HRTPO Project Prioritization Potential Modifications And Scoring Weights

Summary of Recommended Enhancements – Additional Resource Slides

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

Additional Resource Slides

Proposed Measures vetted through LRTP Subcommittee & Prioritization Working Group

CONGESTION

Current (Project Utility):

- Highway/Bridge & Tunnel
  - % Reduction between Existing and Future V/C Ratios
  - Existing Peak Period Congestion Level (TTI)
  - Existing Peak Period Level of Service (No INRIX Data)
  - Impact to Nearby Roadway
- Interchange
  - Existing Queue Conditions
  - Queue Improvements
  - Number of Movements Added or Improved
- Systems and Demand Management
  - Existing Average Level of Congestion on Project Impact Area (Low, Moderate, Severe)
- Transit and Intermodal
  - N/A (Consider Incorporating)

Proposed:

- Add SMART SCALE MOEs
  - Person Throughput
  - Person Hours of Delay
- Use RSTP/CMAQ Congestion measure for Transit
  - Percent of trips removed from roadways
    - Consistent with current RSTP/CMAQ process
    - Transit projects only scored against themselves
- Intermodal: Rail/intersection delay
  - Captured under Conflict Free Movements (Intermodal Project Utility)

Infrastructure Condition (Bridges)

Current:

- Bridges
  - Bridge Sufficiency Rating
- Tunnels
  - Age of Tunnel (horizon year)
  - Last Major Repair
  - Costs for Necessary Repairs/Upgrades

Proposed:

- Separate rehabilitation/replacement projects from capacity improvements
- Bridge Sufficiency Ratings no longer exist
- Modified Bridge MOEs:
  - Condition Factor
  - Importance Factor
  - Design Redundancy Factor
  - Structure Capacity

System Continuity and Connectivity

Current:

- Highways, Interchanges, Bridge/Tunnel, Transit, Active Transportation
  - Degree of Regional Impact
  - Project Improves Vehicular Access to Freight Distribution Facilities, Ports, Major Industrial Clients, or Employment and Population Centers (Transit Only)
- Intermodal
  - Better Accommodates Intermodal Movements
  - Improves Rail or Vehicular Access

Proposed:

- Move 'Improves Vehicular Access' to System Continuity and Connectivity (Highway, currently under Modal Enhancement)
- Resiliency/Flooding Vulnerability – See Next Slide
- Addresses a Gap

RESILIENCY/FLOODING VULNERABILITY

Proposed (potentially under System Continuity and Connectivity):

- Is the candidate project is located in a vulnerable area for sea level rise/storm surge/recurrent flooding? (Vulnerable/Not Vulnerable)
  - Vulnerable – Have you developed planned improvements or adaptation strategies to address future sea level rise/storm surge/recurrent flooding?
    - Yes – points awarded
    - No – no points awarded
  - Not Vulnerable – points awarded (due to no vulnerability)
- If project is in vulnerable area, what level of access is or will be provided by the candidate project to critical areas or facilities (e.g. hospitals, Fire-EMS, emergency shelters, dense employment area, and single entry/exit point for flood prone areas or neighborhoods)?
  - High – high points
  - Medium – medium points
  - Low – low points

System Continuity and Connectivity

Current:

- Active Transportation
  - Degree of Regional Impact
  - Elimination of a Barrier or Completion of a Gap
  - Connection to Existing Bike/Ped Facility
  - Provides Access to Transit, Local/Regional Destinations, High Density Areas

Proposed:

- Remove 'Local' from 'Provides Access'
- Modify Regional "Destinations" to "Activity Centers"

SAFETY AND SECURITY

Current:

- Highway, Interchanges, Bridge & Tunnel
  - Critical Crash Ratio (Actual EPDO Crash Rate/Avg EPDO Crash Rate for Roadway Type)
  - Improvement to Incident Management or Evacuation Routes
  - Diversion Impact Due to Failure (Bridge/Tunnel Only)
- Active Transportation
  - Crash History
  - Project a Safety Improvement - Remove
- Transit and Intermodal
  - N/A (Consider incorporating)

Proposed:

- SMART SCALE
  - Reduction in EPDO of Fatal and Injury Crashes
  - Reduction in EPDO Rate of Fatal and Injury Crashes
- Active Transportation
  - Add Level of Separation criteria (e.g. physically separated shared use path would be awarded more points than a on-road bike lane)
  - Safe Routes to School
- Transit
  - Add Safety and Security criteria under User Benefit

