HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION
Robert A. Crum, Jr.
Executive Director

VOTING MEMBERS:

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Ella P. Ward – Alternate

GLOUCESTER COUNTY
Phillip Bazzani
John C. Meyer, Jr. – Alternate

HAMPTON
George Wallace
Chris Sneed – Alternate

ISLE OF WIGHT COUNTY
Rex Alphin
Rudolph Jefferson – Alternate

JAMES CITY COUNTY
Michael Hipple
Vacant – Alternate

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Andrew Protogyrou – Alternate

POQUOSON
W. Eugene Hunt, Jr.
Herbert R. Green, Jr. – Alternate

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SUFFOLK
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Leroy Bennett – Alternate

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Louis R. Jones – Alternate

WILLIAMSBURG
Clyde Haulman
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The Honorable Frank W. Wagner

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Ray Amoruso – Alternate

VIRGINIA DEPARTMENT OF TRANSPORTATION
James Utterback, Hampton Roads District Administrator
Dawn Odom – Alternate

VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION
Jennifer Mitchell, Director
Cheryl Openshaw – Alternate

VIRGINIA PORT AUTHORITY
John Reinhart, CEO/Executive Director
Cathie Vick – Alternate

WILLIAMSBURG AREA TRANSIT AUTHORITY
Todd Tyree, Executive Director
Jamie Jackson – Alternate
HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION

NON-VOTING MEMBERS:

CHESAPEAKE
James E. Baker

ISLE OF WIGHT COUNTY
Sanford B. Wanner

NORFOLK
Marcus Jones

SUFFOLK
Patrick Roberts

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Marvin Collins

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J. Brent Fedors

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Mary Bunting

NEWPORT NEWS
James M. Bourey

PORTSMOUTH
Lydia Pettis Patton

FEDERAL HIGHWAY ADMINISTRATION
Wayne Fedora, Acting Division Administrator, Virginia Division

FEDERAL AVIATION ADMINISTRATION
Jeffrey W. Breeden, Airport Planner, Washington Airports Office District

PENINSULA AIRPORT COMMISSION
Ken Spirito, Executive Director

CITIZEN TRANSPORTATION ADVISORY COMMITTEE
Gregory Edwards, Chair

FEDERAL TRANSIT ADMINISTRATION
Terry Garcia Crews, Regional Administrator, Region 3

VIRGINIA DEPARTMENT OF AVIATION
Randall P. Burdette, Director

NORFOLK AIRPORT AUTHORITY
Vacant

FREIGHT TRANSPORTATION ADVISORY COMMITTEE
Arthur Moye, Jr., Co-Chair (Nonvoting Board Member)
The Honorable Christopher P. Stolle, Co-Chair (Voting Board Member)

OTHER PARTICIPANTS:

PARTICIPATING JURISDICTIONS

FRANKLIN
Barry Cheatham
R. Randy Martin

SOUTHERN VIRGINIA
Southampton County
Michael Johnson
Barry Porter

COMMONWEALTH TRANSPORTATION BOARD

John Malbon

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Gregory Edwards, Chair

ARTHUR MOYE, JR., CO-CHAIR (NONVOTING BOARD MEMBER)
THE HONORABLE CHRISTOPHER P. STOLLE, CO-CHAIR (VOTING BOARD MEMBER)

MILITARY LIAISONS

Robert Geis, Captain, U.S. Navy
Richard Wester, Captain, U.S. Coast Guard
William S. Galbraith, Colonel, Langley-Eustis

HRTPO PROJECT STAFF

Camelia Ravanbakht, Ph.D. Deputy Executive Director
Dale M. Stith, AICP, GISP Principal Transportation Planner
Keith Nichols, P.E. Principal Transportation Engineer
Kendall L. Miller Public Involvement & Title VI Administrator
Theresa K. Jones Transportation Engineer II

Leonardo Pineda II Transportation Planner
Sara Kidd, GISP HRPDC Senior Regional Planner
Kathlene Grauberger Senior Administrative Assistant
Michael Long General Services Manager
Christopher Vaigneur Assistant General Services Manager
REPORT DOCUMENTATION

TITLE
Hampton Roads 2040 Long-Range Transportation Plan:
Plan Performance

AUTHORS
Dale M. Stith, AICP, GISP
Theresa K. Jones
Leonardo Pineda, Il

PROJECT MANAGER
Dale M. Stith, AICP, GISP

ABSTRACT
The Hampton Roads Transportation Planning Organization (HRTPO) is currently in the process of updating the regional Long-Range Transportation Plan to the horizon year 2040. As part of this process and in keeping with federal regulations, HRTPO must consider multimodal transportation options to effectively address future regional needs based upon projected population and employment growth for the next 20 years.

The document – part of the compendium of reports that comprise the 2040 Hampton Roads Long-Range Transportation Plan – summarizes the forecasted performance of the 2040 LRTP.

ACKNOWLEDGEMENTS
This document was prepared by the Hampton Roads Transportation Planning Organization (HRTPO) in cooperation with the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transportation (DRPT), Transportation District Commission of Hampton Roads (TDCHR), and Williamsburg Area Transit Authority (WATA). The contents of this report reflect the views of the HRTPO. The HRTPO staff is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, FTA, VDOT or DRPT. This report does not constitute a standard, specification, or regulation. FHWA, FTA, VDOT or DRPT acceptance of this report as evidence of fulfillment of the objectives of this program does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

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The HRTPO assures that no person shall, on the ground of race, color, national origin, handicap, sex, age, or income status as provided by Title VI of the Civil Rights Act of 1964 and subsequent authorities, be excluded from participation in, be denied the benefits of, or be otherwise subject to discrimination under any program or activity. The HRTPO Title VI Plan provides this assurance, information about HRTPO responsibilities, and a Discrimination Complaint Form.
Hampton Roads 2040 Long-Range Transportation Plan: Plan Performance

PREPARED BY:
The heartbeat of Transportation Planning Organization
JUNE 2016
FIGURE 13: AVERAGE AFTERNOON DELAY - ELIZABETH RIVER ...................................................................................................................... 24
FIGURE 14: AVERAGE MORNING DELAY - HAMPTON ROADS HARBOR .................................................................................................................. 25
FIGURE 15: AVERAGE AFTERNOON DELAY - HAMPTON ROADS HARBOR .................................................................................................................. 26
FIGURE 16: FORECASTED AVERAGE CONGESTED SPEEDS ................................................................................................................................. 27
FIGURE 17: FORECASTED MODE SHARE (PEAK PERIOD) .............................................................................................................................. 28
FIGURE 18: FORECASTED MODE SHARE (OFF PEAK PERIOD) .............................................................................................................................. 29
FIGURE 19: FORECASTED TRANSIT BOARDINGS .................................................................................................................................... 30
FIGURE 20: ENVIRONMENTAL JUSTICE METHODOLOGY ............................................................................................................................... 49
FIGURE 21: HAMPTON ROADS SAFETY TARGETS AND DATA ......................................................................................................................... 63
FIGURE 22: 2040 LRTP REPORTS TO DATE .................................................................................................................................................. 76
FIGURE 23: 2040 LRTP DEVELOPMENT PLANNING MILESTONES ................................................................................................................... 77

