

Summer 2021 Internship Projects

Below is a list of the Sustainability Scholars projects available for the summer 2021 program.

This list is current as at January 12, 2021

Please check [online](#) for detailed descriptions of each project.

Applications accepted until midnight on January 31.

Please review the website for details about the Scholars Program. If you still have questions, contact sustainability.scholars@ubc.ca

2021-001 Post-Pandemic Resilient Community Planning with a Diversity and Equity Lens This assessment examines various problems caused by pandemic-control interventions, and considers ways the Vancouver Downtown East Side (DTES) can better prepare for, respond to, and recover from pandemics and other shocks with an equity and diversity lens. (Atira Women's Resource Society)

2021-002 Develop a model to quantify the impact of mode choice and mode displacement on Greenhouse Gas (GHG) emissions in the current and emerging shared mobility landscape in Metro Vancouver TransLink is looking to understand how shared mobility options can reduce or avoid GHG emissions and how mode displacement and choice is impacted by the availability of shared mobility options. (TransLink)

2021-003 Communications and engagement best practices to support the development of mobility/congestion pricing The outcome of this project will help to inform communications and engagement approaches, as well as the pathways and strategies towards implementation of a regional mobility pricing system in Metro Vancouver. (TransLink)

2021-004 Exploring the feasibility of innovative water saving opportunities applicable to healthcare facilities The proposed project aims to explore innovative water-saving opportunities applicable to healthcare setting and assess their feasibility for implementation. The scholar will complete a literature review, conduct interviews, and complete a feasibility assessment to identify innovative water saving technologies that have the capacity to be successfully implemented in healthcare facilities in the Lower Mainland. (Vancouver Coastal Health Authority)

2021-005 Engagement targets and metrics for health care environmental sustainability Our goal is to inspire workplace leadership for environmental sustainability in health care through the Green+Leaders staff engagement program. This project will create a monitoring and assessment framework to track program metrics and targets and inform future program improvements. Project work includes analysing current targets and metrics, conducting research on best practices, and providing recommendations. (Vancouver Coastal Health Authority)

2021-006 Communicating the benefits of a circular economy in health care in an accessible and persuasive way This project will create a circular economy communication framework and content that

is based on best practice research in environmental sustainability communications in order to develop a briefing note, PowerPoint slides, and a short video that will explain circular economy within health care in a simple, engaging, and persuasive way. (Vancouver Coastal Health Authority)

2021-007 Geotechnical Analysis to Identify Potentially Hazardous Areas for Development on Bowen Island Research best practices for bylaws that address site alteration activities such as blasting, soil removal, and vegetation clearing to support the development of a proposed draft site alteration bylaw, and to analyze spatial data in order to delineate appropriate areas to apply a new Hazardous Areas Development Permit Area. (Bowen Island Municipality)

2021-008 Developing a Community Driven, Collaborative Continuum of Care for Mental Health and Substance Use Services in BC Co-design an evidence-informed framework for a community-driven mental health and substance use continuum of care. Project outcomes and final documents will be shared with the BC Ministries of Health, and Mental Health and Addictions to support their understanding of how to best address mental health and substance use outcomes. (Community Action Initiative)

2021-009 Developing toolkits to engage school communities in planting native plants to restore habitats and sequester carbon The outcome of this project will support the development of a national toolkit for creating gardens that help wildlife thrive, and help determine best practices for engaging audiences into action with market research. (World Wildlife Fund)

2021-010 Feasibility of recycling and reusing demolition materials found in single-family homes built after 1970 and commercial buildings The project aims to provide an overview of the challenges and opportunities for recycling and reusing demolition materials from single-family homes built after 1970 and commercial buildings in Metro Vancouver to help reach the regional waste diversion goal. (Metro Vancouver)

2021-011 Assessment of Nitrogen Dioxide Emissions from Boilers and Generators on Neighbouring High-Density Residential Buildings Due to densification, there are neighbourhoods where mid- and high-rise buildings are built close to each other. These buildings generally have boilers to provide heat and hot water and diesel generators to provide emergency power. The Scholar will conduct a literature review of building codes throughout different jurisdictions (e.g., US and Europe) and other related documents to assess how building exhaust in dense urban environments is addressed. (Metro Vancouver)

