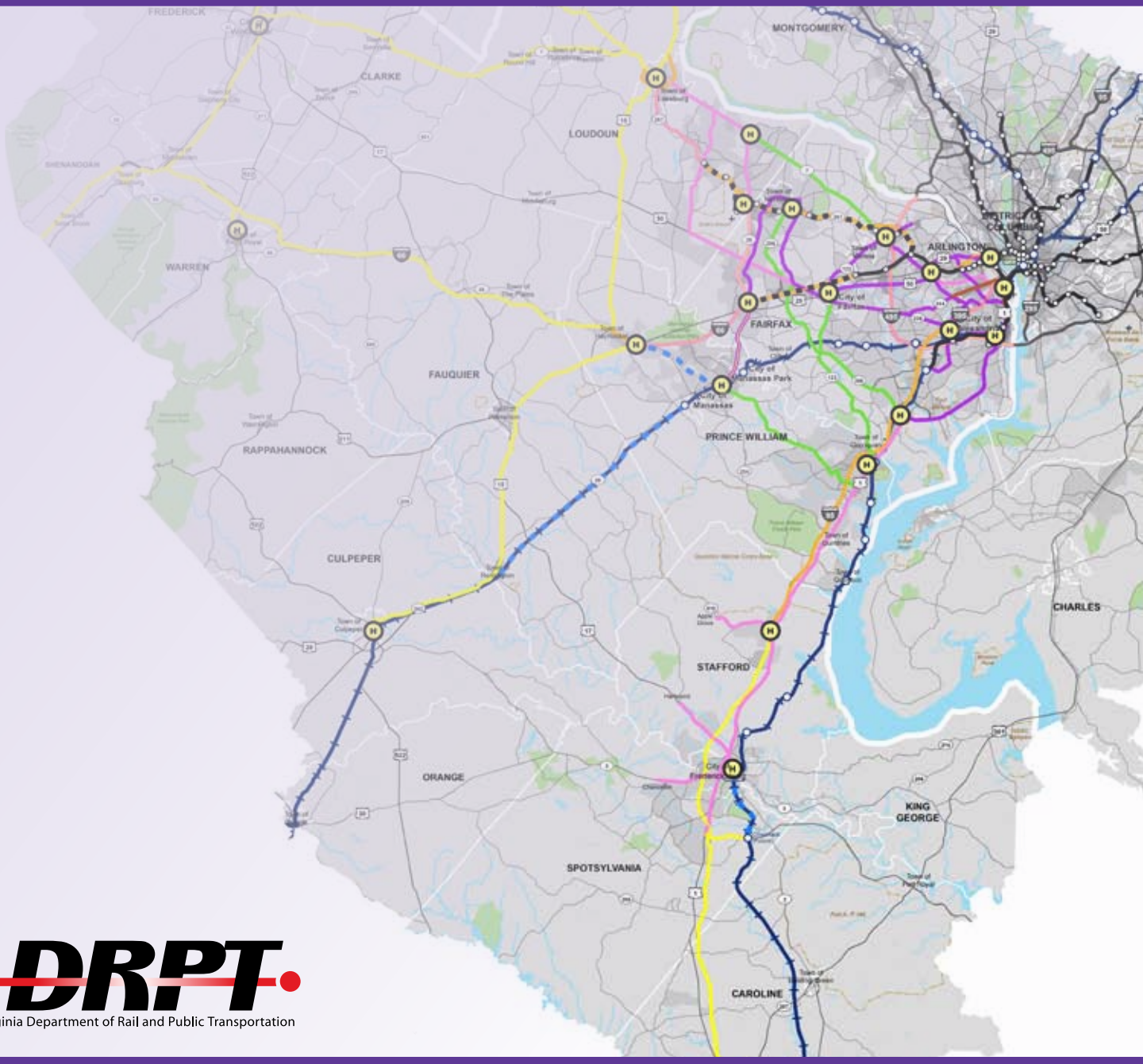
Visioning Mobility Beyond Boundaries

SUPER NoVa Transit/ TDM Vision Plan

FINAL
November 2012



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Vision Mobility Beyond Boundaries

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Chapter 1
Introduction

INTRODUCTION

Passengers on Fairfax Connector. Source: Fairfax County

FROM CONGESTION RELIEF TO TRANSPORTATION CHOICE

The Washington Metropolitan area is continually ranked among the most congested in the United States. The region's transportation challenges were reaffirmed by the *2011 Annual Urban Mobility Report*[1], by the Texas A&M Transportation Institute. This report identified the region as the most congested in the country. The costs of widespread traffic congestion are significant and appreciably affect people's quality of life and the region's competitiveness. Decades of unsuccessfully addressing traffic congestion through major investments in the vehicular transportation system have convinced an increasing number of areas to change their approach to the development of their transportation systems.

The whole range of transportation solutions needs to be leveraged to maintain and improve people's mobility. The transportation system should offer people many travel choices for everyday trips. The Super NoVa Transit/Transportation Demand Management (TDM) Vision Plan is one part of the multifaceted approach that will be needed to keep people moving throughout the super region.

Mobility…

More than four-in-five voters (82 percent) say "the United States would benefit from an expanded and improved transportation system, such as rail and buses." When asked about reducing traffic congestion, three-in-five voters choose improving public transportation and making it easier to walk and bike compared to building more roads and expanding existing roads.

Source: Transportation For America, Future of Transportation National Survey (2010), http://t4america.org/resources/2010survey/

[1] *2011 Annual Urban Mobility Report, Texas Transportation Institute, September 2011, http://mobility.tamu.edu/ums/*

A NEW APPROACH

The prosperity of the greater Northern Virginia region has been remarkable throughout the past 50 years. The growth that has occurred during this period has made the area the most populous in Virginia. The growth in the number of jobs throughout the region has resulted in Northern Virginia being an employment destination for people from three states—Virginia, Maryland, and West Virginia—and the District of Columbia. Many people commute daily more than 100 miles each way to work in urban Northern Virginia.

While the growth in population and jobs has created tremendous benefits for Virginia, as well as the Washington Metropolitan area, it has not been without challenges. Much of Northern Virginia and the communities that are within its approximately 75-mile commuter shed experience significant periods of traffic congestion during weekday mornings and evenings and on weekends. With continued general scarcity of transportation funds for roadway capacity enhancements, especially related to the rate of increase in traffic congestion, significant stress exists on nearly every part of the region's major transportation infrastructure—roads and bridges, sidewalks and bikeways, airports, and transit. While the region has made, and continues to make, substantial investments in major roadway and transit facilities throughout the region, transportation demand continues to outpace new capacity.

Vision Mobility Beyond Boundaries...

"Northern Virginia is the most congested region in Virginia, and it is projected to continue to grow both in population and employment," said Governor McDonnell. "Anecdotal information indicates that some people now make daily commutes of 100 miles each way or more to get to their jobs. To truly address congestion in Northern Virginia, we have to take a broader view of what constitutes the region and the commuting patterns of its workforce. We must develop a geographically broader vision and plan for transit and TDMs that do not stop at local or state political borders."

