerator is reduced to ash.

34. Every person conducting open burning using an air curtain incinerator must operate it in accordance with the manufacturer's recommendations.

35. Every person conducting open burning using an air curtain incinerator must keep a copy of the manufacturer's recommendations on the site of the open burning for the duration of the open burning.

36. A person conducting open burning using an air curtain incinerator must not add vegetative debris to any ignited air curtain incinerator except during the period that starts one hour after sunrise and ends at sunset.

37. Despite section 18(a) [*which provides that the ventilation index must be "good"*], every person conducting open burning using an air curtain incinerator in accordance with this Part may start open burning if the ventilation index for the afternoon of the open burning is either "good" or "fair".

Part 8 – Plans for Community Wildfire Risk Reduction

38. Every person conducting open burning under a plan for community wildfire risk reduction in accordance with this Part 8 is exempt from Part 5 and section 31 of this Emission Regulation.

39. Every person intending to conduct open burning for community wildfire risk reduction must submit to the district director, at least 10 days and not more than 90 days before starting the open burning:

(a) a plan for community wildfire risk reduction, in which open burning is identified as an action, and

(b) a description of the location of the open burning.

40. Every person conducting open burning under a plan for community wildfire risk reduction must, no later than 24 hours in advance of the start of the open burning, give notification of the location of the open burning to the occupants of every residence, place of work, school, hospital, or community care facility within 150 metres of the location of the open burning, including to persons who manage the school, hospital, or community care facility, as applicable.

41. Despite section 18(a) [*which provides that the ventilation index must be "good"*], every person conducting open burning under a plan for community wildfire risk reduction may start open burning if the ventilation index for the afternoon of the open burning is either "good" or "fair".

42. Open burning under a plan for community wildfire risk reduction must be:

(a) at least 50 metres from any building that is a neighbouring residence or place of work, and

(b) at least 100 metres from the nearest property line of a hospital, school or community care facility.

43. Every person conducting open burning under a plan for community wildfire risk reduction must attend the open burn at all times.

44. Open burning under a plan for community wildfire risk reduction must be completed within one calendar day.

45. Every person conducting open burning under a plan for community wildfire risk reduction in accordance with this Part is exempt from Parts 2, 3, 5, 6, 7 and 11 and sections 17 through 22, 40 through 42, and 58 of this Emission Regulation, if:

(a) the open burning is on a parcel of land that can only be accessed by water, and

(b) all individual pieces of the vegetative debris are less than 10 centimetres in diameter.

Part 9 – Diseased Vegetative Debris

46. Every person conducting open burning to dispose of diseased vegetative debris in accordance with this Part 9 is exempt from Parts 2 and 5 and sections 15, 16, 18, 21(c), and 31, of this Emission Regulation.

47. Every person conducting open burning to dispose of diseased vegetative debris must, before starting open burning:

(a) provide written verification signed by a person registered under the *Professional Governance Act*, SBC 2018, c. 47 as an agrologist, a professional biologist, or a professional forester or registered forest technologist, that a pathogen or insect listed in Schedule 1 of the Open Burning Smoke Control Regulation, B.C. Reg. 152/2019 has infested the vegetative debris to the district director and obtain written confirmation from the district director before starting the open burn that a pathogen or insect listed in Schedule 1 of the Open Burning Smoke Control Regulation, B.C. Reg. 152/2019 has infested the vegetative debris and that open burning of the vegetative debris is necessary to stop the spread of the pathogen or insect; or

(b) obtain written confirmation from the district director that a pathogen or insect not listed in Schedule 1 of the Open Burning Smoke Control Regulation, B.C. Reg. 152/2019 has infested the vegetative debris and that open burning of the vegetative debris is necessary to stop the spread of the pathogen or insect.

48. Every person conducting open burning of diseased vegetative debris must notify the district director in writing at least 24 hours before the earliest planned date for starting the open burning.

49. Every person conducting open burning of diseased vegetative debris must complete the open burning within one calendar day.

50. Open burning to dispose of diseased vegetative debris must be:

(a) at least 50 metres from any building that is a neighbouring residence or place of work, and

(b) at least 100 metres from the nearest property line of a hospital, school or community care facility.

51. Burn piles used to dispose of diseased vegetative debris must contain a minimum of 50% diseased vegetative debris.

52. Despite section 59, every person conducting open burning under this Part 9 of diseased vegetative debris that is not seasoned must use an accelerant.

53. Despite section 18(a) [*which provides that the ventilation index must be "good"*], no person may start open burning to dispose of diseased vegetative debris under this Part 9, or continue open burning under this Part 9 on a second day, except if the ventilation index for the afternoon of each day of the open burning is either "good" or "fair".

Part 10 – Flood Management and Flood Emergencies

54. For every person conducting open burning for a domestic or an agricultural purpose to dispose of vegetative debris removed from a flood management ditch:

(a) if all vegetative debris disposed of is less than 3 centimetres in diameter, Parts 2 and 5 and sections 17, 18, 21(c), 28, and 31 of this Emission Regulation do not apply to the open burning, and

(b) if the open burning is conducted during a flooding emergency and if all vegetative debris disposed of is less than 10 centimetres in diameter, Parts 2 through 6 of this Emission Regulation do not apply to the open burning.

Part 11 – Record Retention

55. Every person conducting open burning must, for every open burn conducted and for a minimum period of one year from the start date of each open burn, keep all of the following records:

(a) Owner and operator name;
(b) Owner and operator address and contact information;
(c) Geographic location of the open burn;
(d) Actions taken to reduce, reuse, or recycle vegetative debris, and rationale for not taking action, if action not taken;
(e) Dates the vegetative debris was put into burn piles;
(f) Ventilation index for every day an open burn was conducted, if applicable;
(g) Date of every open burn, and each open burn's start and end time;
(h) Number of air curtain incinerators used;
(i) The volume of vegetative debris open burned if an air curtain incinerator is used;
(j) Whether or not open burning is for diseased vegetative debris, community wildfire risk protection, domestic, agricultural or commercial or industrial purposes;
(k) Burn registration number, if the person has a burn registration number issued under the BC Wildfire Regulation and an air curtain incinerator is used;
(l) Any decisions about substituted requirements made under Part 13 that applied to the open burning.

56. Every person who conducts open burning must ensure that the records referred to in section 55 are kept on site and available for inspection by an officer or the district director during the open burning.

57. Every person who conducts open burning must, within 48 hours of a request by the district director or an officer for records of open burning, submit the requested records to the district director or the officer, in the form and manner specified by the district director or officer.

Part 12 – Prohibited Materials

58. No person may burn salt-laden wood as fuel for open burning.

59. No person may use an accelerant for open burning.

Part 13 – Substituted Requirements

60. The district director may, on his or her own initiative, substitute a different requirement for a requirement contained in this Emission Regulation if the district director considers that, in the individual case:

(a) the substitution is necessary to protect the public or the environment, or

(b) the intent of the regulation will be met by the substitution.

61. The district director may make a substitution under section 60:

(a) for a specified period of time, and

(b) subject to the conditions the district director considers appropriate.

62. On making the decision to substitute a different requirement for a requirement contained in this regulation as set out in section 60, the district director must:

(a) serve a signed copy of his or her decision on the person to whom the substituted requirement applies by registered mail sent to the person's last known address, and

(b) publish the decision in a newspaper published in British Columbia and circulating in the area affected by the decision and including a newspaper that is free and that does not have subscribers.

63. The district director may, on his or her own initiative, cancel or amend a decision made under section 60 whenever, based on new information, the district director considers that:

(a) the cancellation or amendment is necessary to protect the public or the environment, or

(b) the intent of the regulation will be met by the cancellation or amendment.

Part 14 – Air Protection Measures

64. Despite any other provision of this Emission Regulation, a person must not act contrary to a prohibition issued under section 65.

65. The district director may, by public notice or written instruction or both, and for a period of time specified by the district director, prohibit open burning in an area

(a) if the district director considers that the amount of particulate matter in the air in the area has reached, or will reach within 24 hours, a level that is likely to result in the air quality in the area not meeting the ambient air quality objectives,

(b) if the district director considers that pollution is occurring, or likely to occur, from open burning.

66. A prohibition issued under section 65 may include one or more of the following requirements with respect to open burning in the Metro Vancouver region:

(a) all open burning must be extinguished;

(b) no vegetative debris may be ignited or added to ignited burn piles.

67. The district director may, by public notice or written instruction or both, repeal a prohibition issued under section 65, if:

(a) in the case of a prohibition issued under section 65(a), the district director considers that the amount of particulate matter in the air in the area no longer reaches, and will not reach within 24 hours, a level that is likely to result in the air quality in the area not meeting the ambient air quality objectives, or

(b) in the case of a prohibition issued under section 65(b), the district director considers that the pollution is no longer occurring, or no longer likely to occur, from open burning.

Part 15 – Offences

68. A person who provides false information in a registration application or other submission of information, or to an officer or the district director in response to a request to produce records or other information, commits an offence and is liable on conviction to a fine not exceeding $200,000.

69. A person who contravenes any provision of this Emission Regulation commits an offence and is liable on conviction to a fine not exceeding $200,000.

70. Nothing in this Emission Regulation limits the district director or the Metro Vancouver Regional District from utilizing any other remedy that would otherwise be available at law.

Part 16 – Severability

71. If any portion of this Regulation is deemed *ultra vires*, illegal, invalid, or unenforceable in any way in whole or in part by any court of competent jurisdiction, such decision will not be deemed to invalidate or void the remainder of the Emission Regulation. The parts so held to be *ultra vires*, illegal, invalid, or unenforceable must be deemed not to have been part of this Regulation from its adoption. The remainder of the Emission Regulation will have the same force and effect as if the parts that have been deemed ultra vires, illegal, invalid, or unenforceable had not been included in this Emission Regulation when it was adopted.

Read a first, second and third time this _____ day of _____, _____.

Passed and finally adopted this _____ day of _____, _____.

_____
Sav Dhaliwal, Chair

_____
Chris Plagnol, Corporate Officer

Schedule A

Registration Fees

Every person when registering a parcel of land for open burning must pay a Registration Fee based on the type of burn identified in Column 1 of Table 1, as follows:

1. For the initial 12 months of registration, the registration fee shown in Column 2 of Table 1, and
2. For any subsequent 12 months of registration, the renewal fee shown in Column 3 of Table 1.

Table 1 – Metro Vancouver Open Burning Registration Fees

Column 1 Type	Column 2 Initial Registration Fee	Column 3 Renewal Fee
Agricultural	$100	$50
Commercial	$250	$100
Residential	$50	$25
Wildfire risk management	$50	$25

MODUS

from insight to impact

ENGAGEMENT SUMMARY REPORT

METRO VANCOUVER, OPEN BURNING ENGAGEMENT

Prepared by: MODUS Planning, Design & Engagement Inc.
Version: 1.0
Date: 7 June 2022

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1 ENGAGEMENT OVERVIEW

1.1 INTRODUCTION

Metro Vancouver Regional District (operating as Metro Vancouver) is responsible for managing air quality in the region and regulating the discharge of air contaminants under authority delegated from the provincial government in the British Columbia *Environmental Management Act* (EMA). Metro Vancouver protects public health and the environment through a tiered approach of site-specific permits, sectoral emission regulations, and provisions in the *Greater Vancouver Regional District (GVRD) Air Quality Management Bylaw No. 1082, 2008* (Bylaw 1082) to manage the discharge of air contaminants. A system of permits and short-term approvals apply to individual facilities, and emission regulations generally apply to types of operations and activities with similar characteristics. Approvals are similar to permits, but are used in instances where discharges from a site are expected to be of short duration. Approvals for emissions from a particular site can only be issued for a cumulative period of up to 15 months (including any renewals).

The release of air contaminants from open burning in the Metro Vancouver region requires authorization by Metro Vancouver that aligns with the *BC Open Burning Smoke Control Regulation* (OBSCR). Metro Vancouver has explored alternative approaches to its current approach of approvals to regulate emissions from open burning. The proposed emission regulation would streamline authorizations for the regulated community and make it less resource-intensive for Metro Vancouver. Specifically, this emission regulation would reduce regulatory burden by providing ongoing authorization of open burning of vegetative debris more simply and efficiently than through site-specific approvals when specified requirements are met.

Between November 2019 and August 2020, Metro Vancouver began engagement with interested parties, other governments including First Nations, member jurisdictions, and the public to gather feedback on potential elements of a proposal for an emissions regulation to manage emissions from open burning. Following that initial round of engagement, Metro Vancouver made revisions based on the feedback received and launched a second round of engagement on a potential regulation between August 2021 and February 2022.

This report summarizes the engagement efforts and key findings from the second round of engagement

1.2 ENGAGEMENT OBJECTIVES

The objectives of Phase 2 engagement were to inform interested parties and the public about the revised proposals for regulating emissions from open burning activities and to receive feedback. The proposals were described in a discussion paper, which had the following purposes:

- Provide information about the environmental and health impacts of smoke emissions from open burning in Metro Vancouver;
- Describe proposals for a potential regulation to manage emissions from open burning of vegetative debris; and
- Support engagement and encourage feedback from affected and interested parties on proposals for a potential regulation to manage air emissions from open burning.

1.3 AUDIENCES

Staff identified the following audiences as being impacted or could have an interest in a potential emission regulation:

- Members of the public affected by emissions from open burning
- Persons who conduct open burning activities
- Businesses involved in land clearing, land development, construction, and landscaping
- Businesses providing services of collection, recycling, and processing of vegetative debris
- Forestry operations
- Consultants, manufacturers, and distributors of equipment that provide services for open burning activities, such as air emission control
- Manufacturers and distributors of equipment used to reduce the size of vegetative debris
- Agricultural producers and industry associations
- Local Indigenous communities
- Federal and Provincial agencies
- Metro Vancouver's member jurisdictions
- Agricultural advisory committees and associations
- Energy and utilities (i.e. Fortis BC, BC Hydro)
- Municipal fire departments
- Public health experts
- Other interested parties affected by potential regulatory proposals related to open burning activities or by air quality in the Metro Vancouver region

1.4 ENGAGEMENT ACTIVITIES

1.4.1 MEETINGS & PRESENTATIONS

AUDIENCE	DATE	PARTICIPANTS
Delta Agricultural Advisory Committee	August 31, 2021	14
Pitt Meadows Agricultural Advisory Committee	September 9, 2021	15
Lower Fraser Valley Air Quality Coordinating Committee	September 23, 2021	22
West Vancouver Fire Department	September 27, 2021	2
Surrey Fire Department	October 1, 2021	1
Metro Vancouver Agricultural Advisory Committee	October 4, 2021	18
Maple Ridge Agricultural Advisory Committee	October 4, 2021	10
Maple Ridge Fire Department	October 6, 2021	2
Township of Langley Fire Department	October 7, 2021	2
Bowen Island Fire and Municipal Bylaw Department	October 13, 2021	2

AUDIENCE	DATE	PARTICIPANTS
Ministry of Environment and Climate Change Strategy technical staff	October 14, 2021	3
Delta Fire Department	October 15, 2021	1
Richmond Fire Department	October 26, 2021	1
Sasamat Volunteer Fire Department	October 26, 2021	1
Township of Langley Agricultural Advisory and Economic Enhancement Committee	October 27, 2021	11
Richmond Food Security and Agricultural Advisory Committee	October 28, 2021	12
Township of Langley Recycling Coordinator	October 29, 2021	1
Ministry of Agriculture, Food, Fisheries technical staff	November 2, 2021	2
Surrey Agriculture, Environment and Investment Advisory Committee	November, 9, 2021	11
Bowyer Island Property Owners	November 24, 2021	5
Delta Farmers Institute	November 26, 2021	3
Kwantlen First Nation	November 30, 2021	3
Water Access Properties	December 7, 2021	23
Squamish Nation	March 22, 2022	3

1.4.2 WEBINARS

DATE	PARTICIPANTS
September 10, 2021, 11:00 am to 12:00 noon	4
Wednesday, September 29, 2021, 3:00 to 4:00 pm	4
Tuesday, October 5, 2021, 2:30 to 3:30 pm	6

1.5 SUPPORT AND PROMOTIONAL MATERIAL

To support consultation activities, Metro Vancouver created communication material to inform key audiences and members of the public about the potential regulation and to promote engagement events and other means for providing input.

1.5.1 GENERAL INFORMATION MATERIAL

To promote awareness of the potential emission regulation and share opportunities to provide input, Metro Vancouver created:

- Website: Content was posted to a project webpage on metrovancouver.org which provided information about the initiative, options for participating in engagement events, and tools to provide feedback or get more information.
- Discussion Paper: This document provided detailed information on the revised proposals for regulating emissions from open burning, the rationale for the changes, and alternatives to open burning. Links to the discussion paper were provided on the project webpage and in correspondence.

1.5.2 PROMOTIONAL MATERIAL

- Email list: Metro Vancouver has built up an audience database of 196 interested members of the public that have expressed an interest in issues related open burning. This list was supplemented by e-mail contact information for representatives from organizations and associations with a potential interest in the regulation of open burning. The combined list received six mailings requesting feedback on the potential regulation invitations to register for webinar engagement events. Two additional mailings were sent to the Electoral Area A email list.
- Feedback Form: An on-line feedback form was designed to get responses and feedback on the different aspects of the proposals while also allowing respondents to provide additional comments and raise concerns.
- Dedicated email address: An email address specifically for emission regulation development allowed comments and concerns to be sent to Metro Vancouver, and for more information to be requested. Phone contact information was also provided for this purpose.
- Social media: Posts on Facebook & Twitter notified readers of upcoming webinars and provided links to the online questionnaire.
- Advertisements: Advertisements were prepared and published in association and sector communications, including Country Life Magazine, BC Raspberry Growers Association, BC Grape Growers, Association of BC Forest Professionals, College of Applied Biology, and BC Institute of Agrologists, to promote the engagement process.
- Postcards: Postcards were sent out in late August 2021 to all agricultural postal codes in the region to promoting the engagement and availability of the feedback form. Another postcard was sent out to residents and property owners of water access communities in Metro Vancouver's Electoral Area A to promote participation in a Virtual Community Meeting.

1.6 FIRST NATIONS ENGAGEMENT

Letters, either hardcopy or emails, were sent to nine local First Nations to provide information about the potential regulation and to offer an opportunity to provide input on the revised proposals. The letters included the discussion paper which documented exemptions for cultural practices. Metro Vancouver offered meetings with staff to discuss how each Nation's history, perspectives and interests could be acknowledged in the potential regulation and to explore other opportunities to work together on regional emissions reduction initiatives.

Two First Nations requested additional information on the initiative and Metro Vancouver staff met with the two Nations separately to give a presentation on the proposals, answer questions, and gather feedback for consideration in the regulation development process. Questions asked revolved around the following topics:

- Clarifications about components of the proposals, including exemptions for different types of burning, and
- Environmental protection.

2 ENGAGEMENT FEEDBACK

2.1 SUMMARY OF FEEDBACK

The following section summarizes open-ended comments, concerns, and questions raised by participants through engagement activities, including webinars, correspondence, meetings, and an online feedback form.

Comments, concerns and questions fell into four broad categories:

Bylaw Proposal
While there was some support for the potential regulation and its benefits to population health, most of the responses expressed concern for the rigidity, feasibility and burden it may place on potential open-burning applicants. Concerns included the restrictions on burn times, materials, and weather conditions, feasibility of the notification process, site registration and record keeping requirements. Respondents suggested to make the requirements more flexible for specific geographies and local conditions. There were also requests for clarification over the specifics of the proposed emission regulation requirements, notification process, site registration and record keeping. Other responses sought clarification related to the geographic scope of the proposed regulation and the minimum distance requirements, and provided information for consideration with respect to these two aspects of the proposed regulation.

Legal Framework
Responses expressed confusion between the differences (and similarities) between municipal fire permits, Metro Vancouver's authorization process, provincial regulations, and the proposed Metro Vancouver regulation, and confusion of which jurisdiction has precedence. There was concern over the potential redundancies between these three regulating bodies (e.g. municipal fire departments, Metro Vancouver and the Province) while others felt that local fire permits and provincial regulations are sufficient to regulate air quality. Many expressed the need for coordination between municipal fire permits and Metro Vancouver authorization to ensure the process is more streamlined for applicants, fire departments, and Metro Vancouver. Another sub-theme within this category centred around enforcement, including questions around how the potential regulation would be enforced and by who.

Communications
Responses under this category were related to the project timeline and previous feedback received. Some expressed concerns around the authenticity of the engagement process, whether input will actually be considered in the final outcome. Others sought clarification about who attended webinars

and events related to the engagement processes, as well as the timelines for engagement. Some participants provided suggestions to engage with various audiences and experts, noted support for the process, and offered to share engagement materials through their social media channels.

Miscellaneous/Rationale
Comments in this category included requests for information on other air quality concerns related to smoke, such as wildfire smoke, campfires, wood burning stoves, and others. There was interest in using air curtain technology. General concerns were expressed by farmers feeling overregulated. Many comments wanted clarification on the implementation and enforcement protocol for the proposed regulation, and there were related concerns over the potential increases in staff time and effort from local fire departments to enforce.

Responses in this category also expressed concern related to the lack of alternatives to open burning for rural properties and farmers. The cost and availability of alternatives were the most common themes, leading to suggestions of providing subsidies and incentives for people wishing to consider alternatives to open burning, or allocating regulatory fees towards reducing the costs. There was interest in harvesting wood and stumps for bioenergy and biochar.

2.2 DETAILED FEEDBACK

BYLAW PROPOSAL

Burn Time Restrictions
Participants emphasized the importance of flexibility around burn times to account for local conditions and sudden events, such as storms and extreme wind events. In particular, there were concerns around a person's ability to conduct open burning to clean-up debris generated by storm and wind fall events. In addition, farmers expressed concerns that burn restrictions will lead to stockpiling, which could lead to unintended hazards and consequences such as spontaneous combustion, unwanted shade, and eyesores. As well, there are requests for information about how often open burning can be conducted and whether burn bans will be included in the proposed bylaw.

Restrictions on Materials
Participants, particularly from some water-access only properties, raised concerns around the restrictions on open burning of salt-laden wood and storm debris that impact the ability to clean-up from storm events. Participants also raised questions and concerns around designating diseased materials, including the cost of hiring a professional, as well as impacts on the ability to manage invasive species. Clarification is requested about how many open burns are conducted to deal with diseased vegetative debris, what constitutes salt-laden wood, if burn clusters are permitted, and proposed restrictions related to size of materials allowed to be burned, including stumps. It was suggested that Metro Vancouver maintain a list of pests and diseases that do not require director approval but only verification of the disease or pests, similar to OBSCR.

Proposed Scope
Feedback included requests for clarification around the difference between campfires, burning garden refuse and branches, and bonfires. There were also requests to distinguish between agricultural and backyard open burning through regulatory requirements. Additionally, there is clarification sought for considering the management of invasive species.

Proposed Notification Requirements
Participants raised questions and concerns around notifying neighbours. Clarifying questions covered defining a neighbour, whether notification would be online or on paper, and requirements for notification if weather conditions change. Feedback included concern that notification requirements are too onerous and impractical, particularly for remote properties. Suggestions included simplifying the process, providing an online advisory option, extending the 24-hour notice requirement, or providing an alternative notification system for part-time and remote residents. There was also support for notifying neighbours, with a suggestion to develop a fact sheet on the health impacts of short-term exposure to open-air burning.

