

## 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.**

---

### **Research project title: Research to reduce the impacts of street/sidewalk pavement rehabilitation on the urban forest**

#### **Project Background & Overview:**

The Streets Design Branch in Engineering Services at the City of Vancouver manages the rehabilitation and reconstruction of the City's pedestrian, cycling, and vehicular infrastructure. Maintaining our concrete and asphalt pavements in a state of good repair is critical to mobility, accessibility, and network resilience. In this context, we are looking to strengthen the relationship between street/sidewalk maintenance, the urban forest, and natural systems more broadly.

Key issues include:

- Street trees are often not given adequate conditions to grow (lateral clearances, growing medium/nutrients, etc.) and subsequently damage sidewalks, curbs, street pavement, and other infrastructure as they mature.
- The amount of street right-of-way (ROW) dedicated to impervious surface contributes to the urban heat island effect and produces urban rainwater runoff.
  - For context: street ROW is the legal, property-line-to-property-line widths of City-owned road, not just the curb-to-curb width of a street. The ROW typically includes the sidewalks, boulevards with street trees (also known as planting strips or road verges), the curb-to-curb street surface, and above- or below-ground utilities.
- Concrete and asphalt are carbon intensive materials, and we should work to reduce their use, and/or the extent/frequency of replacement, where possible.

#### **Project description**

This Greenest City Scholars project will explore ways the City of Vancouver can use concrete and asphalt rehabilitation of streets and sidewalks as an opportunity to improve the ecological services provided within street right-of-way and reduce the overall impact and footprint of this kind of infrastructure renewal work.

This Greenest City Scholars project will support the:

- Transportation modal targets of the Climate Emergency Action Plan's "big moves" – by helping maintain streets and sidewalks in a state of good repair that allows for increased walking, rolling,

# SUSTAINABILITY SCHOLARS PROGRAM

cycling, and transit use across the City, particularly in neighbourhoods whose streets and sidewalks have been historically and inequitably underinvested in and/or not as well maintained

- Urban Forestry Strategy – by identifying strategies to reduce the impact of sidewalk reconstruction on mature street trees and to increase right-of-way space/conditions to support healthy root systems, while maintaining accessible sidewalks and level pavement surfaces
- Rain City Strategy – by identifying criteria and potential locations where streets can be strategically “de-paved” (or the extent of pavement can be reduced), instead of repaved, to allow for the installation of new green rainwater infrastructure and the reduction of impervious surface area
- Climate Adaptation Strategy – by helping to prioritize street and sidewalk pavement maintenance practices that reduce impacts to natural systems, support a healthy urban tree canopy, and maintain resilient street and sidewalk connections

## Project scope

Three key areas of investigation are:

1. Assess the impacts of street/sidewalk rehabilitation projects on street trees and ways the City can improve the interplay between concrete and asphalt rehabilitation and maintaining/expanding the urban tree canopy
2. Study “de-paving” and identify scenarios in which the City may want to strategically de-pave certain segments (or portions) of local roads, rather than repaving, to reduce impervious surface and increase right-of-way space for green infrastructure and street trees
3. Use street pavement condition index (PCI) scores, sidewalk condition data, street tree health/maturity data, distribution of tree canopy coverage, and various equity/social/environmental indicators to help the City prioritize street & sidewalk rehabilitation project locations that concurrently advance urban forestry and green infrastructure priorities

The primary activities of the project will include:

- Academic literature review
- Best practices research from Canadian and global peers
- A limited number of interviews with staff to identify key pain points between sidewalk/street maintenance, urban forestry, and green infrastructure
- 2-3 short site visits to familiarize the Scholar with typical types of sidewalk damage, street pavement degradation, and the various functions of street right-of-way
- A general GIS analysis of street/sidewalk condition data to identify potential priority locations for better integration between street/sidewalk maintenance priorities and ecological services
  - NOTE: It is not expected that the Scholar will analyze and prioritize the entire street and sidewalk networks but, rather, perform initial analysis to inform project candidate selection criteria. Study area of this initial analysis will be determined by both Mentor and Scholar based on findings from earlier research tasks. Areas with lower tree canopy coverage will be prioritized.
- Time permitting, summarize criteria and alternatives for street/sidewalk maintenance project prioritization, based on equity goals, social and environmental indicators, pavement conditions, and cross-departmental strategies alignment

## Deliverables

- An analysis of improvements the City can make to its street/sidewalk rehabilitation practices and prioritization

# SUSTAINABILITY SCHOLARS PROGRAM

- A summary of projects and programs that have successfully reduced the environmental impact of street/sidewalk maintenance and improved the overall ecological services provided within the street right-of-way
- A final report containing a summary of the work completed with recommendations, complemented by a final presentation to key stakeholders
- A final report (or executive summary) 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 2, 2022 and August 12, 2022
- 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
- Strong analytical skills
- Ability to work independently
- Project management and organizational skills
- Demonstrated experience in (or knowledge of) Urban Forestry, Green Infrastructure, and/or Street/Landscape Design
- Comfortable interacting with strangers to conduct staff interviews (potentially internal or external to the City)
- GIS training or experience (optional, but an asset)
- Understanding of design/engineering relationships between built and natural environments (optional, but an asset)

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

Apply here: [Click here to apply](#)

Contact Karen Taylor at [sustainability.scholars@ubc.ca](mailto: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>

# SUSTAINABILITY SCHOLARS PROGRAM

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>