2021-012 Research to understand and assess the repair and reuse sector in Metro Vancouver One of the best ways to minimize waste and transition to a circular economy is by keeping materials in use as long as possible. Metro Vancouver is currently updating its Solid Waste Management Plan and is seeking an improved understanding of reuse in the region in order to help measure progress and the prevalence of reuse activities. This project will involve providing an overview of the reuse sector in Metro Vancouver and creating an easily replicable methodology for estimating reuse. (Metro Vancouver)

2021-013 Research to inform the transition of wastewater sludge lagoons to freshwater wetlands in order to restore habitat, protect birds and improve water quality on Iona Island The current Iona Island Wastewater Treatment Plant (IIWWTP) uses sludge lagoons to help separate solids from

wastewater. These lagoons are also used by birds. The new IWWTP will treat wastewater differently which provides an opportunity to transition the sludge lagoons to wetlands, and to use treated wastewater to recharge the wetlands. This project contributes to supporting the design of the new IWWTP through surveying relevant literature, summarizing case studies, and conducting expert interviews. (Metro Vancouver)

2021-014 Metro Vancouver Green Fleet Strategy Development To align with Corporate Climate Action plans, Metro Vancouver fleet vehicles and equipment fuels will need to transition to low carbon low emissions sources. This project will help identify how the emissions reduction targets will be achieved along with any potential risks and/or challenges by researching current levels of GHG emissions, renewable fuel options, new technologies, and life cycle impacts. (Metro Vancouver)

2021-015 Investigate sources and entry pathways for pharmaceuticals in the wastewater system Gather information on and evaluate pathways that pharmaceuticals enter the wastewater system, determine trends for different sources, create a database of what medications are disposed of in various jurisdictions, and conduct qualitative interviews with health professionals to identify opportunities and areas of improvement for reducing pharmaceuticals in wastewater. (Metro Vancouver)

2021-016 Exploring the development of a regional carbon budget for Metro Vancouver Emissions targets do not consider the total amount of carbon dioxide emitted between now and 2050, which is ultimately the determinant for how much actual warming the globe will experience. A carbon budget is a valuable tool to bridge this gap. The Scholar will explore the utility of carbon budgeting as a tool to support regional climate action and make recommendations on how this tool could be used to support regional climate action. (Metro Vancouver)

2021-017 Examination of biosolids and drinking water treatment residuals as effective filter media for stormwater source control in Green Infrastructure (GI) / Low-Impact Development This project will investigate the potential to use residuals from wastewater and water treatment facilities as an ingredient in the filter media soils in GI systems. Particularly, whether biosolids, drinking water treatment residuals (DWTR), and mixtures thereof can be used effectively as components in filter media to enhance and optimize the performance of GI systems locally. (Metro Vancouver)

2021-018 Review of best practices for the development of resilience key performance indicators for local governments and utility providers The Metro Vancouver Board of Directors has endorsed the development of a Resilient Region Strategic Framework that will direct all Metro Vancouver staff to bring a resilience and social equity lens to their work. To support the implementation of this work, Metro Vancouver is seeking research to support the development of Key Performance Indicators (KPIs) across a range of services and a wide breadth of resilience considerations including natural hazards, climate change, and local economic benefits. (Metro Vancouver)

2021-019 Assessing program options for air sealing & weatherization in electrically heated homes in BC The purpose of the project is to determine a path forward to support more extensive air sealing and weatherization in existing single family homes to support electricity efficiency, occupant comfort and grid efficiencies. (BC Hydro)

2021-020 Can smart speaker technology make energy management more interesting? The use of Smart Speakers as an interaction channel has been used to varying degrees by several utilities and

municipalities around North America. We would like to learn from these jurisdictions to determine which are the most successful applications of voice technology for energy management outcomes. In addition, we would like to understand the critical design features of a smart speaker application that could drive engagement and behavioural change in reducing home energy consumption. (BC Hydro)