Recognizing the current and anticipated mobility challenges facing the northern part of Virginia, the Commonwealth's leaders through the Virginia Department of Rail and Public Transportation (DRPT), initiated a vision plan development process for transit and TDM in the greater Northern Virginia region. The Super NoVa Transit/TDM Vision Plan has expanded the mobility dialogue beyond traditional local, regional, and state boundaries. The Plan looks at the needs of today, as well as those of the future—2040.

Transportation Fair in Arlington. Source: Arlington County

A Broad Focus...

"Every locality in Northern Virginia faces transportation challenges and most have developed jurisdictionally-specific projects to address those challenges," said Sean Connaughton, Secretary of Transportation. "We must broaden our focus and find the most cost-effective transit and TDM services that have the biggest impact on a regionwide basis. The Super NoVa study will help us do that."

STUDY AREA

The Vision Plan presents a transit and TDM vision that has an awareness of the effects of travel demand, land use policy, and population and employment patterns from three states—Virginia, Maryland, and West Virginia—and the District of Columbia. The planning effort encompassed an area (shown in **Figure 1.1**) of more than 6 million people and 3.5 million jobs. This area extended well beyond any single regional boundary and encompassed three states and the District of Columbia; four metropolitan planning organization's (MPO) boundaries; and dozens of counties, cities, and towns.

The study area's size enabled the Plan to be created with an understanding of multistate travel patterns, long commutes, and the increasing number of activity centers that exist already or will be created from future development and growth across the region.

AREA TRAVEL CHARACTERISTICS

The nature of the job market in the greater Washington area, combined with rising cost of living, has led a considerable portion of the region's workforce to commute long distances each day for work. The majority of commuters in the region eventually find their way into one of four major travel sheds—I-95, I-66, Route 267/7/9 (Dulles), and I-270—that lead to the region's largest employment area. Congestion and transit use in each of these travel sheds increases with each mile as they approach the region's inner area.

In addition to significant travel demand within each of the region's four primary travel sheds, as the population and employment have expanded beyond the traditional urban area of the region, travel demand between and across these sheds has increased and is becoming increasingly difficult. In Northern Virginia, the Capital Beltway (I-495), Fairfax County Parkway, State Route 28, State Route 123, State Route 234, and the Prince William Parkway all carry significant travel volumes between the Dulles, I-66, and I-95 corridors. The increasing decentralized pattern of employment growth in the region, coupled with growth in housing in places like Fredericksburg, Warrenton, and Winchester, VA; the panhandle of West Virginia; and Frederick, MD, all have contributed to greater demand in circumferential travel.

Figure 1.1: Study Area

For perspective on the future of the region and its complexities, according to currently adopted future population forecasts, 11 localities will account for the addition of 1.23 million people by 2040. These 11 localities are Fairfax, Loudoun, Arlington, Prince William, Montgomery, Prince George's, and Frederick Counties and the District of Columbia, City of Falls Church, City of Alexandria, and Fairfax City. The remainder of the region (21 jurisdictions), and vast majority of the geographic area, will account for an additional 900,000 people. Generally, currently rural areas are forecast to retain rural characteristics in the future. While the largest (by number) population increases are projected in Fairfax, Prince William, and Montgomery Counties, Spotsylvania, Stafford, and Culpeper Counties are forecast to more than double in population by 2040.

REGIONAL GROWTH

Historically, investment in major transportation infrastructure and services in the region has focused on the system of major routes feeding the freeway system, the freeway system itself, and major transit infrastructure running within and parallel to these corridors. Far less regional investment has occurred in circumferential infrastructure and services. Projected increases in population and employment in the region (**Figure 1.2**), coupled with continued development of activity centers (**Figure 1.3**), will further strain radial and circumferential transportation services and infrastructure.

