

DynaSmart/DynusT Applications in the Twin Cities, Minnesota Area

Submitted by:

Steve Wilson, Principal, SRF Consulting Group, Inc.
One Carlson Parkway
Minneapolis, MN 55447
(763) 249-6760
swilson@srfconsulting.com

Yi-Chang Chiu, Ph.D.
Assistant Professor
1209 E 2nd St. Room 206
Dept. of Civil Engineering and Engineering Mechanics
The University of Arizona
Tucson, AZ 85721
520.626.8462
Email: chiu@email.arizona.edu

Subject Areas:

Linking Demand and Dynamic Network Models
Approaches to Modeling Traveler Response to Road Pricing

ABSTRACT

The purpose of this presentation will be to report on the experience of the current introduction of dynamic assignment modeling in the Twin Cities, Minnesota area, particularly in relationship with a fast-track high-visibility project.

In April, 2007 MnDOT and its local partners submitted a proposal to the U.S. Department of Transportation for an Urban Partnership Agreement (UPA) competition for improvements to I-35W south of downtown Minneapolis. The proposal was awarded in August, 2007 and included the following aspects:

- **HOV-to-HOT conversion** of the existing HOV lanes on I-35W in the south suburban portion of the corridor, including dynamic pricing
- **I-35W HOT lane extension** through a segment closer to downtown Minneapolis that is being reconstructed and expanded
- **Priced Dynamic Shoulder Lanes (PDSL)** through the space-constrained segment of I-35W between downtown Minneapolis and the new construction
- **Arterial and freeway management** using intelligent transportation system ("ITS") technology

In addition, the project includes significant upgrades to bus services, facilities and technologies in the corridor.

Coincidentally, in August, 2007 following the collapse of the I-35W river crossing north of downtown Minneapolis, Minnesota the Federal Highway Administration offered to develop a DynaSmart dynamic assignment model to assist the Minnesota Department of Transportation in its route diversion and impact planning. Development and support of the model development was provided by the Dynamic Urban Systems in Transportation (DynusT) lab of the University of Arizona, which is upgrading the DynaSmart-P program for FHWA.

While the planning and implementation of the UPA project is on a very fast track, MnDOT and FHWA decided to explore the use of DynaSmart-P (the upgrade of which is being released as DynusT) in developing forecasts and analysis of the UPA corridor because of the availability of the model developed for the bridge. SRF Consulting Group, which had been retained by MnDOT to develop forecasts for the UPA project will also be actively involved in testing and documenting the usefulness of the DynusT program as an effective tool for the various elements of the project. The University of Arizona will provide technical guidance and be able to draw on the experience of the project for improvements to the software.

Among the interests of the project in using the DynusT software are to demonstrate:

- Consistency of pricing results with the Twin regional travel demand model, calibrated to an existing priced facilities in the Twin Cities;
- Ability to cost-effectively update the regional DynusT model to be consistent with the regional travel demand model;
- Ability to provide credible modeling of the impact of UPA-related roadway design issues without absent (or as a prelude to) detailed micro-simulation modeling;
- Ability to efficiently extract the necessary measures of effectiveness (MOEs) for use in the

The forecast work kicked off in January, 2008 and will be completed by Spring, 2008 in order to advance the environmental review and design processes for the project. In addition to the UPA project, there may be other project in the Twin Cities where the DynusT model could be used as well.

Dynamic assignment modeling and mesoscopic modeling are new to the Twin Cities region. Consequently, this project will provide an opportunity to explore the practical uses of software such as DynusT in the project planning and development process. While this type of modeling has clear differences from the travel demand modeling and microscopic simulation models, the benefits and value added by such models will need to be demonstrated in order for the models to gain broad acceptance by the agencies that would use it.