Section 5 – Transportation Strategies
Mobility and Accessibility Strategies

Overcoming the mobility and accessibility challenges in the Hampton Roads region is a goal of the 2034 LRTP. The livelihood and quality of life of many residents is dependent on the constant improvement of the transportation system. Through collaboration at the various levels of government with citizen and business stakeholders, Hampton Roads can employ various strategies to improve mobility and accessibility in the region.

Mobility and Accessibility Strategies for Non-Driver

Some residents in Hampton Roads, because of age, health, or economic circumstance are non-drivers. In an attempt to meet the challenges affecting the mobility and accessibility of non-driver populations, transportation and land use planners have collaborated to develop strategies to address some of the challenges this population faces.

At the local level, jurisdictions can encourage mixed-use activity centers through future land use planning and zoning. Concurrently, localities can invest in infrastructure and support services to further entice mixed-use development. Per the HRTPO Non- Driver Opportunity Analysis, which identifies how to maximize the travel opportunity of non-drivers to multimodal activity centers, several recommendations were made for localities to focus land use, transportation, and development efforts to improve mobility. Map 11.1 on the following page highlights recommended areas in the region having a large number of resident non-drivers in which to focus transit investment and activity center development. Additionally, Map

11.2 highlights activity centers with transit service in which localities could promote affordable housing development for the benefit of non-drivers.

On the regional level, transit providers can encourage the clustering of enhanced, frequent, and accessible transit services within locally designated growth areas; thus promoting accessibility and mobility between mixed-use activity centers. Transit providers can also provide the audible identification of stops for visually-impaired passengers, as well as improved vehicle and transit stop accessibility in order to promote the mobility of populations with special needs.

Transit providers are also encouraged to operate an equitable and efficient service for all eligible users. Therefore, providers in the region offer paratransit service (flexible, non-fixed route transit service). Paratransit services can supplement the fixed route transit system either as a feeder or alternative service for users with mobility needs.
Additionally, alternative options for users with medical/functional needs can be made available. Through ride-sharing programs, voucher programs, and private transportation providers meeting Americans with Disability Act guidelines, users, regardless of their medical/functional need, will have the opportunity to enjoy regional mobility and accessibility throughout Hampton Roads.

Furthermore, local and state agencies can continue to retrofit the transportation network with operational improvements. Prompted by the Americans with Disabilities Act of 1990, improvements have been made to the regional transportation system, including changes in signage, curb ramps, crosswalk enhancements, and transportation services, to name a few.

Finally, public partnerships can help to improve the overall mobility of non-drivers through the coordination of housing, transportation, and activity center development.

Military Transportation Needs

Late in 2009, several local military representatives informed the HRTPO Board that congestion and delays at bridges and tunnels affected mission performance, effectiveness, and efficiency. Rear Admiral Byron E. Tobin (Retired US Navy) addressed the HRTPO Board during February 2010 stating:

“...we are dependent, in large measure, upon the resources and support of this region for the efficient and successful conduct of our mission. One of the key components of that success is mobility, [which is currently impeded] because our transportation infrastructure is in decline and struggling to meet our needs.”

In response, the HRTPO staff created the Hampton Roads Military Transportation Needs Study to place priority on military transportation planning in the region. For the Highway Network Analysis portion of the study, the HRTPO staff worked with various stakeholders—local military representatives, state and federal agencies, port officials and local jurisdictions—to determine transportation concerns and needs of the local military.

Based on stakeholder input, the HRTPO staff identified a roadway network that included both the Strategic Highway Network (STRAHNET) and additional roadways that serve the military sites and intermodal facilities not included in the STRAHNET (Map 11.3 on the following page). Staff reviewed this “Roadways Serving the Military in Hampton Roads” network in order to determine deficient locations, such as congested segments, deficient bridges, and inadequate geometrics. The study made numerous recommendations to address existing deficiencies and to accommodate future military travel needs.
The study also identified 2034 LRTP candidate transportation projects in the region that might improve travel to and from military and supporting sites in Hampton Roads. Based on stakeholder input and the analysis of deficient locations in this study, HRTPO staff has recommended several transportation projects that may benefit military travel from the remaining list of candidate projects that do not have identified funding for construction in the 2034 LRTP.

Furthermore, the HRTPO staff plans to incorporate this work into future iterations of the Congestion Management Process (CMP) and the regional Project Prioritization Tool to assist decision makers as they select future transportation projects. The HRTPO staff plans to continue to work on military transportation needs during the current fiscal year by distributing a military personnel survey to better determine transportation challenges and problems, particularly during daily commutes.

The Military Transportation Needs Study has received both local and statewide interest and recognition as a result of the findings, recommendations, and potential impacts on the military. The study bridges the gap between MPOs, DOTs, local communities, and military installations that currently exists for many metropolitan areas throughout the country. Very few MPOs have taken steps to incorporate the military into the planning process; this study builds on the current relationships already established with the local military and expands the list of military and supporting sites as well as roadways serving the military that were included in the first iteration of the Project Prioritization Tool.

Map 11.3: STRAHNET and Supporting Non-STRAHNET Network

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2 Hampton Roads 2034 Long-Range Transportation Plan: List of projects for air quality conformity analysis, HRTPO, as approved on June 16, 2011.
4 Hampton Roads Prioritization of Transportation Projects, HRTPO, December 2010.
The HRTPO is committed to integrating military transportation needs into its federally required metropolitan planning and programming process in the future. Captain Mary Jackson (U.S. Navy) commended the HRTPO initiative and called it a "great first step". Captain Jackson said the Navy is “committed to continuing to collaborate” in regional planning efforts.

Freight Strategies
Based on growth in trade and improvements to the Panama Canal, the Virginia Port Authority projects that the amount of freight handled by the Port of Virginia will increase to seven million TEUs (twenty-foot equivalent unit, a unit of cargo capacity) annually by the year 2030. To meet this demand, the Virginia Port Authority will need to continue adding capacity to its facilities. In recent years, capacity has been added through infrastructure improvements at the existing Port of Virginia facilities as well as the leasing of APM Terminals.

In addition, future capacity will be added to the Port of Virginia by expanding the APM Terminals facility and constructing a fifth marine terminal. This proposed fifth terminal, currently known as the Craney Island Marine Terminal, will be constructed on new land to the east of the Army Corps of Engineers Craney Island Dredged Material Management Area. The facility will be served by a new roadway, the Craney Island Connector (CIC). The CIC will provide access to the Western Freeway near APM Terminals. Rail access will be provided to the Craney Island Marine Terminal by an extension of the current Commonwealth Railway line that serves the APM Terminals.

Regional Freight Planning
The goal of good multimodal transportation is to create a transportation network for the movement of people and goods that is safe, strategic, efficient, and seamless. An important and often overlooked component of the transportation system is intermodal connectivity. Ideally, transportation networks should function as interconnected webs. All transportation modes impact one another and a single inadequate link in the transportation system can reduce the efficiency and productivity of the overall system. For this reason, it is important to identify current or emerging problems for all modes of travel in Hampton Roads and develop strategies to improve connectivity.

Since 1991, Congress has encouraged the consideration of freight movement and intermodal connectivity during statewide and metropolitan transportation planning processes. Resulting from this growing awareness and new emphasis, the HRTPO developed an Intermodal Management System (IMS) for the region in the early 1990s, and released the region's first IMS report in 1996 with subsequent updates in 2001 and 2007.

Regional freight planning for Hampton Roads is an on-going process that identifies, develops, evaluates, and implements transportation strategies to improve the movement of goods and enhance the connectivity among all modes of transportation. Regional freight planning supports the federal planning factor to enhance connectivity, across and between modes, for people and
freight. In addition, the HRTPO uses the results from freight studies as well as the Congestion Management Process to feed into the development of the LRTP.

2007 IMS Regional Freight Study Summary
A description of the major sections from the IMS Regional Freight Study (April 2007) is provided below:

1. Integration of Freight Into the Transportation Planning Process – describes the process for the Hampton Roads region and provides guidance to other metropolitan regions throughout Virginia and the US of the steps involved in freight planning. It also describes the various freight data sources and analytical tools that are available.

2. Coordination with Statewide Freight Study – describes the statewide coordination with freight officials and stakeholders in Virginia and provides the results of a freight survey conducted by the Virginia Department of Transportation. The HRTPO staff worked with VDOT and other stakeholders in the development of the Virginia Statewide Multimodal Freight Study Phases I (completed in 2007) and II (completed in 2010), which are available on the VTrans website at www.vtrans.org.

3. Freight Facilities in Hampton Roads – provides a detailed description of the roadways, railroads, intermodal and port facilities, warehouse and distribution centers, drawbridges, and railroad crossings on the Southside and Peninsula in Hampton Roads.

4. Freight Facts, Trends, and Forecasts – provides a better understanding of the freight moving in and out of Hampton Roads and how it compares with other areas in the United States and around the world.

5. Military Freight – describes why it is important to maintain a safe, secure, and efficient transportation system in Hampton Roads should an unexpected event occur that would require a rapid deployment of military cargo and personnel via air, land, or sea. This section also provides truck shipment data for military installations in Hampton Roads.


7. Regional Truck Movement – analyzes the movement of trucks both within Hampton Roads as well as through the gateways of the region. This section also identifies freight bottlenecks in Hampton Roads (See Map 11.4).

8. Future Freight Needs – identifies future freight needs and strategies to enhance freight movement to, from, and within Hampton Roads.
Map 11.4: Freight Bottlenecks During the Afternoon Peak Period, 2005

Note: Truck volumes at Congested Locations #10-13 are estimated.
Data sources: VDOT, HRPDC.
FTAC Activities

In 2009, the HRTPO Board created the Freight Transportation Advisory Committee (FTAC) to advise the Board on freight issues. According to HRTPO bylaws, “The FTAC will conduct public outreach activities that help TPO efforts to explain and help raise awareness of the importance of freight transportation to the region and to collect region-wide public input on these matters.”

The FTAC consists of nine members, eight from private industry plus one HRTPO board member who serves as one of two FTAC Co-Chairs. The HRTPO Chair appoints one of the eight private sector FTAC members as the other FTAC Co-Chair, who thereby also serves as a non-voting member of the HRTPO Board. The Virginia Port Authority (VPA) staff handles the administration of FTAC (agendas, minutes, etc.), with HRTPO staff providing technical assistance and research as necessary.