Minimum Distance Requirements
Feedback included questions and concerns around defining sensitive receptors and sensitive populations and meeting the proposed minimum distance requirements from hospitals and schools. It was suggested Metro Vancouver reconsider the proposed conditions required to be eligible for reduced setbacks, and align with OBSCR, specifically with respect to seasoning vegetative debris and notification of neighbours. There were contrasting recommendations for more stringent minimum distances from residences to match the minimum distances proposed for sensitive receptors (e.g. hospitals, schools, childcare facilities, and long-term care facilities). Another recommendation suggests that the movement of material to be burned should be less than the proposed 5km, and a comment that the proposed requirements do not take into consideration burn safety near forests.

Record Keeping
Participants expressed concern that record keeping is too onerous, and raised questions related to the process of keeping and submitting records. There was a suggestion to increase the period records must be kept from one to three years in the event a complaint is made.

Seasonal/Weather Restrictions
There were concerns that local weather conditions vary significantly and so smoke dispersion conditions will not be captured by a regional advisory line. There were suggestions to consider a more localized venting index, to add a requirement to include wind direction, or to consider wind speed and direction, particularly when minimum distances are not able to be met.

Site Registration
There were challenges related to the proposed fees being too burdensome to residents and farmers, and that this may deter registration. Other feedback supported the proposed registration requirements and suggested increasing fees to prevent open burning. Responses also included questions requesting clarification about the proposed application process, and included comments about the ease of registration, and differences between commercial and residential sites for burn registration.

Exemptions
Participants posed requests for exemptions. These included for bonfires and campfires, water-access properties, local government, and Agricultural Land Reserve (ALR) land. It was suggested Metro Vancouver consider how the inclusion of agricultural debris that is normally exempt from OBSCR would increase the burden on farmers, and that more stringent conditions may essentially prohibit open burning on most farms in these areas.

Designated Professionals

Participants suggested to include the International Society of Arboriculture on the list of certified professionals.

Sectoral Concerns
There are concerns the proposed measures could create a significant barrier for farmers to effectively do their work, as well as financial implications.

LEGAL FRAMEWORK

Provincial and Municipal
There were questions requesting clarification about the difference between the potential regulation, Ministry of Forests fire bans, and municipal permitting processes, as well as how the potential regulation would apply to different types of land. Feedback indicated concern that the requirements are ill-suited to the practicalities managing vegetative debris on water-access and rural properties.

Fire Department Permits & Fire Safety
Participants raised questions around the difference and similarities between municipal fire permits, Metro Vancouver's authorizations, provincial regulations, and the potential regulation, including justification for the proposal. Some expressed the opinion that the existing municipal permit is sufficient and that the regional approval application process is challenging.

Current Metro Vancouver Requirements
There were questions seeking clarification about how the potential regulation fits with Metro Vancouver's Air Quality Management Bylaw and what it adds to existing requirements.

Smoke Sensitivity
Participants asked questions about provincial requirements, including exemptions for agricultural burns and High Smoke Sensitivity Zones.

Clarification
Feedback suggested to consider changing the activation of approval validity to start on the date of the first burn.

Enforcement & Compliance
Feedback suggested concern from municipal fire departments around enforcement, and questions related to responsibilities.

COMMUNICATIONS

Notification
There is request for notification when dispersion conditions allow burning.

Communications

There was concern about engagement materials and communications, as well as the requirements listed in the discussion paper, the content of the webinar presentation, and worry that early media attention is creating public confusion. Local fire departments generally expressed support for the process and suggested sharing communication materials.

Engagement Process
Feedback included questions around the project timeline, the authenticity of the consultation process, previous feedback received, and concern with the feedback form questions.

Audiences & Experts
Participants provided suggestions for Metro Vancouver to engage with various audiences and experts through the process.

Implementation
Participants encouraged public education around the proposed changes to reduce confusion and promote safe burning, rather than enforcement. There Is also suggestion to provide information on current burns, locations, dates, and timing for the public to check air quality.

MISCELLANEOUS/RATIONALE

Geographic Scope & Jurisdiction
Feedback suggests that there is concern Metro Vancouver is over-governing and over-regulating.

Site Registration
There is interest in how the fees will be used.

Support for Regulating Open Burning
Feedback suggests that open air burning should be prohibited. There is also suggestion that Metro Vancouver should regulate open air burning more strictly than the provincial Open Burning Smoke Control Regulation, particularly in populated areas, to reduce population exposure. Additionally, there is suggestion to disincentivize open burning by increasing fees.

Alternative Disposal Methods
Feedback suggests residents and farmers are concerned with the lack of alternatives to open burning available, and that alternatives often require the burning of fossil fuels, such as chippers and transfer to compost stations. There were suggestions to allocate regulatory fees towards the cost of alternatives, as well as some interest in harvesting wood and stumps for bioenergy and biochar. There is a high interest in promoting opportunities, education, and improving access to alternatives to open burning.

Fire Department Permits & Fire Safety
Feedback suggests that fire departments are interested in how and what information is shared to the community regarding fire safety alternatives to open burning, as well as processing times for approvals. Other comments indicate that fire risk management for water access properties is a high priority and require extensive measures, such as open burning, to control risks.

Air Quality Concerns

Comments included questions seeking clarification about and concerns around regional air quality, including the impact of cannabis, composting, wildfire smoke, and wood burning stoves.

Air Curtain Technology

There were questions about the function of an air curtain burner, as well as the local availability of air curtain technology. Comments provided support for the use of air curtain technology.

Clarification

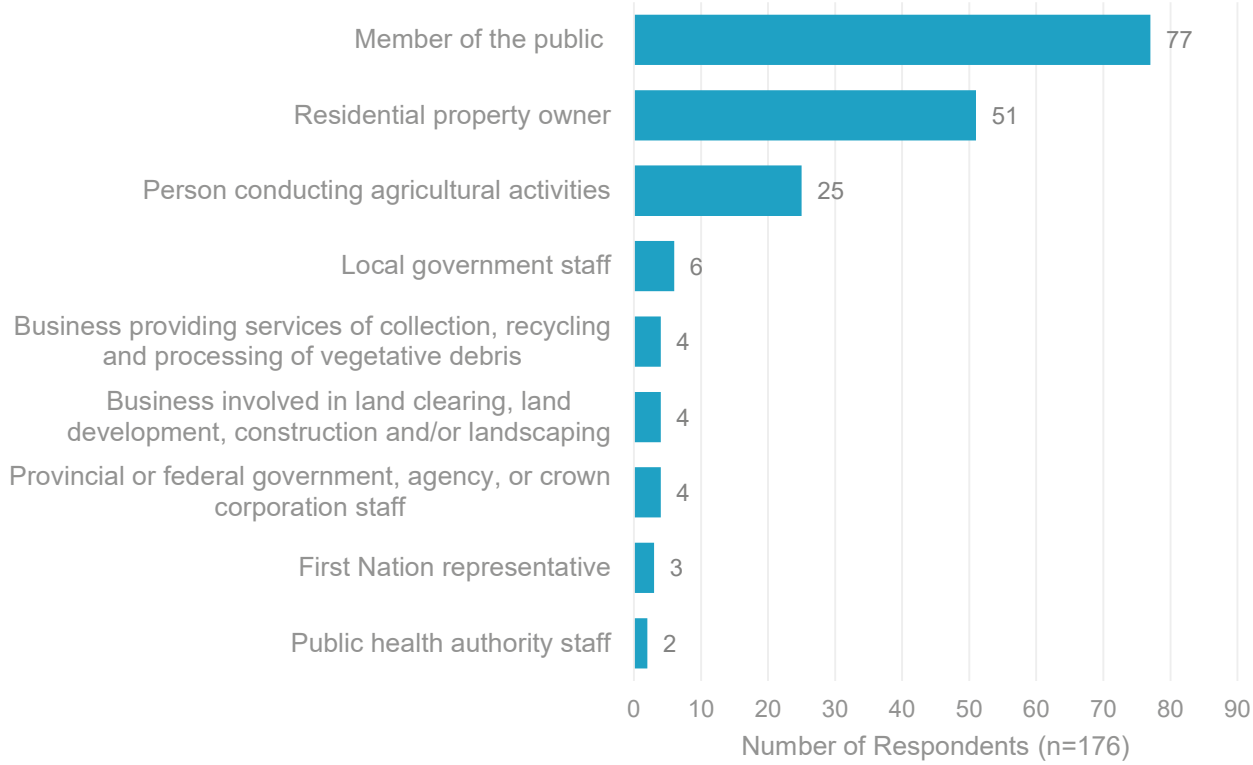
Participants raised questions around whether liability insurance is needed, if campfires are regulated, the regulatory framework for incinerating animal carcasses, and the burn permit length.

2.3 FEEDBACK FROM QUESTIONNAIRE

The following section describes the results from the public questionnaire.

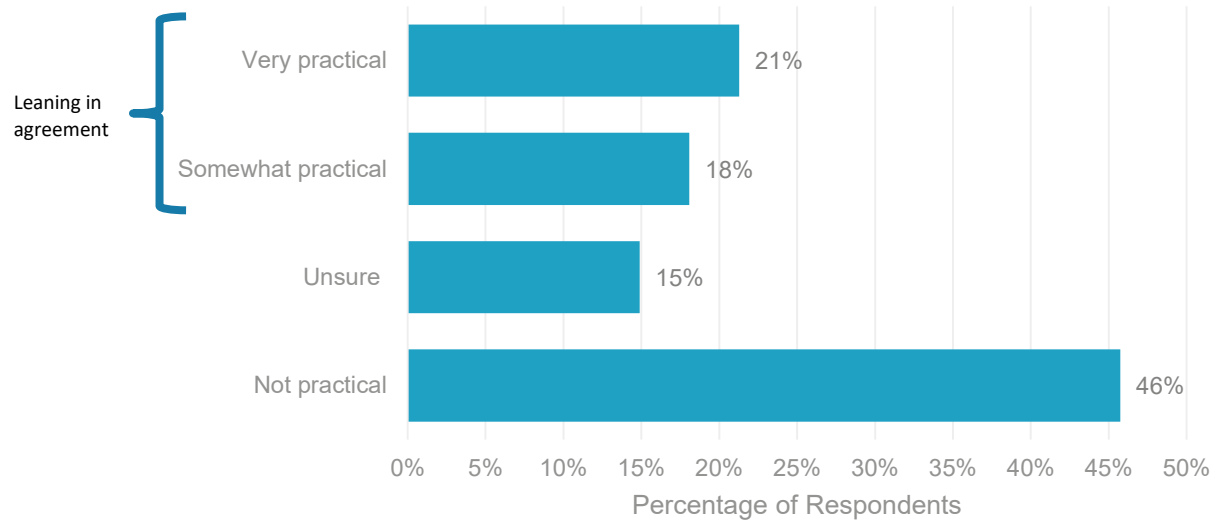
Which of the following best describes you? Select all that apply

Responses: 176



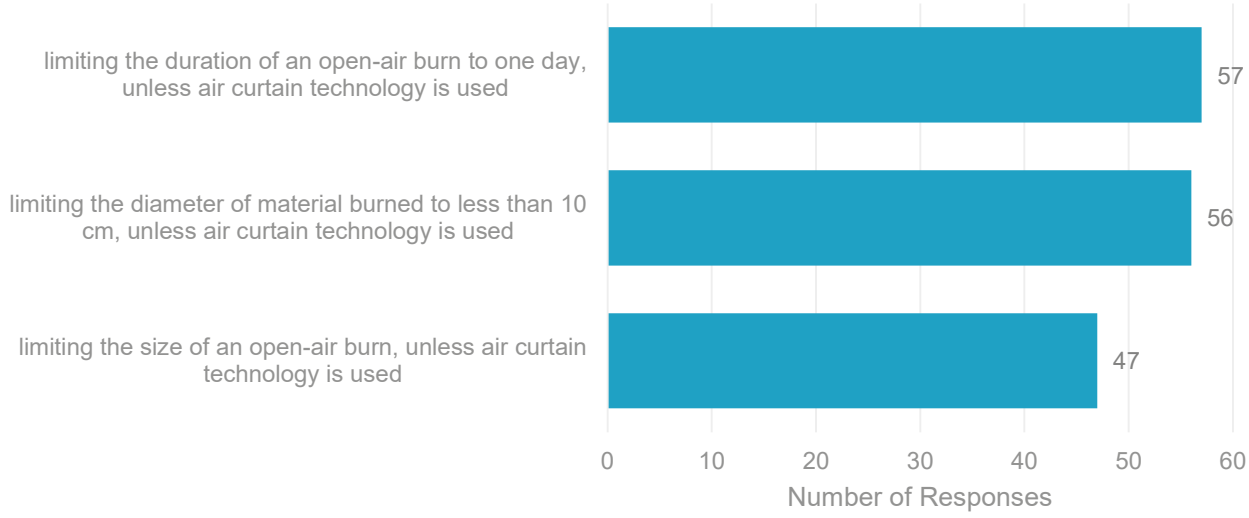
Is it practical to limit an open-air burn to material that is generated on the registered property and is within 5 km of its origin?

Responses: 94



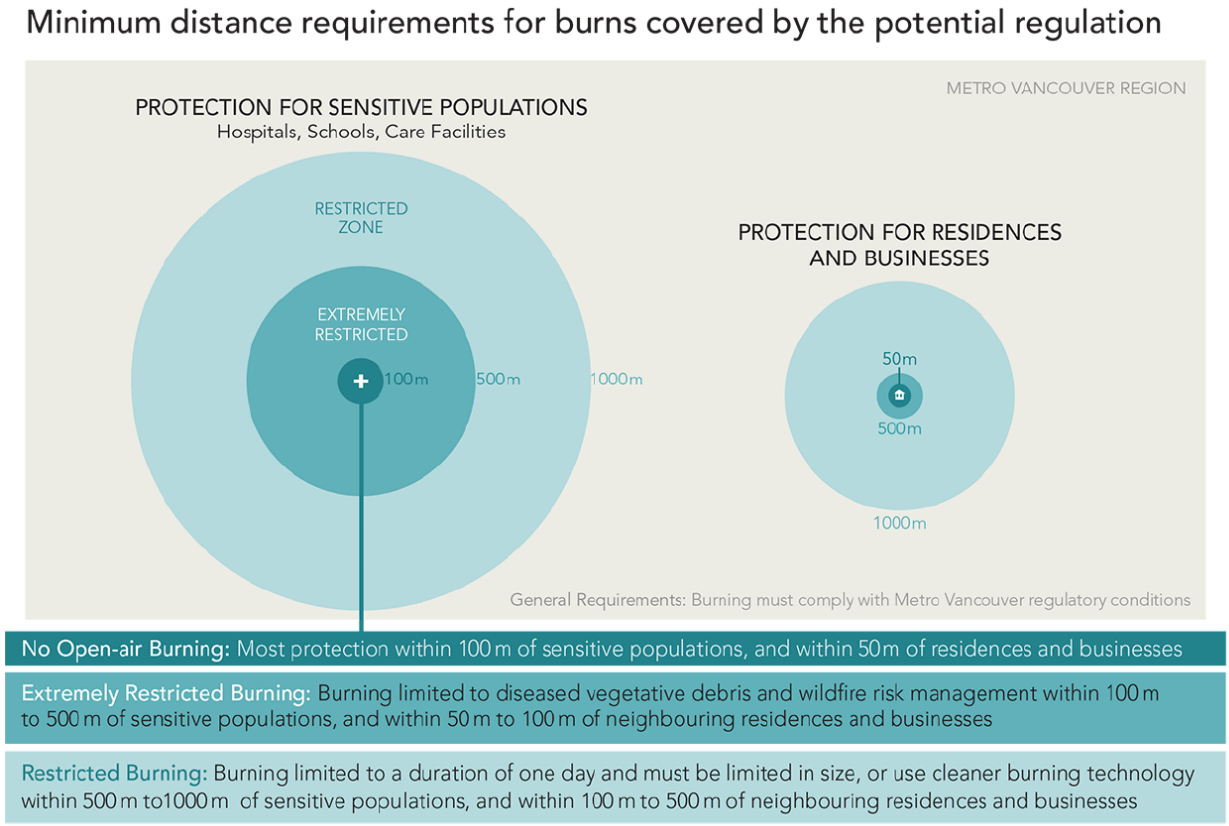
Which of the following additional restrictions (compared to OBSCR) are not practical for open-air burning that occurs within 100 m to 500 m of neighbouring residences and businesses and within 500 m to 1000 m of hospitals, schools and community care facilities? Select all that apply.

Responses: 77



Total number of responses: 160

Do you have any comments on the requirements that would apply at the minimum distances between various types of open-air burns and types of neighbouring properties shown in the figure below?



Support

Participants expressed support for the potential regulation. Some noted they are unable to open their windows or leave their homes in times of burning and would support a ban on open burning.

Alternatives

Some participants expressed support for the use of alternatives, particularly composting, although others noted this is more suitable for residential areas than rural properties. Some feedback expressed concern that alternatives present an additional cost to farmers, while others suggested commercial burns should be done in a facility to generate heat and electricity.

Existing process

Comments suggested that local fire permits and OBSCR are sufficient and that there is no need for additional policies. There were comments that the current process limits acreage properties' ability to maintain fire-safety.

Exemptions

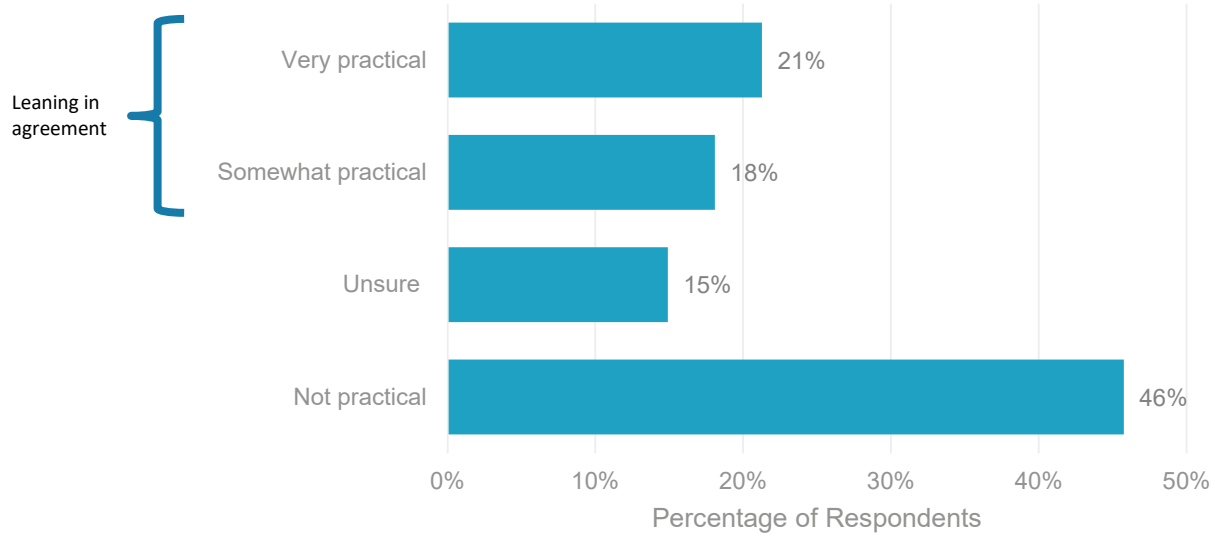
Requests for exemptions from the potential regulation include properties on ALR land, and water-access properties. There was also interest in allowing those that live near hospitals and schools to burn on other people's properties or when school is not in session.

Air quality
Comments expressed concern that wood burning stoves and wildfire smoke present a larger threat to regional air quality. There was a suggestion to provide a publicly available list of burns, as minimum distances do not account for transient daycare programming.

Other
Other comments included the importance of accounting for local weather conditions, difficulties in notifying neighbours for rural properties, and that the requirements are making it impractical for farms to burn. These are all comments that were only mentioned once.

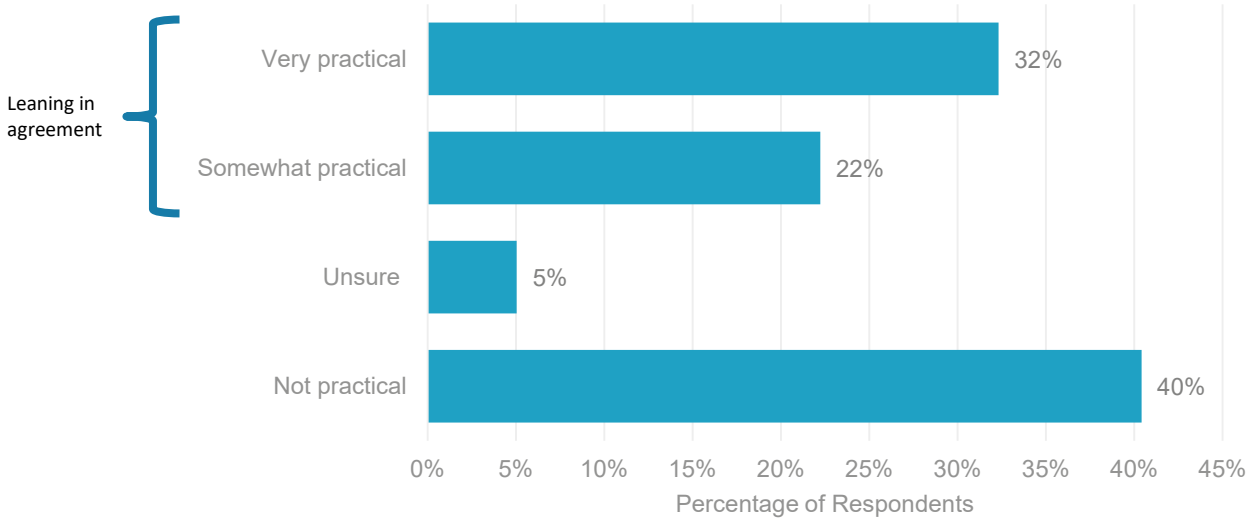
Is it practical to notify Metro Vancouver at least 24 hours in advance when using one or more air curtain burners?

Responses: 94



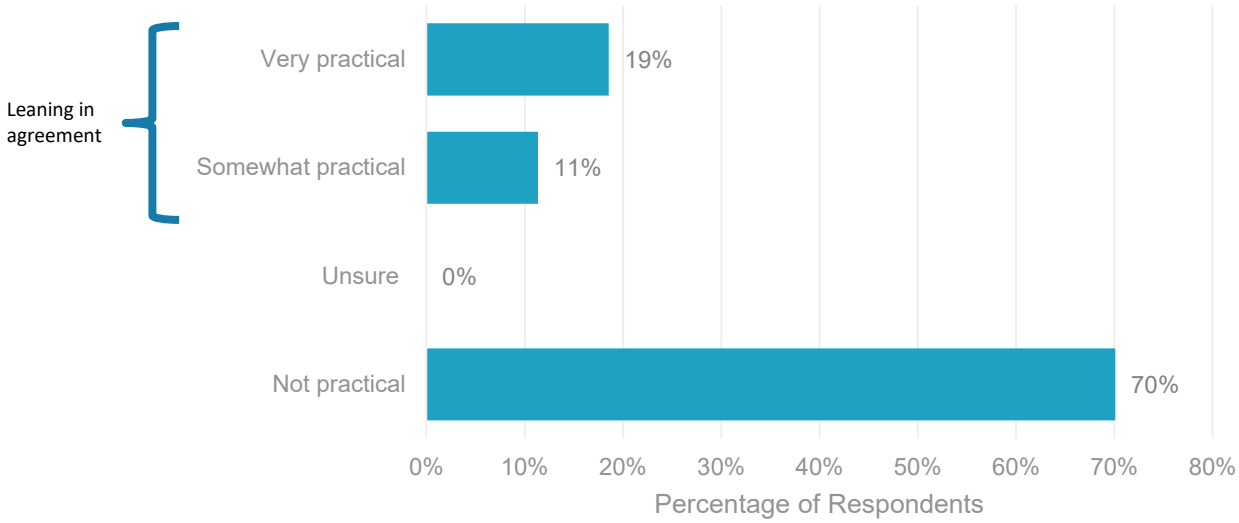
How practical is it for you to register the address of the property where open-air burning will occur, once per year?

