Metro Vancouver
SUSTAINABLE REGION SCHOLARS
UBC Sustainability Scholars Program
Summer 2018

Title of Research Project:

Assessing the performance of Metro Vancouver's wood smoke forecasting tool

1. **How will this project make a contribution to regional sustainability?**

Metro Vancouver's *Board Strategic Plan* provides direction to "Publicize tangible actions that individuals and businesses can take to reduce emissions of greenhouse gases and other air contaminants." In addition, Action 1.3.1 of the *Integrated Air Quality and Greenhouse Gas Management Plan* is to "Work with partners to enhance residential wood smoke emission reduction programs and other education and outreach initiatives."

Metro Vancouver has developed a wood smoke forecast tool, which provides guidance to residents about whether wood smoke from residential burning is likely to dissipate. This project will further validate or define the limitations of the wood smoke forecast tool, and help Metro Vancouver increase awareness of the availability and opportunities for use of the tool among Metro Vancouver's partners to encourage behaviour that will reduce the impacts of wood smoke emissions in Metro Vancouver communities.

2. The purpose of the project is:

The purpose of this project is to assess the performance of forecasts provided through Metro Vancouver's Wood Smoke Forecast Tool. The forecasts produced by the tool are available to the public by phone at 604-436-6777 in the 'heating season' between the beginning of October and the end of March. Depending on the result of the assessment, recommendations about alternative approaches to providing a forecast may be proposed.

3. Outline the scope of project and how the scholar's work will be used by Metro Vancouver:

The project will expand on a previous preliminary analysis, and will assess and validate the performance of the tool for the winters of 2015-16, 2016-17 and 2017-18. The purpose of the assessment will be to ensure that the forecasting tool is sufficiently robust to reliably predict when the use of residential wood burning devices should be discouraged or when fewer impacts on neighbourhood air quality from residential wood smoke emissions might be expected. Depending on the assessment, the Scholar may provide recommendations about alternative approaches for generating the data required to provide a public wood smoke forecast.

The work will support Metro Vancouver's comprehensive approach to managing residential wood smoke in the region.

4. Project Deliverables:

- The main project deliverable is a final report containing details of the analysis conducted, the results of the assessment, and recommendations for improvements to the data input to the forecast tool. The report should include details of methods used, results, and any recommendations as well as a list of references used.
- A presentation to Metro Vancouver staff of project findings may also be requested.
- Final report or executive summary for the UBC Sustainability Scholars Program online project library.

Submit applications here: http://bit.ly/2DC2jpP

It is expected that a draft report will be provided, before the end of the project and prior to completion of the final report, for review by Metro Vancouver.

5. Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between **01 May 2018** and **10 August 2018**
- The scholar is to complete approximately 15 to 20 hours of work per week.
- Scholar to be available, either in person or by telephone as agreed, for project start-up meeting, periodic status updates and draft and final report presentations.

The wood smoke forecast period ends by the beginning of April and restarts at the beginning of October. Completion of the work between June and mid-August would be optimal to inform decisions by Metro Vancouver staff about future use of and improvements to the tool.

6. <u>Describe the required/preferred skill set and knowledge base for a Scholar</u>

☒ Strong skills in quantitative analysis, particularly advanced statistical methods, and some knowledge of regional meteorology are expected to be needed to successfully complete this project.
☒ A good understanding of environmental data analysis and meteorological forecast models (including validation methods)
☒ Well-developed communication and interpersonal skills.
☒ Excellent research and writing skills.
☒ Ability to work independently
☒ Demonstrated time management skills
☒ Deadline oriented
☒ Familiarity with manipulating large datasets, including import and export from different database sources, meteorological forecast model outputs and Excel macros will be needed.
☒ Experience working with R or Matlab an asset.