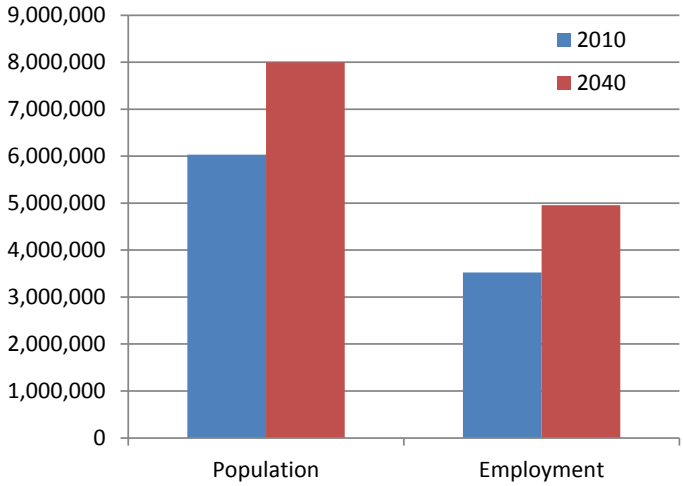


Figure 1.2: Projected Population and Employment Growth, 2010 to 2040

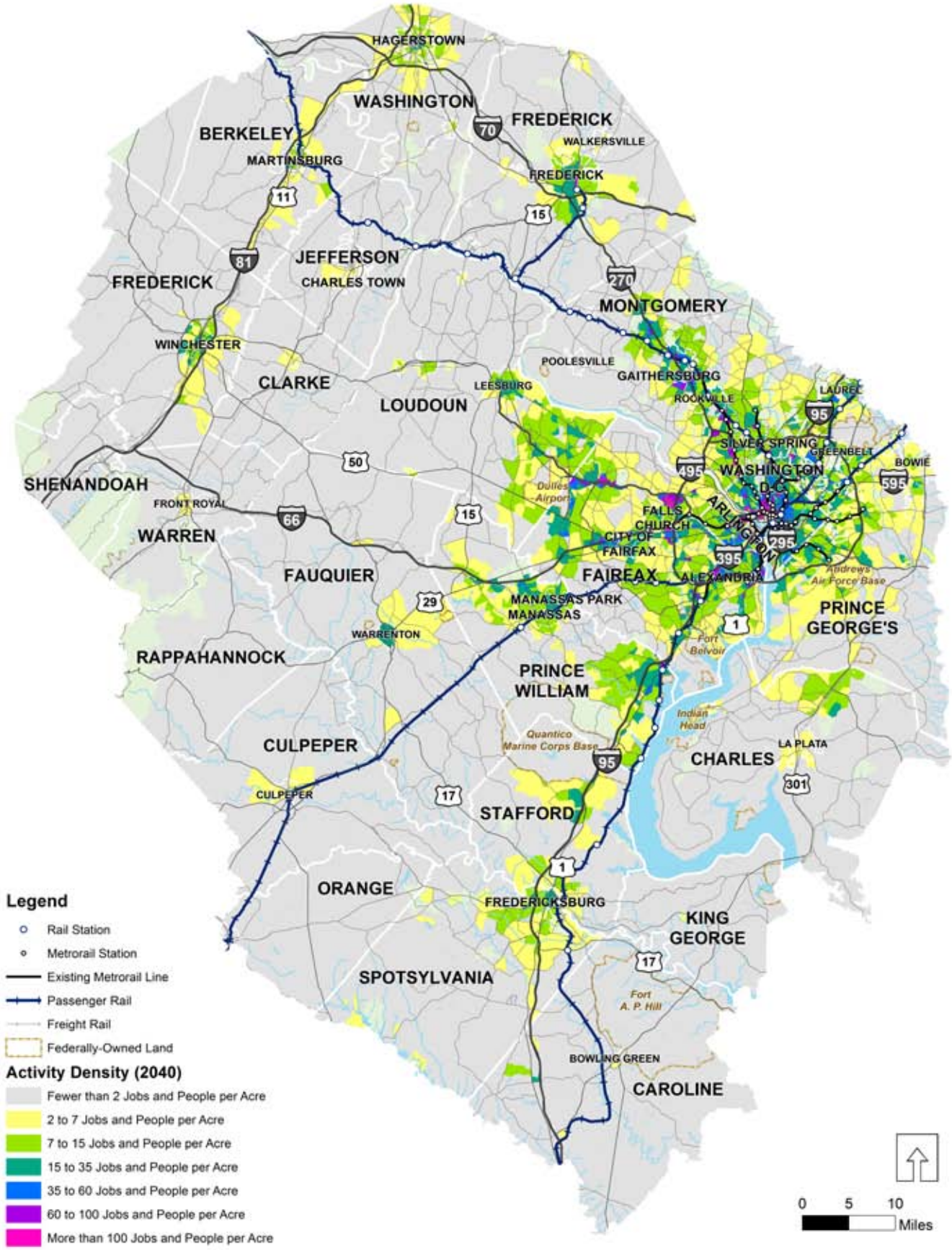


Figure 1.3 2040 Activity Density

This 2040 Activity Density map shows increasing growth outside the traditional urban area.

OPPORTUNITY

The region faces innumerable challenges as it continues to grow; however, abundant opportunities exist to enhance people's mobility through strategic investments in transit infrastructure and services. Rising population and employment, limited land resources to expand critical transportation facilities, spreading congestion, crowding on the transit system, gaps in transportation programs and services, and limited funding will challenge regional mobility. Strategic investments in linking land use and transportation decision-making, multimodal transportation system capacity, transportation education and culture, transit facilities and services, and TDM programs and services are real opportunities to help address the region's mobility challenges.

To move the region forward, significant infrastructure, program, and service investments will be needed. People have clearly indicated, through the choices they have made and the programs they support, that they will choose to walk, bicycle, and take transit more often and for more trip types when doing so is safe, convenient, and effective. A real opportunity in increasing regional mobility lies in the way in which more people can have access to more transportation choices that meet their travel needs.

MISSION AND GOALS

The mission is to vision mobility beyond boundaries. The vision is to identify safe, strategic, and seamless mobility options for rail, transit, and TDM in the Super NoVa area. Framing goals of the vision plan include:

- Increasing mobility and transportation choice through strategic investments in transit and TDM
- Efficiently using transportation infrastructure to meet current and future transportation needs
- Integration of transportation and land use planning and policy
- Sustained economic growth and prosperity

This mission, although simple, addresses a primary theme of the study—creating a plan for a seamless travel experience for the Super NoVa region. Today, transit and TDM programs and services are largely delivered based on individual jurisdictional or semiregional boundaries. These service and program boundaries are based mostly on the way in which programs and services are funded, rather than the way people desire to travel. Although some regional coordination and transit operations exist in the region, they cover an area that is considerably smaller than the defined Super NoVa region.

APPROACH

With an understanding of the complexities of planning in an area as large and significant as the Super NoVa region, a comprehensive and inclusive approach was undertaken in the development of the Vision Plan. This approach included agency and public outreach as well as technical and planning evaluations.

Agency and Public Outreach

A structured public outreach effort was initiated at the onset of the planning process and carried throughout the study. The effort involved communications with the public through print and broadcast media outlets, publication and frequent update of a project website, preparation of project informational materials, three rounds of public meetings held at locations across the study area, and the collection of comments through the project website and questionnaires coordinated with project milestones. Public agencies also were engaged during the study process through four rounds of workshops held across the region. At each agency and public meeting, a variety of input opportunities was offered ranging from whole group discussion sessions to specifically targeted input sessions.

Involving People...

"We plan to engage stakeholders and the public early and often during the study process," said Thelma Drake, DRPT Director. "Reaching a vision for transit in the Northern Virginia region will require significant input and cooperation from everyone in the study area. We look forward to starting that collaborative process."