2021-021 Applying a climate equity lens to the Big Moves for deep emissions reductions This project provides an opportunity to take a significant piece of emissions reduction work--The Big Moves--and apply a climate equity lens in order to identify the challenges and opportunities of addressing social equity and inclusion. (Community Energy Association)

2021-022 High-level building energy retrofit strategies for BC communities For the existing building sector to pull its weight in meeting community 1.5°C GHG reduction targets by 2030, 50% of emissions will need to be reduced. The purpose of this project is to investigate a few different types of communities to identify which buildings are the highest emitting to get to that 50%, and create a high-level strategy (including policy and planning tools) to sharply reduce or eliminate those emissions. (Community Energy Association)

2021-023 Developing a Neighbourhood Electric Vehicle Charging Strategy for the City of North Vancouver Through this project, the Scholar will generate key tools and recommendations to enable the City to pursue neighbourhood EV charging opportunities in areas with significant barriers to home charging, enabling residents to switch to low carbon EVs. (City of North Vancouver)

2021-024 Exploring opportunities to expand the Great Bear Initiative Climate Action Network There are 27 remote First Nations communities in British Columbia, the majority of which still rely on diesel power generation. The Great Bear Initiative Climate Action Network would like to support additional Indigenous communities in developing renewable energy, clean heat, and climate resilience. The scholar will research similar networks to help support scaling or replicating climate action. (Coastal First Nations)

2021-025 Design and execution of a data extraction tool for digitizing and compiling building energy and emissions data The scholar will develop a data mining tool to extract desirable fields from energy modeling reports and store them in a database. The tool must have the capacity to read data from PDFs, spreadsheets and scanned documents. (City of Richmond)

2021-026 Advancing Deep Emissions Retrofits through Existing Building Electrification Case Studies in the Lower Mainland The existing building market faces challenges when it comes to the transition to heat pumps. Local existing building electrification case studies are needed to drive the adoption of high-efficiency electric equipment for space heating and domestic hot water. This project aims to create multiple case studies of existing building heat pump retrofit projects of detached homes, multi-family residential, and/ or commercial buildings. (ZEBx)

2021-027 Understanding Best Practices and Key Barriers to Scaling Zero Emissions Homes in BC The outcome of this project will identify emerging best practices and key barriers to scaling zero emissions homes in BC. The project will also compare how the best practices and key barriers align with existing knowledge and resources and identify gaps where appropriate. (ZEBx)

2021-028 Research to understand the regulatory and technical contexts of electric vehicle-to-building bi-directional charging This project will explore the opportunity for local governments to further

support electrification of buildings and transportation by enabling EVs to be used as energy storage units that can help shift peak electrical demand and supply, help residents save costs, and contribute to a more secure and robust energy system. (Community Energy Association)

2021-029 Research to evaluate affordable approaches to emissions reductions through building retrofits Finding a way to retrofit our building stock to near-zero emissions in a way that safeguards affordability is one of the most pressing challenges we face in BC. This project will help identify the policies and technologies that will get us there. (Integral Group)

2021-030 Defining and mapping the low carbon construction technology sector in BC Through desktop research and interviews, the Scholar will identify, review and document the BC-based construction technology (contech) ecosystem, including companies and solutions that will support BC's energy and emissions goals. (Scius Advisory Inc.)

2021-031 Support the development of an Electric Vehicle Strategy for the City of Prince George The purpose of the project is to conduct a literature and policy review and provide recommendations for the development of an Electric Vehicle Strategy for the City of Prince George to support reducing transportation emissions community-wide. (City of Prince George)

2021-032 Case study research and development of resource materials to encourage electric vehicle charging retrofits in MURBs The project will summarize case study results, provide accessible information and identify additional resources needed to support strata councils and accelerate establishment of EV charging infrastructure in strata owned MURBs. (UBC)

2021-033 Research to evaluate and increase participation in the Renovate Smart Kamloops Program This program evaluation will identify which parts of the Renovate Smart Kamloops Program have been working and which haven't. This will allow us to optimize the program to maximize the likelihood of participants reducing their carbon footprint. (City of Kamloops)

