

Summer 2022 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](#) to confirm your eligibility before applying.

Applications close at midnight on Sunday January 30, 2022.

Project Title: Research on building form and character features that support high performance building design

Project Background & Overview:

Many municipalities across B.C., including the Township of Langley, have detailed Form and Character Development Permit Guidelines. These guidelines are meant to inform the development community on how buildings in the Township should be designed from an aesthetic perspective. These guidelines are developed by Staff and endorsed by Council.

Form and Character Guidelines are firmly preserved as they provide the framework to designers on how buildings in the Township reflect: culture, history, visual competency, and other priorities.

At the highest levels of building performance, however, it must be acknowledged that the general shape and exterior features of a home or building may be different than what a municipality may be used to. These differences in aesthetics must be examined, understood, and supported in the pursuit of enabling cost effective, high performance building design.

It is very possible that design strategies that focus on a look of the building can result in significant cost burdens to meet energy targets or even eliminate the building's ability to reach the highest tiers of energy performance and this project aims to limit scenarios where design demands high cost solutions when affordability is a key concern of residents of BC.

Project description

While Form and Character guidelines add great value to developing functional, and visually interesting neighbourhoods, such guidelines can be in direct conflict with municipal and federal goals. Guidelines that focus on how a building should be shaped or which features it must have in order to give a *look* to the building can create artificial boundaries around design strategies that focus on energy and emissions. Staff upholds Council's expectations, and deviations from said Guidelines are not encouraged in the pursuit of maintaining a consistent vision.

By compiling a dataset of strategies/features that are common in high performance buildings (regionally, and globally) and identifying where they conflict with Township of Langley Form and Character expectations, we can target language or expectations that inhibits high performance design. Further, the data set will highlight features that may be uncommon or not yet understood and through education, Staff and Council can expect such features or strategies in design and call for them during the design process, further establishing expectations with industry and signalling acceptable solutions in building design.

The learnings from the project will be actionable immediately by using the report to inform Staff of what design strategies are to be expected and be explained or defended during the Development Permit process. Council members will be invited to a public presentation of the report and its findings to also be educated on the upcoming future of design strategies. The overarching building and design industry will also be targeted to learn what strategies are high value and, once there is consensus, how they can employ new designs without fear of rejection or delays in the Development Permit process.

Project scope

This project aims to provide a database/tool to Staff, Council, and the public on what to expect in terms of building Form and Character, shape/geometry, exterior features and elements and even potential differences in use. The project intends to collect images, designs, and case studies of buildings that are at the upper tiers of building performance such as Step 4/5 (residential) and Step 3 (ICI), Net Zero/Net Zero Energy Ready, Passive House and other relevant standards of similar performance.

The Scholar will compile a sizable dataset of buildings, review design/forms and establish a series of common features, strategies, traits, etc. and compare them with common design expectations in the Township of Langley. The report will provide a pathway of the steps to take to formally address gaps between municipal design expectations and what design patterns/strategies are most cost effective.

General outline of key questions:

- 1) What are, globally, typical design features, strategies, geometries of buildings?
- 2) Of the patterns that emerge as typical, how do they intersect with Township design preferences?

Outline of key tasks:

- 1) Review high performance building standards that are typically met in B.C. Provide a high-level review and discuss basic similarities and differences: Step Code Step 5, Net Zero Energy Ready, and Passive House/Haus performance standards
 - a. If needed, support can be offered by Township Staff on technical details
- 2) Based off each standard, create a table of common energy conservation measures (ECMs) and strategies that are typically used within each building standard; compare and contrast measures if there are meaningful differences.
 - a. The Township will define the measures that are to be included. Measures will be limited to primarily envelope-based measures or/and strategies that impact the overall form of the building.
- 3) Conduct interviews with Township staff and identify typical design requirements, expectations, and trends regarding the form and character of a building and other requirements that influence the exterior design of a building.
 - a. The Township will arrange up to three interviews with Staff.
- 4) Conduct a thorough internet search of high-performance buildings across Canada and internationally, fitting Step 5/NZER/Passive House etc. standards and compile a database of images.
 - a. Create, with Township staff, a limited amount of trackable data points and assign *tags* to each image such as: low window to wall ratio, increased wall insulation, reduced articulations etc.
 - b. Target 5 existing case studies and conduct a comparison using details pertaining to the envelope/exterior.
- 5) Create a limited database (5-10) of non-high-performance buildings with images and contrast to high performance building database.

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- 6) Report on study findings and recommend design strategies that, nationally/globally are aligned with success meeting high performance building design standards; and notices of strategies that are either required by the Township or are typical practice locally that are in conflict with high performance design strategies.

Deliverables

- A final report containing a summary of the work completed
- A final report for the online public-facing Scholars Project Library.
- If timing permits, a public presentation on the project and findings at an online public webinar.
- If timing permits, a potential Township internal presentation on the project and findings.

Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between **May 2 and August 12**.
- The scholar is to complete hours between **during standard office hours** approximately **17** hours per week.

Required/preferred Skills and Background

- Excellent research and writing skills
- Demonstrated interest in sustainability
- Familiarity with research methodologies and survey techniques
- Strong analytical skills
- Ability to work independently
- Deadline oriented
- Project management and organizational skills
- Design and layout skills
- Experience in designing or constructing buildings is ideal.

Applications close **midnight Sunday January 30, 2022**

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 19. [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>