

**GREENEST CITY SCHOLARS PROGRAM**  
**UBC Sustainability Scholars Program, Summer 2018**

**Research project title**

Research Local High-Performance Building Supply for New Low-Rise Homes

**Research supports the following policies**

Zero Emissions Building Plan  
Renewable City Action Plan

**Purpose:**

In this role you will help the City of Vancouver demonstrate what leading edge applied building technology can look like at scale. Since 2008, the City of Vancouver Building Bylaw (VBBL) has required higher performing windows, the installation of heat recovery ventilators and high efficiency heating systems, among others. These initiatives have reduced greenhouse gases (GHG's) from new homes by 52%. The aim is that homes will be 100% renewable by 2030.

The next Vancouver Building Bylaw update will take place within the next two years. The goal for this update will be to take the largest step we can that will maximize reductions in greenhouse gases while still ensuring that the required product stock (see list building components below) can be supplied locally and by a wide variety of companies.

This work will directly and immediately assist the City of Vancouver in implementing a significant and effective update to the Vancouver Building Bylaw to lower greenhouse gases.

**Scope of work:**

This research study will focus on the following three key building components:

- Fenestration (windows, doors and skylights)
  - specifically U-values of 1.2, 1.0, and 0.8 W/m<sup>2</sup>K for windows
- Heat Recovery Ventilators (HRV's)
  - specifically 75%, 85% and 90%+ efficient
- Heat pump systems (whole home space heating and domestic hot water)
  - \*COP levels to be determined

This project seeks a Greenest City Scholar to:

1. Background research and literature review

Literature review of:

- GHG savings of these components

**Submit applications here: <http://bit.ly/2DC2jpP>**

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- Cost variation with change in efficiency
- Cost variation compared to baseline VBBL requirements
- Cost variation comparing different heating system types

2. Outreach to determine industry position and product availability [This is anticipated to be the most significant part of the work]

- Develop a research methodology and outreach strategy
- Compile a diverse list of local suppliers and manufacturers offering these products
- Determine what products the suppliers currently stock, and what products they could feasibly supply in the future based on potential bylaw updates. This will be determined through:
  - Phone and in-person interviews with manufacturers
  - Online product databases
  - Discussions with industry experts and leading-edge suppliers
- Summarize results in a well-organized spreadsheet

3. Provide recommendations

Based on literature review and interviews, develop recommendations for the next VBBL updates that represent a feasible but highly effective step in reducing greenhouse gases in all new houses and support the recommendations with data.

**Deliverables**

The Greenest City Scholar will deliver a final report containing a summary of their completed work with recommendations, complemented by a final presentation to key stakeholders. The report should include:

- A spreadsheet containing the range of local products (both currently available and potential future) as well as price increments over VBBL baseline for:
  - Fenestration (windows, doors, glass block, and skylights)
  - Heat recovery ventilators
  - Heat pump systems for whole home space heating
- An internal report highlighting opportunities and recommendations for next steps in the update of the Vancouver Building Bylaw
- A public facing 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 *April 27 and August 10<sup>th</sup> 2018*
- The scholar is to complete hours between 9am and 5pm, Monday to Friday, approximately 20 hours per week.

**Skill set/background required/preferred**

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- A desire to improve human impacts on the earth through improvements in the built environment
- Demonstrates keen knowledge and interest in green buildings and their corresponding technology and components
- Excellent time and organizational management skills
- Excellent technical research and writing skills
- Comfortable conducting effective phone calls, interviews and site visits
- Considerable experience with Microsoft Excel is an asset
- Particularly suitable for a Masters of Engineering Leadership (MEL) but all Masters program students are encouraged to apply
- This work will result in the improvement of tens of thousands of new homes, so a focus and dedication balanced with a fun loving approach to life is an asset.

**Work location:** City Hall – 453 W 12<sup>th</sup> Avenue, 7<sup>th</sup> floor (Sustainability)

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