

re:build

Integrated Infrastructure for Sustainable Cities

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The Integrated Infrastructure for Sustainable Cities (IISC) is a newly funded training program initiative that received funds from Natural Sciences and Engineering Research Council (NSERC) under the Collaborative Research and Training Experience Program (CREATE) funding envelope. THE NSERC-IISC initiative includes researchers from the University of Calgary, the University of British Columbia, the University of Victoria, and the University of Waterloo.

The aim of this initiative is to train the 21st century infrastructure engineers and planners capable of responding to the introduction of **transformative and disruptive technologies** in a way that meets and advances our cities' sustainability goals. For example, emerging transportation technologies, such as electric, autonomous and shared private/transit/commercial vehicles, are promising to bring a wave of urban reform. While, the expected reduction of parking demand offers unprecedented opportunities for denser, more people-friendly, walkable communities, the anticipated increase in mobility and accessibility may induce further urban sprawl.

These changes in urban form would impact supporting infrastructure, including building, water, energy, and waste systems; which in turn impact ecological footprint, air and water quality, and greenhouse gas (GHG) emissions. Due to the complex interactions among infrastructure components, emerging changes cannot be handled with existing planning and implementation tools that are devised separately for each component. Such a holistic approach to urban infrastructure analysis is critical for enabling policy and decision makers to assess system-wide efficiency of policies, capital investments, operational budget allocations and dealing with climate change related issues to meet sustainability goals.

