SUSTAINABILITY SCHOLARS PROGRAM

Summer 2020

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 to confirm your eligibility before applying.
- **Applications close at midnight on Sunday February 2, 2020.**

Research project title: Assessing the embodied emissions of building to the Energy Step Code (City of Richmond)

Sustainability Goal or Operations Plan objective

Reducing the overall environmental impact of Richmond's building sector

Project description

The Energy Step Code has created considerable momentum in the move to reduce the energy consumption of buildings in B.C. Many communities in the Province also have environmental policies that push for reducing emissions from buildings. However, such policies only address operational energy consumption and emissions. As the operational energy consumption and emissions of buildings decrease, the embodied energy and emissions due to resource extraction, transformation, transportation and end-of-life processing become a larger portion of the total environmental footprint of the building sector. Transitioning to truly net-zero communities, therefore, requires increased attention to embodied environmental impacts of buildings. Moreover, the push for high-performance buildings enhances the use of construction materials and practices and mechanical systems that may have significant embodied emissions. The objective of this project is to assess the embodied emissions of buildings that have been designed/built to meet various performance targets of the Step Code. The work will include: establishing a benchmark by assessing the embodied emissions of typical, new single-family residential buildings in Richmond; assessing embodied emissions of various high-performance designs and low-carbon energy systems; and, time permitting, review and development of policies and procedures for documenting and addressing embodied emissions. It is anticipated that the results of this project will inform the creation and implementation of environmental, planning and development policies in Richmond and the region.

Scope of Work

- Review the literature on the building sector's embodied emissions
- Identify reliable emission inventories for construction materials (insulation material, envelope assemblies etc.) and mechanical systems (e.g. heat pumps, HRV's, gas-fired boilers)
- Assess the embodied emissions of baseline and improved building designs (around five designs, identified by the City)

- Compare embodied emissions of improved designs and their projected operational emissions
- Possible areas for expansion of work (time permitting):
  - Multi-unit residential buildings (MURBs)
  - Identify alternative construction materials, systems and practices that can reduce embodied emissions
  - Explore policy options to encourage circular economy of construction materials,

Deliverables

- A literature review report at the end of week five
- A final report, containing a summary of completed work with recommendations
- A presentation to stakeholders, highlighting key findings, recommendations and potential future work
- A revised final report [or Executive Summary] for the UBC Sustainability Scholars online project library

Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between May 4 and August 14, 2020
- The Scholar is to complete hours between 9am-5pm, Monday-Friday, approximately 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
☒ Excellent public speaking and presentation skills
☒ Strong analytical skills
☒ Ability to work independently
☒ Project management and organizational skills
☒ Programming skills (text and data mining skills an asset)
☒ Demonstrated experience in Life Cycle Assessment
☒ Familiarity preparing feasibility studies
☒ Experience with financial modelling and analysis
☒ Criminal Record Check required [The successful candidate's reasonable expenses to get a criminal record check done will be reimbursed]
☒ Familiarity with Building Energy Simulation tools

Applications close **midnight Sunday February 2, 2020**.

Apply here: http://sustain.ubc.ca/scholarsapply

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

Useful Resources

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

The Centre for Student Involvement & Careers will host a resume & cover letter webinar tailored for graduate students on Tuesday, January 21, 2020 from 12:00-1:30. Registration will open approximately two weeks before the webinar, and can be accessed at Careers Online.