



# AGENDA

**RICHMOND REGIONAL  
TRANSPORTATION PLANNING ORGANIZATION  
TECHNICAL ADVISORY COMMITTEE**

**Tuesday, June 11, 2019**

**9:00 a.m.**

**Richmond Regional Planning District Commission Board Room**

## **CERTIFICATION OF QUORUM**

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<b>1. Approval of Meeting Agenda</b> (Pompei)..... Action Requested	–
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<b>3. Approval of May 14, 2019 TAC Meeting Minutes</b> (Pompei)..... Action Requested	1 – 5
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<b>5. RRTPO Update</b> (Parsons/10 minutes)..... a. Current Work Efforts b. FY20 – FY25 RSTP and CMAQ Story Map c. TIP: Performance Based Planning and Programming d. CTAC Staff Report	6 – 17
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<b>9. TIP Amendments: VDOT Request</b> (Parsons/5 minutes)..... Action Requested	79 – 83
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<b>10. TIP Amendments: GRTC Request</b> (Parsons/5 minutes)..... to be e-mailed later Action Requested	
<b>11. LRTP Socioeconomic Data: 2045 Future Year Data Approval</b> (Aryal/20 minutes)..... Action Requested	85 – 153
<b>12. TAC Open Comment</b> (TAC members) .....	–
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<b>14. Next TAC Meeting: August 13 (July 9 meeting canceled)</b> (Pompei) .....	–
<b>15. Adjournment: Scheduled for 10:30 a.m.</b> (Pompei) .....	–

CAP/SA/sr  
Attachments

pc:	Patricia S. O'Bannon, RRTPO Chair	David Hyder, Tri-Cities MPO
	John H. Hodges, RRTPO Chair Elect	Tim White, VDOT
	Ivan Rucker, FHWA	Martha Shickle, PlanRVA
	Richard Duran, FHWA	TAC Interested Parties
	Melissa McGill, FTA	Area News Media
	Jennifer DeBruhl, DRPT	

**RICHMOND REGIONAL TRANSPORTATION PLANNING ORGANIZATION (RRTPO)**  
**TECHNICAL ADVISORY COMMITTEE (TAC)**

**MINUTES OF MEETING**  
**May 14, 2019**

**MEMBERS PRESENT**

Andrew Pompei, Chairman ..... Powhatan County  
Barbara K. Smith, Vice Chairman..... Chesterfield County  
Nora D. Amos..... Town of Ashland  
Myles Busching ..... Charles City County  
Thomas Coleman ..... Goochland County  
E. Todd Eure..... Henrico County  
John O’Keeffe (Alternate) ..... RideFinders  
Chet Parsons..... RRPDC  
Mark Riblett ..... VDOT  
Joseph E. Vidunas..... Hanover County

**MEMBERS ABSENT**

Tiffany Dubinsky ..... DRPT  
Kelli Le Duc ..... New Kent County  
Dironna Moore Clarke ..... City of Richmond  
John B. Rutledge ..... CRAC  
Theresa Simmons ..... RMTA  
Von S. Tisdale ..... RideFinders  
Garland W. Williams..... GRTC Transit System

**ALTERNATE MEMBER PRESENT – NOT VOTING**

Sulabh Aryal (Alternate) ..... RRPDC

**Certification of Quorum**

Andrew Pompei, TAC Chairman, called the May 14, 2019 TAC meeting to order at 9:05 a.m. and Chet Parsons, RRTPO Secretary, certified that a quorum was present.

**1. Approval of Meeting Agenda**

On motion of Barbara K. Smith, seconded by Joseph E. Vidunas, TAC unanimously approved the May 14, 2019 TAC meeting agenda as presented.

**2. Public Comment Period**

There were no requests to address TAC.

**3. Approval of April 9, 2019 TAC Meeting Minutes**

On motion of John O’Keeffe, seconded by Thomas W. Coleman, TAC unanimously approved the April 9, 2019 TAC meeting minutes as presented.

**4. Approval of April 23, 2019 Special Called TAC Meeting Minutes**

RRTPO Secretary Chet Parsons requested that the first paragraph of page two of the April 23 meeting minutes be amended to include the name of the New Kent County representative who shared a letter from New Kent County regarding priorities for the allocation of additional funds available through the I-81 Corridor Fund. On motion of Barbara K. Smith, seconded by John O’Keeffe, TAC unanimously approved the April 23, 2019 TAC meeting minutes as presented.

## **5. Election of FY20 TAC Officers**

Chet Parsons, RRTPO Secretary, noted the office rotation order established in Guidance Document 3 of the Richmond Regional Transportation Planning Organization Nonbinding Governance Guidance Documents. Accordingly, the Chesterfield County TAC representative was in line to serve as FY20 Chairman and the Town of Ashland representative would be next in line to serve as the FY20 TAC Vice Chairman.

On motion of Joseph E. Vidunas, seconded by E. Todd Eure, TAC voted unanimously to elect Barbara K. Smith, Chesterfield County as the FY20 TAC Chairman and to elect Nora D. Amos, Town of Ashland, as the FY20 TAC Vice Chairman, with both terms to run July 1, 2019 through June 30, 2020.

## **6. TAC Chairman's Report**

Chairman Pompei had nothing to report.

## **7. RRTPO Update**

Chet Parsons, RRTPO Secretary, reported on the following items:

- a. RRPDC Name Change and Website Update** – Mr. Parsons reported that the Richmond Regional Planning District Commission changed its name to PlanRVA and that a new website with significant changes in format and design is live for staff review. Both the old and new website are up concurrently until the new website ([www.planrva.org](http://www.planrva.org)) is finalized. Mr. Parsons reviewed some of the features of the new website online.
- b. Current Work Efforts Update** – A one-page summary of RRTPO staff current work efforts was included on page 11 of the agenda package. The RRTPO Active Transportation Work Group meeting was scheduled following the TAC meeting at 11:00 a.m. and would feature several presentations on the future of automated vehicles. All TAC members were invited to attend.
- c. Comments at the Spring SYIP Public Meeting** – RRTPO policy board chairman Pat O'Bannon shared comments with the Commonwealth Transportation Board (CTB) at the spring Six-Year Improvement Program (SYIP) meeting held Thursday, April 25. Ms. O'Bannon's comments focused on allocation of additional funding that may be available to the region both from SMART SCALE and from the I-81 Corridor Fund. Mark Riblett indicated this item will be on the May CTB meeting agenda for consideration and will likely be decided in June.

## **8. VTrans Needs Update**

Chris Wichman, Senior Planner with the Office of Intermodal Planning and Investment, reviewed progress on the VTrans Update and shared performance measures to be used for needs identification. Activity centers are being confirmed on an ongoing basis and through a July regional workshop. Urban Development Areas (UDAs) are being confirmed with localities. Mr. Wichman reviewed demographic trends for population, age, and employment statewide and by Planning District and reviewed economic/transportation linkages by industry clusters and transportation needs by industry type. He gave an overview of travel markets by type and discussed methodology and measures for approaching mid-term needs by travel market providing an overview of mid-term needs analysis. Mr. Wichman reviewed the five core VTrans goals and how they are applied for mid-term needs identification measures and reviewed the needs update process. The MPO participation timeline was reviewed showing



that the final approved list of mid-term needs will be published before the end of 2019.

#### **9. TIP Amendments: DRPT**

Chet Parsons noted this item is follow-up to endorsement of several Federal Transit Administration (FTA) Section 5310 project applications which were subsequently selected for funding and two additional projects. This action will amend the *FY18 – FY21 Transportation Improvement Program (TIP)* to add the projects noted in the staff report. There was a brief review of each project and the funding requested. No questions were voiced.

On motion of Mark Riblett, seconded by E. Todd Eure, the Richmond Regional Transportation Planning Organization (RRTPO) Technical Advisory Committee (TAC) voted unanimously to recommend RRTPO policy board approval of the following resolution:

**RESOLVED**, that the Richmond Regional Transportation Planning Organization policy board amends the *FY18 – FY21 Transportation Improvement Program (TIP)* adding the following four new projects:

- STIP ID CHS0004: Chesterfield County Citizens Information and Services - adds this project to the TIP and obligates FTA Section 5310 funds – Chesterfield County;
- STIP ID HCS0001: Hanover Community Services – adds this project to the TIP and obligates FTA Section 5310 funds – Hanover County;
- STIP ID GRTC060: Miscellaneous Equipment for Bus Stops – adds this project to the TIP and obligates Other Federal funds – GRTC; and
- STIP ID HEN0001: Preliminary Engineering for Parking Lots – adds this project to the TIP and obligates Other Federal funds – Henrico County.

#### **10. Socioeconomic Data Update**

Sulabh Aryal, project manager, provided an update on development of future year 2045 socioeconomic data noting that TAC approved the base year in November 2018. He reported that the Socioeconomic Data Workgroup was formed and has met several times working on future year projections. They are using a top-down approach beginning with total jurisdiction population and distributing that to TAZs. Mr. Aryal reviewed the methodology used noting that most jurisdictions went with Weldon Cooper projections, plus 10 percent, for developing 2045 projections, as the state allows, though Chesterfield County used Weldon Cooper less .04 percent and Henrico County used Weldon Cooper plus .04 percent. He said the overall growth rate for the region is 1.05 percent; however, New Kent County has one of the highest growth rates in the state at 2.4 percent.

There is no reliable state source for employment data so other sources such as Chmura Analytics, a Richmond-based nationally recognized economics firm, were used to develop employment data for the region. Chmura used pre-recession employment data from 2008, post-recession data from 2012 and the base year 2017 data, in addition to national and local trends, to develop future year 2045 employment projections. The methodology was bottoms up starting with the two-digit NAICS codes for 20 different sectors and predicting

employment by each NAICS code for each locality. The NAICS codes for each locality were summarized showing an annual growth rate of .82.

Population and employment data will be distributed to the TAZs and future year data will be finalized and presented to the Socioeconomic Data Work Group for approval for TAC consideration at the June 11 meeting. There were no questions.

## **11. Richmond Tri-Cities Model Update**

Sulabh Aryal, project manager, reported that for the 2045 Long-Range Transportation Plan (LRTP) Update to be compliant with federal performance based planning and programming regulations, staff will assess past and present projects to determine what future projects might be. The Richmond Tri-Cities (RTC) regional travel demand model is a critical tool for assessing transportation system performance; other tools may also be used such as Fugro for accessibility measures and GIS for performance measures, and other software to identify existing and future needs for the highway and transit network, and to evaluate the potential impact of investments. The results of performance measures analysis will be used to evaluate whether the proposed investments achieve the desired impacts in the fiscally constrained plan. Staff from the RRTPO, Tri-Cities MPO and VDOT Richmond District are working closely with VDOT modeling staff and their consultants to update the RTC model to a new base year (2017) and horizon year (2045). Completion of this process is anticipated for early fall 2019.

The RTC model is a four-step model: trip generation, trip distribution, mode choice and assignment. Each step must be validated both individually and as a whole, so that the final product is defined. Mr. Aryal described the process and standards for regional model competencies (RMCs) and discussed time of day analysis, demand and supply analysis and components of each. Other aspects of the model update were reviewed in more detail including data and network inputs for the highway and transit networks, park and ride locations, freight and truck intensive TAZs, and downtown parking costs by TAZ. Comments received to date have been incorporated. There were no TAC questions or comments.

## **12. Complete Streets Update**

Barbara Jacocks, project manager, reported that the RRTPO is working with the consulting firm of Michael Baker and with Smart Growth America (SGA) to develop a pilot project for Complete Streets in the Town of Ashland, which has urban, suburban and rural characteristics in their road systems. The project kicked off with a well-attended workshop in Ashland on April 25; the second workshop is scheduled for June 25 and 26 with a focus on Complete Streets best practices. On June 27, SGA will provide a full presentation to the RRTPO policy board. Ashland is the prototype for developing a toolbox for the region to help localities of all characteristics examine their street networks more comprehensively and develop their own policies and practices for Complete Streets. The pilot project will address how to develop more full-service, multimodal streets with bike/ped and goods delivery accommodations and still be safe for all users. Ms. Jacocks reviewed regional and national statistics for bicycle and pedestrian crashes and fatalities noting the need for streets to be safe for all users.

On another matter, Ms. Jacocks reported that work on the Transit Vision Plan Phase II – Implementation will begin on Friday, May 17, by conference call at 10:00 a.m. with consultants from Kimley Horn. Participation by members of TAC

in the conference call would be welcome; those who want to participate should contact Ms. Jacocks.

### **13. Ashland Resolution on Rail Safety**

Chet Parsons, RRTPO Secretary, reviewed the history on this item noting it was brought to the RRTPO Executive Committee in December 2018 by John Hodges, Town of Ashland, who requested consideration of supporting a resolution that the Town of Ashland had passed as well as an additional resolution from the Association of State Rail Safety Managers regarding rail safety. Both resolutions were included in the TAC agenda package. In consultation with the Town of Ashland, staff took additional actions following the January 8 TAC meeting where TAC was concerned about supporting documentation and information. The TAC decided not to take action until additional research could be done to determine how other states have addressed this issue. Staff worked with the Town of Ashland and did some research around the country; a memo was included on page 23 of the agenda package summarizing some of the findings. There are some situations where this kind of resolution could gain traction and find some support including actions within the Commonwealth. Based on that information, staff recommends support of the two resolutions and to recommend to the RRTPO policy board that they take similar action.

Chairman Pompei noted the resolution on page 22 of the agenda package for TAC's recommendation of support for the resolutions to the RRTPO policy board.

On motion of Nora D. Amos, seconded by Joseph E. Vidunas, the Richmond Regional Transportation Planning Organization Technical Advisory Committee voted unanimously to recommend RRTPO policy board approval of the following resolution:

**RESOLVED**, that the Richmond Regional Transportation Planning Organization (RRTPO) policy board supports the October 16, 2018 Town of Ashland Rail Safety resolution and the November 9, 2018 Association of State Rail Safety Managers resolution; and

**BE IT FURTHER RESOLVED**, that the RRTPO policy board action to support the rail safety resolutions, as submitted, communicates to state and federal partners the desire of the Richmond Region to support rail activity and commerce while ensuring safety for the citizens of the region.

### **14. TAC Open Comment**

No comments were offered.

### **15. Future Meeting Topics**

Chairman Pompei noted the list of future meeting topics on page 28 of the agenda package. He said the main action item at the June meeting will be approval of the LRTP Socioeconomic Data.

### **16. Next TAC Meeting: June 11**

Chairman Pompei said the next TAC meeting is scheduled for Tuesday, June 11, 2019 at 9:00 a.m. Chairman Pompei asked if there were any concerns about canceling the July 9 TAC meeting and none were voiced.

### **17. Adjournment: Scheduled for 10:35 a.m.**

Chairman Pompei adjourned the meeting at approximately 10:30 a.m.

## **Current Work Efforts Update**

### **Complete Streets Project Update and Workshop**

**Tuesday, June 25 (1:00-4:00 PM) and Wednesday, June 26 (9:00-4:00 PM)**

#### **Ashland Town Hall in Council Chambers**

The Complete Streets project is a comprehensive region-wide analysis of specific design practices and principles that make a street function effectively for all users and modes of travel. Smart Growth America and Michael Baker International are the project consultants. Due to its urban, suburban and rural character, the Town of Ashland was selected for pilot project for consideration of complete streets principles in the region. Building on input from the first workshop in April, the second workshop will focus on design guidelines and policy development specifically for the Town of Ashland with applicability to the region. This workshop is open to all locality officials, staff and multimodal advocates. Please RSVP to Phil Riggan, [priggan@PlanRVA.org](mailto:priggan@PlanRVA.org) or 323-2033.

### **Park and Ride Investment Strategy**

The next steps of this regional data-driven analysis of priority areas/sites for future park and ride locations will be to finalize project recommendations with planning level cost estimates, timetables, funding sources and implementation strategies identified for the top 10 sites. The study will be presented to the RRTPO policy board on June 27.

### **Ashland Trolley Line Trail**

The purpose of this study is to identify the potential for a 14-mile multi-use trail using the abandoned trolley line corridor and other rights-of-way to link the Town of Ashland through Hanover and Henrico counties to the northern edge of the City of Richmond. The National Park Service through their Rivers, Trails and Conservation Assistance (RTCA) Virginia program has assisted staff in guiding individual localities on site specific field trips to explore barriers and opportunities for linking segments. The Ashland Trolley Line Trail advisory group will meet again in June. This work is being coordinated with the VDOT Ashland to Petersburg Trail plan.

### **Greater RVA Transit Vision Plan: Phase II**

Phase II of this project involves a strategic technical analysis to identify a range of short-term (1-5 years) and medium-term (6-10 years) needs and options for transit services, transit preferential treatments, if any, and transit-oriented land uses that would advance the next incremental steps toward reaching the *transit2040* plan long-term goals for implementation. Phase II focuses on the corridors identified in the *transit2040* vision for high-frequency service by 2040. The project kicked off on Friday, May 17, with the Kimley-Horn consulting team. Completion is scheduled for December 31 to position project recommendations for upcoming funding rounds in 2020-21. A project steering committee is being formed with representation from localities where enhanced transit is proposed in the near term including the City of Richmond, Henrico, Chesterfield, and Hanover counties, and the Town of Ashland; the RRTPO Community Transportation Advisory Committee; GRTC; DRPT; and RideFinders. The steering committee will meet four times over the next six months starting in July.

**RRTPO Active Transportation Work Group Meeting  
Tuesday September 14 (11:00 a.m. – 12:30 p.m.)**

The Active Transportation Work Group (ATWG) meets quarterly to discuss topics related to bicycle and pedestrian infrastructure, safe routes, active mobility, and healthy living. This group brings together regional professional staff and advocate organizations to advise local planning efforts related to active transportation. The May 14 meeting was highlighted by three presentations on automated vehicles and how they may interact with non-motorized transportation, such as bicycles and pedestrians. Presenters included Raymond Khoury, VDOT; Erin Robartes, University of Virginia's Omni Reality and Cognition Lab; and John Estrada, Kapsch TrafficCom USA. The next scheduled meeting will be September 14, 11:00 a.m. to 12:30 p.m. (following the TAC meeting) in the PlanRVA James River Board Room.

## **TAC AGENDA 6/11/19; ITEM 5.**

### **TIP: PERFORMANCE BASED PLANNING AND PROGRAMMING**

#### **Richmond Regional Transportation Planning Organization**

**NO ACTION REQUESTED:** This is an information item only regarding the planned revisions to the *RRTPO FY18 – FY21 Transportation Improvement Program* (TIP) to meet federal Performance Based Planning and Programming (PBPP) requirements.

**BACKGROUND:** In 2012, The Moving Ahead for Progress in the 21st Century (MAP-21) federal transportation funding authorization included new requirements for states and metropolitan planning organizations to report performance measures and targets tied to national goals. The performance measures and performance-based planning and programming requirements of MAP-21 were reaffirmed in the Fixing America's Surface Transportation (FAST Act) federal transportation authorization of 2015. These legislative actions require that states and MPOs report performance measures and targets related to bridge and pavement condition, safety, system performance, congestion mitigation and air quality, freight, and transit asset management.

A component of the PBPP requirements impacts MPO TIPs, as well as state DOT STIPs. With the setting of the final performance measure targets in November of 2018, VDOT has requested MPOs, at this time, include addendums to the TIP to cover these measures. The RRTPO has revised Appendix F of the FY18 – FY21 TIP to include language related to asset management and system performance measure targets and how said targets are being achieved through TIP investments

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## Addendum 3: Performance Based Planning and Programming – Pavement and Bridge Performance Measures

### Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established pavement and bridge condition performance targets as reported in Virginia's Baseline Performance Period Report for 2018-2021<sup>1</sup>. This report, submitted to FHWA in October 2018, satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1<sup>st</sup> of the first year in a performance period. Performance measures for pavement condition are required for the National Highway System (NHS), while bridge condition requirements relate to structures identified as part of the National Bridge Inventory on the NHS. The pavement condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 1 below.

TABLE 1: PAVEMENT CONDITION MEASURES AND PERFORMANCE TARGETS

INTERSTATE PAVEMENT CONDITION MEASURES <sup>2</sup>	CY 2018-2019 TWO YEAR TARGET	CY 2018-2021 FOUR YEAR TARGET
Percentage of Pavements in Good Condition	N/A <sup>3</sup>	45.0%
Percentage of Pavements in Poor Condition	N/A <sup>3</sup>	3.0%
NON-INTERSTATE NHS PAVEMENT CONDITION MEASURES <sup>4</sup>	2018-2019 TWO YEAR TARGET	2018-2021 FOUR YEAR TARGET
Percentage of Non-Interstate Pavements in Good Condition	25.0%	25.0%
Percentage of Non-Interstate Pavements in Poor Condition	5%	5.0%

Bridge condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 2 below.

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<sup>1</sup> Virginia's Baseline Performance Period Report data is through December 2017.

<sup>2</sup> Interstate condition measures are based on four distresses: International Roughness Index (IRI), cracking, rutting, and faulting.

<sup>3</sup> During this first performance period, States are not required to establish 2-year targets for interstate pavements; however, Virginia has chosen to establish performance targets and are 45.0% and 3.0% for percentage of pavements in good and poor condition, respectively.

<sup>4</sup> During this first performance period, Federal requirements for Non-Interstate NHS pavement condition and performance targets are based on a single distress, IRI. However, Federal guidance outlined in a September 27, 2018 Memorandum on State DOT Targets for Non-Interstate NHS Pavement Measures allows for the use of full distress data when reporting Non-Interstate NHS performance targets. Given the availability of full distress data, Virginia has chosen this approach and reported performance targets for Non-Interstate NHS pavements based on all four distresses. This allows for consistency in assessing the condition and setting performance targets for both Interstate and Non-Interstate NHS pavements.

TABLE 2: NHS BRIDGE CONDITION MEASURES AND PERFORMANCE TARGETS

NHS BRIDGE CONDITION MEASURES	CY 2018-2019 TWO YEAR TARGET	CY 2018-2021 FOUR YEAR TARGET
Percentage of Deck Area of NBI Bridges on the NHS in Good Condition	33.5%	33.0%
Percentage of Deck Area of NBI Bridges on the NHS in Poor Condition	3.5%	3.0%

### Background/History

Virginia's history of monitoring asset conditions and utilizing performance information to determine investment strategies based on available funding levels spans over 10 years for pavements and bridges.

VDOT maintains a comprehensive inventory of all pavement and bridges on the state-maintained network. This inventory, which includes location, maintenance responsibility, ownership, and current condition or inspection information, serves as the foundation for life cycle planning, performance forecasting, maintenance and rehabilitation needs estimation, as well as prioritization of work to maximize asset life given available funding. Condition information is also important for communicating with external stakeholders, including the general public.

VDOT's commitment to responsible Transportation Asset Management (TAM) practice is demonstrated through VDOT's annual condition data collection programs and its establishment and publication of network level pavement and bridge performance goals. VDOT's current condition measures and performance goals have been in place for many years and are fully integrated into VDOT's budgeting process and investment strategies.

The federal pavement and bridge performance measures apply to a limited portion of the network for which VDOT is responsible (less than 15% of all lane miles and 18% of the bridge inventory).

### Connection to Other Performance Based Planning Documents

VTrans, the state's long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia's future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long-range multimodal plan is VTrans2040.

Performance management, specifically as it relates to pavements and bridges, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Guiding Principle 5: Ensure Transparency and Accountability and Promote Performance Management - Work openly with partners and engage stakeholders in project development and implementation, and establish performance targets that consider the needs of all communities, measure progress towards targets, and to adjust programs and policies as necessary to achieve the established targets.
- Goal D: Proactive System Management - maintain the transportation system in good condition and leverage technology to optimize existing and new infrastructure.



- Objectives:
  - Improve the condition of all bridges based on deck area.
  - Increase the lane miles of pavement in good or fair condition.

Virginia's federally required Transportation Asset Management Plan (TAMP) presents pavement and bridge inventory and conditions, along with the Commonwealth's performance objectives, measures, and associated risks as they relate to the federal requirements. Asset funding, investment strategies, forecasts, goals, and gaps are also included. The TAMP is specific to the NHS and provides the Commonwealth's Transportation Asset Management (TAM) processes and methodology to meet federal requirements. Pavement and bridge projects included in the STIP are consistent with Virginia's reported TAM processes and methodology.

The program of projects in the STIP are directly linked to the pavement and bridge objectives outlined in VTrans2040 and the TAMP through the strategies and actions that are priorities in Virginia.

### Funding for Pavement and Bridge Projects

There are two key funding sources for pavement and bridge projects, the Highway Maintenance and Operations Fund (HMOF) and State of Good Repair (SGR) program funds. The pavement and bridge funding is used for differing projects from routine maintenance to reconstructive work. Funds are allocated to pavement and bridge projects based on an annual needs assessment process supported by a data-driven prioritization and selection process. The prioritization process is the same for the various funding sources; however, the [State of Good Repair](#) program funds are designated for deteriorated pavements and structurally deficient bridges.

The SGR program requires funds be distributed proportionality between VDOT and localities, based on assessed needs. More details, including the requirements for pavements and bridges, and the SGR prioritization process methodology, can be found at: [State of Good Repair for Bridges](#) and [Local Assistance Funding Programs](#).

VDOT has developed a robust asset management program, placing maintenance of the transportation network at the forefront of VDOT's investment decisions. This commitment to responsible asset management practice is demonstrated through VDOT's annual collection of condition data on pavements and bridges along with its establishment and publication of network-level pavement and bridge performance targets. For more than a decade, VDOT has monitored pavement and bridge conditions using performance information (measures and targets) to determine investment strategies based on available funding levels.

In the annual needs assessment process, VDOT assesses 100% of the pavement network on Virginia's Interstate and Primary systems and approximately 20% of the Secondary system. In 2016, VDOT assessed 100% of the Secondary pavement network to create a condition baseline. The pavement condition data is compiled, analyzed and reviewed to report the optimized needs at a roadway system and district level. VDOT's pavement program selects resurfacing projects, in relation to needs, and optimizes the timing of projects through a data-driven pavement management system.

For bridges, VDOT follows national standards in performing safety inspections and determining general condition of the structures. Condition assessments are performed by certified safety inspection personnel. The inspection program requires a qualified inspector to complete a "hands-on" review of the structure or

bridge during each inspection. By federal regulation, VDOT is required to conduct detailed inspections of NBI structures at intervals not to exceed 24 months. VDOT uses BrM software to store bridge condition and inventory data for each structure and to program, schedule, and track bridge and structure inspections. The data collected during inspections allows VDOT to use a proactive approach to maintenance. Preventive maintenance and timely intervention repairs are performed to avoid and slow deterioration that leads to greater rehabilitation or replacement cost. Virginia's bridge maintenance program is large and complex, so in order to direct its efforts more easily, performance targets have been developed.

VDOT uses a prioritization process when determining funding for the pavement and bridge programs and prioritizes work ranging from preventative maintenance to replacement. The prioritization processes take into account similar factors such as condition, cost effectiveness, maintenance history, and traffic volumes. While the systematic prioritization processes are a guide to assist in funding projects, districts direct the work performed as the local experts.

### How do Pavement and Bridge Projects get selected for Inclusion in the STIP?

As noted above, the funding to meet Virginia's pavement and bridge objectives and targets is allocated to projects in the CTB-approved SYIP and is consistent with VTrans2040. Each spring, the public is invited to comment on projects included in the draft SYIP prior to CTB approval. Since the SYIP is the foundation for the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's pavement and bridge performance objectives and targets and is consistent with Virginia's TAMP.

### Regionwide Performance Targets

As with State DOTs, MPOs also can either create their own Performance Targets or concur with those developed by the state. Regarding the six performance targets established under Pavement and Bridge, the RRTPO elected to concur with those developed by the state.

TABLE 3: PAVEMENT CONDITION MEASURES, VDOT FOUR YEAR TARGET AND RRTPO 2018 DATA

INTERSTATE PAVEMENT CONDITION MEASURES	CY 2018-2019 FOUR YEAR TARGET	RRTPO 2018 DATA
Percentage of Pavements in Good Condition	45.0%	52.14%
Percentage of Pavements in Poor Condition	<3.0%	1.18%
NON-INTERSTATE NHS PAVEMENT CONDITION MEASURES	2018-2019 FOUR YEAR TARGET	RRTPO 2018 DATA
Percentage of Non-Interstate Pavements in Good Condition	25.0%	27.4%
Percentage of Non-Interstate Pavements in Poor Condition	<5.0%	2.1%

TABLE 4: NHS BRIDGE CONDITION MEASURE, VDOT FOUR YEAR TARGET AND RRTPO 2018 DATA

NHS BRIDGE CONDITION MEASURES	CY 2018-2019 FOUR YEAR TARGET	RRTPO 2018 DATA
Percentage of Deck Area of NBI Bridges on the NHS in Good Condition	33.0%	33.3.0%
Percentage of Deck Area of NBI Bridges on the NHS in Poor Condition	<3.0%	3.37%

## Addendum 4: Performance Based Planning and Programming – Highway System Performance

### Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established performance targets for three reliability performance measures to assess the Highway System Performance. All three measures are included in Virginia's Baseline Performance Period Report for 2018-2021 which was submitted to FHWA in October 2018. This report satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1<sup>st</sup> of the first year in a performance period and establishes baseline performance as of December 31, 2017.

Performance of the NHS is measured by the level of travel time reliability. The travel time reliability performance measures and performance targets for the 2018-2021 performance period are indicated in Table 1 below.

TABLE 1: NATIONAL HIGHWAY SYSTEM TRAVEL TIME RELIABILITY PERFORMANCE MEASURES AND TARGETS

NHS TRAVEL TIME RELIABILITY PERFORMANCE	CY 2018-2019 TWO YEAR TARGET	CY 2018-2021 FOUR YEAR TARGET
Percent of Person Miles Traveled on the Interstate That Are Reliable	82.2%	82.0%
Percent of Person Miles Traveled on the Non-Interstate NHS That Are Reliable	N/A <sup>1</sup>	82.5%

The assessment for freight reliability is based on the truck travel time reliability index. The truck travel time reliability performance measure and performance targets for the 2018-2021 performance period are indicated in Table 2 below.

TABLE 2: FREIGHT RELIABILITY PERFORMANCE MEASURE AND TARGETS

TRUCK TRAVEL TIME RELIABILITY PERFORMANCE	CY 2018-2019 TWO YEAR TARGET	CY 2018-2021 FOUR YEAR TARGET
Truck Travel Time Reliability Index	1.53	1.56

The Commonwealth Transportation Board (CTB) approves the performance measures and targets developed for Virginia's surface transportation network. Such targets, including those for Highway

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<sup>1</sup> During this first performance period, States are not required to establish 2-year targets for the Non-Interstate NHS reliability measure.

System Performance, are linked to the goals and objectives in Virginia's long-range transportation plan, or VTrans.

### Connection to Other Performance Based Planning Documents

VTrans, the state's long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia's future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long range multimodal plan is VTrans2040.

VTrans2040 identifies the most critical transportation needs in Virginia to ensure the overarching transportation goals in the long-range plan are achieved. The screening process was informed by a data-driven approach that considers highway system performance measures and targets in addition to other performance indicators.

Performance management, as it relates to the reliability of the NHS and freight, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Guiding Principle 4: Consider Operational Improvements and Demand Management First
  - Maximize capacity of the transportation network through increased use of technology and operational improvements as well as managing demand for the system before investing in major capacity expansions.
- Goal A – Economic Competitiveness and Prosperity: invest in a transportation system that supports a robust, diverse, and competitive economy.
  - Objectives:
    - Reduce the amount of travel that takes place in severe congestion.
    - Reduce the number and severity of freight bottlenecks.
    - Improve reliability on key corridors for all modes.
- Goal B – Accessible and Connected Places: increase the opportunities for people and businesses to efficiently access jobs, services, activity centers, and distribution hubs.
  - Objectives:
    - Reduce average peak-period travel times in metropolitan areas.
    - Reduce average daily trip lengths in metropolitan areas.
    - Increase the accessibility to jobs via transit, walking and driving in metropolitan areas.

Additionally, the Virginia Freight Element (VFE), a component of VTrans2040, discusses freight system trends, needs, and issues. The VFE also includes freight policies, strategies, and performance measures that guide Virginia's freight-related investment decisions.

Projects included in the STIP are directly linked to the Highway System Performance objectives outlined in VTrans2040 and associated needs analysis, and the VFE through the strategies and actions that are priorities in Virginia.

## Funding for Highway System Performance Projects

SMART SCALE, Virginia's data-driven prioritization process for funding transportation projects, considers the potential of a project to improve reliability. In order to be considered for SMART SCALE, a project must first meet a need identified in VTrans2040, thus strengthening the connection between the planning and programming processes. Congestion mitigation, safety, accessibility, economic development, environment, and land use are the factors used to score SMART SCALE projects. Freight considerations are included in the economic development factor.

The FAST Act established a National Highway Freight Program, including a freight-specific funding program to highlight the focus on freight transportation needs. Projects eligible for National Highway Freight Program (NHFP) funding must contribute to the efficient movement of freight on the National Highway Freight Network (NHFN) and be included in the VFE. VDOT uses NHFP funding to construct freight beneficial projects identified through the SMART SCALE process.

SMART SCALE screening and scoring results, along with public feedback and CTB guidance, are used to develop the SYIP.

Other projects selected for funding are subject to program specific prioritization processes approved by the CTB. All funding (federal, state, and other sources) for transportation projects are allocated to projects in the CTB approved SYIP.

## How do Highway System Performance Projects Get Selected for Inclusion in the STIP?

As noted above, the funding for all transportation projects, including funding for projects to meet Virginia's NHS system performance and freight movement targets is allocated to projects in the CTB approved SYIP, and is consistent with VTrans2040 and the VFE. Since the SYIP is the foundation of the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's NHS and Freight Reliability performance objectives and targets.

## Regionwide Performance Targets

As with State DOTs, MPOs also can either create their own Performance Targets or concur with those developed by the state. Regarding the three performance targets established under Highway System Performance, the RRTPO elected to concur with those developed by the state.

TABLE 3: NATIONAL HIGHWAY SYSTEM TRAVEL TIME RELIABILITY PERFORMANCE MEASURE, VDOT FOUR YEAR TARGET AND RRTPO 2018 DATA

NHS TRAVEL TIME RELIABILITY PERFORMANCE	CY 2018-2019 FOUR YEAR TARGET	RRTPO 2018 DATA
Percent of Person Miles Traveled on the Interstate That Are Reliable	82.2%	94.0%
Percent of Person Miles Traveled on the Non-Interstate NHS That Are Reliable	82.5%	91.0%

TABLE 4: FREIGHT RELIABILITY PERFORMANCE MEASURE, VDOT FOUR YEAR TARGET AND RRTPO 2018 DATA

TRUCK TRAVEL TIME RELIABILITY PERFORMANCE	CY 2018-2019 FOUR YEAR TARGET	RRTPO 2018 DATA
Truck Travel Time Reliability Index	1.53	1.42

# MEMORANDUM

**To:** Richmond Regional Transportation Planning Organization (RRTPO)  
RRTPO Technical Advisory Committee

**From:** Kenneth Lantz, Jr. *KEL*

**Date:** May 23, 2019

**Subj:** RRTPO Citizens Transportation Advisory Committee (CTAC) Meeting Report

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The following is a brief report on major discussion items from the May 16, 2019 CTAC meeting.

## **Focused Public Engagement and Citizen Committees**

Unwanna Dabney of AECOM Consultants and Ken Lantz provided presentations entitled "Engagement Best Practices" and "Report on a Review of TPO Citizen Advisory Committees," respectively. Ms. Dabney's presentation included information on planning for successful citizen engagement and examples of best practices. Mr. Lantz focused on the functions, responsibilities, needs, benefits and drawbacks of advisory committees, the basis for establishing such committees, and recommendations for consideration by CTAC.

## **FY20 Unified Planning Work Program Review**

RRTPO Secretary Chet Parsons reviewed the draft *Fiscal Year 2020 Unified Planning Work Program*. He noted that the program was organized around the core areas of program management, transportation planning, data and analysis, and financial programs. Mr. Parsons noted that the FY20 work program include development of a new long-range transportation plan, expanding access to transit, and providing a forum to discuss active transportation and its impacts. Comments on the draft plan are being accepted through June 14.

## **Next CTAC Meeting**

The next CTAC meeting is scheduled for Thursday, July 18, 2019.

KEL/

# CITY OF RICHMOND Traffic Signal Retiming Project

AN EFFECTIVE USE OF CMAQ FUNDING

## PROJECT PURPOSE

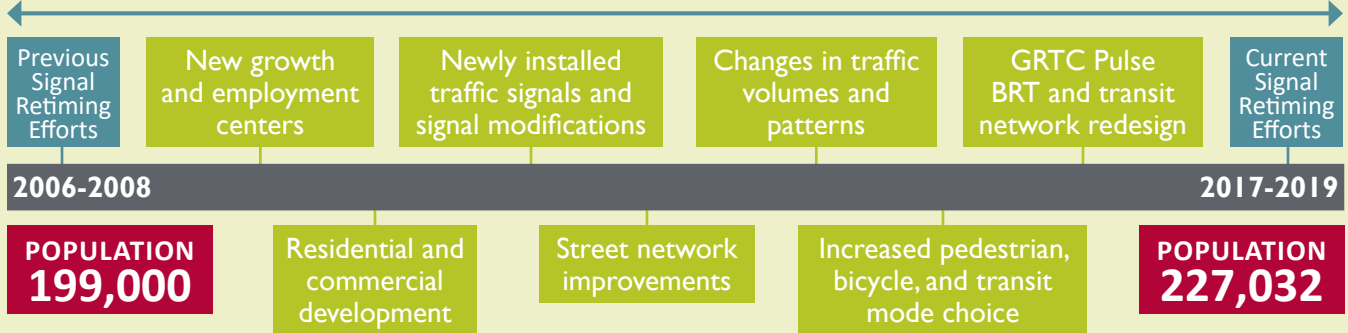
To improve safety and operations for multimodal users within the City of Richmond by optimizing traffic signals to reduce travel times and stops, improve safety, improve air quality, and improve livability for those who walk, bike, drive, and ride transit.



## PROJECT NEED

To align safety and operations with demands generated by population growth, increasing multimodal activity, and economic development.

### Over 10 Years



Within the industry, signal retiming is conducted every three to five years to proactively maintain safe and effective signal operations.

## PROJECT BENEFITS

Signal optimization involves operating traffic signals along a corridor or within a city grid with coordinated timing plans, such that platoons, or groups of vehicles, can travel through a series of signals with minimal or no stopping.

Signal optimization provides the following key benefits:



### IMPROVED TRAVEL TIMES

minimizing travel costs associated with time stopped at traffic signals and saving us money at the gas pump



### IMPROVED SAFETY

as vehicles stop less often, reducing the probability for rear-end crashes



REDUCED VEHICLE EMISSIONS AND FUEL CONSUMPTION  
lowering our carbon footprint



### REDUCED DELAY

which reduces motorist frustration and improves pedestrian safety





# CITY OF RICHMOND Traffic Signal Retiming Project

## SIGNAL OPTIMIZATION SUMMARY FOR SEVEN CORRIDORS



% Change in  
**TRAVEL TIME**

**-11%**



% Change in  
**DELAY**

**-29%**



% Change in  
**STOPS**

**-28%**



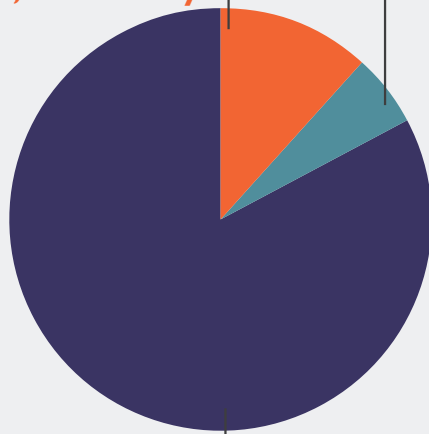
% Change in  
**AVERAGE SPEED**

**14%**

### AIR QUALITY BENEFITS

Volatile Organic  
Compounds  
Savings/Year  
**3,000.70 lbs/yr**

Nitrogen Oxides  
Savings/Year  
**993.91 lbs/yr**



Carbon Monoxide Savings/Year  
**19,401.57 lbs/yr**

**ANNUAL TRAVEL  
TIME DECREASE  
FOR PEAK PERIODS**

**101,388 hours**



### COST SAVINGS BENEFITS

	FUEL SAVINGS	TRAVEL TIME SAVINGS	TOTAL ANNUAL BENEFITS
8th & 9th	\$25,699.68	\$519,522.63	\$545,222.31
Belvidere	\$22,296.34	\$327,412.68	\$349,709.02
Canal	\$6,292.07	\$79,733.16	\$86,025.23
Monument	\$41,461.40	\$873,336.08	\$914,797.48
Patterson	\$12,214.33	\$236,790.24	\$249,004.57
Robinson	\$6,850.89	\$158,269.82	\$165,120.71
<b>TOTAL</b>	<b>\$114,814.71</b>	<b>\$2,195,064.61</b>	<b>\$2,309,879.32</b>

### BENEFIT-COST ANALYSIS

**ESTIMATED ANNUAL  
ECONOMIC BENEFITS**

**\$2,309,879**

**BENEFIT-COST  
RATIO**

**10:1**

\*Approximate retiming cost used in Benefit-Cost Analysis includes cost to collect traffic count data, develop coordinated signal timing plans, and field implement new signal timings for the seven evaluated corridors. This retiming cost does not include project administrative costs or cost to complete signal retiming for remaining citywide intersections, technical memorandums, or reporting.

## **TAC AGENDA 6/11/19; ITEM 7.**

### **PARK & RIDE INVESTMENT STRATEGY STUDY UPDATE**

#### **Richmond Regional Transportation Planning Organization**

**REQUESTED ACTION:** No action is requested. This is an information item related to the *Fiscal Year 2019 Park & Ride (P&R) Investment Strategy Study*. The project team, comprised of the Study Advisory Group (SAG), RRTPO staff and Kimley-Horn, has worked since the October 2018 project kick-off to provide regional perspectives, participate in project meetings, review technical memos and provide feedback to assist in identifying park and ride needs and develop project recommendations for the region. The SAG members include representatives from the region's nine jurisdictions, GRTC, DRPT, VDOT, and RideFinders. To date, the project team has reviewed existing conditions and needs, defined future needs, and developed project recommendations (summarized in three technical memos). The final technical memo on implementation, funding needs and sources will be completed in June and delivered to the SAG in July.

**BACKGROUND:** Building on the statewide inventory and usage study completed by VDOT in 2013 and the 2016 investment strategy study, the regional P&R investment strategy recognizes P&R lots as an essential element of the transit system to fill existing gaps in transit service and provide additional opportunities to connect to other multimodal options. The regional P&R investment strategy provides a detailed regional roadmap that accomplishes the following objectives:

- identifies and validates P&R projects most aligned with regional needs considering existing and future transit, demographics, land use, and travel patterns;
- considers opportunities for congestion relief, increased accessibility and multimodal connectivity;
- provides short-, medium- and long-term recommendations, and identifies strategies for funding and implementing projects that jurisdictions can pursue locally or through regional coordination;
- provides jurisdictions with the foundation and support to advance P&R projects for funding; and
- identifies P&R needs that will feed into the next Long-Range Transportation Plan (LRTP) for 2045 to be completed in October 2021.

**STAFF RECOMMENDATION:** The purpose of today's presentation is to provide background on the study to the TAC with a focus on priority recommendations and guidance for the development of future P&R facilities. The final product for the study will consist of a compilation of the four technical memos, with an executive summary presented in the form of a story map posted on the PlanRVA website. The study overview will be presented to the RRTPO policy board on June 27, 2019 for action to accept the study as a work task completed. The first three technical memos are included in the agenda package, two are final and the third is a draft.



# Richmond Regional Park and Ride Investment Strategy

Technical Memo I – Final  
January 2019

Prepared By:

**Kimley»»Horn**



## Introduction

The Richmond Regional Transportation Planning Organization (RRTPO) identified in the FY19 Unified Planning Work Program (UPWP) the opportunity to assess regional park and ride needs and develop an investment strategy to advance park and ride projects. The development of a regional park and ride investment strategy was specifically called for in the UPWP under the focal area of “expanding access to transit through multimodal connectivity and park and ride projects” and is intended to inform plan2045, the RRTPO’s next Long Range Transportation Plan.

The purpose of the resulting *Richmond Regional Park and Ride Investment Strategy* study is to form the foundation for leveraging park and ride lots in the Richmond region as part of a larger travel demand management strategy. This study will assess existing conditions and existing needs, identify potential future needs, prioritize and rank project recommendations, and develop implementation strategies to advance and promote park and ride projects in the Richmond region.

Previous statewide efforts have been conducted to identify and evaluate park and ride needs and this study will add a regional perspective and build upon these statewide studies. Relevant previous statewide studies include:

- The VDOT Statewide Park and Ride Study (2013) - conducted a statewide inventory of existing park and ride lots; identified recommendations for new, expanded, or closed park and ride lots; conducted a statewide survey to understand characteristics of park and ride users; and assisted VDOT with public outreach and awareness of park and ride facilities.
- The VDOT Park and Ride Investment Strategy (2016 and 2018 update) - compiled park and ride project recommendations from each of the VDOT districts, developed a project prioritization process, and scored and ranked projects to develop an investment strategy for each district.

The types, sizes, and features of a park and ride lot vary depending on many factors including demographics, land use, and travel patterns. Since these factors differ throughout Virginia, regional park and ride priorities are often different from statewide priorities. Previous statewide studies evaluated park and ride lots using a single methodology statewide. This statewide methodology prioritized projects based on population density, traffic volumes, traffic congestion, and proximity to existing park and ride facilities. The *Richmond Regional Park and Ride Investment Strategy* will build upon these previous studies by identifying and validating park and ride projects to align with regional needs. The study will consider factors such as proximity to transit, demographics, land use, and travel patterns, in addition to factors considered in the statewide study. The desired outcome of the study is to develop a regional strategy for park and ride in the Richmond area and provide jurisdictions with the foundation and support to advance park and ride projects locally.

This technical memo summarizes the existing conditions and existing needs for park and ride in the Richmond region. This is the first of five technical memorandums to be completed as part of the *Richmond Regional Park and Ride Investment Strategy* study:

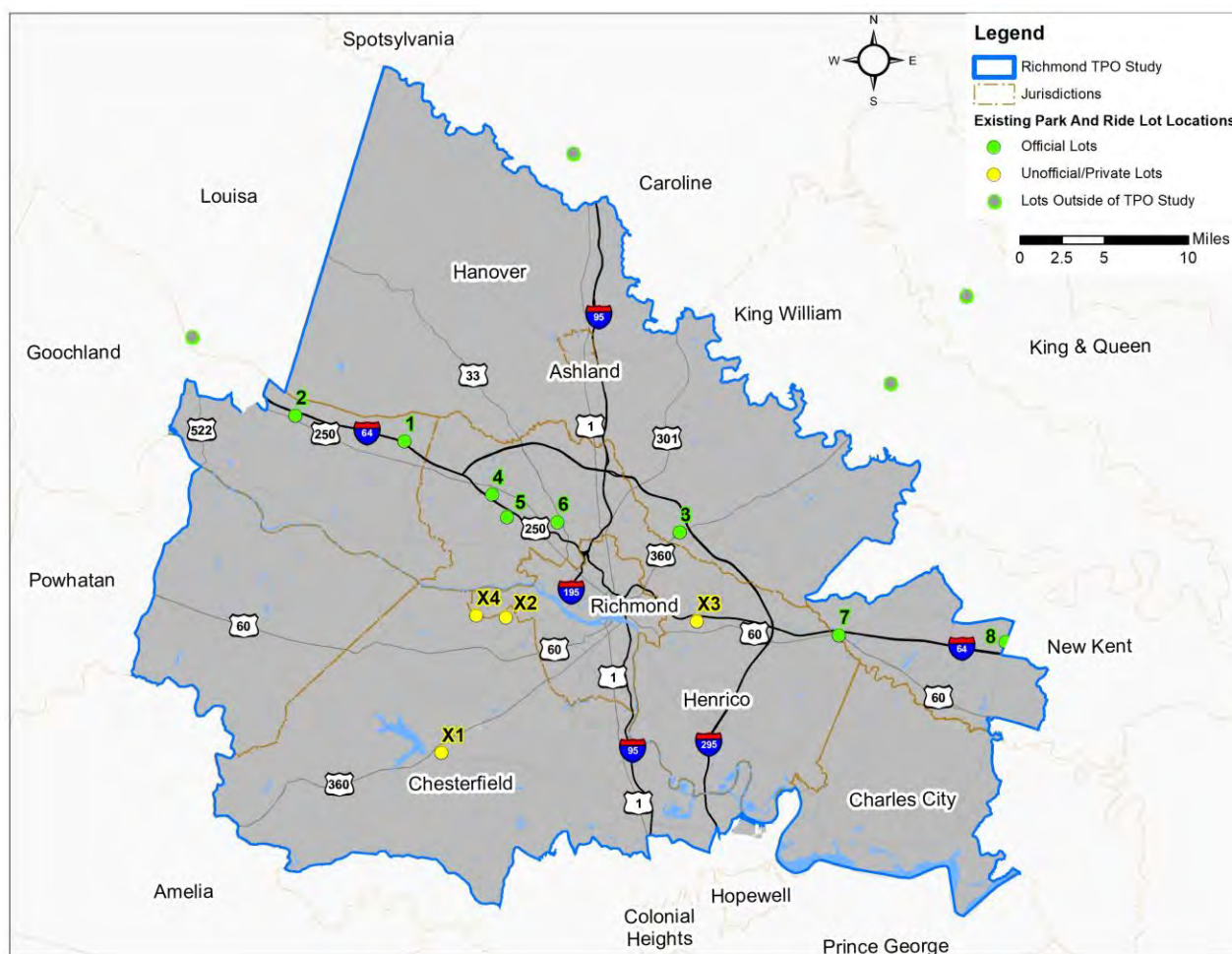
- **Technical Memo I – Existing Conditions and Existing Needs**
- Technical Memo II – Future Needs
- Technical Memo III – Prioritization and Ranking of Project Recommendations
- Technical Memo IV – Implementation Strategy
- Technical Memo V – Funding Needs and Potential Funding Sources

## Existing Conditions

### Existing Park and Ride Inventory

As of November 2018, eight official, park and ride lots exist within the RRTPO study area boundary. In addition, four additional “unofficial” lots (private lots at which agreements are in place to allow commuter parking) are also present in the study area. While the official lots are primarily located along I-64 and northeast of the center of the City of Richmond, the unofficial lots are primarily found south of I-64. **Figure 1, Table 1, and Table 2** summarize the existing park and ride lots within the study area.

Figure 1: Existing Official and Unofficial Park and Ride Lots



Data on the number of parking spaces and weekday occupancy of the official lots was gathered through an inventory and usage survey completed by VDOT for the Richmond region in the fall of 2018. The official lots in the Richmond region range in size from 34 spaces at the New Kent County Public Works lot to 534 spaces at the Gaskins Road lot in Henrico County. VDOT’s survey found the occupancy of most of the official park and ride lots in the Richmond region to be about 50% full, with the exception of two lots that were at or close to capacity (Hickory Haven in Goochland County and Bottom’s Bridge in New Kent County) and two lots that were less than 20% full (Parham Road in

Henrico County and New Kent County Public Works lot). Space count and occupancy data was not collected by VDOT for the unofficial lots since these lots share spaces with other private users.

Table 1: Official Park and Ride Lots

	Lot Name	Lot Location	Parking Spaces	2018 Occupancy (Spaces Filled)
<b>Goochland County</b>				
1	Hickory Haven	I-64 Exit 173 (Route 623)	109	91 (83%)
2	Oilville	I-64 Exit 167 (Route 617)	72	36 (50%)
<b>Hanover County</b>				
3	Mechanicsville	I-295 Exit 37 (US 360)	89	38 (43%)
<b>Henrico County</b>				
4	Gaskins Road	I-64 Exit 180 (Gaskins Road)	534	280 (52%)
5	Parham Road	I-64 Exit 181 (Parham Road)	313	55 (18%)
6	Glenside Drive - Dumbarton	I-64 Exit 183 (Glenside Drive) & Exit 185 (Staples Mill Road)	468	198 (42%)
<b>New Kent County</b>				
7	Bottoms Bridge	I-64 Exit 204 (US 60 & Route 33)	40	40 (100%)
8	New Kent County Public Works	I-64 Exit 214 (Route 604 & Route 155)	34	1 (3%)*

Source: VDOT Park and Ride Inventory and Usage Study (parking spaces and 2018 occupancy data collected Fall 2018).

\*Lot 8 data based on inventory completed in January 2019.

Table 2: Unofficial/Private Park and Ride Lots

	Lot Name	Lot Location	Parking Spaces
<b>Chesterfield County</b>			
X1	Commonwealth 20	US 360 (Hull Street) & Route 288	N/A
X2	Bon Air Baptist Church	Forest Hill Avenue and Huguenot Road	N/A
<b>Henrico County</b>			
X3	White Oak Village	I-64 Exit 195 (Laburnum Avenue)	N/A
<b>City of Richmond</b>			
X4	Huguenot United Methodist Church	Route 147 (W. Huguenot Road) & Old Gun Road	N/A



## Programmed Park and Ride Lots

Two additional lots in the RRTPO study area are programmed to be built in the future. For both lots, local jurisdictions applied for and were selected for SMART SCALE funding. **Figure 2** and **Table 3** show these additional lots within the study area. Both programmed lots are located in Chesterfield County and together are planned to add approximately 250 park and ride spaces by 2028.