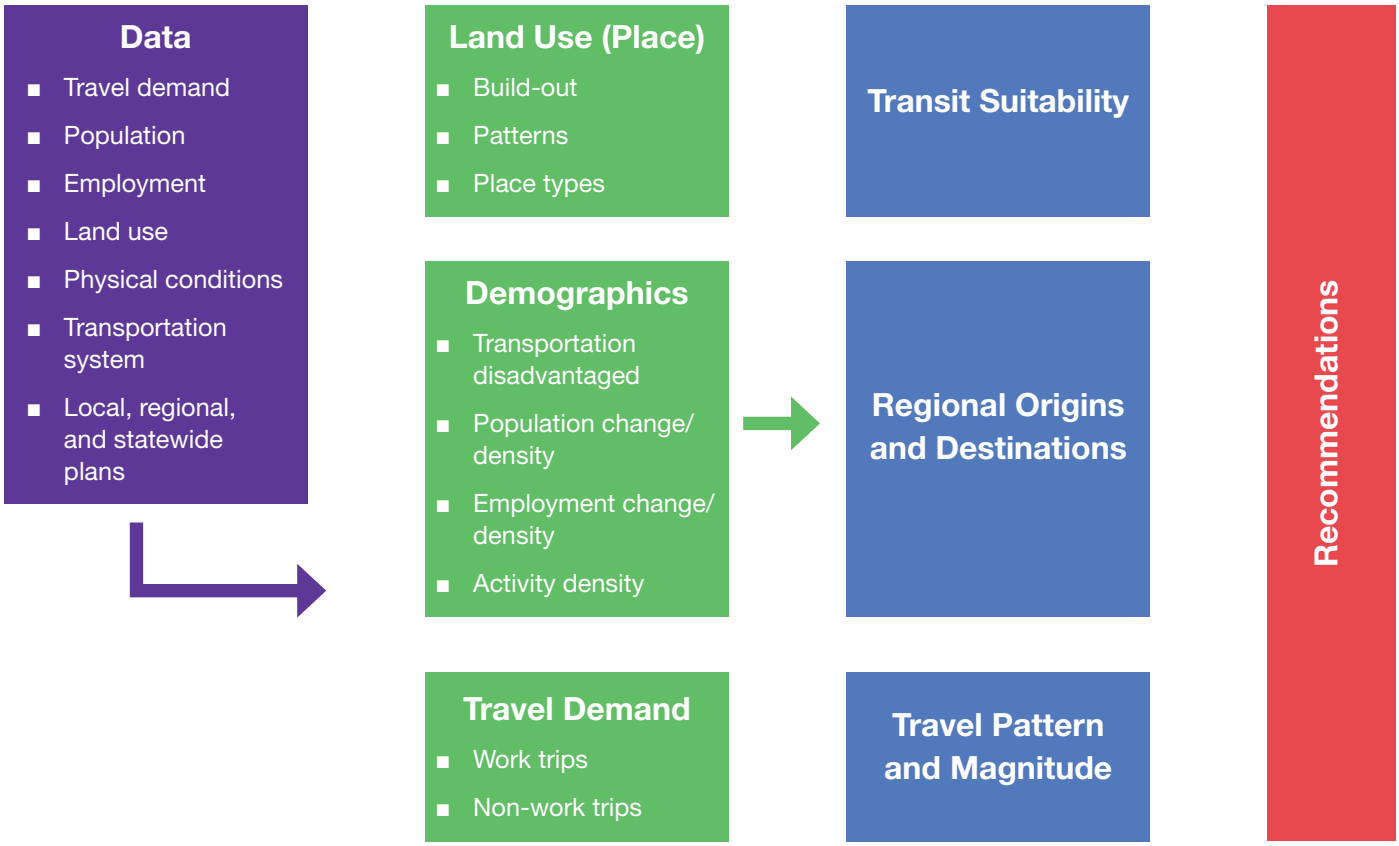


Figure 1.4: Technical Approach

Technical and Planning Needs Evaluation

Within the study area, a wide range of existing and future land use, employment, population, and transportation conditions were evaluated to understand travel needs and identify where gaps in transit service exist. Data used in the planning process was gathered from local, regional, state, and national data sets, plans, models, studies, and reports. **Figure 1.4** and the following briefly summarize the technical and planning evaluation process used in the study.

- **Travel Demand Development** — Information from four regional travel demand models—the Metropolitan Washington Council of Governments (MWCOG), Fredericksburg Area Metropolitan Planning Organization (FAMPO), Winchester-Frederick Metropolitan Planning Organization (Win-Fred MPO), and Hagerstown-Eastern Panhandle (WV) Metropolitan Planning Organization (HEPMPO)—were combined to create a travel demand forecasting tool for the study.
- **Population and Employment Evaluation** — Data was gathered from local comprehensive plans, population and employment forecasts, MPO travel demand model data, census data, and state population forecasts. This data was mapped and evaluated to identify changes in population and employment density patterns across the region and their effects on transit and TDM needs.
- **Land Use Evaluation** — Future land use data was gathered from local comprehensive plans, zoning maps, and other land use documents. The data was organized into a regionally consistent set of land use definitions. The data was then used to help identify regional transit needs.

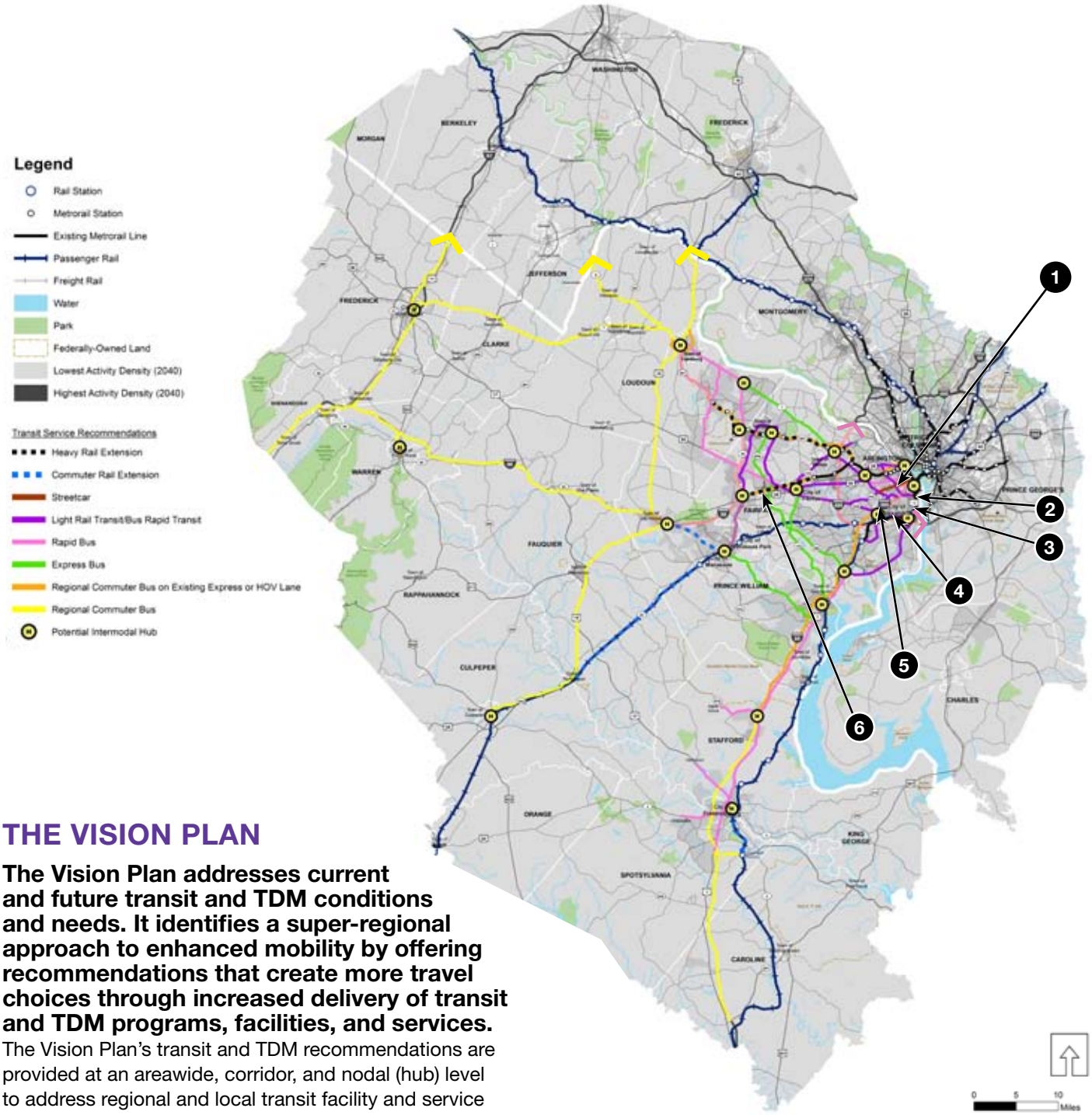


Figure 1.5: Future Regional Transit Network Map

THE VISION PLAN

The Vision Plan addresses current and future transit and TDM conditions and needs. It identifies a super-regional approach to enhanced mobility by offering recommendations that create more travel choices through increased delivery of transit and TDM programs, facilities, and services.

The Vision Plan's transit and TDM recommendations are provided at an areawide, corridor, and nodal (hub) level to address regional and local transit facility and service needs. A set of recommended policies also is included to support the overall vision as well as specific facility and service recommendations.

