# HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION

# CMAQ/RSTP PROJECT SELECTION PROCESS 2016

T17-07

the *heartbeat* of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

**April 2017**

**HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION**
**VOTING MEMBERS**
Robert A. Crum, Jr. – Executive Director

**VOTING MEMBERS:**

**CHESAPEAKE**
Alan P. Krasnoff
Ella P. Ward – Alternate

**FRANKLIN**
Barry Cheatham
Frank Rabil – Alternate

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

**HAMPTON**
Donnie Tuck
Jimmy Gray – Alternate

**ISLE OF WIGHT COUNTY**
Rex Alphin
Rudolph Jefferson - Alternate

**JAMES CITY COUNTY**
Michael Hipple
Vacant - Alternate

**NEWPORT NEWS**
McKinley L. Price
Herbert H. Bateman, Jr. - Alternate

**NORFOLK**
Kenneth Alexander
Theresa Whibley – Alternate

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

**PORTSMOUTH**
John Rowe
Paige Cherry – Alternate

**SOUTHAMPTON COUNTY**
Barry T. Porter
R. Randolph Cook - Alternate

**SUFFOLK**
Linda T. Johnson
Leroy Bennett - Alternate

**VIRGINIA BEACH**
William D. Sessoms, Jr.,
Louis R. Jones - Alternate

**WILLIAMSBURG**
Paul Freiling
D. Scott Foster, Jr. – Alternate

**YORK COUNTY**
Thomas G. Shepperd, Jr.
Sheila Noll - Alternate

**MEMBERS OF THE VIRGINIA SENATE**
The Honorable Mamie E. Locke
The Honorable Frank W. Wagner

**MEMBERS OF THE VIRGINIA HOUSE OF DELEGATES**
The Honorable Christopher P. Stolle
The Honorable David Yancey

**TRANSPORTATION DISTRICT COMMISSION OF HAMPTON ROADS**
William E. Harrell, President/Chief Executive Officer
Ray Amoruso – Alternate

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

**VA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION**
Jennifer Mitchell, Director
Jennifer DeBruhl – Alternate

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

**WILLIAMSBURG AREA TRANSIT AUTHORITY**
William Porter, Interim Executive Director
Joshua Moore – Alternate

**HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION**

**NON-VOTING MEMBERS:**

| | | |
|---|---|---|
| **CHESAPEAKE**<br>James E. Baker | **JAMES CITY COUNTY**<br>Bryan J. Hill | **SOUTHAMPTON COUNTY**<br>Michael W. Johnson |
| **FRANKLIN**<br>R. Randy Martin | **NEWPORT NEWS**<br>Vacant | **SUFFOLK**<br>Patrick Roberts |
| **GLOUCESTER COUNTY**<br>J. Brent Fedors | **NORFOLK**<br>Douglas L. Smith | **VIRGINIA BEACH**<br>Dave Hansen |
| **HAMPTON**<br>Mary Bunting | **POQUOSON**<br>W. Randall Wheeler | **WILLIAMSBURG**<br>Marvin Collins |
| **ISLE OF WIGHT COUNTY**<br>Randy Keaton | **PORTSMOUTH**<br>Linda Pettis Patton | **YORK COUNTY**<br>Neil A. Morgan |

**FEDERAL HIGHWAY ADMINISTRATION**
Jessie Yung, Acting Division Administrator – Virginia Division

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

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

**VIRGINIA DEPARTMENT OF AVIATION**
Randall P. Burdette, Director

**PENINSULA AIRPORT COMMISSION**
Sanford Wanner, Interim Executive Director

**NORFOLK AIRPORT AUTHORITY**
Robert S. Bowen, Executive Director

**CITIZEN TRANSPORTATION ADVISORY COMMITTEE**
Gregory Edwards, Chair

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

**MILITARY LIAISONS**
Michael Moore, Captain, U.S. Navy
Dean Vanderley, Captain, U.S. Navy - Alternate
Rick Wester, Captain, U.S. Coast Guard
William S. Galbraith, Colonel, Langley-Eustis

**INVITED PARTICIPANT**
John Malbon, CTB

# REPORT DOCUMENTATION

**TITLE**
HRTPO CMAQ/RSTP Project Selection Process 2016

**REPORT DATE**
April 2017

**GRANT/SPONSORINGAGENCY**
FHWA/FTA/VDOT/DRPT/LOCAL FUNDS

**PROJECT MANAGER**
Michael S. Kimbrel

**AUTHOR**
John V. Mihaly

**ORGANIZATION NAME, ADDRESS AND TELEPHONE**
Hampton Roads Transportation Planning Organization
723 Woodlake Drive
Chesapeake, Virginia 23320
(757) 420-8300
http://www.hrtpo.org

**PROJECT STAFF**
Robert B. Case, P.E., PhD
Keith Nichols P.E.

**ABSTRACT**

This report summarizes the 2016 selection process for projects to be funded under the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and Regional Surface Transportation Program (RSTP). As a result of the 2016 CMAQ/RSTP Project Selection Process, selected projects received allocations of CMAQ or RSTP funds for Fiscal Year 2023.

# ACKNOWLEDGMENTS

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

## REPORT PRODUCTION STAFF

| | |
|---|---|
| Robert A. Crum, Jr. | Executive Director |
| Camelia Ravanbakht, PhD | Deputy Executive Director |
| Michael S. Kimbrel | Principal Transportation Engineer |
| John V. Mihaly | Transportation Analyst II |
| Kathlene Grauberger | Transportation Planner |
| Michael R. Long | General Services Manager |
| Christopher Vaigneur | Assistant General Services Manager |

## NON-DISCRIMINATION

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

**This Page Intentionally Left Blank**

# HAMPTON ROADS TRANSPORTATION PLANNING ORGANIZATION
# CMAQ/RSTP PROJECT SELECTION PROCESS

# 2016

*This report was included in the Unified Planning Work Program for Fiscal Year 2017, which was approved by the Board of the Hampton Roads Transportation Planning Organization on May 19, 2016.*

**PREPARED BY:**

the heartbeat of HAMPTON ROADS TPO
TRANSPORTATION PLANNING ORGANIZATION

**APRIL 2017**

**T17- 07**

**This Page Intentionally Left Blank**

# TABLE OF CONTENTS

# LIST OF MAPS AND TABLES

## REPORT ORGANIZATION

This report has been organized into five sections:

**Section I – Executive Summary**

The Executive Summary briefly describes the CMAQ and RSTP projects selected to receive available FY 2023 CMAQ and RSTP funds.

**Section II – Background**

The Background section describes the HRTPO CMAQ/RSTP project selection process and associated public participation activities.

**Section III – CMAQ Project Selection**

The CMAQ Project Selection section describes the process by which projects were selected to receive allocations of CMAQ funds.

**Section IV – RSTP Project Selection**

The RSTP Project Selection section describes the process by which projects were selected to receive allocations of RSTP funds.

**Section V – Appendices**

The appendices of this report include the detailed worksheets used in the analysis of each of the candidate projects submitted by member localities/agencies, as well as project ideas submitted by the public.

**This Page Intentionally Left Blank**

# Section I
## *Executive Summary*

# EXECUTIVE SUMMARY

As the metropolitan planning organization (MPO) for the Hampton Roads area, the Hampton Roads Transportation Planning Organization (HRTPO) is responsible for project selection and allocation of funds under two federal funding programs – the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and the Regional Surface Transportation Program (RSTP). The process used by the HRTPO to select projects to receive funds from these two programs is referred to as the CMAQ/RSTP Project Selection Process. The project selection process is conducted annually, normally beginning in July and running through December.

This report summarizes the work of selecting CMAQ and RSTP projects during the 2016 CMAQ/RSTP Project Selection Process. Selected projects received allocations of CMAQ or RSTP funds for Fiscal Year (FY) 2023.

## CMAQ PROJECT SELECTION AND FUNDING ALLOCATIONS

During the November 17, 2016 meeting, the HRTPO Board approved the following action regarding CMAQ funding for FY 2023:

- Fifteen new CMAQ projects were selected to receive a total of $6.8 million in FY 2023 allocations.
- Five previously approved CMAQ projects were selected to receive a total of $7.4 million in FY 2023 allocations.

The approved CMAQ projects are summarized below.

**Allocations to Previously Approved CMAQ Projects**

1. **Bus Vehicle Replacement (148) - (UPC# T16054) – HRT**
   - The project entails purchasing (29, 35, and 40 foot) buses to replace similar buses that have reached the end of their useful life. The new buses will have improved fuel economy and performance, lower operating costs, and lower emissions than the buses they will replace.
   - Allocated $5,740,392 in FY 2023 CMAQ funds.
   - Total FY 2023 and future CMAQ funding request: $46,811,705

2. **Suffolk Traffic Operations Center - (UPC# 108982) – Suffolk**
   - To design and construct a Traffic Operation Center for the City of Suffolk at 800 Carolina Road that will house all command and control infrastructure for all ITS functions. The city recently constructed a new Public Works Operations Center that includes physical space in the building to house this center. The project will make minor modifications to the building HVAC and electrical systems to fully support this center. It will also install all ITS Equipment necessary to fully manage the city's traffic management assets and allow for communications with VDOT, other regional partners, and city emergency service staff. It will be designed and constructed in conformance with all applicable city, state and national ITS standards. The city will be contributing in-kind value of $700,000 in building cost that will house this center.
   - Allocated $750,000 in FY 2023 CMAQ funds to fully fund the project.

- Total FY 2023 and future CMAQ funding request was revised from $2,000,000 to $750,000 per a request from the locality. The locality identified another funding source to cover the remainder of the project funding request.

3. **Bus Shelters and Pedestrian Improvements - (UPC# T17893) – Norfolk**
   - The project entails constructing a total of 72 new bus shelters to replace damaged or old shelters that are beyond their useful life. The project includes the collection and confirmation of ridership information to confirm bus shelter locations, installation of concrete pads, ADA compliant access, appropriate street lighting, shelter fabrication and installation, trash receptacles, seating areas, bike racks, and underground utility surveys. Shelters for the Ferry system would be considered in the project as well.
   - Allocated $220,000 in FY 2023 CMAQ funds.
   - Total FY 2023 and future CMAQ funding request: $370,000

4. **York County – Southeast – Demonstration Route - (UPC# T17890) – WATA**
   - The project entails developing a route to provide a connection point between WATA's current service and Hampton Roads Transit (HRT). The new transit service would afford customers access to a variety of employment, educational, community service, and business locations. The project includes the purchase and installation of four new bus shelters and signage along the route.
   - Allocated $471,666 in FY 2023 CMAQ funds.
   - Total FY 2023 and future CMAQ funding request: $966,840

5. **Suffolk Citywide Signal Timings - (UPC# T17980) – Suffolk**
   - The project entails developing new signal timings for corridors in need of updated coordinated signal timing plans in the City of Suffolk. To obtain optimal timings, traffic data will be collected and analyzed using the latest version of Synchro software, from which improved signal timings will be developed. Once the new coordinated timings are deployed, the City will focus on updating vehicle and pedestrian clearance intervals, optimizing minimum and maximum split times, and intersection offsets for two-way vehicle progression. For isolated intersections that do not warrant full coordinated signal timing plans, an analysis of minimum and maximum times and evaluation of clearance intervals will be performed. The city's IQ Central signal system database interfaces directly with Synchro for direct system monitoring and timing plan manipulation which will be used going forward.
   - Allocated $230,000 in FY 2023 CMAQ funds to fully fund the project.

**<u>New CMAQ Projects</u>**

1. **Chesapeake Signal System – Phase 4 –(ID# CH1CM) - Chesapeake**
   - The project entails a citywide upgrade of the traffic signal system, central system operations, and local intersection capabilities to allow deployment of state of the practice functional operations such as flashing yellow deployment along with interagency coordination with neighboring municipalities and VDOT.
   - Allocated $80,000 in FY 2023 CMAQ funds.
   - Total FY 2023 and future CMAQ funding request: $500,000

2. **Portsmouth Citywide Signal Timing - Phase 1 –(ID# PR1CM) - Portsmouth**
    - This project entails analysis of existing and development of new signal timings for strategic corridors in the City of Portsmouth. To obtain optimal timings, traffic data will be collected and analyzed using the latest version of Synchro software, from which improved signal timings will be developed. The City is seeking to deploy a more systematic method of optimizing all signals within the City on a 4-year cycle. This is CMAQ application is for Phase 1, which these corridors were last retimed in 2012.
    - Allocated $120,000 in FY 2023 CMAQ funds to fully fund the project.

3. **Citywide Signal System Progression –(ID# NN1CM) – Newport News**
    - This project entails the procurement and installation of hardware and software components for the City's Centralized Signal System. These include but are not limited to items that maintain and extend the system's capabilities and create efficiency improvements for internal traffic monitoring, counting, and analytics; automated traffic responsive and adaptive implementation, as well as providing connectivity to vehicles and other road users.
    - Allocated $350,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $1,250,000

4. **Bus Purchase Replacement–(ID# WA3CM) - WATA**
    - This project entails the replacement of six (6) 35' low sulfur diesel buses. The fleet in need of replacement includes the WATA 2008 series of New Flyer buses. The useful life of these buses per the FTA Circular 5010.1D is 12 years or 500,000 miles. The average odometer reading, as of today, on these buses is 420,500.
    - Allocated $3,142,710 in FY 2023 CMAQ funds to fully fund the project.

5. **Citywide Signal System Upgrade – (ID# SF3CM) – Suffolk**
    - This project entails upgrading 21 signals outside of downtown Suffolk from TS-1 standard cabinets without system connectivity to TS-2 cabinets. Fiber optics or cellular will be installed to provide for network connectivity.
    - Allocated $150,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $2,650,000

6. **Downtown Signal System Upgrade–(ID# SF1CM) – Suffolk**
    - This project entails upgrading 27 signals in downtown Suffolk from TS-1 standard cabinets without system connectivity to TS-2 cabinets. Fiber optics or cellular will be installed to provide for network connectivity.
    - Allocated $150,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $1,650,000

7. **Expansion of Bus Shelters–(ID# WA2CM) – WATA**
    - The proposed project includes bus stop infrastructure improvements for the construction of twelve new transit bus shelters. WATA currently has 320 stops with 36 shelters within the service area. The addition of 12 new shelters will provide 15% coverage to the stops. Improvements throughout WATA's service area will work to

enhance safety and manage congestion through the implementation of improved convenience and promote a healthy environment. Implementation of the installation of 12 additional bus shelters is consistent with the Comprehensive Plans of the region's jurisdictions and the 2040 Long Range Transportation Plan.

- Allocated $117,000 in FY 2023 CMAQ funds.
- Total FY 2023 and future CMAQ funding request: $234,000

8. **Downtown Railroad Warning System–(ID# SF2CM) – Suffolk**
    - The project entails the installation of an advance warning system in downtown Suffolk, to warn of approaching and crossing trains on the CSX mainline rail crossing of North Main Street and provide an opportunity for vehicular traffic to use alternate routes around the crossing to include nearby bridges.
    - Allocated $150,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $650,000

9. **Battlefield Blvd/Kempsville Road/Great Bridge Blvd Intersection Improvements–(ID# CH2CM) – Chesapeake**
    - This project entails the implementation of cost effective infrastructure improvements needed to provide improved levels of service. The improvements to the intersection of Battlefield Boulevard, Kempsville Road, and Great Bridge Boulevard will add an additional eastbound lane along Great Bridge Boulevard along with an southbound receiving lane that will enhance the signal operations. In addition, left-turn lanes will be extended along the northbound and westbound directions to allow better lane utilization, which in turn will provide better green time efficiency. This project will have right-of-way impacts on to two properties and will require relocating minimal utilities along the southwest corner of Great Bridge Boulevard. The project will also require signal modification to incorporate the additional second eastbound through lane, channelized right-turn lane to southbound Battlefield Boulevard as well as revised pedestrian facilities to include sidewalks, crosswalks and pedestrian actuation.
    - Allocated $550,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $1,050,000

10. **Expanded Marine Highway Barge Service–(ID# VP1CM) – VPA**
    - The project entails supporting the expanded Marine Highway Barge Service as The Port of Virginia seeks financial support to operate a larger barge with additional capacity and the ability to remove an increased number of trucks from roadways in Hampton Roads.
    - Allocated $543,620 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $4,543,620

11. **Pedestrian Improvements on Route 1208 (Greate Road)–(ID# GL1CM) – Gloucester County**
    - This project entails pedestrian facility improvements on Rte. 1208 (Greate Road) and adjacent side roads connecting to sidewalks currently being planned along Route 17 northbound to provide safe, functional pedestrian network that, in conjunction with the existing road network, internally connects the neighborhoods to existing and planned

commercial, community and recreational destinations and amenities within the designated Gloucester Point-Hayes Village (Urban) Development Area.