LIST OF MAPS
MAP 1: HAMPTON ROADS REGIONAL PRIORITY PROJECTS .................................................................................................................. 19
MAP 2: FORECASTED TRAFFIC VOLUME - EXISTING ................................................................................................................................. 31
MAP 3: FORECASTED 2040 TRAFFIC VOLUME - NO BUILD .......................................................................................................................... 32
MAP 4: FORECASTED 2040 TRAFFIC VOLUME - POTENTIAL HRCS PHASE 1 (HRBT 6-LANE WIDENING) .................................................. 33
MAP 5: FORECASTED 2040 TRAFFIC VOLUME - POTENTIAL HRCS PHASE 1 (Patriots Crossing) ................................................................. 34
MAP 6: FORECASTED 2040 TRAFFIC VOLUME - POTENTIAL HRCS PHASE 1 (I-664 WIDENING) .................................................................. 35
MAP 7: FORECASTED TRAFFIC CONGESTION LEVEL - EXISTING ........................................................................................................... 36
MAP 8: FORECASTED 2040 TRAFFIC CONGESTION LEVEL - NO BUILD ...................................................................................................... 37
MAP 9: FORECASTED 2040 TRAFFIC CONGESTION LEVEL – POTENTIAL HRCS PHASE 1 (HRBT 6-LANE WIDENING) .................................. 38
MAP 10: FORECASTED 2040 TRAFFIC CONGESTION LEVEL - POTENTIAL HRCS PHASE 1 (Patriots Crossing) ........................................... 39
MAP 11: FORECASTED 2040 TRAFFIC CONGESTION LEVEL - POTENTIAL HRCS PHASE 1 (I-664 WIDENING) ........................................... 40
MAP 12: HAMPTON ROADS TRANSIT SERVICE AREAS .......................................................................................................................... 41
MAP 13: EXISTING ACTIVE TRANSPORTATION FACILITIES IN HAMPTON ROADS .................................................................................. 42
MAP 14: TITLE VI/ENVIRONMENTAL JUSTICE COMMUNITIES ACCESSIBILITY TO ALTERNATE MODES OF TRAVEL (TRANSIT) .......... 43
MAP 15: TITLE VI/ENVIRONMENTAL JUSTICE COMMUNITIES ACCESSIBILITY TO ALTERNATE MODES OF TRAVEL (ACTIVE TRANSPORTATION) .................................................................................................................. 44
MAP 16: I-64 PENINSULA 2040 TRIP LOCATIONS ..................................................................................................................................... 45
MAP 17: I-64/I-264 INTERCHANGE (EASTBOUND ONLY) 2040 TRIP LOCATIONS ........................................................................................... 45
MAP 18: I-64 SOUTHSIDE 2040 TRIP LOCATIONS ..................................................................................................................................... 46
MAP 19: HAMPTON ROADS CROSSING - HRCS ALTERNATIVE A 2040 TRIP LOCATIONS .......................................................................... 46
MAP 20: HAMPTON ROADS CROSSING – HRCS ALTERNATIVE C 2040 TRIP LOCATIONS ........................................................................... 47
MAP 21: US ROUTE 460/58/13 CONNECTOR 2040 TRIP LOCATIONS ............................................................................................................. 47
MAP 22: DISABLED POPULATION ABOVE THE REGIONAL AVERAGE ............................................................................................................. 50
MAP 23: ELDERLY POPULATION ABOVE THE REGIONAL AVERAGE ............................................................................................................. 51
MAP 24: FEMALE HEAD OF HOUSEHOLD ABOVE THE REGIONAL AVERAGE .................................................................................................. 52
MAP 25: HOUSEHOLDS RECEIVING CASH ASSISTANCE ABOVE THE REGIONAL AVERAGE ........................................................................... 53
Hampton Roads 2040 Long-Range Transportation Plan: 
Plan Performance

2040 Long-Range Transportation Vision Statement

With an engaged public, the 2040 Long-Range Transportation Plan sets forth a vision to develop a well-balanced transportation system that promotes good quality of life while enhancing the unique character of Hampton Roads.

LRTP Update Overview

Over the past four years, the Hampton Roads Transportation Planning Organization, or HRTPO (the MPO for Hampton Roads), has been updating the regional Long-Range Transportation Plan (LRTP) to the horizon year of 2040. The updated LRTP, entitled Navigating the Future to 2040, is anticipated to be complete by summer of 2016.

This report is one in a series of reports outlining the development of the 2040 LRTP. Previous reports include information on the visioning survey designed to solicit regional concerns to help define the plan’s vision and goals, the socioeconomic forecast describing projected population and employment growth for the region, the collection of candidate transportation projects to consider in the development of the LRTP, the evaluation and prioritization of these candidate projects, transportation challenges that exist in the region and associated strategies designed to meet these challenges, the assessment of candidate projects from a Title VI and Environmental Justice perspective, the documentation of the funding plan, and a project information guide.

Regional Priorities

Utilizing a survey questionnaire, regional priorities were solicited from stakeholders and interested citizens across Hampton Roads. These priorities were then used to help define the vision and goals that would help guide the development of the 2040 LRTP. Key Findings from the 2013 Visioning Survey included:

- Interest in Public Transportation
- Interest in the Expansion of Light Rail
- More Active Transportation Facilities
- More Transportation Options
**Figure 1: Key Findings from 2040 LRTP Visioning Survey**

**Key Findings**

**Transportation Options**

Approximately 9% of survey respondents stated that the region lacked transportation options. Combining this with the transit and active transportation responses, the survey revealed a general interest in non-auto forms of transportation.

**Transit**

The 2040 LRTP Visioning Survey showed that many survey respondents truly have an interest in using public transportation. Approximately 56% of survey respondents focused on public transportation.

**Light Rail**

Approximately 71% of the public transportation project suggestions referenced light rail. Many survey respondents expressed the need to expand The Tide, the region’s light rail system.

**Active Transportation**

Approximately 33% of survey respondents indicated that providing more biking and walking facilities would help reduce congestion.
2040 LRTP Vision Statement and Goals

The Vision Statement for the 2040 LRTP is to develop a well-balanced transportation system that promotes good quality of life while enhancing the unique character of Hampton Roads – while engaging the public throughout the planning process. To help achieve this vision, 13 goals (refer to Table 1) were identified. Both the Vision Statement and accompanying goals were developed by incorporating Federal and State guidelines, common themes from local comprehensive plans as well as public input from the Visioning Survey, and further refined with input from the LRTP Subcommittee (subcommittee responsible for guiding the development of the LRTP).

Figure 2: Various Inputs for 2040 LRTP Vision and Goals

- Federal Guidelines
- State Guidelines
- Themes from Survey (Public Input)
- Themes from Locality Comprehensive Plans
- LRTP Subcommittee (Technical Input)
Federal Planning Priorities

On July 6, 2012, President Obama signed *Moving Ahead for Progress in the 21st Century Act* (MAP-21) into law. Like its predecessor transportation bill SAFETEA-LU, a large majority of funding in MAP-21 is dedicated to highway spending with a funding split of 80% for highways and 20% for transit. In addition to strengthening the nation’s highway and public transportation systems, MAP-21 also streamlined the regulatory process, expediting project delivery while encouraging the protection of the environment. MAP-21 also sped up the environmental review process for approving projects, in part by allowing certain projects to fall under Categorical Exclusions, as well as allowing for multiple agency reviews to be conducted concurrently rather than sequentially, cutting the project delivery time in half—from 15 years to about seven. MAP-21 also required the establishment of performance measures and targets to evaluate transportation investments. MAP-21 expired on September 30, 2014, but Congress authorized several extensions until the bill was replaced on December 4, 2015 with *Fixing America’s Surface Transportation Act*, or FAST Act. FAST Act is the first law enacted in over ten years that provides long-term funding certainty for surface transportation. FAST Act largely maintains current program structures and funding shares between highways and transit; the law also makes some changes and reforms to many Federal transportation programs, provides new safety tools, and establishes new programs to advance critical freight projects.

FAST Act builds on the eight Planning Factors identified under MAP-21, incorporating two additional factors related to resiliency/reliability and travel/tourism. As stated previous, Federal Planning Factors were used as guidelines in developing the goals for the 2040 LRTP.
State Planning Priorities

The Commonwealth’s long-range multimodal transportation plan, VTrans2040, is being developed in two phases and will be reported in two companion documents: the VTrans2040 Vision and the VTrans2040 Multimodal Transportation Plan.

VTrans2040 will focus on the needs of the Commonwealth’s statewide network of Corridors of Statewide Significance, the multimodal regional networks that support travel within metropolitan regions, and improvements to promote locally designated Urban Development Areas (UDAs). In order to be considered for funding under the statewide prioritization process (established under House Bill 2), projects must help address a need identified in VTrans2040.