Since its first meeting in December of 2009, FTAC has been actively advising the HRTPO Board on:

- Project Prioritization Methodology
- Project Prioritization analysis, stating that “Goods movement across the region requires that transportation infrastructure be viewed as “systems” to be improved.”
- Traffic impact of a hypothetical inland port in Hampton Roads.
- Developing a video voicing the importance of freight transportation “to the freight, business, transportation community, and the public.”
- Project Prioritization criteria’s relative weighting of data used to determine project readiness and the economic benefit of projects.
- Impacts of tolling proposals on the freight transportation community.
- Pursuing analysis to determine the level of truck tolls at which a toll project becomes counterproductive (i.e. the toll expense outweighs the transportation benefit) in attracting/retaining freight-related businesses in Hampton Roads.
Congestion Strategies

Congestion Management Process
The first critical step in solving congestion problems in Hampton Roads is to identify and develop potential congestion mitigation strategies. As a part of the CMP, a “toolbox” of specific congestion mitigation measures has been assembled to promote strategic solutions involving all modes of transportation, better land development, and more efficient use of the existing transportation system as required by federal CMP regulations.

During the strategy evaluation process, it is important to consider using the strategies in the order presented in a “top-down” approach that would examine strategies to eliminate or shift automobile trips or improve roadway operations prior to adding capacity. Given today’s economic conditions and budgetary constraints, it is imperative to first investigate strategies that utilize the existing capacity on our transportation network. It is also important for regional decision makers, planners, engineers, and other agencies involved with transportation to communicate and coordinate their efforts on a regular basis to solve existing problems and mitigate future congestion in Hampton Roads.

Table 11.1 on the following page provides a detailed description of all five strategies contained in the Congestion Mitigation Strategy “Toolbox”\(^5\). It also provides examples and ways to apply these techniques and strategies to reduce overall congestion. Most of the congestion mitigation strategies are intended to be applied to individual corridors; however, there are several strategies that may be applied to the entire region\(^6\).

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5 Primary Source: Wilmington Area Planning Council (WILMAPCO), 2009 Congestion Management System.

6 HRTPO Hampton Roads Congestion Management Process, 2010 Update
**Table 11.1: Congestion Mitigation Strategy "Toolbox"**

<table>
<thead>
<tr>
<th>Strategy #1</th>
<th>Eliminate Person Trips or Reduce VMT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growth Management/Activity Centers</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 1-1 Land Use Policies/Regulations | Encourage more efficient patterns of commercial or residential development in defined areas. Specific land use policies and/or regulations that could significantly decrease both the total number of trips and overall trip lengths, as well as making transit use, bicycling and walking more viable include, but are not limited to the following:  
  · Encouraging development in existing centers and/or communities (i.e. infill development)  
  · Discouraging development outside of designated growth areas  
  · Promoting higher density and mixed uses in proximity to existing or planned transit service  
  · Establishing a policy for new and existing subdivisions to include sidewalks, bike paths, and transit facilities where appropriate |

| Congestion/Value Pricing | |
|-------------------------| |
| 1-2 Road User Fees/HOT Lanes | Includes area-wide pricing fees, time-of-day/congestion pricing and tolls. Most appropriately applied to freeways and expressways. Requires infrastructure to collect user fees. High Occupancy Toll (HOT) lanes – combines HOV and pricing strategies by allowing single occupancy vehicles to gain access to HOV lanes by paying a toll. |
| 1-3 Parking Fees | Market-based strategy designed to modify mode choice by imposing higher costs for parking private automobiles. Most appropriately applied to parking facilities in urban environments. |

| Transportation Demand Management | |
|-------------------------------| |
| 1-4 Telecommuting | Encouraging employers to consider telecommuting options full- or part-time to reduce travel demand. |
| 1-5 Employee Flextime Benefits/Compressed Work Week | Encouraging employers to consider allowing employees to maintain a flexible schedule - thus allowing the employee the option to commute during non-peak hours. |

| Public Transit Capital Improvements | |
|-------------------------------------| |
| 2-1 Exclusive Right-of-Way - New Rail Service | Includes heavy rail, commuter rail, and light rail services. Most appropriately applied in a dense context serving a major employment center. |
| 2-2 Exclusive Right-of-Way - New Bus Facilities | Includes Busway, Bus Only Lanes, Bus Pull-Out Bays, and Bus Bypass Ramps. Most appropriately applied to freeways and expressways with high existing transit ridership rates. |
| 2-3 Ferry Services | Implement ferry services and supporting facilities. |
| 2-4 Fleet Expansion | Expansion of existing rail, bus, and/or ferry capacity to provide increased service. |
| 2-5 Improved Intermodal Connections | Improve the efficiency and functionality of intermodal connectors (i.e. expanded parking/improved access to stations) where several modes of transportation are physically and operationally integrated. |
| 2-6 Improved/Increased Park & Ride Facilities & Capital Improvements | Improve existing facilities and identify new locations. |

| Public Transit Operational Improvements | |
|----------------------------------------| |
| 2-7 Service Expansion | Includes increased service frequency/area, special events, and accommodations for persons with disabilities. |
| 2-8 Traffic Signal Preemption | Improve traffic flow for transit vehicles traveling through signalized intersections. |
| 2-9 Improved Transit Performance | Includes electronic fare payment, ticket vending machines, eliminating/consolidating stops, express transit routes, and improved transfers. |
| 2-10 Transit Fare Reductions Plan/Reduced Rate of Fare | Includes system-wide reductions, off-peak discounts and deep discount programs. |
| 2-11 Transit Information Systems | Improved in-vehicle and station information systems to improve the dissemination of transit-related information to the user. |

| Bicycle and Pedestrian Modes | |
|----------------------------| |
| 2-12 Improved/Expanded Bicycle Network | Includes on-road facilities, pathways, and greenways. |
| 2-13 Bicycle Storage Systems | Providing safe and secure places for bicyclists to store their bicycles. |
| 2-14 Improved/Expanded Pedestrian Network | Includes sidewalks, pedestrian signals and signs, crosswalks, overpasses/tunnels, pedestrian only zones, countdown signals, street lighting, greenways, and walkways. |
### High Occupancy Vehicles (HOV)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1 Add HOV Lanes</td>
<td>Most appropriate for freeways and expressways.</td>
</tr>
<tr>
<td>3-2 HOV Toll Savings</td>
<td>Preferential pricing to multi-occupied vehicles. Requires infrastructure to administer toll collection.</td>
</tr>
</tbody>
</table>

### Transportation Demand Management

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-3 Rideshare Matching Services</td>
<td>Providing carpool/vanpool matching, ridesharing information resources and services, car sharing, and guaranteed ride programs.</td>
</tr>
<tr>
<td>3-4 Vanpool/Employer Shuttle Program</td>
<td>Organizing groups of commuters to travel together in a passenger van or employer-provided shuttle on a regular basis.</td>
</tr>
<tr>
<td>3-5 Trip Reduction Program</td>
<td>Organizing groups (e.g., employers) that offer tax incentives, commuter rewards, or transit subsidies on a regular basis.</td>
</tr>
<tr>
<td>3-6 Parking Management</td>
<td>Preferential parking is a low-cost incentive that can be used to encourage the utilization of alternative commute modes, such as carpooling and vanpooling.</td>
</tr>
</tbody>
</table>

### Traffic Operational Improvements

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-1 Geometric Improvements</td>
<td>Improvements to roadway and intersection geometrics to improve overall efficiency and operation.</td>
</tr>
<tr>
<td>4-2 Intersection Turn Restrictions</td>
<td>Providing intersections turn restrictions to reduce conflicts and increase overall intersection performance.</td>
</tr>
<tr>
<td>4-3 Intersection Signalization Improvements</td>
<td>Improving signal operations through re-timing signal phases, adding signal actuation, event/holiday timing plans, emergency vehicle preemption etc.</td>
</tr>
<tr>
<td>4-4 Coordinated Intersections Signals</td>
<td>Improving traffic signal progression along identified corridors.</td>
</tr>
<tr>
<td>4-5 Roadway Environment</td>
<td>Includes improvements in pavement markings, pavement condition, pavement reflectors, signage, rumble strips, guardrails, line-of-sight clearances, roadway lighting, etc. that improve roadway operations and congestion.</td>
</tr>
<tr>
<td>4-6 Intelligent Transportation Systems/Smart Traffic Centers (ITS)</td>
<td>Utilizing the latest technology to assist in congestion mitigation, information dissemination, and traffic planning efforts. Examples include road sensors, video detection, changeable message signs, SMART Tag (electronic toll), red light enforcement equipment, truck height/weight enforcement technologies, fiber optic network, ITS data archives, 511 Traveler service, and Smart Travel Laboratories.</td>
</tr>
<tr>
<td>4-7 Reversible Lanes</td>
<td>Reversible Lane Systems enable the maximum use of roadways with heavy directional distribution of traffic by changing the direction of the individual travel lanes. Lane control signs, displayed well in advance of a merge, are often used to close lanes with lower traffic volume and open additional lanes for higher volume.</td>
</tr>
<tr>
<td>4-8 Freight Policies and Improvements</td>
<td>Includes delivery hour restrictions, truck lane restrictions, truck route signage and enforcement, truck route diversion, truck only lanes, bridge lift restrictions, rail improvements, intermodal yards, etc.</td>
</tr>
<tr>
<td>4-9 Incident Management, Detection, Response &amp; Clearance</td>
<td>Utilize traveler radio, travel alert notification (via e-mail, fax, etc.), and general public outreach to enhance incident-related information dissemination.</td>
</tr>
<tr>
<td>4-10 Construction Management</td>
<td>Minimizing congestion caused by roadway maintenance and construction, and alert travelers to construction activities.</td>
</tr>
<tr>
<td>4-11 Elimination of Bottlenecks</td>
<td>Eliminating high-traffic areas where one or more travel lane(s) is dropped.</td>
</tr>
<tr>
<td>4-12 Ramp Metering</td>
<td>Metering vehicular access to a freeway during peak periods to optimize the operational capacity of the freeway.</td>
</tr>
<tr>
<td>4-13 Access Control and Connectivity</td>
<td>Reduction or elimination of “side friction”, especially from driveways via traffic engineering, regulatory techniques, and purchase of property rights. Also includes connections between properties, developments, and roadways.</td>
</tr>
<tr>
<td>4-14 Median Control</td>
<td>Addition of medians with turn bays via traffic engineering and regulatory techniques.</td>
</tr>
</tbody>
</table>

### Add Capacity

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1 Freeway Lanes</td>
<td>Increasing the capacity of congested freeways through additional travel lanes.</td>
</tr>
<tr>
<td>5-2 Arterial Lanes</td>
<td>Increasing the capacity of congested arterials through additional travel lanes.</td>
</tr>
<tr>
<td>5-3 Interchanges</td>
<td>Improving interchange design to allow smoother traffic flow to/from arterials.</td>
</tr>
<tr>
<td>5-4 Improve Alternate Routes</td>
<td>Constructing new roadways or increasing the capacity of other roadways that will decrease demand on congested existing facilities.</td>
</tr>
</tbody>
</table>
Corridor and Other Planning Studies

The HRTPO staff conducts studies and prepares reports for various transportation issues in order to improve safety and mobility, and relieve congestion in the region. Several corridor and local planning studies are completed each year as part of the HRTPO Unified Planning Work Program (UPWP). These studies are typically requested by local municipal governments, the HRTPO Board, or the general public and are often considered critical transportation topics.

