MODELLING THE SENSITIVITY OF POPULATION CHANGE SCENARIOS AT 1.0 KM RESOLUTION USING CMAQ

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The Regional Municipality of Peel (Peel Region) is home to more than one million people and is characterised by a unique mix of land uses, with high-density built-up urban areas in the south and highly fertile rural farmland in the north. It is also experiencing tremendous growth. Current estimates indicate that population within Peel Region will exceed 1.75 million by 2031, and approach 2.0 million by 2041. This high rate of growth is expected to place considerable demands on both human and natural resources, including air quality. As part of the master planning process there is strong a push to strive toward significant urban densification and intensification, accompanied by a modest level of green field development in specific, targeted areas.

This talk describes advanced air quality modelling work performed to quantify potential changes in the magnitude and location of emissions associated with different hypothetical population growth scenarios. The modelling system used for this assessment is based on year-long model simulations using WRF/SMOKE/CMAQ, configured with nested 36km, 12km, 4km and 1km resolution model grids. Resulting impacts on ambient air quality and human health indices over the 1.0 km grid will also be presented.