Adopted by the Commonwealth Transportation Board on December 9, 2015, the VTrans2040 Vision establishes Virginia’s Guiding Principles, Vision, Goals, and Objectives in a policy framework to guide partner agency investment decision over the next 25 years. The VTrans2040 Vision was informed by detailed trend analyses and stakeholder input regarding transportation-related issues and opportunities associated with major economic generators, freight movement, household characteristics, land development patterns, transportation technology, and the natural environment. Additionally, seven Guiding Principles and 5 Goals have also been defined to help realize the overall state vision.

Figure 4: VTrans2040 Guiding Principles

| Guiding Principle 1 | • Optimize Return on Investments |
| Guiding Principle 2 | • Ensure Safety, Security, and Resiliency |
| Guiding Principle 3 | • Efficiently Deliver Programs |
| Guiding Principle 4 | • Consider Operational Improvements and Demand Management First |
| Guiding Principle 5 | • Ensure Transparency and Accountability, and Promote Performance Management |
| Guiding Principle 6 | • Improve Coordination Between Transportation and Land Use |
| Guiding Principle 7 | • Ensure Efficient Intermodal Connections |
In addition to the Federal and State planning guidelines discussed above, common themes from the 2040 LRTP Visioning Survey and local comprehensive plans were also identified and referenced in the development of the LRTP Vision and Goals (refer to Figures 5 and 6 on the following pages).

**Input from LRTP Subcommittee**

After incorporating Federal and State planning guidelines and common themes from the Visioning Survey and local comprehensive plans from across the region, the LRTP Subcommittee further refined the 2040 LRTP Vision and Goals. Input from the Subcommittee included:

**Vision statement should:**
- Reflect unique character of Hampton Roads
- Engage the public
- Promote a transportation system that will enhance:
  - Quality of Life
  - Economy
  - Environment
  - Safety
- Promote an efficient and well-balanced transportation system

**Goals should include:**
- Maintenance for all modes of transportation
- Coordination between modes
- Reduction of congestion on existing infrastructure
- Dedicated and sustainable revenue sources
Figure 6: Common Themes from Visioning Survey (Public Input)

2040 Visioning Survey

- Efficient
- Maintenanc e & Preservation
- Continuous & Complete
- Increased Mobility & Accessibility
- Safety
- Multi-modal
- Consider Needs of All Users & Modes
- Affordable
- Flexible
- Reliable
Figure 7: Common Themes from Local Comprehensive Plans

- Multimodal
- Safe / Efficient Movement of People / Goods
- Support Economic Vitality
- Adequate Mobility
- Travel Options
- Reduce Travel Demand
- Serve Needs of All Users
- Enhance Quality of Life

Locality Comp Plans
Table 1 provides the relationship between federal, state, and regional transportation planning goals.

### Table 1: Federal, State, and 2040 LRTP Goals Relationship

<table>
<thead>
<tr>
<th>Federal Planning Factors</th>
<th>VTrans2040 Planning Goals</th>
<th>2040 LRTP Planning Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support the economic vitality of the metropolitan area.</td>
<td>Economic Competitiveness and Prosperity</td>
<td>Support the economic vitality of the metropolitan area, enabling global competitiveness, productivity, and efficiency.</td>
</tr>
<tr>
<td>Enhance travel and tourism.</td>
<td>Safety for All Users</td>
<td>Increase the safety of the transportation system for all users, including minimizing conflicts between motorized and non-motorized modes.</td>
</tr>
<tr>
<td>Increase safety for motorized and non-motorized users.</td>
<td>Healthy Communities and Sustainable Transportation Communities</td>
<td>Ensure the security of the region's transportation infrastructure and its users.</td>
</tr>
<tr>
<td>Increase security for motorized and non-motorized users.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Accessible and Connected Places</td>
<td>Increase accessibility and mobility of people and goods.</td>
</tr>
<tr>
<td>Increase accessibility and mobility for people and freight.</td>
<td></td>
<td>Provide a variety of transportation options that accommodates all users.</td>
</tr>
<tr>
<td>Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.</td>
<td>Proactive System Management</td>
<td>Increase the coordination of the transportation system, across and between modes, for people and goods.</td>
</tr>
<tr>
<td>Promote efficient system management and operation.</td>
<td></td>
<td>Promote an efficient and reliable regional transportation system.</td>
</tr>
<tr>
<td>Improve the resiliency and reliability of the transportation system.</td>
<td></td>
<td>Preserve and maintain the existing transportation system.</td>
</tr>
<tr>
<td>Emphasize the preservation of the existing transportation system.</td>
<td></td>
<td>Engage a diverse public in the development of the region's transportation system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue to work towards finding dedicated and sustainable revenue sources for transportation to close the funding gap.</td>
</tr>
</tbody>
</table>
PLAN PERFORMANCE

The goals developed for the 2040 LRTP serve as a foundation in which to formulate transportation investment strategies and projects. The goals aim to maximize the utility of transportation dollars within the guidance of Federal, State, and Regional strategies. The HRTPO has established technical approaches to help realize the LRTP goals. These technical approaches include ongoing planning efforts (e.g. congestion management, safety, freight, etc.), the HRTPO Project Prioritization Tool which evaluates candidate projects based on technical merits and regional benefits, the application of the Regional Travel Demand Model, and spatial analyses. Some of these technical approaches produce quantifiable measures and maps and are reported in this document. Other approaches involve monitoring of the transportation system and focused planning studies.

Table 2 on the following page outlines the approaches in place to help achieve the 2040 LRTP goals. This table also documents which quantifiable measures are contained within this document to help gauge the forecasted performance of the plan from a regional perspective. Table 2 also references other planning efforts in place to help move the Hampton Roads region towards realizing its long-range transportation goals.

TERMS TO KNOW

<table>
<thead>
<tr>
<th>Congested Speed</th>
<th>Reduced vehicle speed as a result of congestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBO</td>
<td>Home Based Other - Vehicle trip where one trip end is home (e.g. home to post office)</td>
</tr>
<tr>
<td>HBS</td>
<td>Home Based Shopping - Vehicle trip where one trip end is home and the other trip end is shopping (e.g. home to mall)</td>
</tr>
<tr>
<td>HBW</td>
<td>Home Based Work - Vehicle trip where the trip ends are either home or work (i.e. home to work or work to home)</td>
</tr>
<tr>
<td>Mode Share</td>
<td>The mode or choice of travel (e.g. drive alone in car, share a ride, take transit, etc.)</td>
</tr>
<tr>
<td>NHB</td>
<td>Non Home Based - Vehicle trip where neither trip end is home (e.g. workplace to restaurant)</td>
</tr>
<tr>
<td>Off Peak Period</td>
<td>Time of day when the region experiences lower traffic volumes (i.e. 9 am - 3 pm and 7 pm - 5 am)</td>
</tr>
<tr>
<td>Peak Period</td>
<td>Time of day when the region experiences higher traffic volumes (i.e. 5 am - 9 am and 3 pm - 7 pm)</td>
</tr>
<tr>
<td>Shared Ride 2+</td>
<td>Two or more travelers in a vehicle (e.g. carpool)</td>
</tr>
<tr>
<td>Transit Boarding</td>
<td>A passenger trip made on one transit vehicle. If a passenger boards two buses to get from origin to destination that is considered to be two transit boardings.</td>
</tr>
<tr>
<td>Travel Time</td>
<td>The time required to complete a trip</td>
</tr>
<tr>
<td>VHT</td>
<td>Vehicle Hours Traveled - The total amount of time (in hours) every vehicle in the region travels over a period of time</td>
</tr>
<tr>
<td>VMT</td>
<td>Vehicle Miles Traveled - The total number of miles every vehicle in the region travels over a period of time</td>
</tr>
</tbody>
</table>
# Table 2: 2040 LRTP Goals and Approach Strategy