Most studies contain data, analysis, and a set of recommendations that support the goals and objectives established within the CMP and the LRTP. Many of these studies support one or more of the eight federal planning factors. All studies are coordinated with VDOT, local municipalities, and other stakeholders, and are made available for public review and input.

Figure 11.2: HRTPO Studies Completed Since 2007

- 2007
  - Suffolk Rail Impact Study – May 2007
  - Naval Station Norfolk Area Traffic Management Study – April 2007
- 2008
  - Oyster Point Transportation Study – April 2008
  - Holland Road Corridor Study – June 2008
  - Elizabeth River Crossings Study – June 2008
  - Transit Shuttle Projects: A Literature Review and Best Practices – June 2008
  - South Norfolk Jordan Bridge Closure Traffic Analysis – September 2008
  - Hampton Roads Regional Bridge Study – September 2008
  - North Main Street Corridor Study – December 2008
  - Hampton Roads Regional Travel Delay Study – December 2008
- 2009
  - Bridge Road Corridor Study – October 2009
- 2010
  - Coliseum Central Special Events Management Plan Study – January 2010
  - Nansemond Parkway Corridor Study – April 2010
  - Pruden Boulevard Corridor Study – June 2010
  - Regional Land Use Research Scan – June 2010
  - Carolina Road Corridor Study – July 2010
- 2011
  - US Route 460 Corridor Study – July 2011
  - Traffic Impact of a Hypothetical Inland Port in Hampton Roads Study – September 2011
Public Transportation Strategies
In order to meet the growing mobility and accessibility needs of the Hampton Roads population and offset congestion, public transportation investments and solutions have to be considered within the regional multimodal transportation network.

Hampton Roads Transit (HRT), Williamsburg Area Transit Authority (WATA), the HRTPO, and the Virginia Department of Rail and Public Transportation (DRPT) have been actively planning for envisioning and implementing enhanced public transportation services in the Hampton Roads region.

HRT Strategic Planning Efforts
HRT recently developed a Transit Development Plan (TDP), completed in December 2011. The HRT TDP has a six-year horizon spanning 2012 to 2017, focusing on guiding the operational management and capital improvements of the transit system. As part of the TDP, HRT drafted a Comprehensive Operational Analysis and conducted a Service and Schedule Efficiency Review.

HRT Comprehensive Operational Analysis
The Hampton Roads Transit Comprehensive Operational Analysis (COA), approved in 2009, identifies improvements in the operational and business practices of the transit agency. The COA provides recommendations for the short-term, mid-term, and long-term. The recommendations include amenities, transfer centers, fleet, agency organization, current service, new service, and service expansion. The COA recommendations will enable HRT to use its existing resources as efficiently as possible in order to provide a high quality bus service.

HRT Service and Schedule Efficiency Review
The HRT Service and Schedule Efficiency Review was published to identify significant operational savings through scheduling and service efficiencies. The study was triggered as the agency tries to avoid or reduce the magnitude of a possible fare increase. The HRT Service and Schedule Efficiency Study has reviewed four key aspects of HRT transit service operations in order to identify opportunities for achieving significant operating cost savings:

- Service Performance
- Schedule Efficiency
- Operator Work Practices
- Labor Utilization

WATA Strategic Planning Efforts
WATA has also developed a TDP to assist in the guidance of the operational management and capital improvements in their transit system. Approved in 2009, the WATA TDP has a six-year horizon spanning from 2010 to 2015. The WATA TDP is comprised of:

- System goals, objectives, and performance metrics
- Overview of service strengths and weaknesses
- Transit investment vision plan
- Fiscally constrained and programmed operational and capital investments
- Financial plan

WATA will also develop a COA in 2012 to evaluate the current use and performance of its transit system.
Hampton Roads Regional Transit Vision Plan
In the past several years, public transportation stakeholders in Hampton Roads have been collaborating to define a vision for the region’s public transit system. The local governments understand that transit can help achieve the goals of relief from traffic congestion, improved quality of life, preservation of natural resources, and economic development. However, these gains require collaborative planning and integration of land use and transportation plans. *The Hampton Roads Regional Transit Vision Plan* is a realization of a multi-year collaborative effort to improve transit in the region.

*The Hampton Roads Regional Transit Vision Plan* (TVP) was designed to aid in the visualization of what may be possible for the region’s transit services in the future – 2025 and beyond. The TVP provides a concept for a regional rapid transit network that connects major employment and population centers in Hampton Roads, including coordinated land use planning, combined with specific transit modes that improve mobility options for the public. The purpose of the TVP is to provide a long-term framework for transit development, rather than a definite set of approved projects. As the region selects projects for further study, planners, elected officials, and the public will collaborate to define the specific requirements, alignments, and transit modes in accordance with local land use planning, alternative analysis, environmental considerations, and available funding.

Note: The Norfolk TIDE opened in August 2011
Bicycle and Pedestrian Strategies

Either to connect to other modes of transportation or destinations, the non-motorized transportation network, namely sidewalks, bikeways, and trails, is crucial for mobility and accessibility. There are several ongoing efforts in the Hampton Roads region to advocate and assist in the planning of local and regional sidewalks, bikeways, and trails.

Current statewide guidelines have started to encourage roadway enhancements and capacity improvements to include a non-motorized component. All VDOT projects begin with the assumption that a bicycle-pedestrian accommodation will be provided unless the project falls within one of six categorical exclusions:

1. Scarcity of population, travel and attractors, both existing and future, indicate an absence of need for such accommodations
2. Environmental or social impacts outweigh the need for such accommodations
3. Safety would be compromised
4. Total cost of bicycle and pedestrian accommodations to the appropriate fund (i.e. Interstate, Primary, Secondary, or Urban system) would be excessively disproportionate to the need for the facility
5. Purpose and scope of the specific project do not facilitate the provision of such accommodations (e.g. projects for the Rural Rustic Road Program are defined as paving unpaved (gravel) roads, which are considered to be a bicycle accommodation)
6. Bicycle and pedestrian travel is prohibited by state or federal law

To further promote bicycle and pedestrian facilities across the state, the Virginia State Bicycle Policy Plan was adopted in September of 2011.

Similar guidelines are emerging in the region's localities, promoting the incorporation of non-motorized facilities within roadway improvements and new developments. Localities have begun to organize bicycle and trail advisory committees to advocate and advise policy-makers on non-motorized network development.

Planning for bicycle facilities and sidewalks is largely managed on the local level. Most Hampton Roads localities include bicycle and pedestrian planning within their Comprehensive Plans. Many localities also have bicycle and pedestrian advisory committees which are chartered to advise their city councils or county boards of supervisors on various aspects of bicycle and pedestrian planning. In addition, many localities in Hampton Roads have developed detailed bikeway and trail plans, along with maps of existing and planned routes. Examples include:
• **Virginia Beach** - The city of Virginia Beach produced an update to the *Virginia Beach Bikeways and Trails Plan* in 2011. Bikeway and trail information is also accessible on the city's website, including maps of the city's bicycle routes and facilities.

• **Historic Triangle** - James City County, York County, and Williamsburg have joined together for many bikeway planning efforts, including the preparation of a *Regional Bicycle Facilities Plan* and a *Regional Bikeway Map*. These documents are available on York County's website.

• **Isle of Wight** - Isle of Wight County has a *Pedestrian and Bicycle Facilities Master Plan*. The plan, which was updated in 2009, is available on the county's Department of Planning and Zoning website.

• **Newport News** - The city of Newport News graphically displays all of its bicycle paths on the city's GIS mapping website.

There are several national, state, and regional bicycle and pedestrian trails in Hampton Roads7, including:

### National
- East Coast Greenway

### State
- Beaches to Bluegrass Trail
- James River Heritage Trail

### Regional
- Virginia Capital Trail
- South Hampton Roads Trail
- Dismal Swamp Connector Trail

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7 Hampton Roads Regional Trails Update, Joint Environmental Committee, December 2010
The East Coast Greenway is a 3,000 mile trail network, of which 81 miles run through the Hampton Roads region. The Hampton Roads alignment, which is from Jamestown to Elizabeth City, NC, aims to provide an off-road trail wherever possible. The East Coast Greenway serves as an urban counterpart to the Appalachian Trail network (See Map 11.6).

The South Hampton Roads Trail is another trail that is a proposed 41 mile federation of projects that aims to connect four of five urban centers from Suffolk to Virginia Beach. The project aims to have a mix of facility types along the alignment, including dedicated trails, bike lanes, enhanced road shoulders, and ferry service (Map 11.7).

There is also a bi-state planning effort to develop the Dismal Swamp Connector Trail. This 15 mile multi-use trail parallels the eastern portion of the Dismal Swamp from Deep Creek in Chesapeake to South Mills, North Carolina. Planning and design for the final 3-mile segment at the VA/NC line is underway.

In response to this growing need for regional coordination on bikeway and pedestrian infrastructure development, HRTPO staff has embarked upon a research scan of bike and pedestrian plans. This broad scan includes a review of bike and pedestrian plans from regions across the United States and worldwide. The scan is designed to identify best practices in:

- Facility and network development
- Facility and network management
- Methodology for regional bicycle and pedestrian plan development
- Implementation strategies to educate, fund, and develop the regional non-motorized network.

Map 11.7: South Hampton Roads Regional Trail
Rail Strategies
Integral to the vitality of the region is the role rail has in moving people and goods. Rail transportation has the potential to reduce highway congestion and pollution through improvements in the freight and passenger rail systems. For the increased mobility of people and goods and operational efficiency of the regional rail system, private and public stakeholders must continue planning for and investing in rail infrastructure.

Freight Rail
Regionally, there are various projects and initiatives, either completed or underway, investigating ways to improve mobility, operational efficiency, and safety of the regional rail system. Additionally, private rail companies (Norfolk Southern and CSX) have invested in capital and supporting infrastructure projects to improve the operations of the regional rail traffic, including signal and crossing upgrades, third track installation, and intermodal rail stations.

As the private sector improves the rail infrastructure, the public sector can be involved in improvements between rail and other modes of transportation. There are various operational improvements that can be made to reduce conflicting intermodal movements in the rail system, including:

- Closing redundant rail crossings with low multimodal traffic
- Providing messaging for motorists near major at-grade crossings, alerting drivers of impending road closures due to crossing trains (drivers can seek alternate routes, reducing roadway congestion, and safety conflicts at the rail crossing)

To improve safety, major at-grade crossings can be replaced with grade separated crossings. In order to enhance capacity, heavy rail corridors could be double-tracked for two-way traffic, or include a third track to allow faster rail cars (such as passenger trains) to bypass slower rail cars (such as freight trains).