Responses: 99



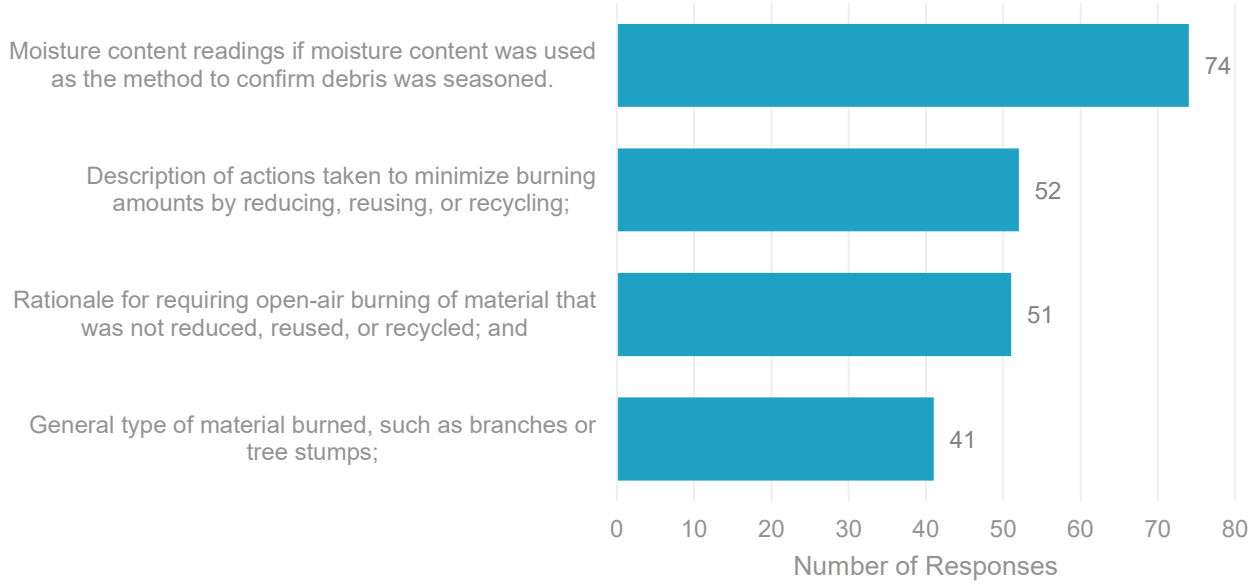
Before conducting a burn, how practical is it for you to notify your neighbours and Metro Vancouver at least 24 hours before burning?

Responses: 97



Under the proposed emission regulation, you would need to keep records for one year, except for short duration burns of pieces less than 3 cm in diameter. In addition to OBSCR record-keeping requirements, which of the following information required by the proposed Metro Vancouver regulation would ***not be practical*** *to keep? Select all that apply.*

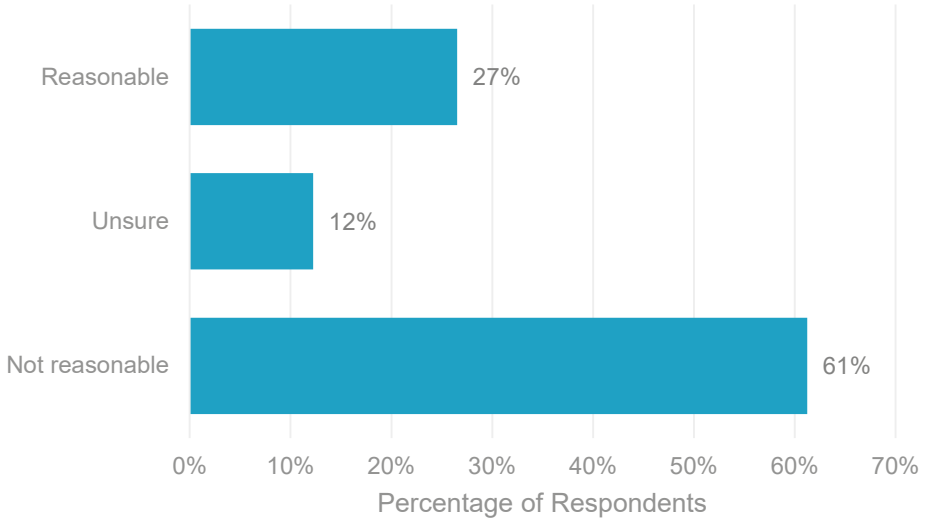
Responses: 81



Total Number of Responses: 218

Is an initial registration fee of $100 (Agricultural burns) or $250 (Non-agricultural burns) and a yearly renewal fee of $50 (Agricultural burns) or $100 (Non-agricultural burns) a reasonable cost to open-air burn?

Responses: 98



Do you have any additional comments on the proposed fees?

Existing process
Feedback included suggestions to use the existing local fire department permitting process. There were questions if the proposed fees are in addition to the local permitting process, and concerns that if so, this is a burden and not practical.

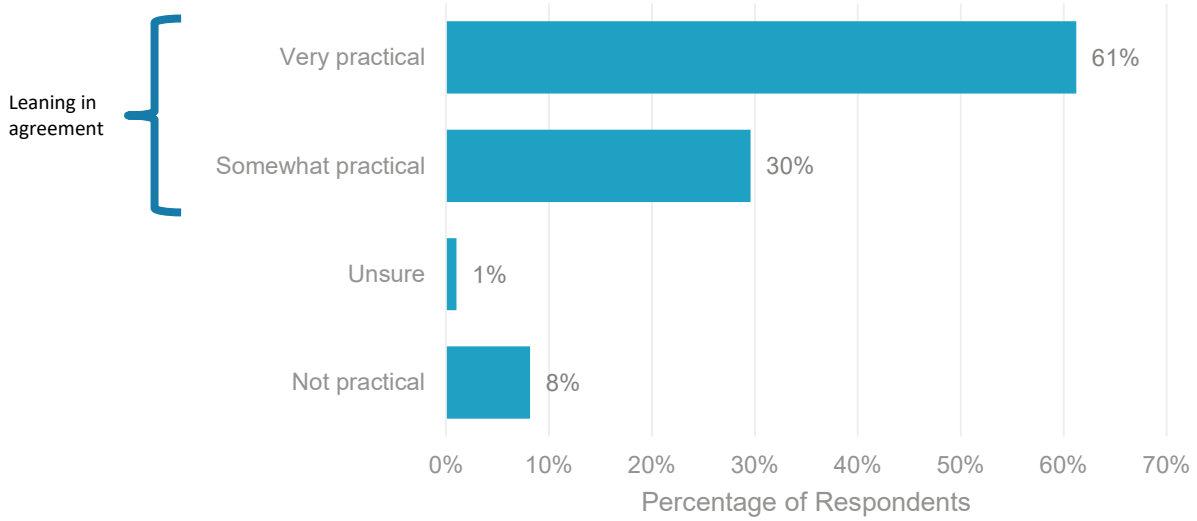
Too onerous
Comments suggested the proposed fees are too onerous for properties looking to clean up and control wildfire risk. There were concerns the fees are not affordable to those that need to burn, including small businesses and residents, as well as concern that the fees may create a deterrent to reporting. Water-access properties indicated there are no alternatives to open burning available, and thus fees to burn are unreasonable.

Overburden to farmers
There were suggestions to determine fees based on acreage, to exempt agricultural burns, as well as to only require one permit a year at no cost to farmers. There was concern the fees create an unnecessary cost to farmers and will increase the cost of food production.

Other
Some participants expressed support that increasing fees may disincentivize open burning, while others commented on the need to promote alternatives like mulching, compost, and bioenergy. There were questions around how the fees will be used, and a suggestion to ban open burning.

To reduce community wildfire risk, how practical is it to attend an open burn at all times while burning?

Responses: 98



Campfires (defined as small fires that involve burning wood in one pile not exceeding 60 cm high and 75 cm in the largest horizontal dimension for a maximum period of 5 hours) would be exempt from the potential regulation except the prohibition on burning salt-laden wood such as marine driftwood. Do you have any comments on this?

Support
Participants expressed support for the potential regulation, commenting that campfires are important for social gatherings and cooking.

Material Restrictions
Feedback included questions seeking clarification about the definition of salt-laden wood and why it would be restricted.

Geographic Scope
Participants commented that campfires are already restricted under municipal regulations and should only be allowed in Provincial campsites.

Concern
Feedback expressed concern with regulating beach fires and providing exemption for recreational open burning while restricting burns for agricultural producers.

Air quality
There were concerns with air quality, and suggestion to ban all open burning.

Additional Comments

Alternatives to Open Burning
Participants expressed support for the use of alternatives and suggested Metro Vancouver allocate money towards their availability rather than on regulation. Specifically, participants suggested promoting bioenergy, waiving green waste disposal fees for agricultural properties, and a local rental for air curtain technology.

Support
Participants expressed support for regulating open burning and gratitude for the opportunity to provide feedback.

Existing Process
Feedback suggested that existing processes, including local fire department permits and OBSCR are sufficient to regulate open burning and air quality.

Fees & Registration
Feedback suggested the proposed fees are too high for small farm operations and rural property owners. There were questions about whether fees would be in addition to local fire department permits. Farmers expressed concern the registration process will be too burdensome. Others suggested the application process should be streamlined with existing local government processes.

Notification
Participants expressed concern that notification requirements are too onerous, particularly for rural and part-time properties. Some suggested the requirements are a better fit for properties close to the urban containment boundary, and others raised challenges with the 24hr notice, stating it is difficult to predict weather conditions.

Requests for Exemption
Participants requested exemptions for farms in the ALR as they are far from other residences, vacation homes on remote sites to promote fire safety, and water access properties as the potential regulation do not fit the local context.

Other
Other feedback included the need to consider wind direction, to provide different regulations for different areas in Metro Vancouver, concern that the material size restrictions are not appropriate for the clean-up for windfall material, and support for record keeping.

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Climate Action Committee

From: Amy Thai, Senior Policy Analyst
Parks and Environment Department

Date: June 13, 2022 Meeting Date: July 8, 2022

Subject: **Air Quality and Climate Action Initiatives in Caring for the Air 2022**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated June 13, 2022, titled "Air Quality and Climate Action Initiatives in *Caring for the Air* 2022".

EXECUTIVE SUMMARY

Caring for the Air is Metro Vancouver's annual plain language publication on regional climate action and air quality initiatives. The 2022 edition showcases innovative solutions to air quality and climate challenges, and describes projects supported by Metro Vancouver's Sustainability Innovation Fund and the University of British Columbia's Sustainability Scholar program. Whereas previous editions of *Caring for the Air* focused on the development of climate and air quality plans such as the *Climate 2050 Roadmaps* and *Clean Air Plan*, this year's edition shifts the focus to how Metro Vancouver will implement actions outlined in those plans, which will be critical for meeting Board-adopted climate action and clean air targets.

A strong social media promotion of last year's 10th anniversary edition (*Caring for the Air* 2021) reached more than twice as many people as the 2020 promotion. A new online format that allowed staff to track the number of views for individual articles, rather than the entire publication, provided insight on which articles were the most popular.

PURPOSE

To present the 2022 edition of the annual *Caring for the Air* publication and provide information about outreach conducted for the 2021 edition to raise awareness about climate change and air quality initiatives in the Lower Fraser Valley airshed.

BACKGROUND

The *Metro Vancouver Board Strategic Plan* strongly emphasizes taking leadership on climate action through *Climate 2050*, and improving air quality by mitigating threats to public health and the environment. *Caring for the Air* has been published annually since 2012, and is Metro Vancouver's key branding document that promotes awareness of climate action and air quality initiatives. Written in plain language, it describes actions being taken by Metro Vancouver and partner agencies as well as activities that individuals can carry out to reduce greenhouse gas emissions, protect against the effects of climate change, improve air quality, and protect public health. Each edition of *Caring for the Air* also summarizes the previous year's air quality measurements and compares the data to applicable objectives.

The Climate Action Committee 2022 Work Plan identifies the development of the 11th annual *Caring for the Air* as a priority for the second quarter of the year.

INSIDE *CARING FOR THE AIR* 2022

Caring for the Air 2022 focuses on innovative solutions that support Metro Vancouver's commitment to a carbon neutral region as well as to improve and protect regional air quality. Previous editions highlighted the development of Metro Vancouver's climate and air quality strategies and plans, such as the *Climate 2050 Roadmaps* and the *Clean Air Plan*. The 2022 edition now shifts the focus from the development of these plans to how Metro Vancouver will implement them.

The 2022 edition summarizes some of Metro Vancouver's recent Sustainability Innovation Fund projects that use novel approaches and technologies to tackle air quality and climate change issues. *Caring for the Air* 2022 also describes Metro Vancouver's participation in the University of British Columbia's Sustainability Scholar internship program, which demonstrates the importance of collaborating with youth and other organizations to reach shared climate goals.

This year's edition also examines how climate change can influence extreme weather events that can lead to degraded air quality, such as the heat dome in 2021, and how residents can protect themselves from wildfire smoke.

Other topics in *Caring for the Air* 2022 include:

- Guidance on how to follow residential indoor wood burning requirements in Metro Vancouver.
- Updates on the development of bylaws for open-air burning and cannabis.
- Changes to air contaminant fees for industrial facilities and the non-road diesel engine emission regulation.
- A pilot project that investigates how to integrate small air quality sensors into Metro Vancouver's air monitoring network.
- Updates on the development of the *Climate 2050* roadmaps and highlights from the finalized roadmaps on buildings and transportation.
- Results from Metro Vancouver's first consumption-based emissions inventory, assessing embodied GHG emissions.
- A summary of air quality data for 2021 and trends in key air contaminant levels since 2008.

Caring for the Air 2022 will be promoted through traditional media, social media, at relevant events, and through other agencies and organizations.

DISTRIBUTION AND PROMOTION OF *CARING FOR THE AIR* 2021

For last year's edition (*Caring for the Air* 2021), a social media promotion, including promoted posts via Metro Vancouver's Facebook channel and organic posts via Twitter, LinkedIn, and Instagram, was used to reach out to potential audiences between May and December 2021. Posts highlighted the range of topics covered by articles in the publication and provided links to the online version of *Caring for the Air* 2021. Analytics indicate that *Caring for the Air* social media posts reached over 29,000 people, resulting in over 2,000 clicks through to the newly created online version of the publication. The new online format allowed individual articles to be shared on social media, and in total, the new

online format resulted in over 2,700 page views to the various articles in the publication. The most popular articles in the online version were 'A Decade of Caring for the Air', 'Opening the Door to Greener Condos and Townhouses', and 'How the Air Quality Health Index Can Protect You'.

As 2021 was the 10th anniversary of *Caring for the Air*, staff also created a promotional video featuring interviews with Metro Vancouver representatives and testimonials from air quality and health professionals on how *Caring for the Air* supports and encourages residents to protect our air quality and climate. The video received over 1,600 views through various online platforms.

A link to the online version was also sent to a *Caring for the Air* email list, with over 500 subscribers, and to the Northwest Air Quality Communicators mailing list, which includes air quality organization representatives in western Canada and the United States. Copies of *Caring for the Air* 2021 were circulated to municipal offices and libraries in the region, and additional copies were provided on request. About 2,600 rack cards highlighting the purpose and content of *Caring for the Air* 2021 were distributed to community centres and health units in the region. Copies of *Caring for the Air* 2021 were also made available at the Metro Vancouver Information Centre and library. At the time of writing, there have been over 440 views of the static (pdf) electronic version of *Caring for the Air* 2021.

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

FINANCIAL IMPLICATIONS
Caring for the Air 2022 describes projects and programs that were undertaken within approved budgets and work plans or funded through the Regional District Sustainability Innovation Fund. The report also provides information about work relevant to Metro Vancouver's air quality and climate action interests that were conducted by and entirely the responsibility of external organizations, supported by their own resources.

CONCLUSION
Caring for the Air makes information about Metro Vancouver's climate change and air quality initiatives accessible to a wide range of readers. It helps to increase public understanding of air quality and climate change issues and encourage public engagement and personal actions. *Caring for the Air* complements other outreach activities and publications, such as the *State of the Air* report produced by the BC Lung Foundation, which describes air quality programs throughout British Columbia, and Metro Vancouver's annual technical air quality monitoring report, the *Lower Fraser Valley Air Quality Monitoring Report*.

Attachment
Caring for the Air 2022

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Caring for the Air 2022

In this issue

Innovative solutions to climate challenges

Extreme weather and air quality

Roadmaps to carbon neutral transportation and zero emissions buildings

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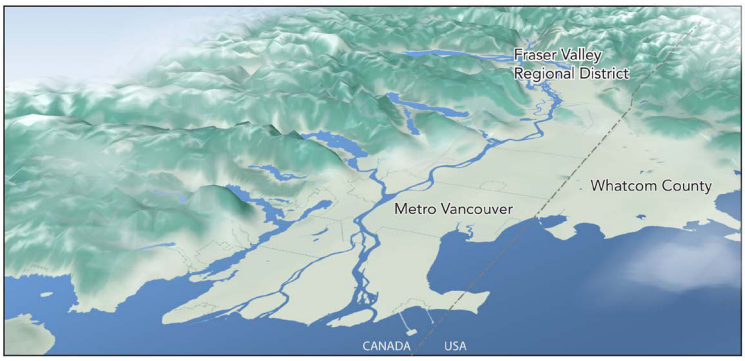


The Lower Fraser Valley Airshed

Air pollutants can travel between Metro Vancouver and surrounding areas. Managing air quality successfully requires effective collaboration with our neighbours and other levels of government, and participation from businesses, public institutions, non-government organizations, and residents. Articles in this publication reflect this cooperation.

Message from the Chairs

Last year's *Caring for the Air* celebrated our 10th edition. This year marks another anniversary – 50 years of the air quality service in the Metro Vancouver region. The air quality program has evolved over 50 years, always striving for an evidence-based approach to assessing regional air quality, tracking the success of our programs, and identifying new priorities, all while responding to new challenges.

Clean air continues to be a key priority in making our region such a desirable place to live, work, and play. One of the common threads over 50 years has been collaboration, and we acknowledge our member jurisdictions, regional, First Nation, and provincial staff and partners who work with us to keep our air clean and to respond to the climate change challenge.

2021 demonstrated that climate change impacts are increasing in severity, and highlighted the urgency for action. Over 140 days, we saw a dramatic shift from droughts and a heat dome — with associated impacts in the form of wildfires and smoke, ground-level ozone concentrations not seen since the 1980s, and devastating health and infrastructure impacts — to an atmospheric river event and significant flooding.

In this year's edition, you will read about ongoing actions to respond to climate change and continue to improve regional air quality, including implementation of the *Clean Air Plan* and the *Climate 2050 Roadmaps*, and how we build innovation into our programs and policies.

Sav Dhaliwal
Chair, Metro Vancouver Board

Adriane Carr
Chair, Metro Vancouver Climate Action Committee

Climate Action Committee Membership:

Carr, Adriane (C) – Vancouver
Dhaliwal, Sav (VC) – Burnaby
Arnason, Petrina – Langley Township
Baird, Ken – Tsawwassen First Nation
Dupont, Laura – Port Coquitlam
Hocking, David – Bowen Island
Kruger, Dylan – Delta
McCutcheon, Jen – Electoral Area A
McIlroy, Jessica – North Vancouver City
McLaughlin, Ron – Lions Bay
Patton, Allison – Surrey
Royer, Zoë – Port Moody
Steves, Harold – Richmond
Wilson, Chris – Coquitlam
Yousef, Ahmed – Maple Ridge

Metro Vancouver acknowledges that the region's residents live, work, and learn on the shared territories of many Indigenous peoples, including 10 local First Nations: Katzie, Kwantlen, Kwikwetlem, Matsqui, Musqueam, Qayqayt, Semiahmoo, Squamish, Tsawwassen, and Tsleil-Waututh.

Metro Vancouver respects the diverse and distinct histories, languages, and cultures of First Nations, Métis, and Inuit, which collectively enrich our lives and the region.

Clean Air Plan: Making Big Moves to Reduce Emissions

In 2021, the Metro Vancouver Board approved the *Clean Air Plan*, which includes actions to reduce regional greenhouse gas (GHG) emissions and yield air quality health benefits estimated at up to $1.6 billion. This plan is strongly linked to Metro Vancouver's *Climate 2050 Strategy*: both plans aim to reduce GHG emissions, while the *Clean Air Plan* also focuses on improving day to day air quality.

Metro Vancouver and member jurisdictions have been improving and protecting the region's air quality and climate for decades, and staff are now accelerating actions to meet the aggressive emission targets laid out in the *Clean Air Plan*. There are major impacts to inaction: extreme weather is already becoming more frequent and intense with rising global temperatures. In 2021, wildfires, record-breaking heatwaves, rainfall, and flooding demonstrated that climate change is happening here and now, with potentially catastrophic effects.

So how can we ensure that we are doing our part to reduce global emissions and the potential impacts of climate change? First, we need to work together. The *Clean Air Plan* was strengthened with public feedback and equity is key to the plan's success. This spirit of collaboration, with residents, businesses, and other governments, must continue as we implement actions to reach our targets.

The *Clean Air Plan* is organized around six topics, such as transportation, industry, and buildings. Each topic contains "Big Moves" that are the foundational actions needed to support significant emission reductions.

Some of the Big Moves that would be led by Metro Vancouver include:

Develop GHG performance standards for buildings: Existing buildings would need to meet GHG emission performance targets, which would reach zero carbon emissions before 2050.

Develop emission requirements for passenger vehicles: Requirements could include low or zero emission zones or a vehicle emissions levy with rebates for replacing older vehicles.

Integrate GHGs into regulations and permits: Current air emission regulations and permits address air contaminants only. Adding limits or fees for GHGs could encourage industrial facilities to consider transitioning to cleaner energy.

Now is the time for everyone to do their part to keep our air clean and reduce our contribution to global climate change.

Extreme Weather Brings the Effects of Climate Change to Metro Vancouver

The heat dome, wildfire smoke, and floods experienced in Metro Vancouver in 2021 show that climate change is already impacting our lives. These extreme weather events emphasize the need for action now to reduce emissions and increase resilience in the coming years.

Air quality in the region has been severely degraded by wildfire smoke in five of the last seven summers. The unprecedented heat dome in June 2021 was associated with 740 excess deaths across BC and triggered an early start to an extremely active wildfire season, especially in the BC Interior. The heat dome also set temperature records across BC and exceeded what some climate models are projecting for 2050, such as the number of days with overnight temperatures above 20°C.

As a result of the heat, ground-level ozone concentrations reached levels not recorded since the late 1980s, despite programs and regulations implemented over the last two decades to reduce air contaminants that form ground-level ozone. This shows how extreme weather can erode emission reductions already realized. High ground-level ozone concentrations also add another health threat during already dangerous heat waves.

Experts predict that the Metro Vancouver region will continue to experience increases in both the severity and frequency of extreme weather events in the coming decades. These could range from more intense atmospheric rivers, like the one experienced in November 2021 which led to catastrophic flooding and landslides, to drier and hotter conditions leading to more wildfires and air quality impacts.