Notes:

1. *Columbia Pike: Arlington County and Fairfax County Boards have adopted, as the locally preferred alternative, modern streetcar service and continued bus service between Pentagon City in Arlington County and the Skyline area of Fairfax County.*
2. *US Route 1: Arlington County Board and Alexandria City council have a coordination agreement for the joint Route 1 Corridor Streetcar Conversion project that would convert the bus transitway (under construction) to a streetcar between Crystal City in Arlington County and the potential new Potomac Yard Metrorail station in the City of Alexandria.*
3. *US Route 1: City of Alexandria is currently constructing a bus transitway between East Glebe Road and the Braddock Road Metrorail station.*
4. *Duke Street: Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for Duke Street between the King Street Metrorail station and Landmark Mall.*
5. *Van Dorn Street/Beauregard Street: Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for sections of Van Dorn Street and Beauregard Street between the Van Dorn Metrorail station and the Mark Center. At the Mark Center, the high-capacity bus transitway would branch into two lines with one serving Pentagon/Pentagon City via I-395 and the second serving the Northern Virginia Community College, Shirlington, and Pentagon/Pentagon City via Beauregard Street, S. Arlington Mill Drive, and I-395.*
6. *I-66 Between I-495 and US 15: DRPT and VDOT are conducting a Tier 1 Environmental Study. Recommendations from the study may differ from the Super NoVa Vision Plan. Bus solutions may be implemented as an interim solution in the corridor and do not preclude future rail implementation.*

* *Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies.*

** *The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

Chapter 2

Outreach

INTRODUCTION

Public meeting that focused on the presentation, discussion, and refinement of future transit and TDM recommendations.

MANY VOICES

The vast geography of the Super NoVa region, diverse needs of travelers, and multifaceted agency roles and responsibilities in the region contributed to a broad engagement approach being undertaken during the planning process. Working sessions with stakeholders and the public and communication through traditional and new media helped to reveal regional transit and transportation demand management (TDM) needs. Themes of input included connectivity; travel choice; information; seamless travel; reasonable cost; quality access; coordination; sustainability; service expansion; competitive travel time; respect for communities; economic benefit; and travel related to work, recreation, and other purposes.

A number of stakeholder and public participation meetings were conducted as part of the Super NoVa plan. The target audiences for the outreach included stakeholders (i.e., local jurisdiction staff, regional and state agency staff, transit operators, TDM staff, and other relevant special interest groups), commuters, and the general public. There were four rounds of stakeholder meetings and three rounds of public meetings as well as a number of individual meetings with various groups. In addition to meetings, the study provided a number of different ways for stakeholders and the public to stay informed on the effort.

STAKEHOLDER INVOLVEMENT

Stakeholder meeting in Arlington County that focused on discussing needs and identifying future opportunities.

EXPANSIVE DIALOGUE

The study process was conducted in an open forum with stakeholders. Stakeholders that participated throughout the study are documented in the Appendix and included:

- Towns
- Cities
- Counties
- Metropolitan Planning Organizations (MPO)
- Regional Commissions
- Transportation Authorities
- State Agencies
- Federal Agencies
- Transit Agencies/Providers
- Commuter and Passenger Railroads
- Transportation Commissions
- Transportation Management Agencies (TMA)
- TDM Program Administrators
- Military

Widespread support existed in each round of stakeholder meetings. Stakeholders were asked in the first round of meetings in January 2012 to talk with their colleagues and partners about the study, create a link to the project website from their websites, and post the study information on social media sites. Stakeholders also were asked to identify the correct point people to be on the stakeholder list and persons in their organization to contact about outreach.

STAKEHOLDER MEETINGS

Four rounds of public meetings were organized to correspond with key milestones in the study. Because of the broad geography of the study area, two opportunities to attend a meeting were offered for each round of meetings. Meetings were organized with presentational and workshop elements. Stakeholder presentations also were made available via an FTP site.

Stakeholder Meeting 1: Vision Plan Introduction/Current Conditions

Fairfax County and Front Royal

The first set of stakeholder meetings were held to introduce the study to the stakeholders, explain the vision plan, review goals and objectives, and facilitate a workshop to gather information and needs.

Stakeholder Meeting 2: Analysis/ Concept Alternatives

Culpeper and Arlington County

The second set of stakeholder meetings was held to review preliminary data and analysis; brainstorm ideas related to serving super-regional mobility needs and closing gaps in services, systems, and programs; and facilitate a workshop to gather input to the analysis and guide the development of initial recommendations.

Stakeholder Meeting 3: Initial Recommendations

Winchester and Fairfax County

The third set of stakeholder meetings was intended to workshop through enhanced analysis, discuss draft recommendations, and gather input related to refinement of draft recommendations.

Stakeholder Meeting 4: Final Recommendations

Warrenton and Fairfax County

The fourth set of stakeholder meetings offered the stakeholders the opportunity to review final plan recommendations and provide comments and further insight on the recommendations as well as discuss next steps for achieving the project mission.

STAKEHOLDER COMMENTS

Stakeholders were offered several ways to submit comments on the study:

- At stakeholder meetings
- Written comments to the project team
- Agency and jurisdictional workshop meetings

A record of stakeholder comments is provided in the **Appendix**. A brief summary of thematic stakeholder comments follows.

Existing Conditions

- Unconstrained demand for park-and-ride lots in many locations
- Primary demand for transit is to traditional inner area destinations
- Washington Metropolitan Area Transit Authority (WMATA) and Virginia Railway Express (VRE) have core capacity constraints
- Fare structure can be a disincentive to potential customers
- TDM funding is insufficient
- State's investment in high-occupancy vehicle (HOV)/ high-occupancy toll (HOT) lanes will benefit bus transit operations

Regional Mobility Needs

- Travelers are not concerned with jurisdictional boundaries, but transit service providers are because there is no incentive or funding for crossjurisdictional boundaries outside the WMATA and VRE compacts
- Additional reverse commute service
- Suburb to suburb
- Support aging in place through human services-oriented transportation
- Services to military institutions, colleges and universities, tourist destinations, and airports
- Transportation options between states

Preliminary Ideas

- Make use of technology
- Consider telework and reverse commutes as a way to use available transportation capacity
- Transportation hubs in established activity centers with information, TDM services, and timed transfers
- New Potomac River crossings for transit
- Increased Transportation Management Plan (TMP) requirements
- Public-private partnerships transit/TDM funding
- Open-source transit and TDM data
- Centralized location for customers to access transit and TDM information
- Additional commuter parking
- Additional VRE service (i.e. extensions, midday service, reverse operation, and potential run through service between Maryland and Virginia)
- Core capacity improvements for Metro such as additional eight-car trains
- Regional midday bus storage
- Sustainable and transit-oriented land use patterns
- Additional HOV facilities
- "Last mile" improvements such as bicycle and pedestrian facilities
- Destination-specific shuttles
- Specific corridor rapid transit services
- I-495 or other circumferential transit services

Draft Recommendations

- Follow Tyson's Corner example for TDM outreach
- Encourage "car-light" and "car-free" lifestyles
- Address core capacity issues and potential improvements
- Promote benefits of smart land use planning
- Regionally-coordinated transit and TDM planning
- Plan for paratransit and other programs and services for disabled populations
- Improve walking and bicycling infrastructure
- Consider parking guidelines that are supportive of transit and TDM
- Develop regional transit technology systems or guidelines
- Continue regional planning dialogue
- Communicate using and educate people on transit mode definitions
- Specific comments related to corridor transit recommendations (described further in Chapter 5)
- Additional locations for hubs
- Connect fixed guideway transit corridors
- Discuss coordination with local and regional plans

PUBLIC INVOLVEMENT

Public meeting that focused on the presentation, discussion, and refinement of future transit and TDM recommendations.