- Allocated $65,000 in FY 2023 CMAQ funds.
- Total FY 2023 and future CMAQ funding request: $500,000

12. **Dam Neck Road/Holland Road Intersection Improvements–(ID# VB1CM) – Virginia Beach**
    - The project entails the addition of a second left turn lane from westbound Dam Neck Road to southbound Holland Road. The improved geometry will also require reconstruction of the existing refuge island on the northeast corner and storm water adjustments. Two new mast arm poles with pedestrian accommodations will be constructed to accommodate the new lane configuration. The addition of drainage structures and storm water management facilities will be included as required. The project will also incorporate utility coordination/relocation as needed. Signal retiming will be necessary once construction is complete.
    - Allocated $430,000 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $2,190,000

13. **Tabbs Lane Sidewalk Infill–(ID# NN2CM) – Newport News**
    - This project entails improving pedestrian facilities along Tabbs Lane which is an unimproved local collector with open ditches and limited existing pedestrian accommodations. Developments on each end of the project area have installed sidewalks. This project's scope will link these sidewalks to bridge the gap connecting the surrounding high density residential parcels to Warwick Boulevard, the adjacent major arterial with local bus service.
    - Allocated $238,000 in FY 2023 CMAQ funds. The FY 2023 funding of $238,000 was subsequently removed as the project was deemed ineligible to receive federal funding. The proposed project location was on a roadway with a functional classification of urban local.

14. **Crittenden Road/Route 17 Intersection Realignment–(ID# SF4CM) – Suffolk**
    - Project will realign the existing intersection of Crittenden Road and Route 17 with Clubhouse Road and Route 17. Traffic signal, turn lanes, and storm water management features will be included.
    - Allocated $372,530 in FY 2023 CMAQ funds.
    - Total FY 2023 and future CMAQ funding request: $4,872,530

15. **New Demonstration Routes – Upper York County/Kent County Connector–(ID# WA1CM) – WATA**
    - The project entails improving transit to an unserved area of James City County and provides a connection point between Barhamsville, Eltham, New Kent County, and Providence Forge and current service of the Williamsburg Area Transit Authority providing service to the north-western part of James City County. The planned route will provide service to underserved areas in James City County and unserved areas by regular scheduled transit service in Barhamsville, Eltham, New Kent, and Providence

Forge. This need for service expansion is also documented in the Comprehensive Plan of York County (see New Kent County Comprehensive Plan – Adopted October 9, 2012 – Goal 8).

- Allocated $372,530 in FY 2023 CMAQ funds.
- Total FY 2023 and future CMAQ funding request: $1,164,921

*Map 1* | *Projects Selected for CMAQ Allocations*

## Projects Selected for CMAQ Allocations

### Mapped Projects

1. Battlefield Blvd/Kempsville Rd/Great Bridge Blvd Intersection Improvements - Chesapeake
2. Pedestrian Improvements on Route 1208 (Greate Road) - Gloucester County
3. Dam Neck Road/Holland Road Intersection Improvements - Virginia Beach
4. Tabb Lane Sidewalk Infill - Newport News
5. Crittendon Road/Route 17 Intersection Realignment - Suffolk
6. Suffolk Trafic Operations Center - Suffolk

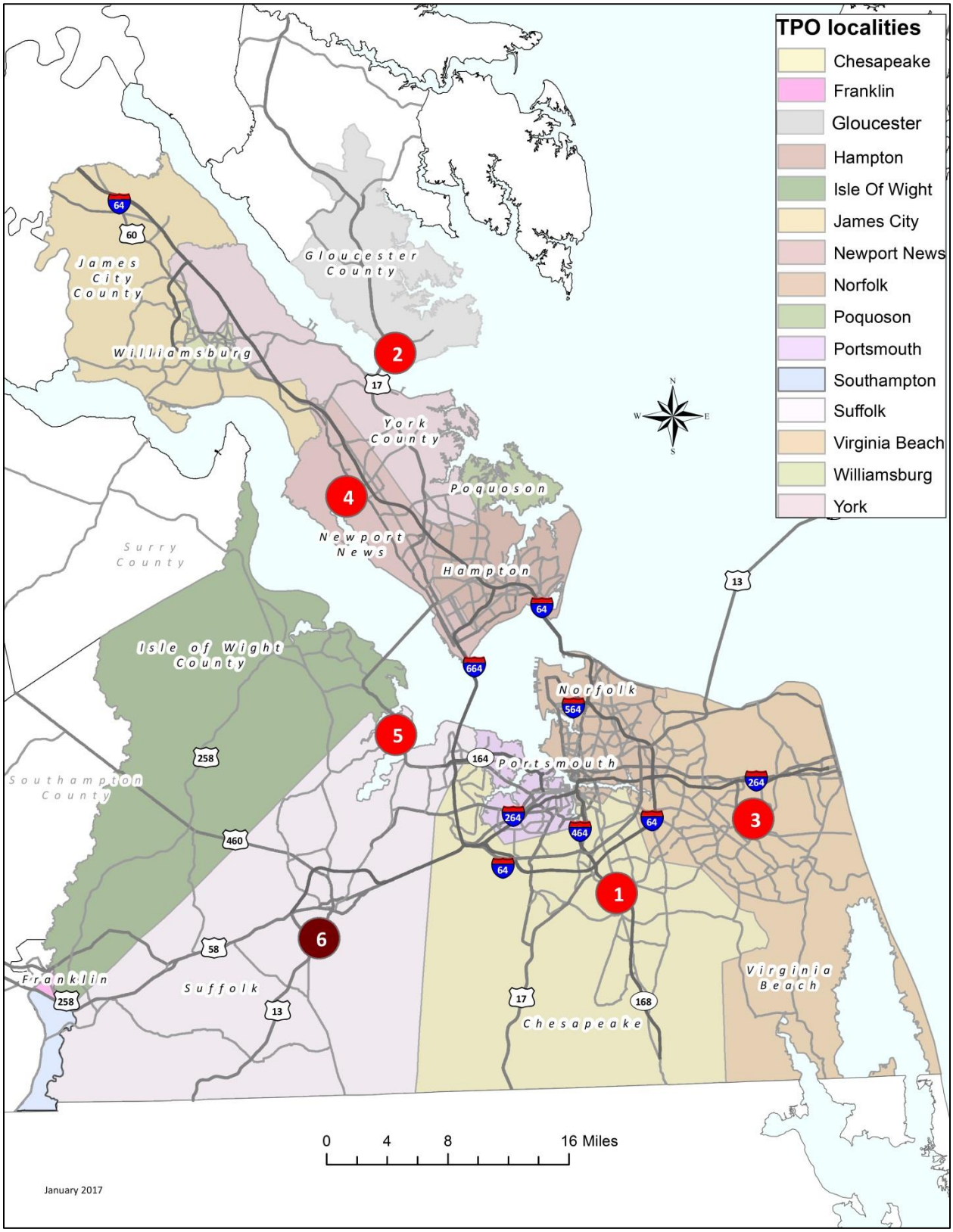
### Unmapped Projects

7. Bus Vehicle Replacement (148) - HRT
8. Bus Shelters and Pedestrian Improvements - Norfolk
9. York County - Southeast - Demonstration Route - WATA
10. Suffolk Citywide Signal Timings - Suffolk
11. Chesapeake Signal System - Phase 4 - Chesapeake
12. Portsmouth Citywide Signal Timing - Phase 2 - Portsmouth
13. Citywide Signal System Progression - Newport News
14. Bus Purchase Replacement (6) - WATA
15. Citywide Signal System Upgrade - Suffolk
16. Downtown Signal System Upgrade- Suffolk
17. Expansion of Bus Shelters - WATA
18. Downtown Railroad Warning System - Suffolk
19. Expanded Marine Highway Barge Service - VPA
20. New Demonstration Routes - Upper York County/Kent County Connector - WATA

### Project Selection Status

- Previously Approved CMAQ Projects
- New CMAQ Projects

***Map 1 | Projects Selected for CMAQ Allocations***



## RSTP PROJECT SELECTION AND FUNDING ALLOCATIONS

During the November 17, 2016 meeting, the HRTPO Board approved the following actions regarding RSTP funding for FY 2023:

- Four new RSTP projects were selected to receive a total of $4.3 million in FY 2023 allocations.
- Six previously approved RSTP projects were selected to receive a total of $29.9 million in FY 2023 allocations.

The approved RSTP projects are summarized below.

**Allocations to Previously Approved RSTP Projects**

1. **Naval Station Norfolk Transit Extension Study FEIS/PE - (UPC# T9093) – HRT**
   - This project entails the continued funding of this transportation demand management (TDM) program.
   - Allocated $6,000,000 in FY 2023 RSTP funds to fully fund the project.

2. **TRAFFIX - (UPC# T1404) – HRT**
   - This project entails the continued funding of this transportation demand management (TDM) program.
   - Allocated $1,000,000 in FY 2023 RSTP funds.

3. **Skiffes Creek Connector - (UPC# 100200) – James City County**
   - The project entails constructing a two-lane roadway which will start at Route 60, span the railroad track and Route 143 and tie back in with Route 143 as a fish-hook alignment.
   - Allocated $1,544,066 in FY 2023 RSTP funds to fully fund the project.

4. **Croaker Road Widening - (UPC# 100920) – James City County**
   - The project entails a four lane widening from Library Rd. to Rte. 60. Underground utilities will have to be relocated.
   - Allocated $8,600,000 in FY 2023 RSTP funds to fully fund the project.

5. **George Washington Highway Corridor Improvements (including Elm Ave. intersection) - (UPC# 107035) – Portsmouth**
   - This project entails realigning Elm Avenue to allow for the creation of a traditional 90-degree, four-legged intersection at Williams Avenue and Victory Boulevard. This geometry will significantly improve sight distance for the southbound approach as well as allow for appropriate geometric radii to accommodate heavy truck traffic within this industrial corridor. The improved intersection will provide the additional lanes and storage capacity needed to address specific traffic conditions at this location, such as heavy vehicles and queuing requirements associated with peak inbound demands for Norfolk Naval Shipyard (Gate 39). Since the Norfolk Naval Shipyard is a secured facility, gate checks for inbound vehicles require unique storage requirements that should

consider both storage capacity and signal operations. The realignment will also consider key multimodal connections for bike and pedestrian accommodations.

- Allocated $1,500,000 in FY 2023 RSTP funds.
- Total FY 2023 and future RSTP funding request: $5,400,000

6. **Elbow Road Extended – Phase 2 - (UPC# 16828) – Virginia Beach**
   - The project entails construction of Elbow Road from Indian River Road to Dam Neck Road at the amphitheater. Construction will include widening Elbow Road from a two-lane roadway to a four-lane divided highway within a 125-ft right-of-way. The typical section features a sidewalk, shared-use path, landscaping, and aesthetic design elements. In addition, the existing sub-standard Elbow Road Bridge will be replaced.
   - Allocated $11,221,342 in FY 2023 RSTP funds.
   - Total FY 2023 and future RSTP funding request: $20,303,074

**New RSTP Projects**

1. **George Washington Memorial Highway (Route 17) Widening – Phase 1 - (ID# GL1RS) – Gloucester County**
   - This project entails the continuation of the widening of George Washington Memorial Highway (US Route 17) from a 4-lane principal arterial to a 6-lane principle arterial and to provide safe passage for pedestrians. The phase will begin at the intersection of Farmwood Road, where a previous widening project ended, and continue to approximately 1000 feet north of the intersection with Hook Road/Guinea Road. The total length of this phase is 1.4 miles of the overall 10.4 miles for the entire project.
   - Allocated $2,200,000 in FY 2023 RSTP funds.
   - Total FY 2023 and future RSTP funding request: $43,900,000

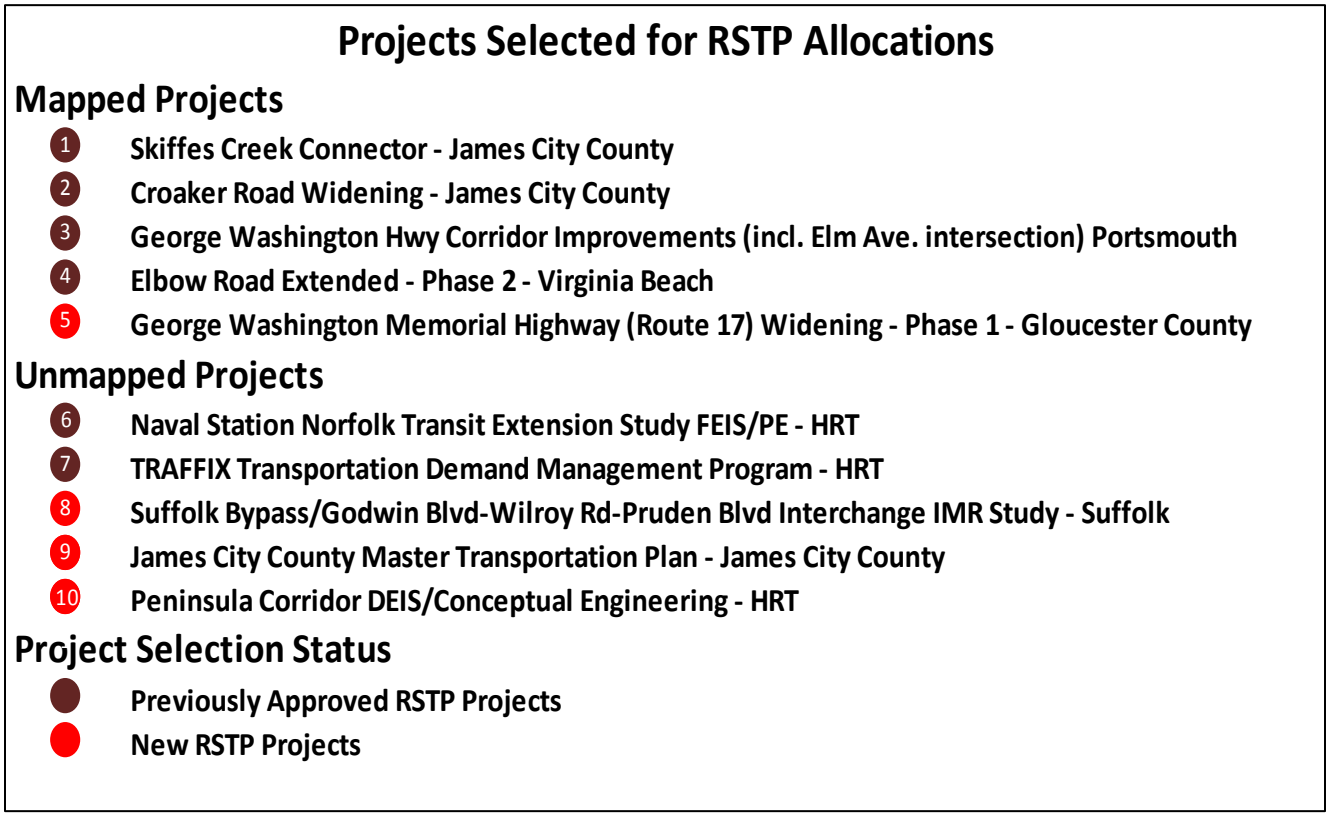
2. **James City County Master Transportation Plan - (ID# JC1RS) – James City County**
   - The project entails creating a master plan as a part of updating the County's Comprehensive Plan. Transportation systems have a profound impact on the mobility and quality of life of its residents and, all too often, transportation systems are thought of only after land use decisions have been made. The goal of the MTP will be to define a future multimodal transportation network with enhanced features that support James City County's and the region's quality of life and economic vitality and which is fully integrated with the county's future land use plans.
   - Allocated $50,000 in FY 2023 RSTP funds.
   - Total FY 2023 and future RSTP funding request: $500,000