LAND USE COMPATIBILITY

Current:

- Highway, Interchanges, Bridge/Tunnel, Transit, Active Transportation
  - Multiple choice MOE
    - Compatible and Officially Documented
    - Compatible but Not Officially Documented
    - Not Compatible
- Intermodal
  - N/A (Consider Incorporating)

Proposed:

- Reviewed SMART SCALE MOEs
  - Transportation Efficient Land Use
    - Evaluates the amount of population and employment located in areas with high non-work accessibility
  - Increase in Efficient Land Use
    - Evaluates the increase in amount of population and employment located in areas with high non-work accessibility between present day and the horizon year
- Prioritization Working Group Recommendation: keep current HRTPO measures
- Move to Project Viability

Modal Enhancements

Current:

- Highway, Interchanges, Bridge/Tunnel
  - Project Improves Vehicular Access to Freight Distribution Facilities, Ports, Major Industrial Clients, or Employment and Population Centers
- Highway, Interchanges, Bridge/Tunnel, Transit, Intermodal, Active Transportation
  - Additional Dedicated Facilities for Alternative Modes
  - Unimpeded Commercial Maritime/Rail Traffic (Bridges and Tunnels Only)

Proposed:

- Move 'Improves Vehicular Access' to System Continuity and Connectivity (Highway, currently under Modal Enhancement)
- Active Transportation
  - Add First Mile/Last Mile criteria (does the project support/enhance ease of First Mile/List Mile connections?)
- Add SMART SCALE Factors (Access to Multimodal Choices) – See Next Slide

MODAL ENHANCEMENTS

Propose to use SMART SCALE *Access to Multimodal Choices* (listed below) + additional MOEs as LRTP Subcommittee deems reasonable (e.g. shared mobility, micro-mobility, etc.)

- Project includes improvements to existing or new HOV/HOT lanes or ramps to HOV/HOT
- Project provides real-time traveler information or wayfinding specifically for intermodal connectors (access to transit station or park & ride lot)
- Provides traveler information or is directly linked to an existing TMC network/ITS architecture
- *Project includes improvements to an existing or proposed park & ride lot**
- *Project includes transit system improvements or reduces delay on a roadway with scheduled peak service of 1 transit vehicle per hour**
- *Project includes construction or replacement of bike facilities (off-road or on-road buffered or clearly delineated facilities are required)**
- *Project includes construction or replacement of pedestrian facilities (sidewalks, pedestrian signals, marked crosswalks, refuge islands, and other treatments are required, as appropriate)**

Environmental Quality MOEs

Propose to use SMART SCALE – Non-SOV Project Characteristics (listed below) + additional MOEs as LRTP Subcommittee deems reasonable (more general environmental MOEs)

- Project includes special accommodations for hybrid or electric vehicles, or space or infrastructure for electric vehicle parking/charging
- Project includes energy efficient infrastructure or fleets, including: hybrid or electric buses, electronic/open road tolling, alternative energy infrastructure (e.g. roadside solar panels)
- *Project includes bus facility improvements or reduces delay on a roadway with scheduled peak service of 1 transit vehicle per hour**
- Project includes improvements to rail transit or passenger rail facilities
- *Project includes construction or replacement of bike facilities (off-road or on-road buffered or clearly delineated facilities are required)**
- *Project includes construction or replacement of pedestrian facilities (sidewalks, pedestrian signals, marked crosswalks, refuge islands, and other treatments are required, as appropriate)**
- *Project includes improvements to an existing or proposed park & ride lot**

ENVIRONMENTAL QUALITY MOES (CON'T)

Proposed: SMART SCALE MOEs

- Freight Transportation Project Characteristics
  - Project reduces traffic delay at a congested intersection, interchange, or other bottleneck with a high percentage of truck traffic (greater than 8 percent of AADT)
  - ~~Project includes improvements to freight rail network or intermodal (truck to rail) facilities/ports/terminals (Prioritization Task Force: remove measure)~~
- Acres of Natural and Cultural Resources Potentially Impacted
  - Conservation Lands
  - Threatened and Endangered Species/Protected Habitats
  - Cultural Resources
  - Wetlands

