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: Residential retrofits: Analyzing EnerGuide evaluations and creating emission reduction scenarios

Project Background & Overview:
The Community Energy Association (CEA) is helping a number of BC communities with meeting their IPCC 1.5°C targets of reducing their emissions by about 50% below 2010 levels by 2030, and 100% by 2050. Emissions need to be reduced in transportation, buildings, and solid waste, and to have the best chance of meeting these targets reductions should be made in all areas.

Evidence is increasing that existing buildings will be an extremely challenging area for reductions. Most of the buildings that will exist in 2030 and 2050 already exist today, and they will need to be retrofitted to help meet the CleanBC and Federal Green Building targets. Retrofitting half of the low-density residential buildings to be GHG neutral by 2030 and all of them by 2050 in any community is a momentous task. In practice, this means in any given community achieving retrofit rates of about 4% to 7% of existing housing stock per year where each of these buildings becomes zero or very low GHG.

CEA is actively helping various communities in BC with retrofit programs that could result in substantial GHG emission reductions if they can be successfully implemented. The primary area of focus is transitioning buildings from fossil fuel heating and domestic hot water to electric heat pumps. One challenge to residential retrofit programs that CEA has identified is the lack of analysis of EnerGuide assessment data and the linking to housing archetypes in order to understand retrofit potential in a community. CEA believes that nobody has conducted this analysis, despite the fact that thousands of residential EnerGuide assessments have been conducted in BC and many residential community retrofit programs are being attempted.

CEA would like research that delves more deeply into this issue, and starts to create solutions, which will support residential retrofit feasibility studies and create the foundation for successfully helping communities with deep GHG emission reductions in this sector. Specifically, we would like to analyze pre- and post-EnerGuide evaluations to identify correlations between

housing archetypes and various retrofit factors and develop a tool for producing retrofit emission scenarios.

Project description

The goal of this project is to explore correlations between housing archetypes and different retrofit factors such as the types of retrofits completed, the cost, and reductions in air changes per hour and energy/GHGs. The purpose is to help CEA support municipalities with exploring and implementing residential retrofit programs.

This project will provide valuable insights into estimating the impacts of retrofit programs, which can lead to a variety of benefits such as support for funding applications, providing rationale for municipalities to pursue retrofit programs, and creating a better understanding of high-impact archetypes to target.

The barrier that this project will address is the lack of analysis of EnerGuide assessment data and the linking to housing archetypes in order to understand retrofit potential in a community. This will help to create a more realistic picture of what could be achieved by retrofit programs in the near future.

This work will support a retrofit feasibility study in Pemberton, which will be ongoing at the time of the scholar's work and work in parallel, as well as future retrofit feasibility studies for BC municipalities. Since the student will be working on a similar timeline to the CEA project team, the scholar's work will be immediately actionable. In addition, CEA is currently working with multiple communities on future retrofit feasibility studies and is looking to expand its own retrofit program called "Retrofit Assist". As such, the scholar's work will help CEA support communities well into 2025 and beyond.

Project scope

The project will consist of two primary activities:

1. Analyze pre- and post-EnerGuide evaluations to identify correlations between housing archetypes and various retrofit factors such as the types of retrofits completed, the cost, and reductions in ACH and energy/GHGs. CEA has a master spreadsheet on EnerGuide assessments in BC received from Natural Resources Canada (note: this information is confidential and CEA will need to request from Natural Resources Canada if access can be granted).
2. Develop a basic retrofit emissions tool to estimate emission reduction potential at a community level. Using the archetypes established by CEA as part of the Pemberton retrofit feasibility study, create retrofit emission scenarios (e.g., typical uptake, accelerated uptake, and maximum theoretical uptake based on selected parameters such percentage of homes retrofitted or maximum budget per home). Each scenario will also include estimated community-level grid impacts (energy and power).

The purpose of these activities is to support Pemberton's retrofit feasibility study, as well as future studies, and CEA's current Retrofit Assist program in Whistler, Squamish, and Rossland.

Deliverables

- A final report containing a summary of the work completed
- A final report for the online public-facing Scholars Project Library.
- Retrofit emissions calculator

Time Commitment

- This project will take 250 hours to complete
- This project must be completed between May 1 to August 15, 2024
- The Scholars 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
☒ Demonstrated interest in sustainability
☒ Statistical analysis
☒ Strong analytical skills
☒ Ability to work independently
☒ Deadline oriented
☒ Project management and organizational skills
☒ Familiarity with benchmarking methods and tools
☒ Familiarity with retrofitting, and retrofitting metrics, an asset
☒ Familiarity with carbon accounting and building emissions, an asset
☒ Experience working with large complex data sets
☒ Comfortable working with Excel (or a strong willingness to learn)

Additional information :

The Excel spreadsheets from NRCan that contain the data are extremely large. A good familiarity with Excel (or a strong willingness to learn), along with strong analytical skills, will be essential.

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