Figure 2: Existing and Programmed Park and Ride Lots

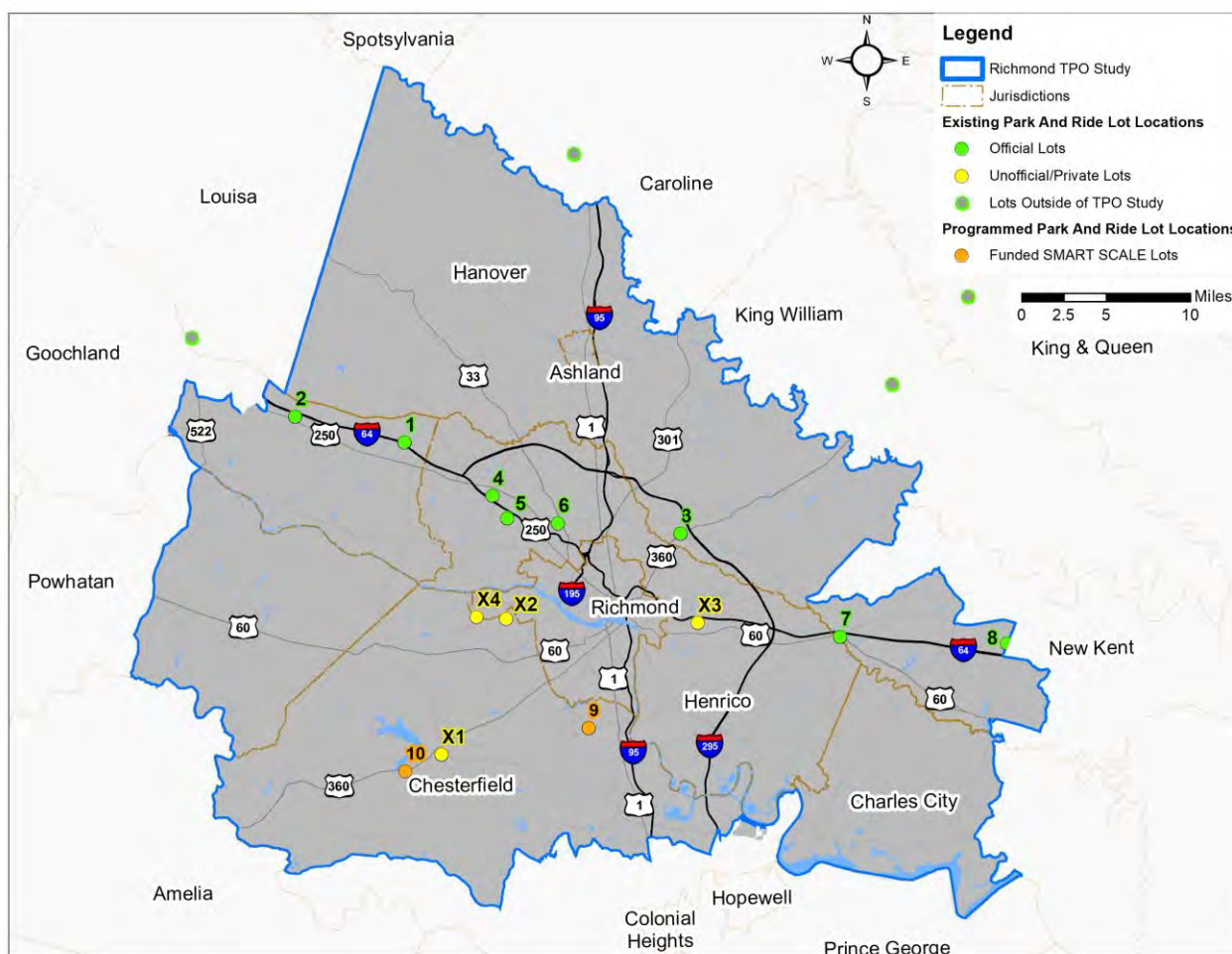


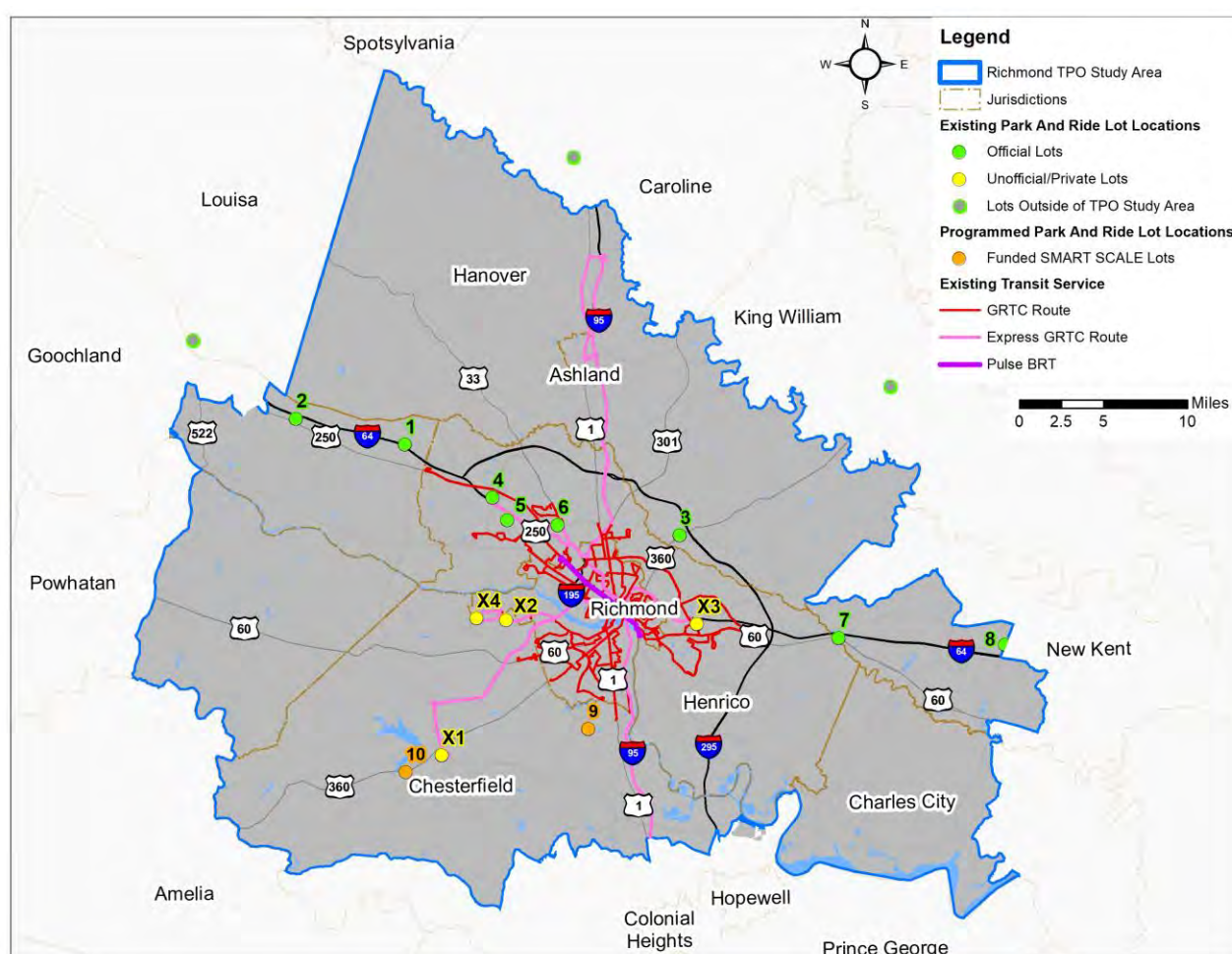
Table 3: Funded SMART SCALE Park and Ride Projects

	Project Name	Lot Location	Proposed Spaces	Anticipated Completion
<b>Chesterfield County</b>				
9	Cogbill/Hopkins/Chippenham – Park and Ride	Route 150 (Chippenham Parkway) & Route 637 (Hopkins Road)	118	2024
10	SB Route 288 to WB US 360 Off Ramp, US 360 Park and Ride	US 360 (Hull Street) at Chesterfield Career and Technical Center	128	2028

## Existing Transit Service

The Greater Richmond Transit Company (GRTC) operates transit service in and around the City of Richmond<sup>1</sup>. Local bus routes are primarily concentrated within the City limits, operating routes throughout the weekday and some routes on weekends. Express routes extend into the surrounding counties and operate primarily during the weekday peak commute hours and in the commute direction (into Richmond during the morning and out of Richmond in the afternoon). The recently opened GRTC Pulse Bus Rapid Transit (BRT) operates frequent, limited-stop service along Broad Street and Main Street, from Rocketts Landing to Willow Lawn during weekdays and weekends. Existing transit service within the study area is shown in **Figure 3** and **Table 4**.

Figure 3: Existing and Programmed Park and Ride Lots with Existing Transit Services



Currently, there are three official park and ride lots within  $\frac{1}{4}$ -mile of existing transit routes, Gaskins Road, Parham Road, and Glenside Drive – Dumbarton. These lots (numbers 4, 5, and 6 on Figure 3) are all located in Henrico County in close proximity to I-64 and all serve express transit routes with connections to downtown Richmond. In addition, all of the four unofficial lots in the study area are also connected to transit. Potential opportunities to fill gaps in the existing park and ride network in relation

<sup>1</sup> Full GRTC system map: [http://ridegrtc.com/media/routes/F\\_GRT\\_Msys\\_32.75x65\\_180914\\_.pdf](http://ridegrtc.com/media/routes/F_GRT_Msys_32.75x65_180914_.pdf)





to the transit network, include route termini for the Pulse BRT (Willow Lawn and Rocketts Landing) and along local routes with frequent service.

Table 4: Existing Park and Ride Lots within 1/4-Mile of Existing Transit Routes

	Lot Name	Transit Route(s)
<b>Henrico County</b>		
4	Gaskins Road	GRTC 29x – Gaskins Express
5	Parham Road	GRTC 23x – Glenside/Parham Express GRTC 26x – Parham Express
6	Glenside Drive - Dumbarton	GRTC 23x – Glenside/Parham Express GRTC 27x – Glenside Express
X3	White Oak Village	GRTC 7B – Nine Mile Henrico GRTC 28x – White Oak Village Express GRTC 56 – South Laburnum GRTC 91 – Laburnum Connector
<b>Chesterfield County</b>		
X1	Commonwealth 20	GRTC 82x - Commonwealth 20 Express
X2	Bon Air Baptist Church	GRTC 64x – Stony Point Express
<b>City of Richmond</b>		
X4	Huguenot United Methodist Church	GRTC 64x – Stony Point Express

## Existing Vanpool Service

Park and ride lots are a common place for vanpools to assemble. Based on data provided by GRTC RideFinders, as of October 2018, there are 81 vanpools that originate in the RRTPO study area with approximately 595 participants. It should be noted that the number of vanpools and participants varies depending on the day, week, and month. **Figure 4** shows the vanpool origin locations in the study area, many of which meet at an existing park and ride lot. Six of the seven official and two of the four unofficial lots serve as origins for at least one vanpool.

Many vanpools meet at origin points in the Richmond area and travel long distances north to Washington, DC and Northern Virginia while others are destined for locations in the Richmond region and other places in Virginia. **Table 5** shows the breakdown on RRTPO study area vanpools by their destination region. Approximately 14% of vanpools are destined to locations within RRTPO boundaries.

Figure 4: Existing and Programmed Park and Ride Lots with Existing Vanpool Origin Locations

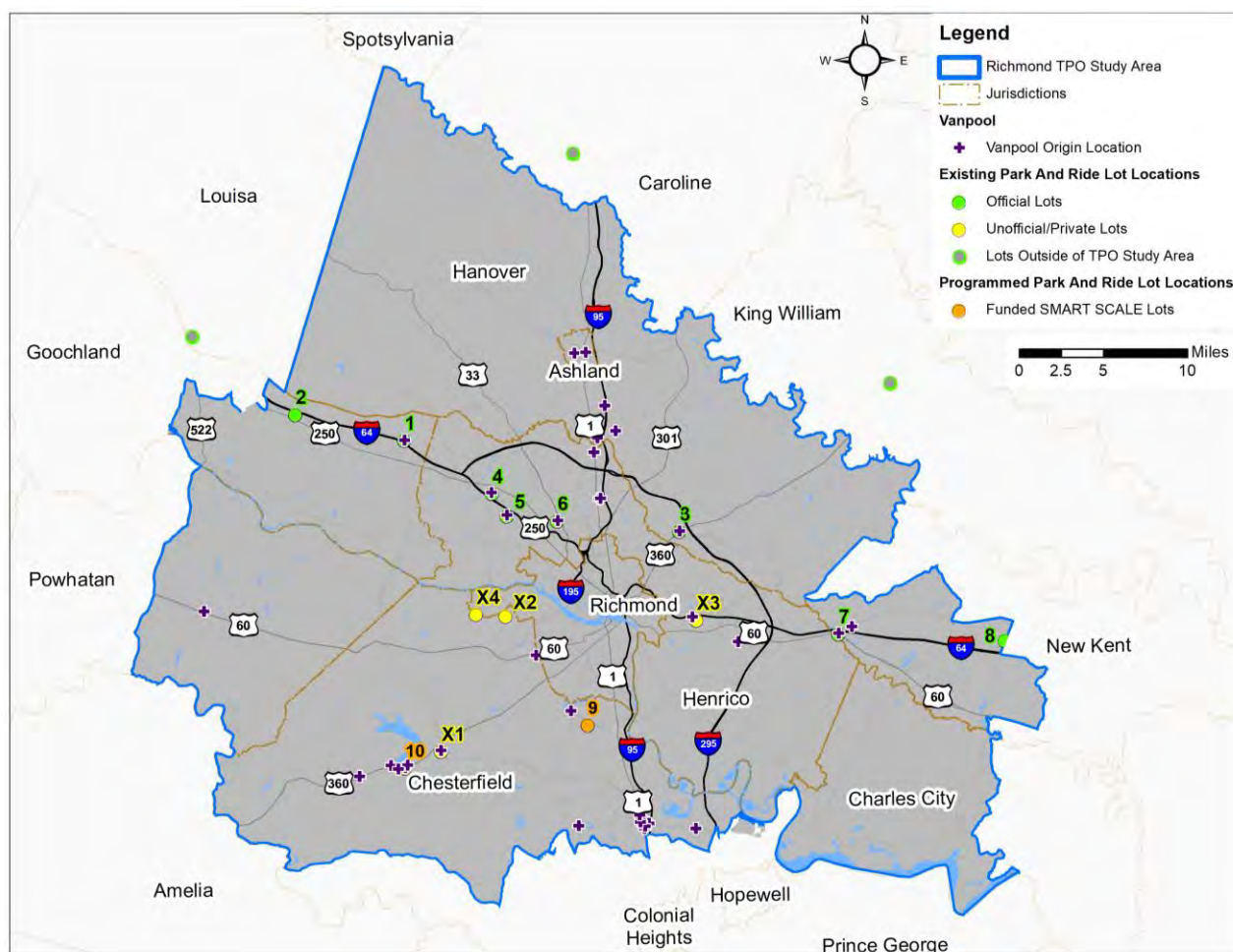


Table 5: Existing RRTPO Vanpool Destination Regions

Destination Region	Number of Vans	Number of Passengers
RRTPO	11	84
Northern Virginia	24	159
Washington D.C.	23	215
Other Virginia - North of RRTPO	13	74
Other Virginia - West of RRTPO	7	42
Other Virginia - East of RRTPO	3	21
<b>Total</b>	<b>81</b>	<b>595</b>

Source: GRTC RideFinders, October 2018

Locations at which clusters of vanpools originate may be potential indicators of a need for a park and ride lot. Three such locations include:

- Along US Route 360 in Chesterfield County
- Along I-95 corridor in the vicinity of Chester
- Along I-95 corridor between Richmond and Ashland

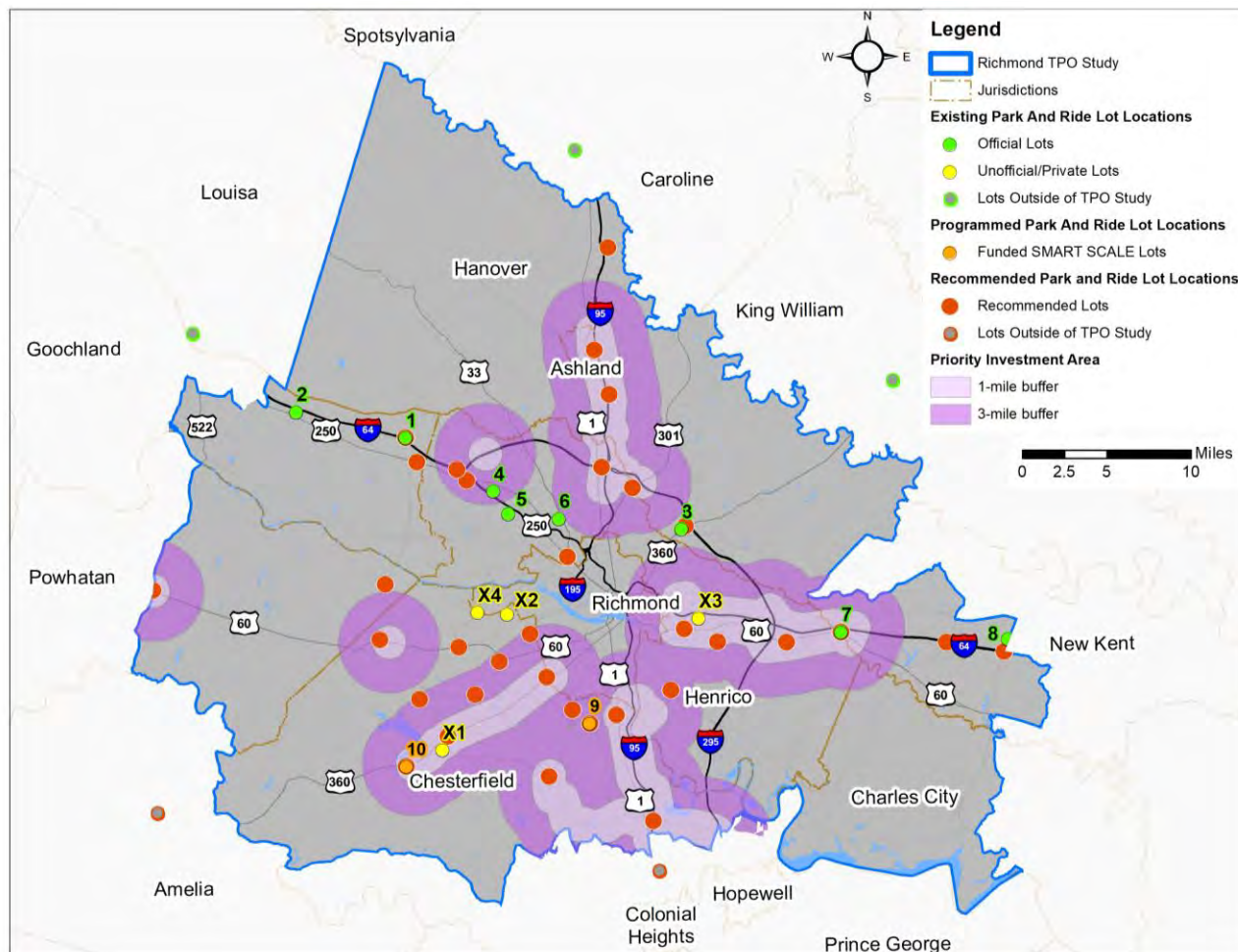
## Existing Park and Ride Needs

### Existing Park and Ride Project Recommendations

Previous planning efforts led by VDOT, and in coordination with regional partners, recommended new park and ride lots and improvements to existing lots within the study area. A total of 34 park and ride lot recommendations were identified in the study area as part of the *VDOT Park and Ride Investment Strategy*. These recommendations are shown in **Figure 5** and are listed in the Appendix and include lots located north of Richmond along I-95 and south of Richmond along Midlothian Turnpike (US 60), Hull Street Road (US 360), and Chippenham Parkway (Route 150). The two programmed lots that received SMART SCALE funding are included in this list of park and ride recommendations.

As part of the *VDOT Park and Ride Investment Strategy*, Priority Investment Areas (PIAs), geographic areas with a higher need for park and ride lots, were identified based on the convergence of population density, traffic volumes, and proximity to existing park and ride facilities. PIAs were developed to identify locations in each VDOT district where park and ride lots did not already exist that had the potential to serve greater numbers of people and have larger impacts on reducing congestion. As part of the ranking methodology employed in the *VDOT Park and Ride Investment Strategy*, park and ride recommendations within PIAs were given extra points that were not given to those located outside of the PIAs. As shown in **Figure 5**, 25 of 34 recommendations in the study area were located within 3 miles of the PIAs.

Figure 5: Existing, Programmed, and Recommended Park and Ride Lots



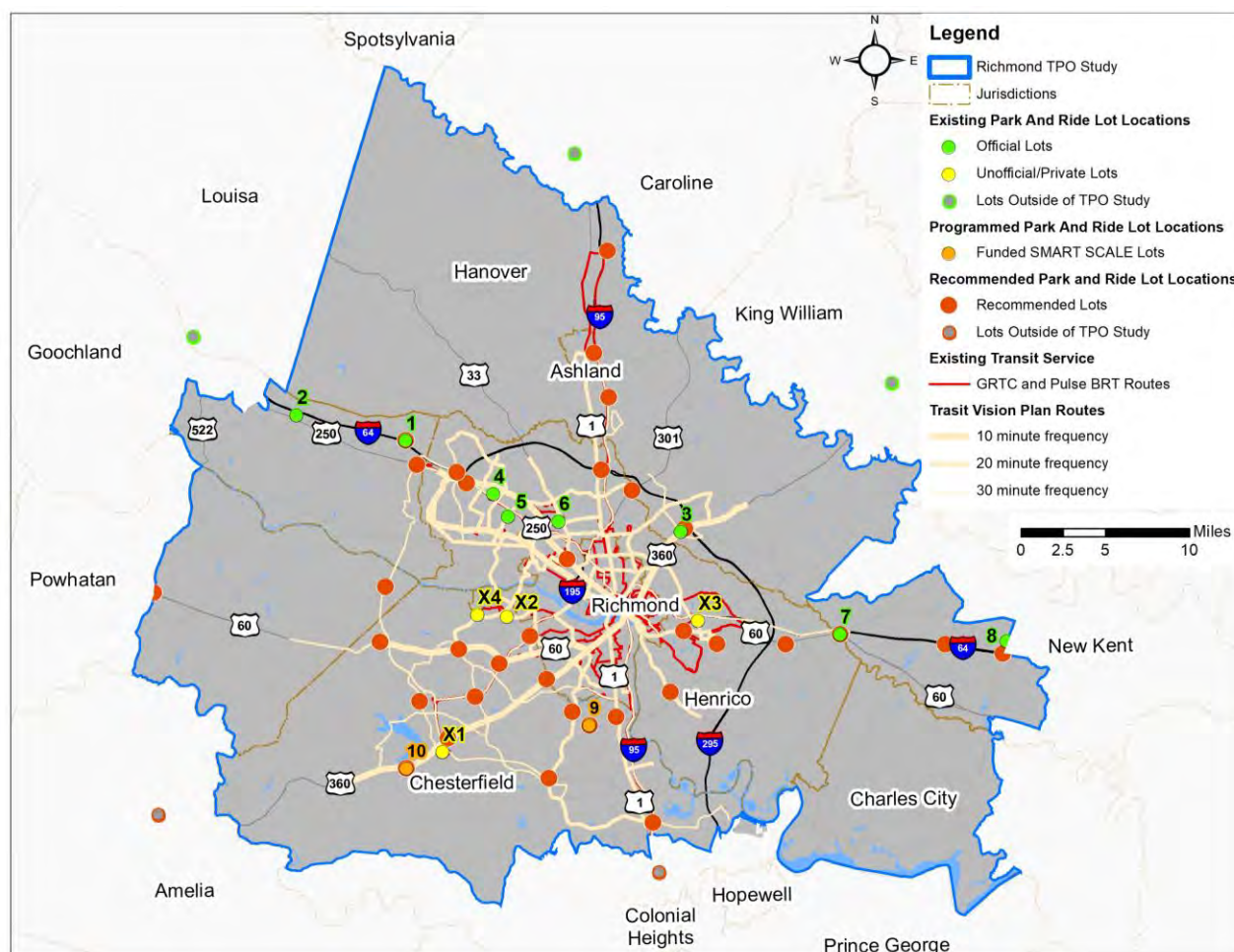


## Planned Transit Service

Eleven of the recommended park and ride lots are located within ¼-mile of existing transit routes. Generally, these lots are located to the north of Richmond along I-95, west along Broad Street (US 250), south along Powhite Parkway (Route 76) and US 1, and east along Williamsburg Road (US 60).

The *Richmond Transit Vision Plan*, which identifies the future unconstrained regional transit network, proposes future transit routes that expand the existing network to provide greater geographic coverage and increased frequency. The implementation of the Vision Plan would increase the number of recommended park and ride lots within a ¼-mile of transit to 27 out of a total 34 lots. This indicates that the recommended park and ride lots align geographically with the planned transit network, which allows for a high level of connectivity between both. The *Richmond Transit Vision Plan* routes are shown in **Figure 6** with the thicker lines indicating the routes with the more frequent service.

Figure 6: Existing, Programmed, and Recommended Park and Ride Lots with Transit Vision Plan Routes

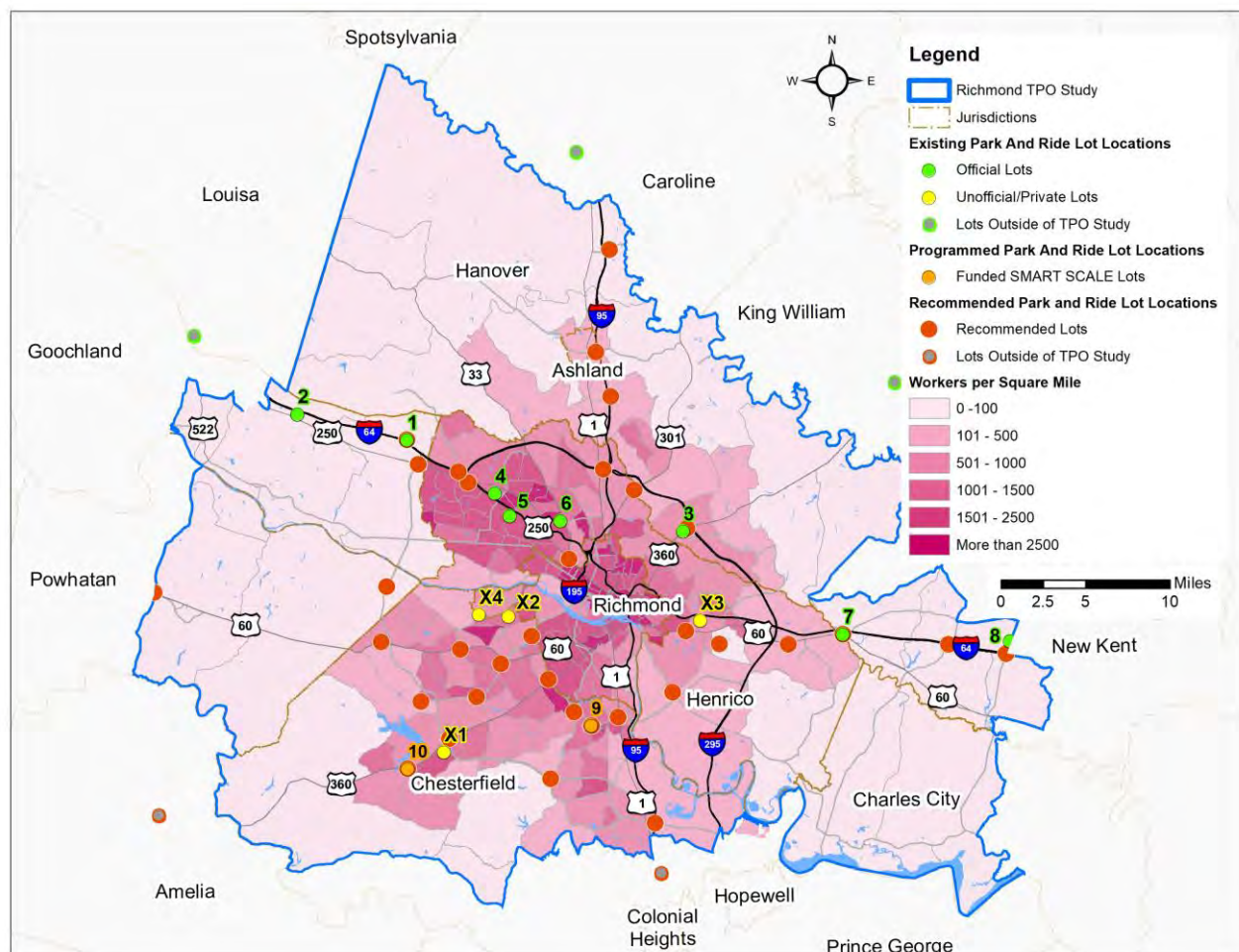


## Regional Demographics

### Worker Density

All existing, programmed, and recommended park and ride lots are shown in **Figure 7** overlaid on a base map of worker density. Worker density corresponds to the number of employed people *living* in the area shown, rather than the number of people whose jobs are located in that area. Based on 2016 American Community Survey 5-year estimate data, 32% of the working population is served by existing official and programmed park and ride lots<sup>2</sup>. When considering the existing, programmed, and recommended lots, 74% of the working population is served by park and ride lots. Generally, the census tracts with the highest density of working population are located along I-64 and southwest of Richmond, which aligns with the locations of many park and ride lot recommendations.

Figure 7: Existing, Programmed, and Recommended Park and Ride Lots with Worker Density



<sup>2</sup> For analysis purposes, the working population served by park and ride lots includes employed people that live within three miles of park and ride lots.



## Environmental Justice Populations

All existing, programmed and recommended park and ride lots are shown in **Figure 8** overlaid on a base map of the concentration of environmental justice (EJ) populations. The EJ population concentration is based on an index considering individuals with disabilities, low-income households, elderly populations, limited English proficiency, non-white or Hispanic populations, and low vehicle ownership households. Concentrations are not weighted based on the number of people in a census tract and are compared to the study area average. The purpose of analyzing EJ concentrations is to provide fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to laws, regulations, and policies<sup>3</sup>. Using data from the 2016 American Community Survey 5-year estimates, each census tract in the study area was compared to the average for the study area. **Table 6** summarizes the EJ analysis for the study area. Seven of ten existing or programmed lots are in areas with “highest” or “high” amounts of EJ populations. Recommended lot locations are more evenly distributed among the EJ densities while still having significant investment in higher EJ concentration areas.

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<sup>3</sup> <https://www.epa.gov/environmentaljustice>



Figure 8: Existing, Programmed, and Recommended Lots with Concentration of Environmental Justice (EJ) Population

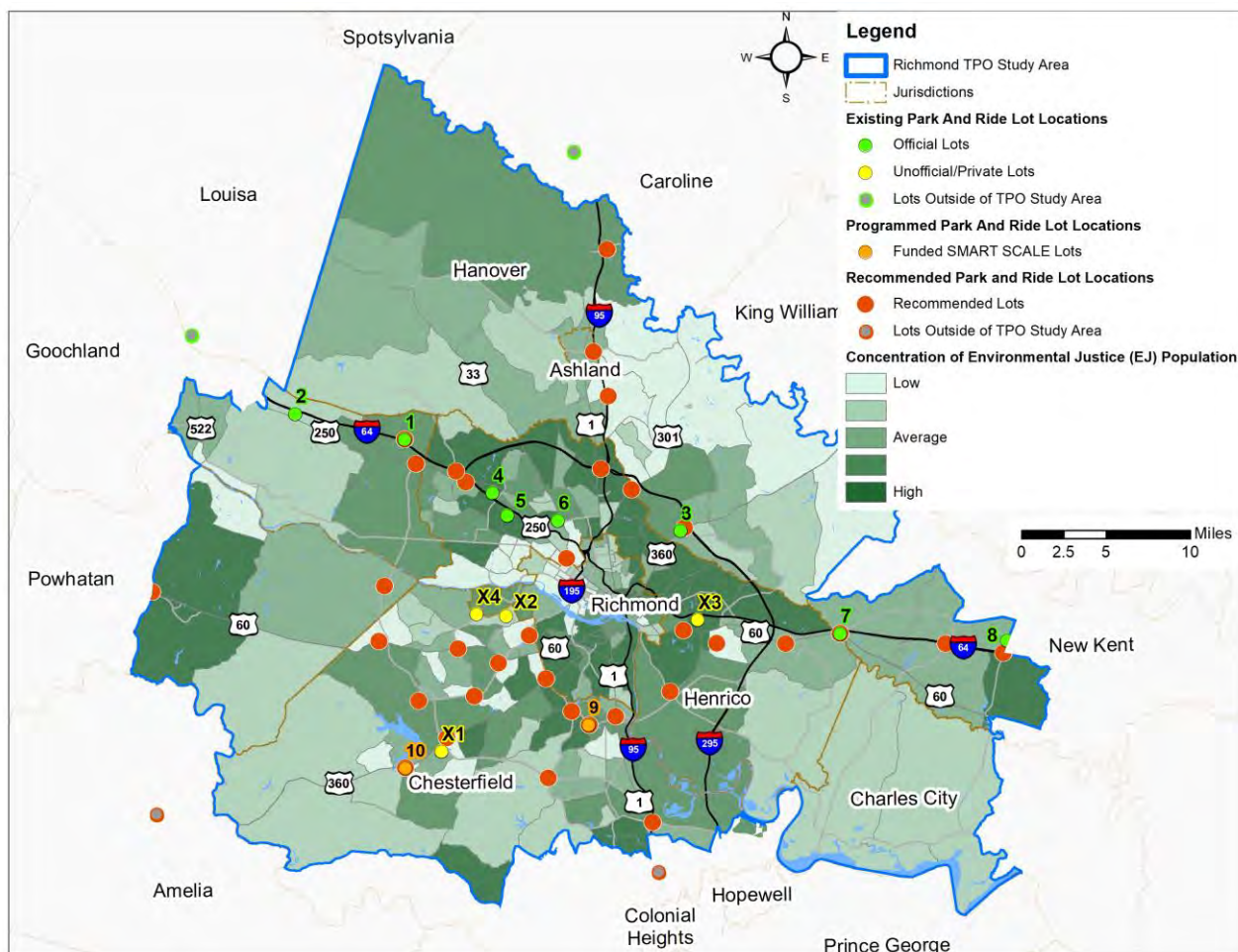


Table 6: Comparison of Park and Ride Lots to Concentration of EJ Populations

	EJ Population Concentration				
	Highest EJ Population	High EJ Population	Average EJ Population	Low EJ Population	Lowest EJ Population
Existing <sup>4</sup> and Programmed Lots	3	4	2	1	0
Recommended Lots	5	11	12	1	5
<b>Total</b>	<b>8</b>	<b>15</b>	<b>14</b>	<b>2</b>	<b>5</b>

<sup>4</sup> Does not included “unofficial” lots in analysis



## Next Steps

The existing conditions and existing needs discussed in this technical memorandum will form the basis for the identification and prioritization of future park and ride needs in the Richmond region. Future needs will consider potential growth scenarios for the Richmond region and the impact of these growth scenarios on the existing park and ride needs. Based on the identified existing and future park and ride needs, a methodology will be developed to prioritize and rank the region's critical needs. Future park and ride needs in the Richmond region will be summarized in Technical Memo II.

## Appendix

Table A: Recommended RRTPO Park and Ride Locations

Jurisdiction	Lot Description and Location
Chesterfield County	New lot at Rte 150 / Chippenham Pkwy & Rte 1 / Jefferson Davis Hwy
Chesterfield County	New lot at I-95 & Rte 10 / W Hundred Rd; Exit 61
Chesterfield County	New lot at Rte 288 / WW II Veterans Memorial Hwy & Rte 60 / Midlothian Tpke, near Watkins Center Pkwy
Chesterfield County	New lot near Rte 360 / Hull Street Rd & Rte 621 / Winterpock Rd
Chesterfield County	New lot at Rte 288 / WW II Veterans Memorial Hwy & Rte 10 / Iron Bridge Rd
Chesterfield County	New lot at Rte 76 / Powhite Pkwy & Rte 686 / Jahnke Rd
Chesterfield County	New lot on Arboretum Pkwy, near Rte 76 / Powhite Pkwy & Rte 60 / Midlothian Tpke
Chesterfield County	New lot at Rte 76 / Powhite Pkwy & Courthouse Rd
Chesterfield County	New lot at Rte 652 / Old Hundred Rd & Rte 754 / Charter Colony Pkwy
Chesterfield County	New lot on Restingway Ln, near Rte 150 / Chippenham Pkwy & Rte 637 / Hopkins Rd
Chesterfield County	New lot near Rte 150 / Chippenham Pkwy & Rte 10 / Iron Bridge Rd
Chesterfield County	New lot at Rte 150 / Chippenham Pkwy & Rte 360 / Hull Street Rd
Chesterfield County	New lot near Rte 360 / Hull Street Rd & Rte 288 / WW II Veterans Memorial Hwy, near Lonas Pkwy
Chesterfield County	New lot at Rte 60 / Midlothian Tpke & Rte 147 / Huguenot Rd
Goochland County	New lot at Rte 288 / WW II Veterans Memorial Hwy & Rte 250 / Broad Street Rd
Goochland County	Expansion to existing at NE lot at I-64 and Route 623/Ashland Rd; New lot at SW corner of interchange
Hanover County	New lot at I-295 & Rte 360 / Mechanicsville Tpke; Exit 37
Hanover County	New lot at I-95 & Rte 802 / Lewistown Rd; Exit 89
Hanover County	New lot near Rte 30 / Kings Dominion Blvd & Rte 688 / Doswell Rd, off of I-95; Exit 98
Henrico County	New lot at Rte 60 / Williamsburg Rd & Eastover Ave
Henrico County	New lot at Rte 895 / Pocahontas Pkwy & Rte 5 / New Market Rd
Henrico County	New lot at Rte 250 / W Broad St & Gathering Pl, near I-64; Exit 178
Henrico County	New lot at Rte 60 / Williamsburg Rd & Technology Blvd, off of I-295; Exit 2
Henrico County	New lot at Rte 1/301 / Chamberlayne Rd & E Parham Rd
Henrico County	New lot at S Airport Dr & Federal Rd
Henrico County	New lot at I-295 & Rte 1 / Brook Rd; Exit 43
Henrico County	New lot at I-64 & Rte 271 / Pouncey Tract Rd
Henrico County/City of Richmond	New lot at Rte 250 / W Broad St & Rte 33 / Staples Mill Rd
New Kent County	New lot at I-64 & Rte 609 / Emmaus Church Rd; Exit 211
New Kent County	New lot at I-64 & Rte 155 / N Courthouse Rd; Exit 214
New Kent County	Expand lot on Rte 60 / E Williamsburg Rd, near Rte 33 / New Kent Hwy, off I-64; Exit 205
Powhatan County	New lot near Rte 288 / WW II Veterans Memorial Hwy & Rte 711 / Huguenot Trl
Powhatan County	New lot at Rte 522 / Maidens Rd & Rte 60 / Anderson Hwy
Town of Ashland	New lot at I-95 & Rte 54 / Thompson St; Exit 92

# Richmond Regional Park and Ride Investment Strategy

Technical Memo II – Future Needs (Final)  
April 2019

Prepared By:

**Kimley»»Horn**

## Introduction

The Richmond Regional Transportation Planning Organization (RRTPO) identified the opportunity in the FY19 Unified Planning Work Program (UPWP) to assess park and ride needs and develop an investment strategy to advance park and ride projects at a regional level. The development of a regional park and ride investment strategy was specifically called for in the UPWP under the focal area of “expanding access to transit through multimodal connectivity and park and ride projects” and is intended to inform plan2045, the RRTPO’s next Long Range Transportation Plan.

The purpose of the resulting *Richmond Regional Park and Ride Investment Strategy* study is to form the foundation for leveraging park and ride lots in the Richmond region as part of a larger travel demand management strategy. This study will assess existing conditions and existing needs, identify potential future needs, prioritize and rank project recommendations, and develop implementation strategies to advance and promote park and ride projects in the Richmond region.

Previous statewide efforts have been conducted to identify and evaluate park and ride needs and this study will add a regional perspective and build upon these statewide studies. Relevant previous statewide studies include:

- The VDOT Statewide Park and Ride Study (2013) - conducted a statewide inventory of existing park and ride lots; identified recommendations for new, expanded, or closed park and ride lots; conducted a statewide survey to understand characteristics of park and ride users; and assisted VDOT with public outreach and awareness of park and ride facilities.
- The VDOT Park and Ride Investment Strategy (2016 and 2018 update) - compiled park and ride project recommendations from each of the VDOT districts, developed a project prioritization process, and scored and ranked projects to develop an investment strategy for each district.

The types, sizes, and features of a park and ride lot vary depending on many factors including demographics, land use, and travel patterns. Since these factors differ throughout Virginia, regional park and ride priorities can be fine-tuned within the statewide framework. Previous statewide studies evaluated park and ride lots using a single methodology statewide. This statewide methodology prioritized projects based on population density, traffic volumes, traffic congestion, and proximity to existing park and ride facilities. The *Richmond Regional Park and Ride Investment Strategy* will build upon these previous studies by identifying and validating park and ride projects to align with regional needs. The study will consider factors such as proximity to transit, demographics, land use, and travel patterns, in addition to factors considered in the statewide study. The desired outcome of the study is to develop a regional strategy for park and ride in the Richmond area and provide jurisdictions with the foundation and support to advance park and ride projects locally by prioritizing and better positioning projects for funding.

A Study Advisory Group (SAG) was formed for this study to help inform the development of the regional strategy for park and ride in the Richmond area. SAG members provided regional perspectives, participated in project meetings, reviewed technical memos, and provided feedback to help identify park and ride needs and develop project recommendations. SAG members included representatives from the following jurisdictions and agencies:

- Town of Ashland
- Charles City County
- Chesterfield County
- Goochland County
- Hanover County
- Henrico County
- New Kent County
- Powhatan County
- City of Richmond
- Greater Richmond Transit Company (GRTC)
- RideFinders, Inc.
- Virginia Department of Rail and Public Transportation (DRPT)
- Virginia Department of Transportation (VDOT)

This technical memo summarizes the projected future needs and needs evaluation methodology for park and ride in the Richmond region. This is the second of five technical memorandums to be completed as part of the *Richmond Regional Park and Ride Investment Strategy* study:

- Technical Memo I – Existing Conditions and Existing Needs
- **Technical Memo II – Future Needs**
- Technical Memo III – Prioritization and Ranking of Project Recommendations
- Technical Memo IV – Implementation Strategy
- Technical Memo V – Funding Needs and Potential Funding Sources



# Park and Ride Needs Evaluation Methodology

## Purpose and Overview of Needs Evaluation

The purpose of the park and ride needs evaluation was to identify and evaluate potential locations for park and ride investments that align with regional needs. The methodology was highly data-driven but also allowed for adjustments to reflect the added value associated with certain locations that were not fully accounted for through the data analysis. This resulted in two primary phases of the needs evaluation methodology:

- **Phase I – Baseline Census Tract Scoring**
- **Phase II – Added-Value Adjustments**

In Phase I, scores were calculated for each census tract in the Richmond TPO for several data-driven evaluation factors. These factors and the specific evaluation methodologies are described in more detail in the following sections. The scores of all evaluation factors for a given census tract were combined into a single Phase I score and used to identify the initial high-priority park and ride investment areas.

In Phase II, additional high-priority park and ride investment areas were identified to account for added-value factors (factors that indicated a demonstrated need for park and ride in the area but may not have been fully accounted for through the data-driven methodology of Phase I). Added-value factors and additional high-priority locations were identified in collaboration with the SAG.

## Needs Evaluation Goal Areas

For Phase I, park and ride needs were scored based on three goal areas. Each of these goal areas was comprised of two or more evaluation factors that could be measured using readily available data. A summary of the goal areas and factors in each goal area is provided below.

- **Goal 1: Multimodal Connectivity** – Provide an integrated multimodal network
  - Proximity to Existing Transit
  - Proximity to Proposed Transit
  - Proximity to Vanpool Origins
- **Goal 2: Access** – Serve the most people who can benefit from park and ride
  - Density of Working Population
  - Anticipated Population Growth
  - Single Occupancy Vehicle (SOV) Commuting Mode Split
- **Goal 3: Congestion Mitigation** – Reduce the demand on the roadway network
  - Commute Time
  - Priority Investment Area (PIA) as defined by the *VDOT Park and Ride Investment Strategy*

Each of the factors and the specific evaluation measurements are described in more detail in following sections.

## Needs Evaluation Factor Scoring

In Phase I, each census tract in the study area was scored according to the evaluation factors described below. The following briefly summarizes the steps involved in the scoring process:

1. **Raw Score** – A raw score was calculated for each census tract for each factor (such as the working population density of a specific census tract).
2. **Factor Score** – Each census tract raw score was converted to a score out of 10 for each evaluation factor. The score out of 10 was based on a comparison of an individual census tract's raw score to the maximum raw score for all census tracts.
3. **Goal Area Score** – All the factor scores within a goal area were averaged together to get a score out of 10 for each goal area.
4. **Overall Score** – The three goal area scores were added together to get a total overall score out of 30 points.

**Table 1** summarizes this scoring process. In this process each goal area was weighted equally in the overall score.

Table 1: Phase I Baseline Evaluation Scoring Summary (Census Tract Basis)

Goal Area	Factor	Max Factor Score	Max Goal Area Score	Max Overall Score
Multimodal Connectivity	Proximity to Existing Transit	10	10	30
	Proximity to Proposed Transit	10		
	Proximity to Vanpool Origins	10		
Access	Density of Working Population	10	10	
	Anticipated Population Growth	10		
	SOV Commuting Mode Split	10		
Congestion Mitigation	Commute Time	10	10	
	Priority Investment Area (PIA)	10		
		Factor scores averaged for each Goal Area	→	Goal Area scores added to get Overall Score

The maps in the following sections present the factor scores (step 2) for each of the evaluation factors as well as the overall score (step 4). These maps illustrate the census tracts scores, relative to each other, for individual factors and in aggregate for all goal areas.



## Park and Ride Needs Evaluation Results

### Phase I – Baseline Census Tract Scoring

The following sections describe each of the three goal areas and the associated evaluation factors. The tables in each section describe the factor, how it was measured, the data source, and also provide additional notes for clarification. The maps show the relative Phase I census tract scores for each of the evaluation factors.

#### Goal Area 1: Multimodal Connectivity

Park and ride lots are key elements in providing an integrated multimodal network. The three evaluation factors in this goal area aim to identify areas that would provide connections to existing transit, proposed transit routes, and locations at which vanpools originate. These represent potential ways that park and ride lots provide additional travel choices and support alternative modes of travel. **Table 2** summarizes the three multimodal connectivity evaluation factors.

Table 2: Multimodal Connectivity Evaluation Factors

Factor	Measurement	Data Source	Notes
<b>Proximity to Existing Transit</b>	Number of existing transit service termini	GRTC Existing Weekday/Saturday Route Termini (including Pulse BRT)	Score is based on the number of routes that terminate in a given census tract.
<b>Proximity to Proposed Transit</b>	Number of proposed transit service termini	Proposed Richmond Transit Vision Plan Route Termini	Score is based on the number of routes that terminate in a given census tract.
<b>Proximity to Vanpool Origins</b>	Number of vanpool passengers originating	Vanpool Origin Location Data provided by RideFinders (October 2018).	Score based on the number of vanpool passengers originating in a given census tract to prioritize based on serving the most people. Note: The number of passengers is approximate and based on October 2018 data. Some (3 out of 81) vanpools did not have ridership data available.

For this goal area, census tracts received a higher score based on the number of connections (the number of transit route termini or the number of estimated vanpool passengers) in the census tract. A survey conducted in 2011 for the *VDOT Statewide Park and Ride Study* showed that approximately 90% of park and rider users in Central Virginia use park and ride lots as a location to park their vehicle and ride the bus or to carpool/vanpool. As a result, route termini were considered to identify potential lots at the “end-of-the-line”. **Figure 1**, **Figure 2**, and **Figure 3** illustrate the Phase I evaluation results for the multimodal connectivity evaluation factors.

Figure 1: Proximity to Existing Transit

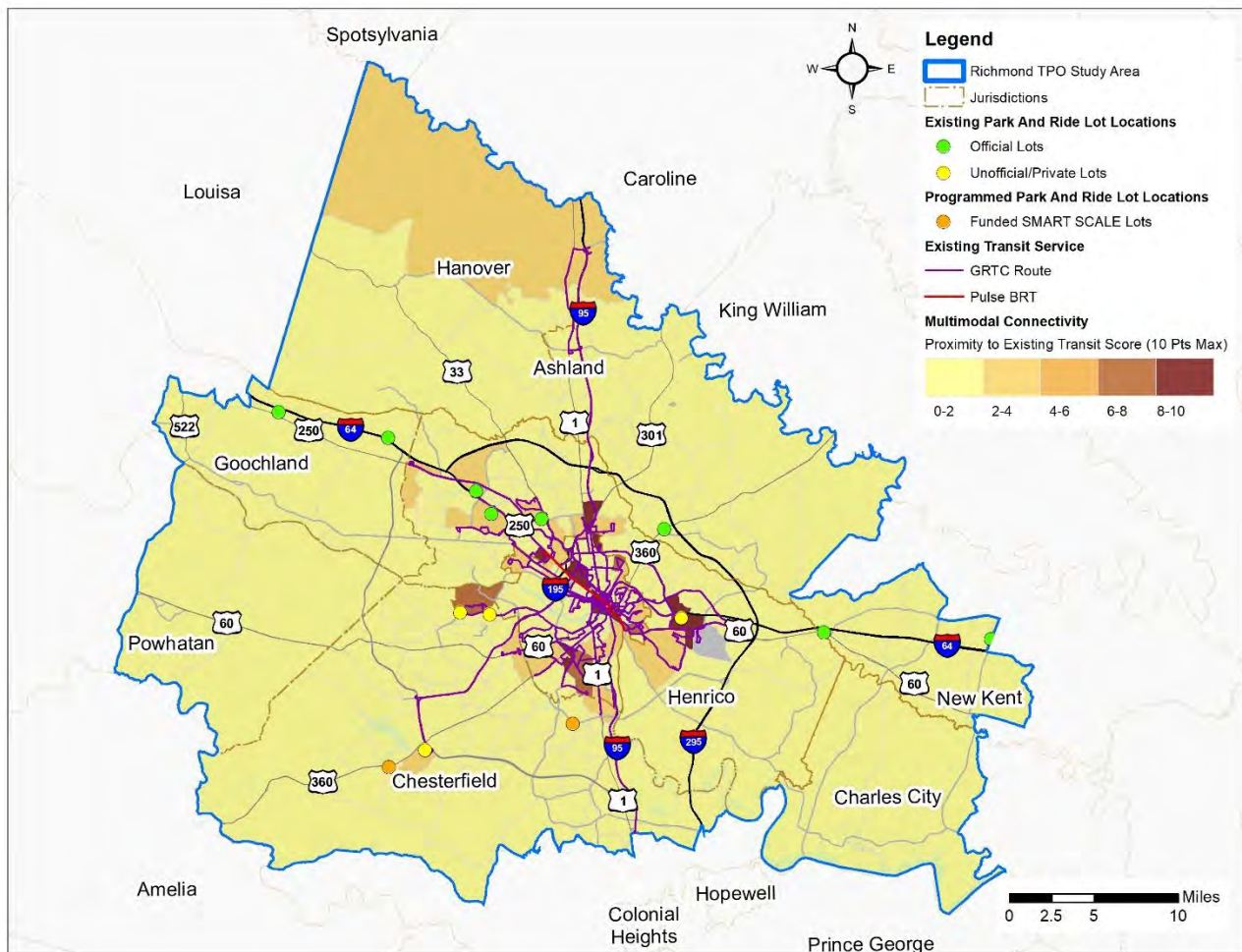


Figure 2: Proximity to Proposed Transit

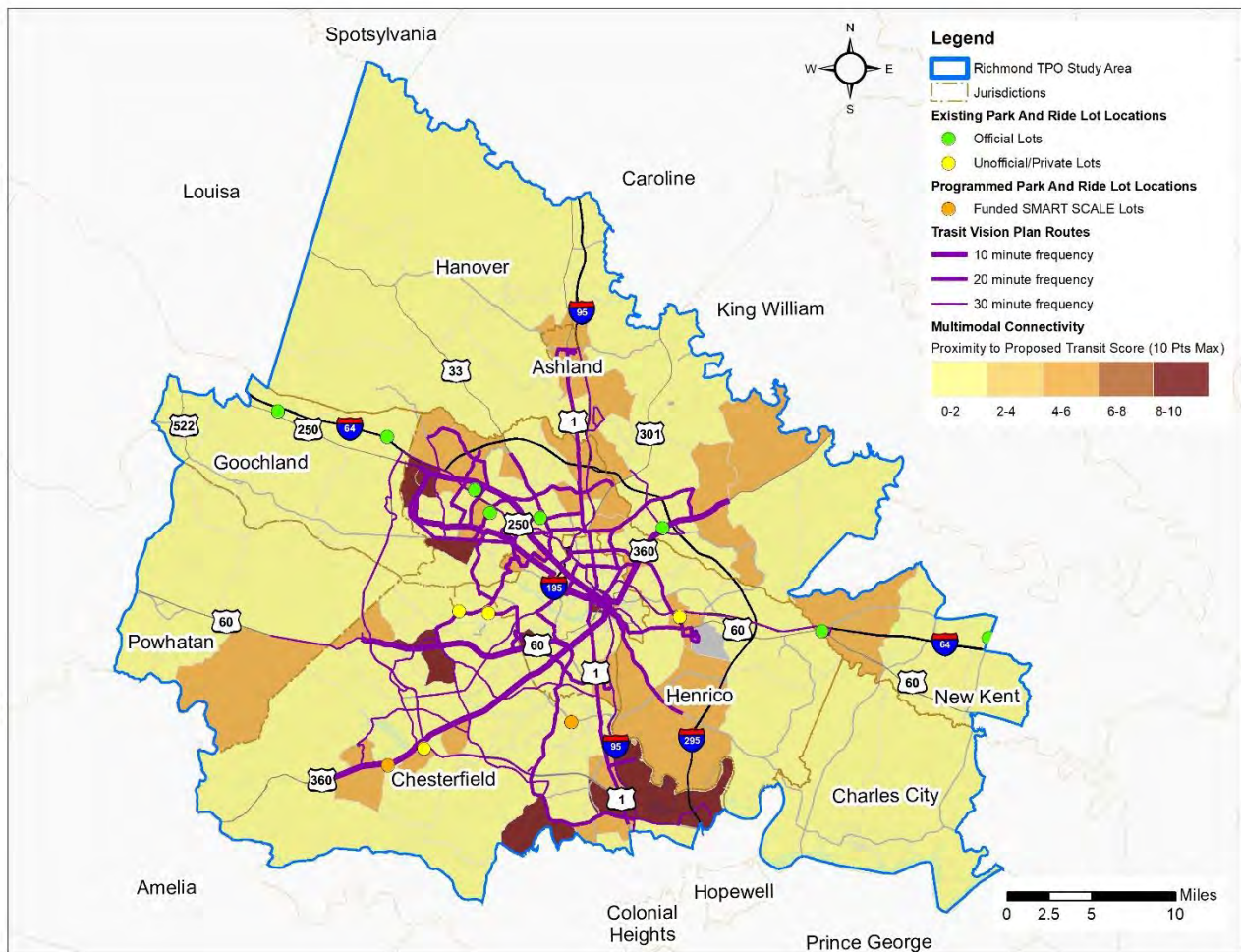
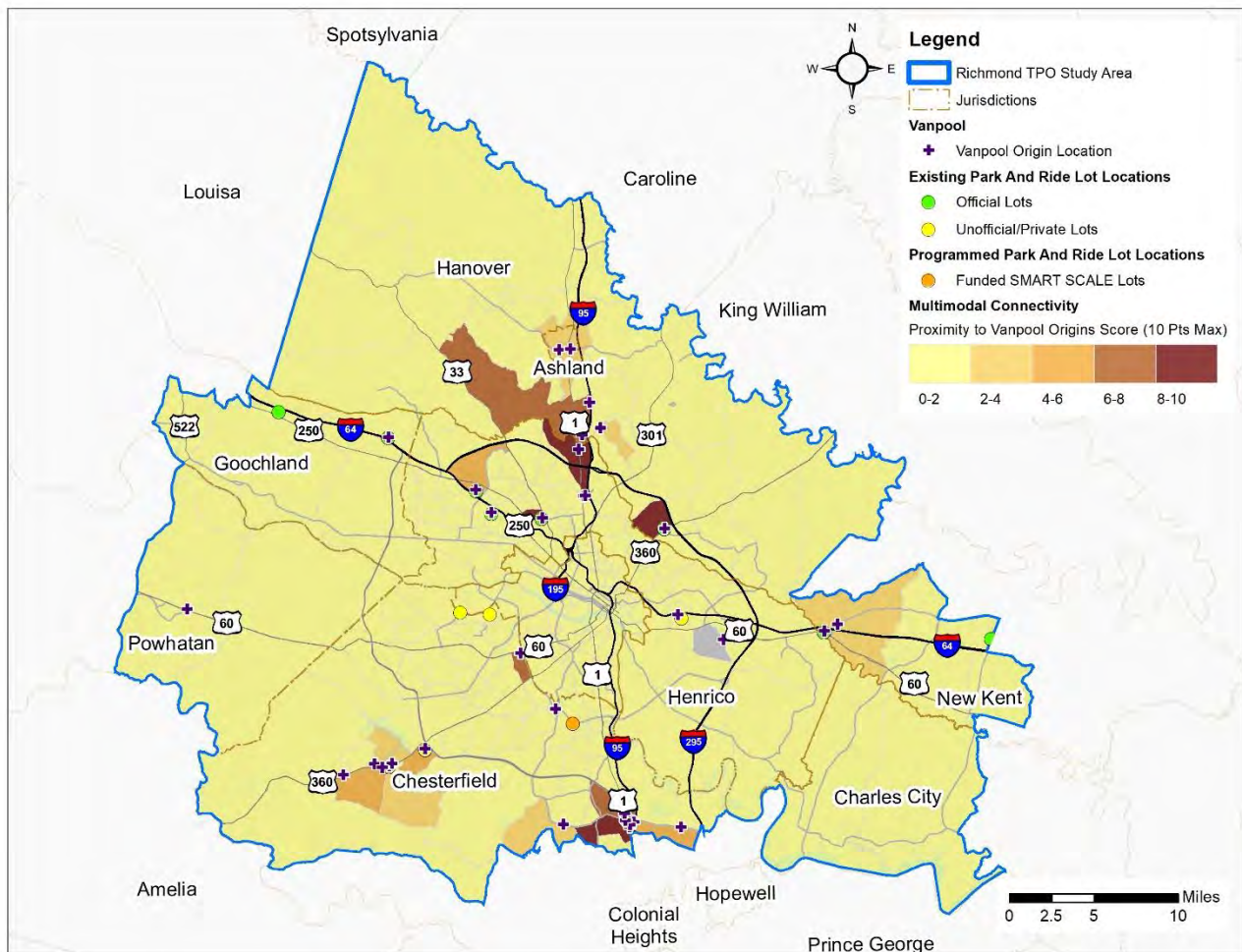




Figure 3: Proximity to Vanpool Origins



## Goal Area 2: Access

The access goal area strives to identify areas in which park and ride investment would serve locations with the greatest number of people who need access to transportation options through park and ride lots. The three evaluation factors in this goal area identify the areas where the highest densities of workers live, the areas forecasted to experience significant population growth in the future, and the areas with the highest number of people who commute in single occupancy vehicles. **Table 3** summarizes the three evaluation factors included in the access goal area. **Figure 4**, **Figure 5**, and **Figure 6** illustrate the Phase I evaluation results for these factors.