Heartland Corridor
As the Port of Virginia continues to grow in container volume, freight rail plays an important role in transporting goods from the Port to various markets of the United States. To improve the movement of freight and increase rail capacity with strategic infrastructure investments, Norfolk Southern and several states have partnered for the construction of the Heartland Corridor project. Completed in September 2010, the project involves raising tunnel clearances, allowing the use of efficient double-stack containers along a corridor between Hampton Roads and Columbus, Ohio. Additional in Virginia, the project includes constructing a new intermodal facility in the Roanoke region.

8 Crossing Consolidation Guidelines, FRA, (2009)
9 Zhang & Schurr (2005)
National Gateway
Similar to the Heartland Corridor project by Norfolk Southern, CSX has also engaged in a corridor improvement project along the East Coast. Dubbed the National Gateway project, this project aims to improve the movement of double-stack freight to and from the Port of Virginia. The project will remove vertical obstructions on the CSX National Gateway system which extends from Atlanta, Georgia to the Northeast along the I-95 corridor. CSX has partnered with various states and the federal government to fund the initiative.

Figure 11.3: Commonwealth Rail Mainline Relocation

Commonwealth Rail Mainline Relocation
A recently completed rail project in the region includes the relocation of the Commonwealth Railway mainline that accesses the APM Terminals. Relocated to I-664 and the Western Freeway, the new rail line allows grade separated rail access to the marine terminal (bypassing the old 4.5 mile rail line with 14 at-grade rail crossings). This corridor will be used to serve both the planned VPA Craney Island Marine Terminal and the recently completed Maersk APM Terminal.

Passenger Rail
Aspiring for greater and faster connections to Washington, DC, the Northeast Corridor and to the Southeast High Speed Rail Corridor, the Virginia Department of Rail and Public Transportation (DRPT) is investigating higher-speed and enhanced intercity passenger rail for Hampton Roads. Short-term efforts include enhancing rail service to the Peninsula and establishing conventional rail on the Southside.

The Virginia Statewide Rail Plan identifies rail enhancements and the installation of a third track segment between Washington, DC, Richmond, and Newport News. Upon completion of improvements in the Richmond to Newport News corridor, including funding identification, three regional trains from Richmond’s Staples Mill Station will be extended to Newport News for a total of five daily roundtrip trains to serve Newport News, Richmond, and Washington, DC.
Recognizing that the lack of passenger rail service to south Hampton Roads, DRPT is partnering with Norfolk Southern, CSX and Amtrak to extend Richmond’s Amtrak Virginia regional service to Norfolk. Starting approximately in the fall of 2013, one daily roundtrip conventional speed (limited to 79-mph) train will allow Norfolk passengers a one-seat ride up the Northeast Corridor as far north as Boston. According to the Virginia Statewide Rail Plan, upon securement of funds and construction of capacity improvements at the Appomattox River Bridge in Petersburg, service to Norfolk will increase to three daily roundtrip trains.10

Figure 11.4: US Definitions of High-Speed and Intercity Passenger Rail Corridors


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10 Richmond/Hampton Roads Tier I Draft EIS.
Richmond to Hampton Roads Rail Project

Presently, DRPT has developed the Richmond/Hampton Roads Passenger Rail Project Tier I Draft Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA).

To support the Commonwealth’s efforts, the HRTPO approved a resolution in October 2009, in support of establishing high-speed passenger rail service between Richmond, Petersburg and Norfolk along the US Route 460/Norfolk Southern corridor and enhancing the existing intercity passenger rail service between Richmond and Newport News along the Interstate 64/CSX corridor.

In February 2010, based on the evaluation and public comments received, the Commonwealth Transportation Board approved the preferred alternative for enhanced conventional passenger rail service between Richmond and Newport News and higher-speed passenger rail service between Petersburg and Norfolk. The Tier I Draft EIS has been submitted to the Federal Railroad Administration and is awaiting a Record of Decision.

On the Peninsula, the Tier I Draft EIS recommends an additional round-trip train per day (for a total of three) at conventional speeds (limited to 79-mph) on the Peninsula, with higher speed rail service on the Southside from Norfolk to Richmond.
Southeast High Speed Rail Project

The Southeast High Speed Rail Corridor (SEHSR) is one of eleven proposed high speed passenger rail corridors designated by the U.S. Department of Transportation (USDOT).

The corridor was designated as running from Washington, DC through Richmond, VA and Raleigh, NC to Charlotte, NC with maximum speeds of 110-mph. It is part of an overall plan to extend service from the existing high-speed rail on the Northeast Corridor (Boston to Washington) to points in the Southeast. To implement the SEHSR, the corridor will involve reconstructing, upgrading, and constructing rail lines between Washington, DC and Charlotte, NC. The estimated cost of the SEHSR is between $2.6 and $7.5 billion.

The North Carolina Department of Transportation and the Virginia Department of Rail and Public Transportation are jointly collaborating in the development of the dual-phased Environmental Impact Statement for the SEHSR. Additionally, the Virginia-North Carolina High Speed Rail Compact, consisting of state legislators for each state, convenes biannually for the purposes of examining and discussing strategies to advance the multi-state high speed rail project.
Reliability Strategies

As part of the transportation planning process, the region has established strategies to promote a reliable transportation system. These strategies will be implemented to manage and alleviate regional congestion, assess the structural soundness of infrastructure, and ensure a secure network for the movement of people and goods.

**System Preservation**
Preserving the existing transportation system is critical in order to maintain regional mobility at its highest possible level. This becomes more difficult as transportation infrastructure throughout the region ages. Not only must this infrastructure be monitored on a regular basis, but increasing maintenance demands continue to overwhelm the transportation budget.

**Infrastructure Monitoring**

**Roadways**
Roadways are inspected on a regular basis to monitor pavement condition and roughness. For state-maintained roadways (which includes all roadways within the counties and interstates within the cities), VDOT hires a contractor that uses continuous digital imaging and automated crack detection technology. The contractor collects data using vans equipped with digital cameras to capture downward images for crack detection and forward images for right of way views. Sensors are also mounted on the vehicle to capture pavement roughness and rutting data. Data collected by these cameras and sensors are processed with specialized software to identify cracks and other pavement distresses.

Data is collected for VDOT on the entire statewide interstate and primary highway systems annually. Approximately 20%-25% of the secondary roadway system is also collected each year.

VDOT uses two methods to evaluate pavement condition on state-maintained roads:
- Critical Condition Index (CCI)
- International Roughness Index (IRI)

The Critical Condition Index (CCI) ranges from 0 to 100 and is based on pavement type (asphalt or concrete) and pavement distress. Pavement with a CCI value below 60 is considered deficient. These deficient roadways are then evaluated for maintenance and rehabilitation.

The IRI is based on the amount of pavement irregularities in the roadway surface in terms of inches per mile. Pavement with an IRI of 140 inches per mile or above on interstates and primary roadways is considered deficient in terms of ride quality. An IRI of 220 inches per mile or above on secondary roadways is also considered deficient.

Cities in Hampton Roads are responsible for monitoring the condition and roughness of the pavements on city-maintained roadways, and use a variety of methodologies and technologies to perform this function.
Bridge Inspections
As stated in Chapter 8 (Reliability Challenges), bridges are inspected at least once every two years by qualified inspection teams (some bridges may require more frequent inspection based on their condition or design). Underwater inspections are also performed where necessary at least once every five years.

Based on their measurements and observations, bridge inspectors assign ratings to describe the existing condition of each structure. These ratings determine whether a bridge is classified as "structurally deficient", "functionally obsolete", or not deficient.

Tunnel Inspections
All tunnels in Hampton Roads are currently maintained by VDOT except for the Chesapeake Bay Bridge-Tunnel. These tunnels are inspected regularly by qualified inspection teams, usually every one to five years based on the condition of the tunnel.

In addition, VDOT conducts a continual operations and maintenance program at the region's tunnels. The regional tunnel maintenance and operations program includes maintaining and replacing safety and operation systems such as fire suppressant, flood prevention, and drainage systems; removing or replacing tunnel roof panels; upgrading lighting; testing floodgates; and improving pavement and structural components. This effort has increased in recent years in response to the flooding in the Midtown Tunnel during Hurricane Isabel, and flooding in the westbound Hampton Roads Bridge-Tunnel due to a burst pipe.

In addition to the above mentioned strategies to address roadway infrastructure, there are also safety and system management strategies in place to help improve reliability and maximize efficiency of the regional transportation system.
Roadway Safety

There were a total of 23,142 crashes in Hampton Roads in 2010, resulting in 13,449 injuries and 121 fatalities. In other words, a crash occurred on average every 23 minutes in Hampton Roads in 2010, with an injury every 37 minutes and a fatality every three days. Although the number of crashes, injuries, and fatalities are at lower levels than seen in the last decade (Figures 12.1 and 12.2), continuing this reduction is important because of the impacts that roadway safety has on both the transportation system and the quality of life in Hampton Roads.

The HRTPO began incorporating roadway safety into the transportation planning process a decade ago with the Hampton Roads Regional Safety Study. This three-part study reviewed roadway safety trends; compared roadway safety in Hampton Roads with statewide and national data; analyzed the location of crashes throughout the region; and examined countermeasures and potential solutions to remedy safety-related issues at high crash locations. Based on the success of this effort, HRTPO staff produced the Hampton Roads Rural Safety Study, which examined similar issues in the rural areas of the region. These reports are updated by the HRTPO staff on a regular basis.

Roadway safety is also included in other HRTPO transportation planning tasks. Crash data collected by VDOT and the Virginia Department of Motor Vehicles (DMV) is analyzed by HRTPO staff; this data is used in the Project Prioritization Tool (details pertaining to the Project Prioritization Tool are discussed in Chapter 15) and as criteria for evaluating potential projects for Regional Surface Transportation Program (RSTP) funding. Congested corridors throughout the region are ranked as part of the CMP based on many factors, including safety. Many corridors and subareas studied by HRTPO staff include safety analyses as well.

![Figure 12.1: Traffic Crashes in Hampton Roads](image1.png)
![Figure 12.2: Traffic Crash Fatalities in Hampton Roads](image2.png)
In addition, HRTPO staff assists VDOT and localities with roadway safety efforts. One way this is accomplished is through participating in Road Safety Audits (RSAs). RSAs are formal safety performance examinations of unsafe locations led by independent, multidisciplinary teams. These teams typically include engineers, maintenance personnel, and law enforcement officials from various agencies. RSAs are used to qualitatively and quantitatively report on road safety issues based on data analysis, site examinations, and discussions with those familiar with the location, and identify potential safety improvements.

