



Evaluation and Rating of Significant Transportation Projects in NoVA

Project Selection Model

Northern Virginia Transportation Authority
Work Session
December 12, 2013

Presentation Overview

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Project Selection Model Purpose

- **Ensure that projects selected for analysis are consistent with:**
 - **CTB Priorities**
 - **Overall intent of the law (study mandate/objectives)**
 - *Evaluate and rate significant transportation projects that reduce congestion and improve mobility during homeland security emergency situations*
 - *Projects should include significant highway, rail, bus, and/or technology investments that reduce congestion*
 - *Priority should be given to projects that most effectively reduce congestion in the most congested corridors and intersections*
- **Help select a finite number of qualified projects for evaluation and rating in this round of the study**

Project Definition

- **This study defines a “Project” as one or more complementary investments that attempt to provide a comprehensive solution to an identified congestion problem**
 - *A project may include a combination of highway, transit, technology and/or travel demand management improvements and any access components such as pedestrian, bicycle and parking improvements which enhance the project’s effectiveness in reducing congestion.*
 - *Multi-modal projects are encouraged and welcomed. For example:*
 - HOV/HOT lanes with high quality bus service and connections to park-&-ride lots with multimodal access options.
 - Metrorail extension with enhanced feeder bus, multimodal station access, street improvements, and demand management incentives.
 - A series of roadway improvements to address bottlenecks with an active traffic management system to coordinate signals and provided routing information to travelers.

Stakeholder Engagement - PSM

- **October 17th CTB Meeting (Tier 1 Criteria)**
- **October 31st Peer Review Group webinar on Draft PSM**
- **November 1st Draft PSM Distributed to stakeholders**
- **November 8th and 14th Draft PSM Discussions – PIWG and JACC**
- **November 15th Received stakeholder comments on Draft PSM**
- **November 22nd Stakeholder meeting on revisions to draft PSM**
- **December 2nd Revised PSM Discussions - PIWG and JACC**
- **December 3rd Stakeholder input session on the final PSM criteria**
- **December 9th NoVA CTB Members Input on PSM**

Project Selection Model

- **The Project Selection Model (PSM) implements the legislative requirements using the following overall structure**
- **Tier One – CTB Priority Principles**
 - The project must meet at least one of the six CTB selected priorities to be considered for selection
- **Tier Two – Study Mandates and Objectives**
 - The project is assessed against a set of criteria related to its significance, congestion reduction potential and Homeland Security mobility

Tier One – CTB Priority Principles

- **Priority principles applied in a regional context**
- **The project must meet at least one of the following CTB priorities**
 - Preserve and Enhance Statewide Mobility through the Region
 - Increase Coordinated Safety and Security Planning
 - Improve the Interconnectivity of Regions and Activity Centers
 - Reduce the Cost of Congestion to Virginia Residents and Businesses
 - Increase System Performance by Making Operational Improvements
 - Increase Travel Choices to Improve Quality of Life for Virginians

Tier Two – Study Mandates and Objectives

- **Three categories of criteria:**
 - Project Significance
 - 5 sub-criteria / attributes – *project type, designated corridors, high travel volume, connects activity centers, connects major facilities*
 - Congestion Reduction Potential
 - 5 sub-criteria / attributes – *congestion severity, congestion duration, person hours of delay, adds capacity, reduces vehicle trips*
 - Homeland Security Mobility
 - 1 sub-criteria / attribute – *facility and operational improvements*
- **All quantitative assessments will be based on 2020 Conditions**
 - Facilities, volumes, congestion levels, delays, regional activity center sizes, ...

Tier Two: Project Significance Criteria

- ***Project Type*** – The project includes a highway, rail, bus, technology or large scale travel demand management investment.
- ***Designated Corridors*** – The project is on a facility in/near Northern Virginia and included in the Statewide Mobility System; Corridors of Statewide Significance; in a Super NoVA corridor; or in a TransAction 2040 corridor
- ***High Travel Volume*** – The project is in a corridor that serves a high volume of person trips.
- ***Connects Regional Activity Centers (RACs)*** – The project enhances or expands transit, HOV/HOT lanes or roadway connections between non-contiguous regional activity centers (RACs).
- ***Connects Major Facilities*** – The project enhances or completes connections between interstate highways, principal arterials or transit stations, park-&-ride lots, and DCA or IAD airports.

Tier two: Congestion Reduction Potential Criteria

- ***Congestion Severity*** – The project is located in a heavily congested corridor.
- ***Congestion Duration*** – The project corridor experiences moderate to heavy congestion for multiple hours of the day.
- ***Person Hours of Delay*** – The project is located in a corridor with significant person hours of delay.
- ***Adds Capacity*** – The project adds person moving capacity to a congested location, facility or corridor.
- ***Reduces Vehicle Trips*** – The project has the potential to reduce vehicle trips on a congested facility or corridor.

Tier Two: Homeland Security Mobility Criteria

- ***Facility and Operational Improvements*** – The project improves regional mobility in the event of a homeland security emergency.