<table>
<thead>
<tr>
<th>2040 LRTP Goals</th>
<th>Approaches/Regional Efforts</th>
<th>Measures/Planning Efforts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support the economic vitality of the metropolitan area, enabling global</td>
<td>HRTP Project Prioritization Tool Rob's Driving the Economy Study Regional Freight Studies</td>
<td>Access to Jobs (Average Travel Time)</td>
</tr>
<tr>
<td>competitiveness, productivity, and efficiency.</td>
<td></td>
<td>Regional Travel Demand Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Figure 9</td>
</tr>
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<td></td>
<td>Regional Accessibility (for Regional Priority Projects)</td>
<td>GIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maps 16 - 21</td>
</tr>
<tr>
<td></td>
<td>Transit Accessibility</td>
<td>GIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Map 12</td>
</tr>
<tr>
<td></td>
<td>Regional Economic Analysis</td>
<td>Planning Efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to Driving the Economy study (anticipated completion 2016)</td>
</tr>
<tr>
<td></td>
<td>Freight Data</td>
<td>Planning Efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to regional freight planning efforts</td>
</tr>
<tr>
<td>Increase the safety of the transportation system for all users, including</td>
<td>Regional Safety Study (Crash Trends and Locations, Crash Countermeasures)</td>
<td>Fatal and Serious Injuries Avoided Per Year (for Regional Priority Projects)</td>
</tr>
<tr>
<td>minimizing conflicts between motorized and non-motorized modes.</td>
<td>Active Transportation Safety Study Participation with Virginia Strategic Highway Safety Plan</td>
<td>Safety Studies</td>
</tr>
<tr>
<td></td>
<td>and Traffic Records Coordinating Committee HRTP Project Prioritization Tool Performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management Planning Efforts</td>
<td>Table 3</td>
</tr>
<tr>
<td></td>
<td>Performance Management Data</td>
<td>Safety Studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to safety studies</td>
</tr>
<tr>
<td></td>
<td>Performance Management Efforts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to Performance Management planning efforts</td>
</tr>
<tr>
<td>Ensure the security of the region’s transportation infrastructure and its</td>
<td>Regional Evacuation Planning Efforts Urban Area Security Initiative HRTP Project</td>
<td>N/A</td>
</tr>
<tr>
<td>users.</td>
<td>Prioritization Tool</td>
<td>Planning Efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to security/hurricane evacuation planning efforts</td>
</tr>
</tbody>
</table>
### Table 2 Continued: 2040 LRTP Goals and Approach Strategy

<table>
<thead>
<tr>
<th>Goal Area</th>
<th>Method/Source</th>
<th>Tool/Model</th>
<th>Figure/Map</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protect and enhance the environment, promote energy conservation and improve the quality of life.</strong></td>
<td>Reduction in Travel Time/Vehicle Miles Traveled Air Quality Conformity (Hampton Roads is in attainment) Environmental Mitigation Coordination with Regional Environmental Agencies Climate Change/Sea Level Rise Planning Efforts Coordination with Planning District Commission Planning Efforts HRTPO Project Prioritization Tool</td>
<td>Vehicle Miles Traveled Regional Travel Demand Model</td>
<td>Figure 10</td>
</tr>
<tr>
<td></td>
<td>Travel Time Savings (Vehicle Hours Traveled)</td>
<td>Regional Travel Demand Model</td>
<td>Figure 11</td>
</tr>
<tr>
<td></td>
<td>Accessibility (Average Travel Time)</td>
<td>Regional Travel Demand Model</td>
<td>Figure 9</td>
</tr>
<tr>
<td></td>
<td>Transit Boardings</td>
<td>Regional Travel Demand Model</td>
<td>Figure 19</td>
</tr>
<tr>
<td></td>
<td>Mode Share</td>
<td>Regional Travel Demand Model</td>
<td>Figures 17 and 18</td>
</tr>
<tr>
<td></td>
<td>Transit Accessibility</td>
<td>GIS</td>
<td>Map 12</td>
</tr>
<tr>
<td></td>
<td>Bikeable Facilities</td>
<td>GIS</td>
<td>Map 13</td>
</tr>
<tr>
<td></td>
<td>Title VI/Environmental Justice (EJ) Accessibility (by alternate modes)</td>
<td>GIS</td>
<td>Maps 14 and 15</td>
</tr>
<tr>
<td></td>
<td>Air Quality Conformity (in attainment)</td>
<td>N/A (region in attainment)</td>
<td>Refer to the Air Quality section in the 2040 LRTP Transportation Challenges and Strategies Report</td>
</tr>
<tr>
<td><strong>Consider the impact of transportation investments on the environment.</strong></td>
<td>Air Quality Conformity (Hampton Roads is in attainment) Environmental Mitigation Coordination with Regional Environmental Agencies</td>
<td>N/A (region in attainment)</td>
<td>Planning Efforts</td>
</tr>
<tr>
<td><strong>Promote compatibility between transportation improvements and planned land use and economic development patterns.</strong></td>
<td>HRTPO Project Prioritization Tool Regional Land Use Map</td>
<td>N/A</td>
<td>Planning Efforts</td>
</tr>
</tbody>
</table>
### Table 2 Continued: 2040 LRTP Goals and Approach Strategy

<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicator</th>
<th>Methodology</th>
<th>Figures/Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase accessibility and mobility of people and goods.</td>
<td>Travel Time Savings (Vehicle Hours Traveled)</td>
<td>Regional Travel Demand Model</td>
<td>Figure 11</td>
</tr>
<tr>
<td></td>
<td>Reduction in Total Annual Delay (for Regional Priority Projects)</td>
<td>Regional Travel Demand Model</td>
<td>Table 3</td>
</tr>
<tr>
<td></td>
<td>Average Delay – Water Crossings</td>
<td>Regional Travel Demand Model</td>
<td>Figures 12 - 15</td>
</tr>
<tr>
<td></td>
<td>Access to Jobs (Average Travel Time)</td>
<td>Regional Travel Demand Model</td>
<td>Figure 9</td>
</tr>
<tr>
<td></td>
<td>Congested Speeds</td>
<td>Regional Travel Demand Model</td>
<td>Figure 16</td>
</tr>
<tr>
<td></td>
<td>Regional Accessibility (for Regional Priority Projects)</td>
<td>GIS</td>
<td>Maps 16 - 21</td>
</tr>
<tr>
<td></td>
<td>Vehicle Miles Traveled</td>
<td>Regional Travel Demand Model</td>
<td>Figure 10</td>
</tr>
<tr>
<td></td>
<td>Transit Boardings</td>
<td>Regional Travel Demand Model</td>
<td>Figure 19</td>
</tr>
<tr>
<td></td>
<td>Mode Share</td>
<td>Regional Travel Demand Model</td>
<td>Figures 17 and 18</td>
</tr>
<tr>
<td></td>
<td>Transit Accessibility</td>
<td>GIS</td>
<td>Map 12</td>
</tr>
<tr>
<td></td>
<td>Bikeable Facilities</td>
<td>GIS</td>
<td>Map 13</td>
</tr>
<tr>
<td></td>
<td>Title VI/Environmental Justice (EJ) Accessibility (by alternate modes)</td>
<td>GIS</td>
<td>Maps 14 and 15</td>
</tr>
<tr>
<td></td>
<td>Fatal and Serious Injuries Avoided Per Year (for Regional Priority Projects)</td>
<td>Safety Studies</td>
<td>Table 3</td>
</tr>
<tr>
<td></td>
<td>Congestion Data</td>
<td>Congestion Management Process and Regional Travel Demand Model</td>
<td>Refer to CMP studies and Maps 2 – 11</td>
</tr>
</tbody>
</table>
Table 2 Continued: 2040 LRTP Goals and Approach Strategy

| Provide a variety of transportation options that accommodates all users. | Multimodal Transportation Planning Efforts  
Transit Vision Plan  
TRAFFIX  
HRTPO Project Prioritization Tool | Mode Share | Regional Travel Demand Model | Figures 17 and 18 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Transit Accessibility</td>
<td>GIS</td>
<td>Map 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bikeable Facilities</td>
<td>GIS</td>
<td>Map 13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title VI/Environmental Justice (EJ) Accessibility (by alternate modes)</td>
<td>GIS</td>
<td>Maps 14 and 15</td>
</tr>
</tbody>
</table>