Other Transit Specific MOEs

Current:

- Existing Usage and/or Prospective Ridership
- User Benefit
  - Total Annual Travel Time Savings per Rider
  - New Project
- Air Quality

Proposed:

- User Benefit:
  - Adding DRPT MOEs:
    - Operating Efficiency
    - Travel Time Reliability (moved from Economic Vitality)
    - Accessibility and/or Customer Experience
    - Safety and Security
- Air Quality moved to Project Viability (under Environment)

SMALLER SCOPE TRANSIT PROJECTS

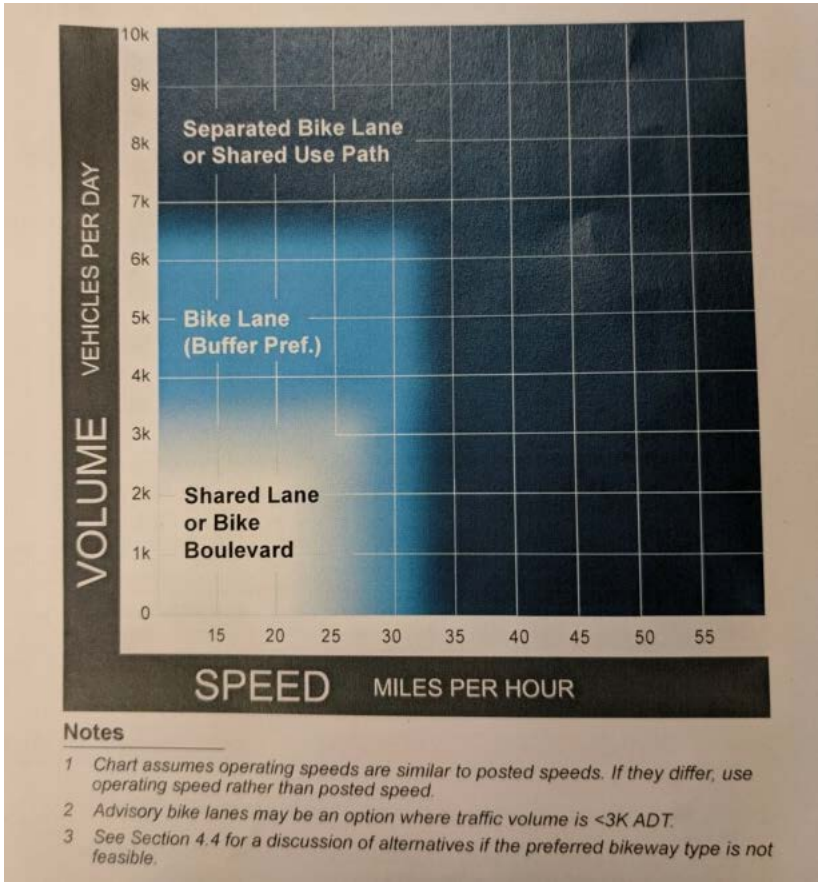
Proposed: DRPT Prioritization Measures

- Service Impact:
  - Service Frequency, Travel Time, and/or Reliability: speeds up transit routes or allows for increased frequency or reliability
  - Operating Efficiency: provides more cost-effective service (maintenance building being a LEED building, reduced deadheading, electric/hybrid technology)
  - Service Accessibility and/or Customer Experience: implements a significant improvement in a customer's ability to access the system/ease use of system (new stops, expanded service coverage, software/hardware to provide real-time arrival information)
  - Safety and Security: improved lighting or other crime prevention features, pedestrian safety improvements
- Incorporated under Transit Project Utility: User Benefit

ACTIVE TRANSPORTATION MOEs

Proposed Additional:

- User Demand
  - CMAQ Demand estimation
- Level of Separation/Network Quality (under Safety)
  - Traffic Stress Score (user comfort based on lanes, vehicle volume, vehicle speed, bicycle facility type)