Table 3: Access Evaluation Factors

Factor	Measurement	Data Source	Notes
<b>Density of Working Population</b>	Working population (all employed persons) per square mile (by census tract)	American Community Survey: 2012-2016 5-Year Estimates (Table S2301)	Score is based on existing conditions analysis. Same data shown in Worker Density map completed for Tech Memo I. The average density in the study area is approximately 1,660 employed persons per square mile.
<b>Anticipated Population Growth</b>	Forecast residential growth percentage	RRTPO Population Forecasts by TAZ, 2012 and 2040 (October 2015)	Score is based on forecast growth within a TAZ. The same score is applied to all census tracts within a TAZ. The average growth in the study area from 2012 to 2040 is approximately 37%. The darkest colored areas for this factor highlight areas that are forecast to grow at a rate more than double the average rate (on a percentage basis).
<b>Single-Occupant Vehicle (SOV) Commuting Mode Split</b>	Percentage of employed workers that drive alone to work	American Community Survey: 2012-2016 5-Year Estimates (Table S0801)	Score is based on percentage of people who drive alone to work. The average percentage in the study area is approximately 80%. This factor highlights areas where the largest percentage of workers drive alone to work. Areas with higher percentages of people who drive alone may represent potential target markets for travel behavior shift.

Figure 4: Density of Working Population

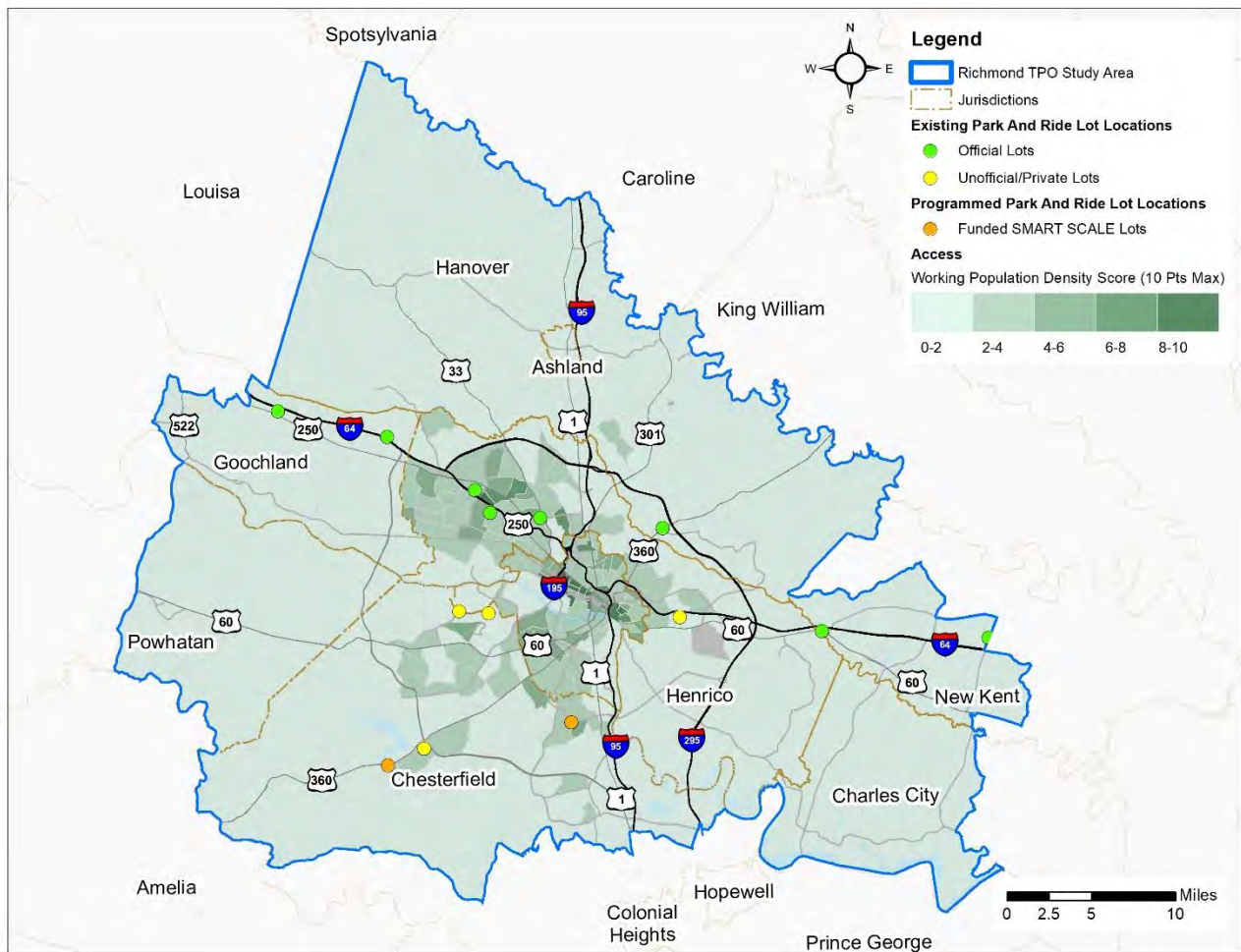




Figure 5: Anticipated Population Growth

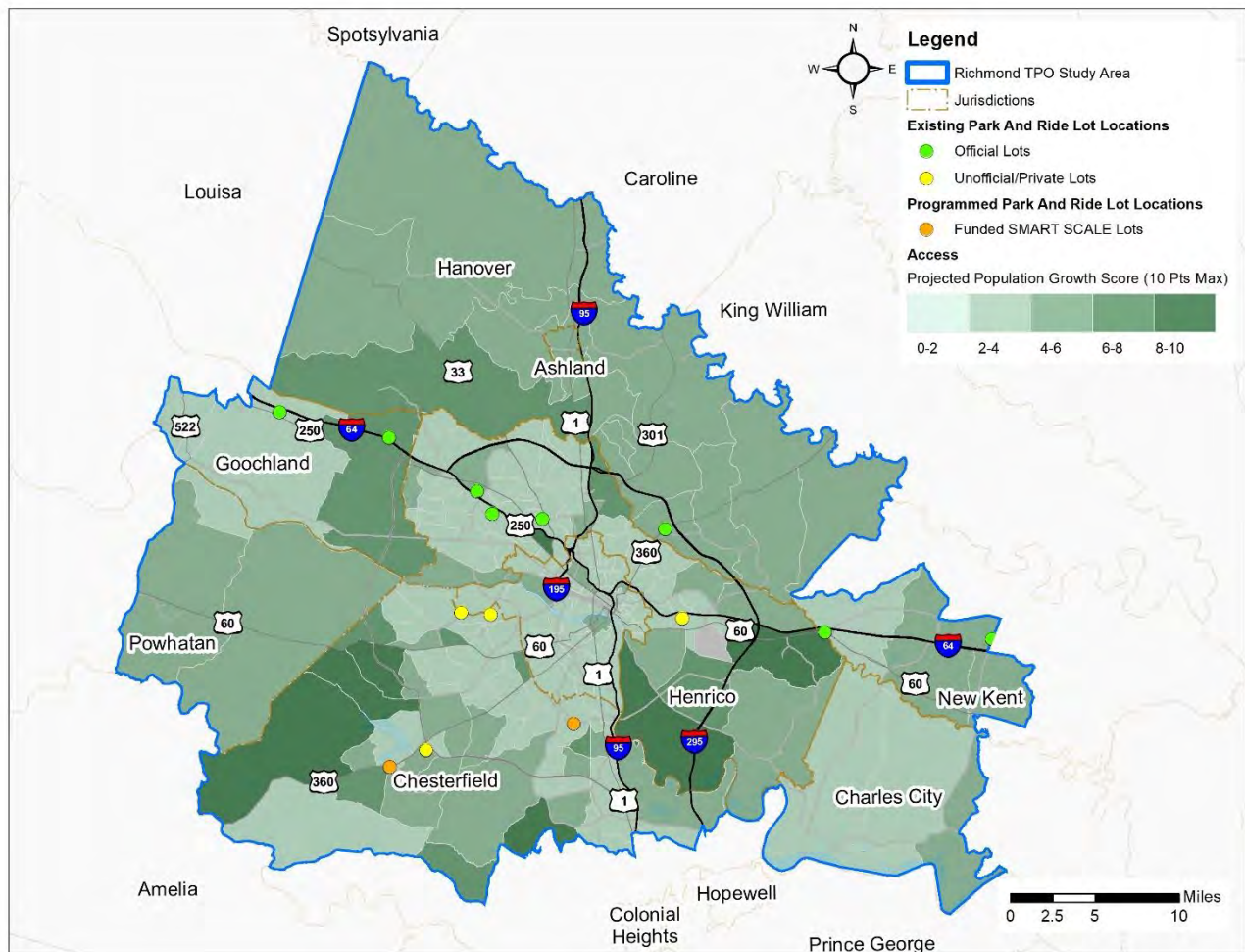
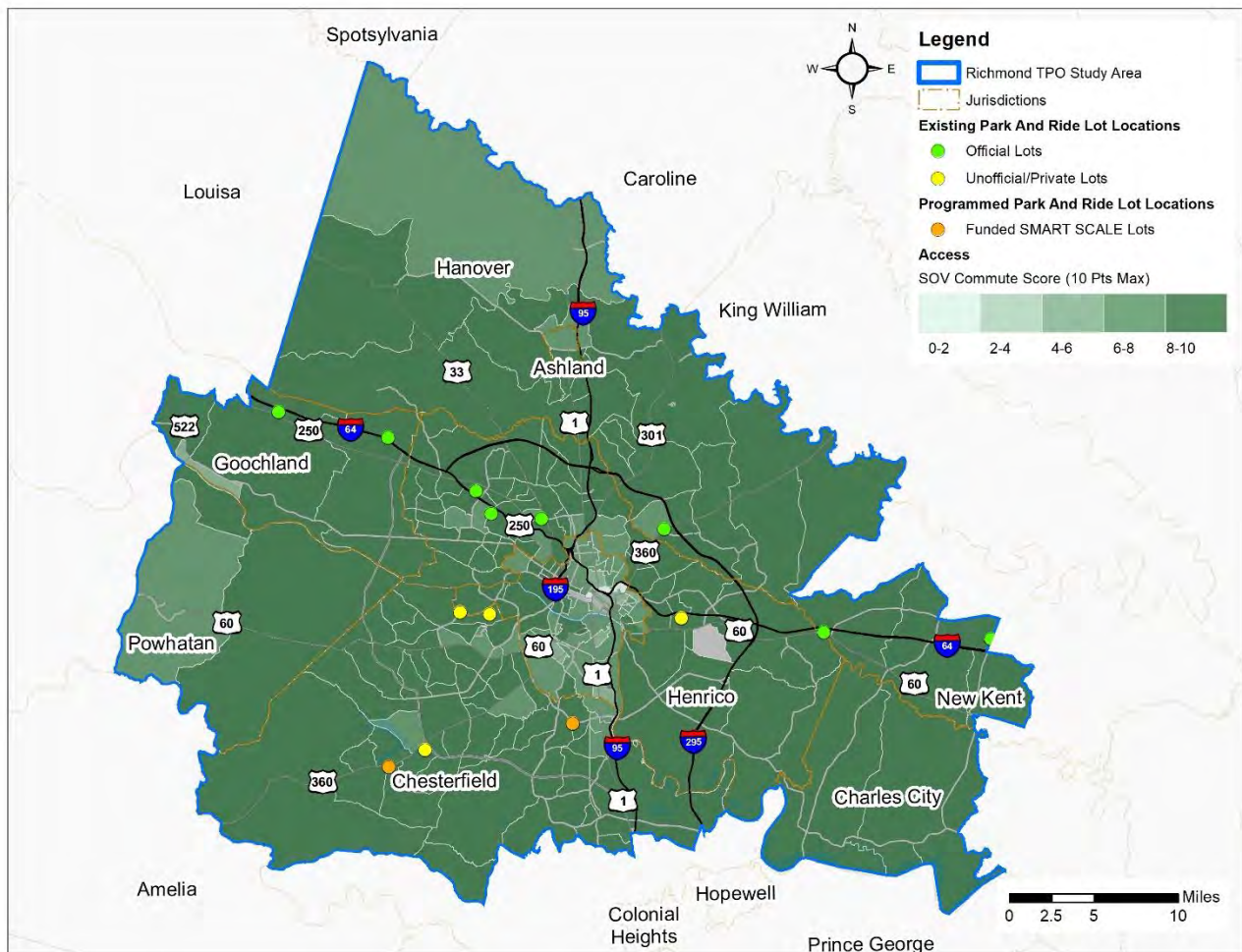


Figure 6: SOV Commuting Mode Split





### Goal Area 3: Congestion Mitigation

The third goal area, congestion mitigation, focuses on reducing demand on the roadway network. The commute time evaluation factor identifies areas in which workers are traveling longer than average times to work. The Priority Investment Area (PIA) evaluation factor accounts for locations that were identified as part of the previous planning effort (VDOT Park and Ride Investment Strategy) based on the convergence of population density, traffic volumes, and proximity to existing park and ride facilities. PIAs were developed to identify locations in each VDOT district where park and ride lots did not already exist but offer the potential to serve greater numbers of people and have larger impacts on reducing congestion. **Table 4** summarizes the two congestion mitigation evaluation factors. **Figure 7** and **Figure 8** illustrate the Phase I evaluation results for these factors.

Table 4: Congestion Mitigation Evaluation Factors

Factor	Measurement	Data Source	Notes
<b>Commute Time</b>	Mean travel time to work (by census tract)	American Community Survey: 2012-2016 5-Year Estimates (Table S0801)	Score is based on mean travel time to work for a census tract. This factor helps to identify commuters with long commutes who would be more likely to use park-and-ride lots, including both commuters traveling long distances as well as commuters traveling shorter distances along congested routes. The mean commute time in the study area is approximately 24 minutes.
<b>Priority Investment Area (PIA)</b>	Percentage of census tract located within 3-mile buffer PIA	GIS analysis using the 3-mile buffer polygon created by previous VDOT efforts	Score is based on 3-mile buffer PIAs developed for VDOT Park and Ride Investment Strategy. Scoring reflects the percentage of the census tract that overlaps with a 3-mile PIA buffer.

Figure 7: Commute Time

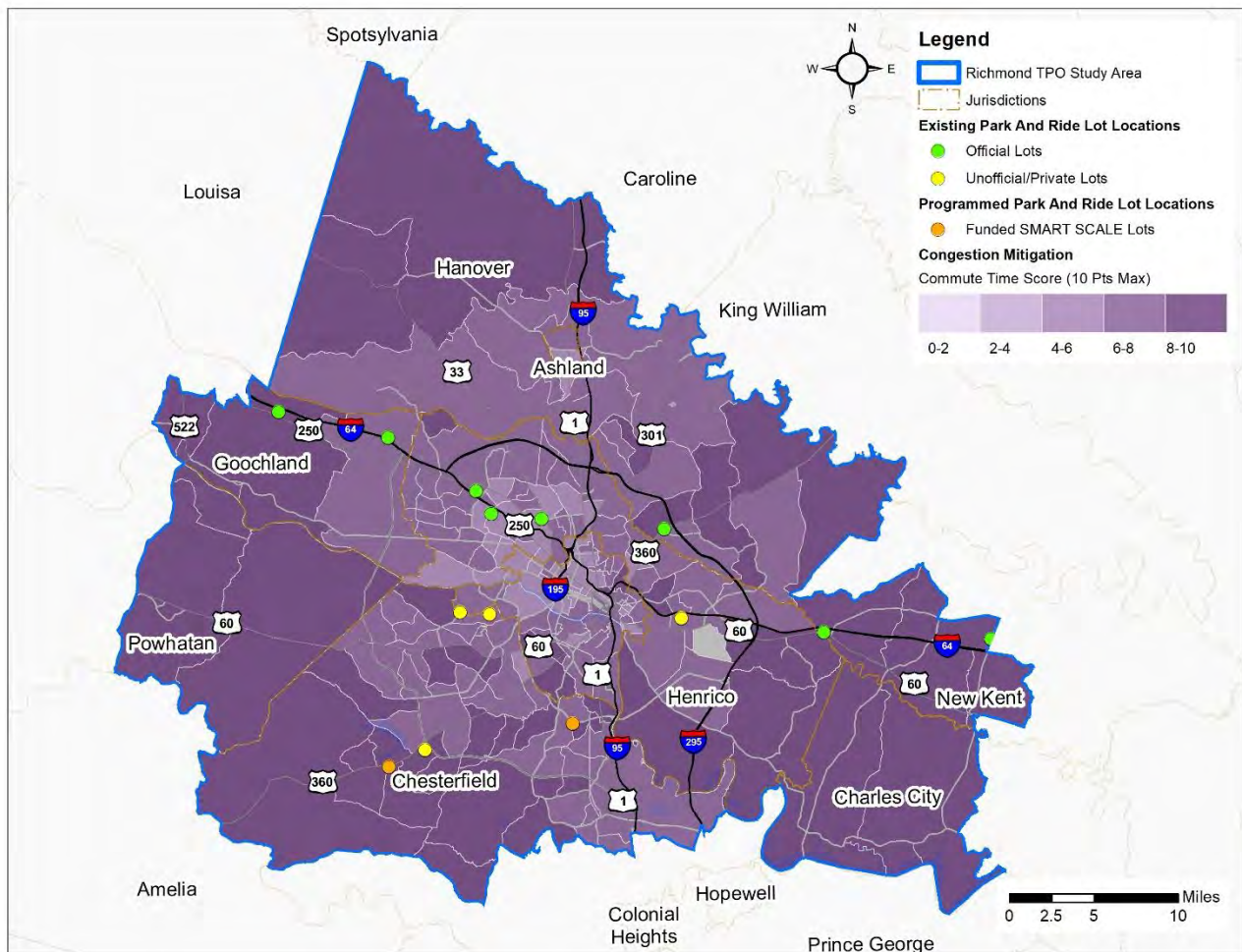
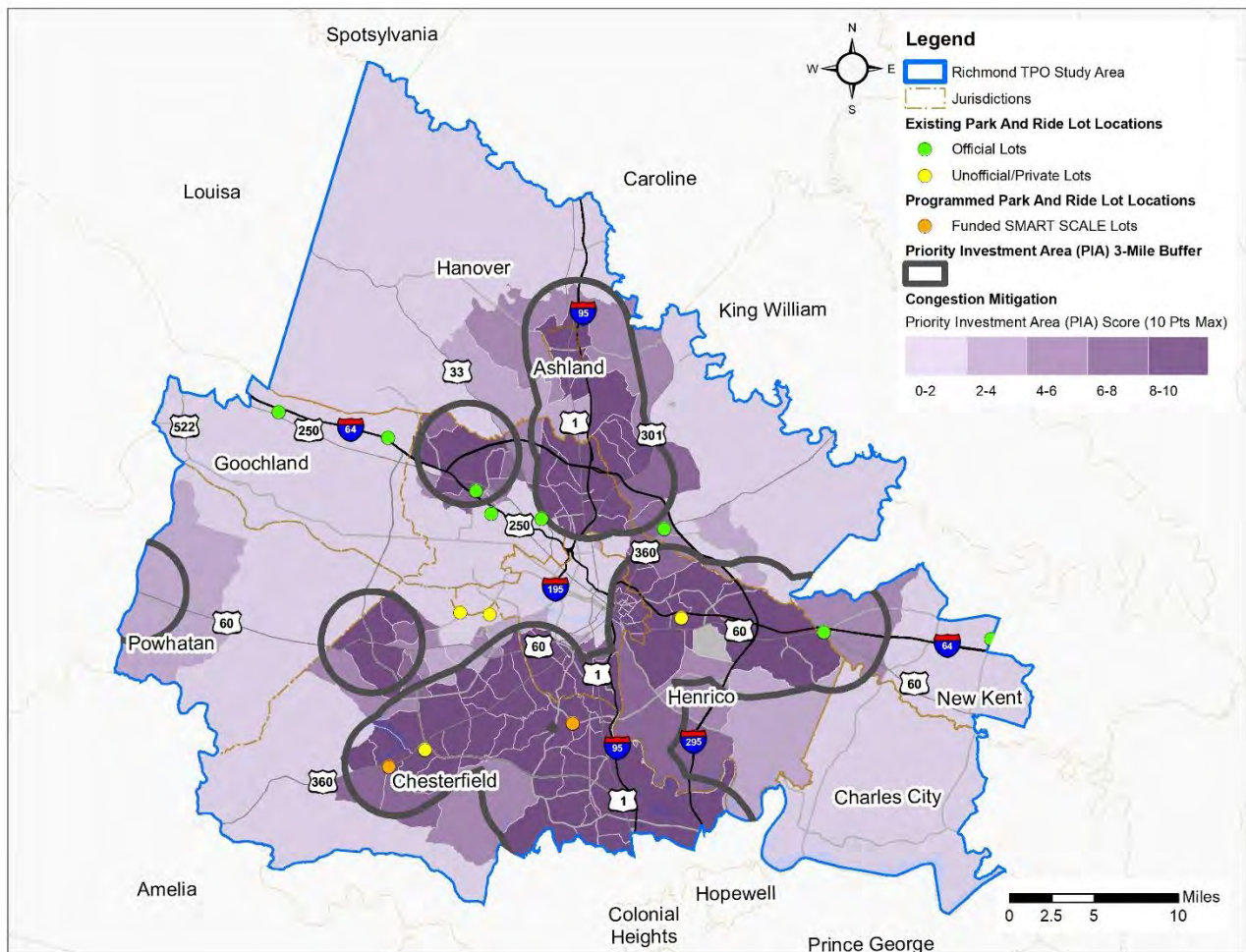


Figure 8: Priority Investment Areas





## Overall Phase I Needs

As described in the scoring section, for each census tract, the three goal area scores (out of 10) were added together to get an overall score for Phase I (out of 30). The results of the Phase I evaluation are shown in **Figure 9** and the census tracts with the highest scores are highlighted in **Figure 10**.

Figure 9: Phase I Evaluation Baseline Scoring

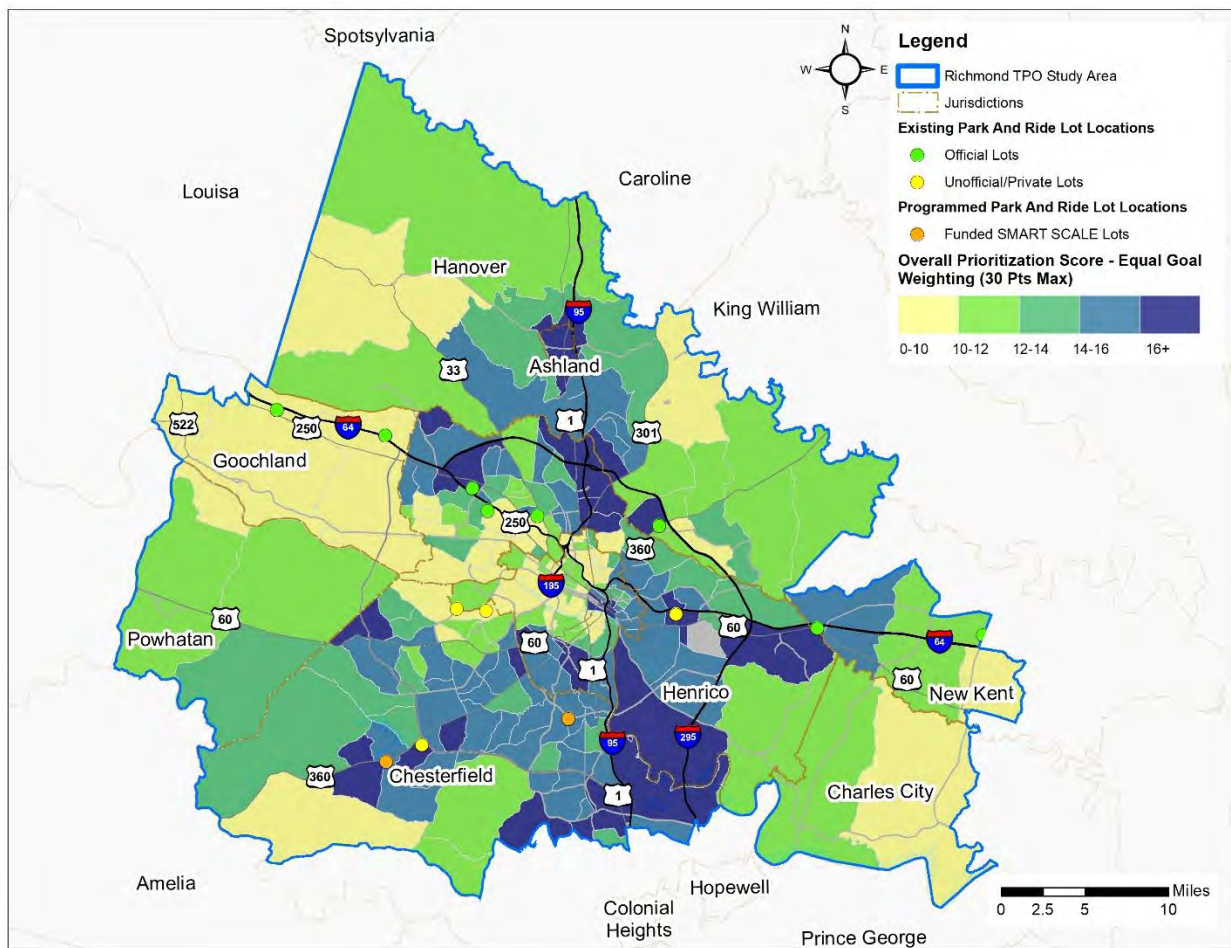
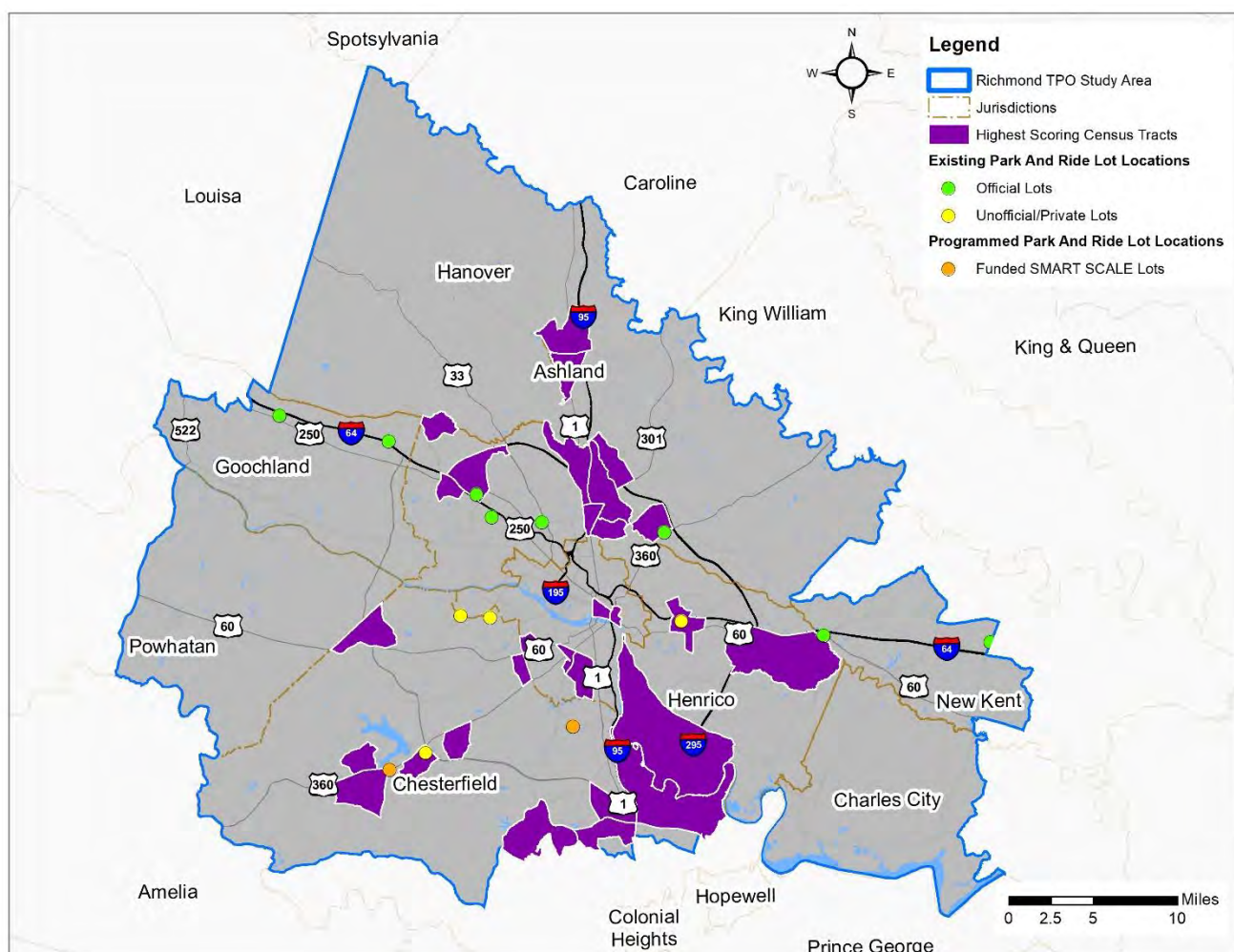


Figure 10: Phase I Highest Scoring Census Tracts



## Phase II – Added-Value Adjustments

During the January 29, 2019 meeting, the SAG identified a list of high-priority park and ride investment areas for consideration as added-value locations. Areas on this list included the following:

- Major commuter corridors and roadway interchanges
- Priority transit locations
- Locations near unofficial lots
- Locations near where vanpools had to be relocated
- Locations where existing park and ride lots are currently at or approaching capacity (>80% full)

This list was then compared to the identified Phase I needs to determine where gaps existed. High-priority locations that did not fall into or adjacent to a Phase I needs area were reviewed as potential



added-value locations. The following two areas were recognized as added-value locations because they demonstrated a need in areas that did not fall into or adjacent to a Phase I needs area:

- Area near Pulse BRT western termini
  - Pulse ridership shows a demonstrated need for an official park and ride lot in this area
- Area near unofficial park and ride lots at Bon Air Baptist Church and Huguenot United Methodist Church
  - Usage of the unofficial lots, liability concerns by private lot owners, and concerns about congestion from surrounding neighbors demonstrate need for official park and ride lot in this area

### Overall Regional Park and Ride Needs Areas

The combined results of the Phase I and Phase II needs evaluation are shown in **Figure 11**. In many cases, several high-needs census tracts were clustered together in the same geographic area. For these areas, the multiple census tracts in close proximity were combined into one “needs area”.

**Table 5** presents the needs areas with their general location.

Figure 11: Regional Park and Ride Needs Areas

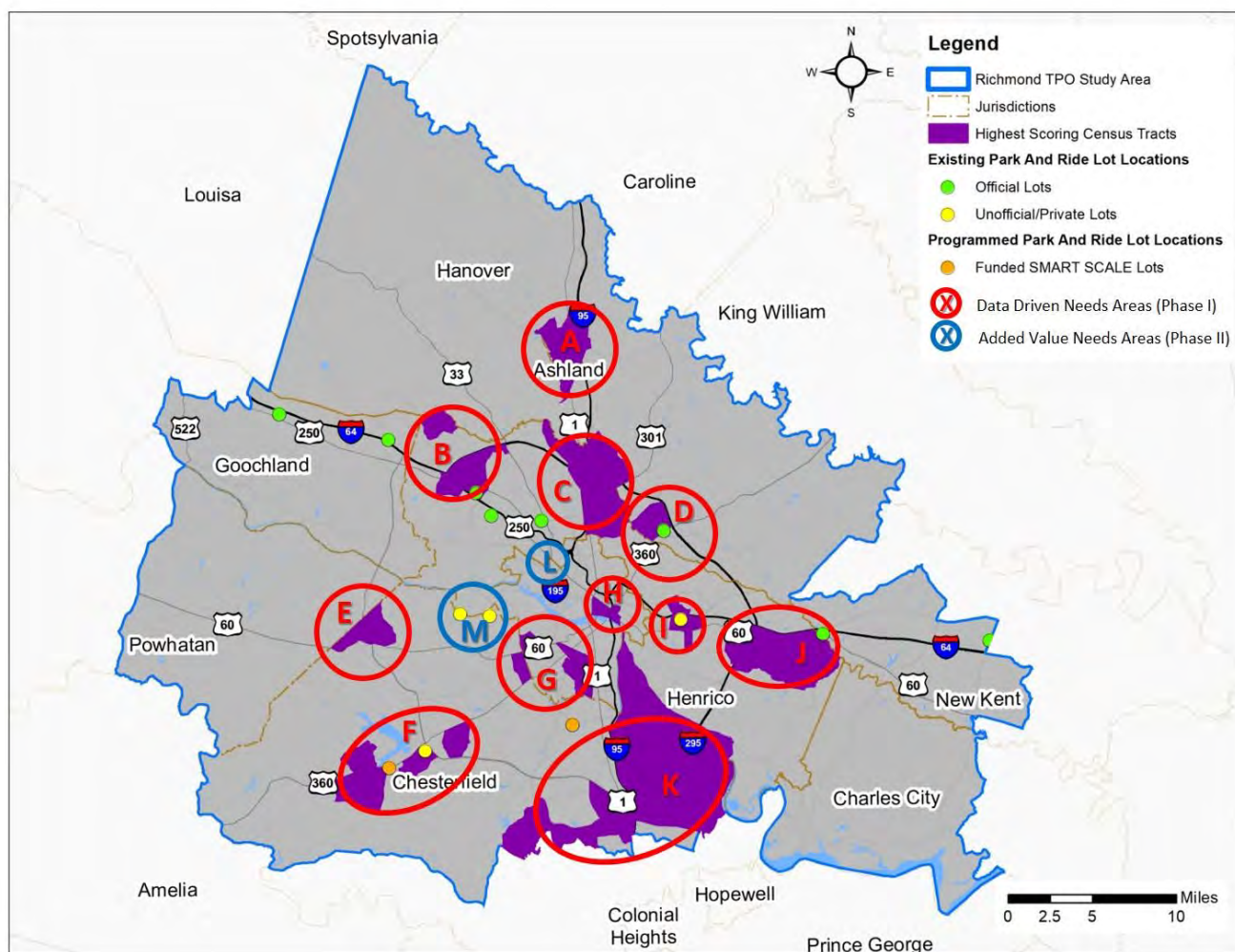


Table 5: Regional Park and Ride Needs Areas

Phase	Map ID	Needs Area	Jurisdiction(s)
I - Data Driven Needs	A	Ashland	Hanover, Ashland
	B	I-64 at I-295	Henrico
	C	I-95 at I-295	Henrico, Hanover
	D	I-295 at US 360	Hanover, Henrico
	E	US 60 at Route 288	Chesterfield, Powhatan
	F	US 360 at Route 288	Chesterfield
	G	Chippenham Parkway	Chesterfield, Richmond
	H	East of Downtown	Richmond
	I	I-64/US 60 at S. Laburnum Road	Henrico
	J	I-295 at US 60	Henrico, New Kent
	K	Route 10/Route 288 at I-95/I-295	Chesterfield, Henrico
II - Added-Value	L	US 250 at Willow Lawn/Staples Mill	Henrico, Richmond
	M	Huguenot Road at Forest Hill Avenue	Chesterfield

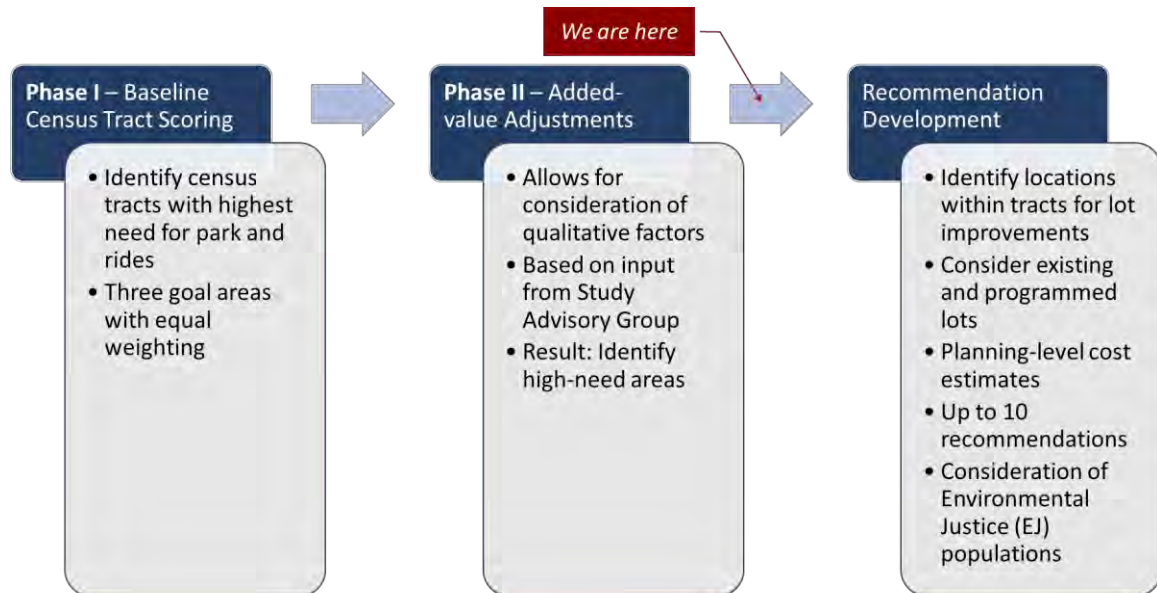
## Next Steps

In the next phase of this project, the high-priority park and ride needs areas will be further examined to identify locations within the areas of greatest need for specific project recommendations. SAG members will be asked to support this process by identifying potential locations based on local knowledge of the area as well as the availability of public-owned land to ensure more cost-effective solutions. As part of this recommendations process, the locations of existing and programmed park and ride lots will be considered to determine if the identified need is already met or if an existing lot may be a candidate for expansion. In addition, concentrations of environmental justice populations (as described in Tech Memo I, Figure 8) will also be considered within the areas recommended for park and ride lots to ensure individual access enhancements, such as bicycle and pedestrian connections, signalization, and other infrastructure, are included in project recommendations where appropriate.

An overview of the evaluation of needs and project recommendation development process is illustrated in **Figure 12**.



Figure 12: Needs Evaluation and Recommendation Development Process



# Richmond Regional Park and Ride Investment Strategy

Technical Memo III – Draft  
May 2019

DRAFT (no SAG revisions)

Prepared By:

**Kimley»»Horn**

## Introduction

The Richmond Regional Transportation Planning Organization (RRTPO) identified the opportunity in the FY19 Unified Planning Work Program (UPWP) to assess park and ride needs and develop an investment strategy to advance park and ride projects at a regional level. The development of a regional park and ride investment strategy was specifically called for in the UPWP under the focal area of “expanding access to transit through multimodal connectivity and park and ride projects” and is intended to inform plan2045, the RRTPO’s next Long Range Transportation Plan.

The purpose of the resulting *Richmond Regional Park and Ride Investment Strategy* study is to form the foundation for leveraging park and ride lots in the Richmond region as part of a larger travel demand management strategy. This study will assess existing conditions and existing needs, identify potential future needs, develop project recommendations, and identify implementation strategies to advance and promote park and ride projects in the Richmond region.

Previous statewide efforts have been conducted to identify and evaluate park and ride needs and this study will add a regional perspective and build upon these statewide studies. Relevant previous statewide studies include:

- The VDOT Statewide Park and Ride Study (2013) - conducted a statewide inventory of existing park and ride lots; identified recommendations for new, expanded, or closed park and ride lots; conducted a statewide survey to understand characteristics of park and ride users; and assisted VDOT with public outreach and awareness of park and ride facilities.
- The VDOT Park and Ride Investment Strategy (2016 and 2018 update) - compiled park and ride project recommendations from each of the VDOT districts, developed a project prioritization process, and scored and ranked projects to develop an investment strategy for each district.

The types, sizes, and features of a park and ride lot vary depending on many factors including demographics, land use, and travel patterns. Since these factors differ throughout Virginia, regional park and ride priorities can be fine-tuned within the statewide framework. Previous statewide studies evaluated park and ride lots using a single methodology statewide. This statewide methodology prioritized projects based on population density, traffic volumes, traffic congestion, and proximity to existing park and ride facilities. The *Richmond Regional Park and Ride Investment Strategy* will build upon these previous studies by identifying and validating park and ride projects to align with regional needs. The study will consider factors such as proximity to transit, demographics, land use, and travel patterns, in addition to factors considered in the statewide study. The desired outcome of the study is to develop a regional strategy for park and ride in the Richmond area and provide jurisdictions with the foundation and support to advance park and ride projects locally by prioritizing and better positioning projects for funding.

A Study Advisory Group (SAG) was formed for this study to help inform the development of the regional strategy for park and ride in the Richmond area. SAG members provided regional perspectives, participated in project meetings, reviewed technical memos, and provided feedback to help identify park and ride needs and develop project recommendations. SAG members included representatives from the following jurisdictions and agencies:

- Town of Ashland
- Charles City County
- Chesterfield County
- Goochland County
- Hanover County
- Henrico County
- New Kent County
- Powhatan County
- City of Richmond
- Greater Richmond Transit Company (GRTC)
- RideFinders, Inc.
- Virginia Department of Rail and Public Transportation (DRPT)
- Virginia Department of Transportation (VDOT)

This technical memo summarizes the recommendations for park and ride in the Richmond region. This is the third of five technical memorandums to be completed as part of the *Richmond Regional Park and Ride Investment Strategy* study:

- Technical Memo I – Existing Conditions and Existing Needs
- Technical Memo II – Future Needs
- **Technical Memo III – Project Recommendations**
- Technical Memo IV – Implementation Strategy
- Technical Memo V – Funding Needs and Potential Funding Sources

## Park and Ride Recommendation Development

### Overview of Recommendation Development Process

Park and ride project recommendations were developed in collaboration with the SAG members for the park and ride needs areas identified in Phase I and II of the needs evaluation process (and described in Technical Memo II). **Figure 1** provides an overview of the needs evaluation and recommendations development process and **Figure 2** shows the regional park and ride needs areas identified during both phases of the needs evaluation.

Figure 1: Needs Evaluation and Recommendation Development Process

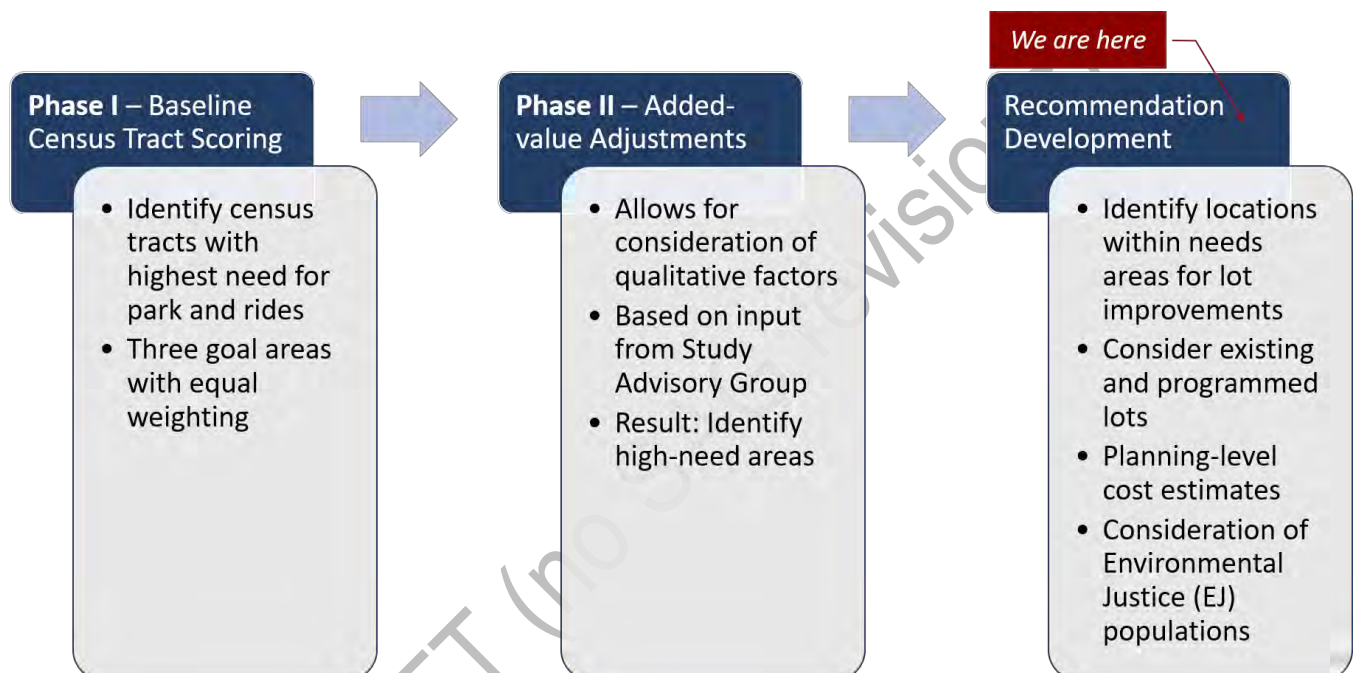
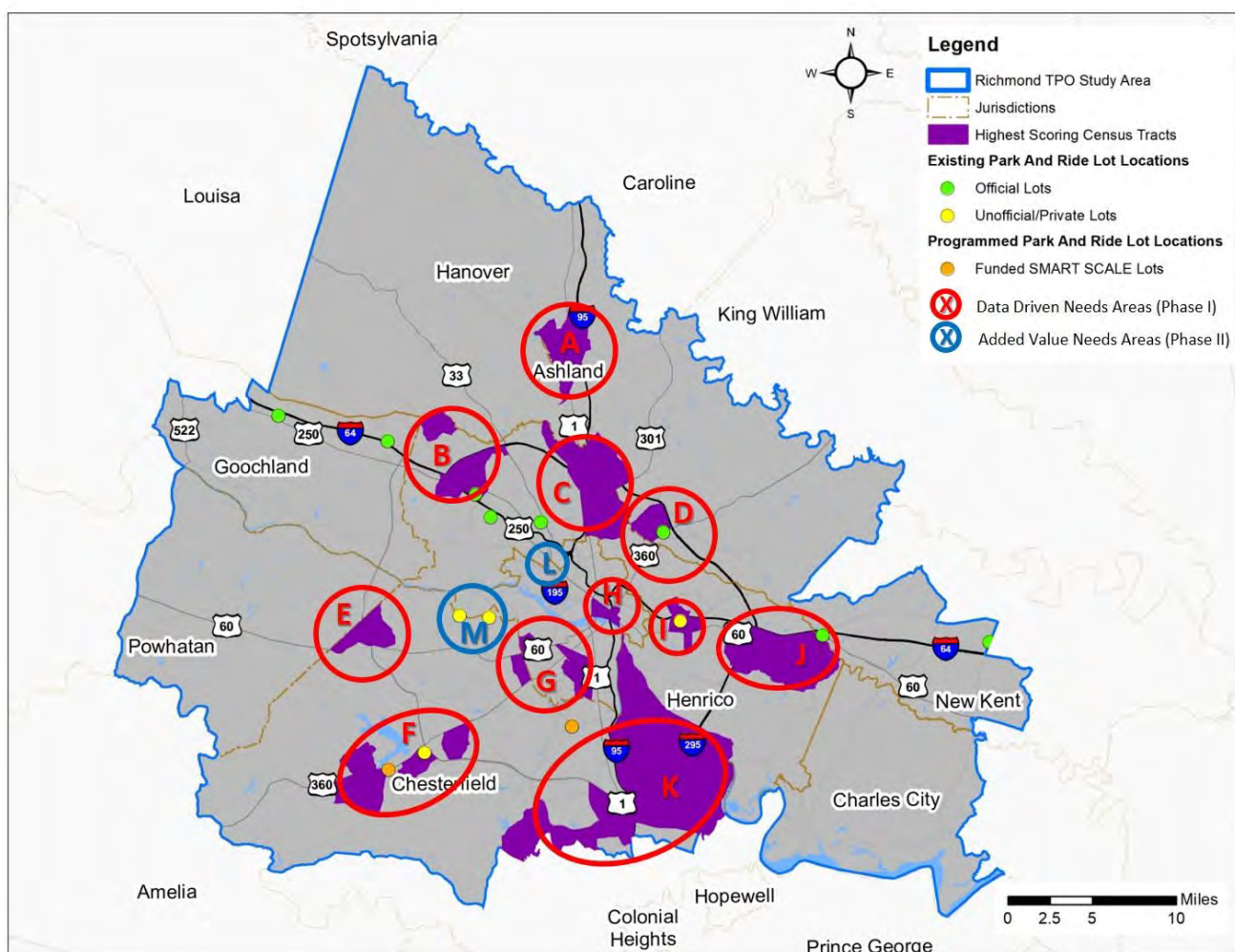




Figure 2: Regional Park and Ride Needs Areas



As a first step in the recommendations development process, the locations of existing and programmed park and ride lots and the existing occupancy at those lots was considered to determine if the identified need was already met. **Table 1** summarizes whether needs in the identified needs areas were met, only met in the short term, or not met.

Table 1: Summary of Existing Need Status

Needs Area	Reason Need Met/Not Met
<b>Need Met</b>	
<b>D:</b> I-295 at US 360	Met by existing Mechanicsville official lot
<b>F:</b> US 360 at Route 288	To be met by funded SMART SCALE park and ride project at US 360 at Chesterfield Career and Technical Center
<b>Need Met in Short Term</b>	
<b>B:</b> I-64 at I-295	Met in the short term by adjacent official lots at Gaskins Road and Hickory Haven
<b>I:</b> I-64/US 60 at S. Laburnum Avenue	Met in the short term by unofficial lot at White Oak Commons
<b>M:</b> Huguenot Road at Forest Hill Avenue	Met in the short term by unofficial lots at Bon Air Baptist Church and Huguenot United Methodist Church
<b>Need Not Met</b>	
<b>A:</b> Ashland	No existing official or unofficial lots in needs area
<b>C:</b> I-95 at I-295	No existing official or unofficial lots in needs area
<b>E:</b> US 60 at Route 288	No existing official or unofficial lots in needs area
<b>G:</b> Chippenham Parkway	No existing official or unofficial lots in needs area
<b>H:</b> East of Downtown	No existing official or unofficial lots in needs area
<b>J:</b> I-295 at US 60	Official lot at Bottom's Bridge at capacity
<b>K:</b> Route 10/Route 288 at I-95/I-295	No existing official or unofficial lots in needs area
<b>L:</b> US 250 at Willow Lawn/Staples Mill	No existing official or unofficial lots in needs area

For needs areas where the needs were not fully met, SAG feedback was used to identify more targeted “project recommendation areas” within the needs area. These project recommendation areas were focused on locations near interchanges and where intermodal travel could be facilitated by the presence of a park and ride lot. SAG members provided local knowledge of the areas to help identify recommended locations to meet the identified need, as well as provide input on potentially available publicly-owned land in the area. Continuing coordination with the localities will be important throughout the implementation of the regional park and ride investment strategy as specific parcels are identified.

The more targeted project recommendation areas are shown in **Figure 3** and described in **Table 2**. In some needs areas, more than one potential project location was recommended for further evaluation. It is intended that only one project per needs area would ultimately be implemented to meet the demand for a particular area. Monitoring and evaluation following implementation of the initial project will determine if there is demand for any additional lots within this needs area. If additional lots are needed, the other project recommended locations would be positioned for further feasibility.



Figure 3: Park and Ride Project Recommendation Areas

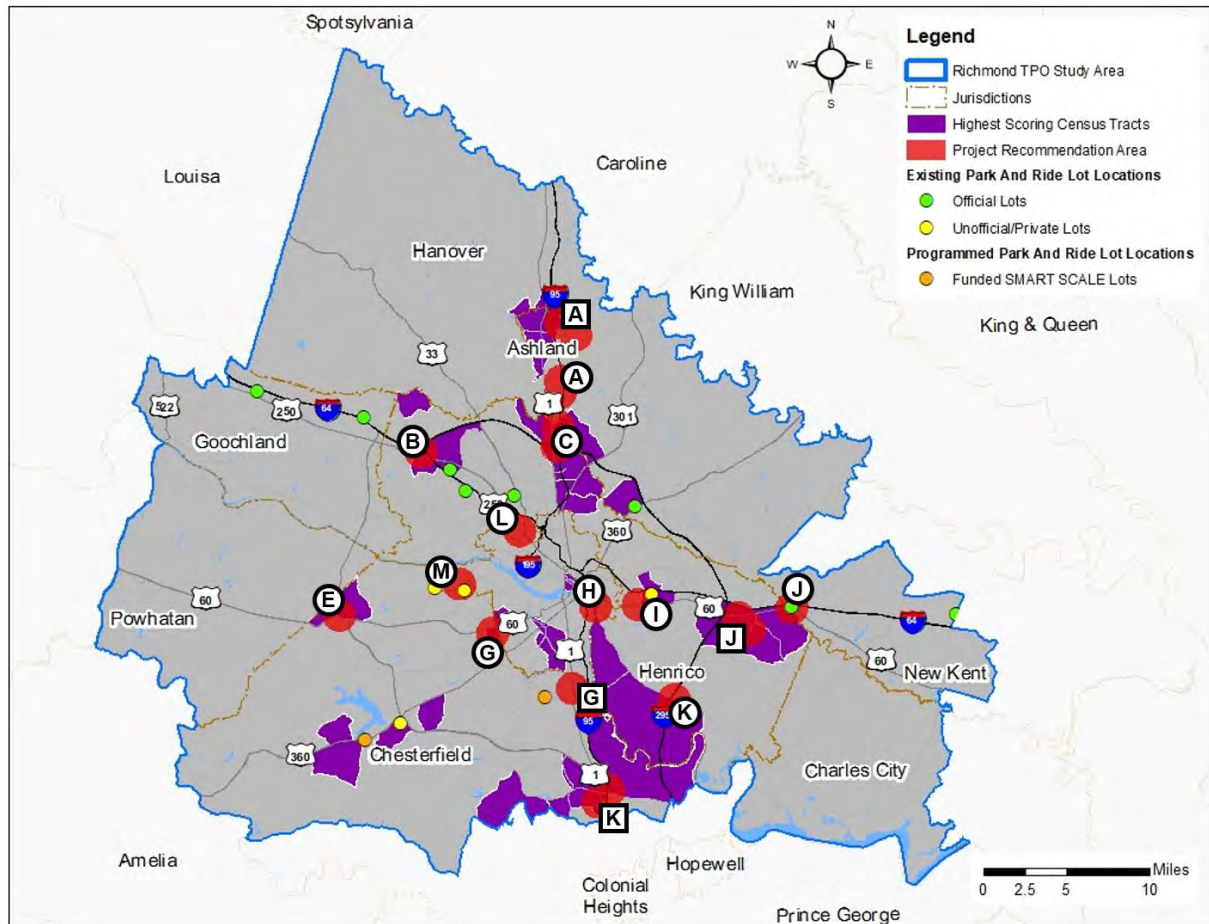


Table 2: Park and Ride Project Recommendation Area Descriptions

Needs Area	Project Recommendation Area Description	Map ID
A	I-95 at Lewistown Road near Lakeridge Parkway	Ⓐ
	I-95 at Route 54 east of interchange	Ⓐ
B	I-64 at I-295 in Short Pump	Ⓑ
C	I-95 at I-295 near Virginia Center Commons	Ⓒ
E	US 60 at Route 288 near Westchester Commons	Ⓔ
G	Chippenham Parkway at Midlothian Turnpike	Ⓖ
	Chippenham Parkway at US 1/US 301	Ⓖ
H	Eastern Pulse Terminus	Ⓕ
I	I-64 at S. Laburnum Avenue near US 60	Ⓖ
J	Bottoms Bridge	Ⓙ
	I-295 at US 60 near Technology Boulevard/Elko Road	Ⓙ
K	I-95 at Route 10	Ⓚ
	I-295 at Route 5	Ⓚ
L	Western Pulse Terminus	Ⓛ
M	Huguenot Road/Forest Hill Avenue/Chippenham Parkway	Ⓜ

The following sections provide additional details on the park and ride recommendations in each of the project areas, including recommended actions in each needs area, estimated demand, planning-level cost estimates, and recommended features and amenities.

### Park and Ride Needs Area Recommendations

Park and ride recommendations for each needs area are summarized in **Table 3**. Establishing an official park and ride lot is recommended for each identified needs area where the need is not already met. Planning and design of these lots should begin as early as possible. Since the implementation timeframes for constructing these lots will vary by location depending on the availability of land and funding, additional recommendations help address or partially address park and ride needs in the interim. Some interim recommendations include: (1) establishing formal agreements or leases with private lot owners, (2) advertising nearby existing lots that are underutilized, and (3) continuing to monitor usage of existing lots.