| Increase the coordination of the transportation system, across and between modes, for people and goods. | Multimodal Transportation Planning Efforts  
Transit Vision Plan  
Regional Freight Studies  
HRTPO Project Prioritization Tool | N/A | Planning Efforts | Refer to Transit Vision Plan, regional freight planning efforts, and multimodal transportation planning efforts |

| Promote an efficient and reliable regional transportation system. | Performance Management Planning Efforts  
Congestion Management Process  
Intelligent Transportation Systems/Operations  
Traffic Incident Management Coordination of Hampton Roads Transportation Operations (HRTO) Subcommittee  
Climate Change/Sea Level Rise Planning Efforts  
HRTPO Project Prioritization Tool | Travel Time Savings (Vehicle Hours Traveled) | Regional Travel Demand Model | Figure 11 |
<p>| | | Reduction in Total Annual Delay (for Regional Priority Projects)* | Regional Travel Demand Model | Table 3 |
| | | Average Delay – Water Crossings | Regional Travel Demand Model | Figures 12 - 15 |
| | | Fatal and Serious Injuries Avoided Per Year (for Regional Priority Projects) | Safety Studies | Table 3 |
| | | Congestion and Reliability Data | Congestion Management Process | Refer to CMP studies, ITS and Operations planning efforts, and sea level rise planning efforts |
| | | Crash Data | Safety Studies | Refer to safety studies |</p>
<table>
<thead>
<tr>
<th>Preserve and maintain the existing transportation system.</th>
<th>Performance Management Planning Efforts Regional Bridge Study</th>
<th>Pavement/Bridge Condition</th>
<th>Performance Management Efforts</th>
<th>Refer to Performance Management planning efforts and regional bridge study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage a diverse public in the development of the region’s transportation system.</td>
<td>Public Participation Plan/implementation</td>
<td>N/A</td>
<td>Public Involvement Efforts</td>
<td>Refer to the 2040 LRTP Public Involvement documentation (anticipated completion June 2016) and other HRTPO public involvement planning efforts</td>
</tr>
<tr>
<td>Continue to work towards finding dedicated and sustainable revenue sources for transportation to close the funding gap.</td>
<td>HRTAC Public/Private Partnerships Tolls Legislative Action Local Contribution</td>
<td>N/A</td>
<td>Planning Efforts</td>
<td>Refer to 2040 LRTP Funding Plan and Transportation Challenges and Strategies reports</td>
</tr>
</tbody>
</table>
TABLE 3: HAMPTON ROADS REGIONAL PRIORITY PROJECTS - IMPACTS TO CORRIDOR

<table>
<thead>
<tr>
<th>Regional Priority Project</th>
<th>Reduction in Total Annual Delay</th>
<th>Fatal and Serious Injuries Avoided per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-64 Peninsula Widening</td>
<td>1,205,300 Hours (79%)</td>
<td>11.9</td>
</tr>
<tr>
<td>I-64/I-264 Interchange</td>
<td>236,200 Hours (87%)</td>
<td>1.4</td>
</tr>
<tr>
<td>I-64 Southside Widening/High Rise Bridge</td>
<td>858,702 Hours (87%)</td>
<td>3.2</td>
</tr>
<tr>
<td>Hampton Roads Harbor Crossing</td>
<td>Project Supplemental Environmental Impact Statement (SEIS) underway.</td>
<td></td>
</tr>
<tr>
<td>US Route 460/58/13 Connector</td>
<td>N/A</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Figure 9: Average Travel Time by Trip Purpose

Average Travel Time by Trip Purpose (Peak Period)

Average Travel Time by Trip Purpose (Off Peak Period)
**Figure 10: Forecasts Vehicle Miles Traveled (VMT)**

**Forecasted Total VMT vs. Severe VMT**

- **Existing**: Total VMT - 6.5%, Severe VMT - 20.4%
- **2040 No Build**: Total VMT - 15.3%, Severe VMT - 20.4%
- **2040 Build**: Total VMT - 15.3%, Severe VMT - 15.3%

The chart illustrates the comparison between total and severe vehicle miles traveled under different scenarios.
Figure 11: Forecasted Reduction in Severely Congested Travel (Travel Time Savings)

- **Existing**: 117,800
- **2040 No Build**: 496,500
- **2040 Build**: 365,800

26% reduction in travel time.
Corridors Crossing the Elizabeth River

Average AM Delay – towards Virginia Beach

Figure 12: Average Morning Delay - Elizabeth River
Corridors Crossing the Elizabeth River

Average PM Delay – towards Suffolk
Figure 14: Average Morning Delay - Hampton Roads Harbor

Corridors Crossing the Hampton Roads Harbor

Average AM Delay – towards Southside

<table>
<thead>
<tr>
<th>Corridor</th>
<th>No Build</th>
<th>Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRBT</td>
<td>26 min</td>
<td>17 min</td>
</tr>
<tr>
<td>Monitor-Merrimac</td>
<td>14 min</td>
<td>8 min</td>
</tr>
</tbody>
</table>

35% decrease.
FIGURE 15: AVERAGE AFTERNOON DELAY - HAMPTON ROADS HARBOR

Corridors Crossing the Hampton Roads Harbor

Average PM Delay – towards the Peninsula

<table>
<thead>
<tr>
<th></th>
<th>2040 No Build</th>
<th>Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRBT</td>
<td>41 min</td>
<td>27 min</td>
</tr>
<tr>
<td>Monitor-Merrimac</td>
<td>13 min</td>
<td>7 min</td>
</tr>
</tbody>
</table>

- 29 minutes
- 18 minutes
- 38%
Figure 16: Forecasted Average Congested Speeds

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>2040 No Build</th>
<th>2040 Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate</td>
<td>56.9</td>
<td>51.6</td>
<td>53.7</td>
</tr>
<tr>
<td>Arterial</td>
<td>39.9</td>
<td>37.4</td>
<td>38.1</td>
</tr>
</tbody>
</table>
Figure 17: Forecasted Mode Share (Peak Period)

HBW Mode Splits - Peak Period

HBO Mode Splits - Peak Period

NHB Mode Splits - Peak Period

Existing

2040 No Build

2040 Build
**Figure 18: Forecasted Mode Share (Off Peak Period)**

- **HBW Mode Splits - Off Peak Period**
  - Trips vs. Mode (Drive Alone, Shared Ride 2+, Walk/Drive to Transit)

- **HBO Mode Splits - Off Peak Period**
  - Trips vs. Mode (Drive Alone, Shared Ride 2+, Walk/Drive to Transit)

- **NHB Mode Splits - Off Peak Period**
  - Trips vs. Mode (Drive Alone, Shared Ride 2+, Walk/Drive to Transit)

Legend:
- **Existing**
- **2040 No Build**
- **2040 Build**
Figure 19: Forecasted Transit Boardings

Peak Period

- Existing: 29,900
- 2040 No Build: 37,600
- 2040 Build: 37,900

Off Peak Period

- Existing: 22,600
- 2040 No Build: 28,100
- 2040 Build: 29,300
MAP 2: FORECASTED TRAFFIC VOLUME - EXISTING

Traffic Volume Map (Daily) - Existing Conditions

Legend
- Less than 5,000
- 5,001 to 10,000
- 10,001 to 20,000
- 20,001 to 30,000
- 30,001 to 40,000
- More than 40,001

Based on Regional Travel Demand Model
Map 3: Forecasted 2040 Traffic Volume - No Build

Forecasted 2040 Traffic Volume Map (Daily) - No Build

Legend
- Less than 5,000
- 5,001 to 10,000
- 10,001 to 20,000
- 20,001 to 30,000
- 30,001 to 40,000
- More than 40,000

