Acknowledgement
This document was prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration (FHWA), and the Virginia Department of Transportation (VDOT).

Disclaimer
The contents of this document reflect the views of the Tri-Cities Area Metropolitan Planning Organization. The staff of the Crater Planning District Commission 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 Federal Highway Administration (FHWA), the Virginia Department of Transportation (VDOT), or the Crater Planning District Commission (CPDC). This report does not constitute a standard, specification, or regulation. FHWA or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvement 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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Section 1 – Introduction
The Safe, Accountable, Flexible, Efficient, Transportation, and Equity Act: A Legacy for Users
(SAFETEA-LU) was established under federal law in 2005. SAFETEA-LU authorizes surface
transportation programs for highways, highway safety, and transit for federal fiscal years 2004-09.
This legislation enhanced the current metropolitan transportation planning process with the addition
of provision for consultation with environmental resource agencies and for consideration of
transportation security as a separate planning factor. Following issuance of final guidance by the
U.S. Department of Transportation in February 2007 for implementation of SAFETEA-LU, the Tri-
Cities Metropolitan Planning Organization (MPO) completed revisions to the 2031 Transportation
Plan narrative in June 2008 to make the long range plan compliant with SAFETEA-LU metropolitan
planning requirements. Since the SAFETEA-LU 6-year authorization period expired, a series of
extensions have been made at the federal level; however, at the time of this update no
reauthorization of a multi-year federal bill has been enacted by the U.S. Congress. The assumption
has been made the current applicable federal metropolitan transportation planning requirements will
continue.

Updated planning assumptions, such as 2035 socio-economic forecast and the 2035 transportation
revenue forecast have been completed and included in this document. The list of financially
constrained projects has been revised based on a newly instituted regional prioritization procedure
implemented by the MPO during the fall of 2011. The recommended project improvement list has
been prioritized as a single list by the MPO on a regional basis for each highway functional
classification grouping, including interstate, arterial, collector and local facilities. Prior to the 2035
update, only candidate RSTP and CMAQ projects have been prioritized by the MPO on a regional
basis. The 2035 update is the first time a regional prioritization of all candidate projects by
functional classification has been completed in the Tri-Cities Area.

The 2035 financial forecast was developed by VDOT and provided to the MPO during the summer
of 2011. The draft air quality conformity analysis of the Year 2035 Transportation Plan was
completed and authorized for public review in June of 2012. Endorsement of the 2035 Plan and the
Conformity Analysis report of improvement projects recommended in this document are scheduled
for MPO action before September 16, 2012.

The goals and objectives statement for the Year 2035 Transportation Plan places emphasis on
alternative transportation modes, economic development, comprehensive plan compatibility and
public involvement. As a method of assessing attainment of these goals and objectives, the Tri-
Cities MPO adopted regional land use and transportation performance measures. Section 4
contains the list of State performance measures currently monitored by the Tri-Cities MPO.
Section 2 includes historical and projected demographic information for the transportation study
area for population, employment, and housing change within the MPO study area. In addition,
the distribution of minority, elderly, disabled, limited English proficiency and low income
population within the transportation study area are graphically displayed using the 2010 U.S.
Census tract information in Appendix B. Section 3 discusses the trends in land development
patterns and the type of land use planning activities occurring in the metropolitan area.
Information on general environmental constraints in the study area is identified. Section 4 also
presents functional classification and congestion information on highway facilities. Section 5
includes a summary of intermodal element, including existing transit facilities and a description
of transit service delivery. General information on available modes of transportation in the
region is also provided. Section 6 provides an overview of current transportation plans and
programs in the Tri-Cities area, including the adopted Tri-Cities MPO Public Participation Plan.
Summary information on the 2006 Fort Lee Expansion Traffic Study and the Crater Growth
Management Plan is also provided in this section. Section 7 includes a discussion of several
transportation planning related activities.
Transportation Goals and Objectives for the Tri-Cities Area

This statement of transportation goals and objectives was developed under the direction of the Tri-Cities Area Transportation MPO and Technical Committee for the purpose of helping to determine the purpose and need for transportation projects listed in the Year 2035 Transportation Plan. These goals and objectives reflect community values and are intended to complement local comprehensive and land development plans. Further, governmental agencies may use this statement as an indication of the public interest when performing legislated responsibilities. While all of these goals may not be fully achieved with the implementation of the Tri-Cities Year 2035 Transportation Plan, some movement toward the desired objectives will be realized. The objectives may be considered as relative measures of goal attainment.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Develop a regional transportation plan which offers alternative travel modes for the safe and efficient movement of people and freight at a reasonable cost.</th>
</tr>
</thead>
</table>
| Objectives | • Promote pedestrian and vehicular travel safety.  
• Reduce travel time and transportation costs.  
• Assure the future availability of transit service.  
• Participate in regional and State airport and freight movement studies.  
• Promote the use of low cost improvements and energy conservation measures to maximize the efficiency of the existing transportation system.  
• Promote transportation security considerations, especially at military installations located in the transportation study area. |

<table>
<thead>
<tr>
<th>Goal</th>
<th>Assure transportation improvements are compatible with local comprehensive plans, regional economic development activities, and environmental regulations.</th>
</tr>
</thead>
</table>
| Objectives | • Encourage the implementation of future transportation improvements which complement current land-development plans and regional economic development activities.  
• Promote the reduction of mobile source air emissions. |

<table>
<thead>
<tr>
<th>Goal</th>
<th>Improve the urban transportation planning process by encouraging citizen input and intergovernmental cooperation.</th>
</tr>
</thead>
</table>
| Objectives | • Follow the provisions of adopted public participation process regarding resource agency consultation and stakeholder involvement.  
• Maximize local government input into the development of area-wide transportation plans through the maintenance of a continuing transportation planning process. |

The implementation of projects from this plan should benefit the overall social, economic and environmental well being of the Tri-Cities Area. Improvements to the transportation system will provide for more efficient movement of people and goods and ensure accessibility to the system for all residents of the Tri-Cities. Because an efficient transportation system is vital to area economic health, planned improvements to the Tri-Cities transportation system should also benefit the regional economy. The improvements included in the metropolitan transportation plan are intended to benefit the area, socially and economically, with minimum adverse environmental impact.
Section 2 – Tri-Cities Area Socio-Economic Estimates and Projections
Metropolitan Planning Organization Study Area
The Tri-Cities Transportation Study Area is comprised of the City of Petersburg, the City of Colonial Heights, and City of Hopewell, and portions of Chesterfield County, Prince George County and Dinwiddie County. The MPO is responsible for conducting the continuing, cooperative and comprehensive transportation planning process required by federal law in urbanized areas over 50,000 in population. The Tri-Cities Area forms the southern portion of the Richmond, Virginia Urbanized Area. The Richmond Urbanized Area has a population base of more than 200,000.

Elected representatives from each of the six localities within the study area, along with appointed representatives from the Virginia Department of Transportation (VDOT), the Crater Planning District Commission (CPDC) and Petersburg Area Transit (PAT) comprise the voting membership of the MPO – Policy Committee. Representatives from the Federal Transit Administration, the Federal Highway Administration and the Virginia Department of Rail and Public Transportation (VDR&PT) also participate on the MPO – Policy Committee as nonvoting members.

The MPO – Policy Committee is assisted by a Technical Advisory Committee, comprised of representatives from public works, engineering, planning, and traffic engineering staffs of the six local jurisdictions, VDR&PT, VDOT and the CPDC. A representative from U.S. Army installation at Fort Lee and a representative from the National Park Service at Petersburg National Battlefield also serve on the MPO - Technical Committee as ex-officio members.

The Tri-Cities study area is located in south central Virginia within the I-85, I-95, and I-295 travel corridors. Major arterial routes serving the area are Virginia Route 10, Virginia Route 36, US 301, US 1, US 460, Virginia Route 156 and Virginia Route 144. The Tri-Cities supports a multi-modal transportation system with air, rail, water, and pedestrian and bicycle transportation facilities accessible for its population. Localities within the study area also have access to the international water ports and airports located in Richmond and Norfolk.

In order to meet the future transportation needs of the Tri-Cities Area, annual estimates are made at the traffic analysis zone level of socio-economic growth or decline, including housing units, population and employment. Using current trends and State population control totals, new socio-economic forecasts are made for the next 20-year planning horizon period. Under SAFETEA-LU provisions, plan updates are to be made at least every 4 years. Changes in socio-economic patterns during the update periods are monitored and are a vital consideration to the transportation planning process. With these data, decision makers are better able to assess the future transportation needs for the study area. For example, rates of population change can be used to help determine future travel demand. This information can be used to provide an indication on needs for new transportation facilities and improvements to existing transportation facilities.

The following series of narratives, tables and graphs in this section show current and forecasted socio-economic trends in the Tri-Cities Area. This information has been used to help develop the 2035 Transportation Plan. Socio-economic data related to the 2009 - 2011 expansion at Fort Lee as a result of the implementation of the U.S. Base Realignment and Closure (BRAC) Commission recommendations has been included in the 2035 forecast data. Forecasted impacts of Fort Lee expansion on the region related to housing, child care, employment and other items may be found in the Crater Growth Management Plan located www.craterpdc.state.va.us.
Population

The overall population of the Tri-Cities Area is projected to experience an increase from 2000 to 2035. Most of the growth in the area will occur within the counties, with the largest increases expected in Prince George and Chesterfield. The projected Tri-Cities study area population for the year 2035 is 198,239. This is an increase of 51,327 persons over the 2000 estimate and represents a forecasted growth of about 35% for the Tri-Cities Area during this time period.

### Tri-Cities Existing and Projected Population (2000 - 2035)

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2026</th>
<th>2031</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>34,775</td>
<td>31,735</td>
<td>31,816</td>
<td>32,607</td>
<td>33,018</td>
<td>32,488</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>16,354</td>
<td>17,897</td>
<td>18,724</td>
<td>18,287</td>
<td>18,486</td>
<td>18,947</td>
</tr>
<tr>
<td>Hopewell</td>
<td>22,256</td>
<td>22,669</td>
<td>23,431</td>
<td>23,431</td>
<td>24,270</td>
<td>24,901</td>
</tr>
<tr>
<td>Prince George*</td>
<td>34,444</td>
<td>42,700</td>
<td>56,628</td>
<td>62,902</td>
<td>65,336</td>
<td>67,339</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>10,219</td>
<td>11,810</td>
<td>13,215</td>
<td>13,215</td>
<td>13,663</td>
<td>14,101</td>
</tr>
<tr>
<td>Chesterfield*</td>
<td>28,864</td>
<td>36,834</td>
<td>38,506</td>
<td>38,800</td>
<td>39,830</td>
<td>40,463</td>
</tr>
<tr>
<td>Study Area Total</td>
<td>146,912</td>
<td>163,645</td>
<td>181,793</td>
<td>189,242</td>
<td>194,603</td>
<td>198,239</td>
</tr>
</tbody>
</table>

*Only that portion of the county in the transportation in the study area.
Source: Tri-Cities Area Transportation Study, October 2011.
*Only that portion of the county in the transportation in the study area.
Source: Tri-Cities Area Transportation Study, October 2011
The projected differences in the rates of growth between the cities and the counties of the study area will affect future transportation planning. The counties are projected to grow more than the cities. The planning for certain modes of transportation, such as public transit and pedestrians, must be approached differently in a rural county setting than it is in the urban setting of cities. Special concerns arise when dealing with the elderly and the physically challenged in the more rural counties. These projections identify the future changes in the Tri-Cities population and allow for a proactive approach to transportation planning.

### Projected Growth Rates (2000 - 2035)

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>% Growth 2000-2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>-6.6%</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>15.9%</td>
</tr>
<tr>
<td>Hopewell</td>
<td>11.9%</td>
</tr>
<tr>
<td>Prince George*</td>
<td>95.5%</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>38.0%</td>
</tr>
<tr>
<td>Chesterfield*</td>
<td>40.2%</td>
</tr>
<tr>
<td>Overall</td>
<td>34.9%</td>
</tr>
</tbody>
</table>

*Only that portion of the county in the transportation study area
Source: Tri-Cities Area Transportation Study, October 2011
Elderly Population

The concentration of elderly population in the jurisdictions comprising the Tri-Cities has increased steadily between the years 1960 and 2010. As shown in the table below, the percentage population over 65 is generally higher in the 3 cities than the 3 counties, although the elderly population grew more in the counties. Between 2000 and 2010, Chesterfield and Prince George experienced the most significant percentage increases for the population 65 years of age and over.

**Tri-Cities Elderly Population by Jurisdiction (Ages 65+) as a Percentage of Total Population**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>9.1</td>
<td>10.2</td>
<td>11.6</td>
<td>15.5</td>
<td>15.6</td>
<td>15.0</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>N/A</td>
<td>6.9</td>
<td>9.0</td>
<td>15.5</td>
<td>18.6</td>
<td>19.6</td>
</tr>
<tr>
<td>Hopewell</td>
<td>6.0</td>
<td>10.9</td>
<td>10.9</td>
<td>13.0</td>
<td>14.6</td>
<td>14.9</td>
</tr>
<tr>
<td>Prince George</td>
<td>2.9</td>
<td>2.7</td>
<td>3.7</td>
<td>6.1</td>
<td>7.3</td>
<td>10.4</td>
</tr>
<tr>
<td>Dinwiddie</td>
<td>10.2</td>
<td>9.1</td>
<td>10.9</td>
<td>11.6</td>
<td>12.2</td>
<td>13.7</td>
</tr>
<tr>
<td>Chesterfield</td>
<td>4.9</td>
<td>4.4</td>
<td>4.5</td>
<td>6.1</td>
<td>8.1</td>
<td>10.4</td>
</tr>
</tbody>
</table>

*Entire Jurisdiction

Source: U.S. Bureau of the Census

![% of Total 2010 Study Area Population That is Elderly](image)
Minority Population
The distribution of minority population at the jurisdiction level for 2010 is shown in the table below. Petersburg has the largest Tri-Cities Area concentration of minority population and Colonial Heights the smallest.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Black</th>
<th>Other Race(s)</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>79.1</td>
<td>4.8</td>
<td>16.1</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>10.2</td>
<td>7.5</td>
<td>82.3</td>
</tr>
<tr>
<td>Hopewell</td>
<td>37.0</td>
<td>7.6</td>
<td>55.4</td>
</tr>
<tr>
<td>Prince George</td>
<td>32.0</td>
<td>6.9</td>
<td>61.1</td>
</tr>
<tr>
<td>Dinwiddie</td>
<td>32.9</td>
<td>3.2</td>
<td>63.9</td>
</tr>
<tr>
<td>Chesterfield</td>
<td>21.9</td>
<td>9.8</td>
<td>68.3</td>
</tr>
</tbody>
</table>

*Entire Jurisdiction
The projected number of housing units for the Tri-Cities Area in 2035 is 81,861. This figure would represent an increase of 21,727 units over the 60,134 units that existed in 2000. Most of this increase is anticipated to occur in the county portions of the transportation study area, primarily in Prince George and Chesterfield.

### Tri-Cities Existing and Projected Housing Units 2000 - 2035

<table>
<thead>
<tr>
<th>Jurisdiction*</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2026</th>
<th>2031</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>16,266</td>
<td>16,644</td>
<td>16,947</td>
<td>17,086</td>
<td>17,306</td>
<td>17,480</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>6,897</td>
<td>8,187</td>
<td>8,302</td>
<td>8,393</td>
<td>8,534</td>
<td>8,763</td>
</tr>
<tr>
<td>Hopewell</td>
<td>9,737</td>
<td>10,938</td>
<td>11,304</td>
<td>11,524</td>
<td>11,739</td>
<td>12,016</td>
</tr>
<tr>
<td>Prince George*</td>
<td>12,996</td>
<td>14,820</td>
<td>16,712</td>
<td>17,805</td>
<td>18,716</td>
<td>19,445</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>3,973</td>
<td>4,277</td>
<td>4,674</td>
<td>4,906</td>
<td>5,093</td>
<td>5,149</td>
</tr>
<tr>
<td>Chesterfield*</td>
<td>10,265</td>
<td>13,168</td>
<td>15,452</td>
<td>16,832</td>
<td>17,988</td>
<td>19,008</td>
</tr>
<tr>
<td>Study Area Total</td>
<td>60,134</td>
<td>68,034</td>
<td>73,391</td>
<td>76,546</td>
<td>79,376</td>
<td>85,959</td>
</tr>
</tbody>
</table>

*Only those portions of the counties located in the transportation in the study area.

Source: Tri-Cities Area Transportation Study, October 2011
*Only those portions of the counties located in the transportation in the study area.
Source: Tri-Cities Area Transportation Study, October 2011
## Households with Zero Vehicles Available

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>2,848</td>
<td>1,883</td>
<td>-965</td>
<td>-33.9</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>407</td>
<td>465</td>
<td>58</td>
<td>14.3</td>
</tr>
<tr>
<td>Hopewell</td>
<td>912</td>
<td>1,087</td>
<td>175</td>
<td>19.2</td>
</tr>
<tr>
<td>Prince George</td>
<td>340</td>
<td>223</td>
<td>-117</td>
<td>-34.4</td>
</tr>
<tr>
<td>Dinwiddie</td>
<td>445</td>
<td>561</td>
<td>116</td>
<td>26.1</td>
</tr>
<tr>
<td>Chesterfield</td>
<td>3,056</td>
<td>3,006</td>
<td>-50</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

*Entire Jurisdiction

Employment

Employment projections are an important part of planning for future transportation needs. Places of employment generate traffic and affect travel demand. Much of the congestion experienced within the Tri-Cities occurs during peak demand hours and is a result of commuter traffic. Projections of employment can be used to determine the location and timing of future transportation facilities.

### Tri-Cities Existing and Projected Retail Employment

<table>
<thead>
<tr>
<th>Jurisdiction*</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2026</th>
<th>2031</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>2,555</td>
<td>2,472</td>
<td>2,355</td>
<td>2,360</td>
<td>2,599</td>
<td>2,634</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>4,694</td>
<td>6,779</td>
<td>6,422</td>
<td>6,307</td>
<td>6,315</td>
<td>6,314</td>
</tr>
<tr>
<td>Hopewell</td>
<td>1,325</td>
<td>1,440</td>
<td>1,387</td>
<td>1,389</td>
<td>1,396</td>
<td>1,396</td>
</tr>
<tr>
<td>Prince George*</td>
<td>1,312</td>
<td>2,190</td>
<td>1,887</td>
<td>1,947</td>
<td>1,939</td>
<td>1,943</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>418</td>
<td>344</td>
<td>252</td>
<td>252</td>
<td>252</td>
<td>252</td>
</tr>
<tr>
<td>Chesterfield*</td>
<td>530</td>
<td>929</td>
<td>929</td>
<td>929</td>
<td>929</td>
<td>929</td>
</tr>
<tr>
<td>Study Area Total</td>
<td>10,834</td>
<td>14,154</td>
<td>13,232</td>
<td>13,184</td>
<td>13,430</td>
<td>13,468</td>
</tr>
</tbody>
</table>

* Only those portions of the counties located in the transportation in the study area.

Source: Tri-Cities Area Transportation Study, October 2011
* Only those portions of the counties located in the transportation in the study area.
Source: Tri-Cities Area Transportation Study, October 2011
**Tri-Cities Existing and Projected Total Employment**

*2000 - 2035*

<table>
<thead>
<tr>
<th>Jurisdiction*</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2026</th>
<th>2031</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petersburg</td>
<td>13,422</td>
<td>15,065</td>
<td>14,036</td>
<td>14,095</td>
<td>14,102</td>
<td>14,103</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>8,409</td>
<td>11,653</td>
<td>10,953</td>
<td>10,996</td>
<td>11,002</td>
<td>11,003</td>
</tr>
<tr>
<td>Hopewell</td>
<td>8,326</td>
<td>8,466</td>
<td>8,471</td>
<td>8,475</td>
<td>8,472</td>
<td>8,473</td>
</tr>
<tr>
<td>Prince George*</td>
<td>4,485</td>
<td>16,701</td>
<td>15,758</td>
<td>15,846</td>
<td>15,831</td>
<td>15,839</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>4,886</td>
<td>6,699</td>
<td>6,563</td>
<td>6,572</td>
<td>6,569</td>
<td>6,570</td>
</tr>
<tr>
<td>Chesterfield*</td>
<td>9,058</td>
<td>7,624</td>
<td>7,606</td>
<td>7,613</td>
<td>7,606</td>
<td>7,609</td>
</tr>
<tr>
<td>Study Area Total</td>
<td>48,586</td>
<td>66,208</td>
<td>63,387</td>
<td>63,597</td>
<td>63,582</td>
<td>63,597</td>
</tr>
</tbody>
</table>

* Only those portions of the counties located in the transportation in the study area.

