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MARCH 19, 2021 @ 1:00PM **Evaluating the Impacts of Adopting Electric Vehicles in Canadian Cities**

An Application to London, Ontario and Calgary, Alberta

Canadian cities have experienced significant sprawled growth over the past six decades, but the emerging patterns can be considered far from sustainable. Urban sprawl has resulted in longer commute and traffic congestion, which in turn led to alarming degradation of air quality in many metropolitan areas. Air quality problems from transportation can be attributed to the internal combustion engine technology powering most motorized vehicles in Canada. As a remedy, there has been an increasing interest in electric vehicles (EVs) in recent years. However, the share of these alternative fuel vehicles is still minuscule in Canada. While various stakeholders have been promoting the adoption of EVs, the transition to this new technology will most likely be gradual and slow. In general, there is a clear gap in knowledge about the extent of the benefits that such gradual adoption will have on the urban environment in Canadian cities. This is particularly the case because travel activities vary over space and by time of the day. Also, the spatial distribution of the housing and/or workplace of EV owners will change over time.

The research presented in this seminar will address the current gap in knowledge by evaluating the impacts of adopting EVs in two Canadian cities: London, Ontario and Calgary, Alberta. The conducted work is part of a project that focused on the development and application of a new GIS-based simulation tool called SMARTPLANS (Simulation Model for Assessing the Ramification of Transportation Policies and LAND use Scenarios). SMARTPLANS is a full-fledged integrated urban model (IUM) that can be used to assess long-term urban planning policies. It is a complex computer simulation program that acts as a virtual laboratory to imitate the interactions between urban land use and transportation systems. The discussion will start by featuring some of the main characteristics of SMARTPLANS. Next, the two study areas and the EV scenarios that were developed and simulated will be highlighted. The presentation will then proceed to describe and discuss the key findings from the conducted simulations to quantify the extent of benefits from adopting EVs.



Dr. Hanna Maoh is an Associate Professor of Civil Engineering at the University of Windsor. He is also the Associate Director of the Cross-Border Institute (CBI) and the founder of its Traffic Lab. To date, Professor Maoh has been involved in several academic research projects. He is the author and co-author of numerous peer-reviewed international publications and government reports. His main research interests include land use & transportation interactions, freight transportation, network analysis, big-data analysis, GIS data modeling, and development of geospatial simulation models. His research activities have been supported through various agencies including Natural Science and Engineering Research Council (NSERC), Transport Canada, FedDev Ontario, Windsor-Detroit Bridge Authority, and Health Canada, among others. Professor Maoh was the recipient of faculty and university-wide awards from the University of Windsor for his excellence in research, scholarship, and creative activity.

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