Table 3: Summary of Needs Area Recommendations

Needs Area	Recommendations
<b>A:</b> Ashland	<ul style="list-style-type: none"> <li>Explore formal agreement or leasing opportunities at private lots in the vicinity of Route 54 and US 1</li> <li>Identify site and construct new official park and ride lot near I-95 Exit 89 (Lewistown Road) or I-95 Exit 92 (Route 54). Potential locations include: <ul style="list-style-type: none"> <li>Publicly-owned parcels west of I-95 on Lakeridge Parkway (Exit 89)</li> <li>Publicly-owned parcels east of I-95 on Route 54 (Exit 92)</li> </ul> </li> </ul>
<b>B:</b> I-64 at I-295	<ul style="list-style-type: none"> <li>Need met in the short-term from existing adjacent official lots (Gaskins Road and Hickory Haven)</li> <li>Identify site and construct new official park and ride lot near I-64 at I-295. Potential locations include: <ul style="list-style-type: none"> <li>Old I-64/I-295 loop ramp in Short Pump</li> </ul> </li> </ul>
<b>C:</b> I-95 at I-295	<ul style="list-style-type: none"> <li>Explore formal agreement or leasing opportunities at private lots in the vicinity of Virginia Center Commons</li> <li>Identify site and construct new official park and ride lot near I-95 at I-295. Potential locations include: <ul style="list-style-type: none"> <li>Near Virginia Center Commons</li> </ul> </li> </ul>
<b>D:</b> I-295 at US 360	<ul style="list-style-type: none"> <li>Need met by existing official lot (Mechanicsville)</li> <li>Continue to monitor occupancy of existing lot and need for additional parking capacity in this area</li> </ul>
<b>E:</b> US 60 at Route 288	<ul style="list-style-type: none"> <li>Explore formal agreement or leasing opportunities at private lots in the vicinity of Westchester Commons</li> <li>Identify site and construct new official park and ride lot near US 60 at Route 288. Potential locations include: <ul style="list-style-type: none"> <li>Near Westchester Commons</li> </ul> </li> </ul>
<b>F:</b> US 360 at Route 288	<ul style="list-style-type: none"> <li>Need expected to be met by funded SMART SCALE lot at Chesterfield Career and Technical Center</li> <li>Monitor use of new lot and any additional needs in the vicinity of the US 360/Route 288 interchange</li> </ul>
<b>G:</b> Chippenham Parkway	<ul style="list-style-type: none"> <li>Once constructed, monitor use of funded SMART SCALE lot at Chippenham and Hopkins to determine additional needs in this area</li> <li>Identify site and construct new official park and ride lot near Chippenham Parkway at US 1/US 301. Potential locations include: <ul style="list-style-type: none"> <li>Near Food Lion on US 1/301 north of Chippenham Parkway</li> </ul> </li> <li>Identify site and construct new official park and ride lot near Chippenham Parkway and Midlothian Turnpike. Potential locations include: <ul style="list-style-type: none"> <li>Country-owned parcel at Stonebridge</li> </ul> </li> </ul>

Needs Area	Recommendations
<b>H:</b> East of Downtown	<ul style="list-style-type: none"> <li>Identify site and construct new official park and ride lot within 1/4-mile of Pulse eastern terminus at Rocketts Landing</li> </ul>
<b>I:</b> I-64/US 60 at S. Laburnum Avenue	<ul style="list-style-type: none"> <li>Need met in the short-term from unofficial lot at White Oak Commons. Explore formal agreement or leasing opportunities to establish greater permanence at this site.</li> <li>Identify site and construct new official park and ride lot near I-95 at S. Laburnum Avenue</li> </ul>
<b>J:</b> I-295 at US 60	<ul style="list-style-type: none"> <li>Advertise the New Kent Public Works park and ride lot and monitor usage</li> <li>Identify site and construct new or expand existing park and ride lot near I-64/US60/I-295. Potential locations include: <ul style="list-style-type: none"> <li>Expanding the existing Bottoms Bridge lot or building a second lot on the western side of the parcel</li> <li>Commonwealth-owned parcel at VDOT residency</li> </ul> </li> </ul>
<b>K:</b> Route 10/Route 288 at I-95/I-295	<ul style="list-style-type: none"> <li>Explore formal agreement for park and ride use of Capital Trail parking area at the Four Mile Creek Trailhead near I-295 on Route 5</li> <li>Identify site and construct new official park and ride lot near the I-95/Route 10 interchange. Potential locations include: <ul style="list-style-type: none"> <li>Northeast quadrant of I-95 at Route 10 interchange</li> <li>West of I-95 on US 1/US 301</li> <li>East of I-95 near John Tyler Community College</li> </ul> </li> </ul>
<b>L:</b> US 250 at Willow Lawn/ Staples Mill	<ul style="list-style-type: none"> <li>Promote use of City of Richmond Arthur Ashe shuttle</li> <li>Identify site and construct new official park and ride lot within 1/4-mile of Pulse western terminus in the Willow Lawn/Staples Mill area</li> </ul>
<b>M:</b> Huguenot Road at Forest Hill Avenue	<ul style="list-style-type: none"> <li>Need met in the short term from unofficial lots at Bon Air Baptist Church and Huguenot Methodist Church. Explore formal agreements or leasing opportunities to establish greater permanence at these sites.</li> <li>Explore formal agreement or leasing opportunities at other private lots in this area if existing unofficial lots can no longer be used for park and ride</li> <li>Identify site and construct new official park and ride lot near Huguenot Road/Forest Hill Avenue/Chippenham Parkway</li> </ul>

## Recommended Park and Ride Lot Size and Cost Estimates

For each project recommendation area, the parking demand was estimated to determine the recommended number of parking spaces for the construction of an official park and ride lot in the area. A sketch planning model derived from Florida Department of Transportation (FDOT) methodology for determining park and ride demand was used to estimate the number of parking spaces needed in each project recommendation area. The model used traffic volumes on the major roadways expected to feed into a park and ride lot in each project recommendation area to estimate the commuter demand. For validation, this methodology was tested on existing official park and ride lots in the Richmond region and found to be representative of the existing occupancy observed at those lots.

Planning level cost estimates were developed for each project recommendation area using the estimated number of parking spaces needed and per space unit costs. Unit cost ranges were developed based on a review of proposed park and ride project cost estimates from FY20 SMART SCALE applications. Right-of-way costs were not included in the costs ranges as these will be contingent on available land, leasing and purchasing opportunities, and coordination with public and private entities. The low and high unit cost ranges are summarized in **Table 4**.

Table 4: Unit Cost Ranges for Park and Ride Projects

Low Unit Cost	High Unit Costs
<b>Typical Features/Amenities at Park and Ride Lot</b>	
<ul style="list-style-type: none"> <li>Lower-density lot</li> <li>Minimal earthwork required</li> <li>Minimal amenities</li> <li>No transit service</li> </ul>	<ul style="list-style-type: none"> <li>Higher-density lot</li> <li>More significant earthwork required</li> <li>Greater number of amenities</li> <li>Transit service</li> </ul>
<b>Per Space Unit Cost</b>	
\$9,500	\$21,000
Per space unit costs include PE, construction, lighting/landscaping, and earthwork	
<b>Per Lot Unit Cost</b>	
\$180,000	\$330,000
Per lot unit costs are in addition to per space costs and include stormwater management and electric charging	

Note: Costs reported in 2019 dollars.

Cost estimates at the high-end of the unit cost range reflect park and ride lot designs that incorporate a greater number of amenities and design elements, such as access roads, bus loading areas, bicycle parking, and sidewalks, as well as sites where more significant earthwork is required. Estimates at the low-end of the unit cost range are more representative of a park and ride lot design with minimal amenities, design elements, and earthwork. **Table 5** provides a summary of the recommended number of spaces and cost estimate ranges for park and ride lots in each of the project recommendation areas. The size and cost estimates presented should be used for site identification and planning purposes

only. When specific sites are identified in these areas for park and ride lots, a conceptual layout should be developed to determine a more accurate site-specific cost estimate.

Table 5: Park and Ride Project Recommended Lot Sizes and Cost Estimates

Project Recommendation Area		Recommended Spaces	Cost Estimate	
			Low	High
<b>(A)</b>	I-95 at Lewistown Road near Lakeridge Parkway	200	\$ 2,060,000	\$ 4,530,000
<b>[A]</b>	I-95 at Route 54 east of interchange	200	\$ 2,060,000	\$ 4,530,000
<b>(B)</b>	I-64 at I-295 in Short Pump	320	\$ 3,190,000	\$ 7,050,000
<b>(C)</b>	I-95 at I-295 near Virginia Center Commons	380	\$ 3,760,000	\$ 8,310,000
<b>(E)</b>	US 60 at Route 288 near Westchester Commons	70	\$ 840,000	\$ 1,800,000
<b>(G)</b>	Chippenham Parkway at Midlothian Turnpike	330	\$ 3,290,000	\$ 7,260,000
<b>[G]</b>	Chippenham Parkway at US 1/US 301	270	\$ 2,720,000	\$ 6,000,000
<b>(H)</b>	Eastern Pulse Terminus	130	\$ 1,400,000	\$ 3,060,000
<b>(I)</b>	I-64 at S. Laburnum Avenue near US 60	120	\$ 1,310,000	\$ 2,850,000
<b>(J)</b>	Bottoms Bridge	90*	\$ 1,030,000	\$ 2,220,000
<b>[J]</b>	I-295 at US 60 near Technology Boulevard/Elko Road	120*	\$ 1,310,000	\$ 2,850,000
<b>[K]</b>	I-95 at Route 10	250	\$ 2,540,000	\$ 5,580,000
<b>(K)</b>	I-295 at Route 5	50	\$ 650,000	\$ 1,380,000
<b>(L)</b>	Western Pulse Terminus	290	\$ 2,910,000	\$ 6,420,000
<b>(M)</b>	Huguenot Road/Forest Hill Avenue/ Chippenham Parkway	130	\$ 1,400,000	\$ 3,060,000

\*Note: Park and ride demand at Need Area J is partially served by 40 spaces at the existing Bottoms Bridge lot. The recommended spaces for the project recommendation areas in Needs Area J are in addition to these existing spaces.



## Recommended Park and Ride Lot Features and Amenities

In 2018, VDOT developed the *Park & Ride Design Guidelines* to provide localities with a resource on features and amenities to consider when designing park and ride lots. The guidelines incorporate perspectives from several Virginia agencies, including VDOT, DRPT, Department of Conservation and Recreation, and Department of Environmental Quality and include guidance on the following park and ride lot features and amenities:

- Parking layout
- Drop-off/pick-up areas
- Bus loading/unloading areas
- Access/egress points
- Vehicle circulation
- Carpooling/vanpooling
- Bike parking
- Bus stops and shelters
- Trash receptacles
- Safety features
- Lighting
- Signage
- Vegetation
- Stormwater management
- Solar energy generation
- Green technologies
- Integrated corridor management
- Electric vehicle charging

The recommended implementation of these features and amenities is dependent on the surrounding environment of the park and ride lot. The *Park and Ride Design Guidelines* defines three types of lot environments (high density, medium density, and low density) and provides guidance on elements that are required, preferred, and suggested for each type of location. High-density locations are typically located in urban or suburban areas and are generally accessible by foot, bicycle, or high-capacity transit. Medium-density locations are typically suburban lots found near highway interchanges and often are served by buses and carpooling/vanpooling. Low-density locations are typically found in rural locations near interstate highways or arterials and often have limited transit service.

Due to the differences in features and amenities at the three types of lots, construction costs will vary. The required and recommended park and ride lot elements at high-density locations address a comprehensive set of design concerns and, as a result, sites designed to meet the design guidelines for high-density lots are expected to have unit costs at the higher end of the cost estimate ranges. Conversely, the design guidelines require far fewer elements to be implemented at low-density locations, so it may be possible to implement lots in these areas with unit costs in the lower end of the cost estimate ranges.

Using the *Park and Ride Design Guidelines* as a reference, each of the park and ride project recommendation areas was categorized as high, medium, or low density and these categories were used to inform the recommended features and amenities at the lot. **Table 6** summarizes the lot density types for each project recommendation area.



Table 6: Project Recommendation Area Lot Design Type

Project Recommendation Area		Lot Density Type
<b>(A)</b>	I-95 at Lewistown Road near Lakeridge Parkway	Low
<b>[A]</b>	I-95 at Route 54 east of interchange	Low
<b>(B)</b>	I-64 at I-295 in Short Pump	Medium
<b>(C)</b>	I-95 at I-295 near Virginia Center Commons	Medium
<b>(E)</b>	US 60 at Route 288 near Westchester Commons	Low
<b>(G)</b>	Chippenham Parkway at Midlothian Turnpike	Medium
<b>[G]</b>	Chippenham Parkway at US 1/US 301	Medium
<b>(H)</b>	Eastern Pulse Terminus	High
<b>(I)</b>	I-64 at S. Laburnum Avenue near US 60	Medium
<b>(J)</b>	Bottoms Bridge	Low
<b>[J]</b>	I-295 at US 60 near Technology Boulevard/Elko Road	Low
<b>[K]</b>	I-95 at Route 10	Medium
<b>(K)</b>	I-295 at Route 5	Low
<b>(L)</b>	Western Pulse Terminus	High
<b>(M)</b>	Huguenot Road/Forest Hill Avenue/Chippenham Parkway	Medium

Park and ride lots can play an important role in multimodal connectivity and lot design should consider opportunities for these connections. Existing and future transit routes, bicycle facilities, vanpools, and pedestrian facilities were reviewed to identify potential multimodal connections to inform lot design. A summary of the travel modes served in each of the park and ride project recommendation areas is provided in **Table 7**. The following sources were used to identify the potential multimodal connections:

- **Transit Service:** Existing transit service included existing GRTC routes and future transit service included routes in the *Richmond Transit Vision Plan*. For locations where there is existing or future transit service that travels on a nearby highway but does not stop in the area, the table designates the transit service as “Potential” to reflect the opportunity for route modifications to connect the park and ride lot to transit.
- **Bicycle Facilities:** Existing bicycle facilities included lanes, cycletracks, shared use paths, and designated biking routes identified through Bike Walk RVA’s Bikeways Map and Open Street Map’s Cycle Map. Bicycle facilities designated as “Potential” were identified as proposed bicycle touring routes in the *Richmond Regional Bicycle and Pedestrian Plan*.
- **Vanpools:** Existing vanpool locations included those identified by RideFinders in the vicinity of a project recommendation area. Due to the changing nature of vanpool locations and the attractiveness of park and ride lots to serve as vanpool origins, all other park and ride project recommendation areas were listed as “Potential”. Lot design that includes supportive features for vanpool and carpool, such as drop-off/pick-up areas, should be considered for all recommended lot areas.
- **Pedestrian Facilities:** Existing pedestrian facilities included the presence of sidewalks and paths determined through aerial imagery and included areas where either an adequate sidewalk network or trail system, such as the Virginia Capital Trail, is present. Pedestrian facilities designated as “Potential” were identified as proposed pedestrian corridors in the *Richmond Regional Bicycle and Pedestrian Plan*. While pedestrian facilities would be beneficial for internal circulation at all recommended lot areas, construction of external sidewalk facilities may not be necessary where an existing network to link to is not available.

Table 7: Travel Modes Served at Park and Ride Project Recommendation Areas

Project Recommendation Area	Transit Service		Bicycle Facilities	Vanpool	Pedestrian Facilities
	Existing	Future			
<b>(A)</b> I-95 at Lewistown Road near Lakeridge Parkway	Potential	Potential		Yes	Yes
<b>(A)</b> I-95 at Route 54 east of interchange	Potential	Potential		Yes	Potential
<b>(B)</b> I-64 at I-295 in Short Pump	Yes	Yes	Potential	Potential	Yes
<b>(C)</b> I-95 at I-295 near Virginia Center Commons	Potential	Yes		Yes	Yes
<b>(E)</b> US 60 at Route 288 near Westchester Commons		Yes		Potential	Yes
<b>(G)</b> Chippenham Parkway at Midlothian Turnpike	Yes	Yes		Yes	Yes
<b>(G)</b> Chippenham Parkway at US 1/US 301	Yes	Yes		Potential	Potential
<b>(H)</b> Eastern Pulse Terminus	Yes	Yes	Yes	Potential	Yes
<b>(I)</b> I-64 at S. Laburnum Avenue near US 60	Yes	Yes		Yes	Potential
<b>(J)</b> Bottoms Bridge		Yes	Potential	Yes	Potential
<b>(J)</b> I-295 at US 60 near Technology Boulevard/Elko Road		Potential	Potential	Potential	
<b>(K)</b> I-95 at Route 10	Potential	Yes		Yes	Yes
<b>(K)</b> I-295 at Route 5		Potential	Yes	Potential	Yes
<b>(L)</b> Western Pulse Terminus	Yes	Yes	Yes	Potential	Yes
<b>(M)</b> Huguenot Road/Forest Hill Avenue/Chippenham Parkway	Yes	Yes	Yes	Potential	Potential

The *Park and Ride Design Guidelines* identify features and amenities that are required, preferred, and suggested for each lot density type based on federal and state regulations and guidelines, as well as characteristics of the surrounding area. These features and amenities are summarized in **Table 8**.

After specific sites are identified in the project recommendation areas, the inclusion of features and amenities in the lot design should be further evaluated for the specific location. Lot design should consider and be flexible to accommodate potential future multimodal connections. Additional amenities, features, and design standards may be recommended or required by the locality. Some features may also require coordination with other parties, including localities, VDOT, and private land owners or may be constrained by property ownership and formal usage or leasing agreements.

Table 8: Park and Ride Design Guidelines Features and Amenities

Feature/Amenity	Low Density	Medium Density	High Density
<b>Parking layout</b>	Angled spaces required, where possible	Perpendicular spaces required	Perpendicular spaces required
<b>Drop-off/pick-up areas</b>	Kiss & Ride area suggested	Kiss & Ride area preferred	Kiss & Ride area required
<b>Bus loading/unloading areas</b>	Boarding lanes and adequate queuing space required if served by transit	Boarding lanes and adequate queuing space required if served by transit	Boarding lanes and adequate queuing space required if served by transit
<b>Access/egress points</b>	None specified	Two entrances preferred	Two entrances preferred
<b>Vehicle circulation</b>	One-way traffic required, where possible	Two-way traffic required	Two-way traffic required
<b>Non-vehicle circulation</b>	Internal walkways preferred	Internal walkways required; External connections preferred	Internal walkways required; External connections preferred
<b>Bike parking</b>	2-3 bike racks preferred, bike lockers suggested	1 space for every 10 to 20 vehicle spaces required; covered bike parking preferred	1 space for every 10 to 20 vehicle spaces required; covered bike parking preferred
<b>Bus stops and shelters</b>	Shelters preferred if served by transit	Shelters required if served by transit	Shelters required if served by transit
<b>Trash receptacles</b>	Preferred	Required at all boarding areas	Required at all boarding areas
<b>Security</b>	Emergency assistance phones preferred	Emergency assistance phones preferred	Emergency assistance phones preferred
<b>Lighting</b>	LED lighting with shielding fixtures preferred	LED lighting with shielding fixtures required	LED lighting with shielding fixtures required
<b>Signage</b>	Traffic control preferred; bus route signage suggested if served by transit	Traffic control and bus route signage (if served by transit) required; Integrated corridor management technologies, like real-time information, preferred	Traffic control and bus route signage (if served by transit) required; Integrated corridor management technologies, like real-time information, preferred
<b>Vegetation</b>	Native, context sensitive plants required; 10-20% of lot area suggested	Native, context sensitive plants required; 10-20% of lot area suggested	Native, context sensitive plants required; 10-20% of lot area suggested
<b>Stormwater management</b>	Green retention infrastructure required	Green retention infrastructure required; porous asphalt mix preferred for lot surfacing	Green retention infrastructure required; porous asphalt mix preferred for lot surfacing
<b>Solar energy generation</b>	Panels in high-sun areas preferred	Panels in high-sun areas preferred; solar canopies over parking spaces suggested	Panels in high-sun areas preferred; solar canopies over parking spaces suggested
<b>EV Charging</b>	Stations for 2% of all spaces suggested	Stations for 2% of all spaces preferred	Stations for 2% of all spaces preferred

## Environmental Justice Evaluation

Concentrations of environmental justice (EJ) populations (as described in Technical Memorandum I) were evaluated in the project recommendation areas to ensure an equitable distribution of improvements. The purpose of analyzing EJ concentrations is to provide fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to laws, regulations, and policies<sup>1</sup>. During the design of park and ride lots, accessibility for EJ populations should be considered, including connections to other travel modes and appropriate lot features/amenities. **Figure 4** shows existing and programmed park and ride lots, as well as park and ride project recommendation areas, overlaid on a base map of the concentration of EJ populations and **Table 9** summarizes the EJ analysis for the study area. The EJ population concentration is based on an index considering individuals with disabilities, low-income households, elderly populations, limited English proficiency, non-white or Hispanic populations, and low vehicle ownership households. Areas designed as “highest” had the greatest concentration of EJ populations when compared to other census tracts in the study area. Since specific recommendation locations have not yet been identified and the project recommendation areas extend across multiple census tracts, the EJ population concentration for the recommendations was taken as the weighted average of the EJ population concentrations in all the census tracts within the project recommendation area. Park and ride project recommendation areas were found to be distributed among the EJ densities with the majority of the recommendation areas in locations with “high” and “average” EJ concentrations.

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<sup>1</sup> <https://www.epa.gov/environmentaljustice>

Figure 4: Recommended Lot Areas with Concentration of Environmental Justice (EJ) Population

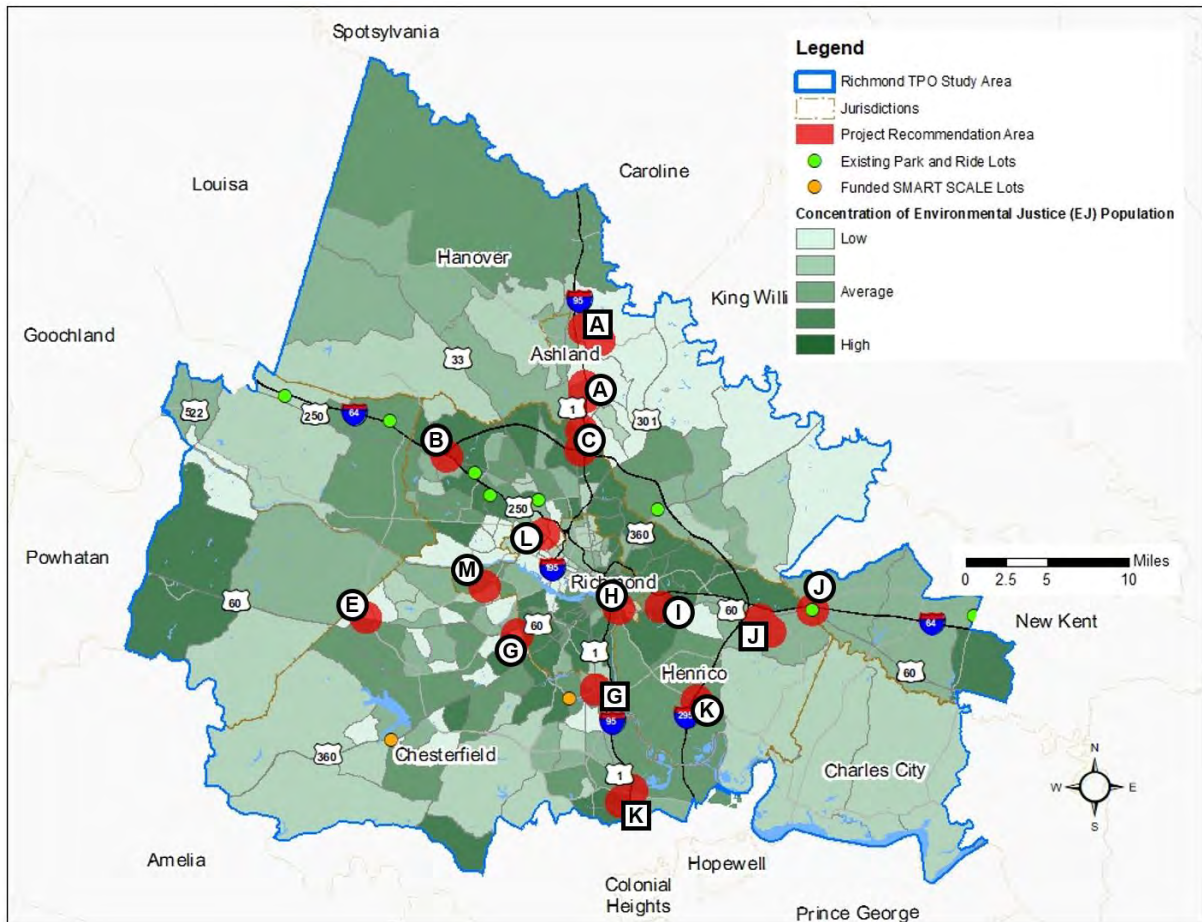


Table 9: Comparison of Park and Ride Lots to Concentration of EJ Populations

	EJ Population Concentration				
	Highest EJ Population	High EJ Population	Average EJ Population	Low EJ Population	Lowest EJ Population
Existing* and Programmed Lots	3 (33%)	4 (44%)	1 (11%)	1 (11%)	0
Project Recommendation Areas	1 (7%)	5 (33%)	5 (33%)	2 (13%)	2 (13%)
<b>Total</b>	<b>4 (17%)</b>	<b>9 (38%)</b>	<b>6 (25%)</b>	<b>3 (13%)</b>	<b>2 (8%)</b>

\* Does not include "unofficial" lots in analysis



## Next Steps

In the next phase of this project, implementation strategies will be developed for the park and ride recommendations discussed in this technical memorandum. Implementation strategies will include details on the steps needed to progress the recommendations such as planning and design, environmental considerations, identification of potential funding sources, and requirements for formal lot usage and leasing agreements, as well as ongoing considerations after a lot is in use. The strategy will also identify the roles and responsibilities of local, regional, and state entities throughout the implementation process. Implementation strategies and funding sources will be summarized in Technical Memo IV and V.

DRAFT (no SAG revisions)

## **TAC AGENDA 6/11/19; ITEM 9.**

### **FY18 – FY21 TIP AMENDMENTS: VDOT REQUEST**

#### **Richmond Regional Transportation Planning Organization**

**REQUESTED ACTION:** Review and recommend to the Richmond Regional Transportation Planning Organization (RRTPO) policy board requests from VDOT to amend the FY18 – FY21 Transportation Improvement Program (TIP) to update three projects.

**BACKGROUND:** The RRTPO policy board has received requests from VDOT to amend the TIP to revise the project description and road segment for three projects. Amendment details are outlined below:

- UPC 115063: Route 60 Shared-Use Path from Ruthers Road to Stonebridge Plaza Avenue - Chesterfield County  
The road segment is expanded from “Ruthers Road to Boulders Parkway” to “Ruthers Road to Stonebridge Plaza Avenue.”
- UPC 15955: Route 1 Intersection Improvements at Hopkins Road & Harwood Street – City of Richmond  
The project description is revised from “widening” to “intersection improvements.”
- UPC 64219: Main Street Station Capital Preventative Maintenance – City of Richmond  
The project description is revised from “Capital Funds” to “Capital Preventative Maintenance.”

**TAC ACTION REQUESTED:** The following resolution is presented for TAC review and recommendation to the RRTPO for approval:

**RESOLVED,** that the Richmond Regional Transportation Planning Organization policy board amends the *FY18 – FY21 Transportation Improvement Program (TIP)* revising the project description and road segment for the following three projects:

- UPC 115063: Route 60 Shared-Use Path from Ruthers Road to Stonebridge Plaza Avenue - Chesterfield County.
- UPC 15955: Route 1 Intersection Improvements at Hopkins Road & Harwood Street – City of Richmond.
- UPC 64219: Main Street Station Capital Preventative Maintenance – City of Richmond.

Attachments

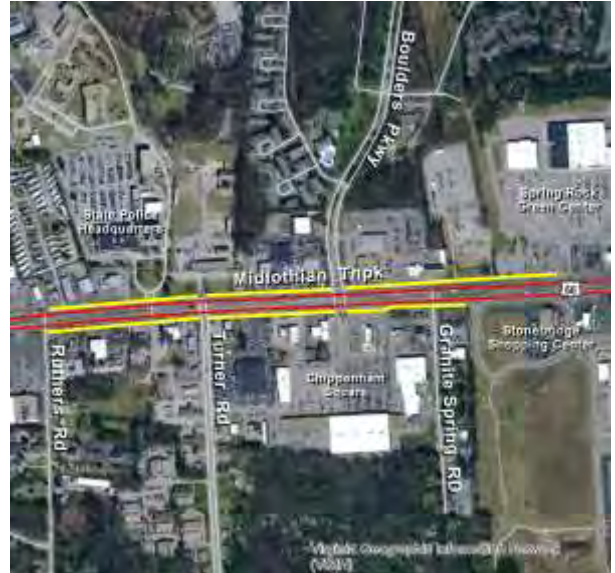
CAP/jl

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Chesterfield

**UPC 115063**

**Jurisdiction:** Chesterfield County  
**Route/Street:** 60/Midlothian Turnpike  
**Description:** Route 60 Shared-Use Path  
**From:** Ruthers Rd  
**To:** Stonebridge Plaza Ave  
**System:** Primary  
**Administered By:** Locally  
**MPO Note:**



### Schedule

Phase	Start	End	Status
<b>Preliminary</b>			
Engineering (PE):	9/27/2019	5/3/2021	FFY19
Right of Way (RW):	5/3/2021	4/1/2022	FFY21
Construction (CN):	4/1/2022	8/11/2023	FFY22

### Cost Estimates / Previous Obligations

#### Cost Estimates

PE:	\$681,000
RW:	\$725,000
CN:	\$2,848,000
<b>Total:</b>	<b>\$4,254,000</b>

### Federal Obligations

Phase	Fund Source	Match	Federal Obligations			
			FY18	FY19	FY20	FY21
PE	CM	\$136,200	\$0	\$544,800	\$0	\$0

### Amendments

**Amd 54** 6/27/2019 Approval Pending

1). Revise road segment from "Boulders Pkwy - Ruthers Rd" to "Ruthers Rd - Stonebridge Plaza Ave."

Date Requested 6/3/2019

### Amendments

**Amd 46**

5/2/2019 Approved 1). This is a new project added to the TIP. 2). Add PE phase to FY19 and obligate \$544,800 CMAQ funds (match \$136,200).

Date Requested 4/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Richmond

### UPC 15955

**Jurisdiction:** Richmond  
**Route/Street:** 1/Jefferson Davis Highway  
**Description:** Rte 1 - Intersection Improvements at Hopkins Rd & Harwood St  
**From:** 0.008 MS Chesterman Ave  
**To:** 0.045 MN Fairfax Ave  
**System:** Urban  
**Administered By:** VDOT  
**MPO Note:** Project details and schedule may be revised



### Schedule

Phase	Start	End	Status
<b>Preliminary Engineering (PE):</b>	1/3/2008	1/3/2008	Completed
<b>Right of Way (RW):</b>	1/3/2008	11/27/2019	Underway
<b>Construction (CN):</b>	11/27/2019	11/18/2021	FFY20

### Cost Estimates / Previous Obligations

Cost Estimates		Previous Obligations	
		Fund Source	Obligation
PE:	\$3,000,000	STP/STBG	\$4,501,667
RW:	\$4,292,188	TOTAL	\$4,501,667
CN:	\$4,310,698		
<b>Total:</b>	<b>\$11,602,886</b>		

### Federal Obligations

			Federal Obligations			
Phase	Fund Source	Match	FY18	FY19	FY20	FY21
PE	CM	\$153,513	\$654,049	(\$39,999)	\$0	\$0
PE	STP/STBG	\$14,596	\$58,385	\$0	\$0	\$0
RW	STP/STBG	(\$15,541)	\$0	(\$62,162)	\$0	\$0
CN	AC OTHER	\$0	\$0	\$0	\$1,679,074	\$0
CN	STP/STBG	\$552,488	\$0	\$0	\$2,209,952	\$0

### Amendments

**Amd 55** 6/27/2019 Approval Pending

1). Revise descriptions from Major Widening to Intersection Improvements at Hopkins Rd & Harwood St. 2). Revise segment from 0.01 KM S Chesterman Ave - 0.016 KM N Decatur St to 0.008 MS Chesterman Ave - 0.045 MN Fairfax Ave. 3). Revise cost from \$8,525,000 to \$11,602,886. 4). Add PE phase to FY18 and obligate \$654,049 CMAQ funds (match \$153,513), and to FY19 and obligate -\$39,999 CMAQ funds. 5). Add PE phase to FY18 and obligate \$58,385 STP/STBG funds (match \$14,596). 6). Add RW phase to FY19 and obligate -\$62,162 STP/STBG funds (match -\$15,541). 7). Add CN phase to FY20 and obligate \$2,209,952 STP/STBG funds (match \$552,488) and \$1,679,074 CN AC Other funds (no match). 8). Eliminate FY18 PE \$356,434 STP/STBG funds (match \$89,109); FY18 RW -\$655,260 STP/STBG funds (match -\$163,815); FY18 CN \$425,799 STP/STBG funds (match \$106,450); FY18 CN \$349,596 CMAQ funds (match \$87,399); and FY18 CN \$1,530,756 AC funds (no match).

Date Requested 5/31/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Richmond

**UPC 64219**

**Jurisdiction:** Richmond  
**Route/Street:**  
**Description:** City Of Richmond - Main Street Capital Preventative Maintenance  
**From:** (Payment For Mainstreet Station - Monitoring Of Funds Only)  
**To:**  
**System:** Urban  
**Administered By:** Locally  
**MPO Note:**



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations
PE:	Fund Source
RW:	Obligation
CN:	TOTAL
CN: \$38,903,806	\$0
Total: \$38,903,806	



### Federal Obligations

			Federal Obligations			
Phase	Fund Source	Match	FY18	FY19	FY20	FY21
CN	RSTP	\$109,223	\$0	\$436,894	\$0	\$0

### Amendments

**Amd 56** 6/27/2019 Approval Pending

1). Revise project description from "Capital Funds" to "Capital Preventative Maintenance."

Date Requested 6/3/2019

### Adjustments

**Adj 50** 11/22/2017 Completed

1). Eliminate \$436,894 (match \$109,224) FY18 CN RSTP funds.

Date Requested 10/26/2017

**Adj 80** 8/24/2018 Completed

1). Add \$436,894 RSTP funds to FY19 (match \$109,223).

Date Requested 8/7/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Project Amendments - Tracking Records

### **Amd 54    115063    Chesterfield County    Route 60 Shared-Use Path**

6/27/2019 Pending 1). Revise road segment from "Boulders Pkwy - Ruthers Rd" to "Ruthers Rd - Stonebridge Plaza Ave."  
Date Requested 6/3/2019

### **Amd 55    15955    Richmond    Rte 1 - Intersection Improvements at Hopkins Rd & Harwood St**

6/27/2019 Pending 1). Revise descriptions from Major Widening to Intersection Improvements at Hopkins Rd & Harwood St. 2). Revise segment from 0.01 KM S Chesterman Ave - 0.016 KM N Decatur St to 0.008 MS Chesterman Ave - 0.045 MN Fairfax Ave. 3). Revise cost from \$8,525,000 to \$11,602,886. 4). Add PE phase to FY18 and obligate \$654,049 CMAQ funds (match \$153,513), and to FY19 and obligate -\$39,999 CMAQ funds. 5). Add PE phase to FY18 and obligate \$58,385 STP/STBG funds (match \$14,596). 6). Add RW phase to FY19 and obligate -\$62,162 STP/STBG funds (match -\$15,541). 7). Add CN phase to FY20 and obligate \$2,209,952 STP/STBG funds (match \$552,488) and \$1,679,074 CN AC Other funds (no match). 8). Eliminate FY18 PE \$356,434 STP/STBG funds (match \$89,109); FY18 RW -\$655,260 STP/STBG funds (match -\$163,815); FY18 CN \$425,799 STP/STBG funds (match \$106,450); FY18 CN \$349,596 CMAQ funds (match \$87,399); and FY18 CN \$1,530,756 AC funds (no match).  
Date Requested 5/31/2019

### **Amd 56    64219    Richmond    City Of Richmond - Main Street Capital Preventive Maintenance**

6/27/2019 Pending 1). Revise project description from "Capital Funds" to "Capital Preventive Maintenance."  
Date Requested 6/3/2019



## TAC AGENDA 6/11/19; ITEM 9.1

### TRANSFER OF RSTP PROJECT FUNDS TO CMAQ PROJECT

#### Richmond Regional Transportation Planning Organization

**REQUESTED ACTION:** Review and recommend to the Richmond Regional Transportation Planning Organization (RRTPO) policy board approval of a request from Chesterfield County to amend the FY18 – FY21 Transportation Improvement Program (TIP) to approve one transfer of Regional Surface Transportation Program (RSTP) funds to Congestion Mitigation and Air Quality (CMAQ) funds.

**BACKGROUND:** The RRTPO has received a request from Chesterfield County to transfer the following funds with details outlined below:

- UPC 113834 Route 60 (Springrock/Stonebridge Boulders) Sidewalk to UPC 115063 Route 60 (Boulders Parkway - Ruthers Road) Shared-Use Path – Chesterfield  
These current CMAQ and RSTP funded projects are adjacent to each other and combining them will lead to efficiencies in developing and delivering the project as one deliverable. The breakdown of the project transfer and proposed programming of funds is shown below.

UPC/Funding	Previous	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	Total
115063 (CMAQ)	\$681,000	\$0	\$362,500	\$362,500	\$1,424,000	\$1,424,000	\$0	\$4,254,000
113834 (RSTP)	\$0	\$0	\$0	\$250,000	\$1,000,000	\$0	\$0	\$1,250,000
115063 new	\$681,000	\$0	\$362,500	\$612,500	\$2,424,000	\$1,424,000	\$0	\$5,504,000

**TAC ACTION REQUESTED:** The following resolution is presented for TAC review and recommendation to the RRTPO for approval:

**RESOLVED**, that the Richmond Regional Transportation Planning Organization Policy Board amends the *FY18 – FY21 Transportation Improvement Program (TIP)* with the following transfer:

- Transfer \$1,250,000 in RSTP funds from the Route 60 (Springrock/Stonebridge Boulders) Sidewalk (UPC 113834) to Route 60 (Boulders Parkway - Ruthers Road) Shared-Use Path (UPC 115063) – Chesterfield.

CAP/

## **TAC AGENDA 6/11/19; ITEM 10**

### **FY18 – FY21 TIP AMENDMENTS: GRTC REQUEST**

#### **Richmond Regional Transportation Planning Organization**

**REQUESTED ACTION:** Review and recommend to the Richmond Regional Transportation Planning Organization (RRTPO) policy board approval of requests from GRTC to amend the FY18 – FY21 Transportation Improvement Program (TIP) to update 21 GRTC projects.

**BACKGROUND:** The RRTPO policy board has received requests from GRTC to amend the TIP to revise the 21 GRTC projects. Amendment details are outlined below:

- STIP ID GRTC003: Preventive Maintenance – GRTC  
In-house capitalized preventive maintenance of rolling stock, support facilities, and equipment.
- STIP ID GRTC005: Transit Enhancements – GRTC  
Purchase and installation of neighborhood bus shelters.
- STIP ID GRTC006: Expansion Rolling Stock - GRTC  
Delete FY18 and FY19 FTA 5307 funds, State match funds, and local match funds.
- STIP ID GRTC008: Replacement Vans – GRTC  
FY20 – Nine paratransit vehicles and FY21—10 paratransit vehicles.
- STIP ID GRTC031: Surveillance/Security Equipment – GRTC  
Update security system.
- STIP ID GRTC032: Purchase Shop Equipment – GRTC  
Purchase and replace maintenance equipment.
- STIP ID GRTC033: Purchase ADP Hardware – GRTC  
Purchase and replace various hardware items.
- STIP ID GRTC034: Purchase ADP Software – GRTC  
Purchase new software and renew maintenance agreements for software systems.
- STIP ID GRTC035: Purchase Support Vehicles – GRTC  
Purchase of support vehicles being replaced.
- STIP ID GRTC048: Expansion Rolling Stock – GRTC  
Delete FY18 FTA 5307 funds and local match funds.
- STIP ID GRTC049: Paratransit Vehicles – GRTC  
21 paratransit vehicles approved and matched by State in FY2019.
- STIP ID GRTC050: Demolition and Expansion – GRTC  
Demolition of church building and paving.
- STIP ID GRTC053: Miscellaneous Support Equipment – GRTC  
Delete FY20 FTA 5307 funds, State match funds, and local match funds.
- STIP ID GRTC054: Renovation of Yards & Shops - GRTC  
Delete FY20 FTA 5307 funds, State match funds, and local match funds.
- STIP ID GRTC055: Employee Education/Training – GRTC  
Training of bus operators and mechanics.
- STIP ID GRTC056: Renovation of Administrative/Maintenance Facility – GRTC  
Painting of Administrative and maintenance facility and redevelopment of office space.

- STIP ID GRTC058: Southside Transfer Plaza – GRTC  
Acquire land, perform pre-engineering & NEPA for a permanent Southside Transfer Plaza.
- STIP ID GRTC059: Non-Fixed Route ADA Paratransit Service – GRTC  
Operating cost of providing ADA complementary paratransit service.
- GRTC00: ERP Consultant – GRTC  
IT consultant for ERP system.
- GRTC000: BRT Park & Ride – GRTC  
BRT park & ride – Henrico VA (acquisition and remodel).
- GRTC0000: Downtown Transfer Plaza – GRTC  
Construction of the Downtown Transfer Plaza.

**TAC ACTION REQUESTED:** The following resolution is presented for TAC review and recommendation to the RRTPO for approval:

**RESOLVED**, that the Richmond Regional Transportation Planning Organization policy board amends the *FY18 – FY21 Transportation Improvement Program (TIP)* revising the following twenty-one (21) GRTC projects:

- STIP ID GRTC003: Preventive Maintenance
- STIP ID GRTC005: Transit Enhancements
- STIP ID GRTC006: Expansion Rolling Stock
- STIP ID GRTC008: Replacement Vans
- STIP ID GRTC031: Surveillance/Security Equipment
- STIP ID GRTC032: Purchase Shop Equipment
- STIP ID GRTC033: Purchase ADP Hardware
- STIP ID GRTC034: Purchase ADP Software
- STIP ID GRTC035: Purchase Support Vehicles
- STIP ID GRTC048: Expansion Rolling Stock
- STIP ID GRTC049: Paratransit Vehicles
- STIP ID GRTC050: Demolition and Expansion
- STIP ID GRTC053: Miscellaneous Support Equipment
- STIP ID GRTC054: Renovation of Yards & Shops
- STIP ID GRTC055: Employee Education/Training
- STIP ID GRTC056: Renovation of Administrative/Maintenance Facility
- STIP ID GRTC058: Southside Transfer Plaza
- STIP ID GRTC059: Non-Fixed Route ADA Paratransit Service
- GRTC00: ERP Consultant
- GRTC000: BRT Park & Ride
- GRTC0000: Downtown Transfer Plaza

Attachments  
CAP/jl

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC003

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Preventive Maintenance  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**      **Start**      **End**      **Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$4,560,000
CN:	LOCAL	\$1,140,000
Total:	TOTAL	\$5,700,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$6,408,834	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$1,602,208	\$0

### Amendments

**Amd 57**      6/27/2019      Approved

1). Obligate \$6,408,834 FTA 5307 funds (Local match \$1602,208) to FY20. 2). Eliminate FY18 \$4,560,000, FY19 \$5,520,000, FY20 \$4,560,000 and FY21 \$4,560,000 FTA 5307 funds. 3). Eliminate FY18 \$1,140,000, FY19 \$1,380,000, FY20 \$1,140,000, and FY21 \$1,140,000 local funds.

Date Requested   6/3/2019

### Adjustments

**Adj 73**      8/10/2018      Completed

1). Revise FY19 FTA Sec 5307 funds from \$4,560,000 to \$5,520,000. 2). Revise FY19 local match from \$1,140,000 to \$1,380,000.

Date Requested   8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC005

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Transit Enhancements  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$1,460,000
CN:	LOCAL	\$73,000
Total:	STATE	\$292,000
	TOTAL	\$1,825,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$111,674	\$0
State	\$0	\$0	\$102,000	\$0
Local	\$0	\$0	\$23,418	\$0

### Amendments

**Amd 58** 6/27/2019 Approved

1). Obligate \$111,674 FTA 5307 funds (State match \$102,000 and local match \$23,418) to FY20. 2). Eliminate FY18 \$114,000, FY19 \$114,000, FY20 \$237,600, and FY21 \$114,00 FTA 5307 funds. 3). Eliminate FY18 \$23,000, FY19 \$23,000, FY20 \$47,520, and FY21 \$23,000 State match. 4). Eliminate FY18 \$6,000, FY19 \$6,000, FY20 \$11,880, and FY21 \$6,000 local match.

Date Requested 6/3/2019

### Adjustments

**Adj 74** 8/10/2018 Completed

1). Revise FY20 FTA Sec 5307 funds from \$114,000 to \$237,600. 2). Revise FY20 state match from \$23,000 to \$47,520. 3). Revise FY20 local match from \$6,000 to \$11,880.

Date Requested 8/1/2018



# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC006

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Expansion Rolling Stock  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			



### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations
PE:	Fund Source Obligation
RW:	TOTAL \$0
CN:	
Total:	

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$0	\$0

### Amendments

**Amd 59** 6/27/2019 Approved

1). Delete FY18 \$2,444,000 and FY19 \$1,509,000 FTA 5307 funds. 2). Delete FY18 \$5,936,000 and FY19 \$3,665,000 State match. 3). Delete FY18 \$350,000 and FY19 \$216,000 local match.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC008

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Replacement Vans  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$156,000
CN:	LOCAL	\$22,000
Total:	STATE	\$378,000
	TOTAL	\$556,000



### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$378,000	\$0
FTA 5339	\$0	\$0	\$0	\$452,973
State	\$0	\$0	\$918,000	\$1,100,077
Local	\$0	\$0	\$54,000	\$64,710

### Amendments

**Amd 60** 6/27/2018 Approved

1). Obligate \$378,000 FTA 5307 fund (State match \$918,000 and local match \$54,000) to FY20. NOTE: DRPT recommends FTA 5307 should be FTA 5339. 2). Obligate \$452,973 FTA 5339 funds (State match \$1,100,077 and local match \$64,710) to FY21. 3). Eliminate FY18 \$252,000, FY19 \$302,000, FY20 \$361,000, and FY21 \$361,000 FTA 5307 funds. 4). Eliminate FY18 \$612,000, FY19 \$734,000, FY20 \$876,000, and FY21 \$876,000 State match. 5). Eliminate FY18 \$36,000, FY19 \$44,000, FY20 \$51,000, and FY21 \$51,000 local match.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC031

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Surveillance/Security Equipment  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$103,000
CN:	LOCAL	\$5,000
Total:	STATE	\$21,000
	TOTAL	\$129,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$111,674	\$0
State	\$0	\$0	\$136,000	\$0
Local	\$0	\$0	\$21,918	\$0

### Amendments

**Amd 61** 6/27/2019 Approved

1). Obligate \$111,674 FTA 5307 funds (State match \$136,000 and local match \$21,918) to FY20. 2). Eliminate FY18 \$103,000, FY19 \$103,000, FY20 \$103,000, and FY21 \$103,000 FTA 5307 funds. 3). Eliminate FY18 \$21,000, FY19 \$21,000, FY20 \$21,000, and FY21 \$21,000 State match. 4). Eliminate FY18 \$5,000, FY19 \$5,000, FY20 \$5,000, and FY21 \$5,000 local match.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC032

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Purchase Shop Equipment  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$30,000
CN:	LOCAL	\$2,000
Total:	STATE	\$6,000
	TOTAL	\$38,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$93,903	\$0
State	\$0	\$0	\$171,707	\$0
Local	\$0	\$0	\$15,900	\$0

### Amendments

**Amd 62** 6/27/2019 Approved

1). Obligate \$93,903 FTA 5307 funds (State match \$171,707 and local match \$15,900) to FY20. 2). Eliminate FY18 \$1,000, FY19 \$1,000, FY20 \$1,000, and FY21 \$1,000 FTA 5307 funds. 3). Eliminate FY18 \$2,000, FY19 \$2,000, FY20 \$2,000, and FY21 \$2,000 State match. 4). Eliminate FY18 \$1,000, FY19 \$1,000, FY20 \$1,000, and FY21 \$1,000 local match.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC033

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Purchase ADP Hardware  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**      **Start**      **End**      **Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
<b>PE:</b>	<b>Fund Source</b>	<b>Obligation</b>
<b>RW:</b>	FTA 5307	\$240,000
<b>CN:</b>	LOCAL	\$12,000
<b>Total:</b>	STATE	\$48,000
	TOTAL	\$300,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$320,446	\$0
State	\$0	\$0	\$566,454	\$0
Local	\$0	\$0	\$55,121	\$0

### Amendments

**Amd 63**      6/27/2019      Approved

1). Obligate \$320,446 FTA 5307 funds (State match \$566,454 and local match \$55,121) to FY20. 2). Eliminate FY18 \$240,000, FY19 \$204,000, FY20 \$376,000, and FY21 \$204,000 FTA 5307 funds. 3). Eliminate FY18 \$48,000, FY19 \$41,000, FY20 \$75,200, and FY21 \$41,000 State match. 4). Eliminate FY18 \$12,000, FY19 \$10,000, FY20 \$18,800, and FY21 \$10,000 local match.

Date Requested 6/3/2019

### Adjustments

**Adj 75**      8/10/2018      Completed

1). Revise FY20 FTA Sec 5307 funds from \$204,000 to \$376,000. 2). Revised FY20 state match from \$41,000 to \$75,200. 3). Revise FY20 local match from \$10,000 to \$18,800.

Date Requested 8/1/2018



# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC034

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Purchase ADP Software  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
PE:	Fund Source	Obligation
RW:	FTA 5307	\$280,000
CN:	LOCAL	\$14,000
Total:	STATE	\$56,000
	TOTAL	\$350,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$1,317,213	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$329,303	\$0

### Amendments

**Amd 64** 6/27/2019 Approved

1). Obligate \$1,317,213 FTA 5307 funds (local match \$329,303) to FY20. 2). Eliminate FY18 \$840,000, FY19 \$840,000, FY20 \$970,400, and FY21 \$840,000 FTA 5307 funds. 3). Eliminate FY18 \$168,000, FY19 \$168,000, FY20 \$194,080, and FY21 \$168,000 State match. 4). Eliminate FY18 \$42,000, FY19 \$42,000, FY20 \$48,520, and FY21 \$42,000 local match.

Date Requested 6/3/2019

### Adjustments

**Adj 76** 8/10/2018 Completed

1). Revise FY20 FTA Sec 5307 funds from \$840,000 to \$970,400. 2). Revise FY20 state match from \$168,000 to \$194,080. 3). Revise FY20 local match from \$42,000 to \$48,520.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC035

**Jurisdiction:** GRTC  
**Route/Street:** Greater Richmond Transit Company  
**Description:** Purchase Support Vehicles  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:**



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

No Image Available

### Cost Estimates / Previous Obligations

Cost Estimates	Previous Obligations	
	Fund Source	Obligation
PE:		
RW:	TOTAL	\$0
CN:		
Total:		

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$277,800	\$0
State	\$0	\$0	\$595,000	\$0
Local	\$0	\$0	\$43,200	\$0

### Amendments

**Amd 65** 6/27/2019 Approved

1). Obligate \$277,800 FTA 5307 funds (State match \$595,000 and local match \$43,200) to FY20. 2). Eliminate FY19 \$160,000 and FY20 \$373,600 FTA 5307 funds. 3). Eliminate FY19 \$32,000 and FY20 \$74,720 State match. 4). Eliminate FY19 \$8,000 and FY20 \$18,680 local match.

Date Requested 6/3/2019

### Adjustments

**Adj 77** 8/10/2018 Completed

1). Add \$373,600 FTA Sec 5307 funds to FY20. 2). Add \$74,720 state match to FY20. 3). Add \$18,680 local match to FY20.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC048

**Jurisdiction:** GRTC  
**Route/Street:** GRTC service area  
**Description:** Expansion Rolling Stock  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Funding split is 28% federal, 68% state match, and 4% local match. State match has not yet been approved and local commitment is firm at 4%.



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			



### Cost Estimates / Previous Obligations

#### Cost Estimates

**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$0	\$0

### Amendments

**Amd 66** 6/27/2019 Approved

1). Delete FY18 \$441,000 FTA 5307 funds and \$1,134,000 local funds.

Date Requested 6/3/2019

### Amendments

**Amd 06**

10/5/2017 Approved 1). This is a new project added to the TIP. 2). Obligate \$441,000 FTA Sec 5307 funds (local match \$1,134,000) to FY18.

Date Requested 6/21/2017

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC049

**Jurisdiction:** GRTC  
**Route/Street:** GRTC service area  
**Description:** Paratransit Vehicles  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Funding split is 28% federal, 68% state match, and 4% local match. State match has not yet been approved and local commitment is firm at 4%.



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**



### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$655,480	\$0	\$0
State	\$0	\$1,591,880	\$0	\$0
Local	\$0	\$93,640	\$0	\$0

### Amendments

**Amd 67** 6/27/2019 Approved

1). Obligate \$655,480 FTA 5307 funds (State match \$1,591,880 and local match \$93,640) to FY19. 2). Eliminate FY18 \$655,469 FTA 5339 funds and \$1,685,491 local match.

Date Requested 6/3/2019

### Amendments

**Amd 07**

10/5/2017 Approved 1). This is a new project added to the TIP. 2). Obligate \$655,469 FTA Sec 5339 funds (local match \$1,685,491) to FY18.

Date Requested 6/21/2017

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC050

**Jurisdiction:** GRTC  
**Route/Street:** GRTC service area  
**Description:** Demolition and Expansion  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Funding split is 80% federal, 16% state match, and 4% local match. State match has not yet been approved and local commitment is firm at 4%.



### Schedule

**Phase**      **Start**      **End**      **Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5339	\$0	\$0	\$814,560	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$203,640	\$0

### Amendments

**Amd 68**      6/27/2019      Approved

1). Obligate \$814,560 FTA 5339 funds (Local match \$203,640) to FY20. 2). Eliminate FY18 \$974,000, and FY20 \$815,200 FTA 5307 funds. 3). Eliminate FY20 \$163,040 State match. 4). Eliminate FY18 \$244,000 and FY20 \$40,760 local match.

Date Requested 6/3/2019

### Amendments

**Amd 08**

10/5/2017      Approved      1). This is a new project added to the TIP. 2). Obligate \$814,560 FTA Section 5307 funds (local match \$203,640) to FY18.

Date Requested 6/21/2017

### Adjustments

## FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

GRTC

UPC GRTC050

Adj 79 8/10/2018 Completed

1). Based on STIP records, revise FY18 FTA Sec 5307 funds from \$814,560 to \$974,000, and FY18 local match from \$203,640 to \$244,000. 2). Add \$815,200 FTA Sec 5307 funds, \$163,040 state match, and \$40,760 local match to FY20.

Date Requested 8/1/2018



# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## UPC GRTC053

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Miscellaneous Support Equipment  
**From:**  
**To:**  
**System:**  
**Administered By:**  
**MPO Note:** Exempt 40 CFR 93.126



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$0	\$0

### Amendments

**Amd 69** 6/27/2019 Approved

1). Delete FY20 \$20,000 FTA 5307 funds (State match \$4,000 and local match \$1,000).

Date Requested 6/3/2019

### Amendments

**Amd 36**

9/6/2018 Approved 1). This is a new project added to the TIP. 2). Obligate \$20,000 FTA Sec 5307 funds (State match \$4,000 and local match \$1,000) to FY20.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC054

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Renovation of Yards & Shops  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Exempt 40 CFR 93.126



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:** \$25,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$0	\$0
State	\$0	\$0	\$0	\$0
Local	\$0	\$0	\$0	\$0

### Amendments

**Amd 70** 6/27/2019 Approved

1). Delete FY20 \$20,000 FTA 5307 funds (State match \$4,000 and local match \$1,000).

Date Requested 6/3/2019

### Amendments

**Amd 37**

9/6/2018 Approved 1). This is a new project added to the TIP. 2). Obligate \$20,000 FTA Sec 5307 funds (State match \$4,000 and local match \$1,000) to FY20.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC055

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Employee Education/Training  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Exempt 40 CFR 93.126. Funding split is 80% federal, 16% state match, and 4% local match. State match has not yet been approved and local commitment is firm at 4%.



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:** \$75,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$55,837	\$0
Local	\$0	\$0	\$13,959	\$0

### Amendments

**Amd 71** 6/27/2019 Approved

1). Obligate \$55,837 FTA 5307 funds (Local match \$13,959) to FY20. 2). Eliminate FY19 \$60,000 FTA 5307 funds and FY19 \$15,000 local match.

Date Requested 6/3/2019

### Amendments

**Amd 38**

9/6/2018 Approved 1). This is a new project added to the TIP. 2). Obligate \$60,000 FTA Sec 5307 funds (local match \$15,000) to FY19.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC056

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Renovation of Administrative/Maintenance Facility  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Exempt 40 CFR 93.126



### Schedule

**Phase**      **Start**      **End**      **Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

*No Image Available*

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:** \$80,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$39,200	\$0
FTA 5339	\$0	\$0	\$70,000	\$0
State	\$0	\$0	\$265,200	\$0
Local	\$0	\$0	\$15,600	\$0

### Amendments

**Amd 72**      6/27/2019      Approved

1). Obligate \$39,200 FTA 5307 funds and \$70,000 FTA 5339 funds (State match \$265,200 and local match \$15,600) to FY20. 2). Eliminate FY20 \$64,000 FTA 5307 funds, \$12,800 State match, and \$3,200 local match.