Source: Tri-Cities Area Transportation Study, October 2011
* Only those portions of the counties located in the transportation in the study area.
Source: Tri-Cities Area Transportation Study, October 2011
Automobile Ownership

Auto ownership directly affects transportation planning as it provides information on the number of cars that may be using the area's transportation system. Increases in the number of autos in the Tri-Cities may be an indication of increasing traffic and congestion. Transportation plans must be developed taking into account the possible number of automobiles available for use in the system.

### Automobile Ownership in the Tri-Cities

#### 2000 - 2035

<table>
<thead>
<tr>
<th>Jurisdiction*</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2026</th>
<th>2031</th>
<th>2035</th>
</tr>
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<tbody>
<tr>
<td>Petersburg</td>
<td>19,462</td>
<td>18,269</td>
<td>18,962</td>
<td>19,322</td>
<td>19,709</td>
<td>19,750</td>
</tr>
<tr>
<td>Colonial Heights</td>
<td>11,602</td>
<td>12,695</td>
<td>12,831</td>
<td>12,946</td>
<td>13,085</td>
<td>13,415</td>
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<tr>
<td>Hopewell</td>
<td>14,069</td>
<td>14,413</td>
<td>14,857</td>
<td>15,124</td>
<td>15,346</td>
<td>15,753</td>
</tr>
<tr>
<td>Prince George*</td>
<td>17,404</td>
<td>22,219</td>
<td>29,116</td>
<td>30,426</td>
<td>32,298</td>
<td>33,885</td>
</tr>
<tr>
<td>Dinwiddie*</td>
<td>8,655</td>
<td>9,933</td>
<td>10,647</td>
<td>11,074</td>
<td>11,437</td>
<td>11,766</td>
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<tr>
<td>Chesterfield*</td>
<td>19,823</td>
<td>26,244</td>
<td>27,435</td>
<td>27,992</td>
<td>28,632</td>
<td>29,284</td>
</tr>
<tr>
<td>Study Area Total</td>
<td>91,015</td>
<td>103,773</td>
<td>113,848</td>
<td>116,884</td>
<td>120,507</td>
<td>123,853</td>
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</tbody>
</table>

* Only those portions of the counties located in the transportation in the study area.

Source: Tri-Cities Area Transportation Study, October 2011

Within the Tri-Cities area, the historical increase in the number of automobiles is expected to continue to increase. Between the years 2000 and 2035, the number of autos is projected to increase 32,838 over the 2000 figure of 91,015 for an increase of 36.08%.
* Only those portions of the counties located in the transportation in the study area. Source: Tri-Cities Area Transportation Study, October 2011
Section 3 – Land Use Planning in the Tri-Cities Area
Relationships between Transportation and Land Use
No longer can the issues of land use and transportation be treated as isolated events. In planning for these issues, the interrelations between these areas must be carefully considered. It is necessary to consider the effects that decisions in transportation planning will have on existing and future land use and, likewise, the impacts that land use policy will have on transportation needs.

Land use patterns in the Tri-Cities area must be carefully evaluated, as the need to improve air quality becomes more pressing. The area has been previously designated as an ozone non-attainment area and, therefore, local officials must work to improve air quality in the area. As traffic volumes increase, land use patterns such as those present along commercial strips must be re-evaluated. The delays and the harmful emissions associated with these delays that result from such land use need to be addressed. The relationship between land use and its effects on travel time are an important consideration in areas such as the Tri-Cities.

Another manner in which land use affects transportation in the Tri-Cities area is evident as residential areas become removed from the commercial and business areas that serve them. As the population moves further into the suburbs and rural areas, transportation policies need to address such issues as commuter traffic and public transportation. Programs such as ride-sharing and rural transportation for the elderly and handicapped may need to accompany current land use trends. Likewise, mixed-use communities may provide a land use solution to transportation concerns.

Transportation decisions impact land use and development and must, therefore, take these plans into consideration. Transportation and land use plans must be coordinated to ensure that the benefits accompanying a new transportation project are not negated by improper use of the land along the improvement corridor. In the Tri-Cities area, transportation plans made in accordance with State and federal guidelines, such as those that accompany air quality designations, must take into account the effects of transportation decisions on area development.

Coordination between land use and transportation is a necessity in the creation and maintenance of successful communities. Efforts are made to assure transportation decisions in the Tri-Cities are made consistent and support land use plans.

Land Use and Comprehensive Planning in the Tri-Cities Area
Land use decisions in Virginia are decided at the local government level. The Code of Virginia defines the authority, and describes the tools used by localities for implementation. Tri-Cities Area jurisdictions are required to adopt comprehensive plans, zoning ordinances and subdivision ordinances. All of these measures are important because together they define what land development can occur in each locality. Land development in the county portions of the Tri-Cities differs from that of the cities because the cities have less undeveloped land for which to plan.

The comprehensive plan is a guide for community growth and development. It outlines each jurisdiction's long-term development scheme and defines the goals and objectives for achieving the derived level of land use and development. According to Title 15.2 of the Code of Virginia, the plan must be reviewed at least once every five years. In addition to land use and transportation elements, comprehensive plans include elements for housing, community facilities, each of the 6 local governments within the transportation study area have comprehensive plans with land use elements. MPO – Technical and Policy Committee representatives provide input from their comprehensive plans during each regional transportation plan development process. SAFETEA-LU requires the MPO to consult with State and local agencies responsible for land use management. Within the local comprehensive plans of MPO jurisdictions, transportation issues are considered. Inventories of
the existing transportation facilities are presented and evaluated. Future transportation needs are identified based on existing and future planned land development patterns.

The Code of Virginia authorizes local governments to enact land development ordinances or tools for implementing comprehensive plans, including the official map, subdivision ordinance, zoning ordinance, site plan review, and capital improvement program.

An official map may be prepared and used to indicate future location of transportation facilities and other utilities. Local governments are required to consult with State agencies regarding facilities under their purview and to submit the official map for review. The official map has value as a means of coordinating State and local plans for land development along transportation corridors.

Subdivision ordinances are used to regulate land parcel division in a manner which promotes orderly development consistent with local goals. These ordinances include standards for lot size and specifications for infrastructure needed to support land development and to avoid congestion. Infrastructure includes roadway facilities constructed by private developers on land parcels being developed.

Local governments are also authorized by the State to enact zoning ordinances to implement the land use and other elements of the comprehensive plan. Zoning ordinances separate the land area within a jurisdiction into different zones and specifies the type of land use activities permitted. The intent of zoning is to promote an arrangement of compatible land uses that benefit the entire community in a manner consistent with the goals and objectives of the comprehensive plan.

Site plan review process may be established and used by a locality to require land developers to submit a visual plan for developing land parcels. The site plan indicates the location of the parcel to be developed, existing and proposed roadways, drainage, vegetation and other factors pertinent to how the development of the parcel will meet applicable requirements of local land development ordinances.

Locally developed capital improvement programs typically include information on the scheduling and financing of public facilities proposed to be constructed to support planned land development over a five-year period. For the past several decades, capital improvement programs in the cities of Petersburg and Hopewell have included consideration of redevelopment areas which may be supported by mass transit service.

During the 2012 session of the Virginia General Assembly, legislation was approved requires local and regional transportation plans to be submitted to the Virginia Department of Transportation for review as to consistency with the State’s transportation plan and State’s Six-Year Improvement Programs. This State legislation also contains provision for cost reimbursement if the locality or localities within a MPO requests termination of a project or does not advance a project to the next phase of construction. Local comprehensive plans are normally update every 5 years. The State’s six-year improvement program is updated annually.

Preservation of Rights-of-Way

The preservation of rights-of-way should be included in the transportation planning process. Early planning for rights-of-way can ensure that localities will be able to address future needs of the transportation system, such as congestion relief, in a more efficient and cost effective manner. A systematic classification of roadway facilities and the establishment of minimum right-of-way widths for those roadway facilities consistent with future local comprehensive planning can help
avoid the construction of private development on land needed for future transportation improvement.

**Access Management**

An effective access management program that limits closely spaced entrances to public roadway facilities, closely spaced traffic signals and median openings can help reduce accident rates, congestion levels and help maintain roadway capacity to carry traffic.

Pursuant to legislative actions of the Virginia General Assembly over the past several years, VDOT implements access management regulations aimed at accomplishing the following:

- Reduce traffic congestion;
- Enhance public safety by reducing conflicting traffic movements;
- Reduce the need for new highways and road widening by maximizing the performance of existing state highways;
- Support economic development by promoting the efficient movement of goods and people;
- Preserve the public investment in new and existing highways; and
- Ensure that private property is entitled to reasonable access to highways.

To accomplish these aims, VDOT administers a series of State access management regulations and standards. These State requirements apply to highway facilities maintained by VDOT. Current access management provisions address the following: spacing entrances, intersection, median openings and traffic signals; location entrances a safe distance from intersection turning movements and from interchange ramps; providing vehicular, and where appropriate, pedestrian circulation between adjoining properties; and sharing highway entrances.

**Traffic Calming**

Traffic calming measures can be incorporated into local ordinances to make subdivision streets less conducive to speeding. Measures to accomplish traffic calming objectives include narrowing the travel way using pavement markings and other roadway design modifications.

**Comprehensive Planning Responsibilities within the Tri-Cities Area**

Comprehensive planning, including land use planning, in the region is conducted at the local government level within the context of local comprehensive plans. The Crater Planning District Commission (CPDC) is responsible for regional planning activities in the Tri-Cities area. In addition to the six MPO jurisdictions, CPDC also serves the following four localities: the counties of Greensville, Surry and Sussex, and the city of Emporia. The Commission is involved in a variety of regional planning activities including rural transportation, coastal resource management, solid waste management, regional tourism and environmental analysis. The CPDC also provides staff support for the Tri-Cities MPO. In addition to its role in regional planning, the CPDC provides limited local planning assistance to its member jurisdictions.

Chesterfield County planning activities are carried out through the Department of Planning. The County has adopted a series of 22 sub-area comprehensive plans, including the Ettrick Village, Matoaca Village and Eastern Area. Chesterfield County is currently preparing a unified countywide comprehensive plan. The County has adopted zoning, subdivision, site plan review ordinances and an erosion and sediment control ordinance. Chesterfield County also has an ordinance to regulate development in locally designated Chesapeake Bay Preservation Areas.
The City of Colonial Heights has a Director of Planning who is responsible for local planning activities. The City has adopted zoning and subdivision ordinances and an erosion and sediment control ordinance. The City has also adopted ordinances, which implement locally designated Chesapeake Bay Preservation Areas. The present comprehensive plan was adopted in 1997. The City is currently in the process of updating its comprehensive plan. Finally, Colonial Heights has adopted an ordinance establishing a local wetlands board.

Dinwiddie County's local planning is handled through the Director of Planning. The County comprehensive plan was adopted in 2006. The County also has adopted zoning, subdivision site plan review and soil erosion and sediment control ordinances.

The City of Hopewell was adopted in 2001. Hopewell has adopted zoning and subdivision site plan and erosion and sediment control ordinances. Hopewell also has an ordinance to regulate development in locally designated Chesapeake Bay Preservation Areas. Finally, the City has adopted an ordinance, which establishes a local wetlands board.

The Department of Planning in the City of Petersburg Planning Office conducts local planning activities. The City comprehensive plan was adopted in 2006 and a 2011 update is under review. In addition, the City has adopted zoning and subdivision, site plan and an erosion and sediment control ordinance. Petersburg also has adopted ordinances which protect locally designated Chesapeake Bay Preservation Areas.

Prince George County has a Director of Planning who is in charge of local planning activities. The County adopted a comprehensive plan in 2007. Local ordinances implementing zoning, subdivision, site plan review and erosion and sediment control have also been adopted. Prince George has adopted ordinances to implement locally designated Chesapeake Bay Preservation Areas.
Section 4 – Highway Element
Functional Classification

The Virginia Department of Transportation classifies roadways in the Richmond, Virginia urbanized area into four functional systems, including urban principal arterial, urban minor arterial, urban collector and urban local. The basis of this classification is the service characteristics of the roadway. Principal arterials serve major activity centers in the metropolitan area, carry the highest traffic volume corridors and serve the longest trip desires. These roadways include interstates, freeways and expressways selected other principal arterials with no roadway access control. The next classification is urban minor arterial. This category of roadways includes arterials that place more emphasis on land access and offer a lower level of mobility. Minor arterials provide roadway connections within the area and may serve as local fixed-route bus routes. The third category, urban collector streets, provide both land access and traffic movement within residential, commercial and industrial land uses within the metropolitan area. The fourth category, urban local streets, provides the primary access to land parcels located along the roadway and access to higher roadway classifications. A more completed discussion of roadway functional classification may be found [http://www.fhwa.dot.gov/planning/fcsec2_1.htm](http://www.fhwa.dot.gov/planning/fcsec2_1.htm) The tables below profile 926 miles of roadways in the Tri-Cities Area by functional classification and by jurisdiction.
Estimated Roadway Miles in the Tri-Cities Area  
by Functional Classification by Jurisdiction

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Interstate &amp; Freeway</th>
<th>Principal Arterials</th>
<th>Minor Arterials</th>
<th>Collectors</th>
<th>Local</th>
<th>Total</th>
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<tr>
<td>Petersburg</td>
<td>9.00</td>
<td>18.05</td>
<td>21.81</td>
<td>21.01</td>
<td>132.23</td>
<td>202.10</td>
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<td>Colonial Heights</td>
<td>3.57</td>
<td>5.01</td>
<td>3.02</td>
<td>7.98</td>
<td>64.07</td>
<td>83.65</td>
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<tr>
<td>Hopewell</td>
<td>2.04</td>
<td>8.75</td>
<td>11.85</td>
<td>3.74</td>
<td>93.17</td>
<td>119.55</td>
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<td>Prince George</td>
<td>15.33</td>
<td>13.86</td>
<td>34.11</td>
<td>54.25</td>
<td>80.68</td>
<td>198.23</td>
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<td>8.44</td>
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<td>26.16</td>
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<td>Chesterfield</td>
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<td>8.16</td>
<td>45.62</td>
<td>44.18</td>
<td>105.41</td>
<td>223.39</td>
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<td>TOTALS</td>
<td>58.40</td>
<td>59.69</td>
<td>128.78</td>
<td>157.32</td>
<td>522.71</td>
<td>926.90</td>
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</table>

Source: Virginia Department of Transportation, 2000

**Congestion Management Process (CMP)**

Highway facilities designated as part of the National Highway System (NHS) in urbanized areas with a population greater than 200,000 are required by federal legislation to be part of a regionally developed Congestion Management Process (CMP). In the Tri-Cities Area, a CMP has been developed. The current CMP traffic database for the Tri-Cities has 562 roadway segments. By dividing roadways into smaller segments, the CMP can better identify specific congested locations.

In January 2012, VDOT – Richmond District completed an update of the Tri-Cities traffic database. A roadway segment showing a V/C ratio of 1.0 or greater (volume is greater than capacity) is generally considered congested. The 15 roadway segments shown in the table below are profiled by current year (2009) and future year (2035) and have a V/C value of 1.0 or greater. The Tri-Cities Area MPO – Technical Committee has reviewed present-day and future-day congestion levels for these segments. Highway oriented strategies considered for reducing congestion at these locations include intersection improvements, one-way/reversible streets, access management, signal improvements, improved signage, turn prohibitions, highway information systems and Park-n-Ride Lots. Transit strategies for reducing congestion include service expansion, improved routing and fare structures. Intelligent Transportation System (ITS) strategies include Traveler information/Assistance, Incident Management System and electronic fare collection. Transportation Demand Management (TDM) strategies include alternative hours of travel (flextime) and assistance programs to make TDM more successful.
<table>
<thead>
<tr>
<th>Locality</th>
<th>Route Number</th>
<th>Functional Class*</th>
<th>Road Name</th>
<th>No. of Lanes</th>
<th>Segment From:</th>
<th>Segment To:</th>
<th>2009 ADT</th>
<th>2009 V/C Ratio</th>
<th>2035 Estimated ADT</th>
<th>2035 V/C Ratio</th>
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<tbody>
<tr>
<td>Prince George</td>
<td>144</td>
<td>UPA</td>
<td>Temple Avenue</td>
<td>4</td>
<td>ECL Colonial Heights</td>
<td>Route 36</td>
<td>32,818</td>
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<td>54,700</td>
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<td>965</td>
<td>UMA</td>
<td>Graham Road</td>
<td>2</td>
<td>Laurel Road</td>
<td>South Crater Road</td>
<td>10,672</td>
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<td>UPA</td>
<td>Temple Avenue</td>
<td>4</td>
<td>Prince George CL</td>
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<tr>
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<td>295</td>
<td>UI</td>
<td>I-295</td>
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<td>I-95</td>
<td>6</td>
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<td>NCL Colonial Heights</td>
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<td>95</td>
<td>UI</td>
<td>I-95</td>
<td>6</td>
<td>NCL Colonial Heights</td>
<td>Rt. 620</td>
<td>94,664</td>
<td>.81</td>
<td>145,000</td>
<td>1.26</td>
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<td>I-95</td>
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<td>.25 Mi. N I-85</td>
<td>Mingea Street</td>
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<td>UPA</td>
<td>Temple Avenue</td>
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<td>Conduit Road</td>
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<td>Rt. 226</td>
<td>Rt. 319</td>
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<td>UPA</td>
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<td>East Ellerslie Avenue</td>
<td>Sherwood Avenue</td>
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<tr>
<td>Petersburg</td>
<td>95</td>
<td>UI</td>
<td>Purple Heart Trail</td>
<td>6</td>
<td>East Bank Street</td>
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<td>Petersburg</td>
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<td>UI</td>
<td>Purple Heart Trail</td>
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<td>East Wythe Street</td>
<td>East Bank Street</td>
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</tr>
<tr>
<td>Petersburg</td>
<td>460</td>
<td>UI</td>
<td>East Wythe Street</td>
<td>2</td>
<td>Adams Street</td>
<td>Jefferson Street</td>
<td></td>
<td></td>
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</table>

*Abbreviations for Roadway Functional Classifications in the Tri-Cities
UI – Urban Interstate
I - Interstate
UMA – Urban Minor Arterial
UPA – Urban Primary Arterial
UC – Urban Collector
MC – Minor Collector
Vehicle occupancy rates can be used to measure the number of people moved on the roadway network at specific locations as compared to the number of vehicles at those same locations. Vehicle occupancy rates may also be used as performance measures in a CMP because it is an indication of whether or not programs to reduce travel demand are successful. The data requirements for using vehicle occupancy as a CMP measurement tool requires special surveys be conducted on a periodic basis.

As part of the Tri-Cities CMP, VDOT provided funding in April 2006 for a traffic study to analyze traffic implications of the planned expansion of the Fort Lee military installation related to BRAC 2005. Fort Lee experienced significant growth between FY 2008 and FY 2011. An evaluation was made of present and future roadway and intersection improvements needed to accommodate the planned expansion, especially improvements needed at the gates, for this major employer and activity center. The study was concluded in November 2006 by the project consultant with recommendations for 3 present-day improvements, 10 intermediate (2015) improvements and 6 long-term improvements (2026). The MPO – Policy Committee received the report in November 2007 and incorporated recommendations on priority Fort Lee improvement needs into its financially constrained transportation plan in June of 2008.