PUBLIC DISCUSSION

The complex physical, human, political, and policy landscape of the Super NoVa region requires a focused effort on stakeholder and public coordination. Outreach with stakeholders and the general public was designed to be relevant, timely, and meaningful.

The program described in the Public Involvement Plan (PIP) was developed with an understanding of federal, state, regional, and local requirements and needs. The outreach program sought to accomplish the following:

- Create awareness and understanding of the study and the benefits that would result from implementing a strategic vision to enhance mobility for the Super NoVa region.
- Inform and educate community groups, businesses, and the general public, including Title VI audiences, about the study, its objectives, and outcomes.
- Encourage coordination, communication, and collaboration among key stakeholders and regional agencies to broaden the reach of the information and dialogue beyond the vision planning effort.
- Gather input from stakeholders, state leaders, and policymakers regarding issues and opportunities.

The outreach effort was organized to coincide with key study milestones. These milestones corresponded to the following meeting topics:

- Vision plan introduction and current conditions
- Analysis and conceptual alternatives
- Final recommendations

To increase the reach of the study's outreach effort, a study website, Twitter page, Facebook page, and survey questionnaires were used. The following summarizes each of the additional tools used in the outreach effort:

- **Study Brand** — A study logo and Department of Rail and Public Transportation (DRPT) logo were incorporated into all notification, educational and display materials for easy study identification and consistency.
- **Website – www.SuperNoVaTransitVisionPlan.com** — A study website was developed to inform the public about this important study. Information was presented describing the project, how to get involved, upcoming public meetings, and links to project-related documents. The website also provided links to Facebook and Twitter pages for the project in which viewers could also gather information.

- **Twitter** — A Twitter website page was created to provide a live feed of project activity. This form of media outreach was implemented because of its ability to update the public as the project progressed, without lag time. Information was posted concerning upcoming events (such as public meetings) and related news articles. A Twitter Feed, or a miniature display of our Twitter page, was placed on the project website so website viewers could see the most up-to-date information.

- **Facebook** — Facebook was used to highlight current/timely information about the study and provide important electronic links to the study website and comment forms. The primary purpose of the Facebook page was to post project announcements and substantive achievements. The Facebook page routinely referred people to the project website.

- **Project Business Card Handouts** — Project business cards were developed to promote the study. The business card included the vision plan logo; a brief statement or summary to describe the project; the website, Facebook, and Twitter URLs; and other contact information.

PUBLIC MEETINGS

Three rounds of public meetings (in addition to the stakeholder meetings) were organized to correspond with key milestones in the study. Because of the broad geography of the study area, several opportunities to attend a meeting were offered for each round of meetings. Meetings were organized at locations with convenient transit access and all meetings were in Americans with Disabilities Act (ADA)-accessible locations. Meeting notifications were distributed throughout the region with the intent to reach as broad an audience as possible.

Meetings were organized in an open-house format and had both a presentational element and an opportunity for discussion. Each meeting offered two formal presentations to better allow people to drop-in and arrive and depart on a more flexible schedule. The DRPT facilitated all public meetings, with project staff there to assist as necessary, in answering questions and presenting material. The project team members and DRPT staff were available throughout the open-houses to assist the public with understanding the Vision Plan and to answer any questions the public may have.

Study fact sheets, demographic surveys, and printed questionnaires were provided to all meeting attendees and an interactive questionnaire also was available on the study website until the close of the formal comment period. A separate comment summary on page 26 will detail the comments and responses. The three rounds of public meetings were organized as follows:

Public Meeting 1: Vision Plan Introduction/Current Conditions

Leesburg, Crystal City, Warrenton, and Fredericksburg

The first set of public meetings were held to introduce the study to the public, explain the vision plan, and introduce the possible alternatives to be studied. This was the stage of the study effort where information was gathered, common knowledge was shared, goals and objectives were reviewed, and an overview of the study was presented.

Public Meeting 2: Analysis/Concept Alternatives

Triangle, Front Royal, and Arlington

The second set of public meetings was held to gather input on the first set of mobility options prepared by the study team. At this meeting, a summary of the first round of public meetings was available for review along with concepts and ideas for enhancing mobility within the Super NoVa study area.

Public Meeting 3: Final Recommendations

Alexandria, Manassas, and Herndon

The third set of public meetings offered the public the opportunity to review final plan recommendations and provide comments and further insight on the recommendations.

PUBLIC OUTREACH AND NOTIFICATIONS

The following is a summary of methods used to educate, inform, and engage the public about each set of public meetings and to distribute study related materials and presentations posted online.

- **Study-Specific Contact List** — A contact list was created and maintained to distribute email notifications and flyers. The list included a diverse group of affected citizens, stakeholders, community leaders, ethnic groups, social service groups, and study participants.
- **Study Website – www.SuperNoVaTransitVisionPlan.com** — The study website was updated to include information specific to the meetings. Meeting details and comment information was posted as well as meeting materials. The web pages provided a link to the interactive survey form, to the meeting presentation and display boards, and to social networking tools.
- **Social Media** — Facebook and Twitter pages were used by the study team to provide information about the meetings, reminders to comment, and news articles about the study.
- **Newspaper Ad Notifications** — Newspaper ads were placed in local and regional newspapers beginning up to three weeks in advance of each set of public meetings. Newspapers included mainstream newspapers and those specially targeting Hispanic and African American populations.
- **Email Notifications** — A series of three email notifications were sent to stakeholder and interested citizens on the study mailing list in advance of public meetings and comment period deadlines.

- **Press Releases/Media Advisories** — News releases were sent to regional print and broadcast media and to DRPT's email database 30 days and again 1 week in advance of each set of public meetings. Releases were distributed to 49 ethnic/special media and 117 general media. For Spanish publications, a translated version was created and used. As a result of the news releases, news outlets, web blogs, and other outlets reported on and/or posted information about the workshop.
- **Flyers** — Informational flyers were prepared prior to each set of public meetings and distributed to key locations in the study area through outreach with public affairs and stakeholder partners among others. Flyers were distributed through transit ticket sales outlets, libraries, and community centers.
- **Coordination with Regional Public Affairs Managers** — The study team connected with public affairs officers, public information officers, and other communication managers in the region to broaden the reach of the vision study message. Contacts assisted by posting information to their social media sites and to their websites; to forward our email blasts to their groups; to run slides on city/county cable, and to include information in their newsletters.