Date Requested    6/3/2019

### Amendments

**Amd 39**

9/6/2018      Approved      1). This is a new project added to the TIP. 2). Obligate \$64,000 FTA Sec 5307 funds (State match \$12,800 and local match \$3,200) to FY20.

Date Requested    8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC058

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Southside Transfer Plaza  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Exempt 40 CFR 93.126



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

#### Cost Estimates

**PE:**  
**RW:**  
**CN:**  
**Total:** \$1,000,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5339	\$0	\$0	\$280,000	\$0
State	\$0	\$0	\$680,000	\$0
Local	\$0	\$0	\$40,000	\$0

### Amendments

**Amd 73** 6/27/2019 Approved

1). Obligate \$280,000 FTA 5339 funds (State match \$680,000 and local match \$40,000) to FY20. 2). Eliminate FY20 \$800,000 FTA 5307 funds, \$160,000 State match, and \$40,000 local match.

Date Requested 6/3/2019

### Amendments

**Amd 41**

9/6/2018 Approved 1). This is a new project added to the TIP. 2). Obligate \$800,000 FTA Sec 5307 funds (State match \$160,000 and local match \$40,000) to FY20.

Date Requested 8/1/2018

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC059

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Non Fixed Route ADA Paratransit Svc  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:** GRTC  
**MPO Note:** Exempt 40 CFR 93.126. Funding split is 80% federal, 16% state match, and 4% local match. State match has not yet been approved and local commitment is firm at 4%.



### Schedule

Phase	Start	End	Status
Preliminary Engineering (PE):			
Right of Way (RW):			
Construction (CN):			

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:** \$1,345,000

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$1,131,497	\$0
Local	\$0	\$0	\$282,874	\$0

### Amendments

**Amd 74** 6/27/2019 Approved

1). Obligate \$1,131,497 FTA 5307 funds (local match \$282,874) to FY20. 2). Eliminate FY19 \$1,076,000 FTA 5307 funds and \$269,000 local match.

Date Requested 6/3/2019

### Amendments

**Amd 42**

9/6/2018 Approved 1). This is a new project added to the TIP. 2). Obligate \$1,076,000 FTA Sec 5307 funds (local match \$269,000) to FY19.

Date Requested 8/1/2018



# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC00

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** ERP Consultant  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$160,000	\$0
Local	\$0	\$0	\$40,000	\$0

### Amendments

**Amd 75** 6/27/2019 Approved

1). Obligate \$160,000 FTA 5307 funds (Local match \$40,000) to FY20.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

### UPC GRTC000

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** BRT Park and Ride  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**  
**Start**  
**End**  
**Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

No Image Available

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5339	\$0	\$0	\$2,400,000	\$0
Local	\$0	\$0	\$600,000	\$0

### Amendments

**Amd 76** 6/27/2019 Approved

1). Obligate \$2,400,000 FTA 5339 funds (Local match \$600,000) to FY20.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## GRTC

UPC GRTC0000

**Jurisdiction:** GRTC  
**Route/Street:**  
**Description:** Downtown Transfer Plaza  
**From:**  
**To:**  
**System:** Public Transportation  
**Administered By:**  
**MPO Note:**



### Schedule

**Phase**      **Start**      **End**      **Status**  
**Preliminary Engineering (PE):**  
**Right of Way (RW):**  
**Construction (CN):**

*No Image Available*

### Cost Estimates / Previous Obligations

**Cost Estimates**  
**PE:**  
**RW:**  
**CN:**  
**Total:**

### Federal Obligations

Fund Source	Federal Obligations			
	FY18	FY19	FY20	FY21
FTA 5307	\$0	\$0	\$2,383,323	\$9,362,000
State	\$0	\$0	\$476,665	\$5,134,000
Local	\$0	\$0	\$119,166	\$604,000

### Amendments

**Amd 77**      6/27/2019      Approved

1). Obligate \$2,383,323 FTA 5307 funds (State match \$476,665 and local match \$119,166) to FY20. 2). Obligate \$9,362,000 FTA 5307 funds (State match \$5,134,000 and local match \$604,000) to FY21.

Date Requested 6/3/2019

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Project Amendments - Tracking Records

<b>Amd 57</b>	<b>GRTC003</b>	<b>GRTC</b>	<b>Preventive Maintenance</b>
6/27/2019	Approved	1). Obligate \$6,408,834 FTA 5307 funds (Local match \$1602,208) to FY20. 2). Eliminate FY18 \$4,560,000, FY19 \$5,520,000, FY20 \$4,560,000 and FY21 \$4,560,000 FTA 5307 funds. 3). Eliminate FY18 \$1,140,000, FY19 \$1,380,000, FY20 \$1,140,000, and FY21 \$1,140,000 local funds. Date Requested 6/3/2019	
<b>Amd 58</b>	<b>GRTC005</b>	<b>GRTC</b>	<b>Transit Enhancements</b>
6/27/2019	Approved	1). Obligate \$111,674 FTA 5307 funds (State match \$102,000 and local match \$23,418) to FY20. 2). Eliminate FY18 \$114,000, FY19 \$114,000, FY20 \$237,600, and FY21 \$114,000 FTA 5307 funds. 3). Eliminate FY18 \$23,000, FY19 \$23,000, FY20 \$47,520, and FY21 \$23,000 State match. 4). Eliminate FY18 \$6,000, FY19 \$6,000, FY20 \$11,880, and FY21 \$6,000 local match. Date Requested 6/3/2019	
<b>Amd 59</b>	<b>GRTC006</b>	<b>GRTC</b>	<b>Expansion Rolling Stock</b>
6/27/2019	Approved	1). Delete FY18 \$2,444,000 and FY19 \$1,509,000 FTA 5307 funds. 2). Delete FY18 \$5,936,000 and FY19 \$3,665,000 State match. 3). Delete FY18 \$350,000 and FY19 \$216,000 local match. Date Requested 6/3/2019	
<b>Amd 60</b>	<b>GRTC008</b>	<b>GRTC</b>	<b>Replacement Vans</b>
6/27/2018	Approved	1). Obligate \$378,000 FTA 5307 fund (State match \$918,000 and local match \$54,000) to FY20. NOTE: DRPT recommends FTA 5307 should be FTA 5339. 2). Obligate \$452,973 FTA 5339 funds (State match \$1,100,077 and local match \$64,710) to FY21. 3). Eliminate FY18 \$252,000, FY19 \$302,000, FY20 \$361,000, and FY21 \$361,000 FTA 5307 funds. 4). Eliminate FY18 \$612,000, FY19 \$734,000, FY20 \$876,000, and FY21 \$876,000 State match. 5). Eliminate FY18 \$36,000, FY19 \$44,000, FY20 \$51,000, and FY21 \$51,000 local match. Date Requested 6/3/2019	
<b>Amd 61</b>	<b>GRTC031</b>	<b>GRTC</b>	<b>Surveillance/Security Equipment</b>
6/27/2019	Approved	1). Obligate \$111,674 FTA 5307 funds (State match \$136,000 and local match \$21,918) to FY20. 2). Eliminate FY18 \$103,000, FY19 \$103,000, FY20 \$103,000, and FY21 \$103,000 FTA 5307 funds. 3). Eliminate FY18 \$21,000, FY19 \$21,000, FY20 \$21,000, and FY21 \$21,000 State match. 4). Eliminate FY18 \$5,000, FY19 \$5,000, FY20 \$5,000, and FY21 \$5,000 local match. Date Requested 6/3/2019	
<b>Amd 62</b>	<b>GRTC032</b>	<b>GRTC</b>	<b>Purchase Shop Equipment</b>
6/27/2019	Approved	1). Obligate \$93,903 FTA 5307 funds (State match \$171,707 and local match \$15,900) to FY20. 2). Eliminate FY18 \$1,000, FY19 \$1,000, FY20 \$1,000, and FY21 \$1,000 FTA 5307 funds. 3). Eliminate FY18 \$2,000, FY19 \$2,000, FY20 \$2,000, and FY21 \$2,000 State match. 4). Eliminate FY18 \$1,000, FY19 \$1,000, FY20 \$1,000, and FY21 \$1,000 local match. Date Requested 6/3/2019	
<b>Amd 63</b>	<b>GRTC033</b>	<b>GRTC</b>	<b>Purchase ADP Hardware</b>
6/27/2019	Approved	1). Obligate \$320,446 FTA 5307 funds (State match \$566,454 and local match \$55,121) to FY20. 2). Eliminate FY18 \$240,000, FY19 \$204,000, FY20 \$376,000, and FY21 \$204,000 FTA 5307 funds. 3). Eliminate FY18 \$48,000, FY19 \$41,000, FY20 \$75,200, and FY21 \$41,000 State match. 4). Eliminate FY18 \$12,000, FY19 \$10,000, FY20 \$18,800, and FY21 \$10,000 local match. Date Requested 6/3/2019	

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Project Amendments - Tracking Records

<b>Amd 64</b>	<b>GRTC034</b>	<b>GRTC</b>	<b>Purchase ADP Software</b>
6/27/2019	Approved	1). Obligate \$1,317,213 FTA 5307 funds (local match \$329,303) to FY20. 2). Eliminate FY18 \$840,000, FY19 \$840,000, FY20 \$970,400, and FY21 \$840,000 FTA 5307 funds. 3). Eliminate FY18 \$168,000, FY19 \$168,000, FY20 \$194,080, and FY21 \$168,000 State match. 4). Eliminate FY18 \$42,000, FY19 \$42,000, FY20 \$48,520, and FY21 \$42,000 local match. Date Requested 6/3/2019	
<b>Amd 65</b>	<b>GRTC035</b>	<b>GRTC</b>	<b>Purchase Support Vehicles</b>
6/27/2019	Approved	1). Obligate \$277,800 FTA 5307 funds (State match \$595,000 and local match \$43,200) to FY20. 2). Eliminate FY19 \$160,000 and FY20 \$373,600 FTA 5307 funds. 3). Eliminate FY19 \$32,000 and FY20 \$74,720 State match. 4). Eliminate FY19 \$8,000 and FY20 \$18,680 local match. Date Requested 6/3/2019	
<b>Amd 66</b>	<b>GRTC048</b>	<b>GRTC</b>	<b>Expansion Rolling Stock</b>
6/27/2019	Approved	1). Delete FY18 \$441,000 FTA 5307 funds and \$1,134,000 local funds. Date Requested 6/3/2019	
<b>Amd 67</b>	<b>GRTC049</b>	<b>GRTC</b>	<b>Paratransit Vehicles</b>
6/27/2019	Approved	1). Obligate \$655,480 FTA 5307 funds (State match \$1,591,880 and local match \$93,640) to FY19. 2). Eliminate FY18 \$655,469 FTA 5339 funds and \$1,685,491 local match. Date Requested 6/3/2019	
<b>Amd 68</b>	<b>GRTC050</b>	<b>GRTC</b>	<b>Demolition and Expansion</b>
6/27/2019	Approved	1). Obligate \$814,560 FTA 5339 funds (Local match \$203,640) to FY20. 2). Eliminate FY18 \$974,000, and FY20 \$815,200 FTA 5307 funds. 3). Eliminate FY20 \$163,040 State match. 4). Eliminate FY18 \$244,000 and FY20 \$40,760 local match. Date Requested 6/3/2019	
<b>Amd 69</b>	<b>GRTC053</b>	<b>GRTC</b>	<b>Miscellaneous Support Equipment</b>
6/27/2019	Approved	1). Delete FY20 \$20,000 FTA 5307 funds (State match \$4,000 and local match \$1,000). Date Requested 6/3/2019	
<b>Amd 70</b>	<b>GRTC054</b>	<b>GRTC</b>	<b>Renovation of Yards &amp; Shops</b>
6/27/2019	Approved	1). Delete FY20 \$20,000 FTA 5307 funds (State match \$4,000 and local match \$1,000). Date Requested 6/3/2019	
<b>Amd 71</b>	<b>GRTC055</b>	<b>GRTC</b>	<b>Employee Education/Training</b>
6/27/2019	Approved	1). Obligate \$55,837 FTA 5307 funds (Local match \$13,959) to FY20. 2). Eliminate FY19 \$60,000 FTA 5307 funds and FY19 \$15,000 local match. Date Requested 6/3/2019	
<b>Amd 72</b>	<b>GRTC056</b>	<b>GRTC</b>	<b>Renovation of Administrative/Maintenance Facility</b>
6/27/2019	Approved	1). Obligate \$39,200 FTA 5307 funds and \$70,000 FTA 5339 funds (State match \$265,200 and local match \$15,600) to FY20. 2). Eliminate FY20 \$64,000 FTA 5307 funds, \$12,800 State match, and \$3,200 local match. Date Requested 6/3/2019	

# FY 2018 to FY 2021 Richmond Region TPO Transportation Improvement Program

## Project Amendments - Tracking Records

<b>Amd 73</b>	<b>GRTC058</b>	<b>GRTC</b>	<b>Southside Transfer Plaza</b>
6/27/2019	Approved	1). Obligate \$280,000 FTA 5339 funds (State match \$680,000 and local match \$40,000) to FY20. 2). Eliminate FY20 \$800,000 FTA 5307 funds, \$160,000 State match, and \$40,000 local match. Date Requested 6/3/2019	
<b>Amd 74</b>	<b>GRTC059</b>	<b>GRTC</b>	<b>Non Fixed Route ADA Paratransit Svc</b>
6/27/2019	Approved	1). Obligate \$1,131,497 FTA 5307 funds (local match \$282,874) to FY20. 2). Eliminate FY19 \$1,076,000 FTA 5307 funds and \$269,000 local match. Date Requested 6/3/2019	
<b>Amd 75</b>	<b>GRTC00</b>	<b>GRTC</b>	<b>ERP Consultant</b>
6/27/2019	Approved	1). Obligate \$160,000 FTA 5307 funds (Local match \$40,000) to FY20. Date Requested 6/3/2019	
<b>Amd 76</b>	<b>GRTC000</b>	<b>GRTC</b>	<b>BRT Park and Ride</b>
6/27/2019	Approved	1). Obligate \$2,400,000 FTA 5339 funds (Local match \$600,000) to FY20. Date Requested 6/3/2019	
<b>Amd 77</b>	<b>GRTC0000</b>	<b>GRTC</b>	<b>Downtown Transfer Plaza</b>
6/27/2019	Approved	1). Obligate \$2,383,323 FTA 5307 funds (State match \$476,665 and local match \$119,166) to FY20. 2). Obligate \$9,362,000 FTA 5307 funds (State match \$5,134,000 and local match \$604,000) to FY21. Date Requested 6/3/2019	



## **TAC AGENDA 6/11/19; ITEM 11.**

### **LRTP SOCIOECONOMIC DATA: 2045 FUTURE YEAR DATA APPROVAL**

#### **Richmond Regional Transportation Planning Organization**

**REQUESTED ACTION:** To approve 2045 Future Year Data as approved by the Socioeconomic Data Workgroup to be used in the Richmond/Tri-Cities (RTC) Regional Travel Demand Model update process and to recommend RRTPO policy board approval of both 2017 Base Year data and 2045 Future Year data.

**BACKGROUND:** The RRTPO staff is scoping the next Long-Range Transportation Planning process and a first task in the process is the update the RTC regional travel demand model and the supporting socio-economic (SE) data. The RRTPO and the Tri-Cities MPO are working closely with VDOT modeling staff to update the RTC model and anticipate completion of this task by the fall. The RRTPO Technical Advisory Committee (TAC) authorized the establishment of the Socioeconomic Data Workgroup at their March 2018 meeting. The establishment of this workgroup has occurred with the development of each long-range transportation plan and includes appointees from local government staff, VDOT, GRTC and DRPT who are qualified to confirm the required data inputs. Locality involvement is critical to confirming population and employment data at the transportation analysis zone (TAZ) level. The Socioeconomic Data Workgroup convened its first meeting on April 27, 2018. The Workgroup approved the 2017 Base Year data at their November 1, 2018 meeting and the Future Year 2045 data in their May 31, 2019 meeting. TAC approved the 2017 Base Year data at the November 2018 meeting. The draft Socioeconomic Data Report document is provided in the agenda package.

**SE DATA WORKGROUP RECOMMENDATION:** The Socioeconomic Data Workgroup approved the 2045 Future Year Data at the Traffic Analysis Zone (TAZ), Jurisdictional and Regional levels and recommends that the RRTPO Technical Advisory Committee (TAC) approve the data as it is presented to be used in the Richmond/Tri-Cities (RTC) Model update process.

**STAFF RECOMMENDATION:** The RRTPO staff concurs with the Socioeconomic Data Workgroup recommendation.

**TAC ACTION REQUESTED:** The TAC is requested to approve the 2045 Future Year Data at the Traffic Analysis Zone (TAZ), Jurisdictional and Regional levels as it is presented by RRTPO staff, to be used in the Richmond/Tri-Cities (RTC) Model update process and recommend RRTPO policy board approval of both 2017 Base Year data and 2045 Future Year data.

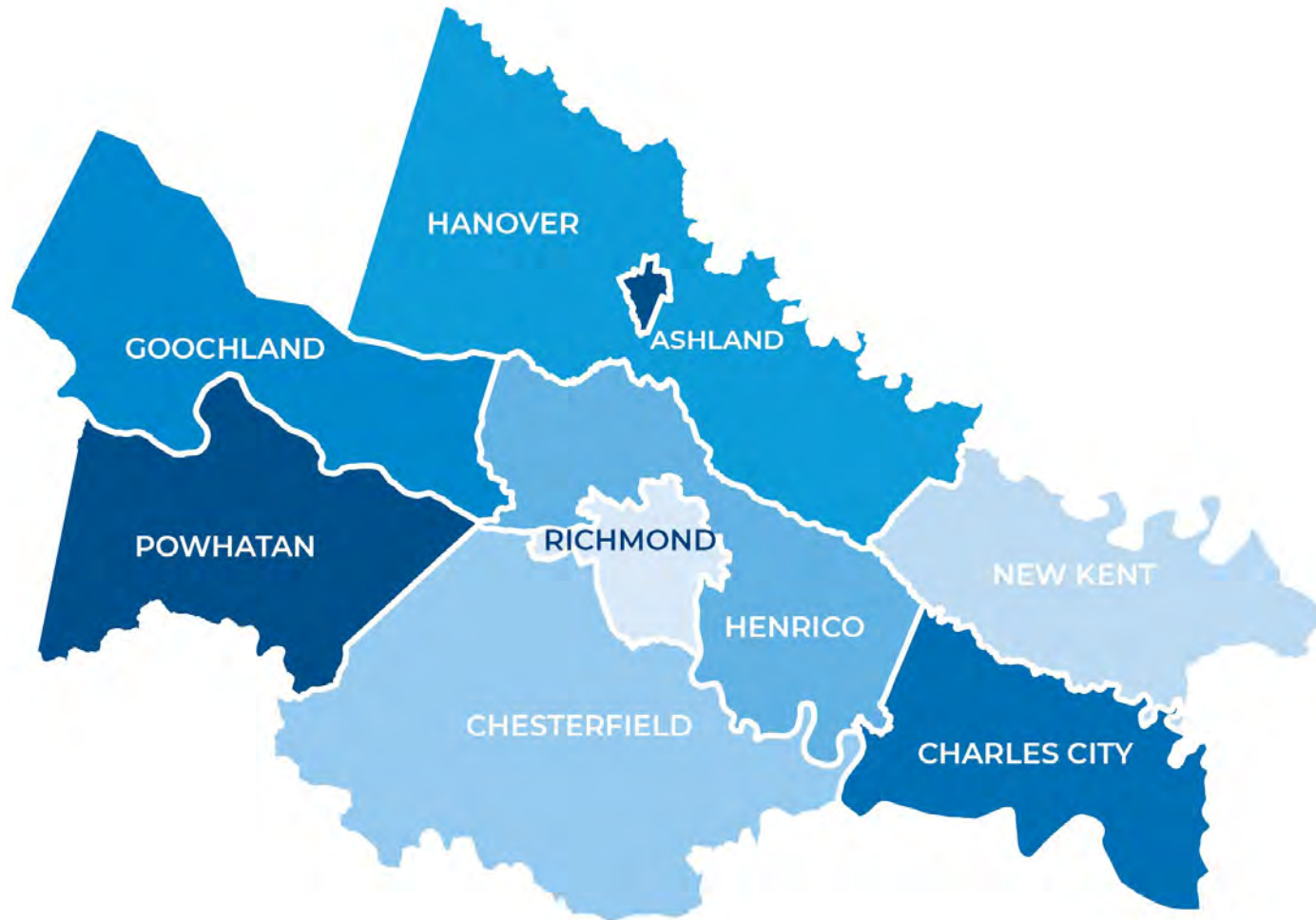
SA/

Attachment:

Socioeconomic Data Report

# Richmond Regional Transportation Planning Organization

## Socioeconomic Data Report for the 2017 Base Year and 2045 Forecast Year



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## **ACKNOWLEDGEMENT**

This report was prepared in cooperation with the United States Department of Transportation, Federal Highway Administration, the Virginia Department of Transportation, Virginia Department of Rail and Public Transportation, GRTC Transit Systems and the representatives of the nine local jurisdictions of the Richmond region and is the collective work of state, regional and local representatives of the Richmond Regional Transportation Planning Organization (RRTPO) Socioeconomic Data Workgroup.

## **DISCLAIMER**

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The RRTPO is the brand of the legal entity known as Richmond Area Metropolitan Planning Organization.

# **Richmond Regional Transportation Planning Organization**

The Richmond Regional Transportation Planning Organization (RRTPO) is the federal and state designated regional transportation planning organization that serves as the forum for cooperative transportation decision-making in the Richmond area. The Richmond Regional PlanRVA is the contracting agent and staff for the Richmond Regional TPO.

## **Voting Members**

### **Town of Ashland**

John H. Hodges  
George M. Spagna \*

### **Charles City County**

Floyd H. Miles  
William G. Coada \*

### **Chesterfield County**

Steve A. Elswick  
Christopher Winslow  
James M. Holland  
Leslie Haley \*

### **Goochland County**

Manuel Alvarez, Jr.  
John L. Lumpkins, Jr.  
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Thomas M. W. Coleman \*\*

### **Hanover County**

W. Canova Peterson  
Angela Kelly-Wiecek  
Wayne T. Hazzard \*  
J. Michael Flagg \*\*

### **Henrico County**

Patricia S. O'Bannon  
Frank J. Thornton  
Thomas Branin \*

### **New Kent County**

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Patricia A. Paige  
Thomas W. Evelyn \*  
W. R. Davis, Jr. \*

### **Powhatan County**

William E. Melton  
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### **City of Richmond**

Parker C. Agelasto  
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### **GRTC Transit System**

(Vacant)  
Garland Williams \*

### **RMTA**

Joi Taylor Dean  
(Vacant)

### **Virginia Secretary of Transportation Designee**

Barton A. Thrasher  
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*\* Alternates*

*\*\* Not eligible to vote*

## **Non-Voting Members**

### **FHWA**

Ivan Rucker

### **FTA**

Melissa McGill

### **RideFinders. Inc.**

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Herbert A. Richwine

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Bilal Damaj – Research Intern

Jessica Turner – Research Intern

## **2017 - 2045 Socioeconomic Data Workgroup Members List**

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### **Charles City County**

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### **Chesterfield County**

Catherine Bray

### **Goochland County**

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Tom Coleman

### **Hanover County**

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### **Henrico County**

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### **New Kent County**

Kelli LeDuc

### **Powhatan County**

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### **City of Richmond**

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David Hyder

### **PlanRVA/RRTP**

Sulabh Aryal



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# Introduction

The scope development for 2045 update of the Long-Range Transportation Plan (LRTP) for the Richmond region is underway. The LRTP is a significant decision tool to guide how the RRTPO and its partners will meet the transportation needs of the Richmond region over the next 20 years. Changes in federal transportation regulations require the LRTP to have as its foundation a performance-based planning focus.

The Richmond Tri-Cities (RTC) regional travel demand model will be a critical tool for assessing transportation system performance for the LRTP. The RTC model will be used to identify existing and future needs for the highway and transit network, and to evaluate the potential impact of investments. Performance measures such as volume/capacity ratio, vehicles miles traveled, vehicle hours traveled, average congested speed by facility type, travel time improvements, and accessibility improvements to major destinations. The results of the analysis will be used to evaluate if the proposed investments achieve the desired impacts in fiscally-constrained plan.

A first task in the 2045 LRTP update process is to update the RTC regional travel demand model and the supporting socioeconomic (SE) data. The RRTPO, the Tri-Cities MPO and VDOT Richmond District staff are working closely with VDOT modeling staff and their consultants to update the RTC model. The RTC model will be updated to a new base year (2017) and horizon year (2045). The completion of the process is anticipated in around late summer of 2019.

RTC model update requires a new set of base year (2017) and horizon year (2045) population and derivatives, school and college enrollment, auto ownership and employment data as primary inputs. The 2017-2045 SE Data provides estimates and projections of population, employment and other socioeconomic data of the Richmond Region within small geographic areas called Transportation Analysis Zones (TAZs). Though the primary purpose of the 2017-2045 SE is to provide input into the RTC Model, this data is also used by local governments, regional

and state agencies, non-profit organizations and consultants for a variety of demographic planning purposes like comprehensive economic development analysis, infrastructure planning on a local or regional basis, sustainability plans, or local comprehensive planning in the context of a region. This data is unique in sense no other available dataset provides future projections of population, employment and derivative in a small geography like the TAZ.

This work is developed by a working group of the RRTPO Technical Advisory Committee – the Socioeconomic (SE) Data Work Group. The establishment of SE Data Work Group has occurred with the development of each long-range transportation plan and includes appointees from local government staff who are qualified to confirm the required data inputs and representatives from VDOT, DRPT and GRTC. Locality involvement is critical to confirming data at the transportation analysis zone (TAZ) level.

The Socioeconomic Data Work Group to develop the 2017-2045 data was convened in the early spring of 2018.

# 2017 Base Year Summary Table

2017 Base Year Data											
Jurisdiction <sup>1</sup>	Population			Housing		Autos	School Enrollment		Employment		
	Total	In Households	In Group Quarters	Housing Units	Households		K-12	Colleges	Total	Retail	Non-Retail
Charles City	7,126	7,126	0	3,328	2,874	8,672	650	0	1,668	96	1,572
Chesterfield <sup>2</sup>	340,848	336,197	4,651	132,586	124,595	293,337	62,779	20,985	131,120	34,646	96,474
Goochland	23,536	22,812	724	9,679	8,981	23,485	2,925	531	13,966	1,360	12,606
Hanover <sup>3</sup>	109,595	106,677	2,918	41,706	40,247	97,794	18,226	1,418	50,625	12,969	37,656
Henrico	335,283	328,396	6,887	135,623	132,421	279,241	57,860	11,490	191,240	45,877	145,363
New Kent	21,347	20,740	607	8,389	8,008	21,868	3,336	100	3,956	948	3,008
Powhatan	29,147	27,150	1,997	11,022	10,442	29,566	4,635	0	6,092	1,577	4,515
Richmond	224,798	210,302	14,496	108,043	99,958	129,444	29,536	41,746	152,044	24,468	127,576
<b>Total</b>	<b>1,091,680</b>	<b>1,059,400</b>	<b>32,280</b>	<b>450,376</b>	<b>427,526</b>	<b>883,407</b>	<b>179,947</b>	<b>76,270</b>	<b>550,711</b>	<b>121,941</b>	<b>428,770</b>

<sup>1</sup>Includes all jurisdictions in Planning District 15 (i.e. MPO Study area, rural areas, and Tri-Cities Area MPO portion of Chesterfield)

<sup>2</sup>Chesterfield County TAZs are located in both the Richmond TPO and Tri-Cities MPO.

<sup>3</sup>Includes the Town of Ashland

# 2045 Forecast Year Summary Table

2045 Forecast Year Data											
Jurisdiction <sup>1</sup>	Population			Housing		Autos	School Enrollment		Employment		
	Total	In Households	In Group Quarters	Housing Units	Households		K-12	Colleges	Total	Retail	Non-Retail
Charles City	8,540	8,540	0	3,988	3,444	10,391	617	0	1,832	112	1,720
Chesterfield <sup>2</sup>	437,512	432,861	4,651	169,660	159,420	375,168	77,677	20,985	177,742	43,522	134,220
Goochland	33,738	33,014	724	14,025	13,003	33,705	7,167	531	20,507	1,976	18,531
Hanover <sup>3</sup>	145,559	142,584	2,969	54,324	52,423	127,162	18,226	1,418	65,859	18,847	47,012
Henrico	430,222	423,335	6,887	174,837	170,701	360,612	74,880	12,329	238,938	51,987	185,951
New Kent	36,270	35,435	835	14,334	13,682	37,365	6,102	310	5,979	1,267	4,712
Powhatan	41,248	39,251	1,997	15,934	15,097	42,694	6,362	0	7,528	1,843	5,685
Richmond	280,141	264,645	15,496	135,306	125,169	162,014	42,990	41,809	173,089	25,987	147,102
<b>Total</b>	<b>1,413,230</b>	<b>1,379,665</b>	<b>33,559</b>	<b>582,408</b>	<b>552,939</b>	<b>1,149,111</b>	<b>234,021</b>	<b>77,382</b>	<b>691,474</b>	<b>145,541</b>	<b>544,933</b>

<sup>1</sup>Includes all jurisdictions in Planning District 15 (i.e. MPO Study area, rural areas, and Tri-Cities Area MPO portion of Chesterfield)

<sup>2</sup>Chesterfield County TAZs are located in both the Richmond TPO and Tri-Cities MPO.

<sup>3</sup>Includes the Town of Ashland

# Methodology For 2017 Base Year

## Housing and Population

The 2017 base year methodology for development of the housing and population data used a bottom-up approach for tracking local residential development. Henrico and Hanover counties track their annual growth through their Continuing, Cooperative and Comprehensive data process, also known as 3-C data. Socioeconomic Data workgroup decided to use this approach for all jurisdictions in developing the population and housing data as part of the 2017-2045 Socioeconomic update process.

The following steps were used:

1. Certificate of occupancies (COs) and demolitions (Demos) by address/location was tracked and through the use of GIS, each CO and Demo point was spatially joined with the Transportation Analysis Zone (TAZ)
2. Using the 2010 Census data as the starting point, all the Census blocks with total population, group quarters population, total housing units, vacant housing units, and occupied housing units were nested into each TAZ.
3. Since the 2010 Census data was completed on April 1, 2010 each jurisdiction was instructed to track their COs and Demos from April 1 – Dec 31, 2010, and then for each subsequent calendar year from 2011 to 2017.
4. COs and Demos dating from April 1 – Dec 31, 2010 were then inputted into 3-C model for year 2010. Subsequently all COs and Demos for the whole year from 2011 to 2017 were input into the 3-C model.
5. The data development process used for Hanover, Chesterfield, and Henrico:
  - All three of these jurisdictions had already been tracking their 3-C data and have the same methodology described for the rural jurisdictions below with a few exceptions:
  - Having tracked 3-C data prior to 2010 all three jurisdictions had a breakdown between single family vs multi-family.
  - Henrico used surveys to identify group quarters population and the multi-family vacancy rates
  - All three jurisdictions used specific countywide average household size based on the 2010 Census and then used American Community Survey (ACS) in subsequent years.
  - All the jurisdictions used individual vacancy rate by TAZ based on the 2010 Census, ACS or Costar Vacancy data (if available)
6. The rural jurisdictions (Charles City, New Kent, Powhatan, and Goochland) process was developed as follows:
  - There was no breakdown of single family and multi-family.
  - A countywide vacancy rate, specific to each jurisdiction and based on either the 2010 Census or ACS was applied to all the rural jurisdictions for both single family and multi-family housing.
  - A countywide average household size was then applied based on the 2010 Census to calculate the single family and multi-family population.
7. City of Richmond data development process:
  - Only total housing units were tracked since the housing stock in the City is so much more diverse was no way to know the exact breakdown.
  - To account for the diverse housing stock the City was divided into five districts which had similar housing characteristics (downtown, northeast, southside, uptown, and the westend) and each district had a different vacancy rate and average household size

## Employment

RRTPO staff used the 2nd quarter 2017 VEC data as the primary source for employment data. The 2017 VEC data was provided with latitude and longitude coordinate systems for most of the employer addresses allowing staff to plot most of the points rather than geocoding over 27,000 employer addresses. Over 95% of the 2017 VEC employment was either plotted or successfully geocoded. Employer addresses without latitude and longitude coordinates were geocoded after their addresses were verified.

# Methodology For 2017 Base Year

Employers with 200 or more employees were verified through contact (phone or email) and disaggregated to several locations where was necessary. The 2017 employment data also went to a thorough spot-checking process as RRTPO staff compared it against the 2012 employment. Any major differences were reality-checked. Some differences reflected employers relocating or going out of business. Other addresses were geocoded on the wrong side of the street or employment needed to be disaggregated into several locations. Generally speaking, staff researched any TAZ where employment had a difference of +/-100 and/or represented a large proportional difference. Several rounds of this spot checking were done along with notes as to reasons for major differences.

## **Autos**

Virginia Department of Motor Vehicles (DMV) Automobile Registration Data was used as the primary source for autos. The aim was to get a database from DMV which only included registered motorized vehicle for personal use. RRTPO and DMV staff spent at least three sessions to develop the query which would yield the most appropriate database applicable. The process was started by querying out the Garage Jurisdiction (the address where the vehicle registration is sent to the customer. If a post box was provided, we also needed a physical address). We assumed that this address is where the vehicle is parked at night. If a vehicle is not registered or registered outside the region but is still parked at the address, we just ignore those. All non-motorized vehicles such as any type of trailers, chassis, hearse etc. were eliminated. Similarly, customer type – “Individual” and Use type “Personal” were only kept in the database. This filtered out fleet vehicles. Also, vehicles with more than 2 Axles were filtered out.

The data after all these different queries came out good. The registration addresses (almost 900,000 records for the Richmond re-

gion) were geocoded, spatially joined and aggregated by TAZs. The database was then crosschecked with housing data. More than 99% of the data fell within the applicable autos per housing range.

## **K-12 School and College Enrollment**

K-12 school enrollment was compiled using the fall of 2017 academic enrollment numbers provided by Virginia’s Department of Education (DOE) for most of the jurisdiction. Hanover and Henrico counties used their School Board numbers. In some cases, auxiliary locations and alternative schools were called to verify.

K-12 private school enrollment was compiled using the 2012 database of private schools, RRTPO had maintained and the online website [www.greatschools.org](http://www.greatschools.org). The 2017 fall enrollment number was used. For any other private schools where staff had no record of enrollment numbers, staff contacted individual schools.

University and college enrollment were compiled through phone calls to each institution, using the fall enrollment of the 2017-2018 academic year. These enrollment numbers include both full-time and part-time students. These institutions include 4-year universities, 2-year colleges, post-graduate programs, certificate programs, technical schools, and proprietary colleges and universities – also known as for-profit institutions of higher learning.



# Methodology For 2045 Forecast Year

For the 2045 Future year data projections Socioeconomic Data Workgroup decided to do a Top-down approach in which we develop the jurisdictional control-total first, then distribute to the individual TAZs. Distribution to the TAZs was based on both current and future trends.

Two independent projections were done to establish the control-totals: population and employment. Other attributes were directly dependent on the established population control-totals.

## **Housing and Population**

The Weldon Copper 2045 population projection – which is the commonwealth of Virginia’s official projection was used as the jurisdiction control total for population. The Virginia State code provides a variance of plus/minus 10 percent from the Weldon Copper projections without documentation. If the variance is more than 10 percent a proper documentation is required. Most of the jurisdiction established their control- totals at Weldon Copper plus 10 percent with Henrico and Chesterfield Counties being the exception using a variance of plus 4 percent and minus 4 percent respectively. Overall, the regional population was 3.43 percent more than the Weldon Copper projections.

For each jurisdiction the net difference of the base year population and the future year population was calculated. This yielded the exact new population which needs to be added. We assume that in the future year each TAZs retains at least the population as its base year unless there is a massive demolition project planned. TAZ population growth was based on major development projects (projects in a short-term pipeline 5-10 years). This information was either provided by the jurisdiction or researched from online and print media and press releases. In Richmond and Henrico infill development and vacant buildings were also

considered. Finally, existing land use, existing zoning and future land use were considered to allocate the remaining population into the TAZs. This distribution of population in the TAZs was further reviewed by jurisdictional staff and in some cases tweaked based on local knowledge.

The major development project provided the number of new housing units for each TAZs. The households (or occupied housing units) were calculated using the vacancy rates. The vacancy rates were kept constant from the base year and use either the same jurisdiction-wide vacancy rates (smaller jurisdictions) or different vacancy rates for each TAZ (larger jurisdiction). Population was then calculated using the average household size, kept constant from the base year. The remaining population needed to reach the control-total was calculated in the reverse order. In this case the population was added to the TAZ first, then the households were calculated using the average household size and finally the housing units were calculated using the vacancy rates.

RRTPO staff and jurisdiction staff reached out or did a web research on any potential projections for Group Quarters population. When the projections were available, those were reflected in the TAZs. If there was no projection available, the group quarters population was kept constant from the base year.

## **Autos**

RRTPO staff did a significant research on local, regional and national, current and future trends on auto ownership. The current trends show an increase on the auto-ownership rates (autos/household) in the last decade. On the other hand, many research papers show a decline on future auto-ownership rates. Connected and Automated Vehicles market penetration by 2045 is another factor which would affect auto-ownership rates in the

# Methodology For 2045 Forecast Year

future and could go either way. Based on all this research RRTPO staff decided to keep the auto-ownership rates constant from the base year. Each TAZ has a separate auto-ownership rate in the base year. The total households in each TAZ was multiplied by the auto-ownership rate to get the number of autos in each TAZs. The TAZ autos were aggregated to get the jurisdictional total.

## **K-12 School and College Enrollment**

For the K-12 schools the growth is mostly accounted for in public school enrollment. Private school enrollment in the future year 2045 was kept constant to the 2017 base year unless projections numbers were received from individual entities. RRTPO developed a cohort component model which gives the future population by age cohort and gender. First, the total school age children (age ranges 5-9, 10-14 and 15-19) were calculated for 2045 using the cohort component model. Private school enrollment (from 2017 base year), drop-out rates and home-schooling rates (data from the 2017 DOE) was applied assuming they remain constant in 2045. Children living in one jurisdiction and going to private school in another jurisdiction and vice versa also were also considered and reflected by multiplying by an adjusting factor (constant). The adjusting factor is different for each jurisdiction and was calculated using 2017 data and kept constant for 2045. Applying the adjusting factor yielded the total public-school enrollment for each jurisdiction for 2045. The private school enrollment was then added to arrive at the total K-12 enrollment by TAZ.

RRTPO staff and jurisdiction staff reached out or did a web research on any potential projections for college and universities for 2045. For community colleges the 2017 enrollment was extrapolated to 2045 based on historical enrollment numbers. For

most universities and proprietary colleges, when the projections were available, those were reflected in the TAZs. If there was no projection available, the college enrollment number was kept constant from the base year.

## **Employment**

The State of Virginia has no body that develops employment projections neither is there an officially recognized employment projections. There are a number of private companies who provide proprietary employment projections by jurisdictions.

RRTPO staff contracted Chmura Economics & Analytics (Chmura), a Richmond based, nationally recognized economics and analytics firm to develop the employment projections for the future year 2045 by jurisdiction and by 2-digit NAICS code (by sector). Chmura was qualified to support RRTPO based on extensive knowledge of the Richmond region, previous experience with similar projects and existing set of analysis tools, datasets, and models.

The employment control-totals as established by Chmura was accepted by the jurisdictions. For each jurisdiction the net difference of the base year employment and the future year employment was calculated. This yielded the exact new employment which needed to be added. RRTPO staff assumed that in the future year each TAZs retains at least the same employment as its base year unless there is a major rezoning or a major demolition project. RRTPO staff first allocated employment based on what major commercial development projects were already in the pipeline gather from information provided by the jurisdiction staff or researched from online and print media and press releases. The commercial development projects provided information on the type of the commercial activity and the and the total area

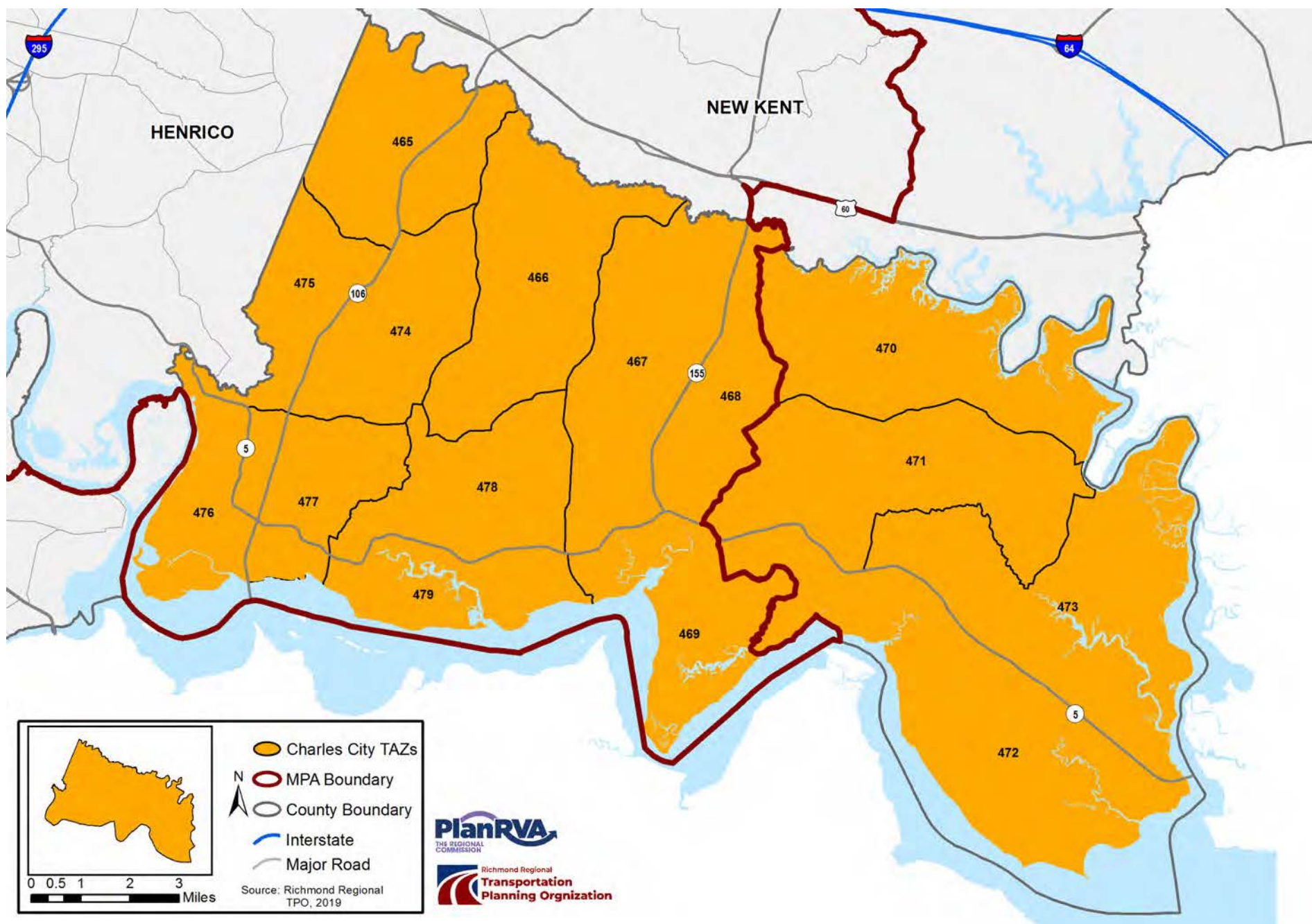
# Methodology For 2045 Forecast Year

for square footage. The square footage was converted into number of employees based on industry standards. For Richmond, Henrico and Chesterfield the employment was further distributed into the TAZs using a future land use (FLU) built-out analysis. This FLU built-out analysis looked at land uses as they related to retail, office, industrial, and mixed-uses assuming any undeveloped land would be developed to 30-50 percent of its capacity. For Hanover county the employment was further distributed into the TAZs by identifying areas for economic growth which focused on major corridors in the county with heavy emphasis on US-33 corridor growth. For all the jurisdictions, the remaining employment needed to reach the control total was distributed proportionally to all remaining TAZs not previously allocated by pipeline activity or by the FLU built-out analysis/ major corridors to account for natural employment growth based on the 2017 employment distribution. This distribution of employment in the TAZs was further reviewed by jurisdictional staff and in some cases tweaked based on local knowledge.

The employment was further broken down into retail and non-retail based on pipeline commercial activities, 2017 employment mix and future land use and aggregated to jurisdictional control totals developed by Chmura. Similarly, for modeling purpose the employment was further broken down into 2-digit NAICS code (20 categories) for each TAZ and aggregated to the NAICS jurisdictional control-totals developed by Chmura.

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# Charles City County (Map)

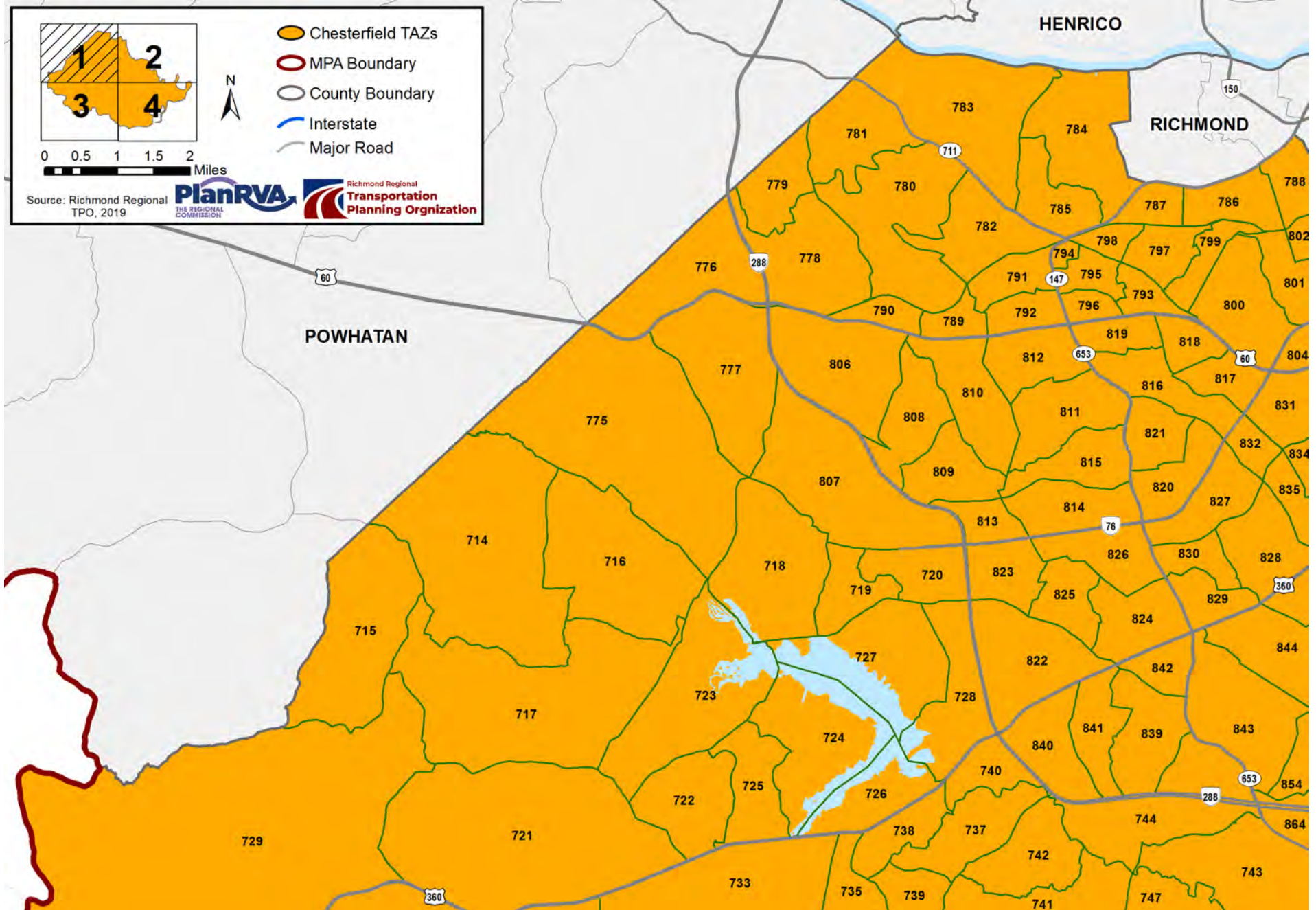


# Charles City County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
465	766	918	766	918	0	0	358	429	309	370	977	1,170	0	0	0	0	144	156	7	8	137	148
466	1,109	1,329	1,109	1,329	0	0	517	620	447	536	1,525	1,829	0	0	0	0	47	47	5	5	42	42
467	694	832	694	832	0	0	324	388	280	336	802	962	650	617	0	0	144	156	7	8	137	148
468	424	508	424	508	0	0	198	237	171	205	619	742	0	0	0	0	22	34	1	2	21	32
469	169	203	169	203	0	0	79	95	68	82	182	219	0	0	0	0	324	337	32	34	292	303
470	322	386	322	386	0	0	151	181	130	156	354	425	0	0	0	0	33	33	0	0	33	33
471	501	600	501	600	0	0	234	280	202	242	604	724	0	0	0	0	25	25	1	1	24	24
472	481	576	481	576	0	0	225	269	194	232	501	599	0	0	0	0	48	48	5	5	43	43
473	275	330	275	330	0	0	128	154	111	133	290	347	0	0	0	0	0	0	0	0	0	0
474	580	695	580	695	0	0	271	325	234	280	780	933	0	0	0	0	11	21	0	1	11	20
475	419	502	419	502	0	0	196	235	169	202	527	630	0	0	0	0	13	13	2	2	11	11
476	122	146	122	146	0	0	57	68	49	59	111	134	0	0	0	0	59	59	2	2	57	57
477	481	576	481	576	0	0	224	268	194	232	619	740	0	0	0	0	4	4	0	0	4	4
478	689	826	689	826	0	0	322	386	278	333	697	835	0	0	0	0	14	14	0	0	14	14
479	94	113	94	113	0	0	44	53	38	46	84	102	0	0	0	0	21	21	1	1	20	20
Total	7,126	8,540	7,126	8,540	0	0	3,328	3,988	2,874	3,444	8,672	10,391	650	617	0	0	1,668	1,832	96	112	1,572	1,720