The map below shows 2009 relative traffic congestion levels and estimated 2035 congested levels for roadways within the Tri-Cities Area. Generally speaking, there were few congested roadways within the Tri-Cities Area during 2009, as indicated by the map and tables below. The congested locations for 2009 occurred at selected intersections on some primary arterial facilities. More significant traffic congestion (V/C ratio of 1.0 or greater) has been estimated to occur by the year 2035 on certain segments of several principal arterial roadways in the Tri-Cities Area.
Tri-Cities MPO Congestion* Heat Map

Legend
- MPO Study Area
- Jurisdiction Boundary

Congestion Level
- Lower
- Higher

SPS Roads
- Interstates
- Primaries
- Other Roads

*rear end and side-swipe crashes utilized as a proxy measure to gauge and visually represent congestion in the Tri-Cities region. Rear end and side swipe crashes were mapped for the years 2008-2009. Then a density analysis was conducted and symbolized to create the heat map shown.
**Level of Service**

The concept of *level-of-service* (LOS) is defined as a qualitative measure describing the operational conditions of traffic flow and how motorists perceive these conditions. Factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety are used to describe level-of-service. Roadway links with a LOS of C or better are considered desirable. An intersection LOS of E or F is considered undesirable.

Six levels of service are defined and each is given a letter designation from A to F. LOS A represents the best operating conditions and LOS F the worst. Levels-of-service are defined as follows for uninterrupted traffic flow:

**LOS A:** *(Free flow conditions)* Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream with a high level of physical and psychological comfort. The effects of minor accidents or breakdowns are easily absorbed at this level.

**LOS B:** *(Reasonably free flow conditions)* The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and breakdowns are still easily absorbed.

**LOS C:** *(Stable operations)* Traffic flows are approaching the range in which small increases in traffic will cause substantial deterioration in service. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require additional care and vigilance. Minor accidents may still be absorbed, but the local deterioration in service will be substantial with delay forming behind any significant blockage. The driver now experiences a noticeable tension due to the additional vigilance required for safe operation.

**LOS D:** *(High density, but stable flow. Bordering unstable flow)* Small increases in traffic may cause substantial deterioration in service. Freedom to maneuver within the traffic stream is severely limited and the driver experiences drastically reduced physical and psychological comfort levels. Even minor accidents can be expected to create substantial delays because the traffic stream has little space to absorb disruptions.

**LOS E:** *(Very unstable operations)* Virtually no usable gaps exist within the traffic stream. This means that any disruption, such as a vehicle entering from a ramp or changing lanes, causes following vehicles to slow or stop to admit the vehicle disrupting the flow. Any incident can be expected to produce substantial delay. Maneuverability within the traffic stream is extremely limited and the level of physical and psychological comfort is extremely poor.

**LOS F:** *(Forced or breakdown flow)* Such conditions generally exist for a number of reasons such as traffic accidents, recurring points of congestion, or peak hour conditions which exceed the current design of the facility. LOS F is used to identify that point where the facility has reached maximum capacity and a complete breakdown of service occurs.

The Virginia Department of Transportation monitors 561 roadway segments in the Tri-Cities Area. The MPO uses this information among other rating factors to evaluate candidate roadway improvement needs within the network. Of the 561 roadway segments monitored in the Tri-Cities for the year 2009, 4 segments were determined to have a LOS of “D” or worse and 97 segments were projected to have a LOS of “D” or worse in the year 2035.
### Regional Land Use and Transportation Performance Measures

The Tri-Cities MPO is required by the Virginia General Assembly to monitor 10 categories of land use and transportation performance measures, including congestion reduction and safety for both highway and transit modes. A total of 28 specific performance measures are monitored and graphically displayed in annual reports found on the MPO’s webpage located [www.craterpdc.org/transportation/mpo.htm](http://www.craterpdc.org/transportation/mpo.htm). In March 2011, the MPO – Policy Committee endorsed 28 land use and transportation performance measures to be monitored for the Tri-Cities. The first report was completed in October 2011. General goals or desired trends for each of these measures were endorsed by the MPO in May 2012. The intent of monitoring regional land use and transportation performance measures is to gauge how the transportation system is generally performing over time and to help demonstrate need for future improvements.

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<th>Performance Measure</th>
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<th>Level of Data Collection</th>
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<td>Number of Highway Fatalities per 100 million VMT</td>
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<td>Number of Transit Crashes</td>
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<td>Number of Transit Fatalities</td>
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<td>Number of Fatalities per 100 million PMT</td>
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<td>Number of Bicycle and Pedestrian Crashes</td>
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<td>Number of Bicycle and Pedestrian Fatalities</td>
<td>Number of Bicycle and Pedestrian Fatalities</td>
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**Transit Usage**

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<th>Number of Transit Trips and Service Area Population**</th>
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<td>Annual Transit PMT per Capita</td>
<td>Transit Passenger Miles and</td>
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<td>Service Area Population</td>
<td>Annual Revenue Miles per Capita</td>
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<td>Number of Annual Transit Revenue Miles</td>
<td>Transit Revenue Miles as Reported by Petersburg Area Transit</td>
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<td>Annual Passenger Rail Ridership</td>
<td>Number of Amtrak Boardings and Alightings at Ettrick Rail Station</td>
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<td>Ettrick Rail Station</td>
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<td>Bar Graph</td>
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**High Occupancy Vehicle Usage (HOV)**

| Number of Registered Vanpools | Transportation Demand Management Data | Richmond Ridefinders | Tri-Cities Area MPO | Upwards | Table and Line Chart Graph | Annual |

**Jobs-to-Housing Ratio**

| Ratio of Jobs by Place of Work to Households at the Transportation Study Area and Jurisdictional Level | Jobs and Housing Data | Tri-Cities MPO Socio-economic Annual Data Reports | By Locality within the Tri-Cities MPO Study Area | Steady | Table and Line Chart Graph | Annual |

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<th>Regional Linear Jobs-Households Dissimilarity Index (0.0 to 1.0)***</th>
<th>Number of Jobs/Household</th>
<th>Bureau of Economic Analysis for Number of Jobs; American Community Survey Table 2501 Occupancy Characteristics of Households</th>
<th>By Locality for the Crater Planning District</th>
<th>Below 0.5</th>
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<td>By Locality</td>
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<td>Commuting Data</td>
<td>Patterns Data; Percent of Workers working in the County in Which They Live</td>
<td>American Community Survey Journey to Work Data for the Crater Planning District</td>
<td>Map at the Locality Level</td>
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<tr>
<td><strong>Jobs and Housing Access to Transit</strong></td>
<td>Transit Geographic Information System (GIS) Layer - Households in TAZs Served</td>
<td>MPO Socio-Economic Data and Transit GIS Shapefiles</td>
<td>Upwards GIS Map by TAZ</td>
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<td>Number and % of Total Households Served by PAT</td>
<td>Transit GIS Layer - Households in TAZs Served by PAT</td>
<td>MPO Socio-Economic Data and Transit GIS Shapefiles</td>
<td>Upwards GIS Map by TAZ</td>
<td>Metropolitan Transportation Plan (updates every 4 years, next update 2010)</td>
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<td><strong>Job and Housing Access to Pedestrian Facilities</strong></td>
<td>Population and Number Who Walk to Work</td>
<td>U.S. Census (American Community Survey) Journey to Work Data</td>
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<td>Metropolitan Transportation Plan (updates every 4 years, next update 2010)</td>
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<td>Number and Percent of Residents Who Walk to Work</td>
<td>Population and Number Who Walk to Work</td>
<td>U.S. Census (American Community Survey) Journey to Work Data</td>
<td>Crater Planning District (U.S. Census Data)</td>
<td>Upwards Table and Line Chart by Locality</td>
<td>Metropolitan Transportation Plan (updates every 4 years, next update 2010)</td>
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<td><strong>Air Quality</strong></td>
<td>Ozone Air Quality Monitoring Station Data</td>
<td>Virginia Department of Environmental Quality</td>
<td>Richmond, VA Ozone Non-Attainment Area</td>
<td>Downwards Table and Bar Graph</td>
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<tr>
<td>Annual Number of Days When Ozone Levels were Above 8-Hour Standard</td>
<td>Ozone Air Quality Monitoring Station Data</td>
<td>Virginia Department of Environmental Quality</td>
<td>Richmond, VA Ozone Non-Attainment Area</td>
<td>Downwards Table and Bar Graph</td>
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<td><strong>Movement of Freight</strong></td>
<td>Tonnage of Freight by Mode Share</td>
<td>U.S. Census Commodity Flow Data or Transearch Data</td>
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<td>Truck &amp; Rail Mode Share, by Tons</td>
<td>Tonnage of Freight by Mode Share</td>
<td>U.S. Census Commodity Flow Data or Transearch Data</td>
<td>Richmond Metropolitan Statistical Area (MSA)</td>
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<td>Truck &amp; Rail</td>
<td>Value of U.S. Census Richmond</td>
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<td>Mode Share by Value</td>
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<td>Transportatio n Plan (updates every 4 years, next update 2010)</td>
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### Daily Vehicle Miles Traveled per Capita

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<tr>
<th>Vehicle Miles Traveled (VMT) per Capita ****</th>
<th>Same Year data for Population and VMT</th>
<th>Texas Transportation Institute Urban Mobility Report</th>
<th>Richmond, VA Urbanized Area (U.S. Census)</th>
<th>Downwards Table and Bar Graph</th>
<th>Annual</th>
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* Performance measure data for the Crater Planning District level of data collection does not include any portion of Chesterfield County.

** Transit service area population is defined as persons living within ¾ mile of a PAT fixed-route.

*** Virginia Transportation Research Council Study “Feasibility of Using Jobs/Housing Balance in Virginia Statewide Planning”

**** VMT for freeways & arterials only
Section 5 – Intermodal Element
Intermodal Element

Federal transportation planning legislation places emphasis on the importance of an intermodal transportation system. Such a system focuses on the interconnectivity between different modes of transportation that allow for linked trip making. The resulting connections, choices and coordination of an intermodal system are a necessary part of a successful transportation system for the future. Map 4 identifies the major intermodal connections in the study area.

A variety of transportation modes are available in the Tri-Cities. As is the case in many metropolitan areas, the overall transportation system of the Tri-Cities would be enhanced by developing a greater level of interconnectivity among these forms of transportation in the area. Benefits of the resulting transportation system would include congestion relief, improved coordination among transportation organizations and easier access to a variety of transportation options.

The Tri-Cities Transportation Plan is designed promote an intermodal transportation system by building upon the existing multi-modal system. The plan identifies existing transportation facilities and examines the linkages that occur among them. The preservation of identified facilities and their integration into an intermodal system will enhance the overall efficiency of the Tri-Cities transportation system.

The transportation plan examines the different elements of a successful intermodal system. These elements include, but are not limited to:

- Air transportation
- Ports
- Pedestrians
- Intercity Bus Service
- Highways
- Rail Services
- Bikeways
- Public Transit
- Taxicab Services
- Trucking

A brief assessment of current conditions and future opportunities for each element of the Tri-Cities multi-modal system is presented below.

Air Transportation

Air transportation in the Tri-Cities is provided by the Dinwiddie County Airport. The Dinwiddie Airport and Industrial Authority operates this facility. I-85, Route 1 and Route 460 provides ground access to the terminal area. This airport has a 5,000’ x 100’ main runway along with 3,060’ x 50’ foot crosswind runway capable of accommodating aircraft with approach speeds greater than 121 knots and aircraft with maximum takeoff weights greater than 50,000 pounds. This facility is classified in the 2003 Virginia Airport Transportation Systems Plan as a "regional general aviation" airport providing a full range of aviation facilities and services to business and recreational users in multiple jurisdictions. This public owned airport exceeds 10,000 annual operations. Construction of the 6,600 square foot terminal building was completed in the 2006.

Scheduled air carrier services for the Tri-Cities Area are generally provided by the Richmond International Airport located in Henrico County approximately 45 minutes northeast of Petersburg via I-95 and I-895 or I-295. Other nearby commercial airports outside of the Richmond/Petersburg metropolitan area includes facilities located in Norfolk and Newport News/Williamsburg.

Freight Rail Service

Rail service in the Tri-Cities area consists of freight as well as passenger service. Freight service is provided by CSX Transportation and Norfolk Southern railroads. The Surface Transportation Board, the federal regulatory agency responsible for classifying railroad carriers according to annual
operating revenues, has classified CSX Transportation and Norfolk Southern as Class I carriers. In addition, these rail lines are further classified as density 7, or as carrying 300 or more million gross ton-miles per mile of line per year. This is the highest freight traffic density classification of all rail lines in the Commonwealth.

Passenger Rail Service

Intercity passenger rail service in the Tri-Cities area is provided by Amtrak. The Ettrick Station located in Chesterfield County along the CSX tracks serves the Tri-Cities portion of the Richmond, VA urbanized area. The Ettrick Route of Petersburg Area Transit serves the Tri-Cities Amtrak station located just east of Route 36 (Chesterfield Avenue) in Chesterfield County and provides an important modal connection.

A passenger station location alternatives analysis is anticipated to be undertaken by the Virginia Department of Rail and Public Transportation during calendar year 2012. The purpose of this project will be to evaluate the feasibility of either constructing a new passenger rail station near Collier Yard in the southwest portion of Petersburg or upgrading the existing passenger rail station presently serving the Tri-Cities Area located in Chesterfield. The alternatives analysis will consider station capacity needs to include planned restoration of Norfolk to Richmond conventional passenger service anticipated to begin by 2013 and the future potential SEHSR higher speed passenger rail service. The need for a passenger rail station alternatives analysis in the Tri-Cities was identified in environmental documents prepared for the Southeast High-Speed Rail (SEHSR) corridor.

Southeast High-Speed Rail (SEHSR) Corridor

The North Carolina Department of Transportation and the Virginia Department of Rail and Public Transportation have completed a Tier II Environmental Impact Statement on a proposal for high-speed rail passenger service between Raleigh, North Carolina and Washington, D.C. A record of decision from the federal government has been received by study sponsors. Within the Crater Planning District, the approved alignment generally parallels I-85 from North Carolina extending in a northeasterly direction into Petersburg and northward to Richmond. Additional information on this project may be found on the web at http://www.sehsr.org

Richmond/Hampton Roads High-Speed Alternatives Analysis/Environmental Impact Statement

The Virginia Department of Rail and Public Transportation (VDR&PT) has prepared a high-speed rail alternatives analysis and Tier I Environmental Impact Statement for the development of high-speed passenger rail service between Richmond and Hampton Roads. This document is under review by the Federal Railroad Administration and is being coordinated with the Southeast High Speed Passenger Rail Study. Additional information on this project may be found on the web at http://www.rich2hrrail.info.
Ports
Water transportation service in the Tri-Cities Area is primarily located at the City Point Port in Hopewell just east of Water Street. Docks located in the Tri-Cities are near the confluence of the Appomattox and James Rivers approximately 18 miles downstream from Richmond and approximately 75 miles northwest of the global water ports of Hampton Roads. The port facility at City Point serves ocean-going ships and has a 25-foot channel. Several companies own this facility. In addition, this port serves as a dock area for private tugboats used for the movement of river barge traffic.

Several large warehouse/distribution companies currently located in the Tri-Cities Area make use of Hampton Roads port facilities involving containerized freight. Future container freight truck and rail activity using Hampton Roads port facilities and the Route 460 Corridor is expected to increase significantly with the completion of the Panama Canal expansion project and the accompanying improved competitive position of U.S. east coast ports.
Bikeways

The Tri-Cities MPO completed an update of the regional bikeway plan in August 2003. The plan recognizes that bicycling is a safe, convenient and viable transportation alternative and to integrate bicycles and walking in the transportation system of the Tri-Cities. The plan considers bikeways concepts such as urban and suburban settings, user group skill levels, facility types, such as Shared Use Path (off-street), Bike Lane (pavement markings for bicyclists, wide outside lane (additional pavement width with no strips delineating separate lane for bikes), shoulder improvements (use of shoulder area for biking) and ancillary facilities (supporting facilities such as bicycle parking and lockers). A future bikeway route structure that can be promoted by the localities as a safe and convenient substitute for motor vehicle travel for recreational and commuting has been recommended in the 2003 Bikeways Plan. Map #5 shows the recommended bikeway improvements throughout the transportation study area. According to VDOT, the identification of an improvement project in an adopted bike and/or pedestrian plan does not guarantee or require the inclusion of bike/pedestrian facilities in the final project design.
Pedestrian Walkways

Pedestrian walkways are an important part of the transportation system. Walkways can provide a link between other modes of transportation in the system. Pedestrian facilities should be considered in both new development and improvements to existing development. Where feasible, efforts should be made to include pedestrian facilities as an option to other transportation modes that may be detrimental to air quality.

The Transportation Enhancement Program and the Congestion Mitigation and Air Quality Program have been used as sources of funding for pedestrian facilities improvements in the Tri-Cities Area. Projects such as the Appomattox Heritage Trail, improvements to Grove Avenue in Petersburg and the construction of a sidewalk on Route 106 near the Prince George County government center have taken advantage of this funding to enhance pedestrian facilities. Other sources of funding for improving the pedestrian element of the intermodal transportation system should be sought.

Public Transit

Petersburg Area Transit (PAT) provides fixed-route public transportation service within the City of Petersburg. In addition, PAT provides service to the Ettrick portion of Chesterfield County; the Central State Hospital area of northern Dinwiddie; the Fort Lee area of Prince George along the Route 36 corridor in Prince George County and a demonstration route within the City of Hopewell. PAT is joint recipient of federal Section 5307 funds for the Richmond, VA urbanized area from the Federal Transit Administration. PAT owns 27 vehicles, including 16 of which are heavy-duty transit buses and six of which are paratransit vehicles. PAT has been owned and operated by the City of Petersburg since June 1977. The system operates a total of 11 fixed routes with a modern central transfer station located at the intersection of Union and West Washington streets in downtown Petersburg. The PAT general hours of operation are from 6:15 a.m. to 7:15 p.m., Monday thru Friday with limited Saturday service beginning at 7:15 a.m. and ending at 8:15 p.m. Some of the routes are operated on ½ hour headways or schedules and some are operated on a 1 hour basis. Paratransit or Dial-A-Ride service for qualified persons is available during the same hours as regular bus service. The regular base fare for fixed and paratransit service is $1.00. During off-peak hours, a 50% fare discount is offered to elderly and handicapped patrons. Fare increases are being considered by the City of Petersburg after July 1, 2012.

The arrangement of stops along the PAT routes offers several opportunities for connection with other modes of transportation. Auto, taxi, pedestrian routes and bicycle can access nearly all of the stops. Because the central transfer station, called Petersburg Station, is located in downtown Petersburg, pedestrian-oriented businesses of downtown Petersburg can be accessed through all PAT routes. Intercity connection is available by Trailways, Inc. that can be accessed by nearby PAT stops. Connection of this public transportation system to Amtrak services located at the Ettrick Station is available on the Ettrick Route.

The need for expanding transit service in the Tri-Cities Area is addressed on a periodic basis. During calendar year 2010, the Tri-Cities MPO updated its transit development plan (TDP). During this process, the feasibility of PAT offering additional routes to areas without service was evaluated by a project consultant and by the affected local government representatives. As a result of the 2010 TDP update process, a 3-year transit demonstration project was selected by the MPO and funded for the City of Hopewell using Congestion Mitigation and Air Quality (CMAQ) funds.

At the present time, PAT and the Greater Richmond Transit Company (GRTC) are providing limited fixed-route transit service between downtown Richmond and Petersburg with a connection to John
Tyler Community College in the vicinity of Chester in Chesterfield County.

Information on planned capital improvements for PAT may be found in Section 6 Tri-Cities Transportation Plans and Programs of this document. Additional information on PAT may be found on the website for the City of Petersburg http://www.petersburg-va.org/transit/index.asp.

Greyhound Bus Lines offers north/south intercity bus service to the Tri-Cities Area. This near hourly service uses Petersburg Station Transit Center located on Washington Street in downtown Petersburg. This newly opened facility is accessible by auto, taxi, pedestrian, and bicycle and public transit. Intercity bus service is an important part of the area's transportation system due to the nearby interstate systems. Other transit companies offering charter and/or tour services include Groome Transportation, Virginia Overland, Winn Transportation and James River Bus Lines.

