Getting on the MOVES: Using Dynameq and the US EPA MOVES Model to Measure the Air Pollution Benefits of ITS Strategies

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In 2009 the United States Environmental Protection Agency (US EPA) released an entirely new tool for evaluating air pollution and greenhouse gas emissions from the transportation sector. This new model called MOVES (Motor Vehicle Emission Simulator), replaces the US EPAs long-standing MOBILE emissions modeling software. MOVES is radically different than MOBILE in that it is based on fine-scale simulation of vehicle movements to estimate air pollution and greenhouse gas emissions. With this additional detail, MOVES is better able to capture the effects of traffic congestion, inefficient traffic signals, and other issues that are important when evaluating the performance of the transportation system.

While MOVES is highly detailed, the tools (e.g., traditional travel demand forecasting models) that have been traditionally applied to develop inputs for air quality tools operate at a much simpler level. To capture the true benefits of a tool like MOVES requires an equally detailed input model. This presentation will document how Fehr & Peers, in partnership with INRO and the Thurston Regional Planning Council (TRPC), applied Dynameq to develop the fine-scale inputs required for MOVES. As part of this project, INRO developed a new component for Dynameq to extract the necessary MOVES input data. We will compare the results from Dynameq and MOVES to more traditional results using static travel demand forecasting and air quality models.

Bios:

Chris Breiland is an Associate in Fehr & Peers' Seattle office who has been with the firm since 2005. Chris is involved in a wide variety of project work and is an active member of the firm's Travel Demand Forecasting research and development team. During his tenure at Fehr & Peers, Chris has led 10 travel demand model development projects and has been involved in dozens of travel demand forecasting model applications, which analyzed the impacts of land use and transportation infrastructure projects. Significant recent projects include the development of travel demand forecasting models for the City of Fairfield, California, Butte County, California, and Port Angeles, Washington. In addition, Chris led the implementation of 4D smart growth adjustments for the travel models in the City of Seattle, Washington, Redmond, Washington, and Amador County, California. Chris also assisted in the assessment of greenhouse gas modeling tools for the Washington State Department of Commerce the

Oregon Department of Transportation, and the Oregon Department of Land Conservation and Development.

Ming-Bang Shyu specializes in traffic engineering, travel demand forecasting, safety analyses, and multi-modal transportation planning. Ming is skilled at customizing regional transportation models for subarea traffic analyses and use in growth management issues such as concurrency and level of service. He creates travel demand models for short-, mid- and long range forecasts, as well as real-time traffic simulation models of smaller networks (travel corridors and sub-areas). He is also skilled in traffic impact analysis and designing systems to manage traffic congestion. Ming's experience includes development and maintenance of travel demand models, traffic operations simulation, development review analyses, and numerous traffic, HOV and transit analyses. He also specializes in safety project prioritization analyses and accident frequency and severity modeling. He has customized the Puget Sound Regional Council's EMME model for jurisdictions updating their transportation plans as required under the Growth Management Act, including the cities of Kirkland, Tukwila, Shoreline, Federal Way, and Redmond.