Roadway safety projects are primarily funded through the Highway Safety Improvement Program (HSIP), which is a federal program that apportions $30-$35 million annually to Virginia. VDOT allocates these funds each year to eligible projects based on a variety of factors, including the project's benefit/cost ratio, total targeted severe crashes, cost range, and improvement type.

**System Management**

As congestion increases and major roadway projects become more costly and difficult to construct, maximizing the capacity of the existing roadway network becomes critical. The purpose of system management, also known as transportation systems operations, is to maximize the safety, security, and mobility of roadway users by actively managing the regional transportation system. This is accomplished with a combination of technology known as Intelligent Transportation Systems (ITS), along with trained and coordinated manpower.

In Hampton Roads, regional transportation operations are led by the VDOT Hampton Roads Transportation Operations Center (TOC). The Hampton Roads TOC maintains and operates ITS infrastructures, such as closed-circuit cameras, vehicle detection devices, and changeable message signs, on 113 miles of the regional interstate network. The Hampton Roads TOC also monitors traffic conditions, responds to crashes and other incidents with the Safety Service Patrol, and distributes roadway congestion and condition information to travelers.
Many local jurisdictions in Hampton Roads also have their own transportation operations centers. These local TOCs are, or will be, connected with VDOT’s Hampton Roads TOC, allowing for data and video sharing, instant communication, and more regional cooperation.

Planning for transportation operations takes place on many levels in Hampton Roads. Various committees (see pages 12-8 and 12-9) are in place to plan for and improve regional transportation operations, and several regional guidelines have been produced, including the ITS Architecture, ITS Strategic Plan, and Regional Concept of Transportation Operations.

**ITS Architecture**

A regional ITS architecture is a framework which guides the development and integration of ITS components and facilitates relationships among various agencies. Examples of ITS and operations improvements include incident management, optimizing and coordinating traffic signals, signal preemption (signal override) for emergency vehicles, automated toll collection, and providing up-to-date information to travelers via highway message signs, radio, phone, and the internet. A regional ITS architecture also helps establish a consensus concerning specific future ITS projects that are needed in the region and how they will fit into the existing system.

A link to the current Hampton Roads ITS Architecture, along with information on how the ITS Architecture was produced and maintained, is available on the HRTPO's Operations Planning website at [http://hrtpo.org/TPO_OpPlanning.asp](http://hrtpo.org/TPO_OpPlanning.asp).

VDOT, with the assistance of local officials, is in the process of updating regional ITS Architectures throughout the state, including Hampton Roads. This update is expected to be complete by early 2012.

**ITS Strategic Plan**

The Hampton Roads ITS Strategic Plan provides the vision for ITS and transportation operations in the region. The existing ITS framework is a summary of regional transportation management challenges. The strategic vision for ITS in the short-term, mid-term, and long-term, and various implementation strategies are all included in the current Hampton Roads ITS Strategic Plan.


**ITS and Operational Recommendations from the CMP**

The HRTPO staff developed recommendations to alleviate congestion for the top 16 CMP Congested Corridors (top six freeways and top ten arterials) in the latest Hampton Roads Congestion Management Process (CMP): 2010 Update.
Recommendations made in the 2010 CMP Update included:

- ITS technology upgrades on Interstate System
- Interstate interchange geometric upgrades
- Lengthen acceleration ramps onto the Interstate System
- Incorporation of adaptive signal timing, phasing, and coordination on major arterial intersections
- Add and/or lengthen turn movement lanes
- Maintain bridge opening restrictions
- Incorporate non-traditional intersection reconfigurations
- Implementation of access management strategies
- Improve roadway markings and signage
- Conversion of existing arterial lanes into reversible lanes

**TRAFFIX**

Transportation Demand Management (TDM) programs are designed to reduce traffic congestion through a variety of mobility options, such as ridesharing, transit usage, telecommuting, and spreading out peak period traffic. In Hampton Roads, TRAFFIX is a cooperative public service, established in 1995, that implements TDM strategies by offering information and services on transportation alternatives to area commuters. TRAFFIX works with businesses and the military in the region to educate their employees regarding ridesharing and transit availability and to assist in the creation of alternate work schedules and telecommuting programs. TRAFFIX also assists with the development of Park and Ride lots, which provide ridesharers with free, all-day parking which are convenient for express buses, carpools, and vanpools.

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*As of June 2011

**Figure 12.3: TRAFFIX Performance Measures, 2005-Present**

Source: TRAFFIX. 2011 numbers reflect participants as of June 2011.
The TRAFFIX program has experienced a growth in the past four years, mainly through outreach to the military commands and the NuRide program, as seen in Figure 12.4. TRAFFIX has completed outreach to over 500 military commands, with approximately 2,000 current participants in TRAFFIX programs. The NuRide program, which offers rewards to commuters that rideshare, take alternate modes, and telework, has over 3,600 current participants. The Commuter Computer, which provides carpooling matches for persons who do not have a work email address (a limitation of NuRide), has almost 700 current users. The vanpool program has 61 available vans, of which all are leased, serving over 700 current users. The Telework!VA program is also at its limit (25 companies), allowing over 700 employees to telework multiple days per week.

The TRAFFIX staff estimates that 70,000 transit trips in Hampton Roads were influenced by the TRAFFIX program during the first 6 months of 2011. The details of each program are shown in Figure 12.4.

Figure 12.4: Participants in TRAFFIX Programs from 2005-Present

![Participants in TRAFFIX Programs chart]

Source: Traffix. 2011 numbers reflect participants as of June 2011.
Operations Committees in Hampton Roads

The following committees work to help improve the reliability of the regional transportation system.

**Hampton Roads Transportation Operations (HRTO) Subcommittee**

The Hampton Roads Transportation Operations Subcommittee, HRTO (formerly ITS), is a group of local and state operations professionals (traffic engineers, traffic operations center operators, firemen, etc.) who meet to share best practices in the operation of transportation systems. The HRTO Subcommittee also advises the Transportation Technical Advisory Committee (TTAC) on operational projects.

During recent years, the HRTO Subcommittee advanced the effective usage of state dollars by scoring VDOT's candidate Intelligent Transportation System (ITS) operations projects based on cost effectiveness, and prepared a prioritized list of these projects for VDOT.

Other recent HRTO-related efforts:

- HRTPO staff tested improvements to VDOT's Hurricane Lane Reversal Plan and, based on that analysis, the HRTO Subcommittee recommended changes to the VDOT plan which staff estimated would reduce evacuation time by seven to thirteen hours.
- In response to heavy congestion resulting from the simultaneous closure of the Gilmerton Bridge and the Downtown Tunnel on October 3, 2009, the HRTO Subcommittee and VDOT staff established a “Regional System of City-Maintained Highways for which Cities will Routinely Notify VDOT of Planned Closures”. This system is designed to reduce the costly time spent by local drivers in queues created by highway maintenance.

**Hampton Roads Regional Concept of Transportation Operations (RCTO)**

Due to high profile incidents on freeways throughout the region, incident management has become an important transportation topic in recent years. In 2004, the HRTO Subcommittee initiated the development of a Regional Concept of Transportation Operations (RCTO), which – as defined by FHWA – is a tool that assists in planning and implementing transportation management and operations strategies in a collaborative and sustained manner.

The RCTO Committee, which is led by VDOT, is comprised of various stakeholders from the Virginia State Police, local police, fire and rescue agencies, traffic engineers and planners, HRTPO staff, as well as other operators and first responders.

The motivation for the Hampton Roads RCTO Committee is to reduce the number of injuries incurred by responders, while decreasing the clearance times associated with these incidents, and to improve the operational coordination among those same responders. One of the major accomplishments of the Hampton Roads RCTO Committee has been regular post-incident reviews to determine where improvements can be made.
In the summer of 2008, a “Resource Document” of the RCTO Committee (Executive Summary Report: June 2008 – available at www.hrtpo.org/TPO_Reports.asp) was completed that identifies action items for providing more efficient traffic flow movement during incidents and for improving incident clearance times. Specifically, this document established six objectives for the Hampton Roads RCTO Committee:

- **Objective 1** - Increase Responder Safety by Eliminating Struck-By Incidents and Fatalities
- **Objective 2** - Decrease Incident Clearance Time
- **Objective 3** - Decrease Secondary Incident Occurrences (those incidents that occur as a result of a previous incident)
- **Objective 4** - Improve Inter-Agency Communication During Incidents
- **Objective 5** - Identify Existing Regional Incident Management Resources and Establish Plan for Inter-Agency
- **Objective 6** - Establish a Regional Incident Management Pro-Active and Post-Incident Review Consortium

Hampton Roads Highway Incident Management (HRHIM) Subcommittee

The Hampton Roads Highway Incident Management (HRHIM) Subcommittee meets quarterly to discuss highway incident response, clearance, and safety issues. Participating agencies include Virginia State Police, Virginia VDOT, HRTPO staff, law enforcement agencies, fire and rescue agencies, medical examiners, and towing agencies. The subcommittee has a rich history of cooperation and coordination, producing the region’s first Multi-Jurisdictional Memorandum of Understanding for Highway Incident Management in December of 1999.

TRAFFIX Oversight Subcommittee (TOS)

The TRAFFIX Oversight Subcommittee (TOS) is comprised of regional transportation professionals from Hampton Roads jurisdictions, VDOT, HRT, WATA, TRAFFIX staff, HRTPO staff, DRPT, FHWA, and other invited participants. At TOS meetings, TRAFFIX staff provides status updates and measures of effectiveness on current and future TRAFFIX programs, and TOS members suggest ways for TRAFFIX to improve alternate modes of travel in the region.
Security and Critical Infrastructure Management

Protecting and ensuring the resiliency of the critical infrastructure and key resources (CIKR) within Hampton Roads is vital to the health, safety, economic vitality and security of the region. Compromises to the regional transportation system could be disruptive to the movement of people and goods. Various federal, state, and regional plans and efforts have been developed to protect infrastructure and the population.

Infrastructure Protection Plans

The National Infrastructure Protection Plan (NIPP), published in 2009, aims to provide a framework for various levels of government. Transportation is among the 18 critical sectors identified within the NIPP. The purpose of this effort is to identify critical infrastructure and develop strategies to mitigate risk and secure critical infrastructure and key resources in a collaborative and proactive manner.

The Virginia Critical Infrastructure Protection & Resiliency Strategic Plan has been developed to mirror the NIPP and to define the Commonwealth's strategy, as well as to direct implementation of supporting plans.

Currently, Hampton Roads stakeholders are working with the Office of Veterans Affairs and Homeland Security to address CIKR, including the transportation sector, from a regional perspective.
Strategic Transportation Network

The Strategic Highway and Rail Corridor Networks within Hampton Roads are the critical transportation links that allow the efficient and expedient mobility of military supplies and personnel from the regional bases and port facilities to the rest of the nation in times of a national emergency. The Strategic Highway Network (STRAHNET) includes both interstate highways as well as other non-interstate primary routes leading into and out of strategic locations. STRAHNET and STRAHNET Connectors are the total minimum defense highway network to support defense emergencies. The Strategic Rail Corridor Network (STRACNET) is an interconnected and continuous rail network critical for movement of essential military equipment to ports as well as defense installations located around the country.