**Taxicab Services**

Taxicab services are an important part of the area's transportation system. Such services provide a demand-responsive mode of transportation. Future coordination of taxicab services with public transit, rail service and other modes of transportation would enhance the area intermodal system. Several taxicab services operate in the Tri-Cities area.

**Highways**

Highways are an important part of the overall intermodal transportation system. This element of the system provides the link between many of the other elements of the intermodal system. A description of the highway element of this regional plan and congestion characteristics of the MPO study area can be found in this document in Section 4- Highway Element.

**Trucking**

Trucking is an important freight movement component of transportation system in the Tri-Cities. The excellent network of interstates and primary highways; availability of rail and ports access to the region and mid-point location along the east coast are factors supporting the movement of freight. A number of warehouse/distribution centers are currently located in the Tri-Cities Area. Truck volumes account for a significant portion of the area's total traffic. The warehouse/distribution centers and other major generators of truck traffic need to be considered in corridor and other transportation planning studies conducted in the Tri-Cities. The 2005 environmental document prepared for the Route 460 Location Study found within the Tri-Cities 30% of the total Rt. 460 traffic was by trucks during 2003. The percentage distributions of truck volumes on Rt. 460 and I-295 are expected to increase as more container freight traffic is generated at Hampton Roads water ports and by warehouse/distribution industries located in the Tri-Cities.
Section 6 – Tri-Cities Area Transportation Plans and Programs
Tri-Cities Area Transportation Planning Overview
Traditionally, metropolitan transportation plans have presented capital costs for recommended facilities without identifying sufficient revenue sources to support planned improvements. Under current federal transportation planning guidelines, metropolitan planning organizations, transit operators and state transportation agencies must identify known funding sources for projects listed in financially constrained transportation plans. Projects without identified funding sources are shown in the transportation plan as vision projects. A vision project may be implemented in the future as the transportation plan is updated and funding sources identified. VDOT has provided revenue projections for highway transportation improvement projects in the Tri-Cities Area for the next 23-year period. The projected allocations and projected project cost are listed by funding source in the 2035 project listings. Each project has a unique identifier number and has been located on a jurisdiction level map. Local officials participating in the metropolitan transportation planning process have identified a series of long-range projects recommended for improvement. The recommended project lists have been developed as a combination of local comprehensive planning activities; local transportation needs assessments and recognition of regional transportation service needs identified in the Fort Lee Expansion Traffic Study. The recommended highway improvement projects listed in Section 7 Year 2035 Tri-Cities Area Transportation Plan Recommended Projects and Financial Assumptions are consistent with regional transportation goals and objectives. Planning assumptions, such as socio-economic, traffic and revenue forecasts, have been updated for the 2035 Transportation Plan.

Public Participation Plan
Pursuant to SAFETEA-LU requirements for metropolitan transportation planning, the Tri-Cities Area MPO has adopted a public participation plan. The public participation plan outlines a process for soliciting input from the public prior to the endorsement of metropolitan transportation plans and programs by the MPO. The participation plan provides opportunities for interested parties, including citizens, providers of freight transportation services, representatives of the disabled and others to be involved in the metropolitan transportation planning process. Also, a process is defined in the participation plan for consultation with resources agencies regarding the transportation plan. Notices of significant regional transportation plans and programs are routinely published local newspapers of general circulation. A copy of the public notice and available documentation on the draft transportation plan or program are made available to the public libraries in the transportation study area. A copy of the public participation plan followed by the Tri-Cities Area MPO is contained in Appendix A of this document. Information on the Tri-Cities MPO and regional transportation plans and programs may be found on the website of the Crater Planning District Commission under MPO located at www.craterpdc.state.va.us.

Richmond/Tri-Cities Travel Demand Model Development
The Richmond/Tri-Cities Forecasting (RTC) Model represents an advanced practice four-step forecasting model to support air quality analysis and project planning in the Richmond/Petersburg Metropolitan Area. It utilizes Citilabs software on the CUBE Catalog modeling platform. It is a four-step model that includes trip generation, trip distribution, mode split, and traffic assignment. When the model is run, its outputs can be used to forecast traffic volumes and congested travel speeds on roadway networks. These results can potentially be used in the following ways:

- Generating multiple regional transportation scenarios to aid the planning process
- Helping to determine future transportation infrastructure needs
- Analyzing regional effects of different groups of transportation projects to aid in the project selection process
- Providing improved future traffic congestion forecasts for the CMP network analysis
- Potential validating of other CMP data sources
- Possibly analyzing driver route choices to better inform scope of CMP network

As of April 2012, an updated RTC model was in the final stages of development. The new model updates the
base year of traffic analysis data from 2000 to 2008 and the horizon forecast year from 2031 to 2035. It also includes the following major changes from the previous model:

- The highway network has been enhanced and provides significantly more detail in terms of streets and their alignments. The freeway interchanges are micro-coded in the network (i.e., coded more closely to the way they actually exist on the ground).

- The transit networks and their processes were converted into CUBE Public Transport (PT) module. The networks were updated to accurately represent 2008 GRTC transit services.

- The model has been refined to conduct full time-of-day modeling. The first three steps in the model (trip generation, trip distribution and mode choice) are stratified for the peak period and the off-peak period. The highway assignments are further stratified into four time periods – AM peak, Midday, PM peak and Night.

- The refined trip generation and distribution models make extensive use of the 2009 National Household Travel Survey (NHTS) Virginia Add-On. Key relationships such as trip rates by purpose, average trip lengths, and trip frequency distributions are derived from that survey.

- The mode choice model was developed using a variety of data sources including the fall 2009 GRTC On-Board transit survey, NHTS data (automobile occupancy) and model parameters from FTA “national experience”. The mode choice model is executed using the CUBE XCHOICE module.

- The highway assignment procedures include a variety of enhancements. These include the use of Conical Volume-Delay functions built up on the VDF optimization research done by Virginia Modeling, Analysis and Simulation Center (VMASC) at Old Dominion University (Source: Evaluation of Volume-Delay Functions and Their Implementation in VDOT Travel Demand Models, May 2011), refinements to the speed-capacity tables and the use of enhanced toll procedures.

- A new heavy truck model was developed and validated.

- The model has been updated to include a feedback loop, which ensures that speeds from the resulting highway assignments are fed back through the forecasting process.

- The model has been generally calibrated and validated to the standards defined in the VTM policies and procedures manual.

**Fort Lee Expansion Transportation Projects – BRAC 2005**

Actions by the 2005 U.S. Base Realignment and Closure Commission (BRAC) actions have resulted in a major expansion of facilities, personnel and activities at the U.S. Army installation at Fort Lee located within the Tri-Cities. This expansion was completed within the FY08 to FY11 timeframe, as directed by Congress. Present-day and near-term recommendations for priority roadway and intersection improvements needed to support base expansion have either been implemented or are currently under construction. These transportation improvements are in the vicinity of base entrances at the Mahone, Sisisky, Shop Road and A Avenue gates. These needs were identified by a traffic study funded by VDOT and completed during 2006 in conjunction with the Tri-Cities Congestion Management Process.

**Joint Land Use Study**

In conjunction with the U.S. Department of Defense and Fort Lee representatives, the six Tri-Cities BRAC local governments within the Crater Planning District will be developing a Joint Land Use Study (JLUS). The purpose of this project is to encourage cooperative land use planning between Fort Lee and surrounding
jurisdictions so that future civilian growth and development are compatible with the training and operational missions of the military installation at Fort. Lee. In addition, the study will identify strategies to reduce the operational impacts on adjacent lands, including the environmental impacts of those operations.

Regional Transit Development Plan
The merger of the Richmond urbanized area and the Petersburg-Colonial Heights-Hopewell urbanized area by the federal government following the 2000 U.S. Census changed the way federal transit grant funds may be used by Petersburg Area Transit (PAT). Because the PAT operation is now located in an urbanized area greater than 200,000 in population, its option to use federal transit funds for operating assistance has been phased out. Prior to the urbanized area merger, transit properties similar in size to PAT located in urbanized areas less than 200,000 in population were permitted by the federal government to use federal transit formula funds for capital or operating needs. This change in federal classification has significantly impacted the ability of the City of Petersburg to continue subsidizing PAT operations, especially for transit services currently provided in surrounding jurisdictions.

In January 2009, a cost analysis of PAT routes operated outside the City of Petersburg was completed by a project consultant. This analysis used 2007 PAT cost to operate fixed-route miles to estimate the amount of subsidy that would be needed from other jurisdictions if service agreements had been in place. PAT currently provides some service in all Tri-Cities jurisdictions, including Fort Lee.

In October 2010, an update of the Transit Development Plan (TDP) for the Tri-Cities was prepared. The purpose of the TDP update is to guide the future development of transit service in the region. The feasibility of modifying selected existing routes was evaluated along with consideration for some new routes alternatives. The 2010 TDP update was adopted by the MPO in January 2011 and by the City of Petersburg in November 2011. An integral part of this regional transportation planning project was the preparation of constrained and unconstrained 6-year financial plans for PAT in the areas of operations; vehicle replacement and expansion; and, facilities, equipment and other capital improvements. This document is located http://www.craterpdc.org/transportation/mpo.htm
Human Service Transportation Agency Mobility Planning

SAFETEA-LU contains statutory provisions under Section 3046 requiring the preparation of coordination plans focused on transportation services for persons with disabilities, older adults and individuals with lower incomes. A number of human service agencies receive grant funds through federal programs. Enhancing the coordination of existing services provided by these agencies should improve efficiency and promote more cost-effectiveness in the delivery of transportation services.

The Virginia Department of Rail and Public Transportation (VDR&PT) is preparing to sponsor a collaborative effort to update the existing Coordinated Human Service Agency Mobility Plan for the Richmond Urbanized Area. This plan was prepared in 2008 and includes both the Tri-Cities MPO and Richmond MPO portions of the Richmond, Virginia urbanized area. The GRTC is the designated agency for administering Section 5316 (Job Access and Reverse Commute) and Section 5317 (New Freedom) federal grant funds allocated to the Richmond, VA urbanized area. A Grant Review Committee has been established by GRTC to evaluate candidate applications submitted by eligible agencies. The Grant Review Committee selects projects for grant awards. Public and private agencies involved in human service agency transportation provision are being invited to participate.

Tri-Cities Area Transportation Improvement Program

A Transportation Improvement Program (TIP) is prepared as part of the transportation planning process for the Tri-Cities transportation study area under 23 CFR Part 450. The Tri-Cities Area TIP is a program of highway and transit capital projects anticipated to receive federal funding during the next 4-year period. The current TIP was adopted by the MPO in June 2011 for fiscal years 2012 through 2015. Under SAFETEA-LU, the TIP is updated on a 4 year cycle by the MPO in cooperation with the State, the transit operator and area local governments. Projects expected to receive only local or State funding are also listed for information purposes. The metropolitan TIP is consistent with the Statewide Transportation Improvement Program (STIP), also requirement of SAFETEA-LU.

The Tri-Cities MPO has endorsed procedures for identifying candidate Congestion Management and Air Quality (CMAQ), Regional Surface Transportation Funds (RSTP) and transit improvement projects. CMAQ projects are selected by the MPO by means of a project rating process that considers factors such as completion of funding needs for projects partially funded during a previous year, availability of local government support, citizen input and reduction of mobile source emissions. The Richmond District Commissioner of the Commonwealth Transportation Board (CTB) serves in an oversight role regarding the selection of CMAQ projects for programming in the Tri-Cities Area. The Tri-Cities MPO also uses a separate rating process to evaluate candidate RSTP projects. The transit element of the metropolitan TIP is obtained from the 2010 Tri-Cities Transit Development Plan (TDP) as endorsed by the Tri-Cities MPO and the City of Petersburg. The TDP is a multi-year planning document that includes the identification of future transit service and management improvements for the region. Petersburg Area Transit, in cooperation with the Tri-Cities MPO and the Virginia Department of Rail and Public Transportation, update the Transit Development Program periodically. The transit portion of the TIP includes information on estimated capital and operational project costs for the next 4 year period. The Tri-Cities MPO, the City of Petersburg and the State each endorses transit improvement projects programmed in the metropolitan TIP. The Commonwealth Transportation Board (CTB) has project selection...
responsibility for other federal and State transportation funding programs identified in the metropolitan TIP.

The TIP is supported by a financial plan. The financial plan indicates which projects can be funded using identified public and/or private sources. The financial forecasts for each funding program in the highway element of the TIP and transportation plan are developed by the Virginia Department of Transportation and the Virginia Department of Rail and Public Transportation. Transportation improvement projects, other than CMAQ, RSTP and transit listed in the metropolitan TIP are extracted from the State’s Six Year Improvement Program. The State’s Six-Year Improvement Program (SYIP) is updated and approved by the Commonwealth Transportation Board on an annual basis. As mentioned above, transit improvement projects identified in the TIP are derived from the Tri-Cities Transit Development Program (TDP) as developed cooperatively by the MPO, the City of Petersburg Area and the Virginia Department of Rail and Public Transportation.

In order to meet federal requirements for public involvement in the development of the Transportation Improvement Program, the Tri-Cities MPO follows its adopted public involvement procedures. The adopted public involvement procedures include provision for periodic public meetings. These meetings provide a forum where both oral and written comments are solicited on transportation needs in the transportation study area. Prior to its endorsement of the TIP, the Metropolitan Planning Organization considers the statements presented during the annual public meeting and during citizen information period scheduled prior to each Technical Committee and Policy Committee meeting. The Virginia Department of Transportation also conducts annual public meetings at the construction district level throughout the Commonwealth regarding SYIP updates. Provision of MPO public meetings provide citizens opportunity provide input on transportation needs and priorities within the region. Also, the cities and counties in the transportation study area periodically conduct public meetings on proposed transportation improvement projects in conjunction with their regular county board of supervisor or city council meetings. During designated periods of these meetings, citizens have additional opportunity to comment on transportation needs and priorities.

CMAQ and RSTP projects are prioritized for advancement to the metropolitan TIP by the MPO for federal authorization and implementation by either the State, local governments or by private entities. Other projects are prioritized by the Commonwealth Transportation Board for advancement to the metropolitan TIP for federal authorization and implementation by either the State, local governments or private entities. All projects selected for inclusion in the metropolitan TIP are listed in the current adopted financially constrained and air quality conforming metropolitan transportation plan. Projected project cost cannot exceed projected revenue during the anticipated time period or band of years of expenditure. After the metropolitan TIP is endorsed by the MPO, it is forwarded to the State for inclusion in the Statewide Transportation Improvement Program (STIP).

**Air Quality and Transportation Planning**

Section 176(c) of the 1990 Clean Air Act Amendments (CAAA) of 1990, includes provisions requiring consistency between metropolitan transportation plans and transportation improvement programs and the State (Air Quality) Implementation Plan (SIP). Hopewell, Colonial Heights, Petersburg, Chesterfield and Prince George are among localities in the Richmond, Virginia urbanized area that have been classified by the U.S. EPA as nonattainment for ozone at some point in time. Monitored air quality emissions have indicated applicable national standards for ozone have been exceeded in this urbanized area. Nonattainment areas are generally defined in federal air quality legislation as local governmental units and/or geographic areas where monitored air quality
emissions for oxides of nitrogen (NOx) and volatile organic compounds (VOC) have shown that a national air quality standard has been violated. In order to improve air quality emissions in nonattainment areas, State (Air Quality) Implementation Plans are developed to indicate how mobile and fixed air pollution concentrations will be reduced in order to attain the national air quality standard. Further, federal air quality and transportation planning legislation requires the preparation of an analysis that demonstrates the finding that the implementation of projects contained in metropolitan transportation plans and transportation improvement programs conforms with the State Implementation Plan for attaining and maintaining the applicable national ozone standard. This analysis and conclusion is referred to as an ozone conformity finding.

In recent years, the Richmond nonattainment area has experienced a sufficient reduction in ozone related emissions. Effective June 18, 2007, the U.S. EPA approved a request by the Commonwealth that the Richmond area be reclassified to ozone maintenance area status.

The Richmond ozone maintenance area has a mobile source emissions budget for ozone precursors, volatile organic compounds (VOCs) and oxides of nitrogen (NOx), in its approved maintenance SIP. Therefore, the Build scenario emissions test for each analysis year used for the 2035 Transportation Plan must be less than the VOC and NOx emission budgets established in the SIP. The air quality conformity analysis of the preliminary project improvement listing for this plan is currently in progress. On September 29, 2011, the Federal Highway Administration and the Federal Transit Administration jointly issued a joint letter indicating applicable transportation conformity requirements for the Richmond 8 Hour Ozone Maintenance Area had been meet. This finding applies to the FY2012 - FY2015 TIPs and 2031 transportation plans prepared for the Richmond, Virginia urbanized area. A conformity analysis of recommended 2035 Plan improvements is in progress.

Environmental Justice Assessment – 2035 Transportation Plan Recommended Highway and Transit Improvement Projects

The map series found in Appendix B has been used for an environmental justice assessment of recommended highway improvement projects in the 2035 Plan. The maps identify percent concentration or distribution of minority population, percent of persons in poverty, employment distribution, percent population over 65 years old, zero vehicles household and persons with limited English proficiency by 2010 U.S. Census tract within the transportation study area. These maps also indicate a highway project reference number for each constrained and vision plan project recommended by the 2035 Plan update. In addition, a route map of the PAT service area is found in Section 6 – Tri-Cities Area Transportation Plans and Programs under Short Range Transit Development Plan. Employment levels, shopping centers and hospitals are profiled in the environmental justice map series and considered for both the highway and transit assessments.

For highway improvement projects, the Tri-Cities MPO uses level of service (LOS) as a mobility performance measure to assess the trip making ability of low-income minority persons in relation to the total population in the Tri-Cities Area. The assessment considers level of service as a measure of how the benefits and burdens of planned transportation improvements are distributed in the transportation study area. Likely impacts of recommended roadway improvements on low-income and minority population in relation to the total population by census tract within the transportation study area are identified in the assessment. The present LOS measure used is for the year 2009 and the future LOS measure used is for the year 2035.
For transit projects, transit service accessibility is used for the performance measure of determining the trip making ability of the low-income and minority population in relation to the total population in the Tri-Cities Area. The study area population served by PAT service area is defined as .75 mile on either side of each fixed-route.

**Highway Improvement Projects**

Each highway improvement project recommended in the 2035 Transportation Plan will have some impact on the resident population and land use activity. Specific information on the extent of impact would require project level field studies and inventories. At the planning system level, general statements on how project implementation would likely impact minority and poverty concentrations may be made. For the purpose of this assessment, a highway improvement project on new location that impacts an existing residential area is assumed to have a more significant impact than a project widening or the reconstruction of an existing facility. For the purpose of this environmental justice assessment, no distinction is made between financially constrained and vision projects. The environmental justice assessment for the 2035 Transportation Plan includes new projects only. This assessment does not include projects that have received some previous allocation towards implementation. Projects with some previous allocation are listed in the 2031 Transportation Plan and have already received environmental justice assessment.

A total of 24 constrained and 37 vision projects are recommended in the Year 2035 Plan. Of the 61 total, only two involve new location. New location projects are generally associated with greatest potential for impacting residential land uses. One of the new location projects is the Route 460 Public Private Partnership Act (PPTA) project. The Route 460 PPTA is a large project located within a major State transportation corridor linking South Hampton Roads and the Tri-Cities. The scope of the Route 460 PPTA involves the construction of a 55 mile long, limited access highway between Route 58 in Suffolk, Virginia and I-295 in Prince George, Virginia. This 4-lane divided highway is proposed to be constructed on new location generally parallel to and approximately 1 mile south of the existing Rt. 460. Approximately 6.6 miles of the Route 460 PPTA project is proposed to be located within the Tri-Cities. The environmental document prepared for this project provides detail project impact analysis and can be found [http://www.route460ppta.org/](http://www.route460ppta.org/) The other new location project listed in the 2035 Plan is a secondary road vision project. This project is much smaller in scope and is less than one mile in length connecting Rt. 670 (Duncan Road) and Rt. 615 (Blue Tartan Road) in Dinwiddie County.