Based on Regional Travel Demand Model
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
Traffic Congestion Level (Daily) - Existing Conditions

Legend
- Free
- Moderate
- Severe

Based on Regional Travel Demand Model
MAP 8: FORECASTED 2040 TRAFFIC CONGESTION LEVEL - NO BUILD

Forecasted 2040 Traffic Congestion Level (Daily) - No Build

Legend
- Free
- Moderate
- Severe

Based on Regional Travel Demand Model
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
Note: Since the Hampton Roads Crossing Study (HRCS) Supplemental Environmental Impact Statement (SEIS) is currently underway, 3 alternatives were analyzed as a potential Phase 1 of the Locally Preferred Alternative.
MAP 13: EXISTING ACTIVE TRANSPORTATION FACILITIES IN HAMPTON ROADS
Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTPO) planning area compared to the total population.
Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTPO) planning area compared to the total population.
MAP 16: I-64 PENINSULA 2040 TRIP LOCATIONS

MAP 17: I-64/I-264 INTERCHANGE (EASTBOUND ONLY) 2040 TRIP LOCATIONS

1 Dot = 100 Trip Ends
There are two trip ends for each trip, one at the place of origin and one at the destination.
**Map 19: I-64 Southside 2040 Trip Locations**

1 Dot = 100 Trip Ends
There are two trip ends for each trip, one at the place of origin and one at the destination.

**Map 18: Hampton Roads Crossing - HRCS Alternative A 2040 Trip Locations**

1 Dot = 100 Trip Ends
There are two trip ends for each trip, one at the place of origin and one at the destination.
MAP 20: HAMPTON ROADS CROSSING – HRCS ALTERNATIVE C 2040 TRIP LOCATIONS

1 Dot = 100 Trip Ends
There are two trip ends for each trip, one at the place of origin and one at the destination.

MAP 21: US ROUTE 460/58/13 CONNECTOR 2040 TRIP LOCATIONS

1 Dot = 100 Trip Ends
There are two trip ends for each trip, one at the place of origin and one at the destination.
Title VI/Environmental Justice Analysis

Environmental Justice (EJ), as it relates to transportation planning, combines environmental awareness with racial, ethnic, and social awareness to ensure that transportation projects do not unfairly burden populations that may experience barriers to mobility. Central to the heart of EJ is the right to a safe, healthy, productive, and sustainable environment for all communities.

As part of the Title VI/EJ Analysis for the 2040 LRTP, 9 Title VI/EJ populations were identified:

- Minorities
- Low Income Households
- Elderly
- Disabled
- Households without Vehicles
- Female Heads of Household
- Households Receiving Cash Public Assistance
- Households Receiving Food Stamps
- Limited-English-Proficiency Population

The HRTPO is committed to the principles of Environmental Justice and has taken steps to better inform and include those who traditionally have been left out of the transportation planning process. During the development of the 2040 LRTP, staff applied a Seven-Step methodology to identify, conduct outreach, evaluate, and document EJ considerations.

Seven-Step Environmental Justice Evaluation

The Seven-Step Environmental Justice Evaluation provides a structured approach for preparing an EJ analysis and developing an effective public involvement strategy. The Seven-Step framework sets out to:

- Identify EJ indicators
- Identify geographical areas for analysis
- Identify EJ communities
- Assign impact extent for projects
- Identify affected EJ communities
- Determine the extent of the impact
- Develop and implement Environmental Justice public participation strategies for 2040 LRTP candidate projects

The details of these steps and the overall Title VI/EJ analysis on the 2040 LRTP can be found in the 2040 LRTP Candidate Project Evaluation: Title VI/Environmental Justice Methodology Report. The report covers the process used to determine the potential impacts of transportation projects on EJ communities. Impact scores found in that report depict degree of impact and not specific types of impact (since both positive and negative impacts could be associated with each specific project). The report also notes that strategic enhanced public involvement strategies should be implemented in Environmental Justice communities that are highly affected by projects.
**Title VI/Environmental Justice Toolkit**

Based on the analysis of the geographic distribution of candidate projects to EJ communities and citizen input, HRTPO staff has developed specific outreach strategies geared towards reaching out to and engaging those who have traditionally been underconsidered in the transportation planning process. Efforts are tailored within communities where traditionally underrepresented populations exist. These strategies come in the form of an Environmental Toolkit that contains different approaches for each of the 9 Title VI/EJ communities identified during the 2040 LRTP planning process.

The Toolkit will facilitate the assessment of each project and will include a review of the goals and purposes of public involvement for the project itself. It will also outline the most effective public involvement approach that is most suited to each particular project and Title VI/EJ community that the project may impact. This will be accomplished by analyzing each Title VI/EJ population and outlining the best way to reach and meaningfully involve each population group.

**Title VI/Environmental Justice Impact Scores Maps**

For the 2040 LRTP, the Title VI/EJ impacts scores developed as part of the EJ Methodology were summarized for each project on the fiscally-constrained list. Projects identified as having a potential impact on an associated Title VI/EJ community above the regional map are depicted on Maps XX-XX on the following pages. Additionally, HRTPO staff has also created a story map that is available online. This online resource contains 11 maps visualizing the 2040 LRTP fiscally-constrained projects in relation to affected Title VI/EJ communities.
Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTPO) planning area compared to the total population.
Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTP0) planning area compared to the total population.
Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTPO) planning area compared to the total population.
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Using data from the 2009-2013 American Community Survey (ACS) 5-Year Estimates, the Regional Average is defined as the percentage of the EJ group’s population in the Hampton Roads Transportation Planning Organization’s (HRTPO) planning area compared to the total population.
MAP 31: SUMMARY OF 2040 LRTP TITLE VI/ENVIRONMENTAL JUSTICE POTENTIAL IMPACT SCORES
**Regional Performance Measures**

A key feature of MAP-21 (and continued under the FAST Act) is the establishment of national performance goals in the areas of safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays. This legislation also requires Metropolitan Planning Organizations (MPOs) to prepare and set targets for the following federally-established performance measures:

- Roadway Safety
- Transit Asset Management
- Bridge Condition
- Pavement Condition
- Roadway Performance
- Freight Movement
- On-road mobile source emissions and traffic congestion for CMAQ Program (for non-attainment areas)

In addition, federal legislation requires that the regional long-range transportation planning process:

- Shall include a description of the federally required performance measures and targets used in assessing the performance of the transportation system.
- Shall include a system performance report evaluating the condition and performance of the transportation system with respect to the targets including progress achieved by the MPO towards meeting the performance targets.
- MPOs that elect to conduct scenario planning shall describe how the preferred scenario has improved performance of the system.

The HRTPO will annually prepare a report on regional performance measures and targets. The initial version of the *HRTPO Regional Performance Measures: System Performance Report* was released in April 2019. This report includes an introduction to the target setting process, a description of the methodology used to calculate each measure, historical data trends for each of the areas, information on statewide targets, a description of the targets that have been established by the HRTPO, and the progress being made towards meeting the established targets.

The HRTPO Regional Performance Measures: System Performance Report will be updated on an annual basis to reflect updated targets as well as progress towards meeting the targets. In addition, HRTPO also maintains a web page [https://www.hrtpo.org/page/regional-performance-measures-and-targets](https://www.hrtpo.org/page/regional-performance-measures-and-targets) that provides information on these regional performance measures and targets as well as the most recent version of the System Performance Report.
The HRTPO has established initial performance targets in each of the areas required by federal legislation, which are described both on the following pages and in the System Performance Report. Setting the initial HRTPO targets was a collaborative effort. The Transportation Technical Advisory Committee (TTAC) recommended targets for the HRTPO Board to consider. In order to assist the TTAC, the committee formed a Performance Measure Working Group. This Working Group included staff from localities, transit agencies, VDOT, and subject-matter experts.