Although significant progress has been made over the last few decades to reduce regional air contaminant emissions, more aggressive action is required. The high ozone concentrations experienced in June show how extreme weather associated with climate change can compromise decades of progress, so we must continue to adapt and find innovative solutions as threats emerge.

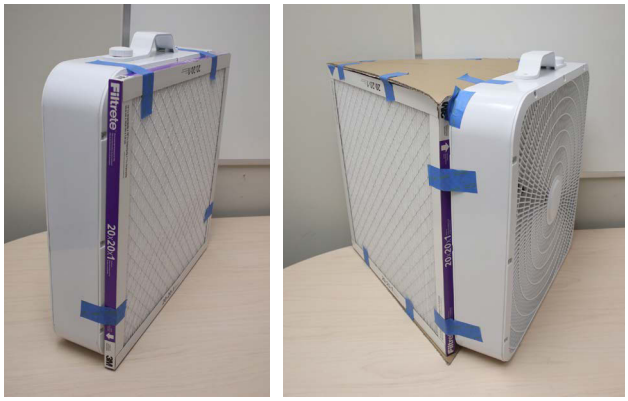
Read more about climate actions in Metro Vancouver's *Climate 2050 Roadmaps* on pages 12 to 15 and how Metro Vancouver supports innovative projects on pages 5 to 7.

Preparing for Wildfire Smoke Season

Wildfire smoke can impact your health, especially if you have asthma, chronic obstructive pulmonary disease, or other underlying conditions. You can minimize your health risk by preparing for smoke before it arrives.

Some people are more likely to experience health effects from smoke exposure than others. Anyone who has a disease with a management plan should speak with their doctor about adapting it for smoky conditions. People who use rescue medications such as inhalers should ensure they have an ample supply in the summer, particularly when traveling.

Think about how best to limit the amount of smoke that gets into your home or bedroom. Tips include keeping windows closed and running forced air systems to recirculate air indoors. Consider purchasing a portable air cleaner or building a box fan air filter to reduce smoke particles in the air. Wildfires often occur when it is hot outside. Make sure that your plan does not result in overheating, as being too hot is a bigger risk than breathing smoke for many people.



Example of a homemade box fan air filter

Keep masks stocked at home. Well-fitted N95 (or KN95) respirators provide the best protection from wildfire smoke, but well-fitted three-layer disposable and cloth masks can also help. Remember – the air must pass through the material of the mask, not around it! You can stay up-to-date on smoke risks by monitoring forecasts, by signing up for air quality alerts, or by downloading air quality apps. Finally, talk about your smoke readiness plans with others in your family and community and help them to develop their own plans.

More Resources

Visit bccdc.ca/wildfiresmoke to learn more about:

- Preparing for wildfire smoke
- The health effects of wildfire smoke
- Portable air cleaners
- DIY box fan air filters
- Masks for smoke

Visit canada.ca and
search 'combined wildfire smoke and heat'

For air quality alerts in Metro Vancouver
visit Airmap.ca

For smoke forecasts visit firesmoke.ca

Courtesy of BC Centre for Disease Control

With Great Climate Goals Come Great Innovation

The ambitious goals in Metro Vancouver's *Clean Air Plan* and *Climate 2050* are supported by innovative solutions to help meet the rising urgency for accelerated action to meet air quality and climate targets.

Sustainability Innovation Fund

Metro Vancouver's Sustainability Innovation Fund supports projects that demonstrate an innovative approach to advancing the region's sustainability while encouraging partnerships with other organizations. Projects span the breadth of Metro Vancouver's service areas and could explore uncertain or higher risk areas, such as new technologies or services. Many recent projects have focused on greenhouse gas (GHG) reduction, air quality, and energy efficiency.

project spotlight Hydrothermal Processing – Biofuel Demonstration Facility

Hydrothermal processing is an emerging technology that can produce low carbon transportation fuels from wastewater biomass. This project involves the design, fabrication, implementation, and testing of a demonstration-scale facility at the Annacis Island Wastewater Treatment Plant.

project spotlight Metro Vancouver Large Building Retrofit Accelerator

The regional retrofit accelerator program will create a resource hub to support owners of large buildings and increase the number of deep carbon building retrofits required to successfully meet greenhouse gas reduction targets. It will connect building owners to available resources and provide tailored solutions on how to meet any future regional GHG regulations.

Sustainability Scholars

Metro Vancouver participates in the University of British Columbia's Sustainability Scholars program, a paid internship for UBC graduate students that offers them real world experience in advancing sustainability in the region. The scholars' projects can also help Metro Vancouver develop new policies and programs.

project spotlight Exploring the Effects of Climate Change on Forest Health

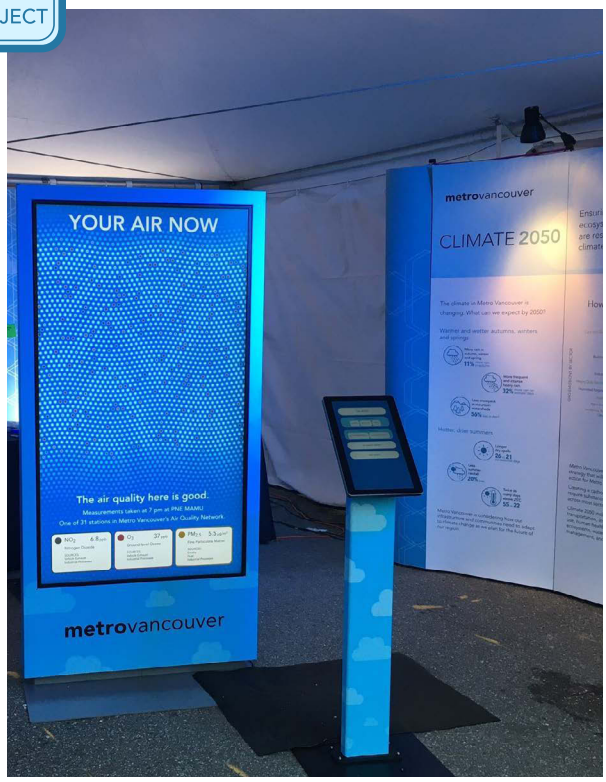
Three different scholars undertook projects in 2016, 2019, and 2020 to understand how climate change affects forest health, with each building on the previous scholar's work. These projects expand our understanding of forest ecosystems so Metro Vancouver can monitor disturbances to forest health, recognize early signs of stress, and adapt or intervene if needed. This way, we can ensure that forest ecosystems continue to provide environmental services such as the removal and storage of carbon dioxide.

Learn more about the Sustainability Scholars program and other projects at sustain.ubc.ca/teaching-applied-learning/ubc-sustainability-scholars-program.

Learn About Other SIF Projects

Visit metrovancouver.org and search 'sustainability innovation program' for a summary of projects that accelerate action to meet air quality and climate targets and look out for this symbol to find other Sustainability Innovation Fund projects in this issue of *Caring for the Air*.

SIF PROJECT



LumiAir: Your Air Quality is Lit!

If you visited the Pacific National Exhibition during the summer of 2021, you might have met LumiAir, Metro Vancouver's latest addition to the air quality toolbox. LumiAir is an interactive display that shows real-time air quality data from the closest Metro Vancouver air monitoring station. You can compare that data to cities around the world or to scenarios such as days with wildfire smoke or a ground-level ozone advisory. LumiAir also shows historical air quality data from decades ago and highlights programs and policies that have helped improve the region's air quality.

LumiAir aims to make air quality data more accessible to communities and will be touring the region, making stops at community centres, libraries, and other public spaces and events.

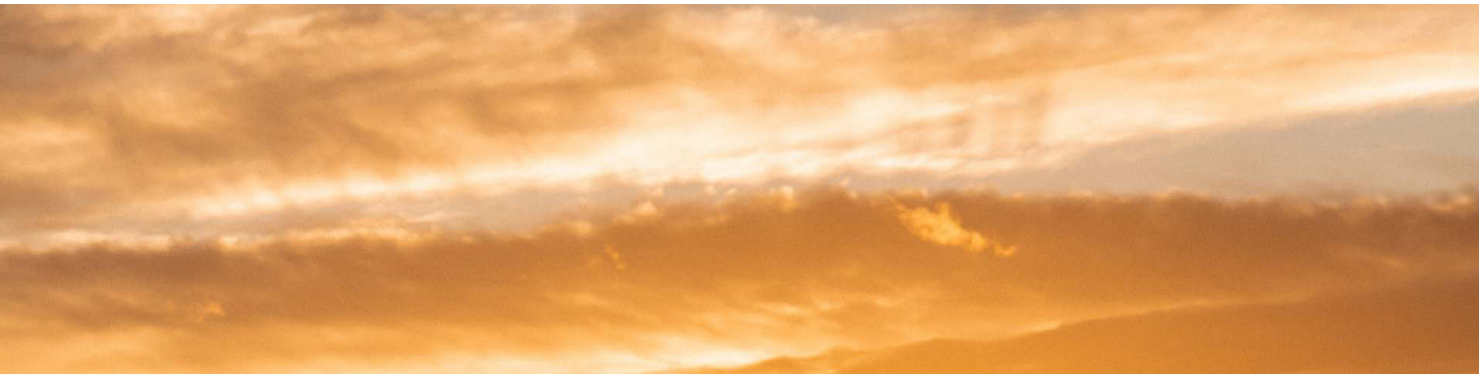
A 'Flying Lab' Takes to the Sky

Metro Vancouver tested a 'flying lab' of small sensors mounted on a drone in the summer of 2021. The sensors collected air quality measurements over a large area at varying heights.

The equipment was tested at three sites with different types of emissions: Annacis Island, the Coquitlam Water Supply Area, and a construction site in Surrey. The sensors collected data for several air contaminants including particulate matter (tiny particles suspended in the air) and various gases (nitrogen dioxide, total volatile organic compounds, and sulphur dioxide).

Lights, Camera, Climate Action!

This project will identify alternative clean and modular power sources to replace portable diesel generators in the film industry. Portable diesel generators create greenhouse gases, other air contaminants such as diesel particulate matter, and noise pollution. The film industry has recognized the need to transition to cleaner sources of mobile power. Metro Vancouver will be supporting this transition by analyzing the feasibility of different clean power opportunities for the film industry and similar users, and recommending cleaner modular options. The project will also pilot a clean power source in one of Metro Vancouver's parks to demonstrate its applicability and report on lessons learned.



The flights were part of a project to assess drone technology for potential air quality measurement applications like detecting hotspots of poorer air quality, assessing fugitive emissions (emissions that are not from a controlled stack or vent), and enhancing understanding of emissions from industrial sources. The results offered an exciting glimpse of the potential for collecting detailed spatial information. Although the technology is not quite ready to be used for routine air quality measurements, using drones could provide a novel and unique tool to improve air quality management and regulation. Work is continuing with these small sensors to better understand how they can help Metro Vancouver's air emissions monitoring activities.

Bylaw and Regulation Updates

Simplifying Open Burning Authorization

Open burning is any burning outside of a structure and that does not vent through a chimney or stack. Emissions from burning vegetative debris, such as leaves and branches, in the open air are currently authorized through site-specific approvals or permits. In 2021 and early 2022, Metro Vancouver engaged residents, businesses, First Nations, member jurisdictions, and other government organizations on a proposed regulation to manage these emissions. The proposed regulation will continue to protect public health and the environment while offering a simpler, more efficient, and less costly authorization process.

To learn more, visit metrovancouver.org and search 'open burning.'

SIF PROJECT

Reducing Emissions from Open Burning

Open burning of vegetative material generates air contaminants. A project completed in 2021 compared emissions from open burning of agricultural vegetative debris to alternative disposal methods, such as chipping or composting. The project also looked at barriers to using alternatives, and created a guide to help reduce those barriers.

The alternative methods produced lower emissions of greenhouse gases and particulate matter compared to conventional open burning, even when considering both direct emissions (for example, from chipping) and indirect emissions (such as those from transporting the chipper to the site). In spite of this, alternatives are not always used because of factors such as cost, availability, feasibility, and concerns about spreading diseases and pests. The guide is expected to be available on Metro Vancouver's website by the end of 2022. It will provide information about how to reduce emissions, where to find equipment, and how to use the byproducts of the vegetative material.

This work complements the development of an open burning emission regulation (see above), by promoting alternatives that can eliminate burning while producing useful byproducts.

Cannabis Production and Processing Emission Regulation

Metro Vancouver began seeking feedback on a proposed regulation for managing emissions from commercial cannabis production and processing operations. Emissions from cannabis facilities include volatile organic compounds that can contribute to the formation of harmful ground-level ozone and fine particulate matter.

The second phase of public engagement concluded in February 2022. Based on feedback received during two phases of engagement, staff are preparing a proposed emission regulation that will be presented to the Metro Vancouver Regional District Board by early 2023.

New Air Contaminant Fees for Industrial Emissions

In 2022, Metro Vancouver will be increasing air quality permit and regulatory fees. The new fees reflect updated information on the health costs of air contaminants and support the additional resources needed to manage and protect regional air quality.

Metro Vancouver charges fees for permits that specify the maximum amount and types of air contaminants a facility is authorized to emit. These fees encourage facilities to reduce emissions, but also recover the costs of air quality regulatory services like inspections and enforcement. The fees were last updated in 2008, and since that time costs for regulatory services have dramatically increased, partly due to more information requests, appeals, and complaints. The new fees will help to ensure that Metro Vancouver can continue to reduce emissions, improve air quality, and protect public health.

Who Pays Fees for Emissions?

All businesses with permits to emit air contaminants in Metro Vancouver, and those that fall under Metro Vancouver's air emission regulations, pay fees for air emissions. A public opinion survey commissioned by Metro Vancouver showed strong support for this "polluter pay" approach, and that fees should be higher for the more harmful contaminants.

The changes will be phased in between 2022 and 2028.

To learn more, visit metrovancouver.org and search 'air quality fees.'

Key Changes to Air Quality Fees

Increasing fees for air contaminants: New health research demonstrates that public health costs from air contaminants are greater than previously thought, so existing fees for air contaminants, including the more harmful ones such as fine particulate matter, photoreactive volatile organic compounds, and nitrogen oxides, are increasing. New fees for greenhouse gas emissions have also been established, except where the provincial carbon tax already applies.

New fees for odorous air contaminants: Managing odorous emissions is one of the reasons why costs for regulatory services are going up. Over 80 per cent of complaints received are related to odour, but Metro Vancouver previously did not charge fees for odorous air contaminants. New fees for odorous air contaminants should discourage emissions, as well as offset the costs of managing them.

Expansion of the Non-Road Diesel Engine Emission Regulation

Metro Vancouver's Non-Road Diesel Engine Emission Regulation has been in place since 2012. The regulation protects air quality and public health by reducing emissions from non-road diesel engines, which can worsen heart and respiratory diseases and contribute to cancer.

Between November 2020 and April 2021, Metro Vancouver invited feedback from the public, businesses, First Nations, member jurisdictions, and government organizations on a proposed expansion of this regulation. In October 2021, the Metro Vancouver Regional District Board adopted a new bylaw with enhanced requirements.

Non-Road Diesel Engines

Non-road diesel engines are used in a wide range of construction, industrial, commercial, and stationary equipment such as excavators, bulldozers, and forklifts. These engines are generally not intended for use on public roads.

The bylaw does not apply to engines less than 25 horsepower, normal farm practices, or personal recreational machines.

New Requirements

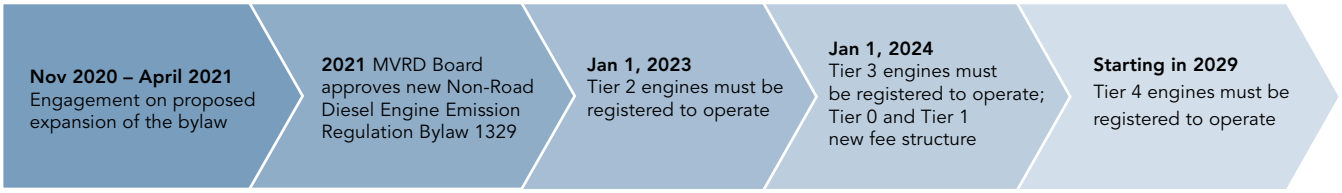
Non-road diesel engines are categorized by tiers, depending on their size and year of manufacture. Tier 0 are the oldest, highest emitting engines and Tier 4 are modern engines with more emission controls. The previous bylaw covered only Tier 0 and Tier 1 engines. The expanded bylaw recognizes that while the newer tiers of non-road diesel engines are cleaner, they still contribute to health and environmental impacts. The new bylaw includes Tier 2 starting in 2023, Tier 3 in 2024, and Tier 4 in 2029. Regulating Tier 4 engines is intended to encourage electrification and other decarbonization options that will reduce health and climate impacts.

Other changes include updated fees and rebates to promote further reduction of harmful diesel particulate matter and nitrogen oxides, prohibiting use of higher emitting engines near sensitive receptors such as hospitals, community care facilities, and elementary schools, as well as adding requirements for emergency generators.

The Vancouver Fraser Port Authority also has a non-road diesel engine emission reduction program. Metro Vancouver collaborates with the port authority to align the requirements of both programs.

To learn more, visit metrovancouver.org and search 'non-road diesel.'

Registration Requirements for Different Non-Road Diesel Engine Tiers in Metro Vancouver



How to Follow Residential Indoor Wood Burning Requirements in Metro Vancouver

Everyone in Metro Vancouver who is responsible for a residential indoor wood burning appliance, including a fireplace or woodstove, must comply with best burning practices (see Schedule B of Bylaw 1303). Indoor wood burning is also prohibited (with some exceptions) between May 15 and September 15 every year.

Starting September 15, 2022, anyone who intends to use a residential indoor wood burning appliance will need to submit a best burning practice declaration to Metro Vancouver. Residents within Metro Vancouver's Urban Containment Boundary will also need to register eligible appliances starting September 15, 2022, before using the appliance, and renew and confirm declarations and registrations at least every three years.

Does the Residential Indoor Wood Burning Bylaw 1303 apply to me?

If you own, operate, or are otherwise responsible for a woodstove, a fireplace, or another type of residential indoor wood burning appliance, then Bylaw 1303 applies to you.

How do I submit a declaration of compliance with best burning practices?

Metro Vancouver is creating an online declaration system. Visit metrovancouver.org and search 'residential wood burning' for more information about submitting your declaration.

Where can I find out more?

Metro Vancouver's website has more information, links to videos, and will provide access to the declaration and registration systems. You can also call 604-451-6677 for more information.

Am I inside or outside Metro Vancouver's Urban Containment Boundary?

The Urban Containment Boundary designates the area in the region within which urban development may occur. Wood burning appliances within this area have stricter requirements because there is higher population density and smoke could impact more people. Use this tool (gis.metrovancouver.org/mvmaps/ucb) to check if your address is inside the Urban Containment Boundary.

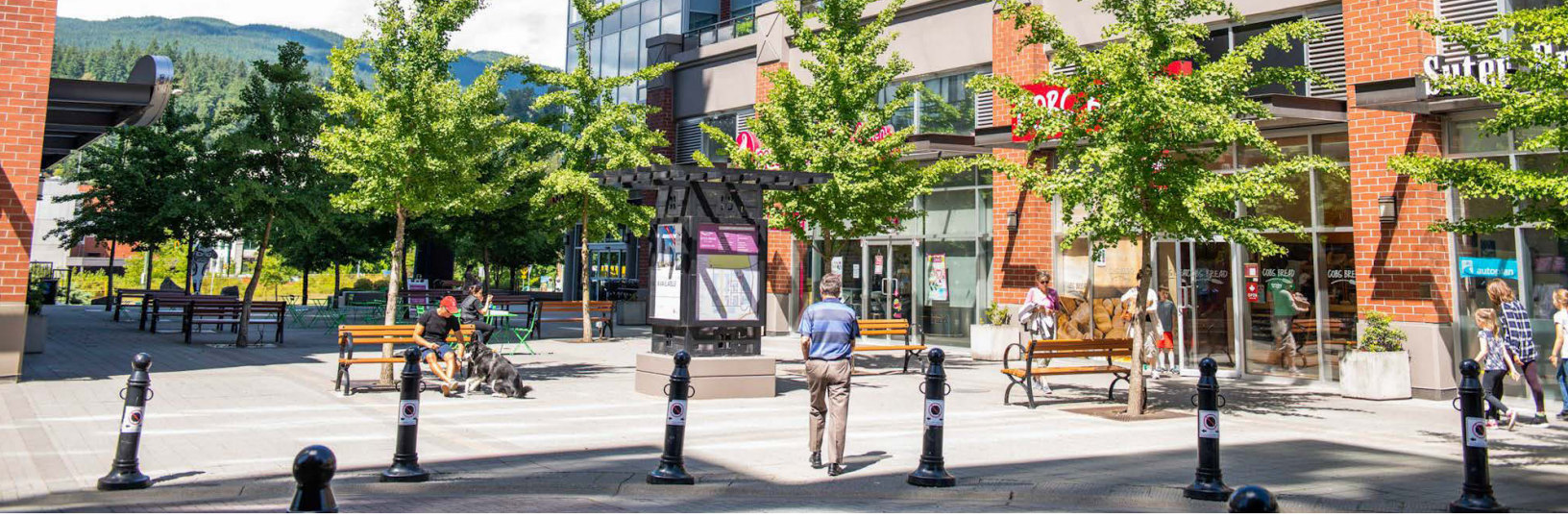
How do I register my appliances?

Metro Vancouver is creating an online registration system. Visit metrovancouver.org and search 'residential wood burning' for more information about registering an appliance.

Who do I contact if I am concerned about wood smoke in my neighbourhood?

Call 604-436-6777 or use the online form at metrovancouver.org, search 'air quality form.'

More questions about Bylaw 1303? Connect with Metro Vancouver staff at riwb@metrovancouver.org.



Climate 2050 Roadmaps are Guiding us Towards a Resilient and Carbon Neutral Region

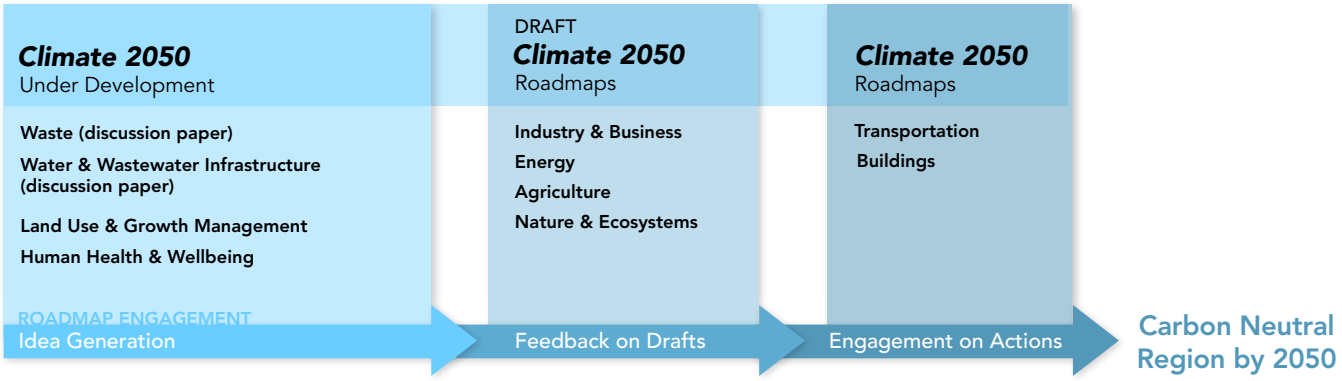
Metro Vancouver has committed to becoming a resilient and carbon neutral region by 2050, but how will we get there? The answers lie in the *Climate 2050 Strategic Framework* and *Roadmaps* which will guide the region's policies and actions to reduce greenhouse gas emissions and ensure that the region is resilient to climate change impacts. Each of the ten roadmaps will focus on a different topic, such as buildings or transportation, and will describe goals, targets, strategies, and actions to help us meet our commitments.