Projects involving the widening of existing roadways generally occur on heavily traveled collector or arterial streets. These projects can also impact residential land use, especially if additional right-of-way needs to be acquired. These roadways are frequently heavily traveled corridors with expanding commercial land use activities. It may be assumed that widening projects would have generally more impact in residential areas, including those neighborhoods with high minority and/or poverty concentrations, than projects involving reconstruction of the existing facility. Of the 61 total projects listed in the 2035 Plan, 14 are recommended for widening, 38 for either reconstruction or replacement of existing facilities. The remaining projects are either bike/pedestrian or transit related.

Roadway projects involving reconstruction of existing facilities are the most frequent and typically impact the most citizens. Reconstruction projects can have both positive and negative impact on residential areas. For example, the reconstruction of a deficient facility should make
the conditions safer for vehicular and pedestrian use. At the same time, a facility reconstruction may result in more future traffic and lead to the development of congestion. Generally, reconstruction projects do not involve as much right-of-way acquisition and are assumed in this assessment as likely to cause less adverse impact as projects involving new location or widening. Also, due to generally greater residential setbacks in suburban areas, project impacts in the county portions of the study area are anticipated to be less than in more urbanized portions of the transportation study area.

**Petersburg**

In Petersburg, all 24 recommended highway improvement projects involve the reconstruction or replacement of existing facilities. These projects are generally dispersed throughout the City, except for the south central area. No widening or new location projects are proposed.

Four of the 2035 recommended projects involve the reconstruction of segments of Defense Road located on the west side of the City. Census data indicates the population residing on the north side and south side of Defense Road includes tracts with 70% to 90% minority population. Approximately 51% to 100% of the total population on the north side of Defense Road is at or below the poverty level. Tracts on the south side of Defense Road show less than 8.5% of the total population at or below the poverty level. LOS measurements for Defense Road are B for present day and C for future day.

The top 3 rated interstate projects recommended in the 2035 Plan are located in Petersburg. These projects include 2 series of recommended I-85/I-95/Rt.460 interchange projects and the reconstruction of the I-95 interchange at Rives Road. There is very little population currently residing in the vicinity of the Rives Road interchange. LOS measurements at the I-85/I-95/Rt. 460 interchange are C for present day and E for future day. Census tracts located on the north side of the I-85/I-95/Rt. 460 interchange include minority populations of 90% or more with 51% to 100% of the total population at or below the poverty level. This project has the potential to impact significant numbers of low income, minority persons.

Census data indicates several tracts where 21.45 to 45.7% of the total population speaks a language other than English.

**Colonial Heights**

Of the 5 recommended projects located in Colonial Heights, 3 involve the reconstruction of an interstate interchange or an arterial intersection. One project involves widening of a segment of Temple Avenue from 4 to 6 lanes between the east corporate limits and Conduit Road. This segment of Temple Avenue has a present day LOS measurement of A and a future day measurement of F. The remaining project consists of streetscape work for a segment of Route 1 (Boulevard) near the Municipal Building. The 2010 Census data, as graphically displayed in Appendix B, does not indicated any concentration of low income, minority population within Colonial Heights. Several of the recommended projects are located on 2 arterial roadways which carry present day traffic volumes higher than 25,000 and present day LOS of C expected to decline to LOS F by the year 2035. The regional shopping center in the Tri-Cities is located in Colonial Heights along with a number of service and retail employment opportunities.

The 2010 Census data indicates several tracts where more than 10.3% of the population speaks a
language other than English.

**Hopewell**
The City of Hopewell has 1 project listed in the 2035 Plan. This project is a proposed bike/pedestrian facility located along a section of the Appomattox River in the northern portion of the City. The 2010 Census data indicates a concentration of low income, minority population along the Route 36 corridor extending from the western corporate limits into the downtown and northeastern portions of the City. Present and future LOS measures for roadways in Hopewell are D or better.

The 2010 Census data indicates several tracts where more than 10.3% of the population speaks a language other than English.

**Chesterfield**
Of the 8 recommended improvement projects, 4 are located along the Route 10 corridor. One project is an intersection improvement and 3 involve the widening of Rt. 10 from 4 to 6 lanes. Census data indicates approximately 15% of the total population along the Rt. 10 corridor in this vicinity of the County is black and less than 8.5% of the total population is within the poverty level. LOS information indicates present and future levels of B or better for the segment of Rt. 10 between Hopewell corporate limits and Rt. 746 (Enon Church Road).

Of the remaining projects, 2 involve widening 2 lane roadways into 4 lanes. One project is the proposed widening of Enon Church Road near Rt. 10 and other is the proposed widening of East River Road. The East River Road project is located in an area with approximately 90% Black population and less than 8.5% of the total population at or below the poverty level. The present day LOS for East River Road is D and the future year is E. The widening of East River Road holds the potential for adversely impacting minority population, especially given the assumption roadway widening will increase current capacity for through traffic.

Census data indicates several tracts where more than 10.2% of the population speaks a language other than English.

**Dinwiddie**
Of the 4 recommended projects, 1 is an intersection improvement, 2 are widening and the remaining project is a new location. Both widening projects are located in census tracts where approximately one-third of the total population is minority. The widening project on Simpson Road is located in an industrial area that should not impact residences. Both the intersection project located at Rt. 670 (Duncan Road) at Elmwood Drive and the nearby new location project to connect Duncan Road and Rt. 615 (Blue Tartan Road) are located in tracts with approximately 1/3 of the total population is minority and 21.4% to 50.9% of the total population is at or above the poverty level. The intersection project should improve safety and the new location project would improve connectivity between 2 secondary roadways. At a systems level review, it would appear these projects would be beneficial and not have adverse impact on low income, minority persons. However, a project level assessment would be able to determine precise impacts. These 3 projects have LOS measure of C or better for both the present and future. The remaining project is the widening of Rt. 600 (Ferndale Road) from 2 to 4 lanes between Rt. 226 (Cox Road) and Rt. 601 (River Road). Ferndale has a LOS measure of D for both present and future. The east side of Ferndale Rd. is comprised of nearly 50%

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minority population and over 51.0% of the total population is at or above the poverty level. The widening aspect of this project appears to present a potential adverse impact on low income, minority persons.

Census data indicates several tracts where more than 10.3% of the total population speaks a language other than English.

**Prince George**
The 2035 Transportation Plan recommends 8 new projects in Prince George, plus the Rt. 460 PPTA project that has received previous allocations for development of related location and environmental studies. The minority population is fairly evenly distributed throughout the Prince George portion of the transportation study area with a concentration in the Fort Lee area of about 50% of the total population. Census data indicates poverty levels are low at 8.5% or less for all tracts in the County, except for one tract in the northern most portion of the County just east of Fort Lee and Hopewell.

Of the 9 projects, one involves an interchange improvement at I-295 & Rt. 460 and two projects involve widening of I-95 and I-295 from 4 to 6 lanes in the transportation study area. The LOS present day measurement for I-295 is A and the future day measurement is C. The LOS present and future day measurements for I-95 in Prince George are C or better. Census information indicates approximately one-third of the population residing near these major corridors are minority population.

The remaining major widening project involves adding to addition lanes to the existing Temple Avenue roadway between the Colonial Heights east corporate limits and Route 36 (Oaklawn Boulevard). There is very little population that resides along this corridor. The land uses in this portion of Prince George include commercial and public spaces associated with Fort Lee. The LOS for this segment of Temple Avenue is A for present day and F for future day.

Other projects recommended in Prince George are intersection improvements and considered less significant for environmental justice assessment.

Census data indicates several tracts where at least 10.3% of the total population speaks a language other than English and one tract where 21.4 to 45.7% speak a language other than English.

**Transit Improvement Projects**
For FTA sponsored Section 5307 transit improvement projects, the Tri-Cities MPO uses transit service availability as an accessibility performance measure. The trip making ability of low-income minority population residing in transit service areas is compared to areas presently not served by transit. Transit service access or service area is defined as 3/4 mile of an existing transit fixed-route in the Tri-Cities. A scaled PAT existing service area map may be found on page 1-8 of the 2010 Tri-Cities Area Transit Development Plan located [http://www.craterpdc.org/transportation/mpo](http://www.craterpdc.org/transportation/mpo). Additional weekday fixed-route public transit services are provided between downtown Richmond to downtown Petersburg by the Greater Richmond Transit System and by Blackstone Area Transit – Dinwiddie Express. FTA sponsored Section 5310 capital grants for provision of transportation services for the elderly and persons with disabilities have been used by human service agencies operating in the Crater Planning District. This assessment is limited to FTA Section 5307 sponsored services.

A comparison of the PAT route map referenced above has been made with the series of 2010
census tract maps displaying race, poverty, employment auto ownership and other information found in Appendix B of this document for an environmental justice assessment of recommended transit projects for the Tri-Cities Area. The use of the PAT route maps and 2010 census information provide a basis for a qualitative basis for this environmental justice assessment. Four transit improvement projects, totaling $9,721,116, have been drawn from the 2010 Tri-Cities Area Transit Development Plan to form the transit element of the 2035 transportation plan project list. These projects are considered financially constrained based on historical Federal, State and Local funding levels. The projects include bus replacement, a small amount for bus expansion, passenger amenity improvements and renovation of the PAT bus maintenance facility. The facility maintenance project and the bus replacement project are the largest investment projects for this long range program of transit capital improvement projects that will serve all PAT routes within the Tri-Cities Area.

**Petersburg**
The current fixed-route transit service in Petersburg generally serves most low-income and minority population areas within the City that are feasible within available financial resources. Transit services are not currently available in the southern and eastern portions of the City. These areas generally have the lowest population densities and percent total population at or below poverty level within Petersburg. Other portions of the City have access to fixed-route transit service.

**Colonial Heights**
In general, the low-income and minority population in Colonial Heights is small and there are no concentrations. PAT currently provides a feeder route service via I-95 from the downtown transfer area in Petersburg at Sycamore and Franklin streets to Southpark Mall in Colonial Heights. The Southpark Mall area has a very high concentration of employment opportunities with retail and service related jobs. The southern portion of the City, particularly the tracts west of the Rt. 1 (Boulevard) include population in the 8.6% to 21.3% that are either at or below the poverty level. According to the 2010 Census, there are approximately 572 to 854 households within the City without autos available.

**Hopewell**
Significant low-income and minority population reside in Hopewell. Concentrations are located in the central and south-central areas of the City. PAT currently provides a feeder route service from Petersburg Station located at Union Street and West Washington Street along the Route 36 corridor to a point just inside the western corporate limits of Hopewell at a commercial area on the north side. There is no population residing in this portion of the City.

At the present time, PAT is implementing a 3 year demonstration fixed-route entirely within Hopewell. A map of this route is shown on page 5-6 of the 2010 Tri-Cities Area Transit Development Plan located [http://www.craterpdc.org/transportation/mpo.htm](http://www.craterpdc.org/transportation/mpo.htm) This route serves the Oaklawn/Woodlawn corridor and portions of the downtown area with the largest concentrations of low-income, minority population within the City. However, significant numbers of low-income, minority population within these tracts are not being served because the service area is limited by the one route. Several major employment concentrations are located on the eastern portion of the City along the Route 10 corridor.

**Chesterfield**
PAT provides feeder route service from downtown Petersburg to the portion of Chesterfield County located along the Route 36 corridor to a point just north of the Amtrak Station. Concentrations of minority along this route in the County are above 90% and the percent at or below the poverty level is less than 8.5%. Somewhat higher poverty levels are found in tracts just north of Colonial Heights and west of Ettrick with lower minority concentrations of minority population. These levels are 8.6% to 21.3% of the total population. The higher employment concentration areas in Chesterfield are located in the eastern portion of the County near the Route 10 corridor.

**Dinwiddie**

Fixed-route transit service in Dinwiddie County is limited to a feeder route provide by PAT along West Washington Street along the Route 1 corridor to Central State Hospital area. The census tract along the west side of Route 1 served by this route is approximately 50% minority with 51% to 100% of the total population is at or below the poverty level. Other census tracts in Dinwiddie generally have lower concentrations of low income, minority population.

In addition to the fixed-route service provided by PAT, the Blackstone Area Bus System (BABS) operates a service called the Dinwiddie Express. This service offers one trip into Petersburg from Dinwiddie County in the morning and two trips from Petersburg in the afternoon. BABS connects with PAT at Petersburg Station and receives some financial support from Dinwiddie County.

**Prince George**

Transit service in Prince George is presently limited to the Route 36 corridor. The Blandford/Fort Lee/Hopewell PAT route extends outside the eastern limits of Petersburg into a portion of Fort Lee and then further eastward into a commercial area in the vicinity of the Prince George and Hopewell border. Census population information indicates this portion of Prince George is 50% minority and less than 8.5% of the total population is at or below the poverty level. Other Census tracts in the County have lower concentrations of minority population and the same approximate percentage of total population at or below the poverty level. Employment concentrations in the portion of the County that currently receive transit service are high.
Section 7 – Tri-Cities Area 2035 Transportation Plan Recommended Projects and Financial Assumptions
Tri-Cities MPO Financial Assumptions for Implementing the 2035 Transportation Plan

This portion of the 2035 transportation plan update demonstrates compliance with the financial constraint requirement pursuant to CFR 23 Part 450.322(10). Transportation improvement projects identified in metropolitan transportation plans and programs and the State Six-Year Improvement Program are considered to be financially constrained by the level of funding anticipated to be under contract during the applicable plan or program time horizon period.

SAFETEA-LU requires the inclusion of a financial plan that shows the financial planning assumptions used to demonstrate that designated financially constrained projects in the transportation plan can reasonably be expected to be implemented over the 23-year planning horizon period. All project cost estimates used for the 2035 Plan are preliminary planning level estimates. Projects listed in the FY13 - FY17 State’s Six-Year Improvement Program were previously evaluated for financial constraint at the time 2031 Tri-Cities Area Transportation Plan was developed. Therefore, these projects are also listed in the 2035 plan update as financially constrained projects as some have not been fully implemented at this time. The metropolitan transportation plan, including the financial assumptions used to support the plan, is updated every four years.

2035 Plan Revenue Forecast and Assumptions
VDOT developed the financial forecast information used for Interstate, Secondary and Statewide roadway categories for the 2035 Plan update. The Statewide funding category includes Primary and Urban sources anticipated to be expended within the Tri-Cities Area. The dollar amounts used to demonstrate financial constraint for the 2035 Plan have been grouped into 3 time periods or bands of years. The 2035 revenue forecast and time periods or bands used are listed in Table 7-1.

Table 7 – 1 Tri-Cities MPO – 2035 Construction Revenue Forecast by Funding Source

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Band One FY12 - FY17</th>
<th>Band Two FY18 – FY28</th>
<th>Band Three FY29 – FY35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate</td>
<td>4,895,785</td>
<td>95,906,175</td>
<td>67,474,712</td>
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<tr>
<td>Secondary</td>
<td>7,755,802</td>
<td>37,657,403</td>
<td>25,655,961</td>
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<tr>
<td>Statewide</td>
<td>28,283,096</td>
<td>3,142,525</td>
<td>1,598,364</td>
</tr>
<tr>
<td>Maintenance</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Band One represents the time period that covers the current Six-Year Improvement Program for which financial constraint has already been demonstrated with the Tri-Cities Area 2031 Transportation Plan. Band Two refers fiscal years FY18 through FY28 and Band Three to the fiscal years 2020 through 2035. Regionally prioritized improvement projects are shown in the Table 7 – 3 by anticipated year of implementation. Anticipated revenues are not expected to exceed the anticipated project implementation schedule. A compound annual inflation rate of 2.5 percent has been applied to preliminary project cost estimated developed during the year 2012 for financially constrained projects listed in Band Two and Band Three and all vision projects.
In addition to the above cited revenue sources, other sources of private and public funds are anticipated to be available for private/local projects and for the Route 460 PPTA project. No assumptions have been made in the 2035 plan regarding revenues that may be generated from the future potential tolling of I-95. Improvements shown in the project list in bold print are considered to be fiscally constrained projects and projects shown in italic print are considered vision projects. Vision projects are shown in italic print. Vision projects are recognized by the MPO as needed improvements but are of lesser priority for which no revenue sources have been identified.

Transit capital and operating financial forecasts used for the 2035 transportation plan projects were obtained from the 2010 Tri-Cities Transit Development Plan update adopted by the MPO in January 2011. This transit plan was developed in cooperation with the VDR&PT and Petersburg Area Transit (PAT). The transit financial plan uses the assumption that the operation of current transit service levels by PAT will be continued. The information used for the 2035 transit financial plan will be updated as a product of future transit development plan updates.

**2035 Plan Project Prioritization**

The following pages include a prioritized listing of projects that have been identified by members of the Tri-Cities Area MPO for inclusion in the year 2035 Plan. A total of 61 projects were identified for prioritization and grouped by functional classification. A preliminary scope of work, planning level cost estimate was prepared for each candidate project. The need for each candidate project typically originated from the development of local comprehensive plans and/or highway needs assessments conducted at the local government level.

Each 2035 candidate project was rated and prioritized by MPO local government Technical Committee members. This prioritization was endorsed by the MPO – Policy Committee with no adjustments. The MPO’s rating procedure used factors involving project Cost/Benefit, Level of Service and how well each project addressed the following 7 factors:

- Support the Economic Vitality of the Metropolitan Area;
- Increase the Safety and Security of the Transportation System;
- Increase the Accessibility and Mobility Options Available to People and for Freight;
- Protect and Enhance the Environment, Promote Energy Conservation, and Improve the Quality of Life;
- Enhance the integration and Connectivity of the Transportation System;
- Promote Efficient System Management and Operation; and,
### Tri-Cities Area 2035 Transportation Plan Regional Improvement Project List by Functional Classification and by Anticipated Implementation Time Period

**Projects shown in bold print are financially constrained and projects shown in italic print are vision projects.**

#### Regional Interstates

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>From</th>
<th>To</th>
<th>Project Type</th>
<th>Prelim Cost</th>
<th>Cumulative Total</th>
<th>2039 ADT</th>
<th>Significance for AG (RIS)?</th>
<th>AQ Band</th>
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</thead>
<tbody>
<tr>
<td>P-02</td>
<td>650-680/I-645 Interchange</td>
<td>Phase I</td>
<td></td>
<td></td>
<td>$29,130,000</td>
<td>$29,130,000</td>
<td>48,310</td>
<td></td>
<td>RS</td>
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<tr>
<td>P-02</td>
<td>650-680/I-645 Interchange</td>
<td>Phase I</td>
<td></td>
<td></td>
<td>$37,657,403</td>
<td>$37,657,403</td>
<td>62,484</td>
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<tr>
<td>P-01</td>
<td>650-680/I-645 Interchange</td>
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<td></td>
<td></td>
<td>$53,609,800</td>
<td>$53,609,800</td>
<td>87,852</td>
<td></td>
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<tr>
<td>Ch-06</td>
<td>650-680/I-645</td>
<td>Route 142 at Route 106</td>
<td></td>
<td></td>
<td>$2,000,000</td>
<td>$2,000,000</td>
<td>16,886</td>
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<td>RS</td>
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**Private/Local Streets**

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<tr>
<th>ID</th>
<th>Description</th>
<th>From</th>
<th>To</th>
<th>Project Type</th>
<th>Prelim Cost</th>
<th>Cumulative Total</th>
<th>2039 ADT</th>
<th>Significance for AG (RIS)?</th>
<th>AQ Band</th>
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</thead>
<tbody>
<tr>
<td>C-01</td>
<td>At 650-680/I-645</td>
<td>Route 601 at Rt. 360</td>
<td></td>
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<td>$140,000</td>
<td>$140,000</td>
<td>5,815</td>
<td></td>
<td>Private/Local</td>
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<tr>
<td>C-02</td>
<td>Intersection Improvement</td>
<td>Rt. 36 Oakleaf Road at Ct. 600</td>
<td></td>
<td></td>
<td>$14,100,000</td>
<td>$14,100,000</td>
<td>2,030</td>
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**Arterial Streets**