3. **Suffolk Bypass/Godwin Blvd-Wilroy Rd-Pruden Blvd Interchange Modification Report (IMR) - (ID# SF2RS) - Suffolk**
   - The project entails providing an IMR for the Route 58 Suffolk Bypass at Godwin Boulevard, Wilroy Road, and Pruden Boulevard interchanges for all movements.
   - Allocated $50,000 in FY 2023 RSTP funds.
   - Total FY 2023 and future RSTP funding request: $2,000,000

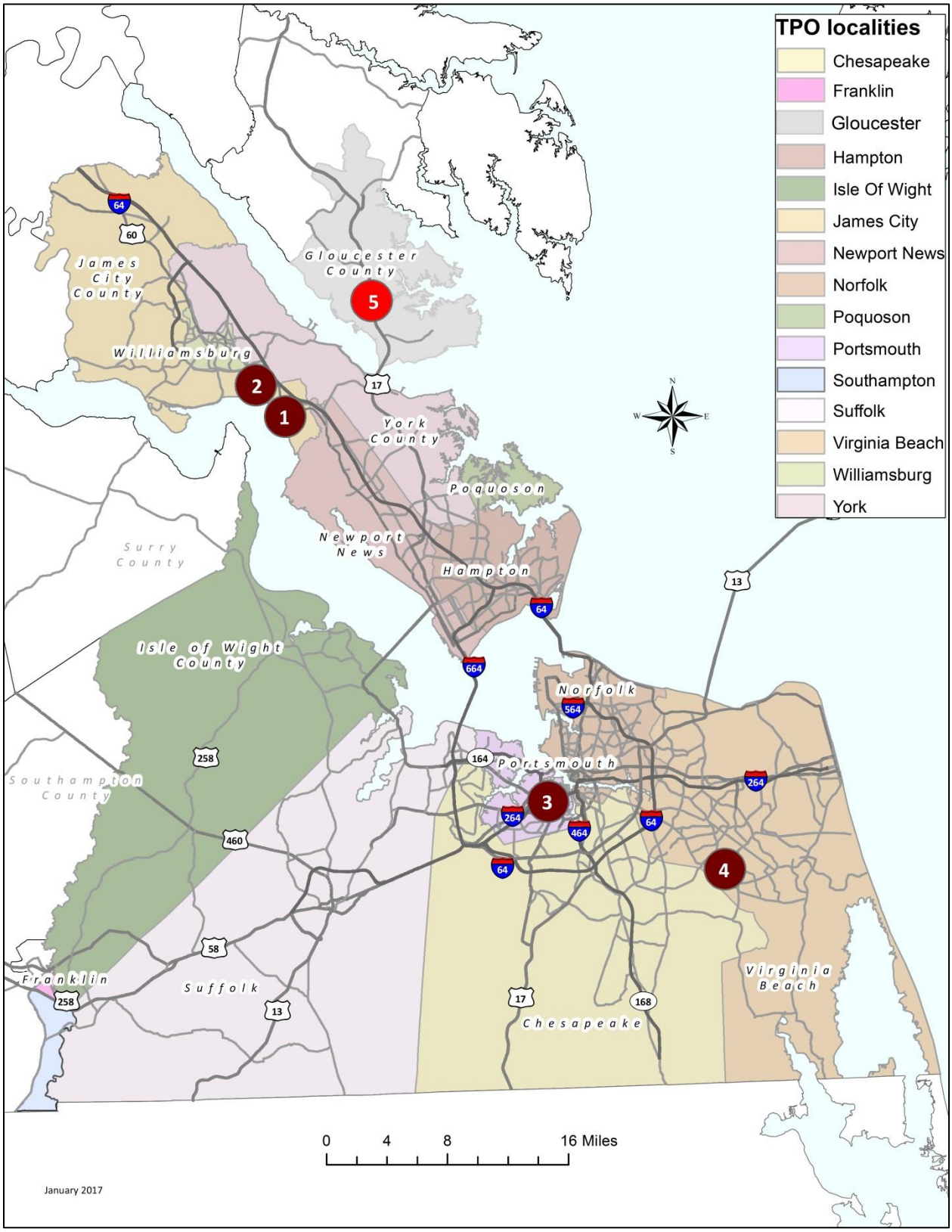
4. **Peninsula Corridor DEIS/Conceptual Engineering - (ID#HT1RS) – HRT**
    - The project entails identifying and comparing the benefits, costs, and impacts of fixed guideway alternatives. Part of this effort will examine how the Locally Preferred Alignment will connect the third crossing to the Southside. The intent of the DEIS analysis is to identify potential impacts to the social, economic and natural environment for each alternative and the relative cost to avoid/minimize/mitigate these impacts. The conceptual engineering effort will define key connection points, right of way requirements, station locations, and prepare a set of prototypical design sheets. The overall level of design will be between 5% -10%.
    - Allocated $2,045,144 in FY 2023 RSTP funds.
    - Total FY 2023 and future RSTP funding request: $8,000,000

**This Page Intentionally Left Blank**

*Map 2* | *Projects Selected for RSTP Allocations*



***Map 2 | Projects Selected for RSTP Allocations***



**This Page Intentionally Left Blank**

# Section II
## *Background*

# INTRODUCTION

The Hampton Roads Transportation Planning Organization (HRTPO) is the metropolitan planning organization (MPO) for the Hampton Roads region of Virginia. As such, it is a federally mandated transportation policy board comprised of representatives from local, state, and federal governments, transit agencies, and other stakeholders and is responsible for transportation planning and programming for the Hampton Roads metropolitan planning area (MPA). The MPA is comprised of the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg; the counties of Isle of Wight, James City, and York; and a portion of Gloucester and Southampton Counties. Among its functions, the HRTPO is responsible for project selection and allocation of funds under two federal programs – the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and the Regional Surface Transportation Program (RSTP).

The CMAQ program provides federal funding to states and localities for transportation projects and programs that help improve air quality and reduce traffic congestion. This funding is intended for areas designated by the U.S. Environmental Protection Agency (EPA) as nonattainment or maintenance areas with regard to the National Ambient Air Quality Standards (NAAQS). A *nonattainment area* is one that does not meet the NAAQS for one or more pollutant. A *maintenance area* is one that was originally designated a nonattainment area, but later met the NAAQS. Hampton Roads has been designated as an attainment area for the current ozone standard and as a maintenance area for the previous standard.

The Surface Transportation Program (STP) provides federal funding that may be used by states and localities for a wide range of highway and transit projects. Regional Surface Transportation Program (RSTP) funds are STP funds that are apportioned to specific regions within a state.

This report summarizes the work of selecting CMAQ and RSTP projects during the CMAQ/RSTP Project Selection Process of 2016. Projects selected received allocations of CMAQ or RSTP funds for FY 2023.

### ELIGIBLE RECIPIENTS

Eligible recipients of CMAQ and RSTP funds in Hampton Roads include the localities within the MPA, Hampton Roads Transit (HRT), the Williamsburg Area Transit Authority (WATA), state transportation agencies, and the HRTPO.

## PROJECT SELECTION PROCESS

The process for obtaining CMAQ or RSTP funding for transportation projects is a competitive one. According to the CMAQ/RSTP Project Selection Process that has been approved by the HRTPO Board, all project proposals are analyzed by the HRTPO staff using a specific set of evaluation criteria. The proposed projects are then ranked based on the results of the analyses. All proposed projects must be consistent with the current HRTPO Long-Range Transportation Plan (LRTP). The LRTP is a financially-constrained transportation plan for the Hampton Roads MPA. The LRTP has a planning horizon of at least 20 years.

### 2016 CMAQ/RSTP Project Selection Process Steps and Deadlines

| | |
|---|---|
| **7/29/2016** | • Deadline for Public to submit projects to be considered for CMAQ/RSTP funding. |
| **8/15/2016** | • Deadline for Applications for project proposals from localities, transit agencies and state transportation agencies. |
| **9/30/2016** | • Project evaluations completed by HRTPO staff. |
| **10/28/2016** | • Transportation Programming Subcommittee (TPS) meeting to review proposed projects and recommend funding allocations. |
| **11/02/2016** | • Transportation Technical Advisory Committee (TTAC) meeting to consider recommendations of the TPS and makes a recommendation for consideration by the HRTPO Board. |
| **11/17/2016** | • HRTPO Board meeting to consider TTAC recommendations regarding CMAQ/RSTP projects and funding allocations for final approval. |

## PUBLIC PARTICIPATION

The general public was invited to submit project ideas for possible CMAQ or RSTP funding. A public notice soliciting CMAQ and RSTP project ideas from the public was posted on June 29, 2016. A special CMAQ/RSTP Project Idea Form was provided for use by the public and posted on the HRTPO website. The deadline for submission of project ideas from the public was July 29, 2016. Project ideas submitted by the public are reviewed by HRTPO staff and then forwarded to the appropriate locality or agency for consideration as a possible project proposal. One project idea was received from the public as a result of this invitation. (See Appendix C)

In addition to the invitation for public involvement at the beginning of the process, all of the meetings associated with the CMAQ/RSTP Project Selection Process – meetings of the Transportation Programming Subcommittee (TPS), Transportation Technical Advisory Committee (TTAC), and HRTPO Board - were public meetings that included an opportunity for public comment at the beginning of each meeting. No public comments regarding the project selection process were received, orally or in writing, during any of those meetings.

# Section III
## *CMAQ Project Selection*

## CMAQ PROJECT SELECTION

In Hampton Roads, projects are selected for funding with Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds based on the amount of air quality improvement expected per dollar spent. This is analyzed in terms of reductions in the emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx), which are precursors of ozone. The air quality aspect of the CMAQ analysis allows all types of CMAQ projects to be compared against one another.

The original analysis policies and procedures were developed in December 1992 after the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA). Over the years since 1992 the policies and procedures have been reviewed and revised. Details on the policies, procedures, and analysis methodologies used for CMAQ project selection are included in the ***Guide to the HRTPO CMAQ and RSTP Project Selection Process***, which may be accessed on the HRTPO website at http://www.hrtpo.org/page/cmaq-and-rstp/.

To help insure that all of the necessary information is included with each project proposal, and to provide some uniformity to the way that project information is submitted, the HRTPO staff developed application forms to be used when submitting CMAQ project proposals. The various ***CMAQ Candidate Project Application Forms*** may be accessed on the HRTPO website at http://www.hrtpo.org/page/cmaq-and-rstp/.

Prior to considering new projects to receive CMAQ allocations, the status of previously approved projects is reviewed to determine whether additional funding is required to allow for the completion of a project or project phase. The review of previously approved projects also includes determining whether those projects are progressing on schedule or whether funds should be:

1. Reallocated to correspond with updated phase schedules, or
2. Reallocated to other projects.

During the 2016 project selection process, 5 requests were made for additional funding for previously approved CMAQ projects. The total request for FY 2023 funding was $8.6 million.

**Table 1** shows all of the new projects proposed for CMAQ funding during the project selection process of 2016. As shown in the table, 17 candidate projects, with a total request of over $28.6 million, were submitted. The total request for FY 2023 funding was $10.2 million.

**Table 2** shows the scoring and ranking of the 17 candidate projects. As shown in the table, each project was scored and ranked based on its cost-effectiveness at reducing VOC and NOx emissions. The ranks for VOC and NOx reduction were summed to produce the composite ranking. The detailed evaluation and scoring worksheets for each of the CMAQ candidate projects are included in **Appendix A.**

**Table 3** shows the new and previously approved projects that were ultimately approved by the HRTPO Board on November 17, 2016 to receive CMAQ allocations in fiscal year 2023. It should be noted that the total CMAQ funding expected to be available for FY 2023, including the 20 percent state match, is approximately $14 million.

***Table 1 | 2016 CMAQ New Candidate Projects***

| Number | Code | Applicant | Project Name | Total Cost | Total CMAQ Request | Total FY-23 Request |
|---|---|---|---|---|---|---|
| 1 | CH1CM | Chesapeake | Chesapeake Signal System - Phase 4 | $ 500,000 | $ 500,000 | $80,000 |
| 2 | CH2CM | Chesapeake | Battlefield Blvd/Kempsville Rd/Great Bridge Blvd Intersection Improvements | $ 1,050,000 | $ 1,050,000 | $ 550,000 |
| 3 | GL1CM | Gloucester Cty. | Pedestrian Improvements on Route 1208 (Greate Road) | $ 500,000 | $ 500,000 | $ 65,000 |
| 4 | NN1CM | Newport News | Citywide Signal System Progression | $ 1,250,000 | $ 1,250,000 | $ 350,000 |
| 5 | NN2CM | Newport News | Tabbs Lane Sidewalk Infill | $ 650,000 | $ 650,000 | $ 238,000 |
| 6 | PR1CM | Portsmouth | Portsmouth Citywide Signal Timing – Phase 1 | $ 120,000 | $ 120,000 | $ 120,000 |
| 7 | SF1CM | Suffolk | Downtown Signal System Upgrade | $ 1,650,000 | $ 1,650,000 | $ 150,000 |
| 8 | SF2CM | Suffolk | Downtown Railroad Warning System | $ 650,000 | $ 650,000 | $ 150,000 |
| 9 | SF3CM | Suffolk | Citywide Signal System Upgrade | $ 2,650,000 | $ 2,650,000 | $ 150,000 |
| 10 | SF4CM | Suffolk | Crittenden Road/Route 17 Intersection Realignment | $ 5,500,000 | $ 5,500,000 | $ 1,000,000 |
| 11 | VB1CM | Virginia Beach | Dam Neck Road/Holland Road Intersection Improvements | $ 2,190,000 | $ 2,190,000 | $ 430,000 |
| 12 | WA1CM | WATA | New Demonstration Routes – Upper York County/Kent County Connector | $ 1,308,555 | $ 1,308,555 | $ 516,164 |
| 13 | WA2CM | WATA | Expansion of Bus Shelters | $ 234,000 | $ 234,000 | $ 117,000 |
| 14 | WA3CM | WATA | Six (6) Bus Purchase Replacement | $ 3,142,710 | $ 3,142,710 | $ 3,142,710 |
| 15 | WA4CM | WATA | Four (4) Bus Expansion Purchase for New Service | $ 1,793,772 | $ 1,793,772 | $ 1,793,772 |
| 16 | YK1CM | York County | Bypass Road Sidewalk | $ 840,000 | $ 840,000 | $ 840,000 |
| 17 | VP1CM | VPA | Expanded Marine Highway Barge Service | $ 4,543,620 | $ 4,543,620 | $ 543,620 |
| **Total** | | | | $ 28,572,657 | $ 28,572,657 | $10,236,266 |

