

Review and Cost Analysis of Low emission Alternatives to Open Burning of Residential Vegetative Waste in Metro Vancouver.

EXECUTIVE SUMMARY

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August, 2022

Disclaimer

This report was produced as part of the UBC Sustainability Scholars Program, a partnership between the University of British Columbia and various local governments and organisations in support of providing graduate students with opportunities to do applied research on projects that advance sustainability across the region.

This project was conducted under the mentorship of Metro Vancouver staff. The opinions and recommendations in this report and any errors are those of the author and do not necessarily reflect the views of Metro Vancouver or the University of British Columbia.

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Acknowledgements

The author acknowledges that the work for this project took place on the unceded ancestral lands of the xwməθkwəyəm (Musqueam), Skwxwú7mesh (Squamish), Stó:lō and Səlílwətaʔ/Selilwitulh (Tsleil- Waututh) Nations.

The author would like to thank the following individuals for their contribution, feedback, and support throughout this project: Karen Taylor of UBC Sustainability Hub, Marina Richter, Prof. Carol McAusland, staff of Metro Vancouver, staff Solid Waste Division Bowen Island, staff of Langley Transfer Station, and UBC MFRE project support team.

1. Introduction

Open burning of vegetative waste from agricultural and residential areas is a major concern for air quality in Metro Vancouver. This concern calls for concerted action and regulation as identified under the 2021 Clean Air Plan for Metro Vancouver Regional District (MVRD). The 2021 Clean Air Plan has three goals: to improve ambient air quality, to reduce greenhouse gases emissions (GHG) by at least 45% from 2010 levels by the year 2030, and to ensure good visibility¹. Open burning of residential waste, sometimes referred to as “backyard burning of yard waste,” is the burning of waste materials such as leaves, grass clippings, twigs, brushwood, and garden debris without any control for smoke and Greenhouse Gas (GHG) emission. Open burning of vegetative waste releases fine particulate matter, nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOC) which might have adverse effect on humans and the environment². These emissions can affect the achievement of Metro Vancouver’s air quality objectives and the 2021 Clean Air Plan for the region.

2. Background

Metro Vancouver has an authority to regulate air quality across the twenty-one municipalities and one electoral area in the region, as delegated by the Environmental Management Act of British Columbia¹. Metro Vancouver helps to maintain safe ambient air quality through Greater Vancouver Regional District (GVRD) air quality management Bylaw Number 1082 and the use of burning permits approval system³.

The Provincial Open Burning Smoke Control Regulation (OBSCR) and municipal burning bylaws in various municipalities are steps taking by the Province to address open burning. These regulations however have their limitations which affects air quality. Most municipal bylaws on open burning

¹ Clean Air Plan 2021: has the authority to implement and identifies actions for implementation by others. The Plan targets air contaminants that can harm human health (Clean Air Plan, 2021)

² Climate Action Committee 2021: Alternative Waste Management Practices for Agricultural Vegetative Debris Project No 201-08930-00, Metro Vancouver Regional District. (Climate Action Committee)

³ Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008 (GVRD Bylaw 1082)

focus on fire prevention with less attention given to the consequences of open burning on the region's air quality. However, the policy options for residential open burning are needed to complement the actions taken to address residential green waste burning and to improve the region's air quality. Therefore, it is important to identify low-emissions alternative for residents to discourage them from open burning.

3. Research Objectives

The main purpose of the study was to identify low-emission alternatives that can be used to discourage residents, especially those outside the urban containment boundaries, from open burning of green debris. The objectives of the research are following:

- Review the existing residential vegetative waste practices and jurisdictional policies across municipalities in the region.
- Evaluate the availability of the region's resources and services among residents.
- Identify and examine applicable low-emission alternatives for disposal of residential vegetative waste.
- Analyze economic barriers to the implementation of identified alternatives.

This project will enhance the implementation of the recently adopted Metro Vancouver's regional Open Burning Emission Regulation Bylaw 1355 when it comes to the effect in 2023 to address open burning of vegetative waste.

4. Research Approach

This study was carried out by conducting qualitative review of municipal websites and existing literature from academic and government publications. Personal interviews with municipal solid waste staff, MVRD solid waste staff and a visit to Langley Transfer station were used to collect additional information. Alternatives to open burning used in Metro Vancouver municipalities and elsewhere were identified with their respective cost to the service providers and the residents. Afterwards, each alternative was evaluated and ranked on the 3-grade matrices of high, medium, and low based on cost, convenience, time, emission reduction, and availability of technology.

5. Results

The review revealed that most municipalities of Metro Vancouver have bylaws regulating open burning activities, such as agricultural and residential, with campfires, ceremonial and outdoor cooking wood burning most often exempted, with various degrees of enforcement across the region. A few municipalities completely ban open burning while others use permits to regulate open burning and some low emission practices for vegetative waste disposal².

The study identified options such as backyard composting, green curbside collection, transfer station drop-off, grass cycling, backyard wood chipping and shredding, fall leaf collection program, adopt-a-block or community neighbourhood clean-up party and use of forced air technology, as low-emission alternatives for residents to adopt. The forced air burner was the most expensive of alternatives for adoption by residents. The economic barriers identified include capital cost of acquiring or renting equipment such as woodchipper, flail mower and force air burner and high opportunity cost of time in using the transfer station drop-off station and sorting waste for organic curbside collection.

6. Recommendations

The following recommendations were made:

- To create more awareness on alternatives.
- To incentivize alternatives that are expensive to adopt by residents.
- To ensure that residents have exhausted all non-burning low-emissions alternatives before issuance of a burning permit.
- To engage curbside collection companies to modify stringent restrictions on volume of green waste to be disposed by residents using pay-as-you-throw.
- To promote more community base initiatives, such as neighbourhood green parties, for collection and removal of green waste.
- To offer new technology adoption rebates or replacement discounts to the residents with an old mower to change to a flail mower.

References

- Clean Air Plan (2021). Metro Vancouver Regional District Clean Air Plan. Retrieved from <http://www.metrovancouver.org/services/air-quality/AirQualityPublications/Clean-Air-Plan-2021.pdf>
- Climate Action Committee (2021). Alternative Waste Management Practices for Agricultural Vegetative Debris Project No 201-08930-00, Metro Vancouver Regional District. Retrieved from http://www.metrovancouver.org/boards/ClimateAction/CAC_2021-Jun-11_AGE.pdf
- Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, (2008). Air Quality Management Bylaw retrieved from http://www.metrovancouver.org/boards/Bylaws1/MVRD_Bylaw_1082_Consolidation.pdf