2021-034 Analysis of industry capacity around the holistic implementation of high-performance envelopes for residential buildings Without addressing industry capacity, there will be elevated risk to meeting upper Step Code targets along with cost pressures due to mid- and post-construction remediation to meet unmet requirements. This project will support capacity building for residential construction with regards to high performance envelopes in support of the BC Energy Step Code Upper Step requirements. (Township of Langley)

2021-035 Developing Guidelines for Energy Retrofits of Heritage Houses in New Westminister This project involves research to develop recommendations on a new approach that supports owners and builders in protecting heritage features while undertaking energy efficiency retrofits of wood-frame single detached dwellings built between 1880 and 1930. (City of New Westminister)

2021-036 Recommending equity indicators and a framework to inform evaluation of climate change initiatives at the City of New West A research study to learn from existing equity work, while also assessing their value and relevance for the City of New Westminister. Includes determining what data is required to assess the indicators, sources of data, and frequency of data updates to inform how the resulting equity indicators can be used as a tool to measure progress in

protecting the community through climate change mitigation and adaptation initiatives. (City of New Westminster)

2021-037 Assessing opportunities to embed energy management curriculum in Indigenous post-secondary education and training This project aims to identify and assess opportunities to embed energy management curriculum into Indigenous post-secondary education in order to empower Indigenous peoples to become active participants in and beneficiaries of the low carbon economy. (BC Hydro)

2021-038 Research to develop an informational toolkit to support a home energy retrofit outreach program Research and development of a Healthy Housing Initiative to support improved health, comfort and energy efficiency in existing buildings. The initiative will help educate homeowners about the many benefits of energy efficiency retrofits including lower residential energy bills, increased home value, and more comfortable, healthier homes (City of Kimberley)

2021-039 Investigate process & technology options for local biofuel generation from key municipal waste streams to identify optimal solutions The purpose of this project is to help the District of Saanich understand the options for local biofuel generation that are suitable to our context, taking into account the available waste streams, collection processes, and cost-benefit analyses. (District of Central Saanich)

2021-040 Best Practices in Diversity, Equity and Inclusion in Vancouver's Non-Profit Sector The purpose of this project is to conduct a review to capture best practices from Vancouver's non-profit sector in integrating diversity, equity and inclusion in organizational practices; and identify opportunities for intervention through the department's social development tools to enhance capacity in the sector. (City of Vancouver)

2021-041 Investigating culturally safe ways to gather data about violence against Indigenous women, girls, non-binary, and 2SLGBTQQIA+ peoples An individual's or a group's experiences of violence are important determinants of health. As we move into a refresh of the Healthy City Strategy, this project will help us re-align our data systems to reconcile the harms that government institutions cause to Indigenous Peoples through data systems gaps. This project will explore some of our complex questions around data governance and disaggregated data to inform our internal work and support work that is being led from within communities and Indigenous groups. (City of Vancouver)

2021-042 Developing best practices for supporting marginalized identity groups through Employee Resource Groups at the City of Vancouver In an attempt to better support City of Vancouver employees who are members of systemically marginalized identity groups (e.g., racialized, queer, Indigenous, women) a number of Employee Resource Groups (ERGs) are being set up. This project involves research to help construct a sustainable model for setting up and supporting ERGs. The results of the project will be applicable to other large employers that are similarly interested in how to cultivate connections and create safe and healing spaces for conversations about difference. (City of Vancouver)

2021-043 Groundwater Management in Vancouver: A Review of Leading Strategies for Local Governments The purpose of this project is to undertake a jurisdictional review of municipal and regional groundwater management strategies, plans and policies so that the City can identify what has worked elsewhere. The findings of the Scholar's research will inform the development of the City's groundwater strategy. (City of Vancouver)