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>From</th>
<th>To</th>
<th>Project Type</th>
<th>Prelim Cost</th>
<th>Cumulative Total</th>
<th>2039 ADT</th>
<th>Significance for AG (RIS)?</th>
<th>AQ Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-02</td>
<td>At 650-680/I-645</td>
<td>Route 36 Oakleaf Boulevard at Lee Avenue</td>
<td></td>
<td></td>
<td>$530,000</td>
<td>$530,000</td>
<td>68,683</td>
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**Collector Streets**

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<th>To</th>
<th>Project Type</th>
<th>Prelim Cost</th>
<th>Cumulative Total</th>
<th>2039 ADT</th>
<th>Significance for AG (RIS)?</th>
<th>AQ Band</th>
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</thead>
<tbody>
<tr>
<td>PD-09</td>
<td>At 650-680/I-645</td>
<td>Route 646 Middle Road at Rt. 646 Middle Road</td>
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<td>$200,000</td>
<td>$200,000</td>
<td>20,000</td>
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**Total Interstates**

Total interstate: $172,920,000

**Total Private/Local**

Total Private/Local: $14,100,000

Total arterials: $176,935,128

Total Private/Local: $14,100,000

Total interstates: $172,809,596
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<th>Description</th>
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<th>Project Type</th>
<th>Estimate</th>
<th>Balance</th>
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<tbody>
<tr>
<td>570325</td>
<td>125 &amp; Temple Avenue Interchange</td>
<td>125 &amp; Temple Avenue</td>
<td>Improvement</td>
<td>8,000,000</td>
<td>-</td>
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<tr>
<td>732904</td>
<td>Rt. 1 &amp; Rt. 225</td>
<td>Intersection Improvement</td>
<td>1,100,000</td>
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<td></td>
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<tr>
<td>905057</td>
<td>Rt. 1 &amp; Woods Edge Rd.</td>
<td>Install RTL</td>
<td>340,000</td>
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<tr>
<td>920394</td>
<td>Rt. 1 Over CSX - Downsville</td>
<td>N/A</td>
<td>3,000,000</td>
<td></td>
<td></td>
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<tr>
<td>726885</td>
<td>Rt. 36 - VCU Sidewalk</td>
<td>Hickory Rd./River Rd./Greener Bl/Ext River Rd.</td>
<td>Install Sidewalk</td>
<td>3,000,000</td>
<td>(200,000)</td>
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<tr>
<td>201865</td>
<td>Rt. 36 Split Intersection with Rt. 144</td>
<td>Intersection Improvement</td>
<td>1,000,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>932290</td>
<td>ARRA - Hopewell/Prince George</td>
<td>Corridor Improvements</td>
<td>900,000</td>
<td>(700,000)</td>
<td></td>
</tr>
<tr>
<td>532906</td>
<td>Rt. 10 &amp; Rt. 634 Roundabout</td>
<td>Construct Roundabout</td>
<td>1,000,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>976910</td>
<td>Rt. 144 Temple Avenue &amp; Dinmore Parkway</td>
<td>Intersection Improvement</td>
<td>300,000</td>
<td>(200,000)</td>
<td></td>
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<tr>
<td>905052</td>
<td>Rt. 144 Temple &amp; Conduit</td>
<td>Intersection Improvement</td>
<td>1,000,000</td>
<td>(200,000)</td>
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<tr>
<td>905053</td>
<td>Rt. 144 Temple Avenue - CH</td>
<td>Signal Coordination</td>
<td>450,000</td>
<td>(200,000)</td>
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<tr>
<td>905054</td>
<td>Rt. 144 Herragegate At South St.</td>
<td>Intersection Improvement</td>
<td>700,000</td>
<td>(200,000)</td>
<td></td>
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<tr>
<td>104490</td>
<td>Rt. 460 &amp; Rt. 637 Enterprise Dr.</td>
<td>Install LTL</td>
<td>750,000</td>
<td>(200,000)</td>
<td></td>
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<tr>
<td>105995</td>
<td>Puddledock Rd. &amp; Industrial Dr.</td>
<td>Intersection Improvement</td>
<td>2,000,000</td>
<td>(200,000)</td>
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<tr>
<td>705910</td>
<td>Construction of Multi-Modal Center Petersburg Area Transit</td>
<td>Transit</td>
<td>17,000,000</td>
<td>(200,000)</td>
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<tr>
<td>70442</td>
<td>Hopewell Circulator Route</td>
<td>Capital &amp; Operating</td>
<td>450,000</td>
<td>(200,000)</td>
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<tr>
<td>107570</td>
<td>Matoaca Rd. &amp; Hickory Rd.</td>
<td>Intersection Realignment</td>
<td>2,000,000</td>
<td>(200,000)</td>
<td></td>
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<tr>
<td>706930</td>
<td>Rt. 616 &amp; Rt. 156</td>
<td>Intersection Improvement</td>
<td>1,000,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 625 Brands Bridge</td>
<td>Wear-Wearing &amp; Resurface</td>
<td>1,000,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>505025</td>
<td>Lakewest Rd. &amp; Brands Bridge</td>
<td>Intersection Improvement</td>
<td>350,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>505025</td>
<td>Rt. 460 &amp; Rt. 630</td>
<td>Construct LTL Lane</td>
<td>250,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>505025</td>
<td>Rt. 630 &amp; Rt. 634</td>
<td>Construct Roundabout</td>
<td>250,000</td>
<td>(200,000)</td>
<td></td>
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<tr>
<td>505025</td>
<td>Rt. 63 Jefferson Park Rd.</td>
<td>Construct Sidewalk</td>
<td>250,000</td>
<td>(200,000)</td>
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<td>505025</td>
<td>Rt. 703 Over Nansemond Creek</td>
<td>N/A</td>
<td>250,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>ARRA Tri-Cities Area</td>
<td>Resurfacing - PT Only</td>
<td>2,500,000</td>
<td>(200,000)</td>
<td></td>
</tr>
<tr>
<td>505025</td>
<td>ARRA Tri-Cities Area</td>
<td>Resurfacing - PT Only</td>
<td>500,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 109 Hickory Rd.</td>
<td>Pave Overlay</td>
<td>800,000</td>
<td>(200,000)</td>
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</tr>
<tr>
<td>104935</td>
<td>Rt. 1 &amp; Rt. 144 Temple Avenue</td>
<td>Additional #4 Truck Lane</td>
<td>1,000,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 1 Boulevard &amp; Dupuy Avenue</td>
<td>Construction</td>
<td>260,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 1 Boulevard</td>
<td>Add Center Turn Lane</td>
<td>250,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 1 Boulevard</td>
<td>Signal Coordination</td>
<td>450,000</td>
<td>(200,000)</td>
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</tr>
<tr>
<td>505025</td>
<td>Rt. 1 - Windsor to Pinkick</td>
<td>Add Center Turn Lane</td>
<td>1,000,000</td>
<td>(200,000)</td>
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<tr>
<td>104935</td>
<td>Rt. 1 &amp; Hummel Ross Rd.</td>
<td>Intersection Improvement</td>
<td>1,000,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 36 Corridor - Hopewell</td>
<td>Upgrade Signal Controller</td>
<td>450,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 36 &amp; Rt. 630</td>
<td>Construct Additional LTL</td>
<td>900,000</td>
<td>(200,000)</td>
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<tr>
<td>505025</td>
<td>Rt. 109 Hickory Hill Rd.</td>
<td>Rt. 460 County Drive</td>
<td>Add Milling LTL</td>
<td>4,500,000</td>
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<td>505025</td>
<td>Sycamore/Crater Rd/Walnut St.</td>
<td>Signal Upgrade</td>
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<tr>
<td>505025</td>
<td>South Crater Road</td>
<td>Signal Coordination</td>
<td>350,000</td>
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<tr>
<td>ID</td>
<td>Description</td>
<td>From</td>
<td>To</td>
<td>Project Type</td>
<td>Cost Estimate</td>
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<td>-----------------------------</td>
<td>----------------------------------------</td>
<td>---------------</td>
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<tr>
<td>UPC 68731</td>
<td>Rt. 301 - Petersburg</td>
<td>Culvert Replacement</td>
<td>$891,000</td>
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<tr>
<td>T10733</td>
<td>Lakeview Avenue</td>
<td>Improvements</td>
<td>$3,314,000</td>
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<tr>
<td>T10732</td>
<td>Rt. 36 &amp; Puddledock Rd.</td>
<td>Intersection Improvement</td>
<td>$1,193,000</td>
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<td>T10731</td>
<td>Dupuy Avenue</td>
<td>Improvements</td>
<td>$2,777,000</td>
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<tr>
<td>UPC 1463</td>
<td>Cedar Level Rd. - Cobblestone Miles</td>
<td>Widening to 4 lanes</td>
<td>$14,653,000</td>
<td>5,490,000</td>
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<tr>
<td>UPC 10532</td>
<td>River Road</td>
<td>Widening to 4 lanes</td>
<td>$4,370,000</td>
<td>426,000</td>
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<tr>
<td>UPC 52172</td>
<td>Courthouse Rd./Berry St.</td>
<td>Widening to 4 lanes</td>
<td>$16,884,000</td>
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<tr>
<td>UPC 86735</td>
<td>St. John St.</td>
<td>Culvert Replacement</td>
<td>$993,000</td>
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<tr>
<td>UPC 71738</td>
<td>Downtown Petersburg Various Sts.</td>
<td>Signal Optimization</td>
<td>$325,000</td>
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<tr>
<td>UPC 50018</td>
<td>Cedar Level Rd. - Phase 1</td>
<td>Widening to 4 lanes</td>
<td>$4,949,000</td>
<td>(1,192,000)</td>
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<tr>
<td>UPC 50021</td>
<td>St. Andrews St.</td>
<td>Bridge Replacement</td>
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<tr>
<td>UPC 94490</td>
<td>ARRA - Colonial Heights</td>
<td>Resurfacing - CH Only</td>
<td>$521,000</td>
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<tr>
<td>UPC 95548</td>
<td>ARRA - Colonial Heights</td>
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<td>$5,000</td>
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<tr>
<td>UPC 97892</td>
<td>Southpark &amp; Dimmock</td>
<td>Add Mill Turn Lane</td>
<td>$330,000</td>
<td>0</td>
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<tr>
<td>UPC 97893</td>
<td>Rte. 1 &amp; Branders Bridge - CH</td>
<td>Intersection Improvement</td>
<td>$245,000</td>
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<tr>
<td>UPC 100551</td>
<td>Rte. 1 &amp; Westover Avenue</td>
<td>Intersection Improvement</td>
<td>$996,000</td>
<td>(129,000)</td>
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</tbody>
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**U.S. Route 460 Corridor Improvement Project**

- Approximately 7.20 miles within Tri-Cities MPO Study Area
- New 4 Lane Divided Highway
- Estimated cost: $1.4b
- Approximately 13.57% of total project cost
- Combination of Funding Sources: Equity Investment, Investment Earnings, Bank Debt, Private Activity Bonds, and Public Investment.

**Estimated Highway Maintenance Funds (Route 460 PPTA Not Included) by Time Period**

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<tr>
<th></th>
<th>FY12 - FY17</th>
<th>FY18 - FY35</th>
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<td>$149,601,814</td>
<td>$339,422,971</td>
<td>$489,024,785</td>
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Petersburg Transportation Project Map - Year 2035
Section 8 – Related Transportation Planning Factors in the Tri-Cities Area
Planning Factors
SAFETEA-LU identified eight planning factors that need to be considered as long range metropolitan transportation plans are developed. Examples of how transportation plans and programs in the Tri-Cities Area have considered these 8 factors are provided below.

Factor A – Support the Economic Vitality of the Metropolitan Area, Especially by Enabling Global Competitiveness, Productivity and Efficiency
An integral part of the goals statement for metropolitan transportation plan in the Tri-Cities Area is to assure compatibility between transportation plans and economic development activities. The Route 460 Private Public Transportation Act project is an excellent example of the application of this planning factor in the Tri-Cities. The Route 460 PPTA is envisioned as transportation improvement that will expand the role of the Route 460 as a corridor of statewide significance. The need to improve the Route 460 corridor between I-295 in Prince George and Rt. 58 in Suffolk continues to be the top regional transportation priority of the Tri-Cities MPO. The concentration of freight traffic on Route 460 has increased to over 25 percent of total traffic in recent years. With the completion of the current Panama Canal expansion project, the Commonwealth envisions its naturally deep water port in Hampton Roads will offer significant competitive advantage over other east coast ports in the U.S., especially in the area of container freight movement.

Safety issues, delays related to signalized intersections, hurricane evacuation for South Hampton Roads have raised the level of interest in provision for a new, 4-laned limited access roadway for the Rt. 460 corridor. Several regional warehouse distribution centers are presently located along this corridor. The volume of container activity using the Route 460 corridor is anticipated to increase in the future. Much of this truck traffic is destined for major cities on along the east coast and the mid-west.

VDOT completed an alternatives analysis and draft environmental impact statement for the 55 mile Route 460 corridor nearly a decade ago. In November 2006, the Commonwealth Transportation Board selected one of the candidate alternatives that provides for a new 4-lane divided Route 460 facility south of the present roadway in the Tri-Cities. The Commonwealth Transportation Board is currently in the detailed proposal stage of reviewing project proposals received from 3 vendors. It is anticipated the Commonwealth will select a winning vendors and execute a contract by the end of calendar year 2012 to complete construction of the new roadway within the next 5 year period. The Tri-Cities MPO includes the Route 460 PPTA project in its financially constrained transportation plan. The Tri-Cities MPO supports the continued development of freight movement and logistics development activities within the Route 460 corridor.

Factor B – Increase the safety of the transportation system for motorized and nonmotorized users
The Route 460 Corridor also provides an example of how the need to improve safety of the transportation system has been considered by the transportation plan. The Virginia portion of the TransAmerica Feasibility Study included an analysis of accidents in the Route 460 corridor. This study found that during the 3-year period 1994-1996, the death rate was 3.5 on the segment between I-295 and Route 58, twice the statewide average for comparable facilities of 1.5.

An example of increased safety consideration for the future transportation system in the Tri-Cities Area is the increased use of technology with Intelligent Transportation Systems applications to monitor traffic movement at the I-85/I-95/Route 460 interchange. The VDOT Richmond District
office is currently conducting a Roadway Safety Assessment (RSA) of this interchange.

The Tri-Cities MPO has participated with the Richmond MPO in a comprehensive effort to develop a regional architecture for Intelligent Transportation Systems (ITS) and is continuing its support for the use of technology to enhance mobility and safety. The intent of developing ITS architecture for the Richmond/Tri-Cities Area has been to provide guidelines on how selected technologies should be deployed. Examples of ITS applications deployed in the Richmond Area include traveler information systems, incident management systems, variable message signs, and closed-circuit television cameras.

**Factor C – Increase the accessibility and mobility options available to people and for freight**

Petersburg Area Transit, the local fixed-route operator, provides accessible coaches for its patrons along with a complementary paratransit service for qualified persons residing within the transit service area. A 3 year PAT demonstration route located in the City of Hopewell is currently in its second year of operation. Previously, no fixed route transit service has been available in Hopewell since the mid-1970s. The distribution of transit service benefits in the Tri-Cities is factor is addressed under the environmental justice assessment in Section 6 - Tri-Cities Area Transportation Plans and Programs.

In addition to the demand response PAT service, several private vendors provide wheel-chair accessible transportation services “for hire” in the Tri-Cities Area for persons with mobility limitations. However, limited mobility services are generally available in the Tri-Cities for disabled persons who require specialized transportation services.

**Factor D – Protect and Enhance the Environment, Promote Energy Conservation, and Improve Quality of Life**

The maps contained in Appendix C identify selected environmental characteristics of the transportation study area. Consideration of these characteristics will serve to help protect the environment by identifying any major environmental concerns associated with planned transportation improvement projects early in the plan development process. Planned transportation improvement projects, such as highway or intermodal facilities, may impact natural, cultural and recreational resources. In order to identify and limit these impacts, State sponsored projects costing more than $100,000 are required by the Code of Virginia Section 10.1188 to have an environmental impact report (EIR). Federally sponsored projects are required by the National Environmental Policy Act (NEPA) and Code of Virginia Section 10.1183(9) to have either an environmental assessment (EA) or an environmental impact statement (EIS). State and federal regulations require the preparation of these environmental documents to show how proposed projects are likely to impact environmental resources.

In Virginia, the EIR must identify project impact on wildlife habitat; adverse effects that cannot be avoided with project implementation; measures to minimize impacts; alternatives to the proposed construction and any irreversible environmental changes that would be the result of implementing the proposed project. State required EIR documents must also identify and describe the environmental resources present in the vicinity of the proposed project and evaluate how the planned project may affect environmental characteristics of interest. Examples of environmental characteristics required to be protected include rare plants and animals along with supporting habitats; historic sites, structures and/or landscapes; selected agricultural and forest lands; wetlands, water bodies and waterways; air quality, ground water and mineral resources.
By way of the consultation process outlined in SAFETEA-LU, the Tri-Cities MPO has previously received information from the Virginia Department of Game and Inland Fisheries that threatened and endangered animals known to exist in the Tri-Cities Area include: federal threatened state threatened bald eagle, state threatened peregrine falcon, state threatened loggerhead shrike, state threatened barking tree frog and state endangered black banded sunfish. Records maintained by this agency also indicate a federal threatened state threatened plant species called sensitive joint-vetch has been identified to exist in the Tri-Cities Area. Improvement projects listed in the metropolitan transportation plan may impact these threatened and endangered animals and threatened plant.

One initiative aimed at protecting environmental characteristics in the Tri-Cities is the Lower Appomattox River Trail, Greenway and Blueway. This 22-mile linear multi-purpose trail and park network begins at City Point in the City of Hopewell and extends westward to Lake Chesdin in Dinwiddie County.

Transportation improvements improve the quality of life for users of the transportation system. Improvements such as facility reconstruction often eliminate traffic hazards and reduce travel time for system users. Improvements that enhance the capacity of existing facilities may create enhanced opportunities for further economic development along travel corridors.

A number of transportation enhancement and energy conservation projects have been implemented in the Tri-Cities Areas. Examples of these projects, including the CMAQ funded Ozone Alert Program and may be found in Section 8 – Related Planning Actives in the Tri-Cities Area of this document.

Pursuant to Section 450.316 of SAFETEA-LU, the Tri-Cities Area MPO has initiated efforts to consult with resource agencies and other organizations regarding compatibility of resource conservation plans/inventories and transportation plans. Comments on previous metropolitan transportation plan updates have been received from State and federal resource agencies. These comments were reviewed and considered by the MPO – Policy Committee. Several comments received were incorporated into the 2031 Transportation Plan update. Appendix C provides visual environmental overview of impacts likely to result as transportation improvement projects are implemented. A general discussion on environmental mitigation and a listing of potential mitigation strategies that may be deployed to offset the environmental impacts of planned transportation improvements is provided near the end of Section 8- Related Planning Activities in the Tri-Cities Area.

Factor E – Enhance the Integration and Connectivity of the Transportation System, Across and Between Modes, for People and Freight
The Intermodal Facility Study provides an example of how such a facility would be able to connect modes for freight shipments by negotiating daily shipping costs on behalf of area shippers. By centralizing individual company freight shipments leaving the intermodal service area, the intermodal facility should be able to obtaining transportation services from truck, rail, air and port transportation providers at a lower cost than individual freight shippers could obtain.

The Southeastern High Speed Rail project and the Richmond to Hampton Roads High-Speed Rail projects provide examples how passenger rail service could be implemented to provide connection between modes for people and freight. Alternatives for corridor alignments and station locations will have impacts on the connectivity of the transportation system.

Also, existing fixed-route transit service provided by Petersburg Area Transit (PAT) offers
connections for patrons with passenger rail service at the Ettrick Station located in nearby Chesterfield County.

Section 5 – Intermodal Element provides a discussion of the regional bikeway plan updated in August 2003 by the MPO along with a map reference showing recommended bikeway facilities for the Tri-Cities Area.

Factor F – Promote Efficient System Management and Operation
The monitoring of growth and travel patterns in the study area; the maintenance of a travel forecasting model; the establishment of the Congestion Management System; the application of Intelligent Transportation Systems; and, the implementation of transportation facility improvements all serve to promote system efficiency in the management and operation of the transportation system.