## *Table 2 | 2016 CMAQ New Candidate Projects in Ranked Order*

| # | ID | Jurisdiction | Project Description | Rank | Total Cost | Total Request | FY 23 Request | Cost-Effectiveness | | Score | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Candidate Projects | | | | | | | | VOC | NOx | VOC | NOx | Composite[1] |
| 1 | CH1CM | *Chesapeake* | Chesapeake Signal System - Phase 4 | 1 | $500,000 | $500,000 | $80,000 | $6,099 | $6,506 | 1 | 1 | 2 |
| 2 | PR1CM | *Portsmouth* | Portsmouth Citywide Signal Timing – Phase 1 | 2 | $120,000 | $120,000 | $120,000 | $14,431 | $15,395 | 2 | 2 | 4 |
| 3 | NN1CM | *Newport News* | Citywide Signal System Progression | 3 | $1,250,000 | $1,250,000 | $350,000 | $22,720 | $24,238 | 3 | 3 | 6 |
| 4 | WA3CM | *WATA* | Six (6) Bus Purchase Replacement | 4 | $3,142,710 | $3,142,710 | $3,142,710 | $93,516 | $45,822 | 4 | 5 | 9 |
| 5 | SF3CM | *Suffolk* | Citywide Signal System Upgrade | 5 | $2,650,000 | $2,650,000 | $150,000 | $330,732 | $43,971 | 7 | 4 | 11 |
| 6 | SF1CM | *Suffolk* | Downtown Signal System Upgrade | 6 | $1,650,000 | $1,650,000 | $150,000 | $173,874 | $185,485 | 5 | 7 | 12 |
| 7 | WA2CM | *WATA* | Expansion of Bus Shelters | 6 | $234,000 | $234,000 | $117,000 | $279,149 | $90,352 | 6 | 6 | 12 |
| 8 | SF2CM | *Suffolk* | Downtown Railroad Warning System | 8 | $650,000 | $650,000 | $150,000 | $444,958 | $352,819 | 8 | 8 | 16 |
| 9 | CH2CM | *Chesapeake* | Battlefield Blvd/Kempsville Rd/Great Bridge Blvd Intersection Improvements | 9 | $1,050,000 | $1,050,000 | $550,000 | $494,992 | $474,673 | 9 | 9 | 18 |
| 10 | VP1CM | *VPA* | Expanded Marine Highway Barge Service | 10 | $4,543,620 | $4,543,620 | $543,620 | $1,363,086 | $528,048 | 10 | 10 | 20 |
| 11 | GL1CM | *Gloucester Cty.* | Pedestrian Improvements on Route 1208 (Greate Road) | 11 | $500,000 | $500,000 | $65,000 | $34,412,989 | $11,138,504 | 11 | 11 | 22 |
| 12 | VB1CM | *Virginia Beach* | Dam Neck Road/Holland Road Intersection Improvements | 12 | $2,190,000 | $2,190,000 | $430,000 | $40,615,677 | $43,328,025 | 12 | 13 | 25 |
| 13 | NN2CM | *Newport News* | Tabbs Lane Sidewalk Infill | 12 | $650,000 | $650,000 | $238,000 | $55,264,923 | $17,887,680 | 13 | 12 | 25 |
| 14 | SF4CM | *Suffolk* | Crittenden Road/Route 17 Intersection Realignment | 14 | $5,500,000 | $5,500,000 | $1,000,000 | $62,825,904 | $67,021,470 | 14 | 15 | 29 |
| 15 | WA1CM | *WATA* | New Demonstration Routes – Upper York County/Kent County Connector | 14 | $1,308,555 | $1,308,555 | $516,164 | $72,616,857 | $62,493,509 | 15 | 14 | 29 |
| 16 | YK1CM | *York County* | Bypass Road Sidewalk | 16 | $840,000 | $840,000 | $840,000 | $193,076,962 | -$8,242,079 | 16 | 17 | 33 |
| 17 | WA4CM | *WATA* | Four (4) Bus Expansion Purchase for New Service | 16 | $1,793,772 | $1,793,772 | $1,793,772 | -$1,602,729 | -$834,730 | 17 | 16 | 33 |
| | Totals | | | | $28,572,657 | $28,572,657 | $10,236,266 | | | | | |

Prepared by HRPO Staff October 21, 2016

[1]The Composite Score is computed as follows:
First, projects are evaluated for their estimated impacts on the reduction of VOC's and NOx.
Second, projects are sorted in ascending order based on the Cost/Benefit for VOC reduction and numbered sequentially. Lower numbers are better.
Third, projects are sorted in ascending order based on the Cost/Benefit for NOx reduction and numbered sequentially. Lower numbers are better.
Finally, the sequential numbers for VOC reduction and NOx reduction are added together to produce the Composite Score. Lower numbers are better.
The Cost-Effectiveness figures represent $/ton of pollutants (NOx, VOC) removed based on the annualized cost of the project.

*Table 3 | FY -2023 Allocations to Previously Approved and New CMAQ Projects*

| ID/UPC# | Jurisdiction | Project Description | Proposed Allocation FY-23 |
|---|---|---|---|
| **Previously Approved Projects** | | | |
| T16054 | HRT | Bus Vehicle Replacement (148) | $5,740,392 |
| 108982 | Suffolk | Suffolk Traffic Operations Center (TOC) | $750,000 |
| T17893 | Norfolk | Bus Shelters and Pedestrian Improvements | $220,000 |
| T17890 | WATA | York County - Southeast - Demonstration Route | $471,666 |
| T17980 | Suffolk | Suffolk Citywide Signal Timings | $230,000 |
| **New CMAQ Projects with FY-23 Allocations** | | | |
| CH1CM | Chesapeake | Chesapeake Signal System - Phase 4 | $80,000 |
| PR1CM | Portsmouth | Portsmouth Citywide Signal Timing – Phase 1 | $120,000 |
| NN1CM | Newport News | Citywide Signal System Progression | $350,000 |
| WA3CM | WATA | Bus Purchase Replacement (6) | $3,142,710 |
| SF3CM | Suffolk | Citywide Signal System Upgrade | $150,000 |
| SF1CM | Suffolk | Downtown Signal System Upgrade | $150,000 |
| WA2CM | WATA | Expansion of Bus Shelters | $117,000 |
| SF2CM | Suffolk | Downtown Railroad Warning System | $150,000 |
| CH2CM | Chesapeake | Battlefield Blvd/Kempsville Rd/Great Bridge Blvd Intersection Improvements | $550,000 |
| VP1CM | VPA | Expanded Marine Highway Barge Service | $543,620 |
| GL1CM | Gloucester County | Pedestrian Improvements on Route 1208 (Greate Road) | $65,000 |
| VB1CM | Virginia Beach | Dam Neck Road/Holland Road Intersection Improvements | $430,000 |
| ~~NN2CM~~** | ~~Newport News~~ | ~~Tabbs Lane Sidewalk Infill~~ | ~~$238,000~~ |
| SF4CM | Suffolk | Crittenden Road/Route 17 Intersection Realignment | $372,530 |
| WA1CM | WATA | New Demonstration Routes – Upper York County/Kent County Connector | $372,530 |
| | | | |
| | | **TOTAL: CMAQ Allocations** | **$14,005,448** |

**** Allocated $238,000 in FY 2023 CMAQ funds. The FY 2023 funding of $238,000 was subsequently removed as the project was deemed ineligible to receive federal funding. The proposed project location was on a roadway with a functional classification of urban local.

**This Page Intentionally Left Blank**

# Section IV
## *RSTP Project Selection*

## RSTP PROJECT SELECTION

Projects selected for funding with Regional Surface Transportation Program (RSTP) funds must meet certain criteria originally developed in 1992 and reviewed and revised since. Details on the policies, procedures, and analysis methodologies used for RSTP project selection are included in the ***Guide to the HRTPO CMAQ and RSTP Project Selection Process***, which may be accessed on the HRTPO website at http://www.hrtpo.org/page/cmaq-and-rstp/.

To help insure that all of the necessary information is included with each project proposal, and to provide some uniformity to the way that project information is submitted, HRTPO staff developed application forms to be used when submitting RSTP project proposals. The various ***RSTP Candidate Project Application Forms*** may be accessed on the HRTPO website at http://www.hrtpo.org/page/cmaq-and-rstp/.

Prior to considering new projects to receive RSTP allocations, the status of previously approved projects is reviewed to determine whether additional funding is required to allow for the completion of a project or project phase. The review of previously approved projects also includes determining whether those projects are progressing on schedule or whether funds should be:

1. Reallocated to correspond with updated phase schedules, or
2. Reallocated to other projects.

After addressing the needs of previously approved RSTP projects, new candidate projects to receive available RSTP funding were considered. **Table 4** shows all of the new projects proposed for RSTP funding during the project selection process in 2016. As shown in the table, 23 candidate projects, with a total request of $176 million, were submitted.

The analysis of RSTP project proposals is more qualitative in nature than the CMAQ analysis. Unlike the CMAQ analysis, RSTP projects must be placed into categories and only projects within the same category can be compared against one another. For this reason, a predetermination must be made with regard to the proportions of available funds that will be allocated to highway versus non-highway projects.

In an effort to continually improve the quantitative nature of the HRTPO CMAQ and RSTP Project Selection Process, the Transportation Technical Advisory Committee (TTAC) recommended during the meeting of March 2, 2016 that the HRTPO Project Prioritization Tool be used to evaluate highway-type RSTP projects and to continue to use the previous RSTP methodologies to evaluate non-highway RSTP projects since the HRTPO Prioritization Tool is not currently capable of evaluating most non-highway type projects. The HRTPO Board approved this change to the Project Selection Process on March 17, 2016.

The Tool does not currently apply the Economic Vitality component for some projects types and, therefore, the scores for such projects cannot be directly compared to the scores for the other projects. **Table 5** shows the scoring and ranking of the 23 candidate projects. The detailed evaluation and scoring worksheets for each of the newly submitted RSTP projects are included in **Appendix B.**

**Table 6** shows the four new projects and six previously approved projects that were ultimately approved by the HRTPO Board on November 17, 2016 to receive RSTP funding allocations in FY 2023. The total RSTP funding expected to be available for FY 2023, including the 20 percent state match, is approximately $34 million.

## *Table 4 | 2016 RSTP New Candidate Projects*

| Number | Code | Applicant | Project Name (HRTPO Prioritization Tool ID) | Total Cost | Total RSTP Request | Total FY-23 Request |
|---|---|---|---|---|---|---|
| **Highway: Utilizing HRTPO Prioritization Tool** | | | | | | |
| **Roadway Widening, New Facilities, HOV Lanes, Intersection Improvements** | | | | | | |
| 1 | CH1RS | Chesapeake | Mt. Pleasant/Great Bridge Bypass (2040-33) | $ 29,500,000 | $ 29,500,000 | $ 9,500,000 |
| 2 | GL1RS | Gloucester Cty. | George Washington Memorial Highway (Route 17 )Widening Phase 1 (2040-40) | $ 43,900,000 | $ 43,900,000 | $ 2,200,000 |
| 3 | SF6RS | Suffolk | Crittenden Road/Route 17 Intersection Realignment | $ 5,500,000 | $ 5,500,000 | $ 1,000,000 |
| 4 | VB1RS | Virginia Beach | Indian River Road Phase VII-B (2040-169) | $ 12,660,000 | $ 12,660,000 | $ 920,000 |
| 5 | VB2RS | Virginia Beach | Laskin Road Phase 1 (2040-171) | $ 82,062,000 | $ 41,775,000 | $ 2,550,000 |
| **Corridor Operational Improvements** | | | | | | |
| 6 | PR1RS | Portsmouth | Elm Avenue Improvements between Navy Gates 29 and 36 (2040-126) | $ 9,750,000 | $ 9,750,000 | $ 900,000 |
| **Bridge Replacement** | | | | | | |
| **Highway: Utilizing RSTP Scoring Process** | | | | | | |
| **Alternatives Analysis and Feasiblilty Studies** | | | | | | |
| 7 | JC1RS | James City Cty. | James City County Master Transportation Plan | $ 500,000 | $ 500,000 | $ 500,000 |
| 8 | SF2RS | Suffolk | Suffolk Bypass/Godwin Blvd-Wilroy Rd-Pruden Blvd IMR | $ 2,000,000 | $ 2,000,000 | $ 2,000,000 |
| **Intelligent Transportation Systems Projects** | | | | | | |
| 9 | NN1RS | Newport News | Citywide Signal System Progression | $ 1,250,000 | $ 1,250,000 | $ 350,000 |
| 10 | SF3RS | Suffolk | Downtown Signal System Upgrade | $ 1,650,000 | $ 1,650,000 | $ 150,000 |
| 11 | SF4RS | Suffolk | Downtown Railroad Warning System | $ 1,250,000 | $ 1,250,000 | $ 350,000 |
| 12 | SF5RS | Suffolk | Citywide Signal System Upgrade | $ 2,650,000 | $ 2,650,000 | $ 150,000 |
| **Non-Highway:** | | | | | | |
| **New or Expanded Service, Passenger Facilities, HS/intercity/& light rail, Station Development, Vehicle Upgrades etc.** | | | | | | |
| 13 | HT2RS | HRT | Virginia Beach Operations and Maintenance Facility | $ 3,000,000 | $ 3,000,000 | $ 3,000,000 |
| 14 | WA2RS | WATA | Transit Bus Pull -Outs | $ 345,300 | $ 345,300 | $ 345,300 |
| 15 | WA3RS | WATA | New Demonstration Routes – Upper York County/Kent County Connector | $ 1,308,555 | $ 1,308,555 | $ 516,164 |
| 16 | WA5RS | WATA | Expansion Bus Shelters | $ 234,000 | $ 234,000 | $ 117,000 |
| **Vehicle Replacement/Purchase** | | | | | | |
| 17 | HT3RS | HRT | Bus Vehicle Replacement | $ 4,725,000 | $ 4,725,000 | $ 1,575,000 |
| 18 | WA4RS | WATA | Four (4) Bus Expansion Purchase for New Service | $ 1,793,772 | $ 1,793,772 | $ 1,793,772 |
| 19 | WA7RS | WATA | Six (6) Bus Purchase Replacement | $ 3,142,710 | $ 3,142,710 | $ 3,142,710 |
| **Other Transit** | | | | | | |
| 20 | SF1RS | Suffolk | College Drive Transit Safety Improvements | $ 360,726 | $ 350,726 | $ 350,726 |
| 21 | WA6RS | WATA | Automated Passenger Counting (APC) System | $ 195,000 | $ 195,000 | $ 195,000 |
| **Alternatives Analysis and Feasiblilty Studies** | | | | | | |
| 22 | HT1RS | HRT | Peninsula Corridor DEIS/Conceptual Engineering | $ 8,000,000 | $ 8,000,000 | $ 4,000,000 |
| 23 | WA1RS | WATA | Transportation Development Plan (TDP) – 6 Year Plan | $ 250,000 | $ 250,000 | $ 250,000 |
| | | **TOTALS** | | **$ 216,027,063** | **$ 175,730,063** | **$ 35,855,672** |

*Table 5 | 2016 RSTP Candidate Projects in Ranked Order*

| Number | Code | Applicant | Project Name | Score (Max = 300 for HRTPO Prioritization tool and 100 for RSTP Tool) |
|---|---|---|---|---|
| **Highway: Utilizing HRTPO Prioritization Tool** | | | | |
| **Roadway Widening, New Facilities, HOV Lanes, Intersection Improvements** | | | | |
| 1 | GL1RS | Gloucester Cty. | George Washington Memorial Highway (Route 17 )Widening Phase 1 (2040-40) | **140.0** |
| 2 | VB2RS | Virginia Beach | Laskin Road Phase 1 (2040-171) | **129.0** |
| 3 | CH1RS | Chesapeake | Mt. Pleasant/Great Bridge Bypass (2040-33) | **122.0** |
| 4 | VB1RS | Virginia Beach | Indian River Road Phase VII-B (2040-169) | **107.0** |
| 5 | SF6RS | Suffolk | Crittenden Road/Route 17 Intersection Realignment | **89.0** |
| **Corridor Operational Improvements** | | | | |
| 6 | PR1RS | Portsmouth | Elm Avenue Improvements between Navy Gates 29 and 36 (2040-126) | **112.0** |
| **Bridge Replacement** | | | | |
| **Highway: Utilizing RSTP Tool** | | | | |
| **Alternatives Analysis and Feasiblilty Studies** | | | | |
| 7 | JC1RS | James City Cty. | James City County Master Transportation Plan | **66.0** |
| 8 | SF2RS | Suffolk | Suffolk Bypass/Godwin Blvd-Wilroy Rd-Pruden Blvd IMR | **62.0** |
| **Intelligent Transportation Systems Projects** | | | | |
| 9 | SF5RS | Suffolk | Citywide Signal System Upgrade | **76** |
| 10 | NN1RS | Newport News | Citywide Signal System Progression | **74** |
| 11 | SF3RS | Suffolk | Downtown Signal System Upgrade | **62.0** |
| 12 | SF4RS | Suffolk | Downtown Railroad Warning System | **57.0** |
| **Non-Highway:** | | | | |
| **New or Expanded Service, Passenger Facilities, HS/intercity/& light rail, Station Development, Vehicle Upgrades etc.** | | | | |
| 13 | WA3RS | WATA | New Demonstration Routes – Upper York County/Kent County Connector | **64** |
| 14 | WA5RS | WATA | Expansion Bus Shelters | **44** |
| 15 | WA2RS | WATA | Transit Bus Pull -Outs | **30.0** |
| 16 | HT2RS | HRT | Virginia Beach Operations and Maintenance Facility | **28.0** |
| **Vehicle Replacement/Purchase** | | | | |
| 17 | HT3RS | HRT | Bus Vehicle Replacement | **65** |
| 18 | WA7RS | WATA | Six (6) Bus Purchase Replacement | **62** |
| 19 | WA4RS | WATA | Four (4) Bus Expansion Purchase for New Service | **28.0** |
| **Other Transit** | | | | |
| 20 | SF1RS | Suffolk | College Drive Transit Safety Improvements | **55.0** |
| 21 | WA6RS | WATA | Automated Passenger Counting (APC) System | **50.0** |
| **Alternatives Analysis and Feasiblilty Studies** | | | | |
| 22 | HT1RS | HRT | Peninsula Corridor DEIS/Conceptual Engineering | **77.0** |
| 23 | WA1RS | WATA | Transportation Development Plan (TDP) – 6 Year Plan | **67.0** |
| | | | | |