Project Selection Model Application

- **Establish the relative weights for each sub-criteria/project attribute using the stakeholder input**
- **Assess each nominated investment package against all 11 sub-criteria/project attributes**
- **Determine the total score for each nominated investment package**
- **The total score informs the selection of a finite number of qualified projects to be evaluated in this study**

Stakeholder Input Session

- **16 of 18 stakeholder jurisdictions and agencies participated in a session assessing the relative importance of the 3 criteria categories and the 11 sub-criteria / attributes in the Project Selection Model**
 - Fairfax County Prince William County Arlington County
 - Loudoun County City of Alexandria City of Manassas
 - City of Fairfax City of Manassas Park City of Falls Church
 - Town of Leesburg Town of Herndon Town of Dumfries
 - Washington Metropolitan Area Transit Authority (WMATA)
 - Virginia Railway Express (VRE)
 - Potomac and Rappahannock Transportation Commission (PRTC)
 - Northern Virginia Transportation Commission (NVTC)

- **Towns of Vienna and Purcellville were unable to participate**

PSM Input – Decision Lens Process

- **The three criteria categories and the 11 sub-criteria were examined in a pair-wise comparison**
 - Each stakeholder rated the relative importance of one criterion over the other in the pair on a scale of 1 through 9
 - The 3 categories of criteria (Project Significance, Congestion Reduction, and Improve Emergency Mobility) were examined in 3 pair-wise comparisons
 - The five sub-criteria for Project Significance were examined in 10 pair-wise comparisons
 - The five sub-criteria for Congestion Reduction Potential were examined in 10 pair-wise comparisons

Alternative Methods of Using Input

- **Stakeholder input used to establish the relative weight of each criteria**
- **3 alternative methods of using stakeholder input were examined**
 - Equal Weights – input from each of the 16 stakeholders are weighted equally
 - Population / Ridership Weights
 - Input of the jurisdictional representatives is weighted by the jurisdiction's population
 - Input of the transit agency representatives is weighted by the annual ridership of the service providers they represent
 - Transit agency inputs accounts for 18.4% of the combined inputs – based on the peak period transit mode share from the TPB model
 - NVTA Voting Rule
 - Equal inputs of the NVTA voting members (four counties and five cities)
 - Considers the voting process as enunciated in the NVTA Bylaws

Comparing Weighted Results

| Category-Attribute | Population/Ridership Weights | | | NVTA Voting Weights | | | Blended Weights | | |
|--------------------------------|------------------------------|-----------|---------|---------------------|-----------|---------|-----------------|-----------|---------|
| | Category | Attribute | Overall | Category | Attribute | Overall | Category | Attribute | Overall |
| Project Significance | 55% | | | 56% | | | 55% | | |
| Project Type | | 5% | 3% | | 6% | 3% | | 6% | 3% |
| Designated Corridors | | 24% | 13% | | 23% | 13% | | 23% | 13% |
| High Travel Volume | | 28% | 15% | | 27% | 15% | | 27% | 15% |
| Connects RACs | | 31% | 17% | | 28% | 16% | | 29% | 16% |
| Connects Major Facilities | | 12% | 7% | | 16% | 9% | | 14% | 8% |
| | | 100% | 55% | | 100% | 56% | | 100% | 55% |
| Congestion Reduction Potential | 38% | | | 35% | | | 36% | | |
| Congestion Severity | | 19% | 7% | | 12% | 4% | | 16% | 6% |
| Congestion Duration | | 30% | 11% | | 20% | 7% | | 25% | 9% |
| Person Hours of Delay | | 22% | 8% | | 22% | 8% | | 22% | 8% |
| Adds Capacity | | 20% | 8% | | 28% | 10% | | 24% | 9% |
| Reduces Vehicle Trips | | 9% | 3% | | 17% | 6% | | 13% | 5% |
| | | 100% | 38% | | 100% | 35% | | 100% | 36% |
| Homeland Security Mobility | 8% | | | 9% | | | 8% | | |
| Facility Improvements | | 100% | 8% | | 100% | 9% | | 100% | 8% |
| Total | 100% | | 100% | 100% | | 100% | 100% | | 100% |

Recommended Project Selection Weights

➤ Use the Blended Weighting method for the PSM

- Uses the inputs of all NoVA jurisdictions and transit agencies with extra weight on NVTA Voting members
- Consistent with CTB and NVTA outlooks
- Recognizes the considerations of the transit agencies explicitly

➤ Highlights of the recommended weighting method:

- Project Significance category was rated higher than Congestion Reduction Potential category (55% to 36%)
- Reasonable mix of Project Significance and Congestion Reduction attributes in the overall project selection set
 - Connects Regional Activity Centers (16%)
 - High Volume Corridors (15%)
 - Designated Corridors (13%)
 - Congestion Duration (9%)
 - Adds Capacity (9%)
 - Person Hours of Delay (8%)



Questions / Comments

THANKS!

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