The Virginia Department of Conservation and Recreation recommends in its 2007 Virginia Outdoors Plan the application of a “Green Infrastructure” in Virginia. The concept of green infrastructure may be summarized as an approach to land development involving less loss of open space, agricultural and forest lands than more traditional land development patterns. Examples of “green infrastructure” include incorporating watershed management in transportation planning; more effective coordination of land use and transportation planning and enhanced funding for transportation improvements.

Factor G - Emphasize the Preservation of the Existing Transportation System
Facility maintenance of transportation infrastructure is a continuing State and local priority. Project level information on transit operational and selected highway maintenance projects is included in Tri-Cities metropolitan transportation plans and programs.

Management Systems
Applicable federal transportation planning guidelines require the application of congestion and intermodal management processes for the Tri-Cities Area. The intent of these processes is to assemble information on the performance of the transportation system to support future statewide and regional transportation planning for existing and future facility improvements.

The Intermodal Surface Transportation Act considered the concept of a management system as

"...a systematic process, designed to assist decision makers in selecting cost-effective strategies/actions to improve the efficiency and safety of, and protect the investment in, the nation's transportation infrastructure. A management system includes: identification of performance measures; data collection and analysis; determination of needs; evaluation and selection of appropriate strategies/actions to address the needs; and evaluation of the effectiveness of the implemented strategies/actions."

The maintenance of the Tri-Cities Congestion Management Process and periodic update of the Intermodal Management System for the Richmond MPO and Tri-Cities MPO are part of metropolitan transportation planning in the Richmond, Virginia Urbanized Area.

Congestion Management Process
SAFETEA-LU requires that the metropolitan planning process in Transportation Management Areas (TMAs) include a congestion management process. In TMAs designated as nonattainment/maintenance areas for ozone, Federal funds may not be programmed for a project that
significantly increases single occupancy vehicle (SOV) capacity unless the project is part of an approved CMP. The Tri-Cities MPO is currently designated as part of the Richmond, Virginia TMA with a total 2010 urbanized area population of 953,556, according the U.S. Census Bureau.

The Federal Highway Administration (FHWA) defines a CMP as "... a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. A CMP includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions, and evaluate the effectiveness of implemented action."

Congestion refers to that level at which transportation system performance is no longer acceptable due to traffic interference. The CMP aids in the identification of specific roadway segments where congestion has occurred or is forecasted to occur and suggests alternative strategies to relieve the traffic congestion.

Listed below is an explanation of how the seven potential components of a CMP, as outlined by Federal guidance, are applied in the Tri-Cities.

1. **Area of Application**
   The Tri-Cities Area to be covered by the CMP includes the Cities of Colonial Heights, Hopewell and Petersburg and the urbanized portions of the Counties of Chesterfield, Dinwiddie and Prince George.

2. **Transportation System Definition**
   Within the area of application, it is necessary to determine which transportation facilities should be included in the CMP. Proposed projects on these chosen transportation facilities are periodically evaluated using the CMP. Only the facilities of the National Highway System (NHS) are required by FHWA to be evaluated by the CMP. As determined by the Metropolitan Planning Organization, the Tri-Cities Area CMP network consists of facilities with the National Highway System (NHS) designation. Other projects not occurring on the NHS, such as regionally significant or major projects on non-NHS facilities, may be evaluated on a project-by-project basis. In addition, improvements on transportation facilities, such as pedestrian and bicycle may be considered as means to help relieve traffic congestion in the area.

3. **Performance Measures**
   Performance measures provide a means of evaluating the performance of the transportation system. These measures provide parameters necessary to identify the location and severity of congestion. Performance measures also allow evaluation of the effectiveness of proposed strategies/alternatives.

   In order to determine the level of congestion for a highway segment the Tri-Cities, CMP uses a performance measurement of volume/capacity (V/C). This figure is determined for each segment of highway CMP traffic data base. Existing and projected roadway V/C values are developed for each segment CMP database. This process allows the MPO to consider present congestion, as well as projected as transportation improvement priorities area established for the metropolitan plan, the RSTP and CMAQ programs.

   In addition to the performance measure of V/C used by the MPO in the CMP related tasks, a much broader set of State required land use and transportation performance measures are monitored in the Tri-Cities. This information may be found in Section 4 of this document.
4. **Data Collection and System Monitoring**

The process of collecting data and monitoring the transportation system is an ongoing effort to determine and monitor the level and severity of congestion that may occur and to evaluate the effectiveness of implemented actions. Existing data sources available with the affected localities, the MPO and the Virginia Department of Transportation are utilized for this effort. The major data component of the Tri-Cities CMP is a database containing roadway characteristics, traffic counts, service volumes, etc. for each road segment in the CMP. The information in this database is updated by VDOT on a periodically as more current traffic counts become available.

5. **Identification and Evaluation of Proposed Strategies**

This process of the CMP identifies potential strategies that will increase the efficiency of the transportation system. Strategies developed by the CMP may be reviewed for inclusion in the long-range plan. In this urban area, the congestion management strategies will contribute to the elimination of congestion identified by the CMP. The intent of the CMP includes an evaluation of the effectiveness of the proposed strategies based on the performance measures identified for the Tri-Cities in terms of economic, technical and political feasibility.

The following are some potential strategies for the Tri-Cities area:

- **Transportation Demand Management**
  - Carpooling, vanpooling, alternate work hours, telecommuting, parking management, congestion pricing, growth management and land use planning, trip reduction ordinances

- **Traffic Operational Improvement**
  - Intersection and road widening and other improvements to existing facilities, HOV facilities, traffic surveillance and control systems, traffic signal improvements, traffic redirection (see Appendix C for information on existing efforts in traffic operational improvement practices)

- **Public Transportation and Non-traditional Modes**
  - Exclusive rights-of-way, new and/or expanded transit opportunities, park and rides, intermodal transfer facilities, traffic signal preemption, fare reductions, transit information systems, new and/or expanded bicycle and pedestrian facilities

- **Intelligent Transportation System Technology (ITS)**

- **Additional System Capacity**
  - These are potential strategies for the Tri-Cities MPO. Other strategies may be identified as effective means of relieving congestion and may be evaluated.

6. **Implementation of Strategies**

At the time candidate projects are identified for MPO evaluation and prioritization, preliminary CMP strategy or strategies may be selected for a planned improvement. Potential congestion relief benefits of each strategy, as well as a Benefit/Cost analysis, should be prepared for each strategy. From these projects, the MPO will choose projects for inclusion in the metropolitan Transportation Improvement Program (TIP). The TIP includes an implementation schedule for all projects and expected sources of funding.

7. **Evaluation of the Effectiveness of Implemented Strategies**

A process should be established to allow for the periodic evaluation of the effectiveness of implemented CMP strategies and performance measures.
Intelligent Transportation Systems

In cooperation with local, regional and State transportation agencies, the development of an Intelligent Transportation Systems (ITS) program began in 1996 with a federally sponsored study that investigated the use of advanced technology applications for transportation facilities within the Richmond/Tri-Cities region. Recommendations from this study included the development of a regional 24-hour operations center to manage freeway traffic. VDOT implemented this concept in March 2000 with the operation of a Smart Traffic Center.

Today, the Richmond, Virginia urbanized area, including both the Richmond MPO and the Tri-Cities MPO is within the Virginia ITS service area defined by VDOT as the Central Region ITS Architecture. The geographic area covered by the Central Region ITS Architecture extends from I-85 at the North Carolina border northward to include the Richmond, Virginia urbanized area to a point just north of Fredericksburg, plus the Northern Neck and Peninsula portions of the Commonwealth. Local, State and Federal agencies with transportation operations responsibilities and related services are considered ITS stakeholders and participate in periodic ITS advisory meetings conducted in support of the Central Region ITS Architecture. A map of this Central Virginia service area and further information is located http://local.iteris.com/virginiaitsarchitecture/index.html

Examples of ITS technology applications deployed over the past several years at key locations along interstate highways within the Tri-Cities include the installation of a VDOT weather station at the I-95 crossing of the Appomattox River and the placement of closed circuit television cameras at I-95 at Southpark Boulevard (Exit 53), I-95 at Temple Avenue (Exit 54) and I-95N at I-85. Examples of other deployed ITS tools in the Central Region include Computerized Traffic Signal Systems, Emergency Vehicle Pre-emption Devices, EZPass, and Roadway Sensors. These and other tools are continuously monitored by VDOT. ITS architectures provide the framework for integrating traffic conditions with helpful traveler information and services within the ITS region.

In June 2009, VDOT released a maintenance plan and an implementation plan for Central Region ITS Architecture. The focus of the maintenance plan is the following required federal requirements for the ITS architecture:

- Description of the region covered;
- List of ITS regional stakeholders;
- Inventory of ITS elements;
- List of ITS services and elements involved;
- Functional requirements of key elements;
- Interfaces between elements (interconnects and architecture flows);
- Applicable ITS standards; and
- Agreements for required deployment.

Stakeholders, such as local governments or transit operators with transportation operational responsibilities, can propose changes on how the architecture operates through a review process with VDOT and other stakeholders within the Central Region ITS.

The VDOT implementation plan for the Central Region ITS includes information for integrating
Transportation planning and potential new ITS technology applications.

Transportation Safety
The Commonwealth’s Strategic Highway Safety Plan (SHSP) was updated in 2011 by several State transportation agencies, including the Departments of Motor Vehicles (DMV), the Virginia State Police (VSP) and VDOT. Specific strategies and action steps identified in this document include six emphasis areas consisting of the following: roadway speeding, intersections, young drivers, unrestrained occupants and alcohol-related. In addition, this plan delineates unique themes for each region of the Commonwealth. For the Richmond Area, the need to focus on distracted driving, judicial education, safety data, and young drivers is documented in this plan.

The statewide traffic data base used by the Tri-Cities MPO for the Congestion Management Process, as provided by VDOT, contains summary information on crashes by roadway segments within the transportation study area. For the 563 roadway segments in the Tri-Cities, a total of 7,324 vehicle and person injury crashes were recorded for the years 2005 through 2009. Vehicle crashes in the Commonwealth affect more citizens than any single disease or type of crime. Crashes impact citizens and local communities in terms of medical costs, lost wages, insurance costs police, fire, and other essential services.

Examples of suggested strategies and actions by emphasis area are listed in Virginia’s Strategic Highway Safety Plan located [http://www.virginiadot.org/info/hwysafetyplan.asp](http://www.virginiadot.org/info/hwysafetyplan.asp) are listed below.

- **Roadway Departure**
  - Conduct a systemic review of roadway departure crashes by functional classification and location.
  - Make systemic improvements on shoulder areas that are similar.
  - Include safety projects when doing resurfacing.

- **Speeding**
  - Review roadway design and geometry to determine whether it contributes to speeding.
  - Develop support for proven countermeasures that can change the safety culture and result in greater acceptance of speed limits, i.e., automated speed enforcement, red light running …

- **Intersections**
  - Examine intersection design to ensure safety for all users including pedestrians and bicyclists.
  - Ensure VDOT policy to consider roundabouts at each intersection upgrade is widely known by regional and local transportation agencies and organizations.

- **Young Drivers**
  - Review driver’s education program and determine areas for improvement.
  - Develop and implement strategic and effective educational messages for youth.

- **Unrestrained Occupants**
- Pass a primary seat belt law.

- Alcohol-Related
  - Provide education on the problem of alcohol-related crashes.
  - Enhance and expand safe rides home programs; reach out large corporation for support.

This document is considered as the safety element for the *Tri-Cities Area 2035 Transportation Plan*.

**Energy Conservation**

Although the Tri-Cities MPO has adopted an energy contingency plan for the purpose of "identifying feasible transportation-related energy contingency strategies that have been or can be implemented in the Tri-Cities Area during future energy shortages" its role has been minimal in this area. Included in the plan are recommendations for the implementation of programs, including ridesharing, park and ride programs, public transit and transportation management systems. More extreme recommendations include programs such as gasoline rationing and reduction of off-peak transit services. Some of the less restrictive energy conservation measures have been implemented in conjunction with the Tri-Cities Area Transportation Study.

Energy conservation efforts are benefited by the area's efforts to reduce congestion and improve air quality. The reduction in traffic delays by the implementation of selected CMAQ projects and provisions for a Congestion Management Process (CMP) reflect efforts by the Tri-Cities MPO to attain energy conservation related goals.

**Congestion Mitigation and Air Quality Program**

The SAFETEA-LU continued funding for the Congestion Mitigation and Air Quality (CMAQ) Program. The purpose of the CMAQ program is to provide State and local governments with federal funds for transportation projects that help meet the requirements of the Clean Air Act. CMAQ funding the Tri-Cities Area has been used since FY 1993 to finance an Ozone Alert Program (ridesharing), traffic signalization and traffic flow improvement projects and a transit fixed-route demonstration project. CMAQ funds are restricted to projects located in areas that are classified as nonattainment or maintenance by the U.S. Environmental Protection Agency. Candidate projects are rated based on locally endorsed criteria and selected for funding by the MPO – Policy Committee. Selected projects must meet federal eligibility standards and show a reduction in harmful mobile source air emissions. At the present time, approximately $1.6 million in federal and State CMAQ funds are made available annually to the Tri-Cities MPO for eligible projects in the Richmond Ozone Nonattainment/Maintenance Area.

**Ridesharing**

In the Tri-Cities Area, Ridesharing services are provided by Ridefinders. Ridefinders is a non-profit organization affiliated with the Greater Richmond Transit Company (GRTC) with offices located in downtown Richmond. The goal of Ridefinders is to move more people in fewer vehicles to increase the efficiency of the transportation network. This goal is accomplished with agency assistance in establishing carpools, vanpools, transit services, or telecommuting. Ridefinders has made its services available to assist with Fort Lee expansion activities.

Ridefinders is financed with federal, State and local funds. The Tri-Cities MPO has made allocations
to Ridefinders under the Congestion Mitigation and Air Quality (CMAQ) Program to support the Ozone Alert Program. In this program participating major employers in the Tri-Cities Area are advised by Ridefinders of approaching days that ozone readings are forecasted by the State to be above healthful levels. The employers encourage employees to make special efforts to carpool on ozone alert days.

**Transportation Security**

450.306(a) (3) of SAFETEA-LU contains language indicating the security of the transportation system for motorized and non-motorized users is to be considered as part of the scope of the metropolitan planning process. The concept of transportation system security in the context of a natural or man-made incident is fairly new for the MPO planning process in Tri-Cities. In August of 2001, the Association of Metropolitan Planning Organizations (AMPO) received a technical paper titled “The MPO Role in Management and Operations” by John Mason. Potential roles identified by Mason for MPOs in the area of transportation security include the following:

1. **Traditional:** The MPO incorporates system management and operations (M&O) Role; in its ongoing transportation planning activities The focus would be on specific M&O projects that arise as part of the transportation planning process; but the primary responsibility for operations-type projects would rest elsewhere, most likely with the region’s operations agencies.
2. **Convener:** The MPO would act as a forum where operations plans could be discussed and coordinated with other plans in the region. Regular meetings on operations issues would be held, but the MPO would still not be responsible for developing a regional operations plan.
3. **Champion:** The MPO works aggressively to develop a regional consensus on operations planning. MPO planners work with operating agencies to create programs and projects that improve system performance. The MPO takes the lead in developing regional agreements on coordinated operations.
4. **Developer:** The MPO would develop regional operations plans in addition to incorporating operations strategies into the transportation plan. System-oriented performance measures would be used to identify strategic operations gaps in the transportation system.
5. **Operator:** The MPO would be responsible for implementing operations strategies that were developed as part of the MPO-led planning process.

The Tri-Cities MPO has some prior experience with the Traditional Security Role. Since FY 2005, security needs supporting Fort Lee’s Lee, Sisisky and Mahone gate entrances have received consideration by the MPO and the Commonwealth Transportation Board (CTB). Turn lane, intersection realignment and signal modification improvement projects at these locations have received funding under the MPO’s Regional Surface Transportation Program (RSTP) and under the CTB’s American Recovery and Reinvestment Act (ARRA) Program. It is likely the Tri-Cities MPO will continue consideration for future projects thru the transportation planning process that enhance security at the entrances to the Fort Lee military installation.
Transportation Enhancement Program
The *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)*, enacted the Federal Transportation Enhancement Program. This program has continued under provision of SAFETEA-LU and the continuing resolutions authorized by the U.S. Congress. Opportunities for the enhancement of the nation's transportation system are encouraged with the development of unique and creative projects that will increase the value of a transportation resource, make it more aesthetically pleasing, and integrate it into its surrounding community. In order to be eligible for enhancement funding, a project must fall into one or more of the following categories:

1. Provision of Facilities for Pedestrians and Bicycles.
2. Provision of Safety and Educational Activities for Pedestrians and Bicyclists.
3. Acquisition of Scenic Easements and Scenic or Historic Sites.
4. Scenic or Historic Highway Programs.
5. Landscaping and Other Scenic Beautification.
7. Rehabilitation and Operation of Historic Transportation Buildings, Structures or Facilities including Historic Railroad Facilities and Canals.
8. Preservation of Abandoned Railway Corridors Including the Conversion and Use Thereof for Pedestrian and Bicycle Trails.
9. Inventory, Control and Removal of Outdoor Advertising.
10. Archaeological Planning and Research.
11. Environmental Mitigation to Address Water Pollution Due to Highway Runoff or Reduce Vehicle-caused Wildlife Mortality While Maintaining Habitat Connectivity.
12. Establishment of Transportation Museums.
Several of the localities in the Tri-Cities Area have been awarded transportation enhancement funds. Following is a partial list of past enhancement projects in the Tri-Cities Area.

<table>
<thead>
<tr>
<th>Project</th>
<th>Locality</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appomattox River Heritage Trail</td>
<td>City of Petersburg</td>
<td>Renovation of historic passenger train station and planning land acquisition and at least partial construction of approximately two miles of pedestrian/bicycle trail along the Appomattox River.</td>
</tr>
<tr>
<td>Appomattox River</td>
<td>City of Petersburg</td>
<td>Partial restoration of historic passenger train station; planning, land acquisition and construction of pedestrian/bicycle trail along river.</td>
</tr>
<tr>
<td>(Phase I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route of Lee's Retreat Consortium</td>
<td>Multi-County</td>
<td>The first phase will consist of development and printing of informational brochures, planning and design of pull-off sites, route signage, land acquisition and utility relocation. The second phase is construction of each pull-off, installation of the solar-powered radio transmission equipment, signage and actual system initiation.</td>
</tr>
<tr>
<td>(Phase II)</td>
<td></td>
<td></td>
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<tr>
<td>Driving Tour of Lee's Retreat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Virginia Civil War Consortium</td>
<td>51 Historical Sites</td>
<td>The project intends to improve and interpret Civil War sites between Fredericksburg and Petersburg accessible from the north and south. The promotion is to be nationally and internationally marketed.</td>
</tr>
<tr>
<td>Blandford Cemetery Wall Restoration and Crater Road Corridor Plan</td>
<td>City of Petersburg</td>
<td>This project includes rebuilding and restoring the historic cemetery walls that line Crater Road and Rochelle Lane along the western boundary of the cemetery.</td>
</tr>
<tr>
<td>Grove Avenue Enhancement Project</td>
<td>City of Petersburg</td>
<td>Streetscape and public right-of-way enhancements.</td>
</tr>
<tr>
<td>Grove Avenue Enhancement Phase II</td>
<td>City of Petersburg</td>
<td>Streetscape and public right-of-way enhancements</td>
</tr>
<tr>
<td>City Point's Rails &amp; Waterways</td>
<td>City of Hopewell</td>
<td>Project to design pedestrian wayside exhibit system. Will include landscaping, improvements of sites and pedestrian paths and relocation of utilities underground.</td>
</tr>
<tr>
<td>City Point's Rails and Waterways Historywalk</td>
<td>City of Hopewell</td>
<td>Envisioned as a continuous pedestrian trail extending along the streets of the City Point.</td>
</tr>
<tr>
<td>White Oak Battlefield Site Interpretation</td>
<td>Dinwiddie County Association for the Preservation of Civil War Sites, Inc.</td>
<td>Establish interpretation and landscape management program, including land and viewed protection measures, site maintenance, visitor safety measures, and trail construction.</td>
</tr>
</tbody>
</table>
Rural Transportation Program
The development of a rural transportation plan for the rural portion of the Crater Planning District was undertaken by a joint effort of VDOT, CPDC and rural localities in PDC #19 and completed in 2011. The program is currently conducting prioritization to identify the most important projects. VDOT will use the rural plan as a foundation for identifying Interstate and Primary system priorities for the Six-Year Improvement Program. The plan is also useful to counties and their respective Residency Administrator when developing the Secondary Six-Year Program. More information can be found at www.craterpdc.org/transportation/rural.htm.

