

Abstract

TRPC Smart Corridors: Lessons learned in implementing DTA using DYNAMIQ

Thurston Regional Planning Council's (TRPC) "Smart Corridors" is a project initiative by a small Metropolitan Planning Organization to improve multimodal transportation operations of key urban arterials in Thurston County. As part of this project, TRPC recognized the need to develop a Dynamic Traffic Assignment (DTA) model to evaluate potential regional traffic operations strategies such as signal coordination, transit signal priority and integrated arterial/freeway management along its priority multi-modal travel corridors.

The development of base year DTA model using DYNAMIQ was presented at the 21st International EMME Users' conference in October, 2010. The entire Thurston County roadway network from the regional travel demand model was imported into the base year DTA model. Furthermore, in the vicinity of the Smart Corridors study area, network refinements such as intersection geometry, traffic control, and signal timing were included in the model to reflect the field conditions. The base year DTA model was calibrated and validated using newly collected data including link counts, turning movement counts, travel time data, speed data and queuing data, in addition to the data used for the travel demand model. As part of the ongoing work, a future year forecast model is developed to conduct hot spot analysis and analyze alternatives for corridor improvements. Also, air quality analysis and transportation related emissions are calculated in the base year and forecast year, by integrating the outputs from the DTA model with Motor Vehicle Emission Simulator (MOVES) model.

Integrating the entire regional travel demand model with the DTA model resulted in more realistic traffic simulation in the corridors by accounting for the effects of queuing and intersection delays, as well as the surge effects of traffic into and out of the urban area. Moreover, DYNAMIQ platform is a powerful tool for visualization of flows, queue propagation, and lane based simulation. This tool provides the local jurisdictions a better platform to coordinate traffic operations in a regional context, and enables TRPC to better evaluate system-wide effects of potential strategies across jurisdictions. The efforts of TRPC in integrating DTA with regional transportation planning, and its potential use in the future will be presented.

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Short biographical note: Bharath Paladugu works as a Transportation Modeler at Thurston Regional Planning Council in Olympia, WA. He graduated with a bachelor's degree in Civil Engineering from Indian Institute of Technology, Madras, India, and with a Master's degree in Civil Engineering, specializing in Transportation Engineering and Planning, from North Carolina State University (NCSU), Raleigh, NC. His professional experience includes working at NCSU Institute of Transportation Research, and as traffic engineer with Parsons Brinckerhoff in Albuquerque, NM.