Developing the roadmaps is a collaborative and evolving task spanning several years. In 2021, the first two roadmaps were completed, and there are more to come.

Learn more about the *Transportation Roadmap* on page 13 and the *Buildings Roadmap* on page 14.

For the most up-to-date information about the roadmaps, visit metrovancouver.org/climate2050.

Climate 2050 Roadmaps Status: June 2022



Climate 2050 Transportation Roadmap:

A Pathway to Carbon Neutral Transportation

The *Climate 2050 Transportation Roadmap* outlines a pathway to a regional transportation system that is carbon neutral and resilient to the impacts of a changing climate by 2050. Although transportation is currently the largest source of regional greenhouse gas emissions, it also presents some of the best opportunities to start reducing emissions, particularly for personal transportation.

The *Transportation Roadmap* describes a vision where movement of goods and people produces no greenhouse gas emissions, with almost all vehicles powered by electricity or hydrogen. In order to realize this vision, we must implement the actions in the *Transportation Roadmap* as soon as possible.

Extreme flooding and landslides in 2021 caused extensive damage to road and rail networks in and out of the region. These extreme events demonstrated that reducing emissions isn't the only action needed to address climate change. We must also develop a transportation network that is resilient to the impacts of a changing climate. The first step in this process will be developing a better understanding of the vulnerability of our regional transportation system to climate change.

Taking Action Now: Exploring Curbside Charging in the City of Vancouver

The BC Government has announced that by 2035, all new vehicles sold in the province will be zero emissions — meaning they will run entirely on electricity, on electricity supplemented with gasoline, or on hydrogen. This transition means residents and businesses that park on-street will need access to electric vehicle (EV) charging.

In 2019, the City of Vancouver completed a pilot project to explore siting, access, and licensing of curbside EV chargers for residents and businesses. The pilot concluded that licensing fixed outlets on the curb for residential applications was not a viable solution, owing to high installation costs and scalability. However, in January 2022, the non-residential licence was renewed as a permanent program for businesses to install EV charging on the public right-of-way in front of their building. In the short term, the residential program has been replaced with a lower cost licence to allow the use of extension cords and cord covers to charge vehicles on-street. Other options like under-sidewalk and near-home off-street charging are also being explored.

Climate 2050 Buildings Roadmap:

A Pathway to Zero Emissions and Resilient Buildings

Buildings emit one quarter of the greenhouse gases in the Metro Vancouver region. Most of this comes from burning natural gas, a fossil fuel, for space and hot water heating.

The *Climate 2050 Buildings Roadmap* envisions a future where residents live in healthy, resilient, zero emissions buildings. To get there, this means first reducing how much energy the home needs for heating or cooling, followed by using zero emissions equipment that is powered by BC's low carbon and renewable electricity. Lastly, to keep energy costs lower, smart home features can optimize building systems. These actions can also keep occupants healthier, more comfortable, and safer from extreme weather caused by climate change, like higher temperatures and heavy rain events.

Taking a Whole Building Approach to Reach Zero Emissions

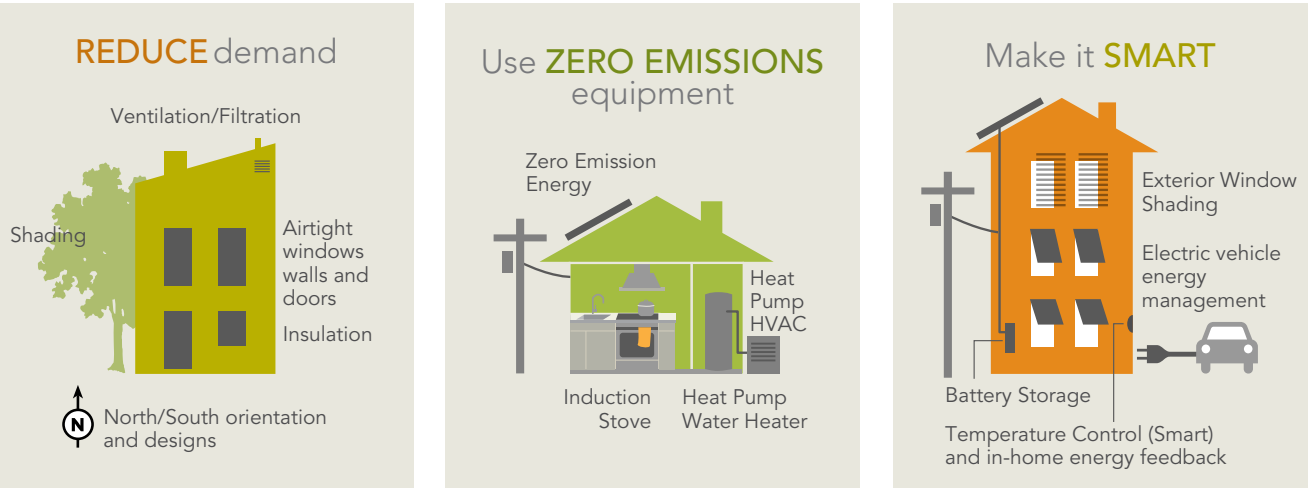


Photo courtesy of H.W. Flesher Housing Co-op

Taking Action Now:
Heat Pump Installation at H.W. Flesher Housing Co-op, Vancouver

This co-op's meeting hall was too cold in the winter and too hot in the summer. The head of maintenance had learned from a resident about heat pumps, which can heat and cool a home, so he had one installed in the hall in 2018. Residents immediately noticed the warmth, and as a bonus, the damp smell from excess moisture was gone.

Building on the success and excitement around the meeting hall's heat pump, the co-op voted to replace the electric baseboards with heat pumps in all of the townhouses.

The retrofit was completed in 2021. It took five months and cost about $400,000 for 87 units, but the co-op received over a third of the money back in energy efficiency rebates from BC Hydro. The co-op anticipates they will be using about a third less energy compared to heating with electric baseboards, and importantly, will be able to stay cool during dangerous heat waves.

We already have all the tools we need to make every home and building in the region healthy, resilient, and produce zero emissions. Many residents and building owners are already shifting to low emissions buildings, but thousands more low carbon renovations will be needed every year to reach our climate goals. The *Buildings Roadmap* aims to reduce barriers, such as higher costs and low awareness of heat pumps and other solutions, so no one will be left behind in the transition to zero emissions buildings.

Learn more at metrovancouver.org, search 'buildings roadmap.'

How Greenhouse Gas Emissions Can Provide Insight into Consumption Behaviours

To help understand the emissions related to our activities, such as consuming products and services, Metro Vancouver completed a consumption-based emissions inventory (CBEI) for the region. The CBEI complements Metro Vancouver's 'in-region' inventory, which accounts for greenhouse gas (GHG) emissions that occur within the region. The CBEI also accounts for 'embodied' emissions that occur outside the region's geographical boundary, but are associated with goods and services consumed within the region.

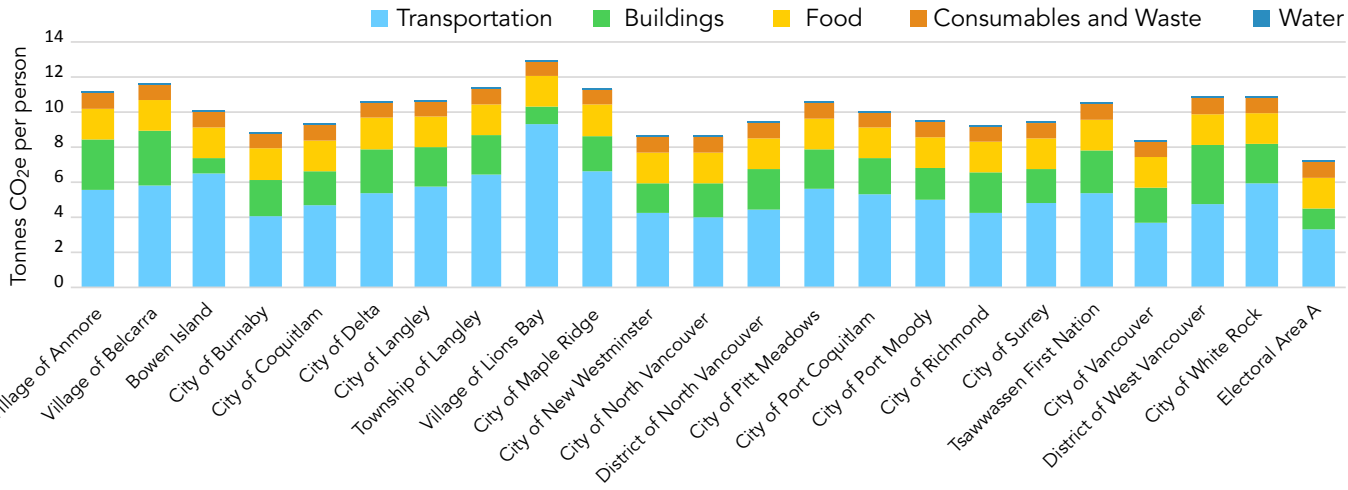
A CBEI helps guide and evaluate regional emission reduction programs. It also underscores the importance of strategies that reduce GHG emissions while avoiding unintended consequences of actions that might reduce GHG emissions within the region, only to push those emissions outside the region.

Findings from the Consumption-Based Emissions Inventory

- Metro Vancouver's consumption-based GHG emissions are 58 per cent higher than the in-region inventory, showing that the region relies more on imported goods than local goods.
- The 'transportation' and 'buildings' categories had the highest embodied GHG emissions, mirroring the results of the in-region inventory.
- The CBEI also reports emissions by community. Generally, larger communities such as Vancouver or Surrey have higher emissions due to their larger populations. Lower density communities with larger homes or those that rely more on vehicles showed higher emissions per person (see graph).

This is the first CBEI prepared for the Metro Vancouver region. Metro Vancouver plans to improve the CBEI and to continue providing this important foundational data for use in implementing future emission reductions.

Learn more at metrovancouver.org, search 'consumption-based emissions inventory.'



Consumption-based emissions inventory of GHG emissions (tonnes CO_2e) per person by Metro Vancouver Community, 2015

Air Quality in 2021

In 2021, extreme heat and wildfire smoke led to four air quality advisories in the Lower Fraser Valley. In total, the region was under an advisory for 10 days.

The first air quality advisory of the season was issued by Metro Vancouver for ground-level ozone and fine particulate matter ($PM_{2.5}$) during a record-breaking heat dome in late June. A second ozone advisory was issued in late July.

In 2021, the temperatures measured inland in Abbotsford and Mission broke all-time high temperature records. In contrast, temperatures at the Vancouver International Airport near the coast did not break any all-time high temperature records, but did set a new record for the highest temperature recorded in June.

The heat dome kicked off a very active wildfire season in BC, with an above average number of wildfires and area burned during the summer. Fortunately, the Metro Vancouver region was spared until later in the summer. Wildfire smoke from fires in the BC Interior and Washington seeped into the region in August, triggering two separate advisories: one in early August for $PM_{2.5}$ and one in mid-August for $PM_{2.5}$ and ozone.

Metro Vancouver generally has good air quality, but extreme weather associated with climate change could threaten the region's clean air. See page 3 to learn more.

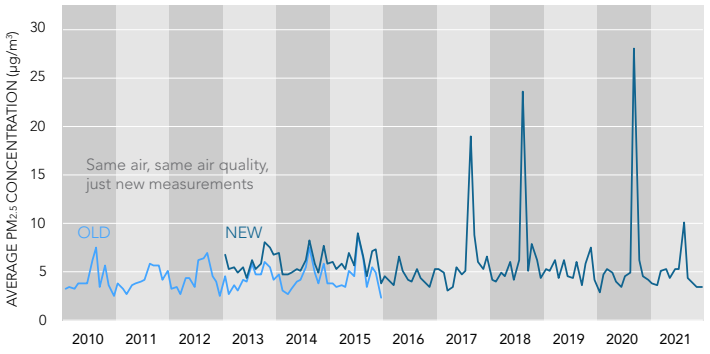
Air Quality Trends

Trends charts (right) illustrate the change in average air quality across the region over time. Measurements from monitoring stations from Horseshoe Bay to Hope are averaged to represent the outdoor air quality typically experienced in the region.

Trends show that most air pollutant levels have been improving over the last decade, even while the region's population has grown. Since 2015, several summers, including the summer of 2021, experienced elevated particulate matter concentrations due to wildfire smoke. Highest average concentrations were measured in 2017, 2018, and 2020. Most gaseous pollutants generally continued to decrease. Improvement of sulphur dioxide levels have been dramatic, mainly due to strict lower sulphur requirements for marine fuels. Average levels of ground-level ozone have slightly increased despite reductions in some pollutants that create it. This is partly due to an increase in ozone formed outside Canada coming into our region. Peak ground-level ozone levels (not shown), which occur during hot and sunny summer afternoons, are generally better now than in the 1980s and early 1990s.

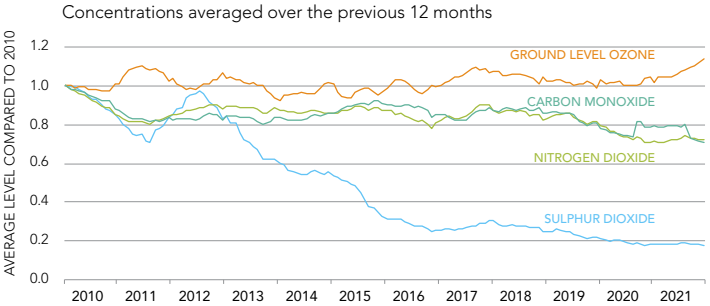
Fine Particulate Matter

In editions of *Caring for the Air* before 2022, this graph showed concentrations averaged over the previous 12 months. The graph now shows average concentrations for each month to better illustrate years influenced by wildfire smoke.



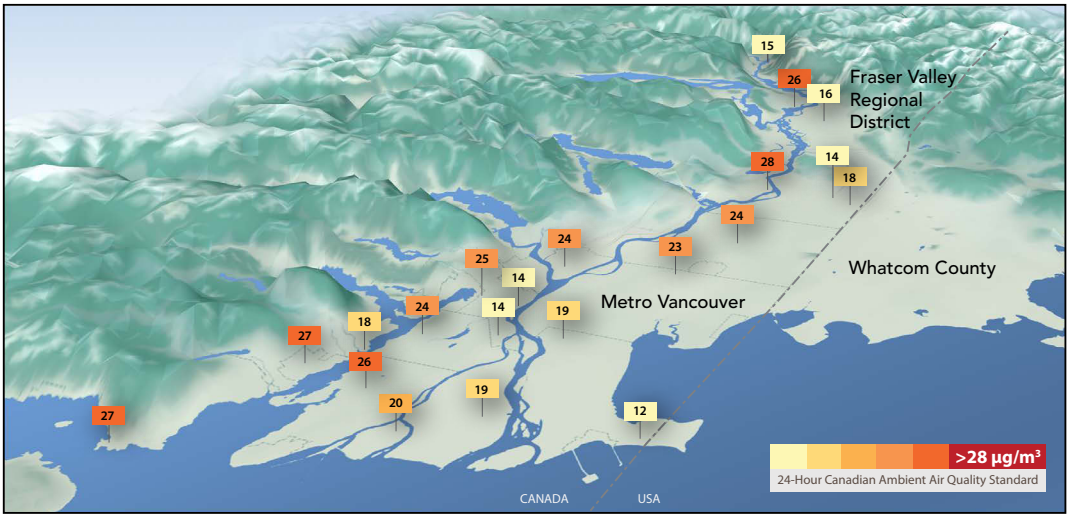
Gas Phase Pollutants

Concentrations averaged over the previous 12 months



Air Quality in 2021: Data Summary

FINE PARTICULATE MATTER IN 2021

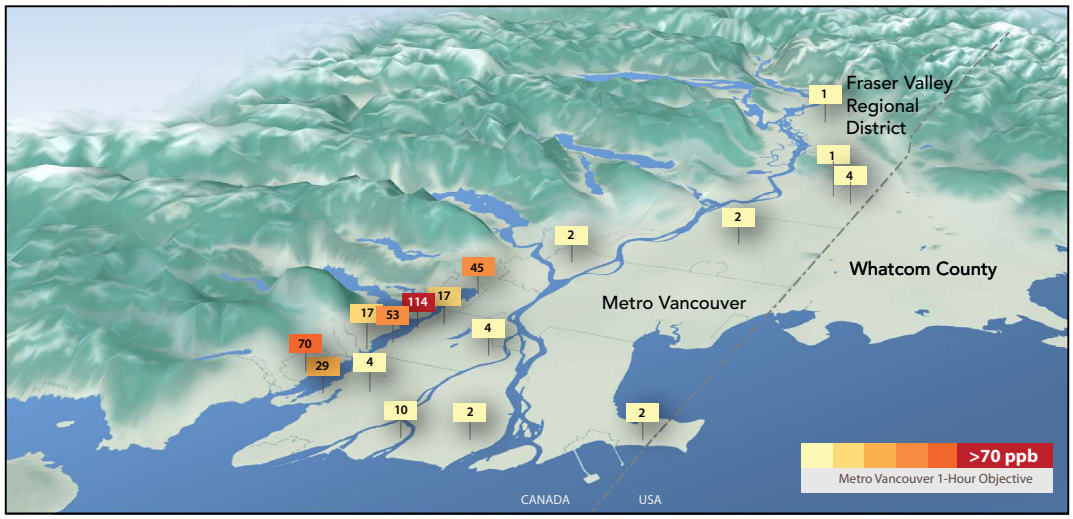


In 2021, fine particulate matter ($PM_{2.5}$) levels throughout the region met the 24-hour $PM_{2.5}$ Canadian Ambient Air Quality Standard (calculated using data from 2019, 2020, and 2021) at all monitoring stations (see map above). Measurements averaged over 2021 were within Metro Vancouver's annual objective. Peak levels based on the highest 24-hour average were worse than the short-term objective (25 µg/m³) at all stations in 2021. Some $PM_{2.5}$ exceedances occurred in June and July, followed by widespread exceedances throughout the network in August due to wildfire smoke.

GROUND-LEVEL OZONE IN 2021

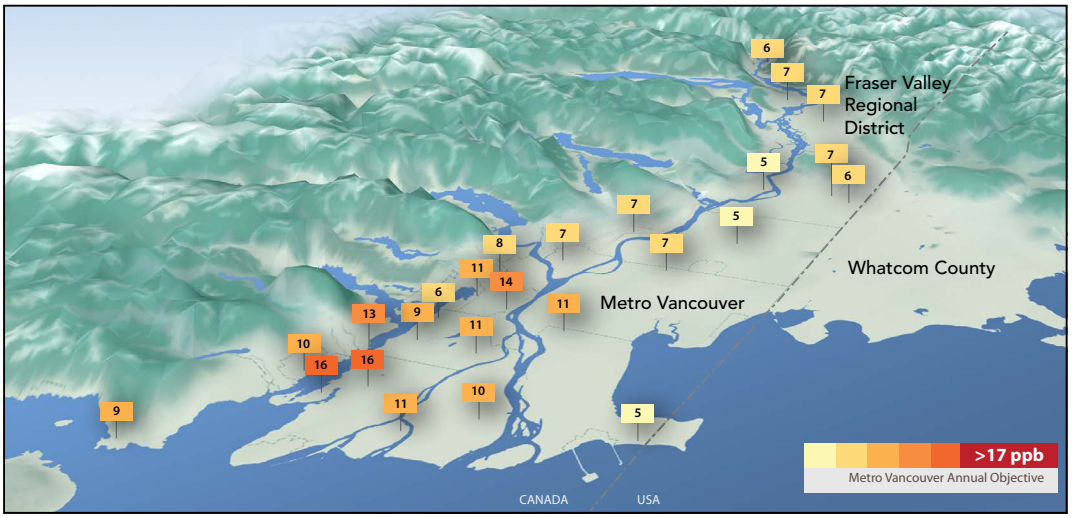
Ground-level ozone forms when nitrogen oxides and volatile organic compounds react in the air in the presence of sunlight. In 2021, elevated levels of ground-level ozone were experienced in June, July, and August with more than half of the monitoring stations exceeding Metro Vancouver's 1-hour ground-level ozone objective (see map above). Over the last two decades, air quality programs and regulations have reduced the frequency and severity of ground-level ozone advisories. However, an extreme heat wave in late June 2021 resulted in unusually high ozone concentrations, reaching levels not seen since the late 1980s. Metro Vancouver's 8-hour objective and the Canadian Ambient Air Quality Standard for ozone were not exceeded in 2021.

SULPHUR DIOXIDE IN 2021



Peak levels based on the highest 1-hour average are shown on the map above. These levels were better than Metro Vancouver's 1-hour objective of 70 ppb at all stations in 2021, with the exception of Capitol Hill in Burnaby where the objective was exceeded for two hours in December. Peak levels at Capitol Hill are mainly influenced by the nearby oil refinery. Average concentrations of sulphur dioxide were below Metro Vancouver's annual objective of 5 ppb at all stations in 2021.

NITROGEN DIOXIDE IN 2021



Nitrogen dioxide concentrations were better than Metro Vancouver's long-term objective (17 ppb) at all monitoring stations. Annual averages are shown on the map. The highest average nitrogen dioxide concentrations were measured in highly urbanized areas near busy roads. More than half of the regional emissions of nitrogen oxides (which includes nitrogen dioxide) come from transportation sources. In 2021, nitrogen dioxide concentrations were better than Metro Vancouver's short-term objective (60 ppb) at all monitoring stations, with the exception of North Vancouver-Second Narrows which exceeded the objective. Short-term measurements of nitrogen dioxide at North Vancouver-Second Narrows were influenced by local construction activity near the station in 2021.

Small Air Sensors Team Up With Big Monitoring Networks

In 2021, Metro Vancouver completed a review of its network of air quality monitoring stations and equipment. The network continuously monitors air quality conditions and is used for air quality planning for the region and issuing public advisories when air quality is degraded, such as during wildfire smoke events. The review found that Metro Vancouver operates a world-class air quality monitoring network and provided recommendations to further improve it.

One recommendation was to integrate small air sensors into the network. These sensors are cheaper and easier to install than traditional air monitoring equipment. They have the potential to increase air monitoring coverage across the region and collect data at higher spatial resolution than Metro Vancouver's existing network. The benefits of small sensors may have tradeoffs, such as lower data quality and reliability, which need to be considered when setting up small sensor networks.

SIF PROJECT

Smart Cities:
Hyperlocal Air Quality Monitoring

A project starting in 2022, "Smart Cities: Hyperlocal Air Quality Monitoring," will investigate how to deploy a dense small sensor network to supplement data already being collected by the Metro Vancouver network. The project proposes to install dozens of small sensors in concentrated areas, such as a single neighbourhood, providing high spatial resolution data to better understand how air quality may change across just a few city blocks. Hyperlocal monitoring could help identify impacts from major transportation routes and industrial emitters, inequities in air quality experienced at the neighbourhood level, the effectiveness of emission reduction strategies, and a better understanding of localized health outcomes related to air quality.

