

Summer 2024 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Hub is pleased to offer current UBC graduate students the opportunity to work on sustainability internship projects. Successful candidates work under the guidance of a mentor from the partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region. These opportunities are paid. The pay rate for the summer 2024 program is \$27.50/hour or \$6,875 for a 250-hour project.

- Visit the [Sustainability Scholars Program website](#) to learn [how the program works](#) and to [apply](#).
- Be sure to review the application guide on the Apply page to confirm your eligibility before applying.

Applications close at midnight on Sunday January 28, 2024.

Project title: Estimating emissions from non-road engines in the Metro Vancouver region

Project Background & Overview:

Non-road engines are a diverse group of engines and equipment used in construction, industry, commercial, lawn and garden care, recreation, and a variety of other applications that are typically not intended for use on a public road. Non-road engines also vary in size, from construction cranes to lawnmowers and other small handheld equipment. The large majority of these engines run on fossil fuels. Electric equipment is currently limited mostly to smaller handheld equipment but more electric options are becoming available across the sector. Non-road engines are also significant contributors of emissions at a regional scale, as well in local environments, as they emit large quantities of particulate matter, nitrogen oxides, greenhouse gases, and other harmful air contaminants. Developing more accurate disaggregation methodologies is in line with Metro Vancouver's goal of continuous improvement as well as better tracking progress towards meeting our reduction targets.

Metro Vancouver's *Clean Air Plan* includes 2030 targets to reduce emissions from non-road engines and equipment, as follows:

- 35% reduction in greenhouse gas emissions, from 2010 levels
- 50% reduction in diesel particulate matter emissions, from 2020 levels.

To track and forecast emissions of air contaminants in the region, Metro Vancouver prepares emissions inventories, which can be used to measure performance, track progress towards goals and targets, and guide policy and regulatory development. For non-road engines, Metro Vancouver has previously relied on inventory estimates available from Environment and Climate Change Canada (ECCC). ECCC prepares national and provincial emissions inventories for non-road engines, and those inventories can be disaggregated to the regional level using economic and population surrogates. However, considerable error can result from the disaggregation process, depending on the accuracy of the national data and how well the disaggregation methods can account for the regional context.

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In 2023, Metro Vancouver worked with UBC's Collaborative PhD for Climate Action pilot program to review existing data and disaggregation approaches, which resulted in initial recommendations for workflow and data improvements. This project will seek to extend the pilot program work, and implement some of the recommendations.

Project description

This project seeks to review methods for disaggregation of emissions, and to prepare updated estimates of emissions from non-road engines for the Metro Vancouver region.

The Scholar will conduct research into best practices for disaggregating emissions data and develop a repeatable methodology that will be applied to estimate emissions. A key element of this project is to access local equipment populations and engine types. This may require working with industrial organizations such as the port and industry associations.

The outcome would be valuable in supporting Metro Vancouver's ongoing improvement of its emissions inventory procedures, and will help inform progress toward meeting regional clean air and climate goals.

Project scope

- Identify best practices for disaggregating emissions data, considering approaches used by the province of BC, other jurisdictions in Canada, and academia as applicable
- Develop a replicable methodology for disaggregating provincial-level emissions data (available from ECCC) to the Metro Vancouver region and its member jurisdictions, based on parameters including population size, industry size, economic data, etc.
- Identify any remaining gaps or barriers to accurate disaggregation and make recommendations for improvement
- Apply the methodology to non-road engine emissions data to disaggregate provincial emissions to the Metro Vancouver region

Deliverables

- A final report containing a summary of the work completed
- A final report for the online public-facing [Scholars Project Library](#).
- Optional: a 5-minute presentation to Metro Vancouver's Corporate Planning Committee (consists of senior managers from across the departments at Metro Vancouver)

Time Commitment

- This project will take 250 hours to complete
- This project must be completed between May 1 to August 15, 2024
- The Scholar is to complete their hours between 9 am and 5 pm, Monday to Friday, approximately 17 to 20 hours per week.

Required/preferred Skills and Background

- Excellent research and writing skills

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- ☒ Demonstrated interest in sustainability
- ☒ Familiarity with research methodologies and survey techniques
- ☒ Statistical analysis
- ☒ Strong analytical skills
- ☒ Ability to work independently
- ☒ Project management and organizational skills
- ☒ Demonstrated experience with data tools such as R, Python, or Git
- ☒ Understanding of sources of air emissions
- ☒ Comfortable using creative problem solving with data
- ☒ Interest or familiarity with air quality, emissions, an asset
- ☒ Demonstrated experience conducting data analysis
- ☒ Familiarity with policy analysis, an asset

Applications close **midnight Sunday January 28, 2024**

Apply here: [Click here to apply](#)

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

We are holding a special **resume preparation workshop for prospective Scholars** on January 23, 2024. [Click here for details and to register.](#)

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

<https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae>

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>