ECONOMIC VITALITY: PROPOSED MODIFICATIONS

- Total Reduction in Regional Travel Time (Hwy, Interchange, B/T, Intermodal)
  - Use Model Outputs (as opposed to corridor specific analysis)
  - Add: Improved Delay (cost of congestion)
- Labor Market Access
  - Travel Time Reliability (move to Project Utility)
    - Align with Federal Performance Measures (Level of Travel Time Reliability, Truck Travel Time Reliability)
  - Increases Access for High Density Employment Areas/Major Employment Centers (~~Transit Only,~~ Incorporate for all categories)
  - Increases Frequency of Service (Transit Only)
  - Access to Institutions of Higher Education (move to Increased Opportunity)
  - Impact on Truck Movement (Intermodal Only)

ECONOMIC VITALITY: PROPOSED MODIFICATIONS

- Address the Needs of Basic/Key Sector Industries
  - Defense Access
    - Project significantly improves access to Major Military Bases
    - Project is part of NHS/STRAHNET/Other Roadways Serving the Military (Hwy, Interchange, B/T)
  - Project significantly increases access to major tourist areas
  - Project significantly improves truck delay and/or reduces travel time for trips to ports (Hwy, Interchange, B/T)
  - Add: Improved Access to Truck Zones (except for Transit and Active Transportation categories)
  - Improves Flow of Freight Rail (Intermodal)
  - Increases Access to Airports (Intermodal) – Include Sea Ports

Economic Vitality: Proposed Modifications

- Increased Opportunity
  - Provides New or Increased Access Opportunities (to areas that are primed for development)
  - Supports Plans for Future Growth
  - Add: Access to Institutions of Higher Education (includes work force development sites) (except Intermodal)
  - Add: Urban Development Areas/Governor's Opportunity Zones
- Economic Distress Factors
  - Access to Areas with High Unemployment
  - Access to Low Income Areas
  - Add to all categories except Intermodal

CURRENT PROJECT VIABILITY

- Percent of Funding Committed
- Project is included in the currently adopted LRTP
- Project Readiness
  - Percentage of Project Design Completed
  - Environmental Documents Complete
  - Environmental Decisions Obtained
  - ROW Obtained and Utilities Coordinated
  - Additional Environmental Permits Obtained (if needed)

PROJECT VIABILITY: PROPOSED MODIFICATIONS

- Add: Environmental Considerations
  - Environmental MOEs (Natural and Cultural Resources)
  - Acres of Natural and Cultural Resources
  - Air Quality (Roadway projects)
    - Project reduces delay at congested bottleneck with high percentage of truck traffic (except Transit, RSTP)
    - Improves freight to rail network or intermodal facilities/ports/terminals (except Intermodal, Transit, RSTP)
    - Emissions Reduction (Transit, Active Transportation, RSTP-Other)
- Add: Land Use Compatibility (moved from Project Utility)
- Add: Project Cost Effectives (moved from Project Utility)

PROJECT COST EFFECTIVENESS

- Project Cost
  - YOE vs Current Year Dollars
- Cost Effectiveness
  - Currently under Project Utility
    - Estimated Cost/Daily Vehicle Miles Traveled
    - Transit: (Annualized Capital Cost + Annualized Operating Cost)/Annual Riders
    - Active Transportation: Project Cost/Population Served (1.5 Mile radius of project)
    - Systems and Demand Management: Travel Cost Savings/Total Cost
  - Consider calculating Cost Effectiveness compared to:
    - Project Utility Score or Total Prioritization Score
  - LRTP Recommendation: Compare current year cost to Project Utility + Economic Vitality

SMART SCALE Evaluation Factors

Factor Areas	Measures	Recommendations
Safety	*Equivalent property damage only (EPDO) of Fatal and Injury Crashes*	*Modify current HRTPO measures to align with SMART SCALE process*
	EPDO Rate of Fatal and Injury Crashes	*Modify current HRTPO measures to align with SMART SCALE process*
Congestion Mitigation	*Person Throughput*	*Expand current HRTPO measures to align with SMART SCALE process*
	Person Hours of Delay	*Expand current HRTPO measures to align with SMART SCALE process*
Accessibility	*Access to Jobs*	*(already included in HRTPO measures)*
	Access to Jobs for Disadvantaged Persons	*(already included in HRTPO measures)*
	Access to Multimodal Choices	*Modify current HRTPO measures to align with SMART SCALE process*
Environmental Quality	*Air Quality and Environmental Effect*	*Expand current HRTPO measures to other categories to align with SMART SCALE process*
	Impact to Natural and Cultural Resources	*Add to current HRTPO measures to align with SMART SCALE process*
Economic Development	*Project Support for Economic Development*	*(already included in HRTPO measures)*
	Intermodal Access and Efficiency	*(already included in HRTPO measures)*
	Travel Time Reliability	*(already included in HRTPO measures)*
Land Use	*Transportation-Efficient Land Use*	*Reviewed SMART SCALE process with Prioritization Working Group, HRTPO measure retained*
	Increase in Transportation Efficient Land Use	*Reviewed SMART SCALE process with Prioritization Working Group, HRTPO measure retained*