Network News

New Ambient Air Monitoring at the Waste-to-Energy Facility

Metro Vancouver's Waste-to-Energy Facility operates well within environmental standards. In 2020, facility emissions represented less than one percent of the regional airshed totals for nitrogen oxide, fine particulate matter, and greenhouse gas emissions.

In fall 2020, Metro Vancouver installed a new air quality monitoring station beside the facility to measure hydrogen chloride, sulphur dioxide, and nitrogen oxides. A hydrogen chloride monitor was also added to the nearby Burnaby South monitoring station.

Data collected to the end of 2021 shows ambient concentrations of hydrogen chloride and sulphur dioxide are less than eight per cent of ambient air quality objectives. Monitoring will continue for at least two years.

Metro Vancouver's monitoring stations had not measured hydrogen chloride before, so learnings from this study will be important for future regional air monitoring strategies and advancement in monitoring technology.

Monthly ambient air monitoring reports are posted online at metrovancouver.org, search 'waste-to-energy reports.'

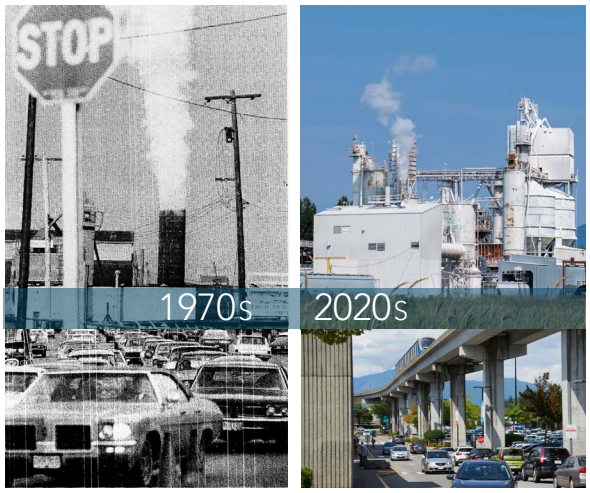
Tsleil-Waututh Nation Air Monitoring Study Complete

Metro Vancouver's Mobile Air Monitoring Unit was stationed at Tsleil-Waututh Nation's Burrard Inlet IR 3 Lands in 2018 and 2019 to better understand sulphur dioxide concentrations and emission sources in the area, such as an oil refinery and marine vessels. The study showed that air contaminant concentrations were below Metro Vancouver's air quality objectives during the study, with the exception of fine particulate matter during a wildfire smoke event in 2018. Air quality levels at the Tsleil-Waututh Reserve Lands compared favourably to other areas of the region, with some of the lowest average levels of air contaminants measured.

The full report is posted online at metrovancouver.org, search 'Tsleil-Waututh study.'

Metro Vancouver's Air Quality Program Turns 50

2022 marks the 50th anniversary of Metro Vancouver's air quality program. In 1972, a series of legislative changes was completed which formalized the provincial government's delegation of authority to manage and regulate air quality in the region to Metro Vancouver (known as the Greater Vancouver Regional District at the time). Since then, Metro Vancouver has been protecting and improving our air quality and will continue to respond to threats to human health and the environment, such as climate change.



metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Metro Vancouver is a federation of 21 municipalities, one electoral area and one treaty First Nation that collaboratively plans for and delivers regional-scale services. Its core services are drinking water, wastewater treatment and solid waste management. Metro Vancouver also regulates air quality, plans for urban growth, manages a regional parks system, and provides affordable housing. The regional district is governed by a Board of Directors of elected officials from each local authority.

If you have questions or comments about *Caring for the Air*,
please contact us at **AQinfo@metrovancouver.org** or 604-432-6200.

Electronic copies of this and previous editions of *Caring for the Air* can be found on **metrovancouver.org**

To: Climate Action Committee

From: Johann Zerbe, Policy Analyst
Parks and Environment Department

Date: June 8, 2022 Meeting Date: July 8, 2022

Subject: **Metro Vancouver Climate 2050 Snapshot 2021/2022**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated June 8, 2022, titled "Metro Vancouver Climate 2050 Snapshot 2021/2022".

EXECUTIVE SUMMARY

Recognizing the need for urgent and transformative action, Metro Vancouver is taking an 'action while planning' approach, implementing climate actions at the same time as it is progressing with development of the *Climate 2050 Roadmaps*. The *Climate 2050 Snapshot 2021/2022* Report is intended to meet Metro Vancouver's commitment to regular and transparent reporting on the development and implementation of the *Climate 2050 Roadmaps*. The *Climate 2050 Snapshot* report presents highlights of Climate 2050 implementation work throughout 2021 and as of mid-2022. As work on *Climate 2050* shifts from planning to implementation, the *Climate 2050 Snapshot* will evolve to include key performance indicators to track and measure progress on roadmap implementation.

PURPOSE

To inform the Climate Action Committee of the *Climate 2050 Snapshot 2021/2022* report which provides an overview of *Climate 2050* roadmap development and implementation in 2021 and 2022 year-to-date. The snapshot report is the first annual report on *Climate 2050*.

BACKGROUND

In September 2018, the MVRD Board adopted the *Climate 2050 Strategic Framework* and directed staff to initiate development of the *Climate 2050 Roadmap*s. Climate 2050 is an overarching long-term strategy that will guide our region's policies and collective actions to transition to a carbon neutral and resilient region over the next 30 years. *Climate 2050* is being implemented through ten issue area Roadmaps, which will describe long-term goals, targets, strategies and actions to reduce regional greenhouse gases and ensure that this region is resilient to climate change impacts. Implementation of the Roadmaps will be driven by Metro Vancouver's management plans and other policies including the Clean Air Plan.

Climate 2050 also includes public outreach with regular reporting on progress. The Climate Action Committee 2022 Work Plan identifies reporting on Metro Vancouver's progress on *Climate 2050* roadmap implementation as a priority for the year. The *Climate 2050 Snapshot 2021/2022* is intended to be the first annual report to communicate progress on *Climate 2050* roadmap implementation, to provide information on specific roadmap actions being advanced, and other climate action projects at Metro Vancouver.

METRO VANCOUVER'S CLIMATE 2050 SNAPSHOT REPORTING

The *Climate 2050 Snapshot 2021/2022* is one of several reports that provides the public with updates and progress on climate action initiatives by Metro Vancouver. Metro Vancouver has historically reported corporate and community climate actions through publications such as *Caring for the Air*, as well as the *Climate Action Revenue Incentive Program* (CARIP) report, both of which have been prepared annually. With the cancellation of CARIP in 2021, and the announcement of a new provincial climate action funding and reporting program in May 2022 (*the Local Government Climate Action Program, or LGCAP*), Metro Vancouver will be meeting the similar reporting obligations through public reporting in summer/fall 2022. A breakdown of Metro Vancouver's corporate carbon emissions will be included in this forthcoming report.

While much work to date on *Climate 2050* has been focused on development and engagement on the various *Climate 2050* roadmaps, Metro Vancouver also progressed and completed numerous climate action initiatives, reflecting our 'Action while Planning' approach. *The Climate 2050 Snapshot 2021/2022* intends to communicate these actions, and be a practical resource for current and ongoing climate action initiatives for elected officials, residents and other stakeholders in the region. As work on *Climate 2050* shifts from planning to implementation, the *Climate 2050 Snapshot* will evolve to focus on reporting key performance indicators identified in each roadmap to track and measure progress on roadmap implementation and targets. Examples could include: number of new buildings with low-carbon energy systems or proportion of new vehicle sales that are zero emissions.

INSIDE THE CLIMATE 2050 SNAPSHOT 2021/2022 REPORT

The *Climate 2050 Snapshot 2021/2022* provides readers with an overview of the *Climate 2050* strategy, and context on the climate change challenge facing our region. It provides a status update on the development and implementation of the *Climate 2050 Roadmaps*, and progress towards roadmap actions and Metro Vancouver's established climate targets. For each of the 10 *Climate 2050* issue areas, the report covers:

- Highlights on key roadmap actions and climate action projects implemented during 2021;
- Progress and actions as of 2022;
- An update on roadmap development.

A full list of climate action projects implemented in 2021 can be found in the *Metro Vancouver 2021 Climate Action Project List*, which in addition to more information on *Climate 2050,* can be found on Metro Vancouver's website, which will be kept current.

CLIMATE 2050 IMPLEMENTATION HIGHLIGHTS

Projects and actions are highlighted in the following ways in the report:

- Big Move: Actions which are foundational to achieving the 2030 targets set out in *Climate 2050*, and which should lead to the most significant emission reductions.
- Corporate Leadership: Actions implemented by Metro Vancouver in its corporate operations to demonstrate leadership and support regional actions.
- GHG reduction: Actions which reduce greenhouse gas (GHG) emissions.

- Adaptation & Resilience: Actions which will support adaption and resilience in a changing climate.

ROADMAP PROGRESS

In 2021, Metro Vancouver finalized the *Climate 2050 Buildings Roadmap* and *Climate 2050 Transportation Roadmap*. Four *draft* roadmaps were under development during 2021: *Agriculture; Nature & Ecosystems; Energy*; and *Industry & Business,* and each of these is now undergoing engagement in 2022. Metro Vancouver is currently working on the drafts of four additional roadmaps: *Waste; Water & Wastewater Infrastructure; Land Use & Growth Management;* and *Human Health & Wellbeing*.

As work on *Climate 2050* shifts from roadmap development to focus on implementation, Metro Vancouver will continue to track and report on progress through the *Climate 2050 Snapshot* report. Information will be shared through the annual report, as well as through an online reporting platform on Metro Vancouver's Climate 2050 webpage. Progress on action implementation will be tracked and reported through a series of Key Performance Indicators, as laid out in the *Climate 2050* roadmaps.

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The resources to develop the *Climate 2050 Snapshot*, as well as to maintain an ongoing web presence, are approved within current program budgets.

CONCLUSION

The *Climate 2050 Snapshot 2021/2022* provides an overview of *Climate 2050* roadmap development and implementation in 2021 and 2022 year-to-date, including updates on key actions and projects that support progress towards the *Climate 2050* objective of a carbon neutral, resilient region. As work on *Climate 2050* shifts from roadmap development to implementation, the *Climate 2050 Snapshot* and online reporting tool will evolve to track and report progress on actions and Key Performance Indicators as outlined in the various roadmaps.

Attachment

Metro Vancouver Climate 2050 Snapshot 2021/2022 Report

References

1. *Climate 2050 Roadmaps: http://www.metrovancouver.org/services/air-quality/climate-action/climate2050/regional-priorities/discussion-papers/Pages/default.aspx*
2. *Clean Air Plan: http://www.metrovancouver.org/services/air-quality/AirQualityPublications/Clean-Air-Plan-2021.pdf*

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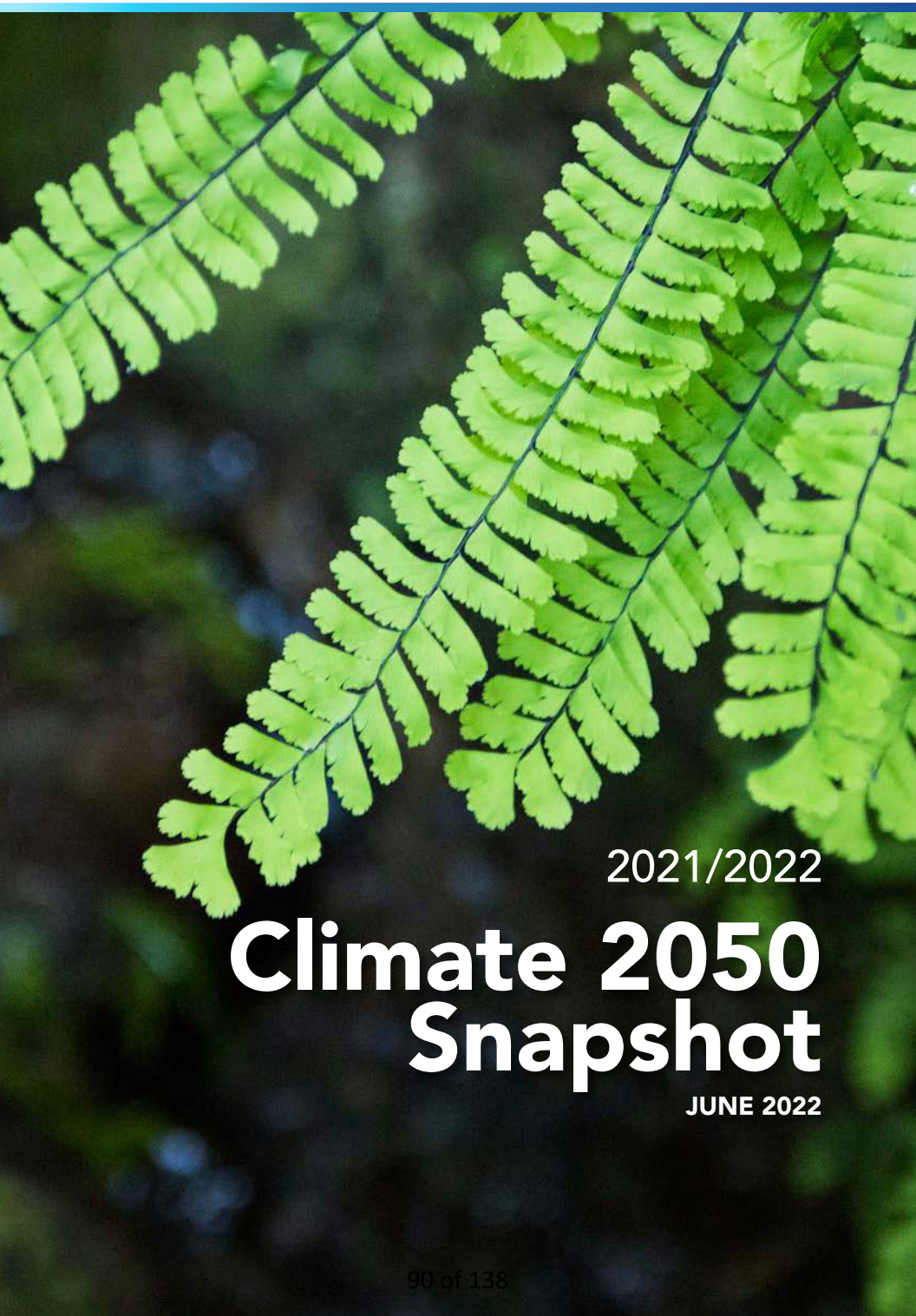

2021/2022

Climate 2050 Snapshot

JUNE 2022

About Metro Vancouver

Metro Vancouver is a federation of 21 municipalities, one electoral area and one treaty First Nation that collaboratively plans for and delivers regional-scale services. Metro Vancouver's core utility services include drinking water, sewage treatment, and solid waste management, along with regional services like regional parks, affordable housing, regional land use planning and air quality and climate action that help keep the region one of the most livable in the world.

Indigenous Territorial Recognition

Metro Vancouver acknowledges that the region's residents live, work, and learn on the shared territories of many Indigenous Peoples, including 10 local First Nations: Katzie, Kwantlen, Kwikwetlem, Matsqui, Musqueam, Qayqayt, Semiahmoo, Squamish, Tsawwassen, and Tsleil-Waututh.

Metro Vancouver respects the diverse and distinct histories, languages, and cultures of First Nations, Métis, and Inuit, which collectively enrich our lives and the region.

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Fraser River

Climate 2050 Snapshot 2021/2022

Climate change is both a global and a local challenge, and it is already affecting our planet and our region in profound ways, making our summers hotter and drier, our winters warmer and wetter, and increasing the frequency of extreme weather events. Recognizing the need for urgent and transformative action, Metro Vancouver takes an 'action while planning' approach, implementing climate actions in 2021 and 2022, while at the same time progressing on development of the *Climate 2050 Roadmaps*, which lay out the strategies and actions needed to reach Metro Vancouver's commitment to a low carbon, resilient region.

The *Climate 2050 Snapshot 2021/2022* is Metro Vancouver's first annual update on implementation progress of the *Climate 2050 Roadmaps*. It is intended to meet Metro Vancouver's commitment to regular and transparent reporting on *Climate 2050 Roadmap* progress, and progress towards Metro Vancouver's established climate commitments and targets. As work on *Climate 2050* shifts from planning to implementation, the *Climate 2050 Snapshot* will evolve to focus on reporting key performance indicators to track and measure progress on roadmap implementation.

For each of the ten *Climate 2050 Roadmap* issue areas, the *Climate 2050 Snapshot 2021/2022* highlights progress on roadmap actions, and other projects with climate benefits implemented during 2021. It also provides progress as of mid-2022 for certain actions and *Climate 2050 Roadmap* development.

For a complete list of climate action projects implemented in 2021, see the Metro Vancouver 2021 Climate Action Project List.

Boundary Bay Regional Park

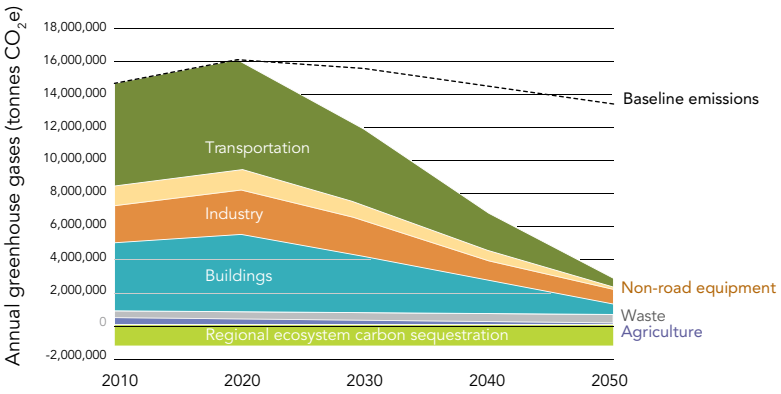
Climate 2050

Metro Vancouver and its 23 member jurisdictions have been enacting climate policy and taking climate action for over 20 years. In 2018, the Metro Vancouver Board of Directors endorsed *Climate 2050*, a regional climate strategy. *Climate 2050* commits to bold leadership in responding to climate change, ensuring that our infrastructure, ecosystems, and communities are resilient to the impacts of climate change. It includes the following commitments:

- Metro Vancouver is a carbon neutral region by 2050
- Infrastructure, ecosystems, and communities are resilient to the impacts of climate change
- Climate 2050 also sets an interim target of 45% reduction in regional greenhouse gas emissions from 2010 levels, by 2030.

Achieving a carbon neutral region by 2050 will require unprecedented greenhouse gas reductions across most sectors. Many sectors must become "zero emissions", and any remaining greenhouse gas emissions will need to be balanced with ecological and technological carbon removal approaches. Initial modeling as a part of Metro Vancouver's Carbon Neutral Modeling Study shows us that the 2020s needs to be a decade of significant action on climate solutions.

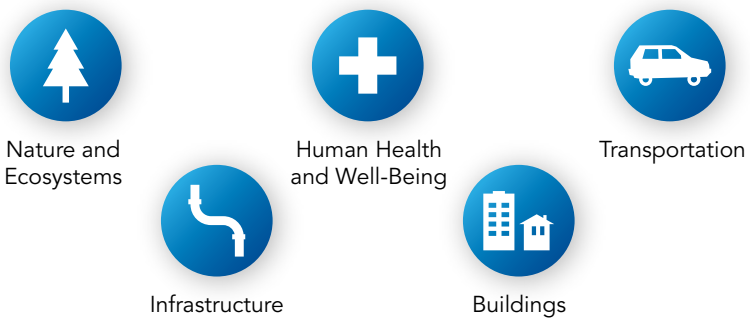
Achieving a Carbon Neutral Region by 2050



Climate 2050 Roadmaps

Climate 2050 is organized around ten issue areas, intended to provide logical groupings of climate goals, strategies, and actions. They reflect the functions and responsibilities under Metro Vancouver's mandate and the range of climate related challenges and initiatives affecting the region. For each issue area, Metro Vancouver is developing a *Climate 2050 Roadmap* which outlines regional and corporate goals, strategies, actions, and performance metrics. Once all ten *Climate 2050 Roadmaps* are completed, they will provide a comprehensive view of the path towards a low carbon, resilient region.

Climate 2050 Issue Areas

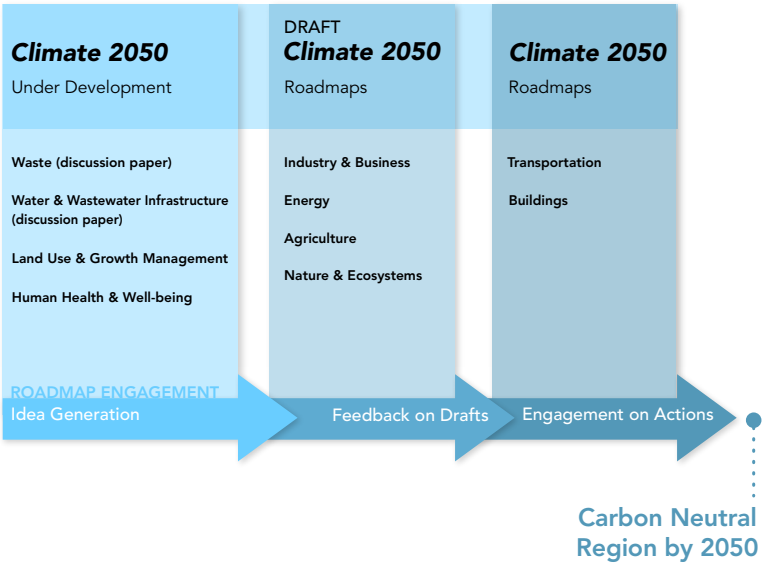


The *Climate 2050 Roadmaps* are being developed by Metro Vancouver, and include a call to action for key stakeholders across the region including: member jurisdictions, residents, businesses, academic institutions, First Nations and other regional partners and orders of government. Metro Vancouver will take a strategic approach to assessing fairness, equity and affordability in the *Climate 2050 Roadmaps*.

Progress on Climate 2050

In 2021, Metro Vancouver finalized the *Climate 2050 Buildings Roadmap* and *Climate 2050 Transportation Roadmap*. Four draft roadmaps were under development during 2021: Agriculture; Nature & Ecosystems; Energy; and Industry & Business, and each of these is undergoing engagement during 2022. Metro Vancouver is currently developing drafts of four additional roadmaps: Waste; Water & Wastewater Infrastructure; Land Use & Growth Management; and Human Health & Well-being.

Climate 2050 Roadmaps **Status: June 2022**



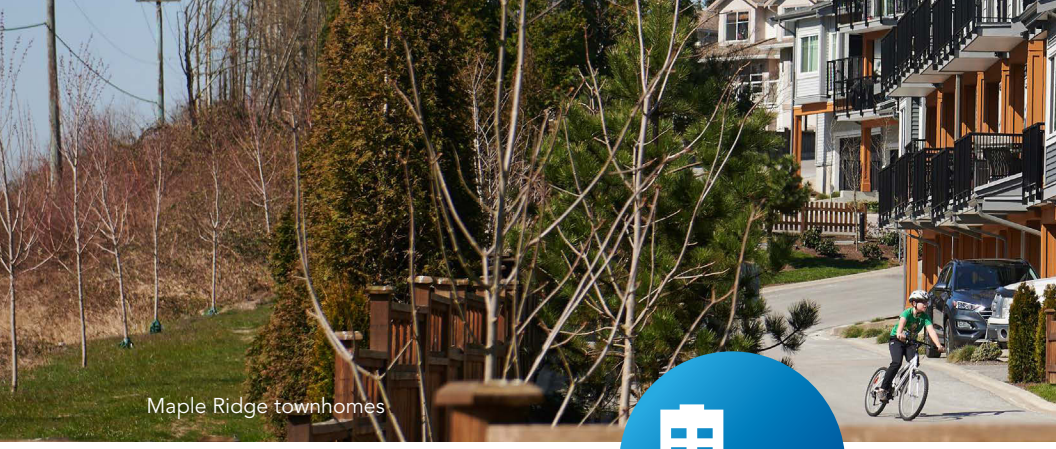
Reflecting our 'Action while Planning' approach, in 2021, Metro Vancouver implemented actions to reduce GHG emissions and support climate adaptation and resilience across the region and in Metro Vancouver's own corporate operations.
For each of the ten Climate 2050 issue areas, the *Climate 2050 Snapshot- 2021/2022* highlights progress on:

1. roadmap development
2. implementation of roadmap actions, and other climate action projects.