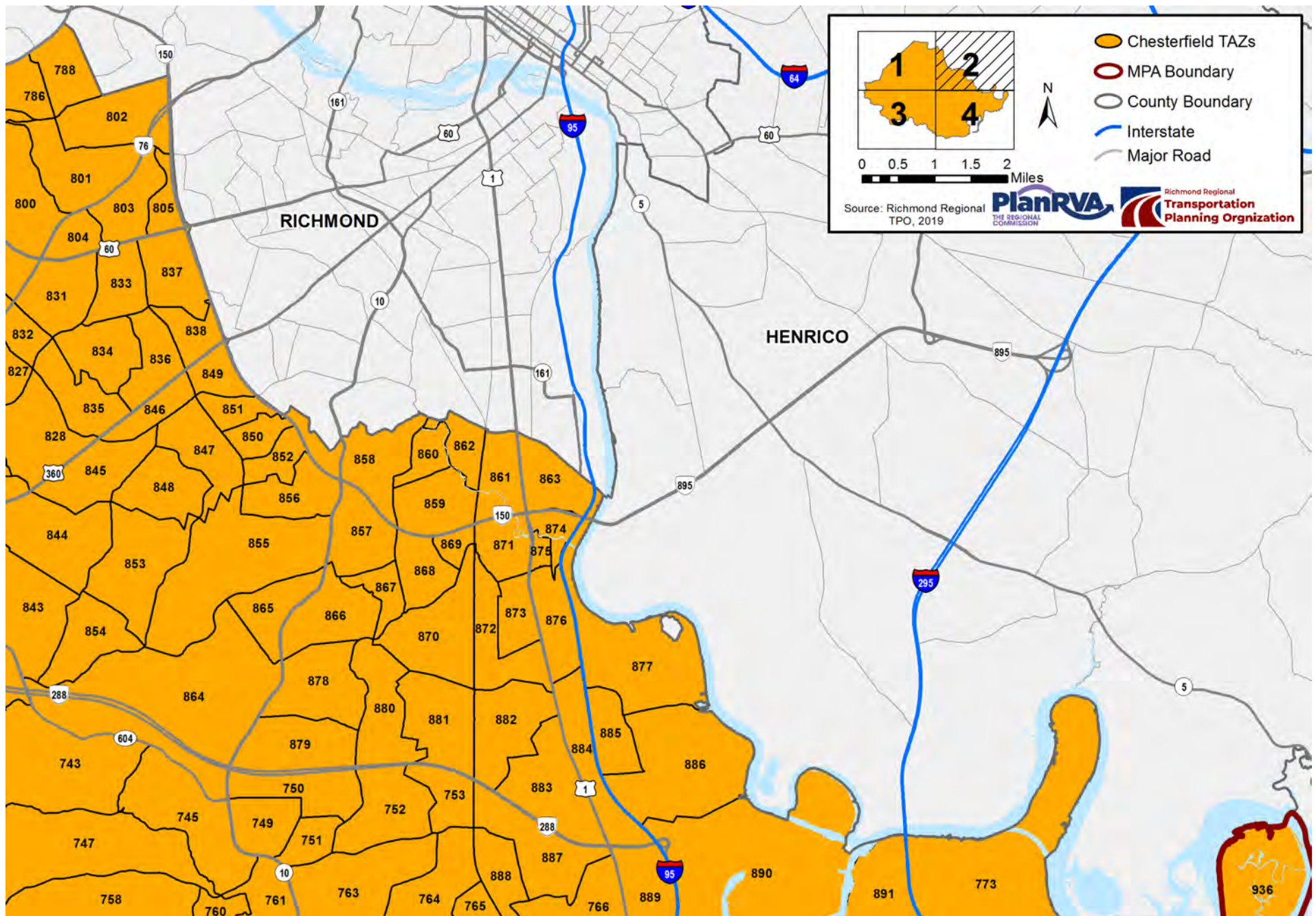


# Chesterfield County (Map 4-1)

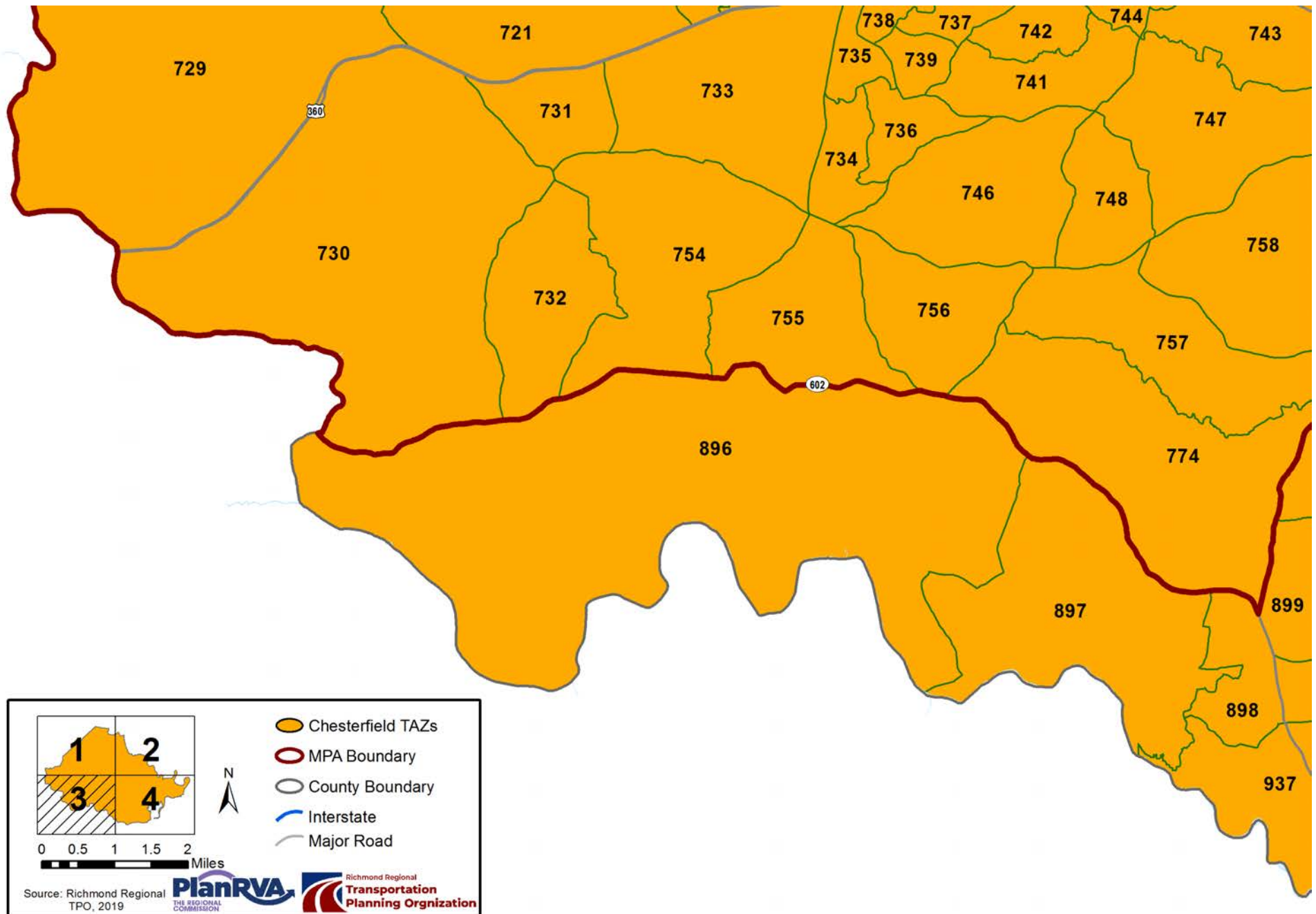




# Chesterfield County (Map 4-2)

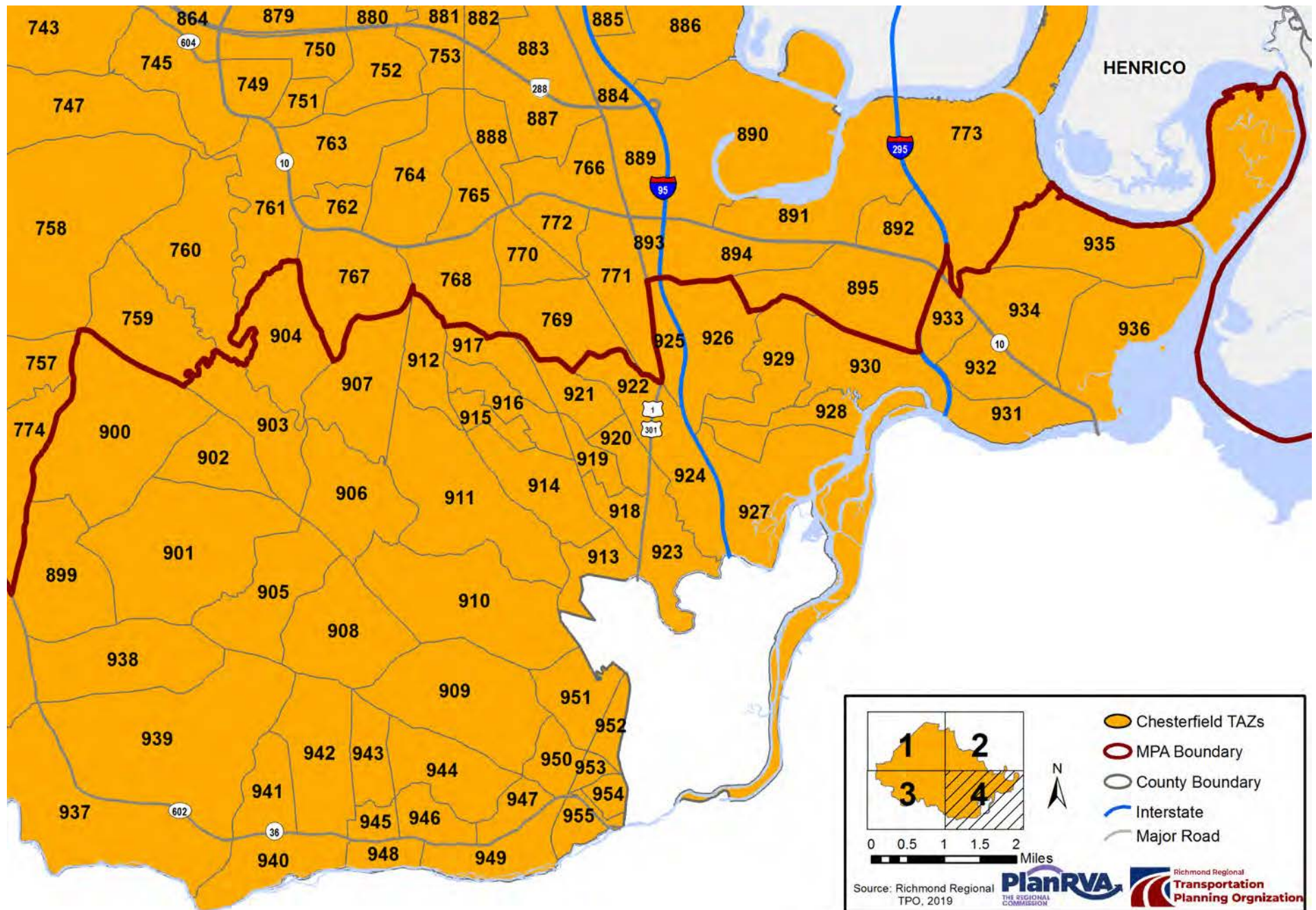


# Chesterfield County (Map 4-3)





# Chesterfield County (Map 4-4)



# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
714	249	817	249	817	0	0	102	335	96	315	295	968	0	0	0	0	*	4	*	1	*	3
715	111	131	111	131	0	0	45	53	42	50	124	148	0	0	0	0	7	7	0	0	7	7
716	274	323	274	323	0	0	108	127	101	119	305	359	0	0	0	0	7	7	0	0	7	7
717	2,083	3,859	2,083	3,859	0	0	626	1,160	588	1,089	1,627	3,013	0	0	0	0	55	55	0	0	55	55
718	3,647	5,860	3,647	5,860	0	0	1,365	2,193	1,283	2,062	2,895	4,653	0	0	0	0	104	520	15	15	89	505
719	2,619	2,645	2,605	2,631	14	14	1,058	1,069	994	1,004	2,103	2,124	872	1,041	0	0	292	292	0	0	292	292
720	1,457	1,718	1,457	1,718	0	0	644	759	605	713	1,072	1,263	76	167	573	0	1,415	1,562	247	247	1,168	1,315
721	2,654	9,142	2,654	9,142	0	0	904	3,114	849	2,924	1,948	6,709	0	900	0	0	149	4,024	49	2,236	100	1,788
722	2,147	4,925	2,147	4,925	0	0	643	1,475	604	1,386	1,836	4,213	0	0	0	0	62	147	1	82	61	65
723	2,647	5,581	2,647	5,581	0	0	830	1,750	780	1,645	2,063	4,351	0	0	0	0	52	52	1	1	51	51
724	4,968	5,018	4,968	5,018	0	0	1,891	1,910	1,777	1,795	4,267	4,310	1,544	1,844	0	0	833	834	89	89	744	745
725	2,885	3,449	2,885	3,449	0	0	1,034	1,236	972	1,162	2,389	2,856	222	487	0	0	358	406	101	101	257	305
726	1,255	1,268	1,255	1,268	0	0	580	586	545	551	1,178	1,191	0	0	0	0	1,230	1,292	726	726	504	566
727	3,873	3,915	3,873	3,915	0	0	1,648	1,666	1,549	1,566	3,410	3,447	0	0	0	0	344	344	49	49	295	295
728	2,253	2,657	2,253	2,657	0	0	905	1,067	850	1,002	1,935	2,281	5,055	6,037	0	0	1,988	2,393	574	747	1,414	1,646
729	646	762	646	762	0	0	230	271	216	255	716	845	0	0	0	0	56	56	27	27	29	29
730	341	402	341	402	0	0	127	150	119	140	366	431	795	949	0	0	208	208	0	0	208	208
731	146	172	146	172	0	0	54	64	51	60	180	212	0	0	0	0	139	139	91	91	48	48
732	222	262	222	262	0	0	77	91	72	85	207	244	0	0	0	0	*	5	*	0	*	5
733	6,920	13,723	6,916	13,719	4	4	2,258	4,479	2,122	4,209	5,597	11,102	1,047	1,250	0	0	1,237	1,522	968	1,074	269	448
734	1,780	2,330	1,780	2,330	0	0	623	816	585	766	1,684	2,205	0	0	0	0	*	399	*	25	*	374
735	942	1,157	942	1,157	0	0	437	537	411	505	868	1,067	0	0	0	0	432	432	391	391	41	41
736	2,643	3,301	2,643	3,301	0	0	1,023	1,278	961	1,200	2,358	2,944	881	1,052	0	0	145	145	1	1	144	144
737	2,297	3,737	2,297	3,737	0	0	823	1,339	773	1,258	1,926	3,134	625	746	0	0	*	140	*	0	*	140
738	1,754	1,771	1,749	1,766	5	5	662	668	622	628	1,490	1,504	0	0	0	0	903	948	468	508	435	440
739	2,513	2,667	2,513	2,667	0	0	869	922	817	867	2,172	2,305	0	0	0	0	23	23	0	0	23	23
740	1,912	2,455	1,912	2,455	0	0	1,063	1,365	999	1,283	1,280	1,644	0	0	0	0	2,291	2,322	1,700	1,700	591	622
741	1,278	1,507	1,278	1,507	0	0	498	587	468	552	1,422	1,677	0	0	0	0	55	55	0	0	55	55

\* - Employment was redacted due to Virginia Employment Commission (VEC) confidentiality agreement, where an employer made up at least 80% of employment OR there was 3 employers or less.

# Chesterfield County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
742	2,015	2,810	2,015	2,810	0	0	671	936	631	880	1,569	2,188	3,462	4,135	0	0	485	485	0	0	485	485
743	475	496	117	138	358	358	56	66	53	63	134	159	200	439	0	0	397	1,252	0	0	397	1,252
744	280	330	280	330	0	0	123	145	116	137	342	404	0	0	0	0	618	618	93	93	525	525
745	475	559	471	555	4	4	221	260	208	245	544	641	0	0	0	0	603	1,067	443	702	160	365
746	2,684	3,165	2,684	3,165	0	0	970	1,144	912	1,075	2,948	3,475	0	0	0	0	65	65	2	2	63	63
747	283	334	283	334	0	0	115	136	108	127	353	415	0	0	0	0	*	53	*	0	*	53
748	694	818	694	818	0	0	305	359	287	338	812	956	0	0	0	0	35	35	6	6	29	29
749	1,057	1,065	379	387	678	678	274	280	257	262	302	308	0	0	0	0	4,338	4,398	103	111	4,235	4,287
750	482	568	482	568	0	0	189	223	178	210	463	546	4,073	4,864	0	0	730	1,016	11	184	719	832
751	1,959	2,139	1,959	2,139	0	0	835	912	785	857	1,570	1,714	0	0	0	0	60	60	24	24	36	36
752	3,464	3,499	3,459	3,494	5	5	1,274	1,287	1,197	1,209	3,085	3,116	0	0	0	0	21	21	1	1	20	20
753	1,028	1,212	1,028	1,212	0	0	404	476	380	448	1,017	1,199	0	0	0	0	7	8	0	0	7	8
754	768	906	768	906	0	0	295	348	277	327	896	1,058	0	0	0	0	39	39	0	0	39	39
755	1,563	1,843	1,563	1,843	0	0	586	691	551	650	1,771	2,089	0	0	0	0	68	68	3	3	65	65
756	1,329	1,580	1,329	1,580	0	0	446	530	419	498	1,328	1,578	0	0	0	0	31	31	0	0	31	31
757	822	969	822	969	0	0	320	377	301	355	939	1,107	0	0	0	0	14	14	4	4	10	10
758	1,940	2,544	1,940	2,544	0	0	767	1,006	721	945	2,272	2,978	0	0	0	0	111	111	1	1	110	110
759	1,327	1,635	1,327	1,635	0	0	463	570	435	536	1,333	1,643	0	0	0	0	58	58	14	14	44	44
760	1,576	2,200	1,576	2,200	0	0	535	747	503	702	1,530	2,135	0	0	0	0	43	43	26	26	17	17
761	50	59	50	59	0	0	22	26	21	25	65	77	0	0	0	0	1,226	1,337	466	469	760	868
762	1,687	1,970	1,687	1,970	0	0	796	930	748	873	1,228	1,433	0	0	0	0	386	387	21	21	365	366
763	2,622	4,245	2,611	4,234	11	11	987	1,601	927	1,503	2,333	3,783	0	0	0	0	834	865	549	556	285	309
764	1,814	2,909	1,814	2,909	0	0	773	1,240	726	1,164	1,813	2,907	796	951	0	0	190	190	0	0	190	190
765	2,194	3,321	2,194	3,321	0	0	1,139	1,724	1,070	1,620	1,540	2,332	0	0	0	0	406	435	169	184	237	251
766	1,627	1,749	1,627	1,749	0	0	687	739	646	694	1,566	1,682	3,055	3,648	0	0	1,123	1,165	646	655	477	510
767	947	1,294	939	1,286	8	8	502	688	472	646	811	1,110	253	302	0	0	1,148	1,183	640	662	508	521
768	1,004	1,270	1,004	1,270	0	0	412	521	387	490	1,156	1,464	0	0	0	0	163	182	50	50	113	132
769	3,378	3,983	3,378	3,983	0	0	1,173	1,383	1,102	1,299	3,097	3,651	618	738	0	0	*	126	*	2	*	124
770	1,550	1,637	1,550	1,637	0	0	725	766	681	719	1,448	1,529	0	0	0	0	906	906	782	782	124	124

\* - Employment was redacted due to Virginia Employment Commission (VEC) confidentiality agreement, where an employer made up at least 80% of employment OR there was 3 employers or less.



# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
771	1,613	2,151	1,613	2,151	0	0	641	855	602	803	1,420	1,894	0	0	0	0	1,086	1,097	984	984	102	113
772	1,079	1,272	1,079	1,272	0	0	458	540	430	507	1,011	1,192	0	0	0	0	118	123	28	28	90	95
773	1,014	2,303	1,014	2,303	0	0	397	902	373	847	1,125	2,555	0	0	0	0	4,901	9,689	13	13	4,888	9,676
774	913	1,074	898	1,059	15	15	356	420	335	395	899	1,060	0	0	0	0	135	135	64	64	71	71
775	2,036	3,811	2,036	3,811	0	0	810	1,516	761	1,424	1,865	3,490	0	0	0	0	81	871	2	463	79	408
776	176	1,528	176	1,528	0	0	65	564	61	530	108	938	0	0	0	0	1,271	1,400	838	846	433	554
777	101	1,161	101	1,161	0	0	44	506	41	471	102	1,172	0	0	0	573	230	2,318	7	295	223	2,023
778	3,652	4,118	3,652	4,118	0	0	1,422	1,603	1,336	1,506	3,049	3,437	0	0	0	0	1,589	1,724	57	57	1,532	1,667
779	1,242	1,602	1,242	1,602	0	0	396	511	372	480	1,060	1,368	0	0	0	0	114	114	70	70	44	44
780	3,263	3,296	3,263	3,296	0	0	1,356	1,370	1,274	1,287	3,046	3,077	0	0	0	0	1,210	1,210	647	647	563	563
781	1,903	1,963	1,903	1,963	0	0	642	662	603	622	1,687	1,740	0	0	0	0	89	89	0	0	89	89
782	2,341	2,396	2,341	2,396	0	0	856	876	804	823	2,212	2,264	0	0	0	0	626	628	1	1	625	627
783	3,224	4,527	3,224	4,527	0	0	1,050	1,474	987	1,386	2,735	3,841	2,747	3,281	0	0	403	403	4	4	399	399
784	2,029	2,066	2,029	2,066	0	0	782	796	735	748	2,041	2,077	0	0	0	0	126	126	9	9	117	117
785	1,377	1,492	1,377	1,492	0	0	738	800	693	751	1,060	1,149	1,980	2,365	0	0	1,313	1,315	561	563	752	752
786	1,350	1,364	1,350	1,364	0	0	581	587	546	552	1,270	1,284	713	923	0	0	495	496	157	157	338	339
787	1,031	1,041	1,031	1,041	0	0	457	461	429	433	928	937	490	1,075	0	0	139	139	31	31	108	108
788	1,352	1,370	1,349	1,367	3	3	565	573	531	538	1,240	1,256	0	0	0	0	445	445	116	116	329	329
789	1,191	1,209	1,191	1,209	0	0	601	610	565	574	893	907	0	0	0	0	517	518	388	388	129	130
790	296	1,238	296	1,238	0	0	163	682	153	640	270	1,129	0	0	0	0	523	555	298	321	225	234
791	1,903	1,951	1,898	1,946	5	5	835	856	785	805	1,659	1,701	0	0	0	0	286	288	4	4	282	284
792	612	618	612	618	0	0	265	268	249	251	531	535	0	0	0	0	1,231	1,242	636	636	595	606
793	276	279	276	279	0	0	141	143	132	133	266	268	0	0	0	0	3,095	4,916	578	1,156	2,517	3,760
794	112	113	112	113	0	0	79	80	74	75	171	173	0	0	5,555	5,555	560	703	243	368	317	335
795	1,094	1,320	1,094	1,320	0	0	579	699	544	656	726	875	0	0	0	0	969	992	548	553	421	439
796	67	68	67	68	0	0	57	58	54	55	34	35	0	0	0	0	2,618	4,137	2,054	2,918	564	1,219
797	2,565	2,591	2,565	2,591	0	0	968	978	910	919	2,177	2,199	582	695	0	0	146	146	2	2	144	144
798	1,425	1,439	1,425	1,439	0	0	693	700	651	657	1,069	1,079	0	0	0	0	188	189	80	80	108	109
799	2,256	2,279	2,256	2,279	0	0	1,105	1,116	1,038	1,049	1,616	1,633	0	0	0	0	155	157	22	22	133	135
800	2,562	3,605	2,324	3,367	238	238	962	1,394	904	1,310	1,816	2,632	0	0	0	0	1,864	1,869	999	999	865	870
801	2,184	2,206	1,984	2,006	200	200	851	860	800	809	1,915	1,937	0	0	0	0	32	32	4	4	28	28

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# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
802	812	967	812	967	0	0	362	431	340	405	829	987	563	672	0	0	*	142	*	0	*	142
803	2,010	2,370	2,010	2,370	0	0	887	1,046	834	983	1,190	1,403	0	0	152	152	1,991	2,450	268	383	1,723	2,067
804	420	494	415	489	5	5	273	322	257	303	232	274	0	0	0	0	1,136	1,459	254	312	882	1,147
805	484	489	484	489	0	0	286	289	269	272	335	339	0	0	0	0	2,550	4,676	295	986	2,255	3,690
806	3,294	5,861	3,290	5,857	4	4	1,598	2,845	1,502	2,674	2,727	4,855	1,691	2,019	4,412	4,412	1,145	1,370	620	698	525	672
807	3,060	5,743	3,003	5,686	57	57	1,184	2,242	1,113	2,107	1,823	3,451	1,510	1,803	0	0	1,917	2,957	68	68	1,849	2,889
808	3,757	4,503	3,757	4,503	0	0	1,349	1,617	1,268	1,520	2,729	3,271	2,252	2,689	0	0	604	609	157	157	447	452
809	2,063	2,084	2,063	2,084	0	0	768	776	722	729	2,007	2,026	0	0	0	0	97	97	47	47	50	50
810	3,432	3,907	3,432	3,907	0	0	1,209	1,376	1,136	1,293	2,878	3,276	1,327	1,585	0	0	972	977	249	249	723	728
811	2,824	2,855	2,824	2,855	0	0	1,094	1,106	1,028	1,039	2,608	2,636	0	0	0	0	90	90	24	24	66	66
812	702	828	702	828	0	0	354	418	333	393	721	851	0	0	0	0	1,361	1,400	1,002	1,020	359	380
813	981	1,156	977	1,152	4	4	485	572	456	538	883	1,042	0	0	0	0	7	76	1	1	6	75
814	3,388	3,422	3,388	3,422	0	0	1,263	1,276	1,187	1,199	2,851	2,880	0	0	0	0	60	60	5	5	55	55
815	2,058	2,426	2,054	2,422	4	4	792	934	744	877	1,722	2,030	2,051	2,449	0	0	431	433	91	91	340	342
816	2,209	2,231	2,200	2,222	9	9	893	902	839	847	2,084	2,104	0	0	0	0	1,336	1,416	73	73	1,263	1,343
817	1,420	1,434	1,416	1,430	4	4	559	565	525	530	1,188	1,199	0	0	0	0	2,385	3,082	139	600	2,246	2,482
818	978	988	978	988	0	0	391	395	367	371	815	824	0	0	612	612	1,787	2,331	605	778	1,182	1,553
819	522	527	522	527	0	0	206	208	194	196	335	338	0	0	0	0	3,820	3,941	1,476	1,529	2,344	2,412
820	2,258	2,352	2,244	2,338	14	14	830	865	780	813	2,112	2,201	0	0	0	0	1,005	1,005	200	200	805	805
821	1,456	1,565	1,450	1,559	6	6	592	637	556	598	1,311	1,410	551	658	0	0	245	245	0	0	245	245
822	554	652	545	643	9	9	223	263	210	248	582	687	0	0	0	0	1,878	2,099	1,082	1,129	796	970
823	223	263	223	263	0	0	95	112	89	105	184	217	0	0	0	0	1,509	2,038	62	177	1,447	1,861
824	1,795	2,137	1,795	2,137	0	0	767	913	721	858	1,499	1,784	0	0	0	0	1,152	1,170	361	361	791	809
825	2399	2,472	2,399	2472	0	0	947	976	890	917	2188	2,254	0	0	0	0	58	58	9	9	49	49
826	1608	1,896	1,608	1896	0	0	642	757	603	711	1435	1,692	653	780	0	0	117	117	1	1	116	116
827	1599	2,090	1,595	2086	4	4	669	875	629	823	1585	2,074	0	0	0	0	53	53	0	0	53	53
828	1571	1,587	1,556	1572	15	15	658	665	618	624	1688	1,704	0	0	0	0	42	46	7	7	35	39
829	218	257	218	257	0	0	139	164	131	154	159	187	0	0	0	0	156	157	74	74	82	83
830	948	957	948	957	0	0	407	411	382	386	944	954	0	0	0	0	21	21	0	0	21	21

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# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
831	1799	1,825	1,799	1825	0	0	756	767	710	720	1678	1,702	0	0	0	0	1415	1,583	342	400	1073	1,183
832	975	985	975	985	0	0	404	408	380	384	849	858	0	0	0	0	*	3	*	0	*	3
833	1154	1,166	1,154	1166	0	0	548	554	515	520	1067	1,077	1552	1,853	0	0	1141	1,368	318	433	823	935
834	2387	2,487	2,387	2487	0	0	935	974	879	916	2228	2,322	0	0	0	0	29	29	5	5	24	24
835	1446	1,818	1,446	1818	0	0	561	705	527	663	1268	1,595	240	527	0	0	252	252	166	166	86	86
836	1241	1,769	1,228	1756	13	13	504	721	474	678	1232	1,762	0	0	0	0	676	907	217	332	459	575
837	1975	3,539	1,975	3539	0	0	773	1,385	726	1,301	639	1,145	0	0	0	0	1050	1,529	525	641	525	888
838	758	892	748	882	10	10	285	336	268	316	637	751	0	0	0	0	249	249	81	81	168	168
839	3173	3,208	3,170	3205	3	3	1226	1,240	1152	1,165	2736	2,767	0	0	0	0	29	31	0	0	29	31
840	2660	3,137	2,660	3137	0	0	1184	1,396	1113	1,313	1897	2,238	676	807	0	0	361	362	68	68	293	294
841	2137	2,213	2,130	2206	7	7	859	890	807	836	1922	1,991	0	0	0	0	179	182	123	123	56	59
842	1245	1,879	1,237	1871	8	8	548	829	515	779	626	947	0	0	0	0	1053	1,340	602	775	451	565
843	2343	2,790	2,340	2787	3	3	903	1,075	849	1,011	2332	2,777	0	0	0	0	348	371	221	221	127	150
844	3036	3,580	3,036	3580	0	0	1113	1,312	1046	1,233	2681	3,160	1630	1,947	0	0	726	738	36	36	690	702
845	995	1,169	972	1146	23	23	428	505	402	474	923	1,088	0	0	0	0	83	84	1	1	82	83
846	680	802	680	802	0	0	322	380	303	357	445	524	1410	1,684	1,233	1,233	748	1,189	120	408	628	781
847	2498	2,529	2,494	2525	4	4	890	901	836	846	2345	2,373	220	483	0	0	179	180	139	139	40	41
848	2172	2,998	2,172	2998	0	0	794	1,096	746	1,030	1992	2,750	0	0	0	0	25	25	0	0	25	25
849	750	758	750	758	0	0	319	322	300	303	811	819	0	0	0	0	206	334	53	168	153	166
850	3388	3,422	3,386	3420	2	2	1280	1,293	1203	1,215	2209	2,231	0	0	0	0	62	62	2	2	60	60
851	2296	2,358	2,296	2358	0	0	996	1,023	936	961	1784	1,832	0	0	0	0	27	27	2	2	25	25
852	1,067	1,078	1,062	1,073	5	5	418	422	393	397	973	983	0	0	0	0	43	43	22	22	21	21
853	2,631	3,102	2,626	3,097	5	5	1,005	1,185	944	1,113	2,481	2,925	0	0	0	0	51	51	7	7	44	44
854	1,270	1,501	1,270	1,501	0	0	416	492	391	462	1,103	1,303	0	0	0	0	29	36	0	0	29	36
855	4,827	5,833	4,804	5,810	23	23	1,761	2,130	1,655	2,002	4,723	5,713	0	0	0	0	169	169	13	13	156	156
856	1,081	1,501	1,076	1,496	5	5	569	791	535	744	830	1,154	881	1,052	0	0	307	735	0	58	307	677
857	1,761	2,105	1,761	2,105	0	0	795	950	747	893	1,622	1,939	2,414	2,883	0	0	427	432	38	38	389	394
858	2,097	2,471	2,090	2,464	7	7	799	942	751	885	1,754	2,067	2,063	2,464	0	0	1,025	1,031	301	301	724	730
859	2,351	2,374	2,345	2,368	6	6	928	937	872	881	2,152	2,174	0	0	0	0	*	58	*	0	*	58
860	836	844	829	837	7	7	345	348	324	327	928	937	0	0	0	0	28	28	0	0	28	28
861	2,386	2,814	2,386	2,814	0	0	854	1,007	803	947	1,464	1,727	0	0	0	0	487	491	108	108	379	383

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# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
862	1,047	1,057	1,047	1,057	0	0	396	400	372	376	907	917	0	0	0	0	278	295	4	4	274	291
863	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	1,913	*	0	*	1,913
864	1,329	2,356	1,329	2,356	0	0	455	807	428	759	1,183	2,098	62	136	0	0	1,695	2,181	159	159	1,536	2,022
865	2,378	3,899	2,371	3,892	7	7	821	1,348	771	1,266	1,880	3,087	0	0	0	0	429	434	167	172	262	262
866	2,122	2,497	2,095	2,470	27	27	759	895	713	841	1,999	2,358	0	0	0	0	306	460	115	201	191	259
867	1,246	1,336	1,246	1,336	0	0	392	420	368	395	1,139	1,223	0	0	0	0	24	24	10	10	14	14
868	1,905	1,933	1,898	1,926	7	7	694	704	652	662	1,988	2,018	733	875	0	0	1,151	1,153	262	262	889	891
869	2,287	2,310	2,287	2,310	0	0	879	888	826	834	1,204	1,216	0	0	0	0	*	21	*	0	*	21
870	1,843	3,131	1,839	3,127	4	4	764	1,299	718	1,221	1,821	3,097	0	0	0	0	103	104	56	56	47	48
871	1,679	1,759	1,659	1,739	20	20	649	680	610	639	1,398	1,464	734	877	0	0	305	311	17	21	288	290
872	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	3,259	*	0	*	3,259
873	1,389	2,229	1,389	2,229	0	0	645	1,035	606	972	932	1,495	0	0	0	0	207	208	39	39	168	169
874	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	114	211	32	32	82	179
875	1,067	1,103	1,067	1,103	0	0	502	519	472	488	551	570	0	0	0	0	51	51	25	25	26	26
876	1,369	1,614	1,369	1,614	0	0	544	641	511	602	1,180	1,390	0	0	0	0	184	217	122	124	62	93
877	59	70	59	70	0	0	30	36	28	33	62	73	0	0	0	0	580	3,536	25	25	555	3,511
878	1,825	2,606	1,825	2,606	0	0	663	947	623	890	1,814	2,591	0	0	0	0	457	470	15	15	442	455
879	1,783	2,102	1,783	2,102	0	0	699	824	657	775	1,522	1,795	0	0	0	0	47	49	0	0	47	49
880	2,226	3,060	2,226	3,060	0	0	816	1,122	767	1,054	2,191	3,011	0	0	0	0	52	52	10	10	42	42
881	1,969	2,340	1,965	2,336	4	4	751	893	706	839	1,974	2,346	0	0	0	0	391	392	22	22	369	370
882	815	966	815	966	0	0	361	428	339	402	781	926	0	0	0	0	57	70	10	10	47	60
883	2,430	3,135	2,430	3,135	0	0	930	1,200	874	1,128	1,759	2,270	545	651	0	0	230	249	107	107	123	142
884	723	853	723	853	0	0	297	350	279	329	643	758	0	0	0	0	567	788	287	403	280	385
885	461	544	461	544	0	0	198	234	186	219	400	471	0	0	0	0	842	893	55	55	787	838
886	16	19	16	19	0	0	8	10	8	10	15	19	0	0	0	0	3,183	6,947	65	65	3,118	6,882
887	2,813	2,897	2,809	2,893	4	4	1,061	1,093	997	1,027	2,678	2,759	0	0	0	0	516	517	214	214	302	303
888	1,356	1,370	1,356	1,370	0	0	509	514	478	483	1,340	1,354	0	0	0	0	116	116	43	43	73	73
889	735	1,778	735	1,778	0	0	311	752	292	706	664	1,605	0	0	0	0	500	1,582	396	767	104	815
890	711	1,528	711	1,528	0	0	332	713	312	671	398	856	0	0	0	0	1,412	4,427	136	136	1,276	4,291
891	3,176	4,549	3,176	4,549	0	0	1,257	1,800	1,181	1,692	2,484	3,559	16	35	0	0	534	547	92	92	442	455

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# Chesterfield County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
892	756	859	756	859	0	0	307	349	288	327	672	763	0	0	0	0	4,223	4,235	462	462	3,761	3,773
893	6	7	6	7	0	0	4	5	4	5	9	11	0	0	3,735	3,735	960	960	534	534	426	426
894	209	246	209	246	0	0	72	85	68	80	194	228	0	0	0	0	1,850	1,941	240	240	1,610	1,701
895	3,128	4,021	3,128	4,021	0	0	1,070	1,375	1,005	1,292	2,978	3,828	2,305	2,753	0	0	914	929	240	240	674	689
896	747	1,034	747	1,034	0	0	261	361	245	339	805	1,114	0	0	0	0	65	65	8	8	57	57
897	1,591	2,599	1,591	2,599	0	0	538	879	506	827	1,608	2,628	0	0	0	0	129	129	14	14	115	115
898	513	605	513	605	0	0	211	249	198	234	613	724	0	0	0	0	*	1	*	0	*	1
899	252	521	252	521	0	0	105	217	99	205	255	528	0	0	0	0	*	5	*	0	*	5
900	95	1,356	95	1,356	0	0	42	599	39	557	105	1,500	0	0	0	0	18	18	0	0	18	18
901	254	300	254	300	0	0	109	129	102	120	285	335	0	0	0	0	27	27	1	1	26	26
902	168	198	168	198	0	0	70	83	66	78	191	226	0	0	0	0	0	0	0	0	0	0
903	436	679	436	679	0	0	168	262	158	246	469	730	0	0	0	0	19	19	0	0	19	19
904	741	874	741	874	0	0	274	323	257	303	870	1,026	0	0	0	0	6	7	1	1	5	6
905	259	305	256	302	3	3	106	125	100	118	307	362	0	0	0	0	*	6	*	0	*	6
906	192	253	192	253	0	0	90	119	85	112	184	242	0	0	0	0	*	5	*	0	*	5
907	729	924	729	924	0	0	303	384	285	361	881	1,116	0	0	0	0	36	36	0	0	36	36
908	173	204	173	204	0	0	73	86	69	81	191	224	0	0	0	0	*	2	*	0	*	2
909	331	1,776	331	1,776	0	0	129	692	121	649	276	1,480	0	0	0	0	0	0	0	0	0	0
910	618	752	618	752	0	0	254	309	239	291	675	822	1,707	2,039	0	0	*	267	*	13	*	254
911	79	251	79	251	0	0	35	111	33	105	119	379	0	0	0	0	*	2	*	0	*	2
912	46	54	46	54	0	0	19	22	18	21	60	70	0	0	0	0	0	0	0	0	0	0
913	415	489	415	489	0	0	169	199	159	187	233	274	0	0	0	0	*	12	*	1	*	11
914	1,810	2,139	1,806	2,135	4	4	699	826	657	777	1,561	1,846	1,053	1,258	0	0	178	178	0	0	178	178
915	830	985	830	985	0	0	305	362	287	341	897	1,066	0	0	0	0	5	5	0	0	5	5
916	1,726	2,145	1,726	2,145	0	0	600	746	564	701	1,704	2,118	0	0	0	0	75	75	3	3	72	72
917	1,644	1,993	1,644	1,993	0	0	610	739	573	695	1,639	1,988	0	0	0	0	*	6	*	0	*	6
918	971	1,145	971	1,145	0	0	379	447	356	420	819	966	206	452	0	0	19	19	3	3	16	16
919	1,356	1,612	1,356	1,612	0	0	459	546	431	512	838	995	597	713	0	0	*	109	*	0	*	109
920	795	1,004	790	999	5	5	299	378	281	355	678	857	0	0	0	0	27	27	7	7	20	20
921	1,493	1,508	1,493	1,508	0	0	554	560	521	526	1,456	1,470	0	0	0	0	33	33	0	0	33	33

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# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
922	1,402	2,560	1,402	2,560	0	0	531	970	499	911	783	1,429	0	0	0	0	122	124	78	78	44	46
923	480	566	480	566	0	0	224	264	210	248	355	419	0	0	0	0	774	834	98	98	676	736
924	10	151	10	151	0	0	6	91	6	91	16	243	0	0	0	0	559	729	70	70	489	659
925	1,485	1,751	1,485	1,751	0	0	533	628	501	591	1,181	1,393	0	0	0	0	323	345	0	0	323	345
926	868	1,024	868	1,024	0	0	301	355	283	334	825	974	560	669	0	0	*	404	*	3	*	401
927	4	5	4	5	0	0	2	3	2	3	7	11	0	0	0	0	3,191	3,782	141	141	3,050	3,641
928	23	27	23	27	0	0	8	9	8	9	29	33	0	0	0	0	695	948	217	225	478	723
929	1,618	1,908	1,618	1,908	0	0	562	663	528	623	1,566	1,848	0	0	0	0	44	44	1	1	43	43
930	1,002	1,226	1,002	1,226	0	0	339	415	319	390	940	1,149	0	0	0	0	9	10	0	0	9	10
931	332	391	332	391	0	0	138	163	130	153	316	372	0	0	0	0	11	11	0	0	11	11
932	1,571	1,852	1,571	1,852	0	0	675	796	634	747	1,436	1,692	516	616	0	0	137	137	24	24	113	113
933	2,206	2,744	2,206	2,744	0	0	949	1,180	892	1,110	1,457	1,813	0	0	0	0	*	152	*	0	*	152
934	219	558	219	558	0	0	88	224	83	211	233	592	0	0	0	0	94	493	36	36	58	457
935	69	81	69	81	0	0	28	33	26	31	78	93	0	0	0	0	919	4,430	5	5	914	4,425
936	22	26	22	26	0	0	10	12	9	11	16	20	0	0	0	0	13	1,615	0	0	13	1,615
937	812	1,689	812	1,689	0	0	302	628	284	591	880	1,831	0	0	0	0	56	56	0	0	56	56
938	510	796	510	796	0	0	195	304	183	286	532	831	0	0	0	0	4	4	1	1	3	3
939	959	1,131	959	1,131	0	0	375	442	352	415	961	1,133	0	0	0	0	*	4	*	0	*	4
940	153	180	153	180	0	0	69	81	65	76	175	205	0	0	0	0	0	0	0	0	0	0
941	389	459	389	459	0	0	157	185	148	175	423	500	0	0	0	0	0	0	0	0	0	0
942	259	305	259	305	0	0	116	137	109	128	268	315	0	0	0	0	*	6	*	0	*	6
943	326	384	326	384	0	0	123	145	116	137	307	363	970	1,159	0	0	*	188	*	0	*	188
944	729	859	723	853	6	6	277	327	260	307	595	703	0	0	0	0	*	6	*	0	*	6
945	329	388	329	388	0	0	134	158	126	149	280	331	0	0	0	0	16	18	0	0	16	18
946	923	1,233	923	1,233	0	0	359	480	337	450	814	1,087	0	0	0	0	*	2	*	0	*	2
947	703	916	703	916	0	0	276	360	259	337	601	782	0	0	0	0	*	48	*	0	*	48
948	327	386	327	386	0	0	144	170	135	159	261	307	421	503	0	0	114	114	13	13	101	101
949	803	947	803	947	0	0	356	420	335	395	615	725	0	0	0	0	6	6	0	0	6	6
950	824	883	332	391	492	492	141	166	132	155	321	377	0	0	0	0	161	161	135	135	26	26
951	1,920	2,272	1,920	2,272	0	0	785	929	738	873	1,701	2,012	0	0	0	0	10	10	0	0	10	10

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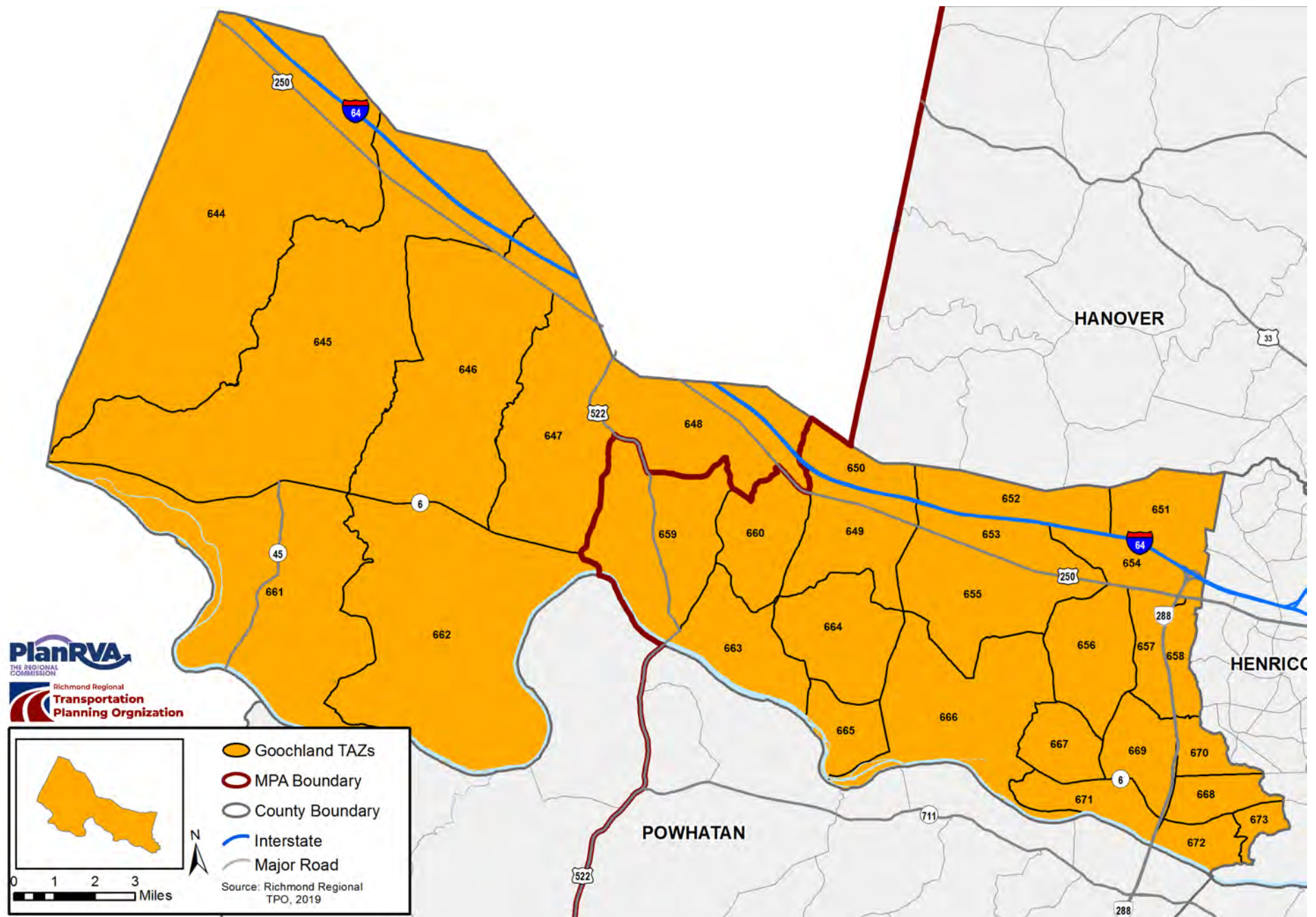
# Chesterfield County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
952	275	341	275	341	0	0	120	149	113	140	194	240	0	0	0	0	*	1	*	0	*	1
953	597	603	594	600	3	3	246	248	231	233	333	336	0	0	0	0	*	12	*	11	*	1
954	2,358	2,360	211	213	2,147	2,147	99	100	93	94	12	12	0	0	4,713	4,713	*	863	*	0	*	863
955	912	1,057	808	953	104	104	334	394	314	370	393	463	584	697	0	0	476	479	96	96	380	383
Total	340,848	437,512	336,197	432,861	4,651	4,651	132,586	169,660	124,595	159,420	293,337	375,168	62,779	77,677	20,985	20,985	131,120	177,742	34,646	43,522	96,474	134,220

\* - Employment was redacted due to Virginia Employment Commission (VEC) confidentiality agreement, where an employer made up at least 80% of employment OR there was 3 employers or less.

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# Goochland County



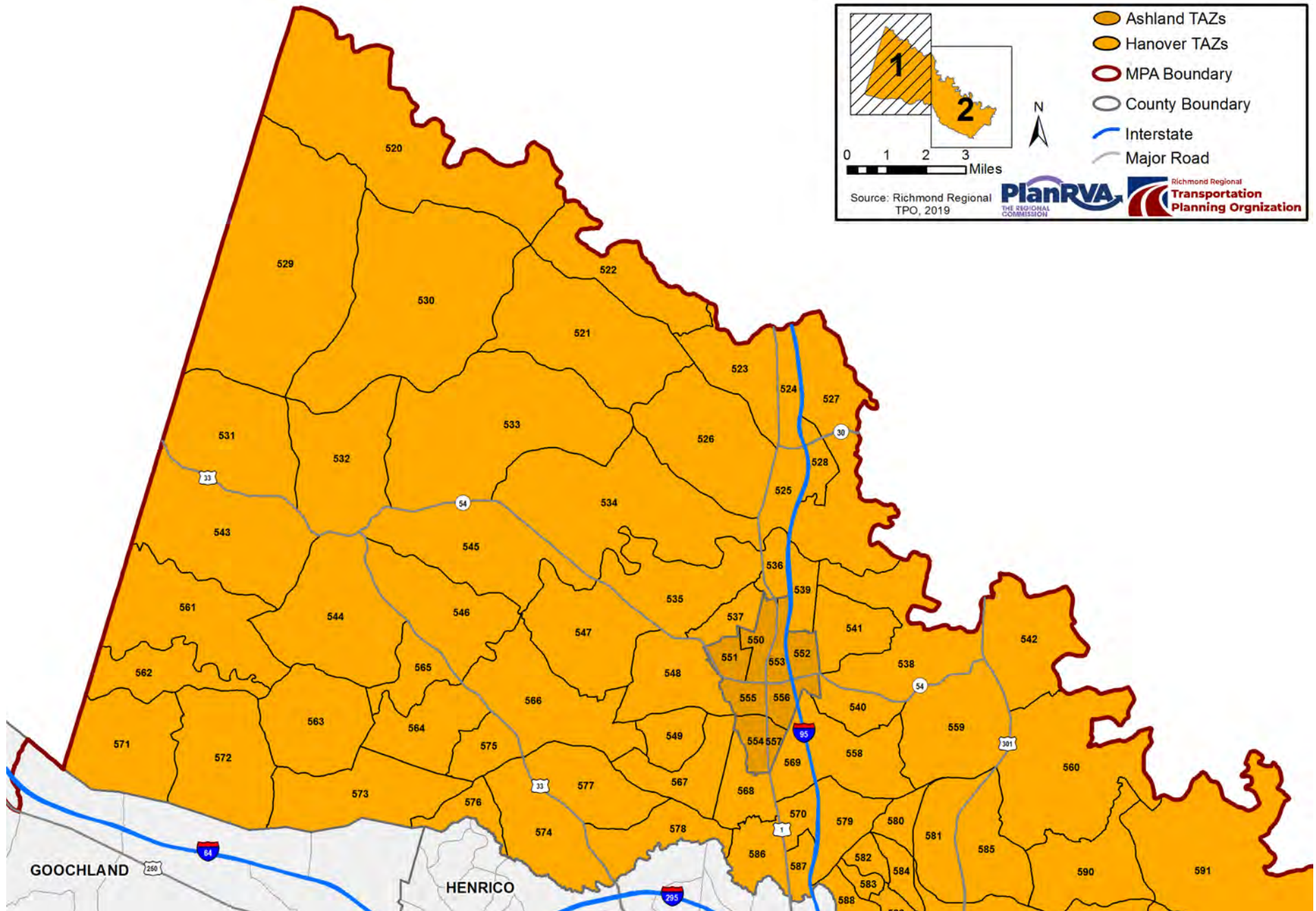
# Goochland County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
644	2,068	2,181	2,068	2,181	0	0	877	925	814	858	1,854	1,954	0	0	0	0	20	29	0	0	20	29
645	1,885	2,024	1,885	2,024	0	0	799	858	742	797	1,936	2,080	346	813	0	0	132	189	2	3	130	186
646	1,420	1,676	1,420	1,676	0	0	602	711	559	660	1,354	1,599	0	0	0	0	171	244	20	28	151	216
647	1,451	1,637	1,397	1,583	54	54	593	672	550	623	1,309	1,483	0	0	0	0	270	387	2	3	268	384
648	1,303	1,529	1,303	1,529	0	0	553	649	513	602	1,415	1,660	0	0	0	0	55	79	19	27	36	52
649	615	743	615	743	0	0	261	315	242	292	690	833	514	1,240	0	0	91	130	34	48	57	82
650	119	126	119	126	0	0	51	54	47	50	98	104	0	0	0	0	168	241	21	30	147	211
651	414	587	414	587	0	0	176	250	163	231	310	439	0	0	0	0	1,597	2,288	74	105	1,523	2,183
652	508	653	508	653	0	0	216	278	200	257	659	847	0	0	0	0	41	59	0	0	41	59
653	724	764	724	764	0	0	307	324	285	301	868	917	0	0	0	0	354	507	52	74	302	433
654	213	225	213	225	0	0	91	96	84	89	239	253	0	0	0	0	521	823	294	463	227	360
655	699	818	699	818	0	0	296	346	275	322	875	1,025	0	0	0	0	109	156	0	0	109	156
656	1,737	2,274	1,737	2,274	0	0	737	965	684	895	1,700	2,224	0	0	0	0	460	659	19	27	441	632
657	175	899	175	899	0	0	74	380	69	354	158	811	0	0	0	0	5,655	8,104	230	326	5,425	7,778
658	599	4,685	599	4,685	0	0	254	1,987	236	1,846	544	4,255	0	0	0	0	12	440	0	0	12	440
659	2,230	2,663	1,641	2,074	589	589	696	880	646	816	1,637	2,068	1,802	4,233	531	531	1,410	2,017	320	454	1,090	1,563
660	643	1,161	643	1,161	0	0	273	493	253	457	793	1,432	0	0	0	0	65	93	22	31	43	62
661	687	724	676	713	11	11	287	303	266	281	663	700	35	117	0	0	*	124	*	18	*	106
662	704	743	704	743	0	0	298	315	277	292	773	815	0	0	0	0	55	79	0	0	55	79
663	279	294	279	294	0	0	119	125	110	116	321	339	0	0	0	0	724	1,038	0	0	724	1,038
664	724	764	724	764	0	0	307	324	285	301	754	796	96	322	0	0	127	182	0	0	127	182
665	109	115	109	115	0	0	46	49	43	45	117	122	0	0	0	0	*	4	*	3	*	1
666	843	940	843	940	0	0	358	399	332	370	971	1,082	0	0	0	0	535	766	57	81	478	685
667	1,201	1,277	1,201	1,277	0	0	510	542	473	503	1,213	1,290	0	0	0	0	145	208	63	90	82	118
668	549	579	549	579	0	0	233	246	216	228	614	648	85	285	0	0	85	121	60	85	25	36
669	307	364	257	314	50	50	109	133	101	123	263	320	47	157	0	0	355	509	0	0	355	509
670	59	1,954	53	1,948	6	6	23	845	21	772	61	2,242	0	0	0	0	496	711	56	80	440	631
671	191	201	191	201	0	0	81	85	75	79	202	213	0	0	0	0	*	267	*	0	*	267
672	420	442	406	428	14	14	172	181	160	169	426	450	0	0	0	0	12	17	0	0	12	17
673	660	696	660	696	0	0	280	295	260	274	668	704	0	0	0	0	25	36	0	0	25	36
Total	23,536	33,738	22,812	33,014	724	724	9,679	14,025	8,981	13,003	23,485	33,705	2,925	7,167	531	531	13,966	20,507	1,360	1,976	12,606	18,531

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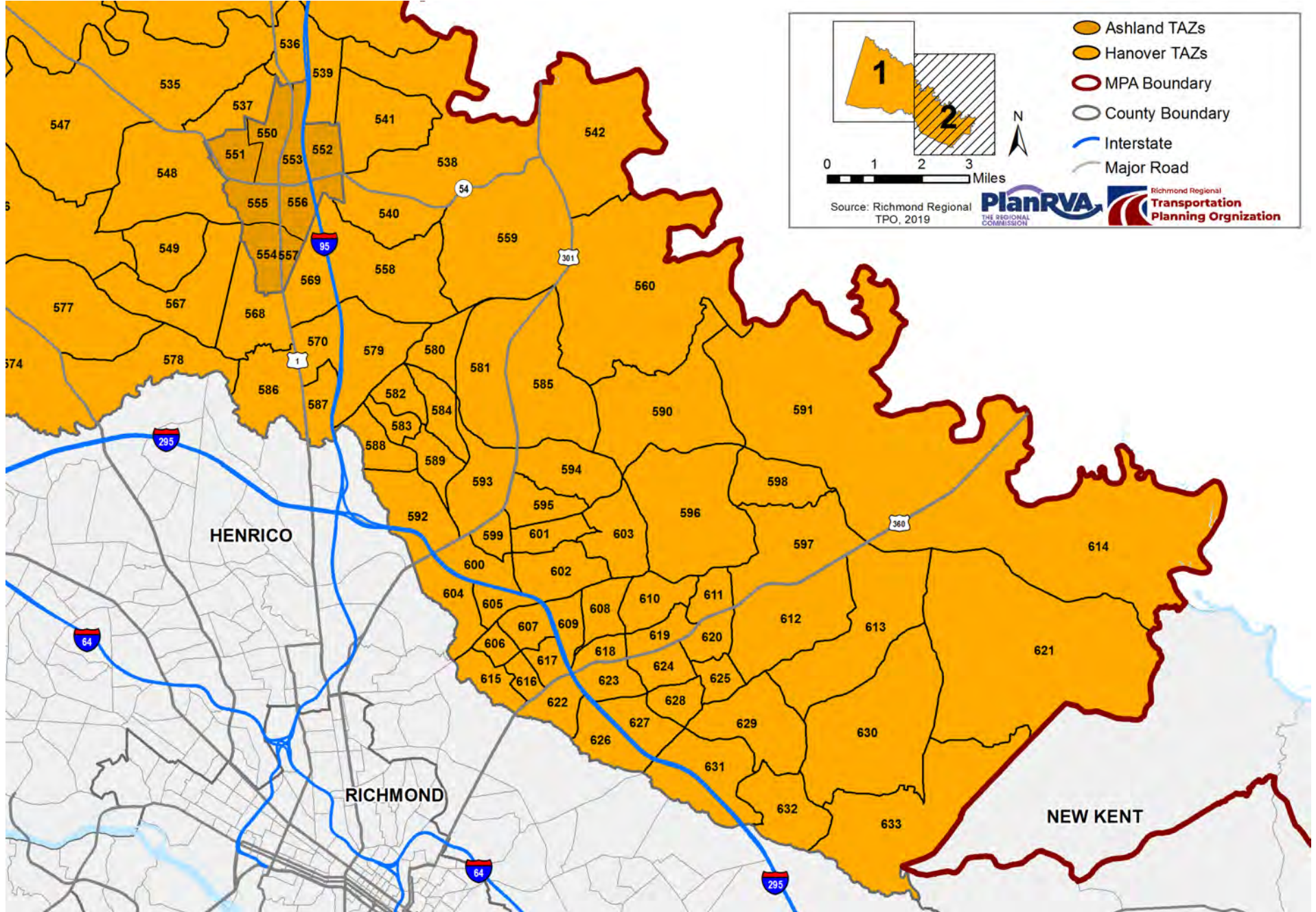


# Hanover County





# Hanover County





# Hanover County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
520	766	858	766	858	0	0	287	327	277	316	749	854	0	0	0	0	52	58	7	13	45	45
521	544	585	544	585	0	0	207	223	200	215	542	583	0	0	0	0	34	43	0	0	34	43
522	199	244	199	244	0	0	73	93	70	90	147	189	0	0	0	0	*	13	*	0	*	13
523	199	305	199	305	0	0	100	116	97	112	219	253	0	0	0	0	63	73	12	12	51	61
524	82	110	82	110	0	0	38	42	37	41	92	102	0	0	0	0	395	489	0	29	395	460
525	200	236	200	236	0	0	82	90	79	87	126	139	0	0	0	0	*	70	*	5	*	65
526	490	567	490	567	0	0	200	216	193	209	565	612	0	0	0	0	65	89	27	41	38	48
527	168	253	96	181	72	72	65	69	63	67	134	143	0	0	0	0	*	406	*	76	*	330
528	3	13	3	13	0	0	1	5	1	5	0	0	0	0	0	0	*	2,313	*	324	*	1,989
529	1,106	1,252	1,106	1,252	0	0	433	477	418	460	1,178	1,296	0	0	0	0	25	25	2	2	23	23
530	934	1,134	934	1,134	0	0	384	432	371	417	905	1,017	316	316	0	0	119	132	8	8	111	124
531	687	777	687	777	0	0	268	296	259	286	647	714	0	0	0	0	52	57	36	36	16	21
532	873	984	873	984	0	0	347	375	335	362	968	1,046	0	0	0	0	164	164	61	61	103	103
533	1,083	1,150	1,083	1,150	0	0	398	438	384	423	1,136	1,251	0	0	0	0	82	95	54	54	28	41
534	891	1,173	891	1,173	0	0	355	447	343	431	931	1,170	0	0	0	0	113	113	3	3	110	110
535	894	1,082	894	1,082	0	0	370	412	357	398	1,023	1,140	0	0	0	0	77	135	0	2	77	133
536	81	116	81	116	0	0	40	44	39	43	69	76	0	0	0	0	258	515	172	343	86	172
537	329	520	329	520	0	0	128	198	124	191	296	456	0	0	0	0	13	13	0	0	13	13
538	392	559	392	559	0	0	163	213	157	206	345	453	0	0	0	0	5	37	0	27	5	10
539	97	123	97	123	0	0	35	47	34	45	77	102	0	0	0	0	*	10	*	10	*	0
540	478	648	478	648	0	0	177	247	171	238	534	743	0	0	0	0	*	99	*	1	*	98
541	740	1,168	740	1,168	0	0	294	445	284	429	699	1,056	0	0	0	0	*	1	*	0	*	1
542	639	651	214	226	425	425	70	86	68	83	138	168	0	0	0	0	1,343	1,687	3	29	1,340	1,658
543	826	942	826	942	0	0	315	359	304	346	825	939	0	0	0	0	130	130	0	0	130	130
544	1,439	1,583	1,439	1,583	0	0	503	603	485	582	1,312	1,574	566	566	0	0	296	310	140	140	156	170
545	980	1,047	980	1,047	0	0	367	399	354	385	993	1,080	0	0	0	0	*	411	*	4	*	407
546	769	911	769	911	0	0	299	347	288	335	680	791	0	0	0	0	71	71	22	22	49	49
547	694	819	694	819	0	0	292	312	282	301	701	748	2,422	2422	0	0	242	466	0	2	242	464
548	406	648	406	648	0	0	175	247	169	238	483	680	0	0	0	0	19	19	7	7	12	12