The HRTPO Board established initial roadway safety targets on February 15, 2018 and Transit Asset Management targets on August 29, 2018. The remaining initial targets were established by the HRTPO Board on October 18, 2018.
ROADWAY SAFETY

The first performance targets that had to be established by MPOs are in the area of roadway safety. There are five safety measures that MPOs are required to establish targets and monitor progress for:

- Fatalities
- Fatality Rate
- Serious Injuries
- Serious Injury Rate
- Bike/Pedestrian Fatalities & Serious Injuries (combined)

Based on the advice of the Performance Measures working group and the TTAC, the HRTPO Board established the following roadway safety targets for 2020 at their January 2020 meeting:

**Table 4: 2020 HRTPO Safety Performance Targets**

<table>
<thead>
<tr>
<th>2020 SAFETY PERFORMANCE TARGETS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>124</td>
</tr>
<tr>
<td>Fatality Rate (per 100 Million VMT)</td>
<td>0.84</td>
</tr>
<tr>
<td>Serious Injuries</td>
<td>1,448</td>
</tr>
<tr>
<td>Serious Injury Rate (per 100 Million VMT)</td>
<td>9.85</td>
</tr>
<tr>
<td>Number of Bike/Pedestrian Fatalities and Serious Injuries Combined</td>
<td>163</td>
</tr>
</tbody>
</table>

Each of these safety targets is based on the Vision Zero concept, where the number of fatalities, serious injuries, and non-motorized fatalities and serious injuries is reduced by a set amount each year to reach a goal of zero by 2045, the horizon of the upcoming regional Long-Range Transportation Plan. An anticipated increase in vehicle-miles of travel of 1.7% annually was assumed for the fatality and serious injury rates, which is equal to the rate assumed by VDOT for statewide targets.
The following charts show the 2020 targets established by the HRTPO, along with historical data, for the number of roadway fatalities, serious injuries, and bike/pedestrian fatalities and serious injuries in Hampton Roads:

**Figure 22: Hampton Roads Safety Targets and Data**

**Hampton Roads Fatalities**

**Hampton Roads Serious Injuries**

**Hampton Roads Bike/Pedestrian Fatalities & Serious Injuries**
**Transit Asset Management**

The Federal Transit Administration’s (FTA) Performance Based Planning final rule requires transit performance measures in the area of state of good repair, also referred to as transit asset management (TAM). MPOs are required to establish regional targets and monitor progress in the following areas:

**Table 5: Transit Asset Management Performance Targets**

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Performance Measure</th>
<th>Asset Classes</th>
<th>2020 HRTPO Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling Stock</td>
<td>% of revenue vehicles within each asset class that have met or exceeded their useful life benchmark</td>
<td>Buses, ferry boats, light rail vehicles, trolley buses, vans.</td>
<td></td>
</tr>
<tr>
<td>Equipment/Service Vehicles</td>
<td>% of vehicles that have met or exceeded their useful life benchmark</td>
<td>Non-revenue automobiles, trucks, other rubber tire vehicles</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>% of track segments, signals, and systems with performance restrictions</td>
<td>Light rail infrastructure</td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td>% of facilities in each asset class rated under 3.0 on FTA’s TERM scale</td>
<td>Passenger facilities, parking facilities, maintenance facilities, administrative facilities</td>
<td></td>
</tr>
</tbody>
</table>

Three transit agencies operate within the Hampton Roads Metropolitan Planning Area – Hampton Roads Transit (HRT), the Williamsburg Area Transit Authority (WATA), and Suffolk Transit. HRT, as a Tier I transit agency, must develop and carry out their own TAM plans. As Tier II transit agencies, WATA and Suffolk Transit are eligible to participate in group TAM plans. WATA and Suffolk Transit are using the statewide targets that were established by the Virginia Department of Rail and Public Transportation.

The HRTPO established regional transit asset management targets at their January 2020 meeting based on a weighted average of HRT, WATA, and Suffolk Transit Fiscal Year 2020 targets. These targets are:

**Table 6: Regional Transit Asset Management Targets**

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Performance Measure</th>
<th>Asset Classes</th>
<th>2020 HRTPO Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling Stock</td>
<td>% of revenue vehicles within each asset class that have met or exceeded their useful life benchmark</td>
<td>Bus</td>
<td>&lt; 19%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cutaway Buses</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ferry Boat</td>
<td>&lt; 33%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Light Rail Vehicles</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minibus</td>
<td>&lt; 20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trolley Buses</td>
<td>&lt; 3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Van</td>
<td>&lt; 25%</td>
</tr>
<tr>
<td>Equipment/Service Vehicles</td>
<td>% of vehicles that have met or exceeded their useful life benchmark</td>
<td>Non-Revenue/Service Vehicles</td>
<td>&lt; 66%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trucks &amp; Other Rubber Tire Vehs</td>
<td>&lt; 13%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>% of track segments, signals, and systems with performance restrictions</td>
<td>Light Rail Infrastructure</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>Facilities</td>
<td>% of facilities in each asset class rated under 3.0 on FTA’s TERM scale</td>
<td>Passenger/Parking</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance</td>
<td>&lt; 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrative</td>
<td>&lt; 10%</td>
</tr>
</tbody>
</table>
**Bridge Condition**

This measure examines the condition of bridges on the National Highway System (NHS) – including on- and off-ramps connected to the NHS – on a regional basis. In order to be included, the bridge must meet National Bridge Inventory (NBI) standards. These standards include:

- The structure must be located on roadways open to the general public. Bridges located within the security perimeter of military bases and other secure federal facilities are not included.
- The bridge must carry a roadway. Structures that carry only railroad or pedestrian traffic are not included.
- The bridge must be more than 20 feet in length. Culverts are included, as long as the opening in the culvert is more than 20 feet in length.

Bridges are classified as being in good, fair, or poor condition based on the lowest of the condition ratings of the bridge’s deck, superstructure, and substructure. For culverts, the classification is based on the culvert condition rating. These classification thresholds are shown in the table below.

For example, if a structure has a deck condition rated as a 7, a superstructure condition rated as a 4, and a substructure condition rated as a 5, then the structure is classified as being in poor condition based on the lowest condition rating of 4.

After each NBI bridge on the NHS is classified as being in good, fair, or poor condition, the deck area of each bridge is calculated by multiplying the full width of the bridge by the bridge’s length. The total deck area of each good bridge, fair bridge, and poor bridge throughout the region is summed together, and then divided by the total deck area of all NBI bridges on the NHS in the entire region. This produces a total regional percentage of bridges that are in good condition, fair condition, and poor condition. The regional percentages of NBI bridge deck area in good and poor condition on the NHS are tracked for regional targets.

The HRTPO Board established the following bridge condition targets for 2021:

**Table 7: Four-Year Bridge Condition Performance Targets**

<table>
<thead>
<tr>
<th>2021 Bridge Condition Targets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of NHS Bridge Deck Area in</td>
<td>&gt; 20%</td>
</tr>
<tr>
<td>Good Condition</td>
<td></td>
</tr>
<tr>
<td>Percentage of NHS Bridge Deck Area in</td>
<td>&lt; 3%</td>
</tr>
<tr>
<td>Poor Condition</td>
<td></td>
</tr>
</tbody>
</table>
The following charts show the four-year targets established by the HRTPO, along with historical data, for the percentage of NHS bridge deck area in good and poor condition in Hampton Roads:

**Figure 23: Hampton Roads Bridge Condition Targets and Data**

**Hampton Roads Percentage of NHS Bridge Deck Area in Good Condition**

**Hampton Roads Percentage of NHS Bridge Deck Area in Poor Condition**
**Pavement Condition**

This measure examines the condition of roadway pavement on the National Highway System (NHS). The percentage of the region’s Interstate system pavement in good and poor condition is measured as is the percentage of the region’s Non-Interstate NHS pavement. This measure only includes through travel lanes; ramps, shoulders, turn lanes, crossovers, etc. are not included in this analysis.