*Table 6 | FY 2023 Allocations to New and Previously Approved RSTP Projects*

| ID/UPC# | Jurisdiction | Project Description | Proposed Allocation FY-23 |
|---|---|---|---|
| **Previously Approved Projects** | | | |
| T9093 | HRT | Naval Station Norfolk Transit Extension Study FEIS/PE | $6,000,000 |
| T14104 | HRT | TRAFFIX Program | $1,000,000 |
| 100200 | James City County | Skiffes Creek Connector | $1,544,066 |
| 100920 | James City County | Croaker Road Widening | $8,600,000 |
| 107035 | Portsmouth | George Washington Highway Corridor Improvements (including Elm Ave. Intersection) | $1,500,000 |
| 15828 | Virginia Beach | Elbow Road Extended - Phase 2 | $11,221,342 |
| **New RSTP Projects with FY-23 Allocations** | | | |
| GL1RS | Gloucester County | George Washington Memorial Highway (Route 17) Widening Phase 1 (2040-40) | $2,200,000 |
| JC1RS | James City County | James City County Master Transportation Plan | $50,000 |
| SF2RS | Suffolk | Suffolk Bypass/Godwin Blvd-Wilroy Rd-Pruden Blvd Interchange Modification Report (IMR) | $50,000 |
| HT1RS | HRT | Peninsula Corridor DEIS/Conceptual Engineering | $2,045,144 |
| | | | |
| | | **TOTAL: RSTP Allocations** | **$34,210,552** |
| | | | |
| | | **TOTAL: Left in Reserve (For Highway Projects)** | **$767,717** |

# Section V
## *Appendices*

# APPENDIX A

# CMAQ Project Evaluation Worksheets

CONGESTION MITIGATION AND AIR QUALITY
**BICYCLE AND PEDESTRIAN PROJECTS**

JURISDICTION: York County
PROJECT NAME: **Bypass Road Sidewalk**
LOCATION: Bypass Road (Route 60) between the western City of Williamsburg boundary [345' west of Waller Mill Road (Rte 713)] and the eastern City of Williamsburg boundary (275' east of Route 132)
DESCRIPTION: The proposed rehabilitation/reconstruction project will provide a safe and smooth surface for the many pedestrians and cyclists who use this facility. The proposed sidewalk would tie into existing sidewalks on both ends in the City of Williamsburg.
DATE: 8/9/2016 (on application)
PROJECT COST: $840,000

1- ESTIMATES OF VMT REDUCTIONS:

Ground counts for reasonableness check re: CMAQ Post Evaluation study [12]:

| Bikeway | Bicycle Counts | | | Pedestrian Counts | | |
|---|---|---|---|---|---|---|
| Sampled Bikeway | Weekday Counts | Weekend Counts | Avg. Day Estimate [1] | Weekday Counts | Weekend Counts | Avg. Day Estimate[1] |
| Goodwin Neck | 2 | 4 | 3 | 0 | 0 | 0 |
| Warwick Blvd | 13 | 31 | 18 | 11 | 10 | 11 |
| Col. Pkwy Conn. | 34 | 81 | 47 | 7 | 5 | 6 |
| Average: | 16 | 39 | **23** | 6 | 5 | **6** |

Demand estimation for proposed facility re: NCHRP Report 552:

Local Bicycle Commute Share (C): 0.3% [2]
Facility Length (L): 1.13 mi. [13]

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.00-0.25 mi. | 1264 | 587 |
| | 1274 | 370 |
| | 1277 | 318 |
| | 1278 | 137 |
| | 1279 | 899 |
| | 1397 | 16 |
| | 1403 | 766 |
| | Average: | 442 |
| 0.25-0.50 mi. | 1266 | 127 |
| | 1272 | 80 |
| | 1273 | 2 |
| | 0 | 0 |
| | 0 | 0 |
| | Average: | 70 |

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.50-1.00 mi. | 1265 | 44 |
| | 1267 | 95 |
| | 1269 | 434 |
| | 1270 | 1,280 |
| | 1271 | 339 |
| | 1275 | 3,384 |
| | 1276 | 928 |
| | 1280 | 846 |
| | 1319 | 1,349 |
| | 1404 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | Average: | 870 |

| Buffer, Distance from Project | TAZ | 2009 Density (D), persons/ sq.mi. | Area of Buffer (A), sq.mi. [6] | Residents in Buffer (R=D*A) | Existing Adult Cyclists (R*C*0.8) [3] | New Adult Cyclists [4] | Existing Adult Pedestrians [5] | New Adult Pedestrians [5] |
|---|---|---|---|---|---|---|---|---|
| 0.00-0.25 mi. | above | 442 | 0.57 | 250 | 1 | 1 | 0 | 0 |
| 0.25-0.50 mi. | above | 70 | 0.57 | 39 | 0 | 0 | 0 | 0 |
| 0.50-1.00 mi. | above | 870 | 1.13 | 983 | 2 | 1 | 1 | 0 |
| | | | | 1,272 | 3 | 2 | 1 | 1 |

CONGESTION MITIGATION AND AIR QUALITY
**BICYCLE AND PEDESTRIAN PROJECTS**

JURISDICTION: Newport News
PROJECT NAME: **Tabbs Lane Sidewalk Infill**
LOCATION: Tabbs Lane between the intersections of Old Courthouse Way and Telford Drive
DESCRIPTION: Tabbs Lane is an unimproved local collector with open ditches and limited existing pedestrian accomodations. Developments on each end of the project area have installed sidewalks. This project's scope will link these sidewalks to bridge the gap connecting the surrounding high density residential parcels to Warwick Boulevard, the adjacent major [illegible]
DATE: 8/11/2016 (on application)
PROJECT COST: $650,000

1- ESTIMATES OF VMT REDUCTIONS:

Ground counts for reasonableness check re: CMAQ Post Evaluation study [12]:

| Bikeway | Bicycle Counts | | | Pedestrian Counts | | |
|---|---|---|---|---|---|---|
| Sampled Bikeway | Weekday Counts | Weekend Counts | Avg. Day Estimate [1] | Weekday Counts | Weekend Counts | Avg. Day Estimate [1] |
| Goodwin Neck | 2 | 4 | 3 | 0 | 0 | 0 |
| Warwick Blvd | 13 | 31 | 18 | 11 | 10 | 11 |
| Col. Pkwy Conn. | 34 | 81 | 47 | 7 | 5 | 6 |
| Average: | 16 | 39 | **23** | 6 | 5 | **6** |

Demand estimation for proposed facility re: NCHRP Report 552:

Local Bicycle Commute Share (C): 0.3% [2]
Facility Length (L): 0.45 mi. [13]

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.00-0.25 mi. | 1192 | 2,211 |
| | | |
| | 0 | 0 |
| | Average: | 2,211 |
| 0.25-0.50 mi. | 1176 | 4,394 |
| | 1160 | 3,616 |
| | 1193 | 4,094 |
| | 1194 | 552 |
| | 1115 | 5,127 |
| | 1116 | 5,568 |
| | Average: | 3,892 |

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.50-1.00 mi. | 1191 | 5,927 |
| | 1199 | 3,160 |
| | 1175 | 6,163 |
| | 1174 | 2,904 |
| | 1173 | 5,058 |
| | 1181 | 521 |
| | 1204 | 0 |
| | 1185 | 1506 |
| | 1110 | 1,683 |
| | Average: | 2,991 |

| Buffer, Distance from Project | TAZ | 2009 Density (D), persons/ sq.mi. | Area of Buffer (A), sq.mi. [6] | Residents in Buffer (R=D*A) | Existing Adult Cyclists (R*C*0.8) [3] | New Adult Cyclists [4] | Existing Adult Pedestrians [5] | New Adult Pedestrians [5] |
|---|---|---|---|---|---|---|---|---|
| 0.00-0.25 mi. | above | 2,211 | 0.23 | 497 | 1 | 2 | 0 | 1 |
| 0.25-0.50 mi. | above | 3,892 | 0.23 | 876 | 2 | 2 | 1 | 1 |
| 0.50-1.00 mi. | above | 2,991 | 0.45 | 1,346 | 3 | 1 | 1 | 0 |
| | | | | 2,719 | 7 | 6 | 2 | 1 |

Checking reasonableness of bicycle demand estimation via comparison to ground counts:

| | | |
|---|---|---|
| Existing Adult Cyclists: | 7 | above |
| New Adult Cyclists: | 6 | above |
| Total Adult Cyclists: | 12 | |
| Trips, per day per cyclist: | 2 | trip to destination + return trip |
| Total Trips per Day: | 25 | |
| vs. Trips on Sampled Bikeways: | 23 | above |

Therefore, the demand calculation results are reasonable.

Calculating VMT reduction:

| | Biking | Walking | |
|---|---|---|---|
| New Users: | 6 | 1 | above |
| Trips, per day per user: | 2 | 2 | trip to destination + return trip |
| New Person Trips on Facility: | 12 | 3 | |
| Eliminated Person Trips by Auto: | 12 | 3 | above [7] |
| Occupancy of Eliminated Auto Trips: | 1.25 | 1.25 | [11] |
| Eliminated Vehicle Trips (Auto): | 9 | 2 | |
| Avg. Alt. Mode Trip Length, mi.: | 2 | 1 | [9] |
| Factor (for converting alt. mode trip lengths): | 2 | 2 | [10] |
| Avg. Eliminated Auto Trip Length, veh-mi.: | 4 | 2 | |
| VMT Reduction, mi: | 38 | 5 | |
| Total: | | | 42 vehicle-miles |

2- EMISSIONS CALCULATIONS:

| Type | Emissions Factor, g/mi [5] | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 42 | 3 | 0.003 | 250 | 1 |
| NOx | 0.207 | 42 | 9 | 0.009 | 250 | 2 |

3- COST EFFECTIVENESS:

| | | |
|---|---|---|
| Total Cost: | $650,000 | above |
| Useful life, years: | 15 | as assumed in CMAQ analyses of previous years |
| Annual Cost: | $43,333 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Con-version Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $43,333 | 1 | $60,932 | 907 | **$55,264,923** |
| NOx | $43,333 | 2 | $19,722 | 907 | **$17,887,680** |

Notes:

[1] Average Day Estimate = [(Weekday Count * 5) + (Weekend Count * 2)] / 7

[2] "A Review of 2000 Census Commute Data for Hampton Roads", HRPDC, Nov. 2005, p. 28

[3] "Low" estimate, re: NCHRP Report 552, pg. 38

[4] "New": i.e. as a result of proposed facility; New = Existing * B, where B varies by buffer: 0-0.25mi: 1.93; 0.25-0.50mi: 1.11; 0.50-1.00mi: 0.39, re: NCHRP Report 552, pg. 39

[5] Pedestrians = Cyclists / 4, based on ground counts at top of page

[6] Only areas lateral to facility are included in buffers; semi-circular areas at ends of facility are not included in buffers

[7] Assuming each new alt. mode trip eliminates an auto trip

[8] Source: VDOT, Hampton Roads average for light duty vehicles and roadway functional classes, 2014, 35mph

[9] Source: 2001 NHTS Table Designer

[10] It is assumed that the eliminated auto trips will have length lower than regular auto trips (10 miles; source [9]) and higher than regular alt. mode trips (shown above).

[11] All-trip occupancy, based on occupancies assumed in CMAQ analyses of previous years: work- 1.1; non-work- 1.3

[12] HRPDC, Feb. 2003, Appendix C

[13] From application

CONGESTION MITIGATION AND AIR QUALITY
**BICYCLE AND PEDESTRIAN PROJECTS**

JURISDICTION: Gloucester County
PROJECT NAME: **Pedestrian Improvements on Route 1208 (Greate Road)**
LOCATION: Route 1208 Greate Road and Greate Road West from Intersection of Route 17 to Gloucester Point Beach and Public Boat Ramp
DESCRIPTION: Pedestrian Improvements on Rte 1208 Greate Road and adjacent sideroads connecting to sidewalks currently being planned along Route 17 northbound.

DATE: 8/15/2016 (on application)
PROJECT COST: $500,000

1- ESTIMATES OF VMT REDUCTIONS:

Ground counts for reasonableness check re: CMAQ Post Evaluation study [12]:

| Bikeway | Bicycle Counts | | | Pedestrian Counts | | |
|---|---|---|---|---|---|---|
| Sampled Bikeway | Weekday Counts | Weekend Counts | Avg. Day Estimate [1] | Weekday Counts | Weekend Counts | Avg. Day Estimate [1] |
| Goodwin Neck | 2 | 4 | 3 | 0 | 0 | 0 |
| Warwick Blvd | 13 | 31 | 18 | 11 | 10 | 11 |
| Col. Pkwy Conn. | 34 | 81 | 47 | 7 | 5 | 6 |
| Average: | 16 | 39 | **23** | 6 | 5 | **6** |

Demand estimation for proposed facility re: NCHRP Report 552:

Local Bicycle Commute Share (C): 0.3% [2]
Facility Length (L): 0.63 mi. [13]

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.00-0.25 mi. | 1434 | 3,758 |
| | 1435 | 1,287 |
| | 0 | 0 |
| | Average: | 2,523 |
| 0.25-0.50 mi. | 1434 | 3,758 |
| | 1435 | 1,287 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | Average: | 2,523 |

| Buffer, Distance from Project | TAZ [13] | 2009 Density (D), persons/ sq.mi. |
|---|---|---|
| 0.50-1.00 mi. | 1434 | 3,758 |
| | 1435 | 1,287 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | 0 | 0 |
| | Average: | 2,523 |

| Buffer, Distance from Project | TAZ | 2009 Density (D), persons/ sq.mi. | Area of Buffer (A), sq.mi. [6] | Residents in Buffer (R=D*A) | Existing Adult Cyclists (R*C*0.8) [3] | New Adult Cyclists [4] | Existing Adult Pedestrians [5] | New Adult Pedestrians [5] |
|---|---|---|---|---|---|---|---|---|
| 0.00-0.25 mi. | above | 2,523 | 0.32 | 795 | 2 | 4 | 0 | 1 |
| 0.25-0.50 mi. | above | 2,523 | 0.32 | 795 | 2 | 2 | 0 | 1 |
| 0.50-1.00 mi. | above | 2,523 | 0.63 | 1,589 | 4 | 1 | 1 | 0 |
| | | | | 3,178 | 8 | 7 | 2 | 2 |

Checking reasonableness of bicycle demand estimation via comparison to ground counts:

| | | |
|---|---|---|
| Existing Adult Cyclists: | 8 | above |
| New Adult Cyclists: | 7 | above |
| Total Adult Cyclists: | 15 | |
| Trips, per day per cyclist: | 2 | trip to destination + return trip |
| Total Trips per Day: | 30 | |
| vs. Trips on Sampled Bikeways: | 23 | above |

Therefore, the demand calculation results are reasonable.

