

Evaluating Significant Projects that May Ease Congestion in Northern Virginia Interim Progress Report #5

January 1, 2015

Legislative Background

Chapters 768 and 825 of the 2012 Acts of Assembly amended the *Code of Virginia* by adding § 33.2-257, directing the Virginia Department of Transportation (VDOT), in ongoing coordination with the Commonwealth Transportation Board (CTB), the Department of Rail and Public Transportation (DRPT), and the Northern Virginia Transportation Authority (NVTA), to evaluate and develop a quantitative rating system for at least 25 significant transportation projects in and near the Northern Virginia Transportation District, to the extent funds are available for such a purpose. (The effort to develop the rating system and evaluate and rate the projects is hereinafter collectively referred to as the “Rating Study” or “study.”)

The enacting legislation directs that the project evaluation and rating be based on the project’s expected effectiveness at easing congestion and, to the extent possible, the rating should also be based on the project’s expected improvement in regional mobility in the event of a homeland security emergency. The evaluation and ratings are to be completed and published on VDOT’s website every four years. Interim progress reports are to be published on VDOT’s website every six months. VDOT posted its first four reports on its website on January 1, 2013, July 1, 2013, January 1, 2014 and July 1, 2014, respectively. The interim reports are available at:

http://www.virginiadot.org/projects/northernvirginia/evaluating_significant_projects.asp.

The full text of the *Code of Virginia* § 33.2-257 can be found at:

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+33.2-257>

VDOT’s Northern Virginia District Office and DRPT are leading the Rating Study. This Interim Report #5 serves as an update on tasks in progress and new activities commenced since the July 2014 Interim Report.

Update on tasks from Interim Progress Report #4 – July 1, 2014

- 1. Conduct ongoing coordination with the CTB and the NVTA:** VDOT continually coordinates with the Northern Virginia representatives of the CTB and with the NVTA.

Status – Since the July 2014 Interim Report, VDOT has coordinated with the following stakeholders regarding the analyses and evaluation of the 37 nominated projects:

- Provided ongoing updates to the Northern Virginia representatives of the CTB, as well as to the NVTA Chairman.

- Presented the preliminary results of the Basic Project Evaluation and Rating to the stakeholders and the NVTA in July 2014.
- Provided an update on the Measures of Effectiveness to NVTA's Technical Advisory Committee on December 17, 2014.
- Provided a project update to NVTA's Planning Coordination Advisory Committee on December 18, 2014.

2. Evaluation and rating process for nominated projects: After the 37 nominated projects passed the CTB Priorities and Project Selection screens, VDOT/DRPT conducted a high-level evaluation using the Transportation Planning Board (TPB) Travel Demand Model only.

Status – On July 24, 2014, VDOT/DRPT presented the basic rating results to the NVTA at their scheduled meeting. Prior to this meeting, VDOT/DRPT shared the preliminary results with the Peer Review Group, project stakeholders, NVTA Staff, and the Northern Virginia CTB members (as referenced in Interim Progress Report #4).

- The nominated projects were evaluated using the Metropolitan Washington Council of Governments (MWCOC) regional travel demand forecasting model to arrive at a basic rating for each nominated project. Benefits were based on low/medium/high score for each effectiveness measure.
- This work effort was not included in the original scope of work. The basic or high-level rating was requested to enable NVTA to begin the process of allocating funds for the next 2.5 years to rated projects. These basic ratings helped inform NVTA's project selection criteria.

The following is a new task that VDOT and DRPT initiated since the July 2014 Interim Report.

Detailed Technical Analysis and Simulation Modeling: Travel demand and simulation models in TRANSIMS were utilized to produce a more detailed evaluation and rating for the nominated projects.

Status – In cooperation with the stakeholders and NVTA, the study team developed effectiveness measures to gauge each project's impact on congestion relief and ability to improve mobility during a homeland security emergency. The study team completed a detailed analysis for each nominated project using transportation models to forecast the measures of effectiveness. These forecasted metrics were used to calculate the ratings for each project for 2020 and 2040.

- The 37 selected projects were evaluated using rigorous analytical techniques and transportation models that integrate the MWCOC regional demand modeling process with a regional simulation process based on

the TRANSIMS software, developed by FHWA. This software evaluates the temporal and operational impacts of complex transportation systems on congestion. The process quantifies system performance and the severity, duration, and distribution of congestion in a more detailed and realistic way than a traditional travel demand forecasting model.

- The TRANSIMS model validation was shared with the Peer Review Group on October 23, 2014. Reviewers provided suggestions and comments on the model's performance as well as approaches to sharing the information with stakeholders and the public.
- The effectiveness measures used to evaluate and rate projects assess each project's ability to reduce congestion and, to the extent possible, improve mobility during a homeland security emergency. The project measures of effectiveness were reviewed by the NVTA in February 2014, and include:
 - Congestion Duration
 - Person Hours of Delay
 - Person Hours of Congested Travel in Automobiles
 - Person Hours of Congested Travel in Transit Vehicles
 - Transit Crowding
 - Accessibility to Jobs
 - Emergency Mobility
- The detailed technical analyses and simulation modeling results were shared with the local jurisdictions in small workgroup discussions from December 4 through December 10, 2014. At these meetings, VDOT reviewed the evaluation results and three of the 2020 and 2040 highway measures of effectiveness that were used to rate the effectiveness of each project in reducing congestion. These measures included Congestion Duration, Person Hours of Delay, and Person Hours of Congested Travel in Automobiles. The remaining measures of effectiveness were reviewed by VDOT and jurisdictional staff at the January 6th stakeholders meeting.

Next steps

The following represents the next key steps and the anticipated schedule:

- Transmit the draft final ratings to NVTA - December 31, 2014. (complete)
- Meet with local/regional transportation and transit stakeholders to review the detailed operational rating results – January 6, 2015. (complete)
- Meet with the NVTA Project Implementation Working Group – January 12, 2015.
- The project team will share the technical analyses and simulation modeling results with the Peer Review Group - January 2015.
- Meet with NVTA to present the results of the rating process – January 22, 2015.
- Publish the Final/Detailed Project Ratings – January 2015.