Predicting a low carbon future for Toronto

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Cities are major players in the climate change game. More than half of the world's population lives in urban areas and over 70% of global GHG (greenhouse gas) emissions can be attributed to cities. A case study of Toronto demonstrates alternative strategies for how the city can implement a low carbon urban infrastructure plan by 2031. Two scenarios are described: one based on Toronto's current policies was found to reduce GHG emissions by 31%; and another suggests aggressive alternatives that could reduce GHG emissions by 71%. Strategies under the aggressive scenario include retrofitting all existing buildings, using renewable heating and cooling systems, and the proliferation of electric cars. This study is published in the *Canadian Journal of Civil Engineering*.

"Our research shows that it is technically possible for cities, even in Canada, to reduce their greenhouse gas emissions by 70% or more in the long-term," says Chris Kennedy, Civil Engineering Professor in the Faculty of Applied Science and Engineering at University of Toronto (U of T). "This is the sort of reduction the international community is calling for so we can avoid the potentially serious consequences of climate change."

"Cities around the world are taking action on climate change," says Lorraine Sugar, Climate Change Specialist at the World Bank. "Cities are where people live, where economic activity flourishes. Cities are where local actions can have global impacts."

Kennedy and Sugar recognize that cities play a key role in solving the

climate change crisis. This paper helps to demonstrate how cities can make a positive difference using realistic, achievable steps.

Kennedy teaches courses in Infrastructure Economics, Engineering Ecology, and the Design of Infrastructure for Sustainable Cities at U of T. He has also consulted for the World Bank, the United Nations, and the OECD on urban environment issues. Sugar is a Masters graduate from the Faculty of Applied Science and Engineering at the U of T. She currently works with cities to design and implement strategies for low-carbon development.

Buildings, energy supply and transport are this study's main focus. Best practices as well as options and opportunities are detailed. Cities can refer to these strategies when planning to reduce carbon emissions in the decades to come.

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