Calculating VMT reduction:

| | Biking | Walking | |
|---|---|---|---|
| New Users: | 7 | 2 | above |
| Trips, per day per user: | 2 | 2 | trip to destination + return trip |
| New Person Trips on Facility: | 15 | 4 | |
| Eliminated Person Trips by Auto: | 15 | 4 | above [7] |
| Occupancy of Eliminated Auto Trips: | 1.25 | 1.25 | [11] |
| Eliminated Vehicle Trips (Auto): | 12 | 3 | |
| Avg. Alt. Mode Trip Length, mi.: | 2 | 1 | [9] |
| Factor (for converting alt. mode trip lengths): | 2 | 2 | [10] |
| Avg. Eliminated Auto Trip Length, veh-mi.: | 4 | 2 | |
| VMT Reduction, mi: | 47 | 6 | |
| Total: | | | 52 vehicle-miles |

2- EMISSIONS CALCULATIONS:

| Type | Emissions Factor, g/mi [5] | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 52 | 4 | 0.004 | 250 | 1 |
| NOx | 0.207 | 52 | 11 | 0.011 | 250 | 3 |

3- COST EFFECTIVENESS:

| | | |
|---|---|---|
| Total Cost: | $500,000 | above |
| Useful life, years: | 15 | as assumed in CMAQ analyses of previous years |
| Annual Cost: | $33,333 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Con-version Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $33,333 | 1 | $37,942 | 907 | **$34,412,989** |
| NOx | $33,333 | 3 | $12,281 | 907 | **$11,138,504** |

Notes:

[1] Average Day Estimate = [(Weekday Count * 5) + (Weekend Count * 2)] / 7

[2] "A Review of 2000 Census Commute Data for Hampton Roads", HRPDC, Nov. 2005, p. 28

[3] "Low" estimate, re: NCHRP Report 552, pg. 38

[4] "New": i.e. as a result of proposed facility; New = Existing * B, where B varies by buffer: 0-0.25mi: 1.93; 0.25-0.50mi: 1.11; 0.50-1.00mi: 0.39, re: NCHRP Report 552, pg. 39

[5] Pedestrians = Cyclists / 4, based on ground counts at top of page

[6] Only areas lateral to facility are included in buffers; semi-circular areas at ends of facility are not included in buffers

[7] Assuming each new alt. mode trip eliminates an auto trip

[8] Source: VDOT, Hampton Roads average for light duty vehicles and roadway functional classes, 2014, 35mph

[9] Source: 2001 NHTS Table Designer

[10] It is assumed that the eliminated auto trips will have length lower than regular auto trips (10 miles; source [9]) and higher than regular alt. mode trips (shown above).

[11] All-trip occupancy, based on occupancies assumed in CMAQ analyses of previous years: work- 1.1; non-work- 1.3

[12] HRPDC, Feb. 2003, Appendix C

[13] From application

CONGESTION MITIGATION AND AIR QUALITY

**HIGHWAY PROJECTS - INTERSECTION GEOMETRY**

JURISDICTION: Virginia Beach
PROJECT NAME: **Dam Neck Road/Holland Road Intersection Improvements**
LOCATION: Intersection of Dam Neck Road and Holland Road
DESCRIPTION: Includes the addition of a second left turn lane from westbound Dam Neck Road to southbound Holland Road. Also, reconstruction of existing refuge island on the northeast corner and
DATE: 8/14/2015 (1)
PROJECT COST: $2,190,000

1 - REDUCED AUTO EMISSIONS

Weekday PM Peak Hour

| | | | |
|---|---|---|---|
| Intersection Delay Before Project | | 51.8 | sec/veh (1) |
| Intersection Delay After Project | | 50.1 | sec/veh (1) |
| Change In Intersection Delay | | 1.7 | sec/veh, pk hr |
| Total Vehicles During Peak Hour | | 5,652 | veh/hr (1) |
| | divided by | 3,600 | sec/hr |
| Change In Intersection Delay | | 2.7 | veh hr's, pk hr |
| | divided by | 17% | pk hr delay factor(2) |
| Change In Intersection Delay | | 15.7 | hours/day |

| Type | Emissions Factor, g/hr (3) | Delay Change, hr/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, weekdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 15.7 | 20 | 0.020 | 250 | 4.9 |
| NOx | 1.168 | 15.7 | 18 | 0.018 | 250 | 4.6 |

2 - COST EFFECTIVENESS

| | | |
|---|---|---|
| Total Cost: | $2,190,000 | (from above) |
| Useful life, years: | 10 (4) | |
| Annual Cost: | $219,000 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Conversion Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $219,000 | 4.9 | $44,780 | 907 | **$40,615,677** |
| NOx | $219,000 | 4.6 | $47,771 | 907 | **$43,328,025** |

Notes:

(1) From application

(2) pk hr delay factor = pk hr delay / daily delay;
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, Page 8, June 1997.

(3) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.

(4) As previously assumed.

Checking reasonableness of bicycle demand estimation via comparison to ground counts:

| | | |
|---|---|---|
| Existing Adult Cyclists: | 3 | above |
| New Adult Cyclists: | 2 | above |
| Total Adult Cyclists: | 5 | |
| Trips, per day per cyclist: | 2 | trip to destination + return trip |
| Total Trips per Day: | 10 | |
| vs. Trips on Sampled Bikeways: | 23 | above |

Therefore, the demand calculation results are reasonable.

Calculating VMT reduction:

| | Biking | Walking | |
|---|---|---|---|
| New Users: | 2 | 1 | above |
| Trips, per day per user: | 2 | 2 | trip to destination + return trip |
| New Person Trips on Facility: | 4 | 1 | |
| Eliminated Person Trips by Auto: | 4 | 1 | above [7] |
| Occupancy of Eliminated Auto Trips: | 1.25 | 1.25 | [11] |
| Eliminated Vehicle Trips (Auto): | 3 | 1 | |
| Avg. Alt. Mode Trip Length, mi.: | 2 | 1 | [9] |
| Factor (for converting alt. mode trip lengths): | 2 | 2 | [10] |
| Avg. Eliminated Auto Trip Length, veh-mi.: | 4 | 2 | |
| VMT Reduction, mi: | 14 | 2 | |
| Total: | | | 16 vehicle-miles |

2- EMISSIONS CALCULATIONS:

| Type | Emissions Factor, g/mi [5] | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 16 | 1 | 0.001 | 250 | 0 |
| NOx | 0.207 | 16 | 3 | 0.003 | 250 | 1 |

3- COST EFFECTIVENESS:

| | | |
|---|---|---|
| Total Cost: | $840,000 | above |
| Useful life, years: | 15 | as assumed in CMAQ analyses of previous years |
| Annual Cost: | $56,000 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Con-version Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $56,000 | 0 | $212,874 | 907 | **$193,076,962** |
| NOx | $56,000 | 1 | $68,901 | 907 | **$62,493,509** |

Notes:

[1] Average Day Estimate = [(Weekday Count * 5) + (Weekend Count * 2)] / 7

[2] "A Review of 2000 Census Commute Data for Hampton Roads", HRPDC, Nov. 2005, p. 28

[3] "Low" estimate, re: NCHRP Report 552, pg. 38

[4] "New": i.e. as a result of proposed facility; New = Existing * B, where B varies by buffer: 0-0.25mi: 1.93; 0.25-0.50mi: 1.11; 0.50-1.00mi: 0.39, re: NCHRP Report 552, pg. 39

[5] Pedestrians = Cyclists / 4, based on ground counts at top of page

[6] Only areas lateral to facility are included in buffers; semi-circular areas at ends of facility are not included in buffers

[7] Assuming each new alt. mode trip eliminates an auto trip

[8] Source: VDOT, Hampton Roads average for light duty vehicles and roadway functional classes, 2014, 35mph

[9] Source: 2001 NHTS Table Designer

[10] It is assumed that the eliminated auto trips will have length lower than regular auto trips (10 miles; source [9]) and higher than regular alt. mode trips (shown above).

[11] All-trip occupancy, based on occupancies assumed in CMAQ analyses of previous years: work- 1.1; non-work- 1.3

[12] HRPDC, Feb. 2003, Appendix C

[13] From application

CONGESTION MITIGATION AND AIR QUALITY

**HIGHWAY PROJECTS - INTERSECTION GEOMETRY**

JURISDICTION: Chesapeake

PROJECT NAME: **Battlefield Blvd/Kempsville Rd/Great Bridge Blvd Intersection Improvements**

LOCATION: Intersection of Battlefielf Blvd and Kempsville Road/Great Bridge Blvd

DESCRIPTION: This project entails improvements to the intersection of Battlefield Blvd, Kempsville Rd, and Great Bridge Blvd that will add an additional eastbound lane along Great Bridge Blvd. Adding the additional lane will require relocating the existing utilities along the south side of Great Bridge Blvd. Revised pedestrian facilities

DATE: 8/14/2016 (1)

PROJECT COST: $1,050,000

1 - REDUCED AUTO EMISSIONS

Weekday PM Peak Hour

| | | | |
|---|---|---|---|
| Intersection Delay Before Project | | 140 | sec/veh (1) |
| Intersection Delay After Project | | 80 | sec/veh (1) |
| Change In Intersection Delay | | 60.0 | sec/veh, pk hr |
| Total Vehicles During Peak Hour | | 6,300 | veh/hr (1) |
| | divided by | 3,600 | sec/hr |
| Change In Intersection Delay | | 105.0 | veh hr's, pk hr |
| | divided by | 17% | pk hr delay factor(2) |
| Change In Intersection Delay | | 617.6 | hours/day |

| Type | Emissions Factor, g/hr (3) | Delay Change, hr/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, weekdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 617.6 | 770 | 0.770 | 250 | 192.4 |
| NOx | 1.168 | 617.6 | 721 | 0.721 | 250 | 180.4 |

2 - COST EFFECTIVENESS

| | | |
|---|---|---|
| Total Cost: | $1,050,000 | (from above) |
| Useful life, years: | 10 (4) | |
| Annual Cost: | $105,000 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Conversion Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $105,000 | 192.4 | $546 | 907 | **$494,992** |
| NOx | $105,000 | 180.4 | $582 | 907 | **$528,048** |

Notes:

(1) From application

(2) pk hr delay factor = pk hr delay / daily delay;
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, Page 8, June 1997.

(3) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.

(4) As previously assumed.

CONGESTION MITIGATION AND AIR QUALITY

**HIGHWAY PROJECTS - INTERSECTION GEOMETRY**

JURISDICTION: Suffolk

PROJECT NAME: **Crittenden Road/Route 17 Intersection**

LOCATION: Intersection of Crittenden Road and Route 17 with realigned Clubhouse Road

DESCRIPTION: Project will realign the existing intersection of Crittenden Road and Route 17 with Clubhouse Road and Route 17. Traffic signal, turn lanes, and stormwater management features will be included.

DATE: 8/11/2016 (1)

PROJECT COST: $5,500,000

1 - REDUCED AUTO EMISSIONS

Weekday PM Peak Hour

| | | | |
|---|---|---|---|
| Intersection Delay Before Project | | 23.8 | sec/veh (1) |
| Intersection Delay After Project | | 17.8 | sec/veh (1) |
| Change In Intersection Delay | | 6.0 | sec/veh, pk hr |
| Total Vehicles During Peak Hour | | 2,600 | veh/hr (1) |
| | divided by | 3,600 | sec/hr |
| Change In Intersection Delay | | 4.3 | veh hr's, pk hr |
| | divided by | 17% | pk hr delay factor(2) |
| Change In Intersection Delay | | 25.5 | hours/day |

| Type | Emissions Factor, g/hr (3) | Delay Change, hr/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, weekdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 25.5 | 32 | 0.032 | 250 | 7.9 |
| NOx | 1.168 | 25.5 | 30 | 0.030 | 250 | 7.4 |

2 - COST EFFECTIVENESS

| | | |
|---|---|---|
| Total Cost: | $5,500,000 | (from above) |
| Useful life, years: | 10 (4) | |
| Annual Cost: | $550,000 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effective-ness, $/kg | Conversion Factor, kg/ton | Cost Effective-ness, $/ton |
|---|---|---|---|---|---|
| VOC | $550,000 | 7.9 | $69,268 | 907 | **$62,825,904** |
| NOx | $550,000 | 7.4 | $73,894 | 907 | **$67,021,470** |

Notes:

(1) From application

(2) pk hr delay factor = pk hr delay / daily delay;
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, Page 8, June 1997.

(3) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.

(4) As previously assumed.

CONGESTION MITIGATION AND AIR QUALITY

**CITYWIDE SIGNAL SYSTEM**

| | |
|---|---|
| JURISDICTION: | Chesapeake |
| PROJECT NAME: | Chesapeake Signal System - Phase 4 |
| LOCATION: | Citywide |
| DESCRIPTION: | Signal timing on 3 corridors including 39 intersections in 4 systems. |
| DATE: | 8/14/2016 (1) |
| PROJECT COST: | $500,000 |

1 - EMISSIONS REDUCTION

| | | Low Volume Intersections | Medium Volume Intersections | High Volume Intersections | Total Intersections | |
|---|---|---|---|---|---|---|
| | veh / pm pk hr: | Less than 2,690 | 2,690 to 5,900 | More than 5,900 | | |
| Number of Intersections (1): | | 20 | 50 | 107 | 177 | (A) |
| | multiplied by: | 2,690 | 5,900 | 9,500 | veh / pm pk hr (2) | |
| | multiplied by: | 10.7 | 10.7 | 10.7 | sec/veh (2) | |
| | divided by: | 3,600 | 3,600 | 3,600 | sec/hr | |
| | divided by: | 0.17 | 0.17 | 0.17 | delay factor (3) | |
| Change in Vehicle Delay: | | 941 | 5,158 | 17,772 | hrs/day | |

Total Change in Vehicle Delay (sum of 3 col's above): 23,870 hrs/day

| Type | Emissions Factor, g/hr (4) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day (5) | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 23,870 | 29,743 | 29.7 | 250 | 7,436 |
| NOx | 1.168 | 23,870 | 27,881 | 27.9 | 250 | 6,970 |

2 - COST EFFECTIVENESS

| | | |
|---|---|---|
| Total Cost: | $500,000 | (from above) |
| Useful Life, years: | 10 (2) | |
| Annual Cost: | $50,000 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $50,000 | 7,436 | $6.72 | 907 | **$6,099** |
| NOx | $50,000 | 6,970 | $7.17 | 907 | **$6,506** |

Notes:

(1) From application

(2) As previously assumed

(3) Portion of daily delay represented by peak hour
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, June 1997.

(4) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.