2021-044 Research to understand best practices to address workers' needs for a zero-carbon economic transition strategy The purpose of this project is to research progressive jurisdictions working on labour market transition planning as part of climate action to understand which programs / initiatives are showing the most success or promise in realizing the principles of a Just Transition; and identify which initiatives would be most relevant to grow inclusive prosperity in Vancouver as part of the Zero Carbon Economic Transition Strategy. (City of Vancouver)

2021-045 Reducing the City of Vancouver's Non-Exhaust Fleet Emissions: Tire Particulate Data Benchmarking and a Comparative Life Cycle Assessment Emissions from tire and brake pad wear are largely unregulated and have been found to emit a significant amount of fine particulate matter into the atmosphere. The City of Vancouver would like to look at different ways to reduce non-exhaust emissions from its ~1500 road driven vehicle fleet. The scholar will begin this process by benchmarking the fleet's non-exhaust emissions data, researching products and practices to reduce these emissions and then performing a comparative LCA on a product or practice. (City of Vancouver)

2021-046 Neighbourhood Typologies: An Analysis of Neighbourhood Types and Growth Patterns The purpose of the project is to better understand how Vancouver neighbourhoods perform based on an evaluation using a selection of holistic resilience and sustainability indicators. Additionally, the project will test and evaluate the potential ways in which neighbourhoods grow and change over time. (City of Vancouver)

2021-047 Gender Inclusion and Rapid Transit Facility Design This project involves using an intersectional framework to research emerging trends on the topic of gender and transportation; bringing a gender lens to the identification of policies/practices to address the needs of different genders through transit station design, and recommending design-specific spatial considerations and initiatives that may be implemented moving forward. (City of Vancouver)

2021-048 Research on policies and incentives to encourage electric vehicle adoption As part of the recently approved climate emergency plan, the EV market and rate of adoption is rapidly changing. The City would like to encourage more people to buy EVs and is considering developing new policies around incentivizing electric vehicles, or dis-incentivizing new gasoline vehicles in the form of a vehicle surcharge. This project will primarily involve finding and comparing policies in cities across North America and internationally to explore how they deal with vehicle surcharges and EV adoption. (City of Vancouver)

2021-049 Fuel Economy Benchmarking: Augmenting the Business Case for Low-Carbon Vehicle Adoption To support the City of Vancouver's goal of increasing adoption of low-carbon vehicles, this project will benchmark the fuel economy of end-of-life internal combustion engine (ICE) vehicles vs. new ICE vehicles, as well as how new ICE vehicle fuel economy compared to equivalent electric options. The project will provide a robust dataset to strengthen the business case for low-carbon vehicle options. (City of Vancouver)

2021-050 Researching lighting and other factors of perceived safety and comfort to improve Vancouver's bike routes The purpose of this project is to understand how leading cycling cities identify and evaluate factors of perceived safety and comfort (other than exposure to motor vehicles); and to develop a methodology for evaluating lighting and other factors of perceived safety and comfort on cycling routes. The Scholar's work will help evaluate our existing cycling network and inform updates to

our AAA Design Guidelines to make our cycling network more inviting to everyone who wants to bike. (City of Vancouver)

2021-051 Research to understand the intersection of land use planning and human rights: A scoping study for the City of Vancouver To support the City of Vancouver's long-term planning efforts and reinforce the City's commitment to human rights, this project will focus on scoping the intersection of human rights and land use planning to help the City of Vancouver identify priority actions and future work on this topic. (City of Vancouver)

2021-052 Mitigating industrial land use impacts through building and site design In order to meet needs and expand the supply of industrial floor space, the City seeks to balance the intensification of industrial lands while considering the impact on surrounding communities. This research project will explore compatibility issues between land uses and provide building and site design recommendations to mitigate these issues. (City of Vancouver)

2021-053 Market analysis and literature review for Refuse Derived Fuel (RDF) from Residual Waste The City would like to better understand RDF products currently in use, end user segments, and local market conditions/dynamics associated with the demand for RDF products. The outcome of this project will highlight various options for City staff to determine the appropriate next steps for reaching Vancouver's zero waste goals and the City's role in Metro Vancouver's future regional solid waste management plan. (City of Vancouver)