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# Hanover County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
549	591	1,328	591	1,328	0	0	236	506	228	488	622	1,331	0	0	0	0	9	23	1	4	8	19
550	1,627	2,005	352	730	1,275	1,275	258	278	249	268	440	474	327	327	1,418	1,418	1,354	3,424	147	1,162	1,207	2,262
551	1,459	2,237	1,269	2,047	190	190	587	780	566	753	1,016	1,352	0	0	0	0	575	643	167	201	408	442
552	110	176	110	176	0	0	55	67	53	65	156	191	70	70	0	0	206	265	0	12	206	253
553	1,330	1,732	1,330	1,732	0	0	656	660	633	637	641	645	0	0	0	0	1,786	2,306	632	952	1,154	1,354
554	171	326	171	326	0	0	74	124	71	120	137	232	0	0	0	0	1,124	1,564	441	641	683	923
555	2,378	3,000	2,378	3,000	0	0	1,111	1,143	1,072	1,103	1,969	2,026	316	316	0	0	674	1,417	401	749	273	668
556	705	1,118	705	1,118	0	0	281	426	271	411	590	895	0	0	0	0	1,466	1,795	1,076	1,376	390	419
557	5	5	5	5	0	0	2	2	2	2	5	5	0	0	0	0	1,451	1,504	201	213	1,250	1,291
558	766	906	766	906	0	0	295	345	285	333	778	909	0	0	0	0	70	80	12	22	58	58
559	860	998	860	998	0	0	344	380	332	367	718	794	0	0	0	0	50	62	19	29	31	33
560	852	1,011	852	1,011	0	0	335	385	323	372	852	981	0	0	0	0	95	102	4	11	91	91
561	469	530	469	530	0	0	178	202	172	195	479	543	0	0	0	0	44	47	0	0	44	47
562	245	331	245	331	0	0	102	126	98	122	135	168	0	0	0	0	31	31	0	0	31	31
563	695	971	611	887	84	84	278	338	268	326	709	862	0	0	0	0	67	72	19	24	48	48
564	410	496	410	496	0	0	149	189	144	182	308	389	0	0	0	0	14	33	0	0	14	33
565	305	383	305	383	0	0	114	146	110	141	257	329	0	0	0	0	22	24	0	2	22	22
566	650	819	650	819	0	0	262	312	253	301	748	890	0	0	0	0	304	304	7	7	297	297
567	657	1,399	657	1,399	0	0	263	533	254	514	631	1,277	382	382	0	0	116	124	0	2	116	122
568	1,171	2,037	1,171	2,037	0	0	475	776	458	749	999	1,634	0	0	0	0	424	481	136	156	288	325
569	137	144	137	144	0	0	51	55	49	53	107	116	0	0	0	0	2,005	2,632	542	742	1,463	1,890
570	138	428	138	428	0	0	58	163	56	157	148	415	0	0	0	0	448	984	205	493	243	491
571	823	882	823	882	0	0	304	336	293	324	747	826	0	0	0	0	15	19	1	2	14	17
572	657	759	657	759	0	0	237	289	229	279	654	797	0	0	0	0	95	100	0	5	95	95
573	711	916	711	916	0	0	293	349	283	337	679	809	0	0	0	0	89	194	12	12	77	182
574	577	3,202	577	3,202	0	0	230	1,220	222	1,177	602	3,192	0	0	0	0	264	1,034	48	268	216	766
575	59	79	59	79	0	0	26	30	25	29	99	115	0	0	0	0	*	3	*	0	*	3
576	74	2,753	74	2,753	0	0	39	1,049	38	1,012	88	2,344	0	0	0	0	137	144	0	7	137	137
577	750	4,446	750	4,446	0	0	314	1,694	303	1,635	717	3,869	0	0	0	0	35	780	2	192	33	588

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 Town of Ashland

# Hanover County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
578	442	6,006	442	6,006	0	0	188	2,288	181	2,208	359	4,379	0	0	0	0	*	1,542	*	208	*	1,334
579	185	265	185	265	0	0	93	101	90	97	232	250	0	0	0	0	4,799	5,099	566	566	4,233	4,533
580	1,692	1,538	1,692	1,538	0	0	582	586	562	565	1,492	1,500	0	0	0	0	64	64	0	0	64	64
581	1,288	1,570	1,288	1,570	0	0	558	598	538	577	1,222	1,311	3,771	3771	0	0	606	631	6	23	600	608
582	2,276	2,116	2,276	2,116	0	0	802	806	774	778	1,062	1,067	0	0	0	0	557	582	152	177	405	405
583	1,982	1,814	1,982	1,814	0	0	675	691	651	667	1,915	1,962	0	0	0	0	314	334	142	162	172	172
584	3,219	2,439	3,219	2,439	0	0	925	929	893	896	2,416	2,424	0	0	0	0	88	116	4	6	84	110
585	750	948	750	948	0	0	333	361	321	348	719	779	0	0	0	0	22	43	9	9	13	34
586	793	2,034	793	2,034	0	0	351	775	339	748	790	1,743	0	0	0	0	567	848	152	333	415	515
587	544	955	544	955	0	0	276	364	266	351	414	546	0	0	0	0	2,451	2,651	535	635	1,916	2,016
588	2,098	1,688	2,098	1,688	0	0	593	643	572	620	1,548	1,678	0	0	0	0	65	67	0	2	65	65
589	1,493	1,709	1,493	1,709	0	0	506	651	488	628	1,248	1,606	3,459	3459	0	0	568	568	2	2	566	566
590	958	1,134	958	1,134	0	0	340	432	328	417	920	1,170	0	0	0	0	75	90	2	17	73	73
591	1,426	1,591	1,426	1,591	0	0	556	606	537	585	1,455	1,585	0	0	0	0	63	65	2	2	61	63
592	1,307	1,953	1,307	1,953	0	0	456	744	440	718	1,174	1,916	0	0	0	0	187	321	46	83	141	238
593	3,442	5,121	3,442	5,121	0	0	1,322	1,951	1,276	1,883	3,028	4,468	0	0	0	0	1,266	1,966	560	960	706	1,006
594	83	210	83	210	0	0	30	80	29	77	97	258	0	0	0	0	0	11	0	0	0	11
595	2,174	2,512	2,174	2,512	0	0	887	957	856	924	2,048	2,211	0	0	0	0	928	949	171	192	757	757
596	1,232	1,286	1,232	1,286	0	0	466	490	450	473	1,362	1,432	608	608	0	0	75	97	5	5	70	92
597	511	612	511	612	0	0	217	233	209	225	527	567	0	0	0	0	51	92	6	7	45	85
598	331	346	331	346	0	0	116	132	112	127	339	384	0	0	0	0	42	44	2	2	40	42
599	954	1,029	954	1,029	0	0	376	392	363	378	998	1,039	417	417	0	0	358	486	99	163	259	323
600	904	979	904	979	0	0	369	373	356	360	881	891	204	204	0	0	1,311	1,427	106	122	1,205	1,305
601	785	1,263	785	1,263	0	0	319	481	308	464	791	1,192	0	0	0	0	*	151	*	15	*	136
602	257	651	186	580	71	71	101	221	97	213	372	817	0	0	0	0	657	1,157	199	399	458	758
603	2,274	2,433	2,274	2,433	0	0	804	927	776	895	1,905	2,197	479	479	0	0	68	190	6	24	62	166
604	5	5	5	5	0	0	2	2	2	2	5	5	0	0	0	0	1,749	1,949	26	26	1,723	1,923
605	1,003	976	1,003	976	0	0	356	372	344	359	968	1,010	0	0	0	0	2,039	3,082	126	176	1,913	2,906
606	1,200	1,278	1,200	1,278	0	0	467	487	451	470	1,020	1,063	110	110	0	0	68	78	16	26	52	52

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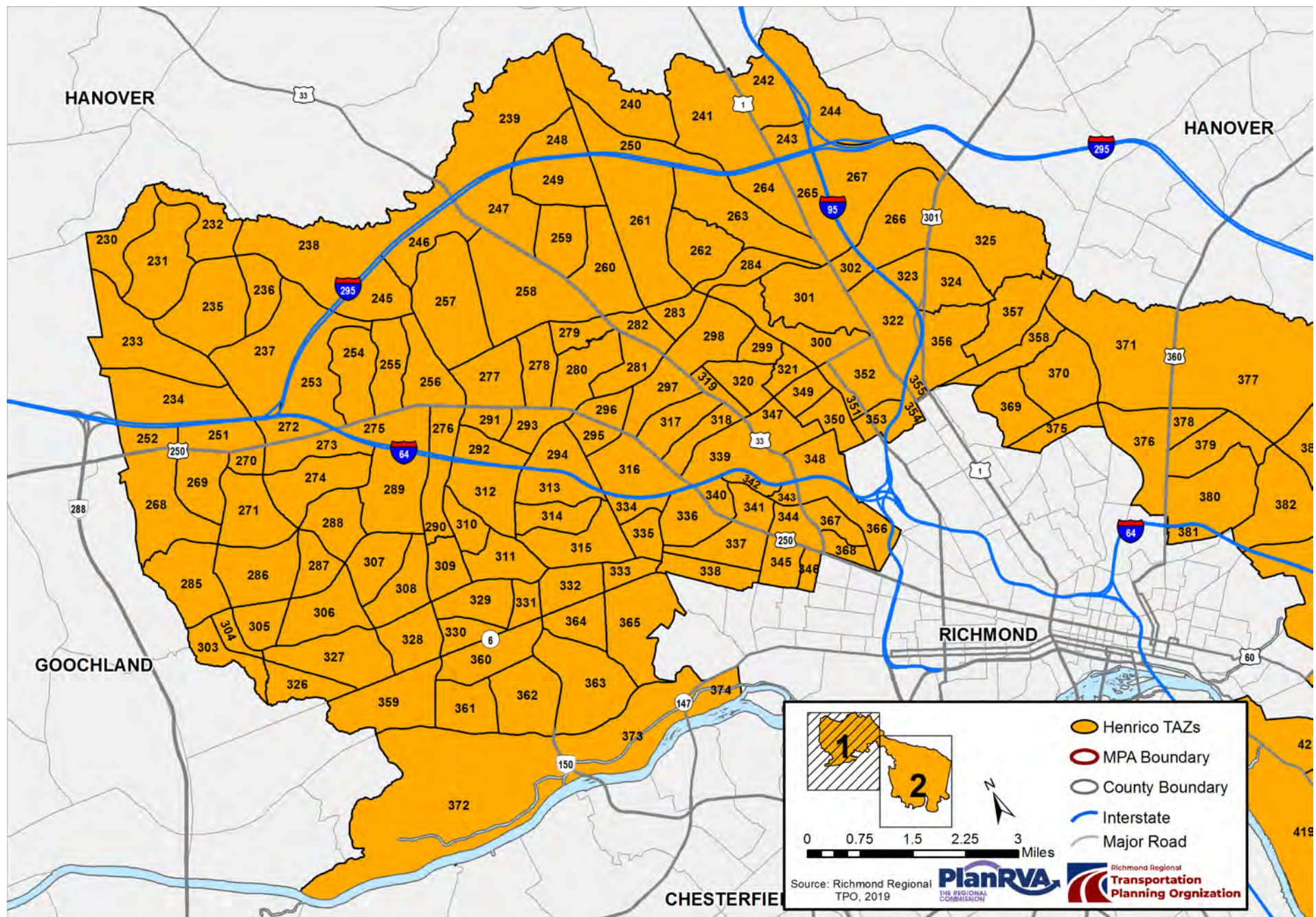
# Hanover County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
607	1,520	1,879	1,268	1,627	252	252	570	620	550	598	1,184	1,287	0	0	0	0	395	414	11	30	384	384
608	2,703	3,603	2,154	3,003	549	600	1,003	1,144	968	1,104	2,079	2,371	0	0	0	0	496	506	6	16	490	490
609	185	667	185	667	0	0	74	254	71	245	227	783	0	0	0	0	*	429	*	60	*	369
610	3,805	3,690	3,805	3,690	0	0	1,356	1,406	1,308	1,357	3,184	3,303	573	573	0	0	284	302	25	43	259	259
611	1,888	1,882	1,888	1,882	0	0	709	717	684	692	1,498	1,516	0	0	0	0	157	232	51	83	106	149
612	660	803	660	803	0	0	290	306	280	295	782	824	420	420	0	0	*	131	*	6	*	125
613	1,276	1,467	1,276	1,467	0	0	491	559	474	539	1,454	1,653	0	0	0	0	59	59	3	3	56	56
614	870	997	870	997	0	0	348	380	336	367	1,069	1,168	0	0	0	0	34	42	7	13	27	29
615	1,007	1,032	1,007	1,032	0	0	373	393	360	379	967	1,018	0	0	0	0	642	662	423	423	219	239
616	1,373	1,664	1,373	1,664	0	0	622	634	600	612	1,138	1,161	578	578	0	0	1,185	1,205	161	161	1,024	1,044
617	1,158	1,357	1,158	1,357	0	0	485	517	468	499	1,049	1,118	0	0	0	0	84	86	51	53	33	33
618	914	1,089	914	1,089	0	0	411	415	397	400	775	781	2,600	2600	0	0	1,507	1,644	917	986	590	658
619	1,035	1,168	1,035	1,168	0	0	395	445	381	429	817	920	86	86	0	0	807	892	593	643	214	249
620	2,065	2,318	2,065	2,318	0	0	663	883	640	852	1,747	2,326	0	0	0	0	297	460	49	192	248	268
621	1,683	1,856	1,683	1,856	0	0	597	707	576	682	1,705	2,019	0	0	0	0	61	143	3	6	58	137
622	2,711	3,074	2,711	3,074	0	0	1,159	1,171	1,118	1,130	1,990	2,011	0	0	0	0	535	605	134	204	401	401
623	1,492	2,249	1,492	2,249	0	0	640	857	618	827	1,331	1,781	0	0	0	0	1,930	2,075	1,563	1,658	367	417
624	1,866	2,291	1,866	2,291	0	0	733	873	707	842	1,627	1,938	0	0	0	0	1,441	1,851	1,035	1,245	406	606
625	705	724	705	724	0	0	260	276	251	266	658	697	0	0	0	0	200	339	5	61	195	278
626	1,217	1,454	1,217	1,454	0	0	550	554	531	535	982	989	0	0	0	0	30	39	0	0	30	39
627	2,639	2,583	2,639	2,583	0	0	976	984	942	950	2,400	2,420	0	0	0	0	129	173	51	51	78	122
628	1,530	1,593	1,530	1,593	0	0	557	607	537	586	1,513	1,651	522	522	0	0	*	137	*	0	*	137
629	661	759	661	759	0	0	277	289	267	279	778	813	0	0	0	0	*	88	*	0	*	88
630	1,027	1,197	1,027	1,197	0	0	388	456	374	440	1,221	1,436	0	0	0	0	20	21	1	2	19	19
631	441	533	441	533	0	0	199	203	192	196	399	407	0	0	0	0	20	128	14	20	6	108
632	216	215	216	215	0	0	78	82	75	79	193	203	0	0	0	0	29	33	6	7	23	26
633	969	1,079	969	1,079	0	0	363	411	350	397	1,175	1,333	0	0	0	0	226	228	2	4	224	224
Total	109,595	145,559	106,677	142,590	2,918	2,969	41,706	54,324	40,247	52,423	97,794	127,162	18,226	18,226	1,418	1,418	50,625	65,859	12,969	18,847	37,656	47,012

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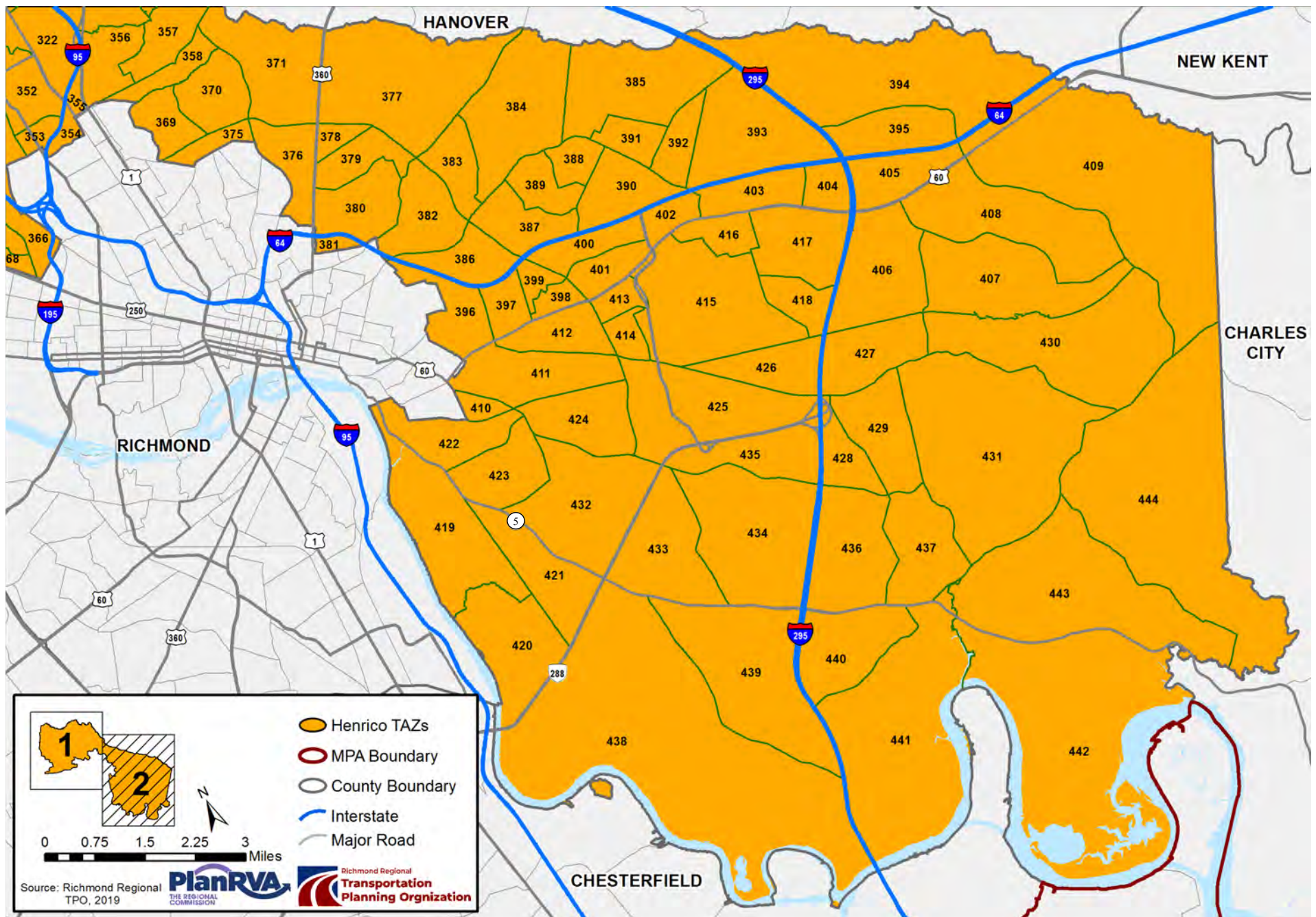


# Henrico County (Map 2-1)





# Henrico County (Map 2-2)





# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
230	1,621	2,060	1,621	2,060	0	0	664	844	654	831	1,663	2,113	0	0	0	0	49	50	27	28	22	22
231	3,104	3,181	3,104	3,181	0	0	1,281	1,313	1,252	1,283	3,503	3,590	717	868	0	0	303	339	40	41	263	298
232	1,621	1,817	1,621	1,817	0	0	664	744	654	733	1,619	1,815	0	0	0	0	123	126	1	2	122	124
233	921	1,533	921	1,533	0	0	378	629	372	619	1,022	1,701	429	519	0	0	163	252	0	0	163	252
234	1,222	1,924	1,222	1,924	0	0	514	809	493	776	833	1,311	689	834	0	0	*	1,644	*	4	*	1,640
235	2,404	3,049	2,404	3,049	0	0	985	1,249	969	1,229	2,977	3,776	0	0	0	0	159	181	55	55	104	126
236	1,969	2,016	1,969	2,016	0	0	817	837	794	813	1,416	1,450	1,963	2,546	389	389	1,075	1,227	312	341	763	886
237	4,742	4,859	4,742	4,859	0	0	1,959	2,007	1,912	1,959	4,175	4,278	1,445	1,749	0	0	1,183	1,416	326	344	857	1,072
238	1,621	2,550	1,621	2,550	0	0	664	1,044	653	1,027	1,980	3,114	1,743	2,110	0	0	2,477	2,804	146	262	2,331	2,542
239	3,481	4,019	3,481	4,019	0	0	1,436	1,658	1,404	1,621	2,571	2,968	0	0	0	0	120	174	35	35	85	139
240	605	952	605	952	0	0	248	390	244	384	480	755	0	0	0	0	22	25	5	8	17	17
241	3,264	7,535	3,264	7,535	0	0	1,358	3,135	1,316	3,038	2,277	5,256	0	0	0	0	1,037	1,329	865	914	172	415
242	62	91	54	83	8	8	22	34	22	34	22	34	0	0	0	0	2,912	3,624	1,151	1,311	1,761	2,313
243	307	483	307	483	0	0	126	198	124	195	258	406	0	0	0	0	139	215	106	127	33	88
244	1,625	1,945	1,625	1,945	0	0	666	797	655	784	917	1,098	0	0	0	0	158	429	110	111	48	318
245	259	266	259	266	0	0	106	109	105	108	289	297	0	0	0	0	12,035	13,958	190	190	11,845	13,768
246	1,038	1,266	1,038	1,266	0	0	426	520	419	511	1,308	1,595	0	0	0	0	30	51	6	6	24	45
247	902	1,170	896	1,164	6	6	367	477	361	469	900	1,169	0	0	0	0	27	347	6	6	21	341
248	583	598	583	598	0	0	239	245	235	241	576	591	0	0	0	0	9	9	0	0	9	9
249	933	1,109	730	906	203	203	299	371	294	365	792	983	656	794	0	0	437	520	123	128	314	392
250	578	910	578	910	0	0	237	373	233	367	521	821	611	740	0	0	*	139	*	0	*	139
251	1,198	1,228	1,198	1,228	0	0	505	518	483	495	488	500	0	0	0	0	4,512	4,839	3,787	4,102	725	737
252	17	1,474	17	1,474	0	0	7	607	7	607	17	1,474	0	0	0	0	*	1,446	*	696	*	750
253	1,363	3,118	1,363	3,118	0	0	558	1,277	549	1,256	1,647	3,768	0	0	0	0	1,958	3,027	231	257	1,727	2,770
254	751	5,892	751	5,892	0	0	308	2,416	303	2,377	770	6,041	0	0	0	0	7,117	10,167	713	772	6,404	9,395
255	2,115	3,375	2,115	3,375	0	0	876	1,398	853	1,361	1,643	2,621	0	0	450	450	1,859	3,436	413	429	1,446	3,007
256	3,933	4,030	3,933	4,030	0	0	1,639	1,679	1,586	1,625	3,055	3,130	656	794	0	0	1,689	1,792	844	870	845	922
257	5,203	5,332	5,198	5,327	5	5	2,130	2,183	2,096	2,148	6,015	6,164	576	697	0	0	252	326	35	35	217	291

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# Henrico County

TAZ	Population						Housing						School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
258	4,990	5,111	4,990	5,111	0	0	2,045	2,095	2,017	2,066	4,543	4,653	2,832	3,428	0	0	890	1,049	133	157	757	892
259	1,391	1,453	1,385	1,447	6	6	568	593	558	583	1,059	1,106	0	0	0	0	93	100	14	14	79	86
260	3,240	3,319	3,240	3,319	0	0	1,328	1,361	1,306	1,338	2,653	2,718	0	0	0	0	80	113	14	19	66	94
261	4,091	4,193	4,075	4,177	16	16	1,670	1,712	1,643	1,684	3,328	3,411	0	0	0	0	146	403	33	60	113	343
262	2,878	2,950	2,878	2,950	0	0	1,185	1,215	1,161	1,190	1,778	1,822	0	0	0	0	1,120	1,409	93	96	1,027	1,313
263	2,646	2,710	2,635	2,699	11	11	1,084	1,111	1,063	1,089	1,952	2,000	172	208	0	0	545	751	241	364	304	387
264	1,621	1,663	1,621	1,663	0	0	669	686	654	671	1,124	1,153	502	608	0	0	747	893	177	258	570	635
265	1,142	1,794	1,137	1,789	5	5	466	733	459	722	934	1,469	0	0	0	0	256	579	94	127	162	452
266	2,768	2,837	2,753	2,822	15	15	1,128	1,156	1,110	1,138	2,423	2,484	429	519	0	0	216	292	19	38	197	254
267	56	88	56	88	0	0	23	36	23	36	63	99	0	0	544	544	1,488	2,404	95	95	1,393	2,309
268	2,835	4,340	2,628	4,133	207	207	1,077	1,694	1,060	1,667	3,471	5,459	599	725	0	0	688	1,021	209	268	479	753
269	1,446	2,274	1,442	2,270	4	4	591	930	582	916	1,609	2,532	0	0	0	0	728	1,234	543	776	185	458
270	1,195	1,225	1,195	1,225	0	0	506	519	482	494	640	656	135	298	0	0	2,225	2,253	930	948	1,295	1,305
271	4,049	4,148	4,044	4,143	5	5	1,668	1,709	1,631	1,671	4,083	4,183	1,046	1,266	0	0	760	804	368	398	392	406
272	0	0	0	0	0	0	0	0	0	0	0	0	0	0	190	190	1,825	1,846	1,525	1,544	300	302
273	3,959	4,299	3,959	4,299	0	0	1,658	1,800	1,596	1,733	1,271	1,380	1,546	1,871	617	1,200	2,544	2,602	1,668	1,682	876	920
274	2,148	2,203	2,148	2,203	0	0	880	902	866	888	2,865	2,938	0	0	0	0	189	225	96	114	93	111
275	0	0	0	0	0	0	0	1,100	0	0	0	0	0	0	0	0	6,169	8,119	963	1,089	5,206	7,030
276	325	333	325	333	0	0	133	136	131	134	279	285	0	0	0	0	1,439	1,591	715	796	724	795
277	3,349	3,433	3,349	3,433	0	0	1,391	1,426	1,350	1,384	2,616	2,682	468	566	0	0	1,647	1,701	1,039	1,069	608	632
278	1,521	1,558	1,489	1,526	32	32	610	625	600	615	1,616	1,656	34	75	0	0	812	881	348	387	464	494
279	847	1,085	843	1,081	4	4	346	444	340	436	597	766	0	0	0	0	31	37	0	1	31	36
280	5,078	5,654	5,078	5,654	0	0	2,120	2,360	2,047	2,279	3,166	3,525	614	743	0	0	757	757	115	115	642	642
281	2,964	3,038	2,964	3,038	0	0	1,241	1,272	1,195	1,225	1,207	1,237	1,667	2,018	0	0	2,173	2,238	528	553	1,645	1,685
282	506	794	506	794	0	0	207	325	204	320	324	508	0	0	0	0	918	1,048	673	760	245	288
283	593	809	374	590	219	219	153	241	151	238	200	315	0	0	0	0	1,932	1,984	9	12	1,923	1,972
284	499	511	495	507	4	4	203	208	200	205	440	451	1,138	1,377	0	0	1,538	1,677	196	200	1,342	1,477
285	4,151	4,349	4,151	4,349	0	0	1,714	1,796	1,674	1,754	3,357	3,517	0	0	0	0	133	148	15	18	118	130
286	2,668	2,735	2,668	2,735	0	0	1,093	1,120	1,075	1,102	3,039	3,115	544	658	0	0	349	419	173	173	176	246
287	1,377	1,412	1,377	1,412	0	0	564	578	555	569	1,572	1,612	0	0	0	0	284	445	158	252	126	193

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# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
288	1,855	2,024	1,855	2,024	0	0	760	829	748	816	2,217	2,419	0	0	0	0	79	91	0	0	79	91
289	2,796	4,031	2,157	3,392	639	639	884	1,390	870	1,368	2,433	3,826	62	137	0	0	974	1,125	188	201	786	924
290	1,113	1,143	1,113	1,143	0	0	456	468	449	461	1,151	1,182	0	0	0	0	46	59	11	14	35	45
291	3,889	3,988	3,889	3,988	0	0	1,646	1,688	1,568	1,608	1,450	1,487	0	0	0	0	578	687	456	507	122	180
292	4,308	5,347	4,308	5,347	0	0	1,808	2,244	1,737	2,156	2,540	3,153	0	0	0	0	105	149	10	10	95	139
293	1,675	1,717	1,675	1,717	0	0	705	723	675	692	888	910	1,757	2,127	111	111	1,737	2,059	622	696	1,115	1,363
294	1,543	1,580	1,447	1,484	96	96	593	608	584	599	1,318	1,352	0	0	0	0	338	527	2	2	336	525
295	1,004	1,029	1,001	1,026	3	3	417	427	404	414	888	910	0	0	0	0	669	773	418	471	251	302
296	166	260	166	260	0	0	68	107	67	105	136	213	85	188	0	0	2,013	2,242	469	532	1,544	1,710
297	2,513	2,555	1,604	1,646	909	909	665	682	647	664	1,439	1,477	0	0	0	0	2,700	3,192	222	244	2,478	2,948
298	1,490	1,527	1,464	1,501	26	26	600	615	590	605	1,338	1,372	878	1,425	0	0	1,099	1,236	208	220	891	1,016
299	627	741	627	741	0	0	257	304	253	299	491	580	1,037	1,255	0	0	*	163	*	0	*	163
300	814	834	814	834	0	0	333	341	328	336	976	1,000	0	0	0	0	419	487	56	56	363	431
301	2,431	2,491	2,431	2,491	0	0	1,009	1,034	980	1,004	1,251	1,282	61	135	8,632	8,632	3,545	4,709	67	89	3,478	4,620
302	115	118	115	118	0	0	47	48	46	47	93	95	0	0	0	0	969	1,073	716	819	253	254
303	1,020	1,114	1,020	1,114	0	0	418	457	411	449	1,219	1,332	0	0	0	0	*	95	*	0	*	95
304	2,434	2,494	2,434	2,494	0	0	1,018	1,043	981	1,005	1,476	1,512	75	166	0	0	186	226	110	150	76	76
305	2,464	2,514	2,019	2,069	445	445	830	850	814	834	1,651	1,692	0	0	0	0	805	836	62	67	743	769
306	2,607	2,674	2,589	2,656	18	18	1,061	1,088	1,044	1,071	2,543	2,609	625	1,381	0	0	290	349	6	7	284	342
307	1,764	1,806	1,696	1,738	68	68	695	712	684	701	1,899	1,946	1,828	2,213	0	0	*	329	*	2	*	327
308	2,229	2,472	2,130	2,373	99	99	873	973	859	957	1,881	2,096	0	0	0	0	200	231	0	0	200	231
309	2,525	2,587	2,525	2,587	0	0	1,045	1,071	1,018	1,043	2,023	2,073	1,366	1,653	0	0	461	489	18	18	443	471
310	923	948	923	948	0	0	378	388	372	382	986	1,013	0	0	0	0	37	54	0	1	37	53
311	3,163	4,193	3,163	4,193	0	0	1,330	1,763	1,275	1,690	2,169	2,875	0	0	0	0	1,989	2,266	1,227	1,327	762	939
312	2,767	2,829	2,431	2,493	336	336	999	1,024	980	1,005	2,321	2,380	550	666	0	0	405	573	6	12	399	561
313	1,223	1,253	1,223	1,253	0	0	501	513	493	505	1,385	1,419	0	0	0	0	145	236	11	11	134	225
314	1,320	1,350	1,223	1,253	97	97	501	513	493	505	1,433	1,468	0	0	0	0	116	131	2	2	114	129
315	3,331	3,410	3,234	3,313	97	97	1,347	1,380	1,304	1,336	2,274	2,330	2,058	2,491	0	0	5,245	5,660	69	70	5,176	5,590

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# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
316	1,582	2,976	1,582	2,976	0	0	652	1,226	638	1,200	1,745	3,282	599	725	278	278	3,680	4,233	807	914	2,873	3,319
317	2,157	3,771	2,157	3,771	0	0	911	1,593	870	1,521	1,970	3,444	0	0	0	0	418	499	231	289	187	210
318	3,982	4,989	3,982	4,989	0	0	1,671	2,094	1,605	2,011	1,507	1,888	0	0	0	0	882	1,126	580	631	302	495
319	0	0	0	0	0	0	0	200	0	0	0	0	0	0	0	0	819	951	250	280	569	671
320	1,096	1,126	1,096	1,126	0	0	452	464	442	454	762	783	620	750	0	0	2,897	3,028	190	190	2,707	2,838
321	1,348	1,383	1,348	1,383	0	0	561	575	544	558	897	920	0	0	0	0	17	21	6	6	11	15
322	1,614	2,535	1,606	2,527	8	8	658	1,035	647	1,018	1,271	2,000	0	0	0	0	172	214	75	96	97	118
323	836	856	821	841	15	15	337	345	331	339	585	599	0	0	0	0	10	23	5	7	5	16
324	821	1,292	821	1,292	0	0	337	530	331	521	801	1,261	0	0	0	0	92	102	0	0	92	102
325	1,368	1,658	1,362	1,652	6	6	558	677	549	666	1,371	1,663	1,022	1,449	0	0	229	238	0	0	229	238
326	1,040	1,407	642	1,009	398	398	268	421	259	407	669	1,051	0	0	0	0	614	629	248	263	366	366
327	2,843	3,304	2,505	2,966	338	338	1,031	1,221	1,010	1,196	2,985	3,535	0	0	0	0	532	573	88	91	444	482
328	1,459	1,496	1,459	1,496	0	0	606	621	588	603	1,368	1,403	0	0	0	0	906	1,048	469	506	437	542
329	2,253	2,310	2,253	2,310	0	0	927	950	909	932	2,639	2,706	102	225	0	0	261	374	139	147	122	227
330	1,887	2,889	1,749	2,751	138	138	735	1,156	705	1,109	1,204	1,894	455	1,006	0	0	361	412	49	63	312	349
331	570	1,799	570	1,799	0	0	234	739	230	726	586	1,850	0	0	0	0	651	1,036	483	500	168	536
332	1,642	1,684	1,642	1,684	0	0	673	690	662	679	1,612	1,653	1,805	2,185	0	0	798	855	292	313	506	542
333	952	977	952	977	0	0	390	400	384	394	897	920	0	0	0	0	21	26	17	17	4	9
334	495	502	317	324	178	178	130	133	128	131	299	306	0	0	0	0	2,010	2,151	81	81	1,929	2,070
335	1,267	1,299	1,267	1,299	0	0	519	532	511	524	1,078	1,105	0	0	0	0	1,149	1,221	0	0	1,149	1,221
336	2,211	2,266	2,211	2,266	0	0	925	948	892	914	1,456	1,492	399	483	0	0	3,346	3,996	782	860	2,564	3,136
337	2,121	2,176	2,117	2,172	4	4	869	891	854	876	1,717	1,761	0	0	0	0	961	1,073	355	375	606	698
338	1,583	1,625	1,583	1,625	0	0	649	666	639	656	1,251	1,284	0	0	0	0	6,129	6,365	192	194	5,937	6,171
339	3,232	3,391	3,224	3,383	8	8	1,337	1,403	1,300	1,364	2,651	2,782	0	0	0	0	2,853	3,006	158	186	2,695	2,820
340	65	788	65	788	0	0	27	327	26	315	43	521	0	0	0	0	3,199	3,894	470	499	2,729	3,395
341	1,277	1,309	1,277	1,309	0	0	527	540	515	528	1,267	1,299	0	0	0	0	698	821	257	289	441	532
342	196	201	196	201	0	0	80	82	79	81	213	218	563	681	0	0	*	109	*	0	*	109
343	359	369	359	369	0	0	147	151	145	149	289	297	0	0	0	0	10	15	0	0	10	15
344	312	5,420	312	5,420	0	0	128	2,224	126	2,189	296	5,142	0	0	0	0	2,335	2,782	903	1,006	1,432	1,776

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# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
345	1,245	1,518	1,139	1,412	106	106	467	579	459	569	960	1,190	163	360	0	0	2,693	2,916	798	826	1,895	2,090
346	852	1,845	852	1,845	0	0	350	758	344	745	306	663	0	0	0	0	2,922	3,091	1,235	1,289	1,687	1,802
347	1,578	1,618	1,574	1,614	4	4	645	661	635	651	1,178	1,208	0	0	0	0	1,591	1,731	121	143	1,470	1,588
348	544	855	544	855	0	0	223	350	219	344	399	627	0	0	0	0	1,079	1,181	24	24	1,055	1,157
349	2,060	2,112	2,053	2,105	7	7	854	876	828	849	1,292	1,325	508	615	0	0	173	213	12	12	161	201
350	2,441	2,503	2,433	2,495	8	8	998	1,023	981	1,006	1,664	1,706	0	0	0	0	31	40	21	21	10	19
351	875	892	682	699	193	193	280	287	275	282	438	449	0	0	0	0	392	450	158	182	234	268
352	1,665	2,618	1,665	2,618	0	0	695	1,093	671	1,055	510	802	0	0	0	0	435	582	182	247	253	335
353	791	811	791	811	0	0	324	332	319	327	526	539	0	0	0	0	316	335	142	158	174	177
354	853	853	0	0	853	853	0	0	0	0	0	0	0	0	0	0	85	208	79	96	6	112
355	0	0	0	0	0	0	0	0	0	0	0	0	121	267	0	0	801	894	454	509	347	385
356	3,326	4,033	3,326	4,033	0	0	1,389	1,684	1,341	1,626	1,835	2,225	0	0	0	0	234	277	155	184	79	93
357	2,937	3,433	2,937	3,433	0	0	1,238	1,447	1,184	1,384	1,433	1,675	1,746	2,113	0	0	*	633	*	5	*	628
358	512	804	512	804	0	0	210	330	207	325	459	721	0	0	0	0	106	225	7	15	99	210
359	3,245	3,669	3,245	3,669	0	0	1,359	1,537	1,308	1,479	2,581	2,918	0	0	0	0	402	462	15	22	387	440
360	2,917	2,989	2,917	2,989	0	0	1,205	1,235	1,176	1,205	2,724	2,791	680	823	0	0	431	528	303	318	128	210
361	1,267	1,299	1,267	1,299	0	0	519	532	511	524	1,493	1,531	0	0	0	0	61	76	2	2	59	74
362	1,889	1,936	1,889	1,936	0	0	774	793	762	781	1,760	1,804	1,680	3,713	0	0	*	503	*	3	*	500
363	2,955	3,029	2,955	3,029	0	0	1,211	1,241	1,192	1,222	3,132	3,211	456	724	0	0	234	319	39	42	195	277
364	1,177	1,207	1,177	1,207	0	0	483	495	474	486	1,414	1,450	0	0	0	0	232	310	72	75	160	235
365	2,924	2,998	2,924	2,998	0	0	1,198	1,228	1,179	1,209	3,137	3,217	658	796	0	0	317	376	133	153	184	223
366	207	212	207	212	0	0	85	87	84	86	175	179	0	0	0	0	2,296	2,824	464	464	1,832	2,360
367	0	0	0	0	0	0	0	500	0	0	0	0	0	0	0	0	3,888	4,505	280	280	3,608	4,225
368	0	0	0	0	0	0	0	300	0	0	0	0	0	0	279	535	4,729	5,125	185	185	4,544	4,940
369	1,968	2,018	1,968	2,018	0	0	822	843	793	813	1,016	1,042	603	774	0	0	176	210	58	67	118	143
370	315	323	315	323	0	0	129	132	127	130	234	240	0	0	0	0	564	1,021	87	87	477	934
371	1,690	1,794	1,676	1,780	14	14	687	730	676	718	1,442	1,532	445	539	0	0	457	565	178	200	279	365
372	1,720	1,851	1,720	1,851	0	0	705	759	694	747	2,437	2,623	0	0	0	0	185	188	2	2	183	186
373	954	1,231	488	765	466	466	200	314	197	309	742	1,164	0	0	0	0	304	328	277	281	27	47

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# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
374	266	420	266	420	0	0	109	172	107	169	114	180	0	0	0	0	384	388	117	118	267	270
375	1,499	1,536	1,492	1,529	7	7	620	635	602	617	1,040	1,066	0	0	0	0	304	380	125	152	179	228
376	1,921	1,968	1,913	1,960	8	8	784	803	771	790	1,715	1,757	0	0	0	0	848	1,044	198	263	650	781
377	4,538	7,130	4,526	7,118	12	12	1,872	2,944	1,825	2,870	4,399	6,918	1,274	1,712	0	0	461	549	71	84	390	465
378	1,194	1,226	1,194	1,226	0	0	498	511	482	495	881	905	0	0	0	0	200	241	102	139	98	102
379	2,425	3,811	2,418	3,804	7	7	994	1,564	975	1,534	2,134	3,357	467	565	0	0	247	422	113	136	134	286
380	3,484	3,568	3,479	3,563	5	5	1,430	1,465	1,403	1,437	3,138	3,214	0	0	0	0	245	333	13	32	232	301
381	370	380	370	380	0	0	153	157	149	153	199	204	930	1,126	0	0	*	256	*	9	*	247
382	2,109	3,277	2,038	3,206	71	71	840	1,321	822	1,293	2,018	3,174	0	0	0	0	791	1,247	379	402	412	845
383	4,292	6,749	4,292	6,749	0	0	1,797	2,826	1,731	2,722	2,441	3,838	0	0	0	0	198	256	102	123	96	133
384	2,564	4,032	2,564	4,032	0	0	1,053	1,656	1,034	1,626	2,470	3,884	0	0	0	0	239	327	121	154	118	173
385	2,417	3,783	2,388	3,754	29	29	980	1,541	963	1,514	1,775	2,791	0	0	0	0	86	95	18	18	68	77
386	1,414	1,444	1,213	1,243	201	201	497	509	489	501	1,256	1,287	433	524	0	0	1,292	1,494	148	180	1,144	1,314
387	1,396	2,197	1,396	2,197	0	0	572	900	563	886	1,473	2,318	1,060	1,283	0	0	586	807	124	172	462	635
388	1,542	2,427	1,542	2,427	0	0	638	1,004	622	979	891	1,402	588	712	0	0	287	390	26	50	261	340
389	2,905	3,116	2,902	3,113	3	3	1,199	1,286	1,170	1,255	1,975	2,118	0	0	0	0	10	67	0	0	10	67
390	2,008	3,154	2,001	3,147	7	7	827	1,300	807	1,269	1,581	2,486	2,256	2,731	0	0	1,908	2,089	335	382	1,573	1,707
391	2,296	2,514	2,296	2,514	0	0	941	1,030	926	1,014	1,867	2,044	0	0	0	0	188	214	132	156	56	58
392	2,664	4,123	2,545	4,004	119	119	1,054	1,658	1,026	1,614	1,653	2,600	0	0	0	0	250	297	79	98	171	199
393	2,018	3,172	2,018	3,172	0	0	827	1,300	813	1,278	1,709	2,686	521	631	0	0	238	396	3	3	235	393
394	1,141	1,793	1,141	1,793	0	0	467	734	460	723	1,095	1,721	0	0	0	0	*	18	*	2	*	16
395	60	93	60	93	0	0	25	39	24	37	75	116	0	0	0	0	0	0	0	0	0	0
396	1,853	1,935	1,849	1,931	4	4	758	792	746	779	1,877	1,960	0	0	0	0	21	64	18	26	3	38
397	2,809	2,881	2,809	2,881	0	0	1,172	1,202	1,132	1,161	1,747	1,792	393	476	0	0	186	288	53	84	133	204
398	420	659	420	659	0	0	172	270	169	265	555	870	0	0	0	0	678	764	434	480	244	284
399	927	1,457	927	1,457	0	0	389	612	374	588	426	670	0	0	0	0	514	692	375	419	139	273
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,978	2,467	1,572	1,748	406	719
401	1,949	2,100	1,945	2,096	4	4	809	872	784	845	1,477	1,592	0	0	0	0	594	759	356	410	238	349
402	793	813	793	813	0	0	325	333	320	328	680	697	235	284	0	0	212	359	76	100	136	259

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# Henrico County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
403	1,779	2,797	1,779	2,797	0	0	734	1,154	718	1,129	1,179	1,854	0	0	0	0	92	251	33	53	59	198
404	155	368	155	368	0	0	63	149	62	147	183	434	0	0	0	0	278	455	131	172	147	283
405	94	146	94	146	0	0	38	59	38	59	89	138	0	0	0	0	*	293	*	68	*	225
406	94	888	94	888	0	0	38	359	38	359	140	1,323	0	0	0	0	133	609	0	21	133	588
407	236	373	236	373	0	0	96	152	95	150	230	363	0	0	0	0	*	2,809	*	32	*	2,777
408	523	818	518	813	5	5	212	333	209	328	543	852	0	0	0	0	985	1,463	1	40	984	1,423
409	2,496	3,926	2,496	3,926	0	0	1,023	1,609	1,007	1,584	2,703	4,252	940	1,234	0	0	211	671	8	20	203	651
410	1,401	2,193	1,380	2,172	21	21	581	914	556	875	496	781	0	0	0	0	41	51	5	15	36	36
411	1,396	1,465	1,396	1,465	0	0	572	600	563	591	1,151	1,208	0	0	0	0	1,154	1,498	354	357	800	1,141
412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,327	4,099	489	641	2,838	3,458
413	733	753	733	753	0	0	307	315	295	303	502	516	0	0	0	0	991	1,307	208	242	783	1,065
414	192	299	192	299	0	0	78	122	77	120	164	256	0	0	0	0	958	1,152	48	54	910	1,098
415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,334	3,577	138	139	2,196	3,438
416	1,584	1,626	1,584	1,626	0	0	649	666	638	655	1,298	1,333	410	496	0	0	377	421	87	122	290	299
417	1,009	1,587	1,009	1,587	0	0	420	660	407	640	841	1,322	0	0	0	0	96	169	69	76	27	93
418	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	213	*	0	*	213
419	855	6,230	855	6,230	0	0	350	2,550	345	2,514	435	3,170	0	0	0	0	*	2,259	*	731	*	1,528
420	236	1,103	236	1,103	0	0	97	453	95	444	377	1,762	0	0	0	0	20	30	1	2	19	28
421	2,002	3,151	2,002	3,151	0	0	820	1,290	807	1,270	2,029	3,193	0	0	0	0	72	136	22	73	50	63
422	1,583	2,489	1,583	2,489	0	0	655	1,030	638	1,003	1,378	2,166	0	0	0	0	22	86	0	0	22	86
423	3,852	3,946	3,852	3,946	0	0	1,584	1,623	1,553	1,591	4,531	4,642	0	0	0	0	34	78	12	46	22	32
424	17	27	17	27	0	0	7	11	7	11	27	42	0	0	0	0	1,185	1,301	0	1	1,185	1,300
425	192	299	187	294	5	5	77	121	75	118	186	293	0	0	0	0	1,434	2,252	92	121	1,342	2,131
426	47	74	47	74	0	0	19	30	19	30	31	49	0	0	0	0	5	70	0	0	5	70
427	123	193	123	193	0	0	50	79	49	77	165	259	0	0	0	0	0	26	0	0	0	26
428	245	386	245	386	0	0	101	159	99	156	385	607	0	0	0	0	*	5	*	0	*	5
429	450	709	450	709	0	0	184	290	181	285	362	570	0	0	0	0	13	49	4	4	9	45
430	978	1,531	967	1,520	11	11	397	624	390	613	729	1,146	0	0	0	0	24	50	1	1	23	49
431	967	1,520	967	1,520	0	0	397	624	390	613	1,420	2,232	0	0	0	0	42	55	6	6	36	49

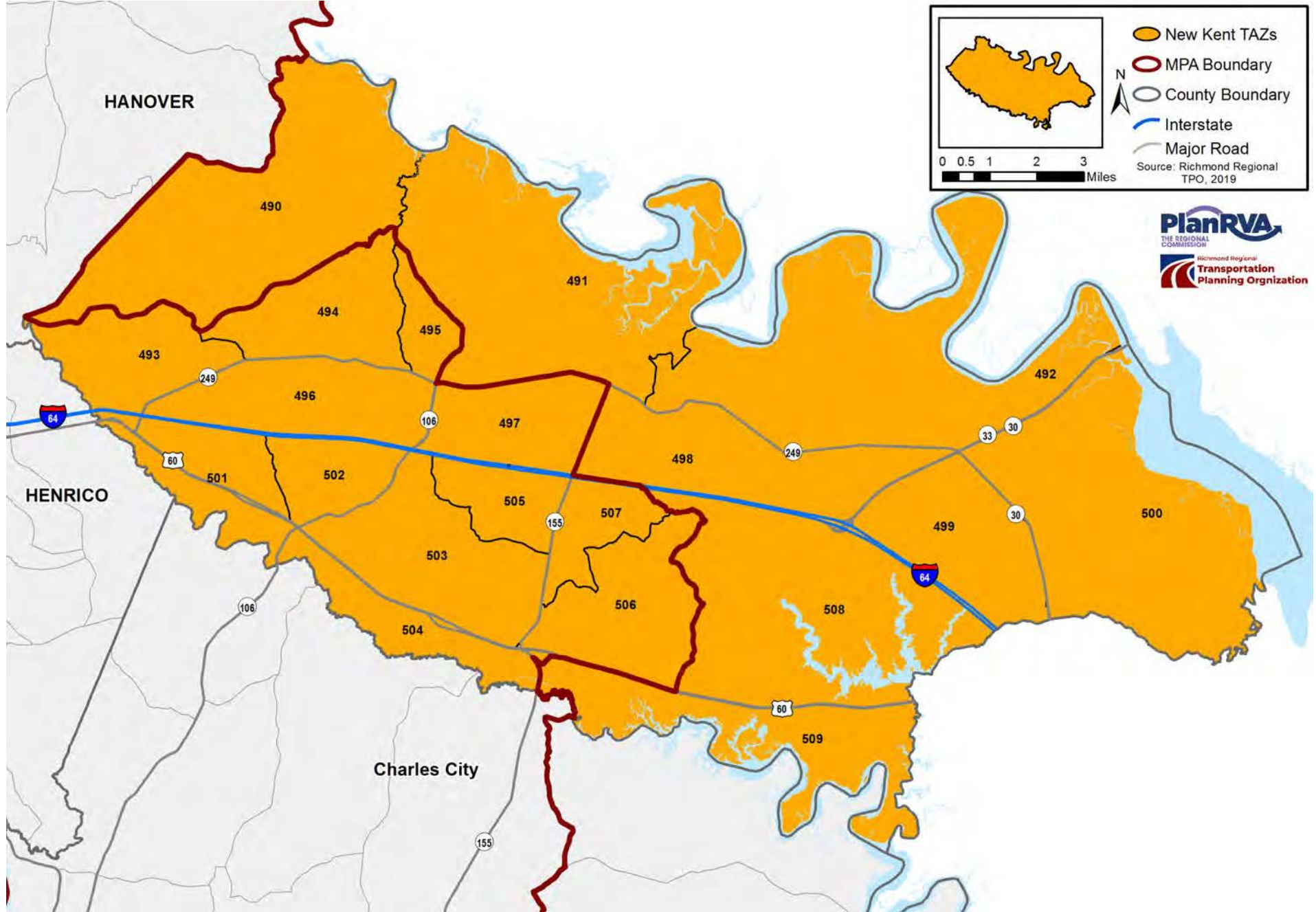
\* - Employment was redacted due to Virginia Employment Commission (VEC) confidentiality agreement, where an employer made up at least 80% of employment OR there was 3 employers or less.