(5) Emission Factor * Change in Vehicle Delay

CONGESTION MITIGATION AND AIR QUALITY

**CITYWIDE SIGNAL SYSTEM**

JURISDICTION: Newport News
PROJECT NAME: **Citywide Signal System Progression**
LOCATION: Citywide
DESCRIPTION: Citywide - 265 signalized intersections
DATE: 8/11/2016 (1)
PROJECT COST: $1,250,000

1 - EMISSIONS REDUCTION

| | | Low Volume Intersections | Medium Volume Intersections | High Volume Intersections | Total Intersections |
|---|---|---|---|---|---|
| | veh / pm pk hr: | Less than 2,690 | 2,690 to 5,900 | More than 5,900 | |
| Number of Intersections (1): | | 205 | 57 | 3 | 265 |
| | multiplied by: | 2,690 | 5,900 | 9,500 | veh / pm pk hr (2) |
| | multiplied by: | 10.7 | 10.7 | 10.7 | sec/veh (2) |
| | divided by: | 3,600 | 3,600 | 3,600 | sec/hr |
| | divided by: | 0.17 | 0.17 | 0.17 | delay factor (3) |
| Change in Vehicle Delay: | | 9,641 | 5,880 | 498 | hrs/day |

Total Change in Vehicle Delay (sum of 3 col's above): 16,019 hrs/day

| Type | Emissions Factor, g/hr (4) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day (5) | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 16,019 | 19,960 | 20.0 | 250 | 4,990 |
| NOx | 1.168 | 16,019 | 18,711 | 18.7 | 250 | 4,678 |

2 - COST EFFECTIVENESS

Total Cost: $1,250,000 (from above)
Useful Life, years: 10 (2)
Annual Cost: $125,000

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $125,000 | 4,990 | $25.05 | 907 | **$22,720** |
| NOx | $125,000 | 4,678 | $26.72 | 907 | **$24,238** |

Notes:
(1) From application
(2) As previously assumed
(3) Portion of daily delay represented by peak hour
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, June 1997.
(4) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.
(5) Emission Factor * Change in Vehicle Delay

CONGESTION MITIGATION AND AIR QUALITY

**CITYWIDE SIGNAL SYSTEM**

JURISDICTION: Portsmouth
PROJECT NAME: **Portsmouth Citywide Signal Timing - Phase 1**
LOCATION: Citywide
DESCRIPTION: The project provides for the analysis of existing and development of new signal timings for strategic corridors in the City of Portsmouth.
DATE: 8/15/2016 (1)
PROJECT COST: $120,000

1 - EMISSIONS REDUCTION

| | | Low Volume Intersections | Medium Volume Intersections | High Volume Intersections | Total Intersections |
|---|---|---|---|---|---|
| | veh / pm pk hr: | Less than 2,690 | 2,690 to 5,900 | More than 5,900 | |
| Number of Intersections (1): | | 12 | 18 | 0 | 30 |
| | multiplied by: | 2,690 | 5,900 | 9,500 | veh / pm pk hr (2) |
| | multiplied by: | 10.7 | 10.7 | 10.7 | sec/veh (2) |
| | divided by: | 3,600 | 3,600 | 3,600 | sec/hr |
| | divided by: | 0.17 | 0.17 | 0.17 | delay factor (3) |
| Change in Vehicle Delay: | | 564 | 1,857 | 0 | hrs/day |

Total Change in Vehicle Delay (sum of 3 col's above): 2,421 hrs/day

| Type | Emissions Factor, g/hr (4) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day (5) | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 2,421 | 3,017 | 3.0 | 250 | 754 |
| NOx | 1.168 | 2,421 | 2,828 | 2.8 | 250 | 707 |

2 - COST EFFECTIVENESS

Total Cost: $120,000 (from above)
Useful Life, years: 10 (2)
Annual Cost: $12,000

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $12,000 | 754 | $15.91 | 907 | **$14,431** |
| NOx | $12,000 | 707 | $16.97 | 907 | **$15,395** |

Notes:
(1) From application
(2) As previously assumed
(3) Portion of daily delay represented by peak hour
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, June 1997.
(4) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2010b), 2021, idle.
(5) Emission Factor * Change in Vehicle Delay

CONGESTION MITIGATION AND AIR QUALITY

**CITYWIDE SIGNAL SYSTEM**

JURISDICTION: Suffolk
PROJECT NAME: **Downtown Signal System Upgrade**
LOCATION: Downtown
DESCRIPTION:
Upgrade to TS-2 cabinents and install fiber optic connectivity
DATE: 8/15/2016 (1)
PROJECT COST: $1,650,000

1 - EMISSIONS REDUCTION

| | | Low Volume Intersections | Medium Volume Intersections | High Volume Intersections | Total Intersections |
|---|---|---|---|---|---|
| | veh / pm pk hr: | Less than 2,690 | 2,690 to 5,900 | More than 5,900 | |
| Number of Intersections (1): | | 6 | 16 | 5 | 27 |
| | multiplied by: | 2,690 | 5,900 | 9,500 | veh / pm pk hr (2) |
| | multiplied by: | 10.7 | 10.7 | 10.7 | sec/veh (2) |
| | divided by: | 3,600 | 3,600 | 3,600 | sec/hr |
| | divided by: | 0.17 | 0.17 | 0.17 | delay factor (3) |
| Change in Vehicle Delay: | | 282 | 1,650 | 830 | hrs/day |

Total Change in Vehicle Delay (sum of 3 col's above): 2,763 hrs/day

| Type | Emissions Factor, g/hr (4) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day (5) | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 2,763 | 3,443 | 3.4 | 250 | 861 |
| NOx | 1.168 | 2,763 | 3,227 | 3.2 | 250 | 807 |

2 - COST EFFECTIVENESS

Total Cost: $1,650,000 (from above)
Useful Life, years: 10 (2)
Annual Cost: $165,000

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $165,000 | 861 | $191.70 | 907 | **$173,874** |
| NOx | $165,000 | 807 | $204.50 | 907 | **$185,485** |

Notes:
(1) From application
(2) As previously assumed
(3) Portion of daily delay represented by peak hour
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, June 1997.
(4) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.
(5) Emission Factor * Change in Vehicle Delay

CONGESTION MITIGATION AND AIR QUALITY

**CITYWIDE SIGNAL SYSTEM**

JURISDICTION: Suffplk
PROJECT NAME: **Citywide Signal System Upgrade**
LOCATION: Citywide
DESCRIPTION:
Upgrade to TS-2 cabinents and install fiber optic or cellular network connectivity.
DATE: 8/15/2016 (1)
PROJECT COST: $2,650,000

1 - EMISSIONS REDUCTION

| | | Low Volume Intersections | Medium Volume Intersections | High Volume Intersections | Total Intersections |
|---|---|---|---|---|---|
| | veh / pm pk hr: | Less than 2,690 | 2,690 to 5,900 | More than 5,900 | |
| Number of Intersections (1): | | 6 | 7 | 8 | 21 |
| | multiplied by: | 2,690 | 5,900 | 9,500 | veh / pm pk hr (2) |
| | multiplied by: | 10.7 | 10.7 | 10.7 | sec/veh (2) |
| | divided by: | 3,600 | 3,600 | 3,600 | sec/hr |
| | divided by: | 0.17 | 0.17 | 0.17 | delay factor (3) |
| Change in Vehicle Delay: | | 282 | 722 | 1,329 | hrs/day |

Total Change in Vehicle Delay (sum of 3 col's above): 2,333 hrs/day

| Type | Emissions Factor, g/hr (4) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day (5) | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 2,333 | 2,907 | 2.9 | 250 | 727 |
| NOx | 1.168 | 2,333 | 2,725 | 2.7 | 250 | 681 |

2 - COST EFFECTIVENESS

Total Cost: $2,650,000 (from above)
Useful Life, years: 10 (2)
Annual Cost: $265,000

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $265,000 | 727 | $364.64 | 907 | **$330,732** |
| NOx | $265,000 | 681 | $389.00 | 907 | **$352,819** |

Notes:
(1) From application
(2) As previously assumed
(3) Portion of daily delay represented by peak hour
Source: "Cost Benefit Model for Intersection Level of Service Improvements", HRPDC, June 1997.
(4) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2023, idle.
(5) Emission Factor * Change in Vehicle Delay

CONGESTION MITIGATION AND AIR QUALITY
**OTHER**

JURISDICTION: Suffolk
PROJECT NAME: **Downtown Railroad Warning System**
LOCATION: CSX main line rail crossing of North Main Street
DESCRIPTION: Install advance warning system in Suffolk to warn of approaching trains on the CSX mainline rail crossing.
DATE: 8/15/2016 (1)
PROJECT COST: $650,000

1 - EMISSIONS REDUCTION

| | | | | |
|---|---|---|---|---|
| Vehicle Volume (ADT) | 24,500 | /1440 | 17.01 | vehicles per minute |
| Train Crossings per day | 5 | | 340.28 | vehicles delayed per train (3) |
| Average Obstruction per train (min) | 20 | | 10 | average vehicle delay (mins) (6) |

| Arterial | Number of Vehicles Delayed (4) | Avg Delay Before (s/veh) | Avg Delay After (s/veh) | Delay Savings (s/veh) | Delay Savings (s/day) | Delay Savings (hr/day) |
|---|---|---|---|---|---|---|
| **Freeman Avenue** | | | | | | |
| North Main Street at CSX Main Line Crossing | 1701 | 600 | 0 | 600 | 1,020,833 | 284 |
| | | | | Total Delay Savings | | 284 hr/day |

| Type | Emissions Factor, g/hr (2) | Change in Veh Delay, hr/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr (3) | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.246 | 284 | 353 | 0.4 | 250 | 88 |
| NOx | 1.168 | 284 | 331 | 0.3 | 250 | 83 |

2 - COST EFFECTIVENESS

| | |
|---|---|
| Total Cost: | $650,000 |
| Useful Life, years: | 15 (5) |
| Annual Cost: | $43,333 |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Cost Effectiveness, $/ton |
|---|---|---|---|---|
| VOC | $43,333 | 88 | $491 | **$444,958** |
| NOx | $43,333 | 83 | $523 | **$474,673** |

(1) From application
(2) Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES201 2014a) 2023, idle
(3) Average Obstruction per train (minutes) * Vehicles per minute
(4) Vehicles delayed per train * number of train crossings per day
(5) Assumed useful life in years for railroad crossing early warning system
(6) Avg. of 20 minute maximum delay and 0 minute minimum delay; (AVG 20,0)

CONGESTION MITIGATION AND AIR QUALITY

**TRANSIT SHELTERS/FACILITIES**

LOCALITY/AGCY: WATA

PROJECT NAME: **Expansion of Bus Shelters**

DESCRIPTION: The proposed project includes bus stop infrastructure improvements for the construction of twelve new transit bus shelters.

DATE: 8/12/2016 (on application)

PROJECT COST: $234,000

1- INCREASED BUS EMISSIONS: No Increase in Service or Emissions

2- TRAVEL REDUCTIONS:

| | | |
|---|---|---|
| Increase in Ridership: | 348 | boardings/day [1] |
| Vehicle Occupancy Rate (work): | 1.15 | persons/veh [3] |
| Reduction in Daily Vehicle Trips: | 303 | vehicles/day |
| Average Trip Length: | 10 | miles/trip [4] |
| Reduction in VMT: | 3,026 | miles/day |

3- EMISSIONS REDUCTIONS:

| Type | Emissions Factor, g/mi [2] | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, wkdays/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 3,026 | 203 | 0.203 | 250 | 51 |
| NOx | 0.207 | 3,026 | 626 | 0.626 | 250 | 157 |

4- COST EFFECTIVENESS:

| | | |
|---|---|---|
| Total Cost: | $234,000 | above |
| Useful Life, years: | 15 | as assumed in previous CMAQ analyses |
| Annual Cost: | $15,600 | |

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $15,600 | 51 | $308 | 907 | **$279,149** |
| NOx | $15,600 | 157 | $100 | 907 | **$90,352** |

Notes:

[1] From Applicant

[2] Source: VDOT, Fleet Avg. Emission Factors for Hampton Roads (Based on US EPA Model MOVES2014a), 2014, 35mph

[3] As assumed in CMAQ analyses of previous years

[4] 2001 NHTS Table Designer

CONGESTION MITIGATION AND AIR QUALITY

**TRANSIT AND FIXED GUIDEWAY PROJECTS - NEW OR EXPANDED TRANSIT SERVICE**

JURISDICTION: WATA
PROJECT NAME: **Upper York County/New Kent Connector - Demonstration Route**
LOCATION: York County, James City County
DESCRIPTION: New transit service that provides service to an unserved area of James City County
DATE: 8/12/2016 (on application)
PROJECT COST: $1,308,555 [1]

1 - INCREASED BUS EMISSIONS:

| | | |
|---|---|---|
| Route Length (one-way): | 35 | mi/trip [2] |
| Bus Trips per day (round trips): | 7 | round trips / day [2] |
| Factor: | 2 | trips / round trip |
| Bus VMT: | 490 | mi/day |

| Type | Emissions Factor, g/mi [3] | Bus VMT, mi/day (above) | Emissions Increase, g/day | Emissions Increase, kg/day | Conversion Factor, days/yr | Emissions Increase, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.034 | 490 | 17 | 0.02 | 250 | 4 |
| NOx | 0.634 | 490 | 311 | 0.31 | 250 | 78 |

2 - REDUCED AUTO EMISSIONS:

| | | |
|---|---|---|
| Ridership Estimate: | 66 | boardings/day [2] |
| Vehicle Occupancy Rate: | 1.15 | persons/veh [4] |
| Reduction in Daily Vehicle Trips: | 57 | veh trips / day |
| Average Trip Length: | 10 | miles/trip [5] |
| Reduction in VMT: | 574 | miles/day |

| Type | Emissions Factor, g/mi [6] | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, days/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 574 | 38 | 0.04 | 250 | 10 |
| NOx | 0.207 | 574 | 119 | 0.12 | 250 | 30 |

3- COST EFFECTIVENESS:

| | | |
|---|---|---|
| Project Cost: | $1,308,555 | above |
| Project life, years: | 3 | [2] |
| Annual Cost: | $436,185 | |

| Type | Cost, $/yr (above) | Net Emissions Reduction, kg/yr | Cost Effectiveness, $/kg | Conversion Factor, kg/ton | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|
| VOC | $436,185 | 5 | $80,063 | 907 | **$72,616,857** |
| NOx | $436,185 | -48 | negative | 907 | **negative** |

[1] From application
[2] From application
[3] VDOT, Hampton Roads average for Diesel Transit & Urban Buses on minor arterials, 2014, 35mph
[4] 1.15 for work trips, 1.30 for non-work trips, as previously assumed
[5] Average trip length for personal vehicle trips, 2001 NHTS
[6] VDOT, Hampton Roads average for all vehicle types on minor arterials, 2014, 35mph

CONGESTION MITIGATION AND AIR QUALITY

**TRANSIT AND FIXED GUIDEWAY PROJECTS - VEHICLE PURCHASE/REPLACEMENT**

AGENCY: WATA
PROJECT NAME: **Six (6) Bus Purchase Replacement**
DESCRIPTION: Replacement of (6) 35' low sulfur diesel buses.
DATE: 8/12/2016 (1)
PROJECT COST: $3,142,710

| | | |
|---|---|---|
| Number of Vehicles Being Retired | 6 | vehicles(1) |
| Number of New Vehicles | 6 | vehicles(1) |
| Average Yearly Vehicle-Miles for Retired Vehicles | 60,471 | vehicle-miles(1) |
| Average Yearly Vehicle-Miles for New Vehicles | 44,500 | vehicle-miles(1) |

1 - CHANGE IN VEHICLE EMISSIONS

| Current Vehicles | Emissions Rate g / bhp-hr (1) | Emissions Rate g/mi (2) | VMT mi/yr/bus | Number of Vehicles | Yearly Emissions g/yr | Yearly Emissions kg/yr |
|---|---|---|---|---|---|---|
| VOC | 1.30 | 6.08 | 60,471 | 6 | 2,206,962 | 2,207 |
| NOx | 2.6 | 12.12 | 60,471 | 6 | 4,396,947 | 4,397 |

| New Vehicles | Emissions Rate g / bhp-hr (1) | Emissions Rate g/mi (2) | VMT mi/yr/bus | Number of Vehicles | Yearly Emissions g/yr | Yearly Emissions kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.14 | 0.66 | 44,500 | 6 | 174,901 | 175 |
| NOx | 0.2 | 0.94 | 44,500 | 6 | 249,859 | 250 |

2 - EMISSIONS REDUCTION

Reduction in Emissions: VOC 2,032 kg/yr; NOx 4,147 kg/yr

3 - COST EFFECTIVENESS

Total Cost: $3,142,710 (from above)
Useful life, years: 15 (3)
Annual Cost: $209,514

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Cost Eff., $/Ton |
|---|---|---|---|---|
| VOC | $209,514 | 2,032 | $103.10 | **$93,516** |
| NOx | $209,514 | 4,147 | $50.52 | **$45,822** |

(1) From application; given values for HC as proxy value for VOC

(2) Applying a conversion factor of 4.679 bhp-hr / mi, EPA data for Mobile6 (no conversion factor yet available for MOVES2010B model)

(3) As assumed previously

CONGESTION MITIGATION AND AIR QUALITY

**TRANSIT AND FIXED GUIDEWAY PROJECTS - VEHICLE PURCHASE/REPLACEMENT**

AGENCY: WATA
PROJECT NAME: **Bus Vehicle Replacement**
DESCRIPTION: Four (4) Bus Expansion
DATE: 8/12/2016 (1)
PROJECT COST: $1,793,772

| | | |
|---|---|---|
| Number of New Vehicles | 4 | vehicles(1) |
| Average Yearly Vehicle-Miles for New Vehicles | 81,000 | vehicle-miles(1) |