The Hampton Roads region contains 14 STRAHNET sites, consisting of major military installations and port facilities. The STRAHNET system that serves those locations consists of all interstate highways (I-64, I-264, I-464, I-564, I-664), several non-interstate STRAHNET routes (13, 58, 460), and STRAHNET Connectors (Map 12.1). Additionally, the Hampton Roads region contains Norfolk Southern and CSX rail lines within STRACNET. These roadways and railways serve as the minimum defense public highway and railway network needed to support a defense emergency and are used for day-to-day military cargo movement in Hampton Roads.

Map 12.1: Strategic Highway Network
Public Transportation Security

Public transportation systems host a number of users daily. In Hampton Roads, an average of approximately one million passengers use the Hampton Roads Transit (HRT) and Williamsburg Area Transit Authority (WATA) transit systems monthly.\(^1\) Transit services are also provided to numerous military and federal facilities across the region. Interruptions to regional transit service could have serious repercussions to the mobility and livelihood of its users as well as to the security of the region.

To assist in mitigating security risks to the public transportation network, the Federal Transit Administration (FTA) has started to provide direct assistance to transit agencies, forming technical committee teams, holding regional forums for emergency responders, and providing grants for training and research projects.\(^2\) Additionally, the FTA has developed a list of security program action items that transit agencies should incorporate into their System Security Program Plans. Because of the openness of transit facilities, timely threat and intelligence information is critical in order for transit agencies to strategically allocate resources.\(^3\)

HRT

HRT has completed a System Security and Emergency Preparedness Plan (SSEPP) reviewed and approved by the Virginia Department of Rail and Public Transportation (DRPT) as well as the FTA. The SSEPP establishes methodologies for threat and vulnerability assessments for the light rail system. HRT also has a security plan for buses and ferry, which is updated annually.

WATA

Williamsburg Area Transit Authority (WATA) is included in the James City County Community Service Emergency Plan which defines roles and responsibilities for transit personnel. WATA personnel have participated in the following safety and security training over the past three years:

- System Security Awareness for Transit Employees
- National Incident Management System
- Virginia Operations Plan Exercise
- Pandemic Influenza-Tabletop
- Evacuation Planning & Disaster Recovery Regional Emergency Management Technical Advisory Committee
- Connecting Communities Public Transportation Emergency Preparedness Workshop

WATA also has a contingency fleet consisting of two heavy-duty (body-on-chassis) vehicles that are part of the regional emergency plan since the service area is within the hurricane corridor of Hampton Roads and is also within a ten mile radius of the Surry nuclear power plant.

Rail Security

The security of the rail lines in Hampton Roads is also vital for the safety of people and the mobility of goods into and out of the region. Regional rail companies, such as CSX, have forged rail security partnerships with federal, state, and local law enforcement.\(^4\) These rail security partnerships share highly specialized and secure train and rail car monitoring, coordination and training of regional law enforcement, security upgrades to rail facilities, and advocating to policymakers on various issues that can impact rail security.

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\(^1\) Based on Ridership data from HRT and WATA
\(^2\) Source: U.S. DOT, FTA
\(^3\) Source: U.S. DOT, FTA
\(^4\) Source: CSX Incorporated
Regional Hazard Mitigation Plans
The Southside Hampton Roads Hazard Mitigation Plan, the Peninsula Natural Hazard Mitigation Plan, and the City of Poquoson Multi-Hazard Mitigation Plan incorporate hazard mitigation principles and practices into routine government activities and functions. These hazard mitigation plans recommend specific actions designed to mitigate risks to residents, business owners, and the built environment from those hazards that pose the greatest inherent risks as communities develop into the future.

Regional Catastrophic Framework
Parallel to the Regional Hazard Mitigation Plans in Hampton Roads, the region also has prepared a Regional Catastrophic Framework for Southeastern Virginia and Northeastern North Carolina. The U.S. Department of Homeland Security has assessed that Hampton Roads is at high risk for both natural and man-made disasters. Therefore, this Framework looks to advance catastrophic incident planning and preparedness within the region. The goal of the framework is to support an integrated emergency planning system that enables regional all-hazard planning for catastrophic events and the development of necessary plans, protocols, and procedures to manage potential catastrophic events.

Components of the Regional Catastrophic Framework include:

- Development of traffic management plans for catastrophic events for regional communities
- Defining a coordinated disaster response
- Delegating disaster response roles
- Caching supplies into a regional pool for an efficient response in light of austerity and resource scarcity
Hurricane Evacuation Plan

Virginia has also developed a Hurricane Evacuation Plan for the state. Considering the regional topography, population density, and coastal vulnerabilities to major hurricanes, Hampton Roads may require evacuation of its residents in the event of a severe hurricane due to storm surge and other hurricane related impacts. The complexity and vulnerability of the bridges and tunnels in the region could hamper or even prevent evacuation efforts if not coordinated properly.

In addition to the state evacuation plan for Hampton Roads, the region must also collaborate with eastern North Carolina to allow for the coordinated, efficient, and expeditious evacuation of tourists and residents from the Outer Banks area. The North Carolina/Virginia Border Traffic Control Plan is a bi-state plan that manages evacuation traffic from the Outer Banks into Virginia without compromising the evacuation traffic and transportation system within Hampton Roads. This plan involves directing traffic onto US 158 in Barco, NC, diverting evacuation traffic away from the Chesapeake Expressway and the Hampton Roads Beltway.

Continued coordinated planning between local and state governments remains necessary in order to properly prepare for the potential threat of a catastrophic hurricane.
Environmental Strategies

In order to minimize impacts to natural resources in Hampton Roads, it is essential for the region to have effective mitigation strategies in place. Chapter 9, Environmental Challenges, detailed many environmental challenges the region faces, including: maintaining good water and air quality, protecting environmentally sensitive lands, and addressing the potential impacts of climate change (namely sea level rise and increased vulnerability to flooding). Through collaboration with local, regional, state, and federal partners, Hampton Roads can outline policies and allocate resources to help protect the environment and improve the quality of life in Hampton Roads.

**Water Quality Management**

In response to the negative impacts on water quality by industry and development, the federal government and the Commonwealth of Virginia have taken steps to improve the health of the Chesapeake Bay and its tributaries. In 2011, Virginia adopted revised stormwater management regulations that will require new developments and redevelopments, including roadways and other transportation infrastructure, to meet more stringent requirements regarding nutrient pollution and runoff.

Based on these new regulations, new construction, including transportation projects, cannot increase current levels of nutrient pollution and runoff. Furthermore, any redevelopment must reduce current levels of nutrient pollution and runoff associated with the existing development by 20 percent.
Air Quality Management
Regional air quality is largely affected by the presence of greenhouse gases. As such, Virginia has set a goal of reducing greenhouse gas emissions 30% by the year 2025. Transportation is one of the largest sources of greenhouse gas emissions in Virginia, so reductions in emissions from the transportation sector will be necessary for any state-wide reduction plan to succeed. The Governor’s Commission on Climate Change outlined several strategies to reduce greenhouse gas emissions from the transportation sector, including reducing Vehicle Miles Traveled (VMT) and increasing the fuel efficiency of automobiles. Other transportation-related strategies that were discussed include:

- Improving transit, pedestrian, and bicycling facilities
- Expanding opportunities for teleworking and/or flexible schedules
- Promoting transit-oriented development
- Requiring greenhouse gas emissions to be incorporated into transportation project environmental analysis
- Adopting “complete streets” policies
- Coordinating state transportation plans with local land use plans
- Enforcing existing speed limit
- Enforcing anti-idling statues
- Incentivizing the purchase of fuel-efficient vehicles

As part of the long-range transportation planning process, all LRTPs must conform to state air quality standards. This process is referred to as Air Quality Conformity and is discussed in detail in Chapter 19.

Adapting to Climate Change
In addition to affecting air quality, greenhouse gas emissions are also the main drivers of climate change. While reducing global greenhouse gas emissions can mitigate climate change, some adaptation will still be required to handle those effects that are already beginning to occur. Higher temperatures and different rainfall patterns may require changes in how roads and other transportation infrastructures are designed, constructed, and maintained. Adapting to the impacts of climate change, specifically sea level rise, may in the long run require moving or rebuilding some of the region’s roads.

1 Greenhouse gases include carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), nitrogen oxides (NOx), and ozone (VOC).
Environmental Mitigation

Environmental Mitigation links transportation planning to the environment via consultation and discussion with environmental agencies. Per SAFETEA-LU, the authorization that governs the Nation’s surface transportation funding, environmental agencies must be consulted regarding the development of the LRTP as well as the environmental mitigation discussion itself.

The goals of this program are to:

- Identify open space areas that can be preserved
- Reduce impacts where transportation and sensitive lands intersect
- Emphasize the importance of integrating/consideration of wildlife and habitat into the design of transportation facilities
- Maintaining, or improving, water and air quality
- Protecting historical and cultural resources
- Encourage member localities to ensure that transportation projects are consistent with the LRTP and other federal, state, and local plans

Consultation: Development of the LRTP

Staff from the region’s localities participated in the development of the 2034 LRTP, including: allocating the forecasted 2034 land use and socioeconomic data, developing the Project Prioritization Tool, and selecting projects for the draft plan. Additional agencies were also consulted in the development of the LRTP, indicated in Figure 13.1.

A map and table of the candidate projects for inclusion in the 2034 LRTP were sent to the following agencies on June 11, 2010 with a request for feedback on projects based on their respective area of expertise, with a response date of July 7, 2010:

Figure 13.1: Additional Agencies Consulted in the Development of the 2034 LRTP

<table>
<thead>
<tr>
<th>Agency Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia Department of Environmental Quality (VDEQ)</td>
</tr>
<tr>
<td>Virginia Marine Resources Commission (VMRC)</td>
</tr>
<tr>
<td>Virginia Clean Cities (VCC)</td>
</tr>
<tr>
<td>Virginia Department of Conservation and Recreation (VDCR)</td>
</tr>
<tr>
<td>Virginia Department of Forestry (VDOF)</td>
</tr>
<tr>
<td>Virginia Department of Historic Resources (VDHR)</td>
</tr>
<tr>
<td>Virginia Department of Game and Inland Fisheries (VDGIF)</td>
</tr>
<tr>
<td>Virginia Council of Indians (VCI)</td>
</tr>
</tbody>
</table>

Consultation: The Environmental Mitigation Discussion

In addition to the solicitation for feedback regarding candidate projects, several environmental agencies, listed in Figure 13.2, were also asked to comment on text (referred to as the Environmental Mitigation Discussion text) that explains the relationship between environmental and transportation planning, as well as the need and purpose in coordination between the two fields. The environmental mitigation discussion text and associated summary table are based on text developed by VDOT staff for use by MPOs around the state. The text and table explain the metropolitan transportation planning process as well as the need and use of the regional LRTP. Furthermore, the text explains the environmental considerations at varying stages of project development, including examples of potential environmental mitigation activities.