# Henrico County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045		2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
432	1,631	3,294	1,623	3,286	8	8	665	1,346	654	1,324	1,831	3,707	2,936	3,554	0	0	694	1,020	10	61	684	959
433	561	1,124	561	1,124	0	0	230	461	226	453	499	1,000	0	0	0	0	49	230	26	39	23	191
434	2,816	4,421	2,806	4,411	10	10	1,150	1,808	1,131	1,778	3,195	5,023	0	0	0	0	88	377	15	36	73	341
435	374	589	374	589	0	0	153	241	151	238	352	555	517	651	0	0	*	158	*	2	*	156
436	556	874	556	874	0	0	228	358	224	352	680	1,069	0	0	0	0	*	7	*	0	*	7
437	139	1,194	139	1,194	0	0	57	490	56	481	146	1,254	0	0	0	0	35	35	25	25	10	10
438	1,380	3,386	1,374	3,380	6	6	563	1,385	554	1,363	1,511	3,717	0	0	0	0	84	195	5	11	79	184
439	1,046	1,641	1,042	1,637	4	4	427	671	420	660	1,230	1,933	682	825	0	0	227	550	74	91	153	459
440	89	138	89	138	0	0	37	58	36	56	100	156	0	0	0	0	51	77	29	43	22	34
441	179	281	179	281	0	0	73	115	72	113	151	237	0	0	0	0	*	164	*	0	*	164
442	45	320	45	320	0	0	18	128	18	128	36	256	0	0	0	0	0	0	0	0	0	0
443	45	70	45	70	0	0	18	28	18	28	60	93	0	0	0	0	*	3	*	3	*	0
444	551	858	537	844	14	14	220	346	217	341	687	1,080	0	0	0	0	25	85	19	19	6	66
Total	335,283	430,222	328,396	423,335	6,887	6,887	135,623	176,854	132,421	170,715	279,241	362,935	57,860	74,880	11,490	12,329	191,240	238,938	45,877	51,987	145,363	186,951

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# New Kent County



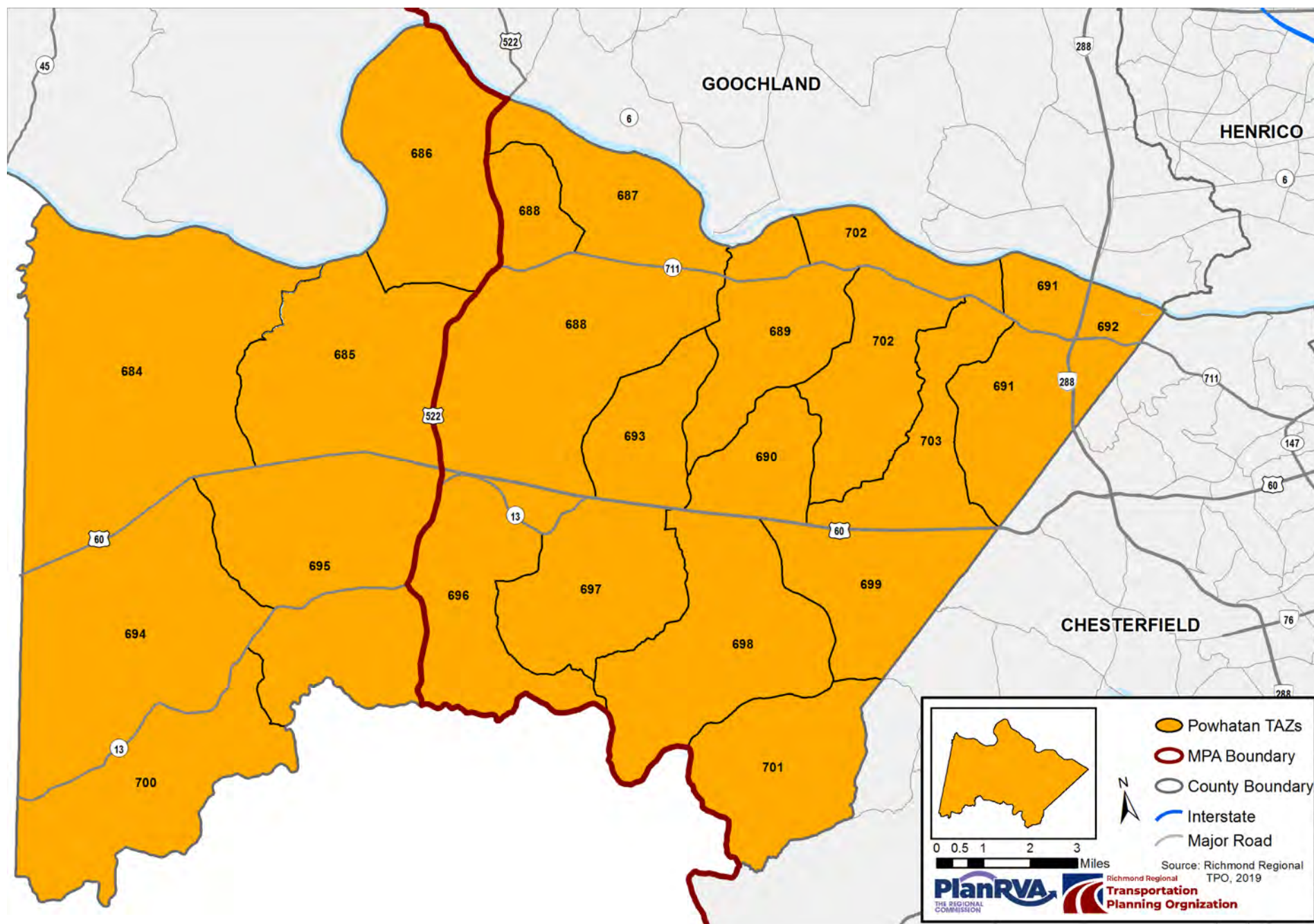
# New Kent County

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
490	1,420	2,415	1,393	2,380	27	35	564	964	538	919	1,525	2,605	0	0	0	0	38	48	1	1	37	47
491	765	1,270	679	1,160	86	110	274	468	262	448	662	1,132	2,627	4,805	0	0	*	343	*	27	*	316
492	925	1,581	925	1,581	0	0	374	639	357	610	925	1,581	0	0	0	0	497	497	3	3	494	494
493	1,114	1,903	1,114	1,903	0	0	451	770	430	735	1,233	2,108	0	0	0	0	102	125	18	18	84	107
494	1,414	2,416	1,414	2,416	0	0	572	977	546	933	1,616	2,761	0	0	0	0	60	76	2	2	58	74
495	75	128	75	128	0	0	30	51	29	49	80	135	0	0	0	0	83	96	35	35	48	61
496	1,704	2,911	1,704	2,911	0	0	689	1,177	658	1,124	1,717	2,933	709	1,297	0	0	305	439	130	167	175	272
497	611	1,044	611	1,044	0	0	247	422	236	403	586	1,001	0	0	0	0	*	69	*	0	*	69
498	824	1,408	824	1,408	0	0	333	569	318	543	955	1,631	0	0	100	310	678	1,001	47	48	631	953
499	484	827	484	827	0	0	196	335	187	320	500	856	0	0	0	0	110	138	7	7	103	131
500	1,968	3,208	1,474	2,518	494	690	596	1,018	569	972	1,488	2,542	0	0	0	0	288	350	60	60	228	290
501	2,295	3,921	2,295	3,921	0	0	928	1,585	886	1,514	2,734	4,672	0	0	0	0	472	622	300	366	172	256
502	1,458	2,491	1,458	2,491	0	0	590	1,008	563	962	1,350	2,307	0	0	0	0	56	70	4	4	52	66
503	686	1,172	686	1,172	0	0	278	475	265	453	668	1,142	0	0	0	0	137	1,156	68	283	69	873
504	225	385	225	385	0	0	91	156	87	149	275	471	0	0	0	0	180	216	46	46	134	170
505	78	133	78	133	0	0	31	53	30	51	77	131	0	0	0	0	57	60	47	47	10	13
506	1,792	3,062	1,792	3,062	0	0	725	1,239	692	1,182	1,866	3,187	0	0	0	0	194	221	93	93	101	128
507	764	1,305	764	1,305	0	0	309	528	295	504	721	1,232	0	0	0	0	68	86	0	0	68	86
508	919	1,570	919	1,570	0	0	372	636	355	606	1,005	1,716	0	0	0	0	126	160	0	0	126	160
509	1,826	3,120	1,826	3,120	0	0	739	1,263	705	1,205	1,885	3,222	0	0	0	0	175	206	60	60	115	146
Total	21,347	36,270	20,740	35,435	607	835	8,389	14,333	8,008	13,682	21,868	37,365	3,336	6,102	100	310	3,956	5,979	948	1,267	3,008	4,712

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# Powhatan County



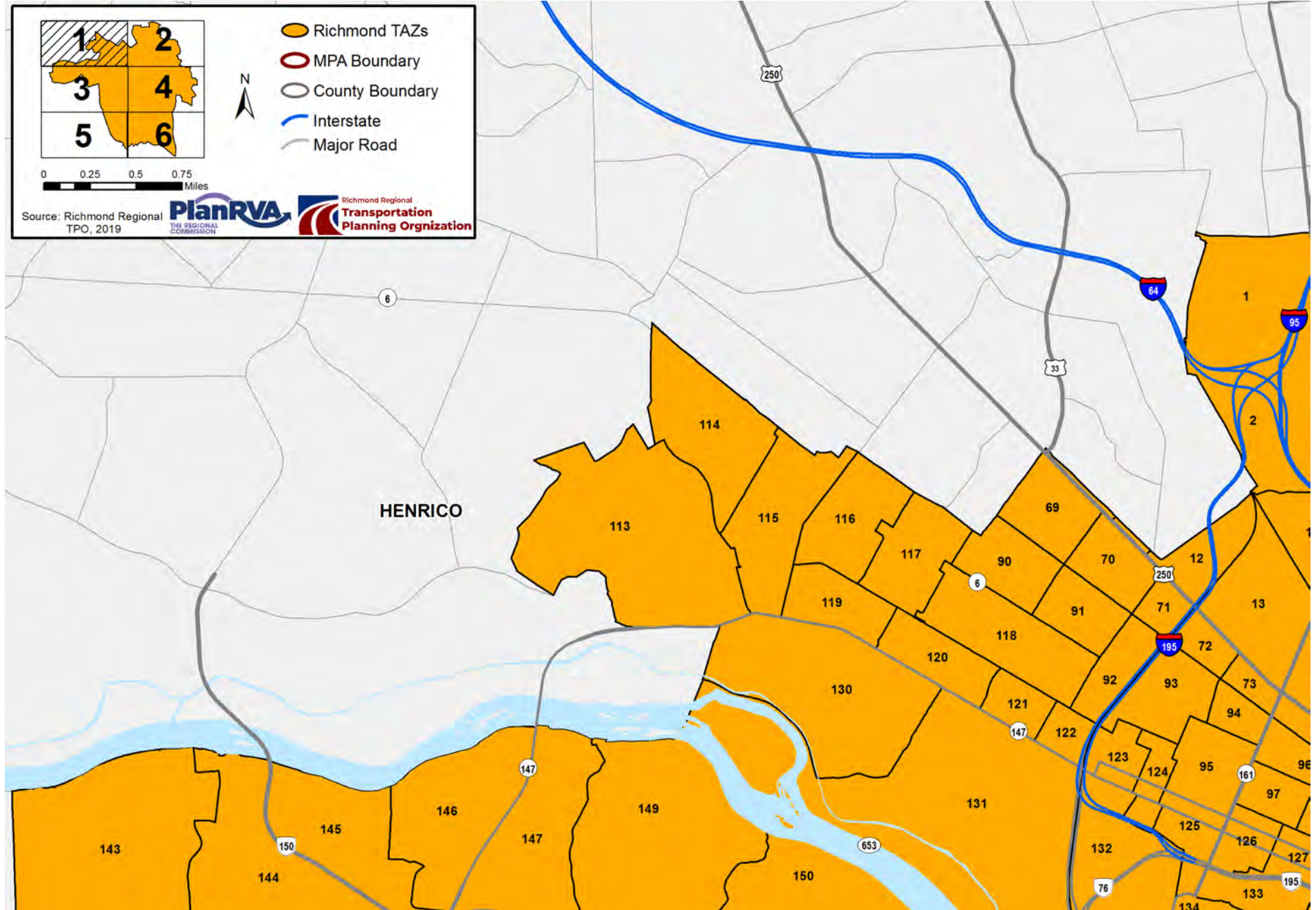
# Powhatan County

TAZ	Population						Housing				Automobiles	School Enrollment				Employment						
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households			Grade K-12		Colleges		Total		Retail		Non-Retail		
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045		2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
684	1,230	1,744	1,230	1,744	0	0	499	708	473	671	1,323	1,876	0	0	0	0	38	46	7	8	31	38
685	1,555	2,191	1,555	2,191	0	0	631	889	598	843	1,695	2,389	924	1,201	0	0	290	359	3	4	287	355
686	460	630	460	630	0	0	187	256	177	242	470	643	0	0	0	0	*	114	*	5	*	109
687	2,385	2,539	416	570	1,969	1,969	169	232	160	219	492	673	0	0	0	0	7	9	0	0	7	9
688	2,647	3,959	2,647	3,959	0	0	1,075	1,608	1,018	1,523	3,076	4,602	338	777	0	0	776	922	349	394	427	528
689	1,607	2,200	1,607	2,200	0	0	652	893	618	846	1,758	2,407	0	0	0	0	117	140	51	58	66	82
690	1,079	1,477	1,079	1,477	0	0	438	600	415	568	1,056	1,445	0	0	0	0	249	291	160	181	89	110
691	676	1,134	676	1,134	0	0	274	460	260	436	747	1,253	0	0	0	0	*	55	*	1	*	54
692	619	1,393	619	1,393	0	0	251	565	238	536	614	1,383	0	0	0	0	349	507	141	195	208	312
693	2,047	2,802	2,044	2,799	3	3	830	1,137	786	1,076	2,226	3,047	0	0	0	0	168	206	16	18	152	188
694	1,035	1,789	1,035	1,789	0	0	420	726	398	688	1,127	1,948	0	0	0	0	18	22	0	0	18	22
695	1,188	1,627	1,188	1,627	0	0	483	661	457	626	1,226	1,679	0	0	0	0	103	124	33	37	70	87
696	1,720	2,570	1,695	2,545	25	25	688	1,033	652	979	1,644	2,469	1,219	1,584	0	0	919	1,119	172	194	747	925
697	2,075	2,841	2,075	2,841	0	0	842	1,153	798	1,093	2,375	3,253	0	0	0	0	98	120	10	11	88	109
698	2,584	3,538	2,584	3,538	0	0	1,049	1,436	994	1,361	2,914	3,990	0	0	0	0	211	260	14	16	197	244
699	1,698	2,473	1,698	2,473	0	0	689	1,003	653	951	1,844	2,686	0	0	0	0	1,141	1,397	140	158	1,001	1,239
700	650	890	650	890	0	0	264	361	250	342	638	873	0	0	0	0	25	30	8	9	17	21
701	1,269	1,738	1,269	1,738	0	0	515	705	488	668	1,433	1,962	0	0	0	0	*	183	*	0	*	183
702	1,843	2,645	1,843	2,645	0	0	749	1,075	709	1,018	2,015	2,893	0	0	0	0	63	77	2	2	61	75
703	780	1,068	780	1,068	0	0	317	434	300	411	893	1,223	2,154	2,800	0	0	1,235	1,547	466	552	769	995
Total	29,147	41,248	27,150	39,251	1,997	1,997	11,022	15,935	10,442	15,097	29,566	42,694	4,635	6,362	0	0	6,092	7,528	1,577	1,843	4,515	5,685

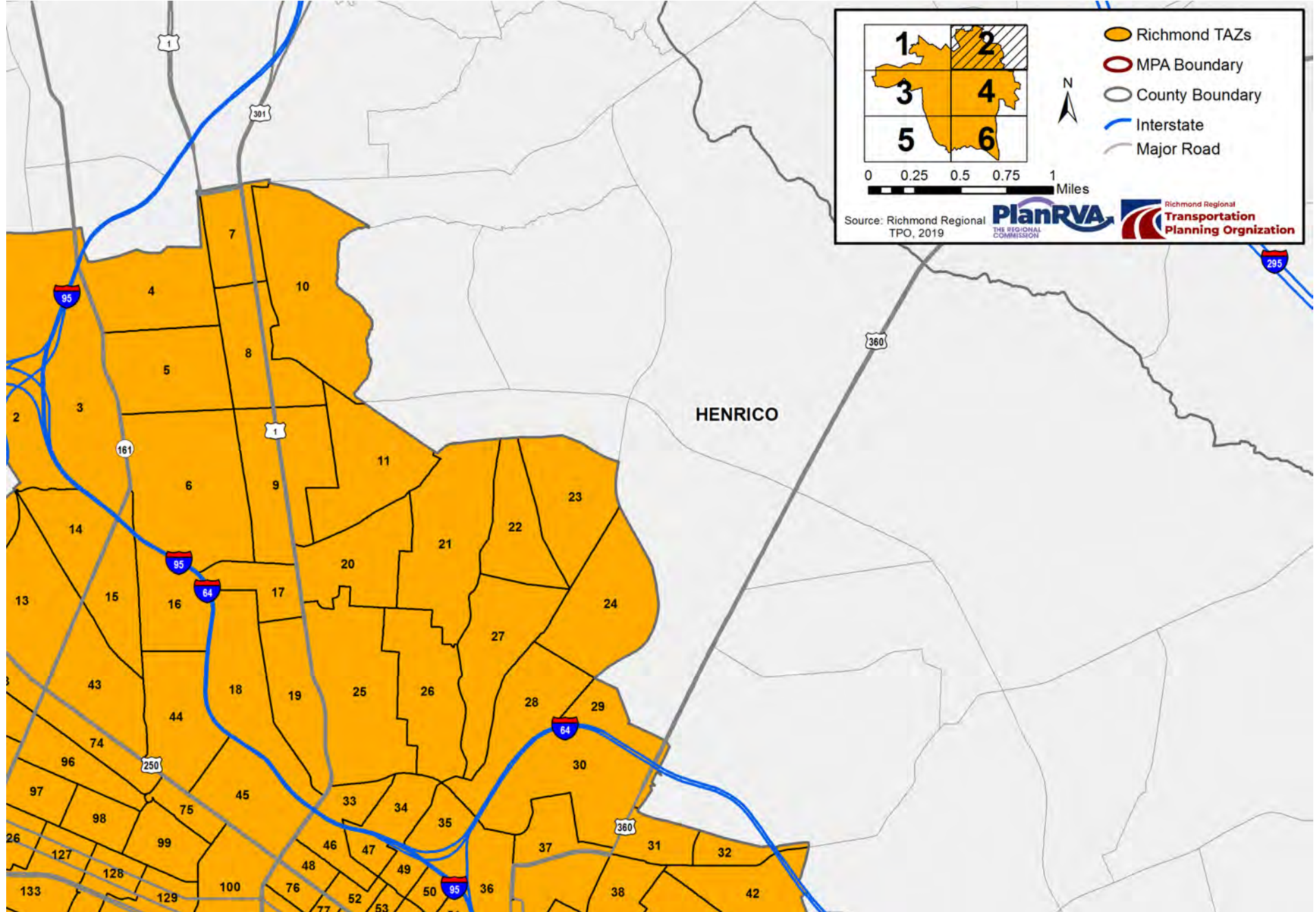
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# City of Richmond (Map 6-1)

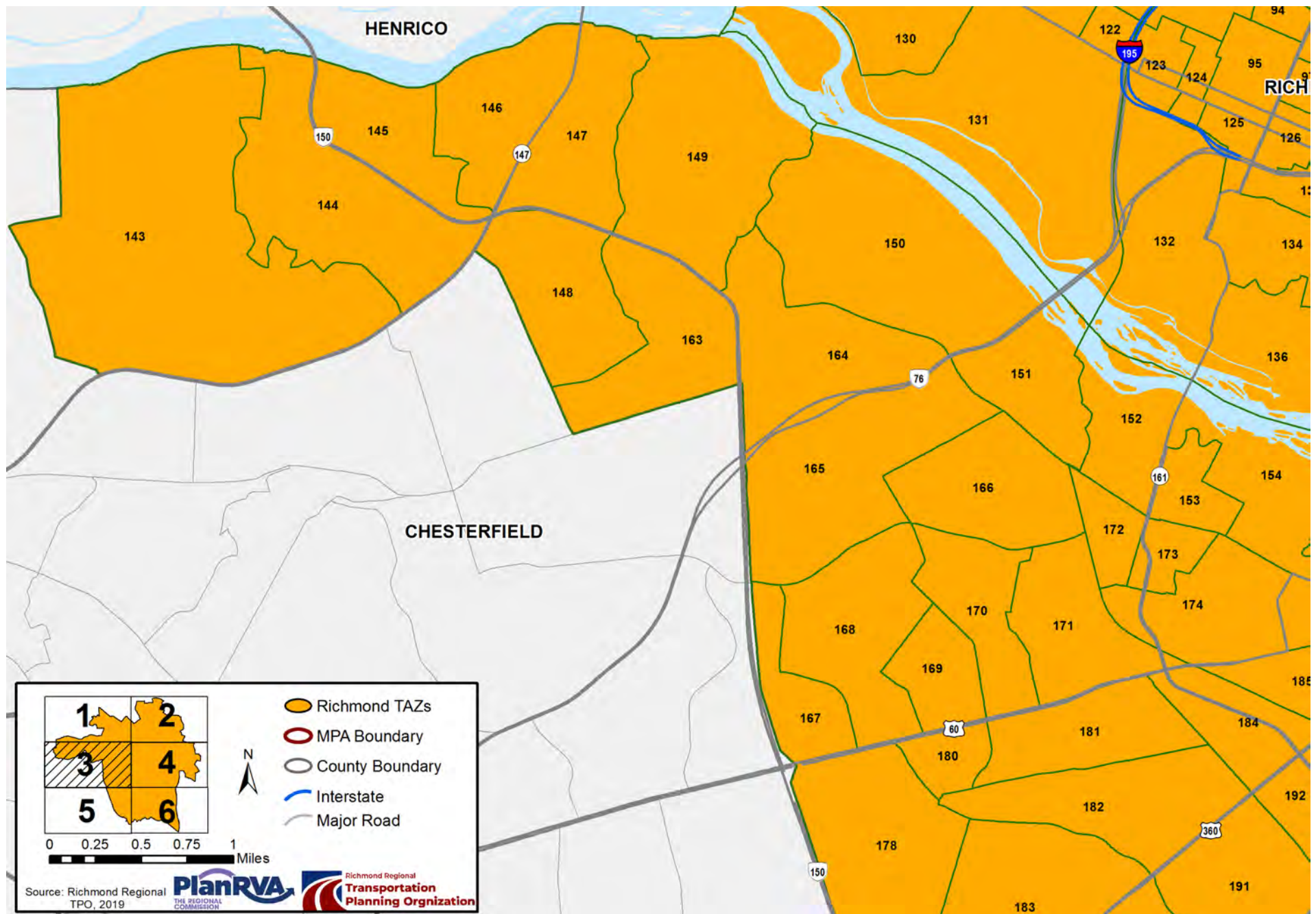


# City of Richmond (Map 6-2)



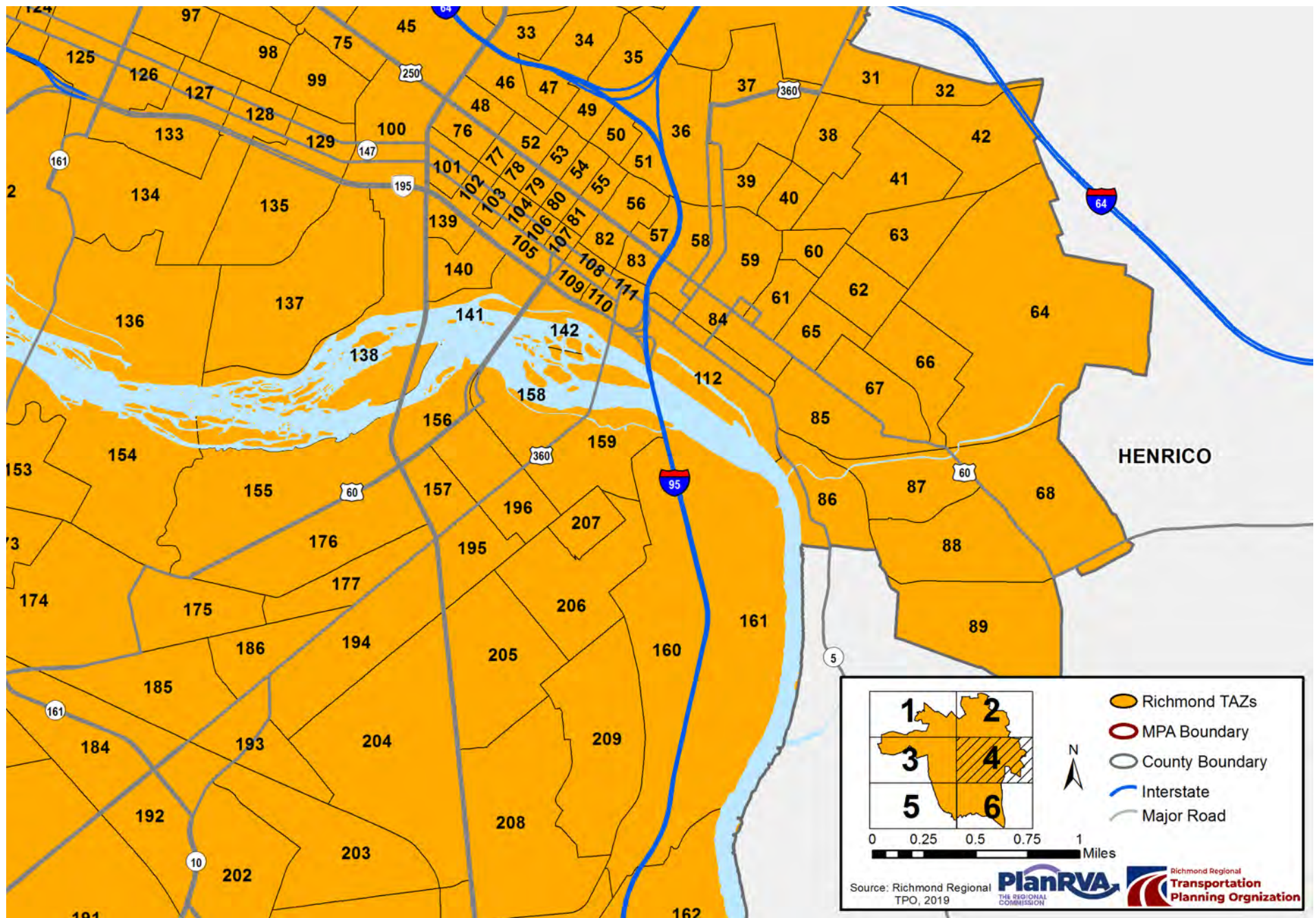


# City of Richmond (Map 6-3)



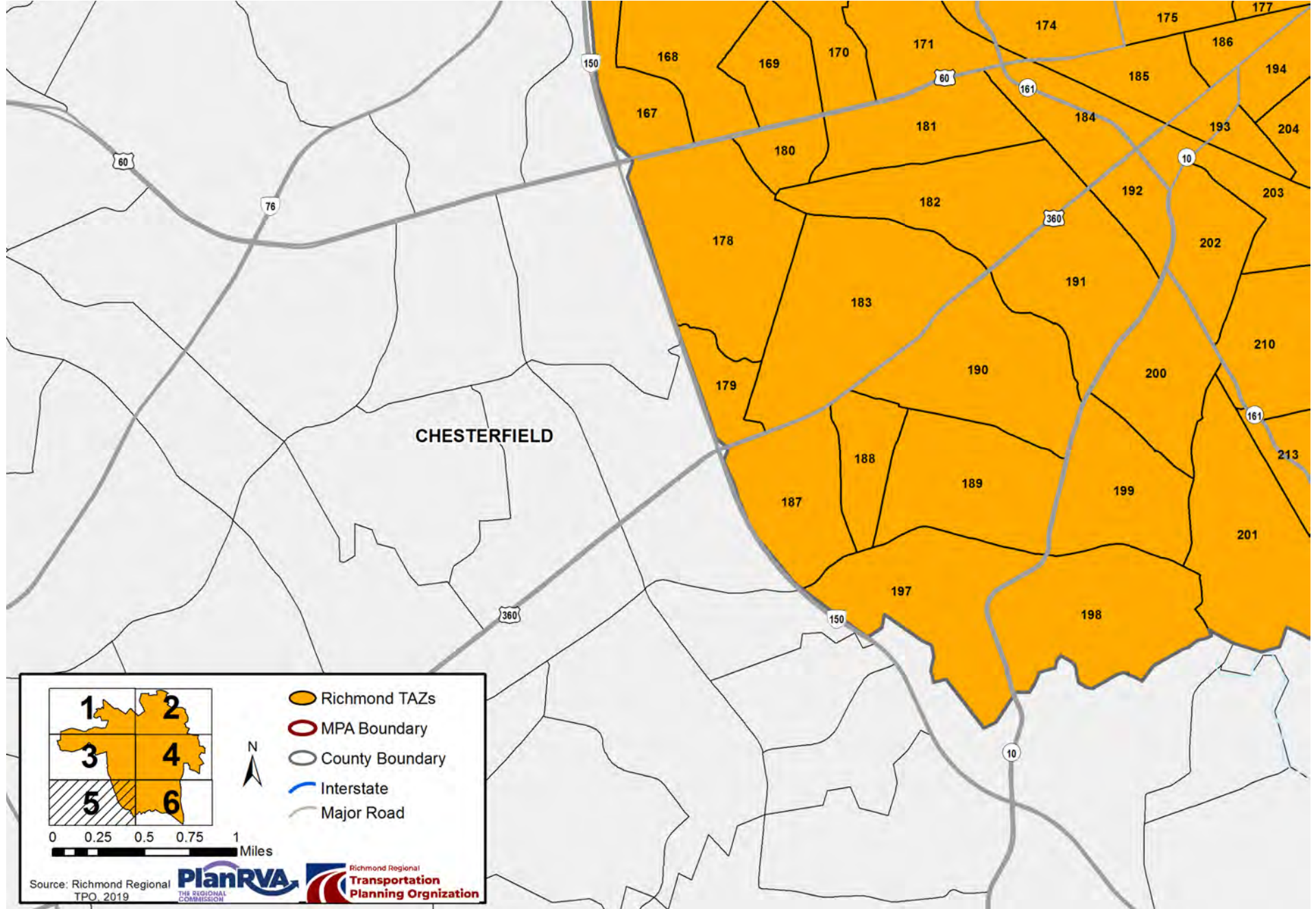


# City of Richmond (Map 6-4)

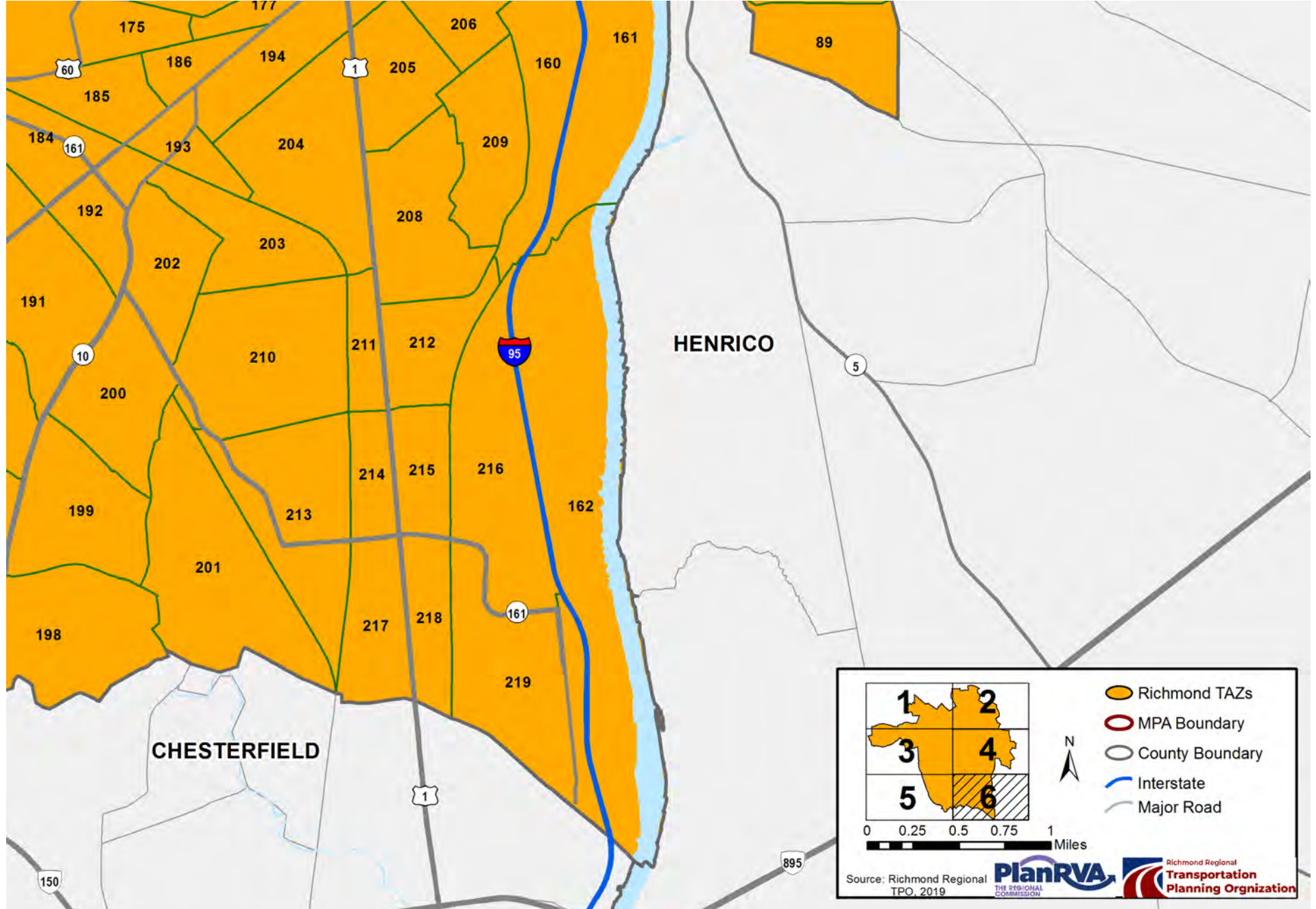




# City of Richmond (Map 6-5)



# City of Richmond (Map 6-6)





# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
1	10	16	10	16	0	0	5	8	4	6	0	0	0	0	0	0	66	91	0	0	66	91
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,074	1,084	35	35	1,039	1,049
3	3,020	3,211	2,774	2,965	246	246	1,332	1,424	1,176	1,257	1,023	1,093	0	0	0	0	648	653	163	163	485	490
4	962	1,028	962	1,028	0	0	462	494	408	436	1,078	1,152	153	357	0	0	705	712	14	14	691	698
5	1,670	1,786	1,670	1,786	0	0	802	858	708	757	1,242	1,328	649	864	0	0	255	256	158	158	97	98
6	1,516	2,239	1,388	2,111	128	128	666	1,013	588	894	887	1,349	0	0	87	150	390	394	13	13	377	381
7	1,279	1,367	1,279	1,367	0	0	614	656	542	579	639	683	0	0	0	0	161	161	135	135	26	26
8	1,772	1,892	1,745	1,865	27	27	838	896	740	791	677	724	314	418	0	0	187	189	0	0	187	189
9	2,267	2,409	2,060	2,202	207	207	989	1,057	873	933	1,027	1,098	165	385	0	0	139	140	43	43	96	97
10	1,277	1,365	1,277	1,365	0	0	613	655	541	578	753	805	1,087	1447	0	0	291	293	50	50	241	243
11	1,510	1,614	1,510	1,614	0	0	725	775	640	684	1,038	1,109	0	0	0	0	*	2	*	1	*	1
12	438	467	416	445	22	22	237	254	224	240	118	126	113	263	0	0	857	865	21	21	836	844
13	1,819	3,780	1,815	3,776	4	4	1,015	2,112	959	1,995	728	1,515	0	0	0	0	3,111	3,211	759	835	2,352	2,376
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,485	1,499	74	74	1,411	1,425
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	882	1,209	28	28	854	1,181
16	71	168	0	97	71	71	0	50	0	46	0	28	0	0	0	0	2,155	2,174	243	243	1,912	1,931
17	402	427	356	381	46	46	171	183	151	162	237	254	0	0	0	0	894	902	45	45	849	857
18	1,130	1,577	448	895	682	682	215	430	190	380	257	513	76	177	1,662	1,662	1,466	1,480	89	89	1,377	1,391
19	691	1,205	592	1,106	99	99	281	525	248	463	293	547	0	0	0	0	707	713	127	127	580	586
20	1,649	1,758	1,579	1,688	70	70	758	810	669	715	1,225	1,310	424	664	0	0	114	120	32	32	82	88
21	2,338	2,499	2,334	2,495	4	4	1,120	1,197	989	1,057	1,588	1,698	258	365	0	0	147	148	41	41	106	107
22	1,457	1,715	1,457	1,715	0	0	700	824	618	727	923	1,086	0	0	0	0	129	130	10	10	119	120
23	1,768	1,889	1,760	1,881	8	8	845	903	746	797	1,157	1,237	0	0	0	0	63	63	42	42	21	21
24	1,548	1,775	1,429	1,656	119	119	687	796	607	703	864	1,001	90	210	0	0	196	266	14	14	182	252
25	2,008	3,224	2,002	3,218	6	6	953	1,532	841	1,352	987	1,586	0	0	0	0	538	670	192	192	346	478
26	1,541	1,647	1,541	1,647	0	0	739	790	653	698	1,000	1,069	0	0	0	0	76	77	0	0	76	77
27	1,169	1,249	1,169	1,249	0	0	548	586	484	517	549	587	367	489	0	0	*	92	*	0	*	92
28	1,279	1,367	1,279	1,367	0	0	614	656	542	579	746	797	0	0	0	0	60	61	4	4	56	57

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# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	420	423	71	71	349	352
30	1,363	1,889	1,363	1,889	0	0	655	908	578	801	497	689	0	0	0	0	66	87	11	11	55	76
31	774	828	770	824	4	4	370	396	327	350	366	392	0	0	0	0	15	15	14	14	1	1
32	846	904	846	904	0	0	406	434	358	383	253	270	472	628	0	0	*	36	*	0	*	36
33	830	887	829	886	1	1	398	425	351	375	186	199	0	0	0	0	35	35	5	5	30	30
34	1,294	1,817	1,196	1,719	98	98	574	825	507	729	267	384	311	414	0	0	109	149	4	4	105	145
35	433	696	433	696	0	0	208	334	184	296	43	69	0	0	0	0	*	152	*	0	*	152
36	23	23	0	0	23	23	0	0	0	0	0	0	0	0	0	0	145	177	62	62	83	115
37	3,206	3,326	1,730	1,850	1,476	1,476	830	888	733	784	544	582	0	0	0	0	170	170	122	122	48	48
38	980	1,047	980	1,047	0	0	471	503	416	444	365	390	0	0	0	0	*	6	*	0	*	6
39	100	107	100	107	0	0	48	51	42	45	23	25	611	813	0	0	166	168	0	0	166	168
40	394	421	394	421	0	0	189	202	167	178	158	169	0	0	0	0	*	7	*	7	*	0
41	1,310	1,488	1,310	1,488	0	0	629	714	555	630	806	916	0	0	0	0	111	212	42	142	69	70
42	1,554	1,661	1,554	1,661	0	0	747	798	660	705	608	650	393	523	0	0	154	155	11	11	143	144
43	496	919	496	919	0	0	278	515	263	487	202	374	0	0	0	0	2,797	2,836	360	375	2,437	2,461
44	511	547	511	547	0	0	291	312	275	294	286	306	0	0	0	0	1,261	1,272	191	191	1,070	1,081
45	3,155	3,334	2,603	2,782	552	552	1,351	1,444	1,277	1,365	680	727	484	644	0	0	498	500	318	318	180	182
46	489	522	489	522	0	0	344	367	326	348	279	298	983	1308	0	0	138	139	5	5	133	134
47	360	718	349	707	11	11	216	438	205	415	163	330	0	0	0	0	24	35	14	21	10	14
48	624	667	624	667	0	0	438	468	415	444	307	328	0	0	0	0	707	713	112	112	595	601
49	29	198	29	198	0	0	15	102	14	96	10	68	0	0	0	0	528	737	0	7	528	730
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	919	928	30	30	889	898
51	208	208	0	0	208	208	0	0	0	0	0	0	0	0	0	0	150	151	8	8	142	143
52	321	586	321	586	0	0	221	403	209	382	141	257	0	0	0	0	400	407	213	218	187	189
53	58	62	58	62	0	0	37	40	35	37	12	13	0	0	0	0	*	604	*	51	*	553
54	6	6	0	0	6	6	0	0	0	0	0	0	0	0	0	0	2,368	6,889	312	720	2,056	6,169
55	55	2,697	0	2,642	55	55	0	1,357	0	1,256	0	773	0	0	0	0	962	5,471	41	450	921	5,021
56	0	2,642	0	2,642	0	0	0	1,357	0	1,256	0	773	0	0	4,148	4,148	12,877	13,004	169	169	12,708	12,835
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,767	1,783	203	203	1,564	1,580

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# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
58	222	357	222	357	0	0	156	251	148	238	191	307	0	0	0	0	164	221	14	14	150	207
59	1,610	1,721	1,610	1,721	0	0	1,125	1,203	1,065	1,138	742	793	139	324	0	0	126	127	56	56	70	71
60	636	1,020	632	1,016	4	4	307	494	271	436	191	307	0	0	0	0	37	39	31	31	6	8
61	584	624	584	624	0	0	394	421	373	399	476	509	0	0	0	0	118	118	90	90	28	28
62	669	715	669	715	0	0	324	346	286	306	427	456	923	1228	0	0	241	243	4	4	237	239
63	924	1,241	924	1,241	0	0	451	606	398	535	519	697	0	0	0	0	*	1,133	*	33	*	1,100
64	2,186	2,870	2,186	2,870	0	0	1,049	1,377	926	1,216	1,141	1,498	0	0	0	0	14	14	6	6	8	8
65	859	918	859	918	0	0	598	639	566	605	692	740	0	0	0	0	85	85	66	66	19	19
66	1,343	1,427	1,223	1,307	120	120	587	627	518	554	653	698	367	488	0	0	*	73	*	4	*	69
67	1,211	1,295	1,211	1,295	0	0	585	626	517	553	840	898	419	558	0	0	100	101	27	27	73	74
68	1,539	1,645	1,533	1,639	6	6	736	787	650	695	945	1,010	0	0	0	0	56	56	28	28	28	28
69	777	831	777	831	0	0	395	422	378	404	503	538	0	0	0	0	931	936	414	414	517	522
70	566	605	566	605	0	0	288	308	276	295	436	466	734	977	0	0	795	802	106	106	689	696
71	289	308	289	308	0	0	153	163	146	156	113	120	0	0	0	0	*	1,018	*	81	*	937
72	595	636	595	636	0	0	339	362	320	342	338	361	0	0	0	0	587	592	61	61	526	531
73	699	747	699	747	0	0	398	425	376	402	240	256	0	0	0	0	111	112	26	26	85	86
74	1,757	1,877	1,738	1,858	19	19	990	1,058	936	1,001	591	632	80	186	0	0	678	681	339	339	339	342
75	2,699	3,037	2,204	2,542	495	495	1,256	1,449	1,187	1,369	352	406	0	0	0	0	225	226	165	165	60	61
76	1,448	1,540	1,335	1,427	113	113	937	1,002	887	948	295	315	90	210	0	0	756	759	492	492	264	267
77	314	332	263	281	51	51	185	198	175	187	61	65	0	0	0	0	575	579	214	214	361	365
78	572	612	572	612	0	0	438	469	415	444	160	171	0	0	0	0	231	232	84	84	147	148
79	161	172	161	172	0	0	118	126	112	120	49	52	0	0	0	0	563	569	181	183	382	386
80	401	429	401	429	0	0	282	302	267	286	189	202	0	0	0	0	346	347	202	202	144	145
81	167	167	1	1	166	166	1	1	1	1	0	0	0	0	0	0	5,498	5,552	70	70	5,428	5,482
82	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	1,554	1,569	13	13	1,541	1,556
83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,584	2,609	105	105	2,479	2,504
84	1,119	1,195	1,108	1,184	11	11	786	840	744	795	681	728	280	373	0	0	489	492	163	163	326	329
85	583	623	583	623	0	0	280	299	247	264	390	417	0	0	0	0	29	29	21	21	8	8
86	2	3	2	3	0	0	1	2	1	2	2	3	0	0	0	0	271	326	127	127	144	199

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# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
87	250	402	250	402	0	0	120	193	106	170	207	333	0	0	0	0	0	0	0	0	0	
88	1,020	1,339	1,009	1,328	11	11	480	632	424	558	808	1,063	0	0	0	0	21	28	3	3	18	25
89	1,433	1,532	1,433	1,532	0	0	688	736	608	650	1,001	1,070	0	0	0	0	177	179	6	6	171	173
90	851	910	851	910	0	0	433	463	414	443	592	633	0	0	0	0	8	8	3	3	5	5
91	647	691	647	691	0	0	329	351	315	336	622	664	0	0	0	0	*	79	*	67	*	12
92	1,213	1,436	1,213	1,436	0	0	617	730	590	698	684	810	120	280	0	0	104	105	39	39	65	66
93	2,154	2,394	2,117	2,357	37	37	1,199	1,335	1,133	1,261	1,239	1,379	484	644	0	0	189	190	40	40	149	150
94	1,375	1,470	1,375	1,470	0	0	783	837	740	791	697	745	0	0	0	0	200	200	155	155	45	45
95	1,704	1,821	1,704	1,821	0	0	971	1,038	918	981	1,114	1,190	670	1142	0	0	959	967	126	126	833	841
96	1,801	1,925	1,801	1,925	0	0	1,026	1,097	970	1,037	959	1,025	0	0	0	0	281	282	194	194	87	88
97	1,467	1,566	1,448	1,547	19	19	825	881	780	833	824	880	511	680	0	0	199	200	79	79	120	121
98	1,212	1,295	1,208	1,291	4	4	688	735	650	695	919	982	0	0	0	0	128	128	79	79	49	49
99	2,073	2,216	2,073	2,216	0	0	1,180	1,261	1,115	1,192	1,155	1,235	50	117	0	0	411	414	113	113	298	301
100	6,081	7,362	1,454	1,735	4,627	5,627	810	967	765	913	246	294	0	0	26,888	26,888	*	12,067	*	1,070	*	10,997
101	726	751	352	377	374	374	248	266	235	252	82	88	0	0	0	0	511	512	448	448	63	64
102	870	929	850	909	20	20	598	640	566	605	186	199	0	0	0	0	502	507	29	29	473	478
103	108	115	108	115	0	0	82	87	78	83	49	52	0	0	0	0	480	484	93	93	387	391
104	180	192	180	192	0	0	138	147	131	140	51	54	0	0	0	0	752	759	60	60	692	699
105	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1,195	3,132	139	139	1,056	2,993
106	150	153	38	41	112	112	28	30	27	29	31	33	0	0	0	0	1,061	1,071	109	109	952	962
107	461	493	461	493	0	0	351	375	332	355	179	191	0	0	0	0	1,782	1,797	279	279	1,503	1,518
108	118	126	118	126	0	0	83	89	79	84	46	49	0	0	0	0	3,839	3,874	344	344	3,495	3,530
109	0	416	0	416	0	0	0	214	0	198	0	122	0	0	0	0	3,845	3,894	300	314	3,545	3,580
110	113	121	113	121	0	0	81	87	77	82	44	47	0	0	0	0	1,123	1,131	363	363	760	768
111	456	488	456	488	0	0	337	361	319	341	147	157	0	0	4,938	4,938	1,978	1,995	240	240	1,738	1,755
112	3,025	3,537	3,025	3,537	0	0	2,152	2,516	2,038	2,383	1,531	1,790	0	0	0	0	1,782	1,802	649	658	1,133	1,144
113	3,203	3,235	454	486	2,749	2,749	231	247	221	237	578	619	0	0	4,023	4,023	2,412	2,436	61	61	2,351	2,375
114	1,287	1,375	1,287	1,375	0	0	654	699	626	669	957	1,022	0	0	0	0	689	693	335	335	354	358
115	808	863	808	863	0	0	412	440	394	421	611	653	2,605	3933	0	0	769	771	520	520	249	251

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# City of Richmond

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	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
116	982	1,050	982	1,050	0	0	497	531	476	509	824	881	0	0	0	0	839	843	407	407	432	436
117	726	776	726	776	0	0	369	394	353	377	621	664	0	0	0	0	77	78	16	16	61	62
118	1,685	1,801	1,685	1,801	0	0	857	916	820	876	1,044	1,116	0	0	0	0	54	54	14	14	40	40
119	486	519	486	519	0	0	247	264	236	252	543	580	0	0	0	0	156	156	125	125	31	31
120	686	733	686	733	0	0	349	373	334	357	561	599	501	667	0	0	88	89	14	14	74	75
121	497	531	497	531	0	0	253	270	242	259	279	298	0	0	0	0	39	39	0	0	39	39
122	623	666	623	666	0	0	317	339	303	324	308	329	0	0	0	0	97	98	0	0	97	98
123	646	690	646	690	0	0	368	393	348	372	447	477	0	0	0	0	1,379	1,382	1,120	1,120	259	262
124	904	966	904	966	0	0	515	550	487	520	568	607	0	0	0	0	480	482	238	238	242	244
125	985	1,052	980	1,047	5	5	558	596	527	563	498	532	0	0	0	0	1,002	1,003	871	871	131	132
126	2,010	2,148	1,997	2,135	13	13	1,049	1,121	991	1,059	678	725	0	0	0	0	745	749	315	315	430	434
127	1,082	1,156	1,082	1,156	0	0	609	651	576	615	565	604	0	0	0	0	276	277	186	186	90	91
128	685	732	685	732	0	0	376	402	355	379	314	336	417	555	0	0	595	598	320	320	275	278
129	736	787	736	787	0	0	404	432	382	408	218	233	0	0	0	0	610	612	429	429	181	183
130	864	923	864	923	0	0	438	468	419	448	880	940	0	0	0	0	29	29	4	4	25	25
131	1,081	1,155	1,081	1,155	0	0	549	587	525	561	1,246	1,331	0	0	0	0	117	118	27	27	90	91
132	1,150	1,949	1,150	1,949	0	0	655	1,110	619	1,049	1,212	2,054	264	351	0	0	*	133	*	4	*	129
133	930	995	930	995	0	0	529	566	500	535	529	566	0	0	0	0	61	61	15	15	46	46
134	1,125	1,194	995	1,064	130	130	567	606	536	573	720	770	44	59	0	0	*	289	*	0	*	289
135	1,723	1,842	1,723	1,842	0	0	976	1,043	922	986	1,100	1,176	0	0	0	0	11	11	6	6	5	5
136	860	919	855	914	5	5	486	520	459	491	632	676	0	0	0	0	*	98	*	0	*	98
137	65	69	65	69	0	0	35	37	33	35	21	22	0	0	0	0	94	95	17	17	77	78
138	1,078	1,152	1,074	1,148	4	4	600	641	567	606	619	662	265	437	0	0	534	539	28	28	506	511
139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	202	*	0	*	202
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	834	842	11	11	823	831
141	20	20	0	0	20	20	0	0	0	0	0	0	0	0	0	0	2,706	2,733	52	52	2,654	2,681
142	602	643	602	643	0	0	446	476	422	451	304	325	0	0	0	0	1,834	1,851	105	105	1,729	1,746
143	3,183	3,517	3,172	3,506	11	11	1,613	1,783	1,544	1,707	2,956	3,267	808	1569	0	0	810	816	165	165	645	651
144	1,764	2,835	1,764	2,835	0	0	862	1,385	825	1,326	949	1,525	152	354	0	0	1,241	1,434	737	737	504	697

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	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
145	186	816	186	816	0	0	95	417	91	399	238	1,044	0	0	0	0	1,755	2,426	1	1	1,754	2,425
146	637	681	637	681	0	0	324	346	310	331	633	677	0	0	0	0	28	28	11	11	17	17
147	617	660	617	660	0	0	313	335	300	321	620	663	0	0	0	0	*	31	*	0	*	31
148	1,088	1,162	1,072	1,146	16	16	545	583	522	558	806	862	0	0	0	0	179	181	0	0	179	181
149	1,403	1,499	1,398	1,494	5	5	711	760	680	727	1,413	1,510	443	590	0	0	61	62	0	0	61	62
150	1,591	2,053	1,585	2,047	6	6	806	1,041	771	996	1,392	1,798	0	0	0	0	713	895	238	238	475	657
151	747	798	741	792	6	6	349	373	322	344	689	736	0	0	0	0	27	27	0	0	27	27
152	930	994	928	992	2	2	437	467	403	431	794	849	0	0	0	0	116	116	82	82	34	34
153	903	952	714	763	189	189	336	359	310	331	533	570	0	0	0	0	233	235	21	21	212	214
154	682	729	682	729	0	0	321	343	296	316	573	612	91	212	0	0	52	52	5	5	47	47
155	2,071	2,214	2,071	2,214	0	0	982	1,050	906	969	1,242	1,328	327	435	0	0	140	141	13	13	127	128
156	1,646	1,753	1,604	1,711	42	42	920	981	871	929	755	805	26	61	0	0	3,242	4,463	51	51	3,191	4,412
157	480	619	480	619	0	0	225	290	208	268	256	330	0	0	0	0	257	260	50	51	207	209
158	1,144	3,117	1,137	3,110	7	7	629	1,720	596	1,630	282	771	0	0	0	0	699	1,275	48	375	651	900
159	2,085	2,351	2,085	2,351	0	0	1,251	1,411	1,185	1,336	741	836	0	0	0	0	621	824	90	90	531	734
160	2	2	2	2	0	0	1	1	1	1	1	1	0	0	0	0	567	572	46	46	521	526
161	2	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	58	80	0	0	58	80
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	638	857	65	65	573	792
163	2,031	2,159	1,852	1,980	179	179	942	1,007	901	963	1,209	1,293	1,349	1796	0	0	1,050	1,053	704	704	346	349
164	639	1,027	639	1,027	0	0	325	522	311	500	517	831	0	0	0	0	911	1,041	570	570	341	471
165	2,467	3,965	2,467	3,965	0	0	1,162	1,868	1,073	1,725	1,593	2,560	755	1005	0	0	132	180	7	7	125	173
166	3,102	3,315	3,093	3,306	9	9	1,463	1,564	1,350	1,443	2,008	2,146	0	0	0	0	189	191	27	27	162	164
167	1,018	1,535	852	1,369	166	166	401	644	370	595	208	334	0	0	0	0	3,236	4,411	165	165	3,071	4,246
168	4,892	6,362	4,892	6,362	0	0	2,303	2,995	2,126	2,765	1,745	2,269	82	191	0	0	577	738	157	157	420	581
169	631	675	631	675	0	0	297	318	274	293	602	644	0	0	0	0	200	202	10	10	190	192
170	1,721	2,765	1,721	2,765	0	0	810	1,301	748	1,202	1,173	1,885	1,585	2639	0	0	1,209	1,651	55	55	1,154	1,596
171	1,209	1,292	1,209	1,292	0	0	569	608	525	561	1,096	1,171	0	0	0	0	144	145	50	50	94	95
172	520	556	520	556	0	0	245	262	226	242	384	411	446	594	0	0	106	107	32	32	74	75
173	546	583	546	583	0	0	257	274	237	253	413	441	130	303	0	0	114	114	67	67	47	47

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# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	
174	3,469	5,575	3,469	5,575	0	0	1,633	2,624	1,507	2,422	1,554	2,497	1,180	1571	0	0	*	229	*	2	*	227
175	1,186	1,266	1,168	1,248	18	18	550	588	508	543	816	872	0	0	0	0	30	30	18	18	12	12
176	1,192	1,273	1,182	1,263	10	10	557	595	514	549	818	874	0	0	0	0	112	113	34	34	78	79
177	851	908	822	879	29	29	387	414	357	382	340	364	0	0	0	0	127	128	34	34	93	94
178	1,124	1,806	1,124	1,806	0	0	528	848	487	782	1,248	2,005	100	233	0	0	161	202	54	54	107	148
179	1,438	1,537	1,438	1,537	0	0	677	724	625	668	1,256	1,342	0	0	0	0	96	96	59	59	37	37
180	120	143	120	143	0	0	40	48	37	44	33	39	0	0	0	0	1,039	1,423	35	35	1,004	1,388
181	479	540	479	540	0	0	226	255	209	236	485	547	0	0	0	0	613	803	117	117	496	686
182	2,159	2,308	2,155	2,304	4	4	1,014	1,084	936	1,001	1,777	1,900	0	0	0	0	49	49	40	40	9	9
183	2,071	3,325	2,066	3,320	5	5	968	1,556	893	1,435	1,651	2,653	1,498	1994	0	0	286	340	146	146	140	194
184	147	157	146	156	1	1	69	74	64	68	147	157	0	0	0	0	1,321	1,330	373	373	948	957
185	1,502	1,605	1,502	1,605	0	0	707	755	653	698	788	842	54	126	0	0	20	20	15	15	5	5
186	652	697	652	697	0	0	307	328	283	303	455	486	274	365	0	0	80	81	10	10	70	71
187	1,052	2,291	1,052	2,291	0	0	495	1,078	457	995	981	2,136	0	0	0	0	65	68	56	56	9	12
188	1,033	1,104	1,033	1,104	0	0	486	519	449	480	687	734	0	0	0	0	9	9	0	0	9	9
189	1,427	2,494	1,427	2,494	0	0	672	1,174	620	1,084	1,236	2,160	563	749	0	0	113	146	27	27	86	119
190	2,402	3,860	2,402	3,860	0	0	1,119	1,798	1,033	1,660	2,022	3,249	120	180	0	0	100	125	34	34	66	91
191	3,777	5,559	3,759	5,541	18	18	1,756	2,588	1,621	2,389	3,308	4,876	641	853	0	0	107	142	15	15	92	127
192	765	817	765	817	0	0	360	384	332	355	682	728	0	0	0	0	196	197	57	57	139	140
193	1,113	1,190	1,113	1,190	0	0	524	560	484	517	530	567	0	0	0	0	113	114	16	16	97	98
194	594	634	578	618	16	16	272	291	251	268	364	389	0	0	0	0	395	399	29	29	366	370
195	714	814	714	814	0	0	337	384	311	355	437	498	441	587	0	0	299	302	23	23	276	279
196	653	749	653	749	0	0	309	354	285	327	335	384	0	0	0	0	*	51	*	43	*	8
197	776	1,745	772	1,741	4	4	350	789	323	728	817	1,842	0	0	0	0	28	39	0	0	28	39
198	1,251	2,336	1,245	2,330	6	6	586	1,097	541	1,012	1,266	2,369	0	0	0	0	104	105	51	51	53	54
199	1,096	1,172	1,096	1,172	0	0	515	551	475	508	1,285	1,374	1,642	2186	0	0	289	291	129	129	160	162
200	1,117	2,095	1,117	2,095	0	0	525	985	485	910	929	1,742	0	0	0	0	322	443	6	6	316	437
201	2,088	3,153	2,084	3,149	4	4	976	1,475	901	1,361	2,017	3,048	0	0	0	0	34	47	0	0	34	47
202	885	1,429	644	1,188	241	241	303	559	280	517	339	625	0	0	0	0	3,175	3,206	93	93	3,082	3,113

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# City of Richmond

TAZ	Population						Housing				Automobiles		School Enrollment				Employment					
	Total		In Occupied Housing Units		In Group Quarters		Housing Units		Households				Grade K-12		Colleges		Total		Retail		Non-Retail	
	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045	2017	2045
203	852	1,061	852	1,061	0	0	401	499	370	461	695	865	0	0	0	0	502	504	283	283	219	221
204	4	614	4	614	0	0	2	315	2	292	3	180	0	0	0	0	638	930	22	78	616	852
205	1,927	2,161	1,927	2,161	0	0	903	1,013	833	934	1,188	1,332	719	957	0	0	169	170	23	23	146	147
206	565	593	406	434	159	159	191	204	176	188	77	82	0	0	0	0	385	459	20	90	365	369
207	4	4	2	2	2	2	1	1	1	1	0	0	0	0	0	0	238	240	40	40	198	200
208	2,309	2,465	2,262	2,418	47	47	1,062	1,135	980	1,048	1,436	1,535	0	0	0	0	123	124	63	63	60	61
209	1,327	1,418	1,327	1,418	0	0	625	668	577	617	492	526	0	0	0	0	680	686	97	97	583	589
210	1,124	1,806	1,124	1,806	0	0	529	850	488	784	623	1,001	0	0	0	0	1,090	1,507	0	0	1,090	1,507
211	231	247	231	247	0	0	109	117	101	108	144	154	0	0	0	0	351	354	43	43	308	311
212	1,009	1,622	1,009	1,622	0	0	475	764	438	704	682	1,096	0	0	0	0	57	72	18	18	39	54
213	478	766	475	763	3	3	223	358	206	331	503	808	0	0	0	0	861	1,189	3	3	858	1,186
214	249	266	249	266	0	0	117	125	108	115	229	245	197	262	0	0	183	184	65	65	118	119
215	903	1,120	903	1,120	0	0	425	527	392	486	590	732	0	0	0	0	32	34	26	26	6	8
216	580	620	580	620	0	0	273	292	252	269	495	529	0	0	0	0	2,601	2,626	102	102	2,499	2,524
217	716	766	716	766	0	0	337	361	311	333	768	822	0	0	0	0	420	422	183	183	237	239
218	489	598	489	598	0	0	230	281	212	259	355	434	0	0	0	0	186	202	144	144	42	58
219	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	428	528	167	167	261	361
Total	224,798	280,141	210,302	264,645	14,496	15,496	108,043	135,306	99,958	125,169	129,444	162,014	29,536	42,990	41,746	41,809	152,044	173,089	24,468	25,987	127,576	147,102

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## **TAC AGENDA 6/11/19; ITEM 13.**

### **Upcoming TAC Future Meeting Topics**

#### **August 13**

- LRTP Draft scope and schedule update
- Congestion Management Process update
- Transit Vision Plan Phase 2 update
- RSTP / CMAQ Allocation Process

#### **Future Meeting Topics**

- Long-Range Transportation Plan (LRTP) Update
- VTrans Statewide Transportation Plan Update
- Transportation Research Board (TRB) Presentation
- Planning for Connected and Autonomous Vehicles
- 5G
- East Coast Greenway
- Strategic Highway Safety Plan