

## UBC Sustainability Scholars Program 2019

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 organizational sustainability goals.

For more information about the Sustainability Scholars Program and to apply to work on this project, please visit the [Student Opportunities](#) page.

Please review the application guide (PDF) before applying.

Applications close **midnight Sunday March 24, 2019.**

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**Research project title:** Research on best practices to encourage energy-efficient renovations in multifamily dwellings

### **Renewable City Action Plan objective**

Long Term Goals: This project supports the City's climate change targets to reduce carbon pollution by 50% from 2007 levels by the year 2030; and by 80% below 2007 levels before 2050.

As new buildings are built to increasingly high standards, the Renewable City Action Plan (2017) notes the need to expand the reach of building retrofit programs and deepen their impact.

Despite a 7% increase in the total floor area of buildings in the City from 2007 to 2016, carbon pollution from buildings has decreased 13% over the same time period. This is due to the success of previous provincial government initiatives, such as LiveSmart BC, utility company rebates and City policy. Additional focus on existing buildings is needed to assist owners in making upgrades to windows, walls and super-efficient heating and cooling equipment that increase comfort and health, conserve energy and reduce carbon pollution.

This research will help to advance actions B.8 and B.10 in the Renewable City Action Plan:

#### **B.8**

Work with other governments, utilities and building owners and managers to develop targeted incentives to encourage deep energy and emissions retrofit projects (i.e. cuts in carbon pollution in the range of 50-80%), particularly in building types with the most encouraging economics for such projects.

#### **B.10**

Continue to research barriers to deep energy and emission retrofits and work with other governments and utilities to address these through new programs and changes to City policy.

**Outline scope of project and why it is of value to the City of Vancouver and describe how and when the scholar's work will be actionable**

Why this work is of value:

There are currently policy and regulation barriers to undertaking voluntary building envelope thermal performance upgrades. Unless they are significantly renovated to reduce energy and emissions, existing buildings will account for a growing portion of total building emissions. New incentives and removal of barriers is needed to reward voluntary leadership in retrofits, which will help build experience and capacity in this specialized area and lower costs for other owners to update their buildings.

These recommendations will support action items B.8 and B.10 in the Renewable City Action Plan.

Scope of work:

The scope is focused on planning policy and practises that encourage owners of stratified residential (condominium) and purpose-built rental buildings to undertake voluntary building envelope upgrades to thermal performance and/or mechanical fuel-switching (replacement of gas with heat pump mechanical equipment). The study looks at voluntary upgrades as opposed to building code regulations that will be universally required. A good example of the intended level of deep retrofit is the EnerPHit standard, particularly for envelope-focused projects.

This project has two parts, research and recommendations.

**1. Research**

- a. Desktop research of planning policies and practices in comparable jurisdictions in North America that encourage building energy and emissions retrofits, including incentives. Measures must be feasible to implement in the near term in Vancouver, and should include density and other incentives with a significant economic effect. The work should include an assessment of the efficacy of the selected incentives. The Scholar should contact planners directly to confirm which approaches have been most successful, or what lessons were learned.
- b. Review of City bylaws and policies identified as major barriers to retrofit, including interviews with City of Vancouver staff. The City of Vancouver is partnering with Pembina on their project on "Readying Municipalities and the Market for Deep Resiliency Retrofits of Multi-Family Rentals" project, an Energiesprong Readiness Project. One of our commitments is identifying municipal barriers.

- c. Conduct telephone and in-person interviews with design and building professionals, and building owners or agents to test the information in a. and b..

Other Greenest City Scholars may be doing research on parallel topics, such as a case study approach to understand multifamily retrofit decisions. If so, the Scholar on this proposal should consider how their recommendations could be coordinated with other projects.

Research by other agencies on related topics, such as retrofit programs for ground oriented housing, should also be reviewed for applicable approaches.

## 2. Recommendations

- a. Recommend specific incentives that can fit within Vancouver's planning policies and practise which will increase the number of deep retrofits per year. Recommendations should be based on best practise with a focus on efficacy, economics, and feasibility. While detailed pro forma analysis is beyond the scope of this study, the recommendations should include order of magnitude estimates of the cost of retrofits and the value of the incentives.
- b. If additional changes are needed to remove barriers from planning policy and practise, these should be included.

Emphasis should be on building types that are most common and amenable to retrofit.

## **Deliverables**

The Scholar will deliver a final written report containing a summary of their completed work, complemented by a final presentation to key stakeholders. The report should address the issues raised in the Research and Recommendation sections above, including:

- A survey of relevant best practises in North America
- Summary of their efficacy, including economics
- Description of current barriers in the City
- Recommendations for specific policy and practise changes to advance retrofits

## **Time Commitment**

- This project will take **250** hours to complete.
- This project must be completed between May 1 to July 30, 2019
- The scholar is to complete hours between 9:00 am and 5:00 pm, Monday to Friday, approximately 20 hours per week.

**Skill set/background required/preferred**

- Excellent research and writing skills
- Demonstrated interest in municipal policy
- Evidence of an academic focus on, or practical experience in, civic policy creation or administration would be an asset
- Strong analytical skills
- Ability to work independently
- Demonstrated time management skills
- Project management and organizational skills
- Writing sample required

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Apply here:

<https://sustain.ubc.ca/student-opportunities>

To learn more about the program here:

<https://sustain.ubc.ca/ubc-sustainability-scholars-program>

Contact Karen Taylor at [sustainability.scholars@ubc.ca](mailto:sustainability.scholars@ubc.ca) if you have questions.