OUTREACH TO LOW-INCOME, MINORITY, AND LIMITED ENGLISH PROFICIENCY (LEP) POPULATIONS

A critical element of the public outreach plan is ensuring the involvement of residents who are low-income, minority, seniors, and persons with disabilities. By including these Title VI and LEP populations in our outreach, we were able to reach those traditionally underserved groups and meet Title VI of the 1964 Civil Rights Act requirements. These groups provided a rich source of ideas and helped to improve transportation not only for themselves, but also for the entire community.

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving federal financial assistance. Through partnerships, outreach was made to low income, minority, elderly, disabled, low literacy, LEP and non-English speaking individuals, human service transportation providers, and the organizations that advocate and/or provide services. Key communications materials were translated into Spanish, during the study and distributed through local media outlets.

The following Title VI-related paragraphs were included on the appropriate materials:

- The DRPT will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact the Title VI Compliance Officer at (804) 786-4440 or TDD 711 for more information.
- The DRPT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its services on the basis of race, color, or national origin, as protected by Title VI of the Civil Rights Act of 1964. For additional information on DRPT's nondiscrimination policies and procedures or to file a complaint, please visit the website at www.drpt.virginia.gov or contact the Title VI Compliance Officer, Linda Maiden, 600 E. Main Street, Suite 2102, Richmond, VA 23219.

Actions taken to involve diverse audiences included:

- Including identification of advocacy groups social services, Hispanic business and civic organizations, minority business and civic groups, etc. in communication database.
- Partnering and consulting with stakeholder organizations and agencies and officials responsible for planning activities within the region that are affected by transportation to promote the study via their communication channels and customers.
- Partnering with other studies and lead agencies such as Virginia Department of Transportation (VDOT), Virginia Mega Projects, Metropolitan Washington Council of Governments (MWCOG), and more to assist with disseminating press release and newsletter insert information.
- Partnering with senior, disability, social service, human service advocate leaders, and Hispanic Liaison Offices of the cities and counties in the study area to provide information to their contacts regarding the study.
- Coordinating with Public Involvement Officers/ Communication Managers from various stakeholder organizations such as local governments, transit agencies/operators, TMAs, regional commissions, and MPOs to leverage greater dissemination of information.

- Increasing awareness of the study through the Internet and use of social media (Facebook and Twitter).
- Engaging the audience through greater use of visuals, larger font and simpler language in flyers, display boards, and presentations.
- Providing informational materials and meeting notifications that are easy to read and understand and include information for those who may need special assistance (sign language interpreter, translation, etc.) to participate in the study.
- Encouraging input at public meetings that are held at convenient, transit- and ADA-accessible locations.
- Offering translation services for meetings and with participation in general (offer made in Spanish and English on all materials).
- Establishing Spanish email address (espanol@kimley-horn.com) and promoting it on all materials for those who required translation services—and translators reserved for each meeting.
- Translating email notices into Spanish to be sent to Hispanic business and social groups for further distribution.
- Sending email notices to Asian- and African American-related business and social groups for further distribution.
- Making translation tools, text font tools, meeting materials, meeting schedules, comment methods, and educational tools available on the study website.
- Using Facebook and Twitter to reach people with Internet access.
- Hand delivering and mailing flyers, fact sheets, and maps documenting planning efforts.
- Placing newspaper advertisements in ethnic newspapers (i.e., Metro Herald, Nuevas, Raices and El Tiempo) and translating ads in Spanish for El Tiempo, in addition to ads placed in mainstream and other specialty newspapers.
- Distributing press releases to 49 contacts at ethnic/specialty news media to include African American, Hispanic, Asian, and senior interest and produced in English and Spanish.
- Surveying via the Internet and printed surveys.
- Including DRPT's Title VI statement plus a statement in Spanish on all notices and materials:
    - The DRPT will strive to provide reasonable accommodations and services for persons who require special assistance to participate in this public involvement opportunity. Contact the Title VI Compliance Officer at (804) 786-4440 or TDD 711 for more information.
    - *Si usted necesita servicios de traducción a participar, por favor manda un email: espanol@kimley-horn.com.*

PUBLIC COMMENT

Citizens were offered several ways to submit comments on the study. Printed survey questionnaires were available during the meetings, and online as a printable PDF. In addition, an interactive electronic survey questionnaire was developed and linked to the study website and citizens were offered to send comments by mail to the team. An example of the survey questionnaire is shown below. Demographic information was requested during meetings and via the electronic survey form. A record of public involvement is provided in the **Appendix**. A brief summary of thematic public comments follows:

Existing Conditions

- Many areas unserved or underserved by transit
- In some locations where transit options are available, the options are not always convenient
- HOV hours are insufficient
- Not enough transit information available
- Special events frequently negatively impact transit operations and transit customers

Regional Mobility Needs

- Improved access for disabled persons and elderly persons
- More direct services and decrease transfers
- Additional education on transit options
- "Last mile" improvements
- Transit services outside normal commuting times
- Consider Base Realignment and Closure
- Amenities such as outlets and wireless internet access on board vehicles as well as real-time travel information to attract customers

Draft Recommendations

- Use technology/telework to decrease commuting
- Need additional services crossing the Potomac River
- Provide seamless fare structure and payment system
- Hubs can help people get to the next place on transit, but also should have standards for bicycle and pedestrian facilities to serve nearby destinations
- Include Capital Bikeshare in recommendations
- Look into diverting freight rail to increase passenger rail capacity
- Additional emphasis on ridesharing
- Additional parking at transit stations

SUPER NOVA TRANSIT/TDM VISION PLAN

We Need Your Input

The Virginia Department of Rail and Public Transportation (DRPT) is leading the development of a Transit and Transportation Demand Management (TDM) Vision Plan for the Super NoVa area. We want to hear from you about your commute and your ideas and suggestions for improving it. All comments received will be reviewed and considered in the development of the final plan. This is the first of several survey opportunities during the plan development process.

About You

First Name:_____ Last Name:_____

Organization/Affiliation:_____

Address:_____

City/Town:_____ State:_____ Zip:_____

Email Address:_____

What is your HOME zip code?_____

What is your WORK zip code?_____

Do you want to be included in the study mailing list to receive periodic updates?

