Summer 2023 Sustainability Scholars Program Internship Opportunity

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- 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 29, 2023.

Project title: Analysis of the large building stock and best practices research on retrofit policies and programs for the City of North Vancouver

Project Background & Overview:
The City of North Vancouver is committed to transitioning to a low carbon, resilient building stock and meeting the targets set by Council to reduce emissions by 80% below 2007 levels by 2040 and achieve net zero emissions by 2050. Addressing carbon pollution from buildings is a priority for the City, where buildings account for 40% of community-wide emissions. The City is a leader in energy performance requirements for new construction and has made significant progress in implementing the BC Energy Step Code and low carbon requirements in recent years.

Now, attention must turn to retrofits of existing buildings to reduce emissions and ensure safe and healthy buildings now and into the future. The City has taken steps to address its existing building stock through a number of retrofit programs and partnerships. In particular, the City has undertaken substantial analysis of the low density housing stock (Part 9 residential buildings in the BC Building Code), to understand building archetypes, energy consumption, and barriers and opportunities to retrofits. With the other North Shore municipalities, the City has launched the Jump on a New Heat Pump program to support homeowners to undertake energy upgrades and switch to heat pumps. To date, the same progress has not been made with respect to the high density housing stock and large buildings (Part 3 buildings in the BC Building Code) in the City. As three out of four residential units in the City are in multi-family buildings, developing an approach to retrofits for this component of the building sector is a particular priority.

According to the City's emissions modeling, all buildings in the City will need to be powered by electricity or district energy and reduce energy consumption by 50% by 2040 to achieve the City's climate targets. This represents a significant shift from today where approximately 50% of buildings are fueled by natural gas.

To inform the City's approach to retrofit policies and programs for large (Part 3) buildings, an analysis of the building stock in the City and review of the broader retrofit policy landscape is needed. The outcome of this project will be two-fold:

1. A better understanding of the high density housing stock and large buildings in the City, and potential opportunities for low carbon, resilient retrofits;
2. A better understanding of retrofit policies and programs in the region and from leading cities elsewhere in Canada, and key lessons learned.

This project will be an early action of the City's upcoming Climate and Environment Strategy (expected to be finalized in early 2023) to increase low carbon, retrofits of buildings across the City.

Project description

The purpose of this project is to better understand the City's building stock and the retrofit policy and program landscape to inform the City's approach to retrofits of large buildings to reduce emissions and increase resiliency to climate change (warmer temperatures, heat and air quality events, greater equity). The project aims to fill gaps in the City's current building stock analysis by classifying large buildings by use and size, and updating a multi-family building database, and to gather information about retrofit program and policy approaches for large buildings by leading municipalities in the region and Canada. The findings from this project will inform the City's approach to retrofits of existing large buildings, especially multi-family buildings.

Project scope

This project consists of three primary tasks: updating the City's multi-family building database; developing classifications for large buildings; and a retrofit policy and program scan. These tasks relate to key questions that need to be answered to support cities – and the City of North Van specifically – in battling carbon emissions. These three questions are:

1. What type of buildings compose the City's building stock (i.e. age, size, mechanical systems/current emissions, building materials, number of units, etc.)?
2. How can we organize these buildings into classifications that group similar buildings in need of similar interventions?
3. What types of policy and program interventions to encourage retrofits of large buildings have been most successful at the municipal scale so that the City of North Vancouver can focus its efforts and build off others' successes?

The answer to these questions will be critical in the City achieving its climate goals of reducing emissions 80% by 2040 and being net-zero by 2050. Further details regarding the tasks are outlined below.

Project work will include:

1. Updating the Multi-Family Building Database

Using recent building permit data, verify and simplify the existing database (of approximately 460 buildings) for accuracy and remove/update unnecessary or outdated data.

From this list generate information to support the classification of the City's Part 3 building stock and identify priority buildings for low carbon, resilient retrofits and considerations for potential retrofit programs and policies.

2. Large Buildings Classification
Using information from the database update classify the Part 3 buildings in the City by size and use based on BC Assessment data. Additional data from BC Assessment, City GIS data and utility consumption data will be provided.

Time permitting: Depending on the findings develop building archetypes for each class of building indicating the most likely age, structural materials and mechanical systems.

3. Retrofit Policy and Program Scan
Review of publicly available plans, programs and policies for retrofits of large buildings from 2 to 3 leading jurisdictions in BC and Canada (suggested list to be refined with Scholar: Metro Vancouver, City of Vancouver, City of Richmond, City of Surrey, City of Toronto, City of Edmonton). The findings will be summarized to outline various approaches and considerations for program and policy development.

Time permitting: Based on these findings interview 2 to 3 key contacts to learn more about the retrofit approaches. Summarize the key takeaways and implications for potential City policies and programs.

Deliverables
- Large buildings classification
- Updated multi-family buildings database
- Retrofit policy and program scan
- A final report containing a summary of the work completed
- A final report for the online public-facing Scholars Project Library.

Time Commitment
- This project will take 250 hours to complete
- This project must be completed between May 1 to August 15, 2023
- The Scholar is to complete 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
☒ Familiarity with research methodologies and survey techniques
☒ Statistical analysis
☒ Excellent public speaking and presentation skills
☒ Strong analytical skills
☒ Ability to work independently
☒ Deadline oriented
☒ Project management and organizational skills
☒ GIS training or experience.
☒ Comfortable interacting with strangers to conduct public/in person surveys
☒ Design and layout skills

Additional notes:
We believe that this project is at an early enough stage that individuals with a variety of experiences could undertake the work and support the desired outcomes in a way that is unique to their strengths. Strong analytic and synthesis skills are important to digest and reframe the data concerning the City's building stock

Applications close **midnight Sunday January 29, 2023**
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, 2023. 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