Through coordination with the rural program, the Tri-Cities MPO will be better able to provide safe and efficient connectivity between the Tri-Cities transportation system and the transportation systems of those jurisdictions outside of the metropolitan area. Coordination and cooperation among metropolitan and rural jurisdictions within the Crater Planning District will provide for a successful regional transportation system.

The Crater Planning District provides staff support to the Rural Transportation Technical Assistance Committee which includes locally designated staff contact persons from Dinwiddie, Greensville, Prince George, Surry, Sussex, Emporia and staff from the Virginia Department of Transportation, Virginia Department of Rail and Public Transportation and the Federal Highway Administration. This group coordinates the rural transportation planning process and plans with the Tri-Cities Area MPO transportation planning process.

In addition to preparation of a rural transportation plan, this program provides transportation planning technical assistance. Examples of such assistance include the following:

- Coordination with local governments, project consultants and VDOT regarding the development of a transportation plan for the City of Emporia;
- Coordination with High Speed Rail Studies in the Southeast High Speed Rail and Route 460 corridors;
- Continuation of transportation project specific Geographic Information Systems (GIS) mapping;
- Monitoring of developments related to the U.S. Route 460 PPTA project;
- Provision of local transportation planning assistance as requested by local governments; and,
- Provision of assistance to the Virginia Department of Transportation in the development of a Statewide Plan and Six-Year Improvement Program, as requested.

Tri-Cities 2035 Transportation Plan and Potential Environmental Mitigation
Transportation planning in metropolitan areas is a regional process used to identify transportation issues and needs. This process is a collaborative effort among participating local government and agency representatives. As a metropolitan transportation plan update is prepared, changes in housing and employment trends, travel patterns and trends are studied are used to help identify existing and future transportation needs. Transportation needs are generally prioritized and over a period of time, implemented during individual project development periods. During the project development period, alternatives to meeting the transportation needs are considered, including consideration of ways to minimizing adverse impacts to the environment.
The Tri-Cities Area 2035 Transportation Plan identifies and recommends a series of improvement projects in the metropolitan planning area over the next 23 year period. The inclusion of a recommended improvement in the long-range transportation plan represents a preliminary expression of project support by the MPO membership at a system level. The recommendations made during the planning process are preliminary in nature. The detailed environmental analysis of an individual project is conducted through the National Environmental Policy Act (NEPA) at the later time when the project is scheduled for implementation. With the exceptions for regional ambient air quality, offsetting environmental impacts during the long range planning process is not required under applicable State and federal regulations. While detailed environmental analysis of the metropolitan plan is not required, it is important to consult with environmental resource agencies during development of a metropolitan transportation plan. This interagency consultation provides an opportunity to compare transportation plans with environmental resource plans, develop discussion on potential environmental mitigation activities, areas to provide the mitigation, and activities that may have the greatest potential to restore and maintain the environment.

Detailed project level environmental analysis occurs later in the project development process as the improvement approaches the preliminary engineering stage. At the preliminary engineering stage, project features may be narrowed and refined, and the environmental impacts and environmental mitigation strategies can be appropriately ascertained. Virginia’s State Environmental Review Process directs the project-by-project interagency review, study and identification of environmental concerns. Related requirements that typically apply at this stage involve public hearings, environmental permit-processing, and NEPA studies. Usually, a variety of environmental documentation, permit and mitigation needs are identified and environmental findings are closely considered and evaluated. Common project environmental mitigation measures (required silt-fence barriers, precautions to control dust, etc.) are managed using Road and Bridge Standards that apply to all construction activities. Special environmental concerns may differ widely by project and location. As environmental studies are conducted and undergo public and interagency review, needed mitigation plans are specified and committee to within the environmental documents on the particular transportation project or activity. Environmental management systems then are used to monitor, and ensure compliance with the environmental mitigation commitments.

Potential environmental mitigation activities may include: Avoiding impacts altogether, minimizing a proposed activity/project size or its involvement, rectifying (restoring temporary impacts), precautionary and/or abatement measures to reduce construction impacts, employing special features or operational management measures to reduce impacts, and/or compensating for environmental impacts by providing suitable, replacement or substitute environmental resources of equivalent or greater value, on or off-site. Where on-site mitigation areas are not reasonable or sufficient, relatively large off-site compensatory natural resource mitigation areas generally may be preferable, if available. These may offer greater mitigation potential with respect to planning, buffer protection and providing multiple environmental habitat value (example: wetland, plant and wildlife banks).

Mitigation activities and mitigation areas will be consistent with legal and regulatory requirements relating to the human and natural environments. These may pertain to neighborhoods and communities, homes and businesses, cultural resources, parks and recreation areas, wetland and other water sources, forested and other natural areas, agricultural areas, endangered and threatened species, and the ambient air. The following table illustrates some potential mitigation activities and potential mitigation areas for these resources:
## Tri-Cities 2035 Transportation Plan and Potential Mitigation Strategies

<table>
<thead>
<tr>
<th>Resource</th>
<th>Key Applicable Requirements</th>
<th>Potential mitigation activities for project implementation</th>
<th>Potential mitigation areas for project implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhoods and communities, and homes and businesses</td>
<td>Uniform Relocation Assistance and Real Property Acquisition Policy Act at 42 USC 4601 et seq.</td>
<td>Impact avoidance or minimization; context sensitive solutions for communities (appropriate functional and/or esthetic design features).</td>
<td>Mitigation on-site or in the general community. (Mitigation for homes and businesses is in accord with 49 CFR 24)</td>
</tr>
<tr>
<td>Cultural resources</td>
<td>National Historic Preservation Act at 16 USC 470</td>
<td>Avoidance, minimization; landscaping for historic properties; preservation in place or excavation for archaeological sites; Memoranda of Agreement with the Department of Historic Resources; design exceptions and variances; environmental compliance monitoring</td>
<td>On-site landscaping of historic properties, on-site mitigation of archeological sites; preservation in-place</td>
</tr>
<tr>
<td>Parks and recreation areas</td>
<td>Section 4(f) of the U.S. Department of Transportation Act at 49 USC 303</td>
<td>Avoidance, minimization, mitigation; design exceptions and variances; environmental compliance monitoring</td>
<td>On site screening or on-site replacement of facilities; in some cases, replacement of affected property adjacent to existing</td>
</tr>
<tr>
<td>Wetlands and water resources</td>
<td>Clean Water Act at 33 USC 1251-1376; Rivers and Harbors Act at 33 USC 403</td>
<td>Mitigation sequencing requirements involving avoidance, minimization, compensation (could include preservation, creation, restoration, in lieu fees, riparian buffers); design exceptions and variances; environmental compliance monitoring</td>
<td>Based on on-sites/off site and in-kind/out-of-kind sequencing requirements; private or publicly operated mitigation banks used in accordance with permit conditions</td>
</tr>
<tr>
<td>Forested and other natural areas</td>
<td>Agricultural and Forest District Act (Code of VA Sections 15.2-4305; 15.2-439; 15.2-4313); Open Space Land Act (Section 10.1-1700-1705, 1800-1804)</td>
<td>Avoidance, minimization; Replacement property for open space easements to be of equal fair market value and of equivalent usefulness; design exceptions and variances; environmental compliance monitoring</td>
<td>Landscaping within existing rights of way; replacement property for open space easements to be contiguous with easements replacement of forestry operation within existing agriculture/forestal district</td>
</tr>
<tr>
<td>Agricultural areas</td>
<td>Farmland Protection Policy Act of 1981 at 7 USC 4201-4209, Agricultural and Forest District Act (Code of VA</td>
<td>Avoidance, minimization; design exceptions and variances; environmental compliance monitoring</td>
<td>Landscaping within existing rights of way; replacement property for open spaces easements to be contiguous with</td>
</tr>
<tr>
<td>Endangered and threatened species</td>
<td>Endangered Species Act at 16 USC 1531-1544</td>
<td>Avoidance, minimization; time of year restrictions; construction sequencing; design exceptions and variances; species research; species fact sheets; Memoranda of Agreements for species management; environmental compliance monitoring</td>
<td>Relocation of species to suitable habitat adjacent to project limits</td>
</tr>
<tr>
<td>-----------------------------------</td>
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<td>-------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Ambient air quality</td>
<td>Clean Air Act at 42 USC 7401-7671, and Conformity regulations at 40 CFR 93</td>
<td>Transportation control measures, transportation emission reduction measures</td>
<td>Within air quality nonattainment and maintenance areas</td>
</tr>
</tbody>
</table>
Section 9 – Appendices
Appendix A

TRI-CITIES AREA
METROPOLITAN PLANNING ORGANIZATION (MPO)
PARTICIPATION PLAN
(January 2007)

The intent of the Tri-Cities Area MPO Participation Plan is to offer reasonable opportunities for
the public to be informed and involved in the development of transportation plans and programs
in the metropolitan area. The public and interested parties, including affected agencies and
certain expressly identified population groups, are encouraged to help identify highway, transit,
pedestrian, bikeway and other transportation needs and comment on proposed improvements in
the metropolitan planning area. In the Tri-Cities, the metropolitan transportation planning area
refers to the cities of Petersburg, Colonial Heights and Hopewell and the adjoining portions of
nearby counties of Prince George, Dinwiddie and Chesterfield anticipated to be developed over
the next 20-year period.

Components or objectives of the existing public involvement process followed by the Tri-Cities
MPO have been revised to incorporate elements required of a Participation Plan process by CFR
23, Part 450.316 pursuant to Safe, Accountable, Flexible, Efficient Transportation Equity Act: a
Legacy for Users SAFETEA-LU),(Public Law 109-59, August 10, 2005). Sections A thru C of
the Participation Plan describe the process for the Participation Plan. Section D addresses the
agency consultation elements required by CFR 23, Part 450.316 for the development of the
metropolitan transportation plans and programs.

Section A: Participation Plan Elements

1. In order to allow for adequate time for public review and comment of the draft
participation plan, public notification will be provided 45 days in advance of
consideration of action on this document by the Policy Committee of the Tri-Cities MPO.
Public notification will be provided 30 days in advance of consideration of action by the
Policy Committee of the Tri-Cities MPO on proposed long range transportation plan
updates, transportation improvement programs and amendments to these planning
documents.

2. Meeting notices will be provided electronically to local news media, including local
public television, one week in advance of each regular Policy Committee and Technical
Committee meeting. Reasonable access to available information about MPO sponsored
transportation studies in the metropolitan area will be provided.

3. Meeting notices will be provided electronically to interested and available parties in the
Tri-Cities Area, including citizens, affected public agencies, representatives of public
transportation employees, freight shippers, providers of freight transportation services,
private providers of transportation, representatives of users of public transportation,
representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, agencies or entities responsible for safety/security operations, providers of non-emergency transportation services receiving financial assistance from a source other than title 49, U.S.C, Chapter 53, and other interested parties with reasonable opportunities to be involved in the metropolitan transportation planning process.

4. Available resources will be used by the MPO to visually convey information related to metropolitan transportation plans and programs.

5. Public information related to transportation plans and programs and meeting notices of the Tri-Cities MPO will be provided electronically on World Wide Web, including draft and final versions of the Participation Plan.

6. Public meetings sponsored by the Tri-Cities MPO will be held at convenient and accessible locations and times. A citizen information period will be provided during each regular MPO meeting. Citizens may use this opportunity to express views on metropolitan transportation plans and programs directly to the MPO membership.

7. Public input received during the development of the metropolitan transportation plan and the transportation improvement program will be given consideration by the MPO. Significant public comments received will be reported by staff to the Policy Committee and the Technical Committee.

8. Outreach efforts seeking input on metropolitan transportation plans and programs from low income and minority households traditionally underserved by existing transportation systems will be continued and documented.

9. Public notices advising citizens in the metropolitan area of the availability of draft transportation plans, transportation improvement programs and conformity reports in local public libraries will be continued. Additional opportunity for public comment will be provided if the final metropolitan transportation plan or transportation improvement program or conformity analysis differs significantly from the version initially made available for public review.

10. The implementation of the Tri-Cities Area Participation Plan will be coordinated with the statewide transportation planning public involvement and consultation processes developed, as appropriate, with agencies and officials responsible for other planning activities within the metropolitan area that are affected by transportation.

11. The overall effectiveness of procedures and strategies contained in the Participation Plan to ensure a full and open participation process will be reviewed periodically by the Tri-Cities MPO.

Page 2 of 3
Section B: Disposition of Significant Comments

1. When significant comments are received on the draft metropolitan transportation plan or the transportation improvement program as a result of the Participation Plan or the Interagency Consultation Process required under the Environmental Protection Agency (EPA) transportation conformity regulations (40 CFR part 93), a summary, analysis, and report on the disposition of comments shall be made as part of the final metropolitan transportation plan and transportation improvement program.

Section C: Agency Consultation on Other Planning Activities

1. As the transportation plan and the transportation improvement program are developed, the MPO shall consult, as appropriate, with agencies and officials responsible for other planning activities in the metropolitan area affected by transportation in order to coordinate planning functions to the maximum extent practicable.

2. The nature of the consultation shall include comparison of metropolitan plans and transportation improvement programs, as they are developed, with the plans maps, inventories, and planning documents developed by other agencies.

3. Public and private agencies responsible for planned growth, economic development, environmental protection, airport operations, freight movements, land use management, natural resources, conservation, and historic preservation in the Tri-Cities shall be included in the agency consultation process, as appropriate.

4. Metropolitan transportation plans and transportation improvement programs shall be developed with consideration for governmental agencies and non-profit organizations receiving Federal assistance from a source other than the U.S. Department of Transportation for the design and delivery of non-emergency transportation services.

5. The MPO will consider the future development of an operations plan for consulting with other governmental agencies responsible for the development of plans affected by transportation in the metropolitan area.
Appendix B: 2010 Census Tract Profile of the Transportation Study Area by Minority and Poverty Concentration
Colonial Heights & Hopewell Transportation Projects 2035
2000 Census Tract Data*
Persons With A Disability
* latest data available
Colonial Heights & Hopewell
Transportation Projects 2035
2010 Census Tract Data
Percent Who Speak Language
Other Than English

Project Site
- Interstate
- US Highway
- State Highway

Other Than English
- 0.0% - 1.9%
- 2.0% - 5.3%
- 5.4% - 10.2%
- 10.3% - 21.3%
- 21.4% - 45.7%
Petersburg
Transportation Projects 2035
2010 Census Tract Data
Race & Poverty Data
Petersburg
Transportation Projects 2035
2010 Census Tract Data
Households With Zero Vehicles
Chesterfield County Transportation Projects 2035
2010 Census Tract Data
Population Over 65
Chesterfield County
Transportation Projects 2035
2010 Census Tract Data
Percent Who Speak Language Other Than English
Dinwiddie County
Transportation Projects 2035
2010 Census Tract Data
Race & Poverty Data
Dinwiddie County
Transportation Projects 2035
2010 Census Tract Data
Population Over 65
Dinwiddie County
Transportation Projects 2035
2010 Census Tract Data
Percent Who Speak Language Other Than English
Prince George County
Transportation Projects 2035
2010 Census Tract Data
Race & Poverty Data
Appendix C: Environmental Overview of the 2035 Transportation Plan and a Listing of Environmental Resource Agencies
Appendix D: Tri-Cities Area MPO SAFETEA-LU Resource Agency Contact List (June 2012)

U.S. Fish and Wildlife Service
Ms. Karen Mayne, Supervisor
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
Office: 804-693-9032
Fax: 804-693-9032
karen_mayne@fws.gov

U.S. Geological Survey
Ms. Suzette Kimball, Director
Eastern Regional Director
11649 Leetown Road
Kearneysville, WV 25430
Office: 304-724-4521
Fax:
Email:

U.S. Department of Agriculture
M. Denise Doetzer, State Conservationist
Natural Resources Conservation Service
1606 Santa Rosa Road, Suite 209
Richmond, VA 23229-5014
Office: 804-287-1691
Fax: 804-287-1737
Email: denise.doetzer@va.usda.gov

U.S. Army Corps of Engineers
Elmer Merryman, P.E.
Central Virginia Area Office
930 20th Street
Fort Lee, VA 23801-1602
Office: 804-734-4041
Fax: 804-861-8487
Email:

Virginia Department of Environmental Quality
Gerard Seeley Jr., Director
Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Office: 804-527-5020
Fax: 804-527-5106
gseeley@deq.virginia.gov
Appendix E: Plan Adoption Resolution and Certification Statement

RESOLUTION OF THE TRI-CITIES AREA METROPOLITAN PLANNING ORGANIZATION ENDORSING THE 2035 TRANSPORTATION PLAN AND TRANSPORTATION CONFORMITY ANALYSIS

WHEREAS, the U.S. Department of Transportation provides financial assistance to public agencies for transportation technical studies; and

WHEREAS, the U.S. Department of Transportation requires approval of regional transportation plans and programs by the Metropolitan Planning Organization (MPO) in accordance with 23 U.S. C. Part 450; and

WHEREAS, the Tri-Cities Area Transportation Policy Committee is the duly designated Metropolitan Planning Organization for the Tri-Cities Area; and

WHEREAS, the Tri-Cities Area Metropolitan Planning Organization, pursuant to its adopted participation process, has considered public comments received on the 2035 Transportation Plan and the Transportation Conformity Analysis of the 2035 Transportation Plan; and

NOW, THEREFORE BE IT RESOLVED, the Policy Committee of the Tri-Cities Area Metropolitan Planning Organization hereby endorses the 2035 Transportation Plan and the Transportation Conformity Analysis of the 2035 Transportation Plan.

________________________________________

Upon a motion by ______________ seconded by ______________ and carried, a motion was adopted to endorse the 2035 Transportation Plan and the Transportation Conformity Analysis of the 2035 Transportation Plan as presented on ________________ with _____ of the 9 voting members present.

________________________________________
Chair, Tri-Cities Area Metropolitan Planning Organization

Date: ____________________________
The Virginia Department of Transportation and the Tri-Cities Metropolitan Planning Organization hereby certify that the transportation planning process for the southern portion of the Richmond, Virginia Urbanized Area and Transportation Management Area is addressing the major issues in the metropolitan planning area and is being conducted in accordance with applicable requirements of:

I. 49 U.S.C. Section 5323(k) and 23 U.S. C. 134;

II. Title VI of the Civil Rights Act of 1964 and the Title VI Assurance executed by State under 23 U.S. C. 324 and 29 U.S. C 794;

III. Section 1101 of the Transportation Equity Act for the 21st Century (Pub. L. 105-178) regarding the involvement of disadvantaged business enterprises in the FHWA and the FTA funded project (Sec. 105 (f), Pub. L. 97-424, 96 Stat. 2100, 49 CFR Part 23);


V. The provision of 49 CFR part 20 regarding restrictions on influencing certain activities; and

VI. Sections 174 and 176(c) and (d) of the Clean Air Act as amended (42 U.S. C. 7504, 7506 (c) and (d)).

The FY 2012 – FY 2015 Transportation Improvement Program was adopted on June 23, 2011. The database for the Congestion Management Process used by the Tri-Cities MPO was updated in November 2011. The Year 2031 Transportation Plan Revision was adopted in June, 2008. The transportation planning process in the Tri-Cities Area received federal certification on August 30, 2006. The most recent federal certification review of the Tri-Cities metropolitan planning process was conducted on August 9, 2010.

Tri-Cities Metropolitan Planning Organization

Virginia Department of Transportation

__________________________
Signature

__________________________
Signature

__________________________
Title

__________________________
Title

__________________________
Date

__________________________
Date