The icons below indicate the types of actions included in the highlights:

BIG Move	Actions which are foundational to achieving the 2030 targets set out in Climate 2050, and which should lead to the most significant emission reductions or significant progress on resilience and adaptation
Corporate LEADERSHIP	Actions implemented by Metro Vancouver in its corporate operations to demonstrate leadership and support regional actions
GHG	Actions which reduce greenhouse gas (GHG) emissions
	Actions which will support adaptation and resilience in a changing climate

For a complete list of climate action projects implemented in 2021, see the Metro Vancouver 2021 Climate Action Project List.



Maple Ridge townhomes

Buildings

Buildings will help shape our low-carbon future by using clean and renewable energy, becoming highly energy efficient, and supporting human health through design and location.

2021 Implementation Highlights:

Corporate LEADERSHIP

Installed low-carbon mechanical systems at MVHC buildings, including at the Net-Zero Welcher Avenue Redevelopment, currently under construction, in support of Metro Vancouver Housing Corporation (MVHC) GHG reduction goal of 45% over the next 10 years.

Corporate LEADERSHIP

Replaced natural gas hallway make up air supply units at MVHC's Meridian Village site with electric heat pump systems that feature cooling capacity, where previous systems only had heating, in support of Metro Vancouver Housing Corporation (MVHC) GHG reduction goals. This will be important both for GHG reductions, as well as improving the resilience of Metro Vancouver's housing facilities to more frequent extreme heat events in the region.

2022 In Progress:

Greenhouse Gas Performance Requirements for Existing Large Buildings (Action 1.1)

As of mid- 2022, the MVRD Board authorized initial engagement to develop an approach to manage GHG emissions from large buildings, which will take place over the summer and fall of 2022.

Decision Support Tools for Low Carbon Upgrades (Action 2.2)

In early 2022, the MVRD Board approved $850,000 in funding over three years to develop a Metro Vancouver Large Building Retrofit Accelerator that will serve as a regional resource hub that provides technical support and resources to building owners and managers to implement low- and zero-emission retrofits.

Corporate LEADERSHIP

Strengthen Metro Vancouver's Corporate Sustainable Design Requirements (Action 4.5)

In 2022, initiated a pilot to test a Design Guide on a full-scale infrastructure project at three Water Services buildings.

Climate 2050 Roadmap Development: *Climate 2050 Buildings Roadmap* endorsed by the Metro Vancouver Board in November 2021.

Transportation

Transportation will help shape our low-carbon future by prioritizing zero-emission vehicles, managing the demand for roads, and making improvements that increase system resilience.

2021 Implementation Highlights:

BIG Move GHG

Enhance and Improve Regional Transit (Action 1.1)

Worked with TransLink to align GHG reduction targets and strengthen climate action on TransLink's long range regional transportation strategy, Transport 2050.

GHG

Electric Vehicle Outreach Programs (Action 2.7)

Worked with member jurisdictions and other regional partners to promote electric vehicles, through outreach programs including Emotive and EV Condo.

GHG

Corporate LEADERSHIP

Transition the Corporate Fleet to Zero Emissions (Action 2.9)

In 2021, initiated a feasibility study to assess Electric Vehicle charging infrastructure at our Lake City/ Production Way Operations Centre. The study will consider emergency backup power requirements to ensure fleet resiliency during periods of grid power loss.

Active Transportation in Metro Vancouver

Initiated development of E-bikes and Micro-mobility in Regional Parks Policy, which will support active/ alternative transportation in Metro Vancouver parks and greenways, and reduce emissions.

2022 In Progress:

Use Pricing to Reduce Driving and Emissions (Action 1.2) and Develop Regional Emissions Requirements for Passenger Vehicles (Action 2.2)

In early 2022, the MVRD Board approved $455,000 in funding over two years for Driving Down Emissions: Working with Key Partners to Develop a Regional Pathway to Accelerate Transportation Emission Reductions, to develop a policy package that will dramatically reduce emissions from light duty vehicles to achieve the sectoral target of 65% reduction by 2030 while considering cost and equity implications.

Climate 2050 Roadmap Development: *Climate 2050 Transportation Roadmap* endorsed by the Metro Vancouver Board in November 2021.

Energy

Energy will help shape our low-carbon future through reduced energy use, enhanced energy efficiency and transitioning to clean, renewable energy.

2021 Implementation Highlights:

Corporate LEADERSHIP

Metro Vancouver as a Regional Clean, Renewable Energy Provider (Action 3.9)

GHG

Finalized an agreement to provide up to 10 megawatts of heat from Metro Vancouver's Waste-to-Energy Facility to Vancouver's River District community starting in 2025. Once fully built out, energy from the Waste-to-Energy District Energy Facility will reduce up to 45,000 tonnes of GHGs per year by offsetting natural gas usage.

GHG

Implemented an Alternative Fuel and Recyclables Recovery Project, which reduces emissions by using small load waste-based alternative fuel in place of conventional fossil fuel in a local cement plant. The initiative is projected to process an estimated 60,000 tonnes of small load waste, reducing regional GHG emissions by up to 20,000 tonnes.

Lulu Island Renewable Natural Gas Recovery Facility

2022 In Progress:

GHG

Regional Hydrogen Hub (Action 3.3)

Working with the B.C. Hydrogen Office and the B.C. Centre for Innovation and Clean Energy on the establishment of a hydrogen hub in Metro Vancouver.

Corporate LEADERSHIP

GHG

Metro Vancouver as a Regional Clean, Renewable Energy Provider (Action 3.9)

Received federal and provincial funding under the CleanBC Communities Fund for the installation of a heat recovery system at Lulu Island Wastewater Treatment Plant, which will increase renewable natural gas production at the Plant.

Climate 2050 Roadmap Development: Draft *Climate 2050 Energy Roadmap* approved for engagement April 2022.

Coquitlam Transfer Station

Industry & Business

Industry will help shape our low-carbon future by reducing emissions with better technology, using clean and renewable energy, and setting high standards for products and their manufacturing processes.

2021 Implementation Highlights:

Carbon Capture in the Metro Vancouver Region (Action 3.1)

In 2021, initiated project and explored potential opportunities through coordination with the Provincial government, academia, and industrial facilities.

2022 In Progress:

Integrate Greenhouse Gases into Emissions Regulations and Permits (Action 1.2)

In early 2022, the MVRD Board approved $150,000 funding over two years starting in 2022 to initiate work on exploring innovative approaches to integrate GHG requirements into permits and regulations.

"Lights, Camera, Climate Action!": An initiative to support the transition of the film industry, and similar user groups away from diesel generators and towards cleaner power alternatives. In 2022, initiated a feasibility study on the viability of clean energy alternatives for the film industry.

Climate 2050 Roadmap Development: Draft *Climate 2050 Industry & Business Roadmap* approved for engagement in February 2022.

Nature & Ecosystems

Nature and ecosystems will help shape our low-carbon future by capturing carbon, cooling our streets, and enhancing livability.

2021 Implementation Highlights:

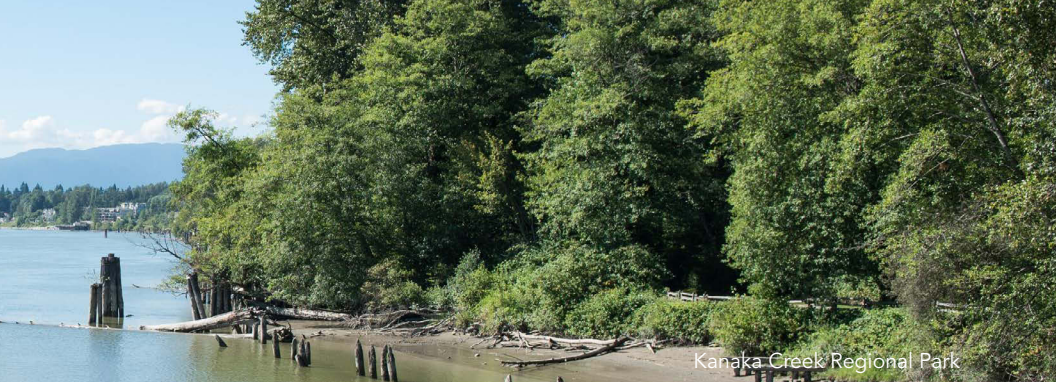
Protect, Restore, and Enhance Natural Areas at the Regional Scale (Action 1.2)

Corporate LEADERSHIP

As part of the Regional Parks Land Acquisition 2050 Strategy, acquired 76.7 hectares of land in 2021 to expand Codd Wetland Ecological Conservancy Area and Kanaka Creek Regional Park, protecting land threatened by development, and supporting ecological conservation and restoration, as well as carbon sequestration.

Regional Parks Ecological Restoration Program

Completed 26 ecosystem restoration projects in 15 regional parks, adding 13,477 native plants to restore degraded sites, to enhance biodiversity and promote ecosystem resilience.


Kanaka Creek Regional Park

Corporate LEADERSHIP

Incorporate Climate Change Planning into Protected Area Management (Action 1.4)

Conducted a Flood Protection Assessment at Minnekhada Regional Park, to assess the sources and impacts of flooding and identify options to improve drainage within the park with considerations of climate change and sea level rise.

BIG Move

Achieve 40% Tree Canopy Cover Within the Region's Urban Areas (Action 4.1)

Completed the Metro Vancouver Tree Regulations Toolkit, which supports tree protection in communities in the region by identifying regulatory tools and approaches that can help to preserve trees and increase tree canopy cover.

2022 In Progress:

Proposed strengthened priorities related to nature and ecosystems as part of *Metro 2050*, the regional growth strategy update, and enhanced climate change policies in the draft Regional Parks Plan.

Regional Parks Alternative Transportation Study Part 2: Access to Regional Parks was completed, which will guide work to improve access to regional parks by public transit, biking, and walking.

Climate 2050 Roadmap Development: Draft *Climate 2050 Nature & Ecosystems Roadmap* approved for engagement in February 2022.

Boundary Bay Dairy Farm

Agriculture

Agriculture will help shape our low-carbon future by using clean and renewable energy and using regenerative farming practices. We all need to protect agricultural land for future food production and carbon storage.

2021 Implementation Highlights:

- **Proposed strengthened priorities to protect and increase resilience of agricultural land** for sustainable food production as part of Metro 2050, the regional growth strategy update.
- **Assessed air emissions emitted as a result of management of agricultural vegetative debris**, to support development of alternatives to open burning, including assessing solutions such as composting.

2022 In Progress:

Review of Benefits of Ecosystem Services on Agricultural Land

Agricultural Land Use Inventory for South of Fraser member jurisdictions with agricultural land.

Climate 2050 Roadmap Development: Draft *Climate 2050 Agriculture Roadmap* published October 2021 and engagement underway in 2022 for feedback.

Water and Wastewater Infrastructure

Water and wastewater infrastructure will help shape our low-carbon future by protecting and conserving water resources, generating low-carbon energy, and planning for resilience across the region.

2021 Implementation Highlights:

We Love Water public education campaign, which promotes residential water conservation for Metro Vancouver's water supply system.

Introduced stricter watering restrictions during high demand season as part of a revised Drinking Water Conservation Plan, to strengthen resilience and conserve drinking water supplies.

Rendering of the North Shore Wastewater Treatment Plant

2022 In Progress:

Corporate LEADERSHIP

Advanced construction on the new North Shore Wastewater Treatment Plant (NSWWTP) which will replace the existing Lions Gate Wastewater Treatment Plant which served the North Shore communities. The use of renewable natural gas produced by the plant's digesters to generate electricity and heat will lead to reduced GHG emissions from plant operations. In addition, heat from the treated wastewater will be extracted and provided to Lonsdale Energy Corporation, the district energy service provider in the City of North Vancouver, providing clean, renewable energy to reduce emissions from buildings.

Climate 2050 Roadmap Development:

Climate 2050 Water & Wastewater Discussion Paper approved for engagement in January 2021. Draft Roadmap under development in 2022.

United Boulevard Recycling & Waste Centre

Waste

Waste management will help shape our low-carbon future by reducing and diverting waste, promoting a circular economy, and generating low-carbon energy.

2021 Implementation Highlights:

Corporate LEADERSHIP

Implemented projects to reduce GHG emissions at Metro Vancouver-operated waste facilities, including the continuation of the Coquitlam Landfill Gas Capture project, and a Non-Ferrous Metals Recovery project at the Waste-to-Energy Facility.

Incorporated climate preparedness considerations into design of two new Recycling and Waste Centers which will open in 2022.

2022 In Progress:

- **Evaluation of Renewable Natural Gas** at Metro Vancouver Waste-to-Energy Facility.
- **Opening two new Recycling and Waste Centres** at United Boulevard and Central Surrey.

Climate 2050 Roadmap Development: *Climate 2050 Waste Discussion Paper* approved for engagement in June 2020. Draft Roadmap under development in 2022.

təmtəmíx"tən/Belcarra Regional Park

Human Health & Well-Being

Anticipating and preparing for climate change impacts including storms, flooding, heat waves, and wildfires, protects our health and safety.

2021 Implementation Highlights:

Replaced natural gas hallway make-up air supply units with electric heat pump systems that feature cooling capacity, where previous systems only had heating, at the MVHC Meridian Village housing site. This is important for health & well-being as we anticipate more extreme heat events in the region.

Introduced a Residential Wood Burning Bylaw, to reduce emissions of the short-lived climate forcer black carbon, and other health-harming air contaminants such as fine particulate matter in the region.

2022 In Progress:

In 2022, Metro Vancouver is continuing to provide and enhance our Air Quality Advisory Program, which helps residents of the region understand current air quality conditions and potential health risks as climate change- influenced air quality events become more frequent and intense.

Climate 2050 Roadmap Development: *Climate 2050 Human Health & Wellbeing Roadmap* under development.

Land Use & Growth Management

The location of new homes and businesses strongly influences both GHG emissions and exposure to risks associated with climate change.

2021 Implementation Highlights:

Proposed strengthened climate policies related to land-use and growth management, as part of Metro 2050, the regional growth strategy update informed by recommendations resulting from the Climate Change and Natural Hazards Policy Review. This work continued in 2022.

2022 In Progress:

In 2022, Metro Vancouver Board directed staff to explore stronger policy directions on GHG emission reductions and regional resilience post *Metro 2050* adoption, driven in part by the unprecedented climate change-related impacts the region and surrounding areas.

Climate 2050 Roadmap Development: *Climate 2050 Land Use & Growth Management Roadmap* under development.

For more information

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Climate Action Committee

From: Aby Sharma, Director (Acting), Policy, Planning and Analysis
Water Services Department

Date: June 13, 2022 Meeting Date: July 8, 2022

Subject: **2022 Update on Water Sustainability Innovation Fund Projects**

RECOMMENDATION

That the Climate Action Committee receive for information the report dated June 13, 2022, titled "2022 Update on Water Sustainability Innovation Fund Projects."

EXECUTIVE SUMMARY

This report provides an update on 10 projects that were approved for funding in 2018 through to 2021 under the Water Sustainability Innovation Fund. Descriptions of the 10 projects are included in the attachment. The projects range from assessment of emerging contaminants of concern, microplastics, disinfection by-products; to monitoring and information management; to greywater reuse; to earthquake early warning systems.

PURPOSE

This report provides an update on projects funded under the Water Sustainability Innovation Fund.

BACKGROUND

The Water Sustainability Innovation Fund was created by the Board in 2004 to provide financial support to Water Utility projects that contribute to the region's sustainability. The GVWD Board adopted the *Water Sustainability Innovation Fund Policy* on June 27, 2014, with further amendments in 2016 and 2021, to guide the use and management of the Fund. The policy requires that the Climate Action Committee be updated on an annual basis on the deliverables, outcomes and measurable benefits of the projects receiving funding.

This report presents an update on projects that have not yet been reported as complete to the Climate Action Committee, including status, amount spent, and project outcomes.

STATUS OF SUSTAINABILITY INNOVATION PROJECTS (APPROVAL YEARS: 2018 – 2021)

The table below provides information on the status of each project. Additional details are provided in the attachment.

Project	Approval Year	Amount Approved	Status
Greywater Reuse and Rainwater Harvesting Demonstration	2018	$350,000	In progress
Treating Emerging Contaminants at the Seymour Capilano Filtration Plant	2019	$300,000	In progress
UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products	2020	$500,000	In progress
Earthquake Early Warning and Strategic Response System Pilot	2020	$270,000	In progress
Enhancing the Data Processing of the Water Flow Metering Network	2020	$180,000	In progress
Building Information Modeling (BIM): Transforming Utilities Information Management	2021	$800,000	In progress
Microplastics Study in Source Waters and Water Treatment	2021	$150,000	Delayed
Next Generation Snowpack Monitoring – Phase 2	2021	$400,000	In progress
Visual Documentation of Key Water Services Infrastructure	2021	$700,000	On hold
ICI Sector Migration – Impact on Water Services	2021	$150,000	On hold

ALTERNATIVES

This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS

The projects summarized in this report had funding approved by the Board from 2018-2021. The disbursals of funds were made in accordance with the *Water Sustainability Innovation Fund Policy* that governs the use and management of the Fund.

The table below outlines the funding approved and the amount spent to date for each project. Any unspent funds for completed projects remain in the Water Sustainability Innovation Fund reserve.

Project	Total Amount of Funding Approved	Amount Spent (as of June 1, 2022)
2018 Approval Year		
Greywater Reuse and Rainwater Harvesting Demonstration	$350,000	$267,340
2019 Approval Year		
Treating Emerging Contaminants at the Seymour Capilano Filtration Plant	$300,000	$131,425
2020 Approval Year		
UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products	$500,000	$35,289
Earthquake Early Warning and Strategic Response System Pilot	$270,000	$199,389
Enhancing the Data Processing of the Water Flow Metering Network	$180,000	$112,570
2021 Approval Year		
Building Information Modeling (BIM): Transforming Utilities Information Management	$800,000	$131,839
Microplastics Study in Source Waters and Water Treatment	$150,000	$0
Next Generation Snowpack Monitoring – Phase 2	$400,000	$205,000
Visual Documentation of Key Water Services Infrastructure	$700,000	$0
ICI Sector migration – Impact on Water Services	$150,000	$0

The balance in the Water Sustainability Innovation Fund at December 31, 2021 was $14.3 million.

CONCLUSION

This report presented an update on 10 projects funded under the Water Sustainability Innovation Fund. The Fund was created by the Board in 2004 to provide financial support to Water Utility projects that contribute to the region's sustainability.

Attachment

2022 Update on Water Sustainability Innovation Fund Projects

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

2022 UPDATE ON WATER SUSTAINABILITY INNOVATION FUND PROJECTS

Greywater Reuse and Rainwater Harvesting Demonstration: In Progress
Metro Vancouver has undertaken an initiative to support the uptake of these non-potable water systems at individual buildings in the region. The project aims to advance non-potable water use through research, education, capacity building, and by convening relevant stakeholders into a process to identify and address barriers to the broader adoption of these systems. Due to pandemic restrictions, the demonstration activity was removed from the project scope.

Outcomes to date:

- A non-potable water systems guidebook and companion document were published in June 2022. The guidebook includes case studies, lessons learned, the non-potable water regulatory environment, and recommendations for the planning, design, implementation, and operation and maintenance of non-potable water systems. The companion document covers the technical aspects of planning, design, and implementation of non-potable water systems.
- The roadmap is planned for completion in September 2022. It identifies the barriers to broader adoption of non-potable water systems in the region and outlines the opportunities to address them.

The key deliverables of the project will be completed by the end of 2022.

Treating Emerging Contaminants at the Seymour Capilano Filtration Plant: In Progress
Consulting engineering services are required to assess and study current and future emerging contaminants to Seymour Capilano Filtration Plant (SCFP). The project comprises two phases. The Phase 1 literature survey includes a desktop study to develop a detailed understanding of future contaminants in source water, an assessment of existing treatment processes, and evaluating best practices to manage emerging contaminants of concern. Phase 2 will undertake pilot testing on a selection of the highest risk contaminants.

Outcomes to date:

- The consultant is close to completing Phase 1 and the last two technical memoranda are being reviewed.
- Phase 1 will define the treatment objectives and operating conditions at the SCFP to effectively treat emerging contaminants.

The project team will evaluate the results of Phase 1 and the treatability assessment report to decide whether to proceed with Phase 2, which is scheduled to commence in October 2022.

UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products: In Progress
Consulting engineering services are required to evaluate the use of multi-spectrum UV visible analyzers for continuous monitoring of disinfection by-products (DBPs) at the Coquitlam Water Treatment Plant (CWTP) and at various locations in the transmission system. Data collected using the UV visible analyzers may enable the implementation of DBP prediction models to optimize sodium hypochlorite and ozone dosages at CWTP, and thereby minimize the formation of DBPs in the water

transmission system. Phase 1 includes a literature survey and desktop analysis that requires the collection of data over a full year.

Outcomes to date:

- The consultant is continuing the evaluation of the use of multi-spectrum UV visible analyzers for continuous monitoring of DBPs.
- Three technical memoranda are being reviewed:
  - Literature Review
  - Desktop UV Visible Equipment Evaluation
  - UV Visible Data Collection and Test Plan

The project team will evaluate the results of Phase 1 in fall 2023. A decision will then be made on whether to proceed with Phase 2, a pilot project to design and install in-line instrumentation at selected locations to monitor DBPs.

Earthquake Early Warning and Strategic Response System Pilot: In Progress

Consulting engineering services are required to plan, design, install, test, and commission an earthquake early warning system at critical Metro Vancouver sites. The project commenced in January 2021 and the first installations were completed in April 2022.

Outcomes to date:

- An earthquake early warning pilot system has been installed at three sites (Seymour Capilano Filtration Plant, Coquitlam Water Treatment Plant and Lake City Operations Centre) and is now undergoing a test period.
- The system has been showing success in the early stages of the test period. The system is designed to sound alarms, giving seconds to tens of seconds of warning to staff and operators. Staff can then seek to duck, cover and hold and/or exit vulnerable spaces.

Once fully tested and commissioned in fall 2022, the project team will examine and test the utilization of the warnings for any automated actions. These actions could help secure vulnerable aspects of the water supply system while increasing safety and resiliency across the region. The system pilot project is expected to be complete by end of 2023.

Enhancing the Data Processing of the Water Flow Metering Network: In Progress

This project will evaluate and develop artificial intelligence software solutions that use artificial neural networks to enhance the data processing of the water flow metering network. This project will involve setting up a software system, analyzing historic data from the flow metering network, generating forecasts and comparing them with live data, and reporting unexpected trends to staff for further investigation.