2021-054 Research on policies, incentives and waste measurement reporting to inform food waste reduction and prevention in business operations The scholar will review government policies, incentives and methods/platforms that encourage the collection and submission of anonymized food waste data from businesses. The results of the project will inform possible development of the City's own data collection policies, incentives and methodology for Vancouver businesses to help the City to measure progress towards zero waste, advance the need for operational change within businesses, and inform adjustments in zero waste initiatives. (City of Vancouver)

2021-055 Research to understand best ways to incorporate an Indigenous lens in sustainability and resilience policy development This project will advance the City's knowledge of Indigenous concepts and ways of knowing related to resilience, hazards, climate change, related land use planning and the shocks and stresses experienced by Indigenous communities. This work will inform the Resilience and the Ecological & Sustainable City policy streams of The Vancouver Plan, the City's first city-wide plan in 100 years and the second since colonization began. (City of Vancouver)

2021-056 Developing a Framework to Measure Social Capital for Climate Action This project will build on data available from the Healthy City Strategy and identify other potential metrics of social capital to develop a measurement framework. The project will also help to identify the relationship strengths and opportunities for the City of Vancouver, by neighbourhood and population group where possible, in order to identify opportunities to build social capital, improve inequities, improve community resiliency and build the movement for climate action. (City of Vancouver)

2021-057 Green Rainwater Infrastructure Assets Inventory for Private Sites and Civic Facilities The project's purpose is to provide a better understanding and visualization of the City of Vancouver's catalogue of green rainwater infrastructure (GRI) assets. The desired outcome for this project is a

mapping tool for cataloguing and visualizing GRI assets on private sites and civic facilities. There is also potential for this project to be incorporated into a future update of VanMap as a layer for public use purposes. (City of Vancouver)

2021-058 Exploring tenant leadership in governance of social and supportive housing Criticisms of current non-market low-income housing governance models are that they are too rigid and top-down, do not consider individual residents needs, minimize tenant autonomy and sense of ownership and self-agency over their housing, and decrease community connection and empowerment. The City of Vancouver's Affordable Housing Programs team is seeking to develop a better understanding of the various approaches to tenant involvement in governance in social and supportive housing projects, and in privately-owned low-income housing. (City of Vancouver)

2021-059 Understanding mobility to pave the way for an integrated park network This project involves conducting an inventory of park mobility infrastructure to support both recreational walking and rolling for all ages and abilities and access to key destinations through the park network such as destination parks and community centres via active transportation. Analysis to include path types, surfaces, connections, rest stops and other amenities to support use by all. (City of Vancouver)

2021-060 Integrating traditional ecological knowledge in actions to protect marine habitat along the Burrard Inlet This project will provide Vancouver Park staff with recommendations for tangible actions to enhance, restore and protect marine habitat in the Burrard Inlet that are grounded in the Tsleil-Waututh Nation (TWN) vision for thriving and resilient shorelines. (City of Vancouver)

2021-061 Leveraging Cycling Data to Improve Decision Making As part of its traffic data collection program, the City of Vancouver collects different forms of data on cycling, including permanent counts at specific locations, short term counts, demographic counts, and surveys. The Scholar will make a meaningful impact by leveraging their analytical and research skills to provide recommendations on improving existing data collection processes to track the City's progress in meeting its sustainable mode share targets. (City of Vancouver)

2021-062 Researching the embodied carbon reduction potential of low-rise construction and development of a low-carbon building supply inventory This project will look at the products and materials available to the Vancouver market that can be used in low rise residential construction. The goal of this research is to assess the potential to reduce the embodied carbon of construction using materials and products available to builders in Vancouver. (City of Vancouver)

2021-063 Integrating embodied emissions accounting into implementation of the BC Energy Step Code Research involves identifying existing and emerging policy and regulatory approaches for accounting for embodied emissions in new construction; identifying and providing comparative research on leading national and international examples that can be used to compare and contrast to current and emergent local approaches; and providing recommendations on how these approaches may be used to advance/support a low carbon approach to the BC Energy Step Code. (District of North Vancouver)