The following metrics are used in determining the pavement condition of each NHS roadway:

- **International Roughness Index (IRI)** – IRI is used to determine the ride quality based on the smoothness of pavement. It is measured in inches per mile of roadway.
- **Rutting and Faulting** – Rutting is a surface depression in the wheel path of asphalt roadways, and faulting is the difference in elevation across joints or cracks in jointed concrete.
- **Cracking** – Cracking measures the percentage of roadway surface area where cracks are present.
- **Present Serviceability Rating (PSR)** – If the posted speed limit is less than 40 mph, the PSR can be used in place of the metrics above to determine the condition of the pavement.

Each of these aspects of each NHS roadway segment’s pavement is rated as good, fair, or poor. These ratings are assigned based on the table above.

For roadways with a posted speed limit below 40 mph, the PSR can be used for determining the overall condition of the pavement. Otherwise, the overall condition of each section of NHS roadway is determined based on the pavement type and the appropriate metrics described previously. As shown in the figure below, for a section to be in good condition, all of the appropriate metrics must be rated as good. Roadway sections are determined to be in poor condition if two of the three metrics (IRI, cracking, and rutting/faulting) are rated poor for asphalt and jointed concrete, or both metrics (IRI and cracking) are rated poor for continuous concrete.
The HRTPO Board established the following pavement condition targets for 2021:

**Table 8: Four-Year Pavement Condition Performance Targets**

<table>
<thead>
<tr>
<th>2021 Pavement Condition Targets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Interstate System pavement in Good Condition</td>
<td>&gt; 45%</td>
</tr>
<tr>
<td>Percentage of Interstate System pavement in Poor Condition</td>
<td>&lt; 3%</td>
</tr>
<tr>
<td>Percentage of Non-Interstate NHS pavement in Good Condition</td>
<td>&gt; 25%</td>
</tr>
<tr>
<td>Percentage of Non-Interstate NHS pavement in Poor Condition</td>
<td>&lt; 5%</td>
</tr>
</tbody>
</table>
The following charts show the four-year targets established by the HRTPO, along with historical data, for the percentage of Interstate and Non-Interstate NHS pavement in good and poor condition in Hampton Roads:

**Figure 24: Hampton Roads Pavement Condition Targets and Data**

**Hampton Roads Percentage of Interstate Pavement in Good Condition**

**Hampton Roads Percentage of Interstate Pavement in Poor Condition**

**Hampton Roads Percentage of Non-Interstate NHS Pavement in Good Condition**

**Hampton Roads Percentage of Non-Interstate NHS Pavement in Poor Condition**
ROADWAY PERFORMANCE

This measure examines the roadway performance of the National Highway System (NHS) based on the person-miles travelled that are classified as reliable. The reliability of the system is calculated using a new metric referred to as the Level of Travel Time Reliability (LOTTR). The LOTTR is defined as the ratio of the 80th percentile travel time to the mean (50th percentile) travel time.

Travel times throughout the year are divided into four reporting periods: Weekday morning peak, weekday midday, weekday afternoon peak, and weekends. The time of day that each period represents is shown below:

A LOTTR ratio is calculated for each Interstate segment and Non-Interstate NHS segment by direction for each of these time periods over the course of an entire year. This produces a total of four LOTTR ratios for each Interstate and Non-Interstate NHS segment. Segments are considered to be not reliable if any of these four LOTTR ratios are 1.50 or greater. For a segment to be classified as reliable, all four LOTTR ratios must be below 1.50. An example of this calculation is shown below.

Each Interstate and Non-Interstate NHS segment in the region follows this procedure to determine whether the segment is reliable or not reliable. Each of the reliable individual Interstate and Non-Interstate NHS segments are then multiplied by the length of that particular segment, the annual vehicle volume on that segment, and an occupancy factor based on the average number of persons per vehicle that converts vehicular travel to person travel. These products are added together for the entire Interstate and Non-Interstate NHS network and divided by the same factors for the entire system to produce the regional percentage of reliable person-miles of travel on the Interstate and Non-Interstate NHS systems. An example of this calculation is shown on the next page.
The HRTPO Board established the following roadway performance targets for 2021:

**Table 9: Four-Year Roadway Performance Targets**

<table>
<thead>
<tr>
<th>2021 Roadway Performance Targets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate Travel Time Reliability (% reliable person-miles)</td>
<td>&gt; 82%</td>
</tr>
<tr>
<td>Non-Interstate NHS Travel Time Reliability (% reliable person-miles)</td>
<td>&gt; 82.5%</td>
</tr>
</tbody>
</table>
The following charts show the four-year targets established by the HRTPO, along with historical data, for the percentage of reliable person-miles of travel in Hampton Roads:

**Figure 25: Hampton Roads Roadway Performance Targets and Data**

Hampton Roads Percentage of Reliable Interstate Person-Miles of Travel

Hampton Roads Percentage of Reliable Non-Interstate NHS Person-Miles of Travel
Freight

This measure examines the reliability of moving freight via truck on the regional Interstate system. The reliability of freight movement is calculated using a new metric referred to as the Truck Travel Time Reliability (TTTR) Index. The TTTR ratio is defined as the ratio of the 95th percentile travel time for trucks to the mean (50th percentile) travel time for trucks.

Truck travel times throughout the year are divided into five reporting periods: Weekday morning peak, weekday midday, weekday afternoon peak, weekends, and overnight. The time of day that each period represents is shown below.

These individual Interstate segment Maximum TTTR ratios are then multiplied by the length of that particular segment. These products are added together for the entire region and divided by the total directional length of the regional Interstate system to produce the regional Truck Travel Time Reliability Index. An example of this calculation is shown below.

A TTTR ratio is calculated for each Interstate segment by direction for each of these time periods over the course of an entire year. This produces a total of five TTTR ratios for each Interstate segment. For each segment, the maximum of these five TTTR ratios is determined and used to calculate the regional index. This calculation is highlighted to the right.
The HRTPO Board established the following roadway performance targets for 2021:

**Table 10: Four-Year Freight Target**

<table>
<thead>
<tr>
<th>2021 Freight Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck Travel Time Reliability Index</td>
</tr>
<tr>
<td>(Interstate System)</td>
</tr>
<tr>
<td>&lt; 2.13</td>
</tr>
</tbody>
</table>
The following chart shows the four-year target established by the HRTPO, along with historical data, for the percentage of reliable travel for freight in Hampton Roads:

**Figure 26: Hampton Roads Freight Target and Data**

Hampton Roads Interstate Truck Travel Time Reliability Index
**SUMMARY**

The 2040 LRTP identifies $12.8 billion in planned transportation projects and studies to help position the Hampton Roads region in achieving its vision of developing a well-balanced transportation system that promotes good quality of life while enhancing the unique character of the region.

In evaluating the plan performance of the 2040 LRTP, congestion is expected to increase in the future largely due to the anticipated increase in regional population and employment. In comparing the ‘Build’ and ‘No Build’ scenarios for 2040, travel during severe congestion is anticipated to decrease in terms of distance and time: 5.1% reduction in Vehicle Miles Traveled (VMT) and 26% reduction in Vehicle Hours of Travel (VHT) during severe congestion. Results also indicate that average travel times will decrease slightly and congested speeds on Interstates and Arterials will increase, which are additional indications of reduced congestion. Transit boardings are also anticipated to increase by 2040; as the regional transit system continues to improve and expand, forecasted boardings will likely continue to grow. With the implementation of the Regional Priority Projects, total annual delay along these critical corridors is forecasted to decrease significantly; additionally, safety is expected to improve resulting in fewer fatal and serious injuries.

Although the 2040 LRTP does not solve congestion issues entirely, the plan includes projects that reduce congestion during severe conditions, resulting in improved quality of life and economic vitality. The transit studies in the plan will help identify the best path for expanding the TIDE light rail starter line; and the active transportation projects included for construction further enhance the multimodal aspect of the overall transportation system, providing residents and visitors with transportation options across the region.

**NEXT STEPS IN THE DEVELOPMENT OF THE 2040 LRTP**

The next step in the long-range transportation planning process will be the documentation of Public Outreach efforts. The anticipated adoption of the 2040 LRTP is scheduled for the summer of 2016.