

Paper Abstract
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***Detailed Intersection Modelling in EMME based on Analysis of the
Interaction of Conflicting Traffic Movements***

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Abstract

This paper describes procedures to estimate intersection turning movement capacities average vehicle delays as part of an iteration of the EMME auto assignment module.

Application of techniques in EMME to estimate turning capacities at intersections, especially at signalised intersections is not new. Papers have been presented at earlier EMME conferences outlining procedures to estimate capacity for turning movements at signalised intersections based on signal timing and saturation flow. However, to the best of our knowledge, none of these procedures explicitly considers the effects of conflicting movements, particularly that of opposing through traffic volumes on permitted left turns. Nor do they explicitly apportion traffic capacity among different turning movements being made from a shared lane.

Our approach applies an iterative procedure which undertakes 6 cycles of assignment and capacity adjustment at each application of the auto assignment stage of a four-step model. After each cycle of assignment, capacities of conflicting movements and movements from shared lanes are recalculated based on the previous assignment. The new capacities are then used in the turn penalty functions for the subsequent assignment. The same iterative procedure is used to determine capacities by movement at 4-way stops, capacities for minor road capacities at 2-way stops, capacities for left turn movements from the through street at 2-way stops, and capacities of roadways entering roundabouts.

The capacity and delay calculations are based on procedures set out in HCM2010. The paper describes the implementation of these procedures within EMME macros and provides selected comparisons of the capacities estimated in EMME with those calculated explicitly from HCM2010.

Speaker Background

Edwin Hull has more than 40 years transportation modelling experience including 26 years using EMME. He has broad international experience and has worked with EMME in seven countries. He has prepared and presented 12 technical papers on innovative applications of EMME at technical conferences including ten such papers to papers at EMME User Group Conferences.

Billy Kwok has six years experience of EMME including projects in Vancouver, Burnaby, Coquitlam, Richmond, Victoria, Prince George and Whitehorse.