Additional Comments Received

COMMENTS RECEIVED

- The comments on the following slides were received from regional stakeholders during the solicitation of input on weighting factors
- Comments and responses were discussed with the Prioritization Task Force at its 1/24/2020 meeting

COMMENTS RECEIVED (CONTINUED)

- Congestion
  - The LRTP Project Prioritization Tool should not identically reflect the criteria of SMART SCALE. There are other grant programs out there that do not place such a high priority on congestion. The LRTP needs to reflect all grant programs, not just SMART SCALE.
  - Our Project Prioritization Tool is tailored to our region and is more robust than the criteria for SMART SCALE (including many non-congestion criteria).
    - Congestion: 40/300 pts (13%)
    - Travel Time Reliability: 15/300 (5%)
    - Regional Travel Time and Delay Impacts: 30/300 (10%)

COMMENTS RECEIVED (CONTINUED)

- Safety and Security
  - Historical crash data loses effectiveness when projecting 20+ years, especially considering the rate of safety development
  - Evaluation factors should include more than just fatal and serious injuries (local roads with lower speeds have less severe injuries and property damage from crashes)
  - Safety is both a priority of the transportation planning process and a factor that is included in most funding programs, including SMART SCALE.
  - We plan on using the SMART SCALE process, which applies weights to crashes that involve fatalities, serious injuries, visible injuries, and non-visible injuries.

COMMENTS RECEIVED (CONTINUED)

- Labor Market Access
  - Category appears to entirely focus on the destination with little consideration to travel delays and impacts at origin sites (major residential areas)
  - Travel delays are captured through Travel Time Reliability and Regional Travel Time and Delay Impacts
- Key/Basic Sector Industries
  - Access to Defense Installations and STRAHNET should be consolidated as they are generally the same
  - Our Tool makes a distinction on the type of roadway providing access to Defense Installations (with more weight given to STRAHNET facilities due to their importance in military mobilizations). FHWA/SDDC are encouraging states and MPOs to incorporate STRAHNET considerations into project prioritization.

COMMENTS RECEIVED (CONTINUED)

- Addresses the Needs of Basic Sector Industries
  - Expand Truck Zones to Industrial Zones
  - Our Truck Zones are heavy industrial zones (identified by HRTPO staff with VPA assistance). This is a data input in our regional travel demand model.
- Economic Distress Factors
  - Suggestion to include economically distressed areas
  - FHWA defines economically distressed areas as having "a per capita income of 80% or less of the national average or the area has an unemployment rate that is at least 1% greater than the national average (FHWA provides maps of these areas)
  - Captured under *Provides access to areas with high unemployment* – can reword to "economically distressed areas"

COMMENTS RECEIVED (CONTINUED)

- Transit
  - Discuss any proposed changes to weights for transit projects with transit agencies
  - No weight changes have been made. Potential change to Project Viability for all categories.
  - Change "Percent of trips removed from highways" to "Percent of trips removed from roadways"
  - Modified. Data to be provided by transit agencies. For test projects, used congestion on parallel roadway facility as a proxy.

COMMENTS RECEIVED (CONTINUED)

- Project Viability
  - Environmental status appears to be counted under both Project Readiness and Environmental Considerations
    - Project Readiness Environmental Documents/Decisions criteria related to NEPA process; Environmental Considerations is evaluating potential environmental impact
  - Concern over Environmental documents/permits expiring (when project not fully funded) – prefer to see additional points for design completeness and percent of additional funding
    - The locality/VDOT determines when NEPA is initiated, not our LRTP/Prioritization process, therefore expiration of said documents is an unrelated issue. The Environmental Documents/Decision status is a measure to evaluate how ready the project is to proceed to construction (projects cannot proceed until these decisions are obtained)