Outcomes to date:

- The vendor demonstrated the product at an off-site installation in March 2022 and Metro Vancouver was able to complete initial testing.
- The vendor-led factory acceptance test sessions of the selected software were completed satisfactorily.

- On-site installation in the test environment was completed in April 2022.

The consultant is currently working on completion of on-site production environment and integration with the Metro Vancouver database. The project is on schedule for completion by the end of September 2022.

Building Information Modeling (BIM): Transforming Utilities Information Management: In Progress
Consulting engineering services are required to explore and advance the potential of BIM for Metro Vancouver utilities. An earlier review of BIM and its benefits for utilities showed tangible efficiencies and cost reductions over the long term. The project will be completed in three phases, each stage-gated for review and approval to proceed.

Outcomes to Date:
- Consultant was hired in fall 2021.
- The consultant is working with the Metro Vancouver team to develop policies, standards, and owner requirements.

Phase 1 is expected to be complete mid-2023 with the policies, standards, templates and procedures completed and successful piloting of BIM 3D tools, staff training, and organizational process improvements. Future applications for Phases 2 and 3 will be made to the Water Sustainability Innovation Fund to continue the advancement of BIM into utility functions. Phase 2 will support construction management, commissioning, operations, and maintenance activities. The final Phase 3 will pilot the integration of BIM with Enterprise Asset Management, GIS, and other corporate systems including the Digital Twin Hydraulic model.

Microplastics Study in Source Waters and Water Treatment: Delayed
This study will evaluate the presence and concentration of microplastics in Metro Vancouver's source waters (Capilano, Seymour, and Coquitlam), treatment residuals from the Seymour Capilano Filtration Plant and within the water treatment train at both drinking water treatment plants.

The long-term objective of this project is to provide Metro Vancouver and member municipalities with additional information on microplastics within the drinking water treatment and transmission system. The project also aims to develop a foundation for further microplastic study within the drinking water treatment and transmission systems as well as within other departments such as Liquid Waste Services.

The project is resuming with procurement in the summer of 2022, as the scope had to be revisited with new research information.

Next Generation Snowpack Monitoring – Phase 2: In Progress
This project involves reviewing and applying new technologies to measure snow in the watersheds and to quantify the amount of stored water in the seasonal snowpack. Phase 1 began in 2019 and was completed by 2021, when Phase 2 was approved.

Outcomes to date:

- The project team completed five fixed-wing aerial LiDAR snow depth surveys and two surveys using remotely piloted aerial systems (RPAS, or drones) in 2021, and two additional aerial LiDAR surveys so far in 2022.
- Extensive field validation work has been completed to determine the accuracy of remotely sensed geospatial snow products, and to determine potential sources of error. Aerial LiDAR and RPAS photogrammetry have shown promising results.
- Optical and Synthetic Aperture Radar (SAR) satellites are now being used operationally to determine the snow covered extent over the water supply areas. This imagery is currently being processed and analyzed by Metro Vancouver staff.

The project is on schedule for completion by end of 2022. The Metro Vancouver team is beginning to work with a consultant to use satellite imagery and machine learning/artificial intelligence algorithms to produce weekly snow depth, snow water equivalent, wet snow extent, and soil moisture maps of the water supply areas. A potential Phase 3 project is being considered.

Visual Documentation of Key Water Services Infrastructure: On Hold

This project aims to create a visual database of critical components of Metro Vancouver's drinking water infrastructure, including dams and water treatment plants. The visual database would result in a potential number of services, including:

- 360° site walk-throughs that allow for remote management and visualization.
- Measurable 2D and 3D images that document existing conditions.
- Accurate and representative floorplans.

Having an accurate inventory of Metro Vancouver's infrastructure is crucial to effectively managing assets and making informed decisions about future development.

This project is on hold. It is expected that the outcomes of the Building Information Modeling (BIM) project will better inform the scope and requirements of this project.

Industrial, Commercial, and Institutional (ICI) Sector Migration – Impact on Water Services: On Hold

Changes in land use patterns and rising land value have driven industry and other businesses to move to more cost-effective areas within and outside the region. In 2017, the ICI sector was estimated to account for 40% of total water demand. The relocation of the ICI sector has the potential to shift water demand in the region. This project will estimate future ICI water demand and how this may impact water system servicing infrastructure.

This project will resume in fall 2022 when the latest 2021 census data has been analyzed by Metro Vancouver Regional Planning and following the Board's acceptance of Metro 2050 Regional Growth Strategy which will be considered in July 2022.

To: Climate Action Committee

From: Claire Ewing, Senior Policy and Planning Analyst
Erik Blair, Senior Planner
Parks and Environment Department

Date: June 8, 2022 Meeting Date: July 8, 2022

Subject: **Metro Vancouver Membership in the BC Building to Electrification (B2E) Coalition**

RECOMMENDATION

That the MVRD Board authorize Metro Vancouver to become a member of the BC Building to Electrification Coalition (B2E).

EXECUTIVE SUMMARY

Buildings emit one-quarter of regional GHG emissions, primarily through burning natural gas for space and water heating. A key action in the *Clean Air Plan* and *Climate 2050 Buildings Roadmap* calls for a "Building Decarbonization Coalition" to accelerate demand for zero emission buildings through incentives, education, and research (Action 2.2.4, *Clean Air Plan*). The newly established BC Building to Electrification Coalition (B2E) implements this action by bringing together a diverse group of organizations and other stakeholders who are working towards a shared goal of decarbonizing buildings across the Province. By joining B2E, Metro Vancouver will amplify the work of B2E within the region, and facilitate collaboration opportunities with other members. There is no cost for Metro Vancouver associated with becoming a member of the B2E Coalition. This report seeks authorization from the MVRD Board to become a signatory member of B2E.

PURPOSE

To seek MVRD Board authorization to become a member of the BC Building to Electrification Coalition (B2E).

BACKGROUND

In 2021, the MVRD Board approved the *Clean Air Plan* and endorsed the *Climate 2050 Buildings Roadmap*, which establish a target of reducing GHG emissions from buildings by 35% below 2010 levels by 2030 and achieving zero emission buildings by 2050. The *Plan* and *Roadmap* call for a "Building Decarbonization Coalition" to help accelerate demand for zero emissions buildings. This report recommends joining the BC Building to Electrification Coalition (B2E) to increase collaboration and support for zero emissions buildings across the region.

BUILDINGS: A MAJOR CONTRIBUTOR TO CLIMATE CHANGE

Buildings produce approximately 25% of the region's total annual GHG emissions and 35% of its fine particulate matter emissions. The Intergovernmental Panel on Climate Change has stated that immediate and deep greenhouse gas emissions reductions across all sectors are necessary to limit global warming to 1.5°C, with global emissions needing to be reduced by almost half by 2030. Even with energy efficiency programs and incentives provided by utilities, the Province, and municipalities, GHG emissions from buildings have risen 10% since 2010 in Metro Vancouver. This increase is

primarily due to the continued widespread use of natural gas for space and water heating in most buildings, which produces over 90% of GHG emissions from buildings. Natural gas systems in buildings are also a significant source of other health-harming air emissions, contributing 10% of the region's nitrogen oxide emissions. Since heating equipment is typically only replaced every 10-20 years, it is critical to ensure that retrofits maximize emission reductions and that new buildings have the most efficient, lowest-emitting equipment installed at the time of construction. Most existing buildings will eventually need retrofits to reduce their emissions to low or zero emissions in line with the targets adopted in Metro Vancouver's Plans.

BENEFITS OF BUILDING ELECTRIFICATION

Electrifying buildings means installing electrically-powered systems, particularly for space and water heating, instead of natural gas systems. Building equipment that is connected to BC Hydro's grid can achieve near-zero GHG emissions and eliminate other air emissions associated with fossil fuel combustion, because the grid is powered by 98% clean and renewable sources. Accordingly, getting to zero emission buildings is expected to depend on widespread building electrification.

Electrification is a key decarbonization strategy for buildings to meet emission reduction targets, and provides co-benefits such as reduced emissions, improved air quality, cooling in homes and increased energy efficiency. Proven technologies are already widely available to support building electrification. Some of these technologies, such as air source heat pumps that heat and cool, can also have life-saving health benefits for building occupants during extreme heat events. As such, building electrification is important not only for mitigating climate change, but also for adapting to it.

THE BUILDING TO ELECTRIFICATION COALITION (B2E)

B2E was launched in 2021 as a BC-based member-driven coalition. Its purpose is to create opportunities for multiple stakeholders to work collaboratively to identify and address barriers to electrification and take actions that contribute to a meaningful market shift to low carbon building electrification. B2E's vision is that:

> *"By 2030, all new and most replacement space heating and domestic hot water systems in BC's buildings will be affordable, high-efficiency, and low-carbon, with electric systems being widely used across all market sectors."*

This vision aligns with the *Climate 2050 Buildings Roadmap* goal of all new buildings being zero emissions in their operations by 2030. Towards their vision, B2E's mission is to build "a broad coalition working together to electrify buildings in British Columbia in order to reduce their climate impacts and reliance on fossil fuels."

B2E is a program area of ZEBx, the Zero Emissions Building Exchange, which is part of the Metro Vancouver Zero Emissions Innovation Centre (ZEIC). ZEBx, BC Hydro, and the City of Vancouver are B2E's founding members. Since its founding, over sixty other organizations have become members, ranging from municipalities to building developers, consultancies, and other associations. Some Metro Vancouver member jurisdictions, including the Township of Langley, the City of Vancouver, and the District of North Vancouver are members of B2E. More information about B2E can be found in the Attachment.

ALIGNMENT WITH THE CLEAN AIR PLAN AND CLIMATE 2050 BUILDINGS ROADMAP

The fundamental alignment between B2E's mission and the *Clean Air Plan* and *Climate 2050 Buildings Roadmap* is the shared goal of zero emission, resilient buildings by 2050. There is also alignment with specific actions in the *Plan* and *Roadmap*, like developing a building decarbonization coalition (Action 2.2.4). Action 2.2.4 calls for a coalition comprised of governments, energy utilities, construction industry, academic institutions, and NGOs to address barriers and create opportunities to accelerate the transition to zero emission homes and buildings.

B2E also supports other Actions in the *Plan and Roadmap*. For example, B2E's mission aligns with Action 1.3, "New Buildings are Highly Efficient and Electric". As B2E organizes a coalition around building electrification, the collective voice amplifies Metro Vancouver and B2E's support for related Provincial legislation – the goal of Action 1.3. As a convener and knowledge hub of building electrification best practices, B2E contributes to Action 2.7, "Increase Public Awareness of the Benefits of Zero Emissions and Resilient Buildings", through workshops and other modes of knowledge-sharing.

METRO VANCOUVER'S ROLE AND MEMBERSHIP REQUIREMENTS

Metro Vancouver staff already participate in B2E in various capacities, but formalizing Metro Vancouver's participation through membership is important to expand B2E's voice and facilitate collaboration. Metro Vancouver has already benefitted from participating in B2E, notably by expanding staff understanding and collaboration across organizations and shared work on heat pumps. Becoming a member of B2E will allow for increased collaboration with other members, amplifying the common goal of building electrification. Metro Vancouver would also get increased access to working groups, other subcommittees, B2E events, and case study development through its membership. Becoming a member of B2E involves the Board agreeing to sign a membership declaration for B2E. Membership requirements are listed in the attached document, but can be summarized as Metro Vancouver agreeing to support B2E and building electrification efforts by participating in knowledge-sharing activities.

ALTERNATIVES

1. That the MVRD Board authorize Metro Vancouver to become a member of the BC Building to Electrification Coalition (B2E).

2. That the MVRD Board receive for information the report dated June 8, 2022, titled "Becoming a Member of the BC Building to Electrification Coalition (B2E)," and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

Under Alternative 1, there is no cost to becoming a member of B2E. Any resources needed for staff time to participate in B2E will be covered through approved program budgets.

OTHER IMPLICATIONS

Membership involves listing Metro Vancouver's name and logo on the public B2E website, demonstrating its membership and endorsement of the B2E mission and vision.

CONCLUSION

The *Clean Air Plan* and *Climate 2050 Buildings Roadmap* set an ambitious path towards zero emissions buildings by 2050. Electrifying buildings will play a key role in enabling our region to meet our emissions targets, increase resiliency, and avoid the worst impacts of climate change. As the Plan and Roadmap set a goal for developing a "Building Decarbonization Coalition", B2E meets this goal with its growing membership base and knowledge-sharing for building electrification. Metro Vancouver can play an important role in B2E by amplifying its voice and will benefit from increased collaboration with the diverse members across B2E. Staff recommends Alternative 1, for the MVRD Board to provide authorization to sign the B2E membership declaration and become a member of B2E.

Attachment

B2E Information and Membership Declaration

Reference

B2E administration and current members

52478447

B2E
Building to Electrification Coalition

Background

In BC, building electrification is a critical component to reduce carbon pollution because of the province's abundant supply of clean, renewable electricity and the mature state of high-efficiency, electric technologies for most building space and water heating applications. Burning fossil fuels to heat our homes and buildings contributes to climate change and makes up 11% of BC's greenhouse gas (GHG) emissions.

The Province has set a target to reduce GHG emissions from buildings and communities by 59% to 64% by 2030 over 2007 levels. The advancement of building electrification contributes to the achievement of this provincial target as well as ambitious local and federal government objectives, and GHG reduction targets established by many BC-based businesses. Electrification is recognized by all levels of government as a critical strategy for decarbonizing BC's building sector.

Building to Electrification Coalition

B2E is Canada's first building electrification coalition, based in British Columbia (BC). We are a member-driven collective of industry experts, professionals, associations, training/ education providers, engineers, designers, general contractors, installers, community housing providers, operators, owners, manufacturers, vendors, financial institutions, researchers, policy makers and electric utilities.

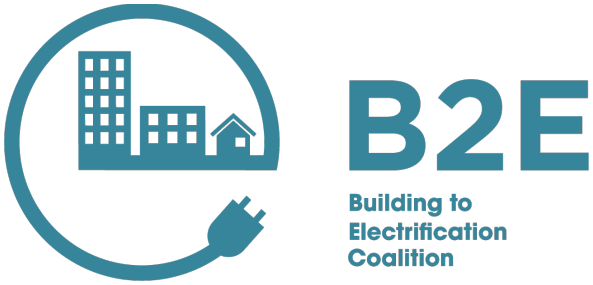
Our purpose is to create opportunities for multiple stakeholders to work collaboratively to identify and address barriers to electrification and take actions that contribute to a meaningful and equitable market shift to decarbonizing BC's building sector.

Our Vision

By 2030, all new and most replacement space heating and domestic hot water systems in BC's buildings will be affordable, high-efficiency and low-carbon with electric systems being widely used across all market sectors.

Our Mission

To build a broad coalition working together to electrify buildings in British Columbia in order to reduce their climate impacts and reliance on fossil fuels.



Becoming a B2E Member

B2E membership is held at the organizational level, and by signing our member declaration our partners agree to:

- Support the B2E Vision.
- Work respectfully and collaboratively with other B2E members to advance building electrification in BC.
- Identify solutions that support affordability while improving health and community wellbeing.
- Participate, as much as possible, in relevant member networking events and training opportunities.
- Act as ambassadors of B2E and promote its Vision.
- Share, as much as possible, building electrification success stories, lessons learned and case study opportunities with the B2E Program Manager (PM).
- Share our organization's logo with the B2E PM, for the purpose of being posted on the website on the members acknowledgement page.

Member benefits include:

- Numerous collaboration opportunities with industry leaders through working groups, subcommittees, B2E events, case study development, and publishing online articles.
- Early access to building electrification news, updates and events.
- Recognition on B2E website and acknowledgement that your organization is committed to the decarbonization of the building sector.
- A voluntary listserv to stay connected with the B2E community and up to date on the latest building electrification news.

To: Climate Action Committee

From: Roger Quan, Director, Air Quality and Climate Change
Parks and Environment Department

Date: June 28, 2022 Meeting Date: July 8, 2022

Subject: **Manager's Report**

RECOMMENDATION
That the Climate Action Committee receive for information the report dated June 28, 2022 titled "Manager's Report".

Climate Action Committee 2022 Work Plan
The attachment to this report sets out the Committee's Work Plan for 2022. The status of work program elements is indicated as pending, in progress, or complete. The listing is updated as needed to include new issues that arise, items requested by the Committee, and changes to the schedule.

BC's Climate Preparedness and Adaptation Strategy
On June 20, 2022, the Province released its new *Climate Preparedness and Adaptation Strategy* (Reference 1), which contains actions that aim to strengthen BC's capacity to anticipate, prepare for and respond to climate impacts including wildfires, floods and heatwaves, such as those that have recently been experienced in the region. The strategy also includes actions that consider climate-induced changes that happen more slowly, like receding glaciers, rising sea-levels, and shifting ecosystems.

The Strategy is organized into four key pathways, each with their own actions: (1) strengthening the foundations for success (which encompasses collaboration with Indigenous peoples, understanding and educating on climate risks, and decision making); (2) building safe and healthy communities; (3) fostering resilient species and ecosystems; and (4) advancing a climate-ready economy and resilient infrastructure. Metro Vancouver staff provided input to the draft Strategy in 2021, with the aim that the pathways would be aligned with the *Climate 2050 Roadmaps*. Staff are now undertaking an assessment of the final actions in order to identify opportunities for collaboration on implementation.

Climate Change and Health Adaptation Framework
In recognition of the impacts of climate change on health in the Metro Vancouver region, Vancouver Coastal Health and Fraser Health worked with Health Emergency Management BC on a three-year Health Canada-funded project under HealthADAPT, a multi-year capacity-building program for health authorities. This collaborative initiative included a climate change and health vulnerability and capacity assessment, which evaluated the degree to which communities, populations, facilities, and some health services in the region are susceptible to, and prepared for, the effects of climate change. The assessment provides an evidence-based snapshot on relevant hazards, vulnerabilities, and risks, and also summarizes the level of adaptive capacity within Vancouver Coastal Health, Fraser Health, and our communities.

The findings of the regional health vulnerability and capacity assessment informed the development of a Climate Change and Health Adaptation Framework (Reference 2), which was finalized in April 2022. The Framework provides recommendations across six pillars: emergency preparedness and response; risk assessment, epidemiology, and research; communications; leadership and advocacy; health equity; and, facilities. Implementation is underway, including for extreme heat events, and the Vancouver Coastal Health climate change web page is continually updated (Reference 3). Staff are reviewing the new framework with consideration of how it can inform the development of the Climate 2050 Human Health and Wellbeing Roadmap.

Initiating Engagement on Electrification of Landscaping Equipment

Initiating engagement on regulating non-road two-stroke engines, including landscaping equipment, is listed in the Climate Action Committee 2022 Work Plan. This item aligns with a strategy in the *Clean Air Plan 2021* and draft *Climate 2050 Industry and Business Roadmap* to reduce non-road emissions and support early adoption of zero-emission engines in landscaping equipment.

Small landscaping equipment (under 19kW) powered by two-stroke engines emits harmful air contaminants, including carbon monoxide, nitrogen oxides, fine particulate matter, volatile organic compounds, and greenhouse gases. An estimated 427,000 pieces of landscaping equipment were fueled by gasoline or diesel regionally in 2019. 78% of this equipment was used residentially, and 22% was used commercially.

In preparation for engagement on regulatory proposals for the transition to zero-emission engines, discussions with regional and municipal park staff that use and procure zero-emission landscaping equipment have revealed several challenges with commercial-scale equipment. The technological challenges include limited power output, battery life, access to charging infrastructure, ergonomics, durability, and constrained mobility for corded equipment. There are also supply chain issues.

A communication initiative is planned to start in Fall 2022, and may extend into 2023, to better prepare for engagement with commercial, institutional, and residential users of landscaping equipment. The intent is to raise awareness about zero-emission alternatives for landscaping equipment amongst regional operators and to understand key challenges that specific sectors face in switching to zero-emission alternatives. The outreach will target homeowners who operate lawn and garden equipment, the landscaping industry, and park operators. Messaging will focus on emphasizing local health and environmental impacts and benefits. A range of tactics will be used to engage audiences, including existing municipal parks networks, committees, social media, Metro Vancouver's website, and corporate channels. Planned outreach actions include showcasing zero-emission equipment at public events, collecting feedback via an online questionnaire, using existing mailing lists for communications, creating a website to provide more information, producing a video highlighting regional and municipal parks staff use of electric alternatives, and developing printed materials, such as rack cards or brochures.

Information exchanged as part of the communications initiative and the development of relationships with commercial, institutional, and residential operators will better position Metro Vancouver to engage on a potential emission regulation for highly emitting landscaping equipment in the future.

Engagement Update

Staff have initiated engagement on *Reducing Greenhouse Gases from Large Buildings* and on proposed amendments to Metro Vancouver's *Boilers and Process Heaters Emission Regulation Bylaw No. 1087*. On June 22, 2022, staff presented both initiatives to air quality and health agencies that are part of the Lower Fraser Valley Air Quality Coordinating Committee, and are making arrangements to present to additional committees and associations. Opportunities to provide input including webinars for each initiative and feedback forms will be available on their respective project webpages until November 30, 2022.

Staff are continuing with public opportunities to provide comment on four draft Climate 2050 Roadmaps, including the *Agriculture Roadmap*, *Industry & Business Roadmap, Energy Roadmap,* and *Nature & Ecosystems Roadmap.* Online feedback forms are available for input on Metro Vancouver's website. Staff will consider all input with the intent of bringing updated roadmaps to the Board for endorsement in late 2022.

Attachment

Climate Action Committee 2022 Work Plan

References

1. BC's Climate Preparedness and Adaptation Strategy
2. Climate Change and Health Adaptation Framework
3. Vancouver Coastal Health Climate Change webpage

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Climate Action Committee 2022 Work Plan
Report Date: June 28, 2022

Priorities

1st Quarter	**Status**
Climate Action Committee 2022 work plan and meeting schedule	Complete
Climate 2050 – draft roadmap for industry	Complete
Climate 2050 – draft roadmap for nature and ecosystems	Complete
Air quality – initiate process to update boilers and process heaters regulation	Complete
Sustainability Innovation Fund (SIF) – 2022 proposals	Complete
2nd Quarter	
Climate 2050 – management of GHG emissions from large buildings	Complete
Climate 2050 – draft roadmap for energy	Complete
Climate 2050 – draft roadmap for land use and growth management	In progress
Climate 2050 - analysis of how land use will contribute to achieving greenhouse gas reduction targets, especially for transportation	In progress
Climate 2050 – annual report and progress tracking	In progress
Air Quality – Initiate engagement on regulation for non-road two-stroke engines	In progress
Air quality – cannabis production and processing emission regulation	In progress
Air quality – open air burning emission regulation	In progress
Annual Caring for the Air report	In progress
Update on ecological health initiatives	In progress
SIF - status report on previously approved liquid waste projects	Complete
SIF - status report on previously approved regional district projects	Complete
3rd Quarter	
Climate 2050 final roadmap: agriculture	Pending
Climate 2050 final roadmap: industry	Pending
Climate 2050 – draft roadmap for infrastructure	Pending
Provincial replacement program for local government climate action	In progress
Air quality – amendments to air quality management fees in emission regulations	Complete
Air quality – amendments to ticketing bylaws	In progress
SIF - status report on previously approved water projects	In progress
4th Quarter	
Climate 2050 final roadmap: energy	Pending
Climate 2050 final roadmap: nature and ecosystems	Pending
Annual budget and 5 year financial plan	In progress
Best Management Practices for invasive species	Complete