1 - CHANGE IN VEHICLE EMISSIONS

NEW BUS EMISSIONS:

| New Vehicles | Emissions Rate g / bhp-hr (1) | Emissions Rate g/mi (2) | VMT mi/yr/bus | Number of Vehicles | Yearly Emissions g/yr | Yearly Emissions kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.14 | 0.66 | 81,000 | 4 | 212,239 | 212 |
| NOx | 0.2 | 0.94 | 81,000 | 4 | 303,199 | 303 |

REDUCED AUTO EMISSIONS:

| | | |
|---|---|---|
| Ridership Estimate: | 367 | boardings/day (3) |
| Vehicle Occupancy Rate: | 1.15 | persons/veh (4) |
| Reduction in Daily Vehicle Trips: | 87 | veh trips / day |
| Average Trip Length: | 10 | miles/trip (5) |
| Reduction in VMT: | 870 | miles/day |

| Type | Emissions Factor, g/mi (6) | VMT Reduction, mi/day (above) | Emissions Reduction, g/day | Emissions Reduction, kg/day | Conversion Factor, days/yr | Emissions Reduction, kg/yr |
|---|---|---|---|---|---|---|
| VOC | 0.067 | 870 | 578 | 0.58 | 250 | 145 |
| NOx | 0.207 | 870 | 693 | 0.69 | 250 | 173 |

2 - EMISSIONS REDUCTION

Reduction in Emissions: VOC -68 kg/yr; NOx -130 kg/yr

3 - COST EFFECTIVENESS

Total Cost: $1,793,772 (from above)
Useful life, years: 15 (7)
Annual Cost: $119,585

| Type | Cost, $/yr (above) | Emissions Reduction, kg/yr (above) | Cost Effectiveness, $/kg | Cost Eff., $/Ton |
|---|---|---|---|---|
| VOC | $119,585 | -68 | -$1,767.07 | **-$1,602,729** |
| NOx | $119,585 | -130 | -$920.32 | **-$834,730** |

(1) From application; given values for HC as proxy value for VOC

(2) Applying a conversion factor of 4.679 bhp-hr / mi, EPA data for Mobile6 (no conversion factor yet available for MOVES2010B model)

(3) From applications

(4) 1.15 for work trips, 1.30 for non-work trips, as previously assumed

(5) Average trip length for personal vehicle trips, 2001 NHTS

(6) ' VDOT Hampton Roads average for all vehicle types on minor arterials, 2014, 35 mph

(7) As previously assumed

CONGESTION MITIGATION AND AIR QUALITY
PROJECT EVALUATION
**OTHER - BARGE SERVICE**

| | |
|---|---|
| AGENCY: | Virginia Port Authority |
| PROJECT NAME: | **Expanded Marine Highway Barge Service** |
| LOCATION: | Chesapeake Bay Marine System between Hampton Roads and Richmond Virginia |
| DESCRIPTION: | Mass transit for containerized cargo. Import containerized cargo boxes, ranging in size from twenty-foot equivalent units (TEU) to forty foot equivalent units(FEU), are loaded aboard the 64-express barge. |
| DATE: | 8/15/2016 (on application) |
| PROJECT COST: | $4,543,620 [(1)] |

| | | |
|---|---|---|
| Project Cost | $4,543,620 | (above) |
| Expected Life-span of Project | 5 | Years [(1)] |
| Annual Cost | $908,724 | |

| Type | 3-yr Emissions Reduction, tons [(1)] | Emissions Reduction, tons/yr | Conversion Factor, kg/ton | Emissions Reduction, kg/yr | Cost per year (above) | Cost Effectiveness, $/ton |
|---|---|---|---|---|---|---|
| VOC | 2 | 0.666666667 | 907 | 605 | $908,724 | **$1,363,086** |
| NOx | 62 | 21 | 907 | 18,745 | $908,724 | **$43,971** |

[(1)] From application

# APPENDIX B

# RSTP Project Evaluation Worksheets

## Evaluation of RSTP Applications (Utilizing HRTPO Prioritization Tool)

**Table 2: Highway- Roadway Widening, New Facility, HOV Lanes, Intersection Improvements**

| Applicant | Project Name (code) | Total Cost | 2040 LRTP Code | Project Utility (0-100) | Project Vitality (0-100) | Project Viability (0-100) | Total (0-300) |
|---|---|---|---|---|---|---|---|
| Chesapeake | Mt. Pleasant/Great Bridge Bypass (CH1RS) | $29,500,000 | 2040-33 | 63 | 54 | 5 | 122 |
| Gloucester Cty. | George Washington Memorial Highway (Route 17) Widening Phase 1 (GL1RS) | $43,900,000 | 2040-40 | 72 | 63 | 5 | 140 |
| Suffolk | Crittenden Road/Route 17 Intersection Realignment (SF6RS) | $ 5,000,000 | 2040-RSTP1 | 39 | 25 | 25 | 89 |
| Virginia Beach | Indian River Road - Phase VII-B (VB1RS) | $12,660,000 | 2040-169 | 36 | 20 | 51 | 107 |
| Virginia Beach | Laskin Road Phase 1 (VB2RS) | $82,062,000 | 2040-171 | 41 | 32 | 56 | 129 |
| | | | | | | | |

**Table 3: Highway- Corridor Operational Improvements**

| Applicant | Project Name (code) | Total Cost | 2040 LRTP Code | Project Utility (0-100) | Project Vitality (0-100) | ProjectViability '(0-100) | Total (0-300) |
|---|---|---|---|---|---|---|---|
| Portsmouth | Elm Avenue Improvements between Navy Gates 29 and 36 (PR1RS) | $9,750,000 | 2040-126 | 74 | 38 | 0 | **112** |
| | | | | | | | |

**Table 6: Transit & Fixed Guideway-New or expanded service, passenger facilities, HS/intercity/and light rail, station Dev., vehicle upgrades, etc.**

| Applicant | Project Name (code) | Total Cost | Congestion Relief (10 pts to project w highest % removed; 0 pts to lowest) | (0-10) | Facility Usage, Daily Ridership (20 pts to highest; 0 pts to lowest) | (0-20) | Cost Effective-ness--Subsidy/ Passenger (20 pts to lowest; 0 pts to highest) | (0-20) | Air Quality (NOx reductions = 10; HC reductions = 10) | (0-20) | Coverage Area (based on population = 10 pts and employment =10 pts to the highest) | (0-20) | Project Readiness (detailed design and cost estimates, ready to go: 10 pts) | (0-10) | Total (0-100) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HRT | Virginia Beach Operations and Maintenance Facility (HT2RS) | $3,000,000 | N/A | 0 | N/A | 0 | N/A | 0 | N/A | 0 | Pop = 432,242 Employment = 148,153 | 20 | Community support: Yes detailed design and $ est: No, and all approvals: No | 3 | **23** |
| WATA | Upper York County/New Kent Connector - Demonstration Route (WA3RS) | $1,308,555 | <581 daily VMT | 10 | 20,525 | 7 | 2.19 | 20 | VOC = < 27.3 lbs./day ; Nox = < 18.9 lbs./day | 20 | Pop = 38,142 Employment = 13,249 | 9 | Community support: Yes detailed design and $ est: Yes, and all approvals: No | 7 | **73** |
| WATA | Expansion Bus Shelters (WA5RS) | $234,000 | <449 daily VMT | 8 | 108,600 | 20 | N/A | 0 | N/A | 0 | Pop = 153,600 Employment = 15,195 | 12 | Community support: Yes detailed design and $ est: Yes, and all approvals: No | 7 | **47** |
| WATA | Transit Bus Pull-Outs (WA2RS) | $345,300 | < 45 daily VMT | 1 | 3,473 | 1 | N/A | 0 | N/A | 0 | Pop = 67,009 Employment = 6,439 | 10 | Community support: Yes detailed design and $ est: Yes, and all approvals: No | 7 | **19** |
| | | | | | | | | | | | | | | | |

**Table 7: Transit & Fixed Guideway- Vehicle Replacement/Purchase**

| Applicant | Project Name (code) | Total Cost | Average age of vehicles (FTA standard is 12 years - Bus & 4 years-Vans) | (0-30) | Percent of vehicles in fleet over (12-Bus: 4-Van) years old fleet | (0-20) | Emissions changes of the old and new vehicles | (0-20) | Average daily ridership / new vehicle anticipated & or purchased | (0-15) | Average mileage of the vehicles to be replaced (FTA Standards = 500,000 -Bus and 100,000-Van) | (0-15) | Total (0-100) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HRT | Bus Vehicle Replacement (HT3RS) - Paratransit Vans | $4,725,000 | 4 | 30 | 100% | 20 | N/A | 0 | N/A | 0 | 250,000 | 15 | **65** |
| WATA | Four(4) Bus Purchase Expansion (WA4RS) | $1,793,772 | 8 | 20 | 35% | 8 | N/A | 0 | N/A | 0 | 0 | 0 | **28** |
| WATA | Six (6) Bus Purchase Replacement (WA7RS) | $3,142,710 | 8 | 20 | 35% | 8 | Nox New = .935 g/bhp-hr Nox Old = 2.235 g/bhp-hr change = 1.3g/bhp-hr | 20 | N/A | 0 | 420,500 | 14 | **62** |
| | | | | | | | | | | | | | |

**Table 8: Other Transit, Other Fixed Guideway and Transit ITS Projects**

| Applicant | Project Name (code) | Total Cost | Will the project increase service reliability? | (0-25) | Will the project improve passenger safety, comfort, and convenience? | (0-30) | Does the project improve efficiency of the transit system? | (0-10) | Does the project improve the revenue collection? | (0-25) | Does the project improve transit data collection system? | (0-10) | Total (0-100) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Suffolk | College Drive Transit Safety Improvements (SF1RS) | $360,726 | Yes: (Provides additional access for two neighborhoods) | 20 | Yes: (convenience, safety, comfort) | 30 | Yes | 5 | No | 0 | No | 0 | **55** |
| WATA | Automated Passenger Counting (APC) System (WA6RS) | $195,000 | Yes | 5 | No | 0 | Yes | 10 | Yes | 25 | Yes | 10 | **50** |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**Table 9: Alternatives Analysis and Feasibility Studies**

| Applicant | Project Name (code) | Total Cost | 1. Is the study necessary to address a major issue or to revise the Plan? | (0-25) | 2. Is the study necessary to address a safety issue? | (0-15) | 3. Is the study concerned with encourag-ing multi-modal transport-ation? | (0-10) | 4. Does the study address the mobility or access-ibility needs of the region? | (0-20) | 5. Is the study well defined in terms of purpose, design concept and scope? | (0-10) | 6. Do the goals and objectives of the study show support for economic develop-ment? | (0-10) | 7. Do the goals and objectives demonstrate preservation or protec-tion of the environ-ment? | (0-10) | Total (0-100) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HRT | Peninsula Corridor DEIS/Conceptual Engineering (HT1RS) | $8,000,000 | Yes | 20 | Yes | 5 | Yes | 10 | Yes | 15 | Yes | 10 | Yes | 7 | Yes | 10 | **77** |
| WATA | Transportation Development Plan (TDP) - 6 Year Plan (WA1RS) | $250,000 | Yes | 25 | Yes | 5 | Yes | 5 | Yes | 10 | Yes | 10 | Yes | 5 | Yes | 7 | **67** |
| James City County | James City County Master Transportation Plan (JC1RS) | $500,000 | Yes | 25 | Yes | 10 | Yes | 5 | Yes | 7 | Yes | 7 | Yes | 5 | Yes | 7 | **66** |
| Suffolk | Suffolk Bypass/Godwin Blvd-Wilroy Rd-Pruden Bkvd IMR (SF2RS) | $2,000,000 | Yes | 20 | Yes | 15 | Yes | 3 | Yes | 5 | Yes | 7 | Yes | 7 | Yes | 5 | **62** |
| | | | | | | | | | | | | | | | | | |

**Table 11: Intelligent Transportation Systems Projects**

| Applicant | Project Name (code) | Total Cost | 1. Will project improve flow during peak periods and special events? | (0-15) | 2. Will project directly reduce number or severity of roadway accidents? | (0-25) | 3. Will project improve LOS, increase capacity, or contribute to incident management? | (0-20) | 4. Does the project address the mobility or accessibility needs of the region? | (0-10) | 5. Does project improve linkage between operating agencies to provide traffic info to motorists? | (0-20) | 6. Is this project consistent with the HRTPO Long-Range Transportation Plan? | (0-10) | Total (0-100) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Newport News | Citywide Signal System Progression (NN1RS) | $1,250,000 | Yes | 12 | Yes | 15 | Improve LOS-Yes; increase Capacity-Yes; Contribute to incident mgmt-Yes | 17 | Yes | 10 | Yes | 10 | Yes | 10 | **74** |
| Suffolk | Downtown Signal System Upgrade (SF3RS) | $1,650,000 | Yes | 10 | Yes | 12 | Improve LOS-Yes; increase Capacity-Yes; Contribute to incident mgmt-Yes | 13 | Yes | 10 | Yes | 7 | Yes | 10 | **62** |
| Suffolk | Downtown Railroad Warning System (SF4RS) | $1,250,000 | Yes | 5 | Yes | 8 | Improve LOS-Yes; increase Capacity-No; Contribute to incident mgmt-Yes | 10 | Yes | 7 | Yes | 17 | Yes | 10 | **57** |
| Suffolk | Citywide Signal System Upgrade (SF5RS) | $2,650,000 | Yes | 12 | Yes | 15 | Improve LOS-Yes; increase Capacity-Yes; Contribute to incident mgmt-Yes | 17 | Yes | 10 | Yes | 12 | Yes | 10 | **76** |
| | | | | | | | | | | | | | | | |

# APPENDIX C

# Public Project Ideas

## CMAQ/RSTP
## HRTPO Project Selection Process

### Candidate Project Idea Form

To be considered for Congestion Mitigation and Air Quality (CMAQ) or Regional Surface Transportation Program (RSTP) funding, a proposed project must be included in the current HRTPO Long-Range Transportation Plan (LRTP). Please fill out one form for each project idea you are submitting. When you have completed the form, save it with a file name that includes your last name and a project name (example: Jones-Main St Bikeway.doc). Send an email message, with your project idea form(s) attached, to Michael S. Kimbrel, Principal Transportation Engineer, at mkimbrel@hrtpo.org. As an alternative, you may send your project idea form(s) to:

Michael S. Kimbrel
Principal Transportation Engineer
Hampton Roads Transportation Planning Organization
723 Woodlake Drive
Chesapeake, VA 23320

All project ideas submitted by the public will be acknowledged and forwarded to the appropriate locality, transit agency or state agency. The project ideas will be considered by those entities for possible submission as projects proposed for CMAQ or RSTP funding.

**The deadline for submitting your project ideas is July 31, 2014.**

**CMAQ/RSTP Project Idea Form**

**Your Name:** Andrew B. Scott, P.E. **Date:** 1/29/15

**E-Mail:** greatscottfamily@yahoo.com **Phone:** 757-681-4580

**Project Name:** Public Electric Vehicle Charging Station

**Project Location (include city or county in which the project is located, street name, end points):**
Virginia Department of Transportation 1700 N. Main Street, Suffolk, VA 23434

**Project Description (include type of project; if CMAQ project, how will it improve air quality?):**
Install a level 1 or 2 public electric vehicle charging station on State or City property to provide improved air quality by promoting the use of electric vehicles.

**Additional Information (If applicable, include additional data or maps as attachments.):**
I have purchased an electric vehicle and commute from Chesapeake to work in Suffolk daily. A public charging station would improve air quality by greatly increasing the daily use of the electric vehicle. A level 1 charging station can be as simple as providing an ordinary 110 volt outlet adjacent to a designated parking space; a level 2 charging station uses 220 volts. Installing a public charging station would advance our sustainability goals and improve our public image. The great majority of public charging stations do not charge a fee, but charging stations can be monetized.