COMMENTS RECEIVED (CONTINUED)

- Project Viability (continued)
  - Existing projects and those with outside funding should be recognized
    - These measures are captured under Project Readiness (*Percent of Additional Funding* and *Prior Commitment*)
  - Consider land use compatibility under Increased Opportunity
    - There is a factor under Increased Opportunity measuring *Support for Future Growth* (measuring the ability of a project to encourage economic development through expanding or attracting new business and the role of the project locality's long-term development plans)

COMMENTS RECEIVED (CONTINUED)

- Project Viability (continued)
  - 4(f) Interference is useful in determining compatibility with land use
  - Since not all projects will have initiated Environmental review, we can use both the Locality Comprehensive Plan and/or Section 4(f) to help make this determination.
  - Suggest replacing Environmental Measures of Effectiveness (taken from SMART SCALE) with a more basic environmental review (3pts)
    - Is there a fatal flaw for permitting?
    - Is the intrusion into sensitive areas justified?
    - Does the project significantly reduce emissions?
  - Agreed

COMMENTS RECEIVED (CONTINUED)

- Project Viability (continued)
  - "Project includes improvements to freight rail network or intermodal (truck to rail) facilities/ports/terminals" appears to double dip from the Economic Vitality section
  - Suggest removing measure

Environmental (potential impacts) Criteria	10 Points
Environmental MOEs Environmental Permitability	3
Acres of Natural and Cultural Resources	3
Project Reduces Traffic Delay at a Congested Intersection, Interchange, or Other Bottleneck with a high percentage of truck traffic	2
Project includes improvements to the freight rail network or intermodal (truck to rail) facilities/ports/terminals	2

COMMENTS RECEIVED (CONTINUED)

- Project Viability (continued)
  - "Project includes improvements to freight rail network or intermodal (truck to rail) facilities/ports/terminals" appears to double dip from the Economic Vitality section
  - Suggest removing measure

Environmental (potential impacts) Criteria	10 Points
Environmental MOEs Environmental Permitability	3
Acres of Natural and Cultural Resources	3
Project Reduces Traffic Delay at a Congested Intersection, Interchange, or Other Bottleneck ~~with a high percentage of truck traffic~~	2
~~Project includes improvements to the freight rail network or intermodal (truck to rail) facilities/ports/terminals~~	~~2~~
- with a high percentage of truck traffic	2

COMMENTS RECEIVED (CONTINUED)

- Project Viability (continued)
  - 55 points seems excessive for Project Readiness
  - Project Readiness was previously weighted 100 points (already capturing a significant decrease with proposed Tool modifications)
  - Cost Effectiveness measure provides the best "is it worth doing" measure and should therefore carry extra weight
  - Many projects at this stage are still conceptual (no real design, alignment identified, etc.) and thus have planning level costs. Therefore, caution assigning too much weight to preliminary costs.

Previous Modifications Made to Tool (as part of previous LRTP efforts)

Previous Modifications to Tool

Scoring Modifications

- Parallel "Proxy" facilities (for new alignments)
- Removed 'Infrastructure Pavement Condition' and 'Improvement to Geometric Deficiencies'
- Developed alternate "cost effectiveness" measure for intermodal projects
- Redefined 'Modal Enhancements' to encompass dedicated facilities for additional alternative modes
- Award points for STRAHNET Roadways and Other Roadways Serving the Military
- Improved Project Viability
- Separate Methodology for Interchanges/Intersections

Improved Data Inputs

- Travel Time/Speed Study – Congestion Measure
  - Previous based on v/c
  - New Scoring based on Travel Time Index (where available)
- Travel Time Reliability
  - Previous based on volumes, congestion, safety, and detours
  - New scoring based on Buffer Index (INRIX data)
- Safety – Critical Crash Ratio
  - Previous based on Average Jurisdictional Rate
  - New scoring based on Ration of EPDO Crash Rate to Regional Rate (different thresholds for project types)
- Military – Increased Access for Defense Installations
  - Previous scoring based on list of defense installations
  - New scoring based on longer list of "military and Supporting Sites" from Military Study
- Truck Delay (changed measures from qualitative to quantitative)
  - Refined criterion for Reduction of Travel Time to Ports; modified to capture Reduction of Truck Delay (across region)
  - Refined criterion for Impact to Truck Movement