---

2 Correspondence to the Virginia Council of Indians was sent April 6, 2011 with a requested response date of April 30, 2011.
A map and table of the candidate projects for inclusion in the 2034 LRTP were sent to the following agencies on June 11, 2010 with a request for feedback on projects based on their respective area of expertise, with a response date of July 7, 2010:

![Figure 13.2: Environmental Agencies Consulted in the Development of the 2034 LRTP](image)

**Responses Received**

Responses were received from VDCR and VDEQ. A summary of the responses can be found on the following page. Copies of the complete correspondence and responses can be found in Appendix B.

**Integrating Land Use and Transportation**

The HRTPO has taken initial steps to better integrate land use and transportation planning by developing the Regional Land Use Map. The Regional Land Use Map depicts the existing and anticipated future land uses of the region.

Additionally, the map can be used as a tool to integrate other planning issues with land use and transportation such as: emergency management, water resource planning, green infrastructure management, housing development, and economic development. Decision-making with the use of tools such as the Regional Land Use Map can help promote cost-effective investments in the community.

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3 Correspondence to the Virginia Council of Indians was sent April 6, 2011 with a requested response date of April 30, 2011.
### Table 13.1: Summary of Environmental Mitigation Responses

<table>
<thead>
<tr>
<th>Agency</th>
<th>Division</th>
<th>Comment Summary</th>
<th>Mitigation Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDCR</td>
<td>Planning and Recreational Resources</td>
<td>Lack of non-motorized transportation considerations</td>
<td>Researching non-motorized transportation planning and regional needs for next LRTP</td>
</tr>
<tr>
<td></td>
<td>Natural Heritage</td>
<td>Conservation sites could be harmed by five projects</td>
<td>In project development stage, conduct environmental impact statement, where mitigation activities will be identified</td>
</tr>
<tr>
<td></td>
<td>Soil and Water Conservation</td>
<td>Projects have potential to disturb soil/enhance stormwater and sediment runoff</td>
<td>In project development stage, conduct environmental impact statement, where mitigation activities will be identified</td>
</tr>
<tr>
<td>VDEQ</td>
<td>Tidewater Regional Office</td>
<td>Potential adverse environmental impacts due to project construction activity</td>
<td>In project construction stage, ensure proper environmental permitting and implement mitigation activities</td>
</tr>
<tr>
<td>VMRC</td>
<td></td>
<td>Projects have potential to encroach on waterways and impact marine fisheries</td>
<td>In project development stage, conduct environmental impact statement, where mitigation activities will be identified</td>
</tr>
</tbody>
</table>
Financial Strategies

Transportation planning recognizes the critical links between transportation and other societal goals. Not only does the transportation system provide for the mobility of people and goods, it also influences patterns of growth and economic activity by providing access to land. The performance of the system also impacts quality of life (air quality, environmental and natural resources, social equity, land use, economic development, safety, and security). Since transportation is essential to a region’s well-being, financing transportation is key in advancing the region’s long-term goals. Similar to other metro areas and the nation, Hampton Roads must maximize the benefit of currently available transportation funds, while working to develop new and expanded sources of revenue.

Transportation Funding Strategies
Recognizing that funding transportation is one of the key challenges facing the Commonwealth, Governor Bob McDonnell announced a plan in early 2011 to invest billions of dollars in the Commonwealth’s transportation system over the next three years without raising taxes.

With support from the Virginia General Assembly and Commonwealth Transportation Board, the FY 2012-2017 SYIP allocated approximately $4 billion in additional construction funding for more than 900 projects. These projects include widening interstate highways, improving bridges and secondary roads, improving passenger rail services, purchasing right-of-way, and conducting engineering and environmental studies.

The legislation uses several financing mechanisms that enable the Commonwealth to take advantage of historically low interest rates on bonds and construction bids that are coming in well below project estimates (see graphic below).

**Figure 14.1**

<table>
<thead>
<tr>
<th>Governor’s Omnibus Transportation Funding Bill Funding Mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerates the issuance of $200 million of Capital Project Revenue Bonds authorized by the General Assembly in 2007 during FY 2012 and $300 million in FY 2013, thereby enabling VDOT to issue $1.8 billion in bonds over the next three years.</td>
</tr>
</tbody>
</table>
Largely attributable to the bond funding provided by the Governor’s Omnibus Transportation Funding Bill, a significant infusion of construction funding was made in FY 2012, as shown in the graph below. The Virginia Department of Transportation’s (VDOT) budget totals $4.8 billion for FY 2012, a 43% increase from the $3.3 billion FY 2011 budget. The budget provides $2.8 billion for highway construction, more than double the FY 2011 amount. It also includes $1.9 billion for VDOT highway maintenance and operations.

A February 2011 report by Chmura Economics and Analytics showed that construction of the 900 projects will grow the Virginia economy by over $13 billion and support an additional 105,642 jobs statewide over the next six years. During the six year period, it is estimated that construction will generate total economic impacts of $6.2 billion in Hampton Roads ($1.035 billion per year), supporting a total of 53,610 jobs (8,935 per year) during the six year period.

Figure 14.2: Statewide Highway Funding, Maintenance vs. Construction

![Graph showing Statewide Highway Funding Maintenance vs. Construction](Image)

Data Source: Virginia Department of Transportation.

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1 Chmura Economics and Analytics, Economic and Fiscal Impacts of the Construction Phase of Transportation Funding in Virginia and its Regions (February 2011).
These additional funds created by the Governor's Omnibus Transportation Funding Package will add new capacity and congestion relief, as well as accelerate and advance many phases of projects, including replacing the Lesner Bridge, widening Lynnhaven Parkway, improvements to Holland Road and Witchduck Road, investments in the Norfolk Light Rail, and bus replacements for transit operators. The Governor's transportation funding package also provides $1.4 billion to help advance several major public-private transportation projects, such as the widening of Dominion Boulevard in Chesapeake; the construction of a new tube for the Midtown Tunnel between Norfolk and Portsmouth; and construction of a new Route 460 from Suffolk to Petersburg. This investment has the potential to leverage an additional $4 billion in resources from the private sector.

**Additional Funding Strategies**

In addition to the Governor's Omnibus Transportation Funding Package, the HRTPO has investigated the application of other non-traditional funding sources in order to advance projects, including: local funding, tolls, and Public-Private Partnerships.

**Project Prioritization**

Another strategy used by the HRTPO to advance regional transportation investments with scarce financial resources is the *Program Priorities Prioritization Methodology* (Project Prioritization Tool).

In July 2009, the HRTPO, with the support of VDOT and its consultant Kimley-Horn and Associates, embarked on the development of an objective Project Prioritization Tool to evaluate regional transportation investments in Hampton Roads. The Project Prioritization Tool serves to prioritize candidate regional transportation projects based on their technical merits and regional benefits in light of scarce financial resources.

Details regarding the Project Prioritization Tool will be discussed in Chapter 15.
Public-Private Partnerships

Public-Private Partnerships (P3s) are a method of engaging the private sector in the construction and implementation of transportation investments. The Federal Highway Administration (FHWA) defines a P3 as a contractual agreement between a public agency and a private sector entity that allows for greater private sector participation in the delivery and financing of transportation projects. By involving the private sector into the development of transportation improvements, this partnership can bring creativity, efficiency, and funding to address challenging problems facing state and local governments. FHWA identifies several key benefits of using P3s to deliver transportation projects:

- Expedited completion compared to conventional project delivery methods
- Project cost savings
- Improved quality and system performance from the use of innovative materials and management techniques
- Substitution of private resources and personnel for constrained public resources
- Access to new sources of private capital

In the Commonwealth of Virginia, the Public-Private Transportation Act (PPTA) of 1995, as amended, is the legislative framework authorizing private entities to enter into agreements with state, local governments, and other public entities to construct, improve, maintain, and operate transportation facilities. One such P3 project in Hampton Roads is the Downtown Tunnel/Midtown Tunnel/Martin Luther King Extension. Virginia has recently executed a comprehensive agreement with a consortium of private companies to build a parallel Midtown Tunnel, extend the Martin Luther King Freeway, and improve the existing Midtown and Downtown Tunnels – thereby improving two of the region’s worst traffic bottlenecks. Recognizing the benefits of a P3, Governor Bob McDonnell has stated, “The innovative public-private agreement will advance this project years before the Commonwealth could afford to complete the work on its own.”

Figure 14.3: Downtown Tunnel/Midtown Tunnel/MLK Extension Transportation Package

TRANSPORTATION PACKAGE
The state is completing a deal on a $2.1 billion project to be finished in 2017. Construction could start early next year.
In July 2009, the HRTPO Board requested staff to develop an objective methodology to assist the Board with determining regional transportation priorities. This effort would help advance the region’s transportation system in light of scarce financial resources. VDOT, and its on-call consultant Kimley-Horn and Associates, assisted HRTPO staff with developing the methodology for the Project Prioritization Tool. After approximately 18-months of regional discussion and collaboration, the HRTPO Board approved the methodology for the Project Prioritization Tool in July of 2010.

A primary goal for prioritizing transportation projects was to rank the ability of a transportation system improvement to increase system benefits for users and impact economic growth. In order to determine this ranking, it was important to identify the relationships between transportation improvements and the resulting benefits, namely decreasing travel times, increasing reliability, providing new capability, and improving regional competitiveness.

Although a great deal of research was conducted to both calibrate the Project Prioritization Tool and determine appropriate categories, weighting factors, and measurement tools, there are several elements of the tool for which there was not sufficient information, research, or data collection methods. As a result, the development of the methodology relied on a great deal of input from the LRTP subcommittee, TTAC, numerous stakeholders, and members of the public, who provided valuable suggestions and insights into the process.

**Prioritization Methodology**

The Project Prioritization Tool prioritizes candidate regional transportation projects based on their technical merits and regional benefits. The prioritization methodology evaluates transportation projects based on three components: Project Utility, Project Viability, and Economic Vitality.
For the purposes of prioritization, projects are categorized into separate evaluation categories to enable decision-makers to more efficiently compare projects: Highways, Bridges/Tunnels, Transit, Intermodal, Bicycle and Pedestrian, and Systems Management. This is also done to account for the varying data input needs for each category. For example, the structural integrity of bridges is evaluated differently than for highways; therefore, to maintain objectivity, these projects need to be evaluated separately.

For the purposes of funding, projects are further subcategorized into their roadway system classification (interstate, primary, secondary, etc.).

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For the purposes of the 2034 LRTP, projects were categorized based on Highways, Bridges/Tunnels, Transit, and Intermodal. Bicycle, Pedestrian, and Systems Management projects are considered ‘grouped’ categories; therefore, projects of this nature are not listed individually and were not prioritized.

**Figure 15.2: Prioritization Project Categories**

<table>
<thead>
<tr>
<th>Project Categories</th>
<th>A set of project categories has been established to evaluate similar projects separately</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways</td>
<td></td>
</tr>
<tr>
<td>Bridge/Tunnel</td>
<td></td>
</tr>
<tr>
<td>Transit</td>
<td></td>
</tr>
<tr>
<td>Intermodal</td>
<td></td>
</tr>
<tr>
<td>Bicycle and Pedestrian</td>
<td></td>
</tr>
<tr>
<td>Systems Management/Transportation Demand Management/Operational Improvements</td>
<td></td>
</tr>
</tbody>
</table>

**Project Utility**

Project Utility considers the project’s ability to solve an existing transportation issue, which could be correlated to congestion, safety, infrastructure condition, or ridership. Improving system utility results in a better quality of life for residents including decreased travel times, increased safety, more mode and route choices, and cleaner air.

Project Utility evaluation criteria for Highways/Bridges/Tunnels projects:
- Congestion Level
- System Continuity and Connectivity
- Cost Effectiveness
- Existing and Future Land Use Compatibility
- Safety and Security
- Infrastructure Condition
- Modal Enhancements

---

**Figure 15.3: Project Prioritization Components**

**Project Prioritization Components**

- **Project Utility** – Considers the project’s ability to solve an existing transportation issue, which could be correlated to congestion, safety, infrastructure condition, or ridership.
- **Project Viability** – Indicates the readiness of the project to be constructed based on available funding and completion of required documentation.
- **Economic Vitality** – Provides additional insight for a project’s ability to support regional plans for future development and economic growth of the region.
Supplemental transit specific evaluation criteria:
- Usage
- User Benefit
- Air Quality
- Enhancements to Other Categories

Supplemental intermodal specific evaluation criteria:
- Intermodal Movement Accommodation
- Access Improvements (Rail or Vehicular)

**Project Viability**
Project Viability indicates the readiness of the project to be constructed based on available funding and completion of required documentation and permits. On occasion, funding is made available by the federal government, such as the American Recovery and Reinvestment Act of 2009. In these situations, transportation funds are awarded to projects that are considered "shovel ready," meaning that construction can start immediately on a project. Since transportation funds are scarce and competitive, it is important to rank projects based on project readiness.

Project Viability evaluation criteria (same for all project categories):
- Amount of additional local/private funds committed to project
- Prior Commitment
- Federal Mandates
- Degree of Project Readiness

**Economic Vitality**
Regions are increasingly recognized as the fundamental unit of economic activity. Regional economies share resources, labor pools, competitive advantages, and a significant extent of their infrastructure. Transportation networks provide a means for resources to flow through the regional economy, facilitating efficient land use decisions while connecting buyers with suppliers and employers with employees. In short, the region's economy is inextricably linked to the regional transportation network as the networks determine the means by which travel occurs and economics determines the necessity of travel. In recognition of the important role that transportation plays in the metropolitan economy, regions are called to "support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency" as part of the transportation planning process.

Economic Vitality is the ability of a proposed project to impact regional economic growth through increased capacity and/or increased opportunity.

Economic Vitality evaluation criteria for Highways/Bridges/Tunnels projects:
- Total Reduction in Travel Time
- Labor Market Access
- Addresses the Needs of Basic Sector Industries
- Increases Opportunity

Supplemental transit specific evaluation criteria:
- Economic Distress Factors

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2 SAFETEA-LU, 2005
Supplemental intermodal specific evaluation criteria:
- Impact on Truck Movement
- Improves Interaction between Modes of Travel

**Evaluation Criteria Weighting Factors**
Each evaluation criterion is weighted based on relative importance, dependent on the current regional vision and availability of funding. The current weighting factors were determined based on technical and public input. These factors can be modified in the future to address changing regional priorities. Refer to Appendix D for a complete listing of category weighting factors.

**Addressing SAFETEA-LU Planning Factors**
As part of the development of any LRTP, it is necessary to address the planning factors established in the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation by the federal government. These planning factors encourage regions to not only identify challenges but also strategies related to improving economic vitality, safety, security, the environment, accessibility, mobility, connectivity, system efficiency, and system preservation.

The previous chapters outline some of the transportation challenges the region faces over the next 20 years as well as some strategies that will be implemented as a response to these challenges. In addition to these strategies, the Project Prioritization Tool addresses the SAFETEA-LU planning factors on a project by project basis. **Table 15.1** details prioritization input criteria as it relates to SAFETEA-LU planning factors. **Figure 15.4** is a summary graphic of this same information.

For more details regarding the Project Prioritization Tool, please refer to Appendix C.

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**Table 15.1: Prioritization Criteria as it Relates to SAFETEA-LU Planning Factors**

<table>
<thead>
<tr>
<th>Prioritization Criteria</th>
<th>SAFETEA-LU Planning Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Preservation</td>
<td></td>
</tr>
<tr>
<td>Enhance Safety</td>
<td></td>
</tr>
<tr>
<td>Enhance Security</td>
<td></td>
</tr>
<tr>
<td>Accessibility and Mobility</td>
<td></td>
</tr>
<tr>
<td>Environmental Coordination</td>
<td></td>
</tr>
<tr>
<td>Integration &amp; Connectivity</td>
<td></td>
</tr>
<tr>
<td>Economic Vitality</td>
<td></td>
</tr>
<tr>
<td>System Management</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 15.4: Relationship of Project Prioritization Criteria and SAFETEA-LU Planning Factors**
Table 15.1: Relationship of SAFETEA-LU Planning Factors to Prioritization Criteria

<table>
<thead>
<tr>
<th>SAFETEA-LU Planning Factors</th>
<th>Prioritization Criteria</th>
</tr>
</thead>
</table>
| Supports the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency | • Reductions in travel time  
• Labor market access by improving travel time reliability and increasing access to major employment centers  
• Addresses the needs of basic sector industries such as defense, tourism, and ports  
• Supported by plans for future growth and development  
• Increases opportunity for business development based on new or increased access  
• Increases access to other modes of travel for the movement of goods |
| Increases the safety of the transportation system for all motorized and non-motorized users | • Crash reductions (between vehicles and pedestrians)  
• Crash rate reductions  
• Improvements to evacuation or incident management routes  
• Improvements to geometric deficiencies  
• Improvements to intermodal movement conflicts  
• Infrastructure condition of highways, bridges, and tunnels also addresses existing safety concerns |
| Increases the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users | • Improvements to incident management or evacuation routes  
• Potential regional impacts, in terms of operations, of a sudden bridge or tunnel failure  
• Improvements to incident management or evacuation routes as well as provisions for emergency vehicle preemption and incident detection |
| Protect and enhance the environment, promote energy conservation, improve the quality of life and promote consistency between transportation improvements and State and local planned growth and economic development patterns | • Reduction of vehicular emissions by reducing congestion and increasing system efficiencies  
• Compatible with existing land use patterns and future growth and development (based on consistency with state and local planning documents)  
• Supports economic growth and vitality across the region |
### SAFETEA-LU Planning Factors

**Increase accessibility and mobility of people and freight**
- Reduction of vehicular congestion on the regional roadway network
- Improves system continuity and connectivity for the regional roadway, bicycle and pedestrian, and transit networks
- Encourages the use of alternate travel modes (walking and biking, transit, ridesharing, etc.)
- Enhances the use of other modes (e.g., a roadway project which includes a multiuse path)
- Improves rail or vehicular access to major destinations such as freight distribution facilities, airports/seaports, major industrial clients, employment and population centers, or rail stations/terminals
- Improves transit, bicycle, and pedestrian access to employment and population centers
- Addresses the mobility and accessibility needs of the region as a whole
- Better accommodation of intermodal movements of people and freight

**Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight**
- Improves system continuity and connectivity for the regional roadway, bicycle and pedestrian, and transit networks
- Provides multimodal accommodations (e.g., a roadway project which includes a multiuse path)
- Improves rail or vehicular access to major destinations such as freight distribution facilities, airports/seaports, major industrial clients, employment and population centers, or rail stations/terminals
- Improves pedestrian and bicycle access to transit as well as local and regional destinations
- Better accommodation of intermodal movements of people and freight

**Promote efficient system management and operation**
- Reduction of vehicular congestion on the regional roadway network
- Reduction in travel time
- Removes conflicts between intermodal movements and thereby improve operations
- Improves communications among multiple operating agencies

**Emphasize the preservation of the existing transportation system**
- Infrastructure condition (priority is given to facilities with poor existing infrastructure conditions (based on nationwide standards)
- Improves operations without major infrastructure improvements (such as signal retiming and ITS solutions)

<table>
<thead>
<tr>
<th>SAFETEA-LU Planning Factors</th>
<th>Prioritization Criteria</th>
</tr>
</thead>
</table>
| Increase accessibility and mobility of people and freight | - Reduction of vehicular congestion on the regional roadway network  
- Improves system continuity and connectivity for the regional roadway, bicycle and pedestrian, and transit networks  
- Encourages the use of alternate travel modes (walking and biking, transit, ridesharing, etc.)  
- Enhances the use of other modes (e.g., a roadway project which includes a multiuse path)  
- Improves rail or vehicular access to major destinations such as freight distribution facilities, airports/seaports, major industrial clients, employment and population centers, or rail stations/terminals  
- Improves transit, bicycle, and pedestrian access to employment and population centers  
- Addresses the mobility and accessibility needs of the region as a whole  
- Better accommodation of intermodal movements of people and freight |
| Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight | - Improves system continuity and connectivity for the regional roadway, bicycle and pedestrian, and transit networks  
- Provides multimodal accommodations (e.g., a roadway project which includes a multiuse path)  
- Improves rail or vehicular access to major destinations such as freight distribution facilities, airports/seaports, major industrial clients, employment and population centers, or rail stations/terminals  
- Improves pedestrian and bicycle access to transit as well as local and regional destinations  
- Better accommodation of intermodal movements of people and freight |
| Promote efficient system management and operation | - Reduction of vehicular congestion on the regional roadway network  
- Reduction in travel time  
- Removes conflicts between intermodal movements and thereby improve operations  
- Improves communications among multiple operating agencies |
| Emphasize the preservation of the existing transportation system | - Infrastructure condition (priority is given to facilities with poor existing infrastructure conditions (based on nationwide standards)  
- Improves operations without major infrastructure improvements (such as signal retiming and ITS solutions) |