☐ Yes ☐ No

Transit services you are using

1. What transit services work well for the trips you make on a daily basis?

☐ Commuter Bus/Express Bus (PRTC, LCT, Martz, Quicks, or similar)

☐ Local Bus (Metrobus, Fairfax Connector, ART, DASH, VRT, Cue, FRED, or similar)

☐ Virginia Railway Express ☐ Metrorail

☐ None ☐ Other (please specify)_____

2. What types of trips do you make using these services?

☐ Work ☐ School ☐ Healthcare

☐ Shopping ☐ Recreational ☐ None

☐ Other (please specify)_____

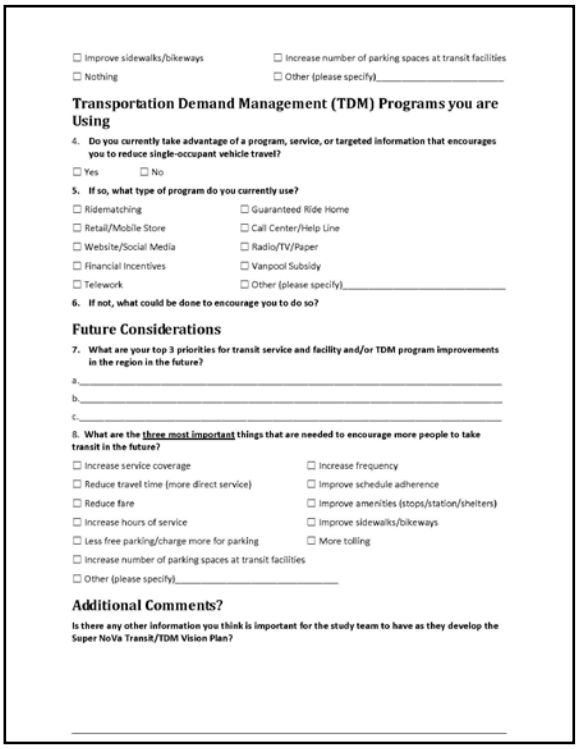
3. What are the three most important things that could be done to improve a service you are currently using?

☐ Increase frequency ☐ Reduce travel time (more direct service)

☐ Improve schedule adherence ☐ Reduce fare

☐ Improve amenities (stops/station/shelters) ☐ Increase hours of service

Survey Questionnaire – Page 2 of 2



☐ Improve sidewalks/bikeways ☐ Increase number of parking spaces at transit facilities

☐ Nothing ☐ Other (please specify)_____

Transportation Demand Management (TDM) Programs you are Using

4. Do you currently take advantage of a program, service, or targeted information that encourages you to reduce single-occupant vehicle travel?

☐ Yes ☐ No

5. If so, what type of program do you currently use?

☐ Ridematching ☐ Guaranteed Ride Home

☐ Retail/Mobile Store ☐ Call Center/Help Line

☐ Website/Social Media ☐ Radio/TV/Paper

☐ Financial Incentives ☐ Vanpool Subsidy

☐ Telework ☐ Other (please specify)_____

6. If not, what could be done to encourage you to do so?

Future Considerations

7. What are your top 3 priorities for transit service and facility and/or TDM program improvements in the region in the future?

a._____

b._____

c._____

8. What are the three most important things that are needed to encourage more people to take transit in the future?

☐ Increase service coverage ☐ Increase frequency

☐ Reduce travel time (more direct service) ☐ Improve schedule adherence

☐ Reduce fare ☐ Improve amenities (stops/station/shelters)

☐ Increase hours of service ☐ Improve sidewalks/bikeways

☐ Less free parking/charge more for parking ☐ More tolling

☐ Increase number of parking spaces at transit facilities

☐ Other (please specify)_____

Additional Comments?

Is there any other information you think is important for the study team to have as they develop the Super NoVa Transit/TDM Vision Plan?

Chapter 3

Existing Conditions

INTRODUCTION

The Tide light rail transit in Hampton Roads, VA.

INFORMATION

The study initiated a comprehensive data collection and information assimilation effort early in the planning process. This data collection effort was used to help the project team and stakeholders establish a comprehensive base of information and understanding for the study area. Published plans, reports, and studies; geographic information system (GIS) data; forecasts; projections; analytic tools; and other pertinent information was compiled and processed during this task. This chapter summarizes existing transit, transportation demand management (TDM), demographic, and transportation system conditions in the Super NoVa area.

TRANSIT PLANNING, PROGRAMMING, AND FUNDING

The Virginia Department of Rail and Public Transportation (DRPT) is a state agency that reports to the Secretary of Transportation. DRPT has three primary areas of activity—rail, public transportation, and commuter services—that focus on the movement of people and goods and the expansion of transportation choices in Virginia. DRPT works closely with the Virginia Department of Transportation (VDOT) but is a separate agency.

DRPT differs from VDOT, which owns and operates many of Virginia's roads, because they partner with transportation operators, TDM agencies, other state agencies, metropolitan planning organizations (MPO), and government officials by providing funding, planning, and programming support. In many cases, local and regional transportation agencies play a lead role in defining the rail and public transportation initiatives for their areas. DRPT provides support for many of these initiatives by offering technical and funding assistance. The Super NoVa Transit/TDM Vision Plan is the first planning effort to explore the entire super region study area. The following regional bodies are responsible for planning within the Super NoVa area; however, none cover the entire area.

MPOs are federally mandated and funded transportation policy organizations comprised of representatives from member local jurisdictions and transportation agencies. There are four MPOs in the Super NoVa study area:

- **Metropolitan Washington Council of Governments (MWCOG)** — This regional organization is comprised of 21 local governments in Washington D.C., Maryland, and Virginia. The National Capital Region Transportation Planning Board (TPB) is the MPO for the MWCOG area.
- **Fredericksburg Area Metropolitan Planning Organization (FAMPO)** — Membership is from the City of Fredericksburg and Spotsylvania and Stafford Counties, VA.
- **Winchester Frederick County Metropolitan Planning Organization (WinFred MPO)** —Membership is from the City of Winchester and Frederick County, VA.
- **Hagerstown-Eastern Panhandle Metropolitan Planning Organization (HEPMPO)** — Membership is from Berkeley and Jefferson County in West Virginia; the municipalities of Martinsburg, Ranson, Charles Town, Shepherdstown, Harpers Ferry, and Bolivar (all in West Virginia); and a small portion of Franklin County, PA.

Planning District Commissions (PDC) are regional subdivisions of Virginia meant to encourage and facilitate local government cooperation and state-local cooperation in addressing regional problems and opportunities in planning and implementing public policies and services. PDCs are chartered by Virginia Code. PDCs may staff MPOs for transportation planning purposes. The following are PDCs in the study area:

- Northern Virginia Regional Commission (NVRC)
- Northern Shenandoah Valley Regional Commission (NSVRC)
- Rappahannock-Rapidian Regional Commission (RRRC)
- George Washington Regional Commission (GWRC)

The Northern Virginia Transportation Authority (NVTA) was created by the General Assembly and is responsible for long-range transportation planning in Northern Virginia. Based on regional consensus, NVTA sets regional transportation policies and priorities and allocates funding. NVTA includes the Counties of Arlington, Fairfax, Loudoun, and Prince William and the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park. DRPT grant funding for all member jurisdictions is given to NVTA for allocation to member jurisdictions.

TRANSIT AND TDM AGENCIES

Transit and TDM services in Virginia are typically provided by a single locality or by a group of jurisdictions acting as a transportation district to facilitate regional transportation solutions to problems that transcend individual localities' borders. In addition to DRPT funding, agencies receive funding for TDM from their locality or localities. Transit and TDM agencies are directly involved in long-range and year-to-year planning and programming. The transit and TDM agencies in the study area are discussed in subsequent sections of this chapter.

TRANSIT SYSTEM OPERATION

Richmond Highway Express in Alexandria, VA.

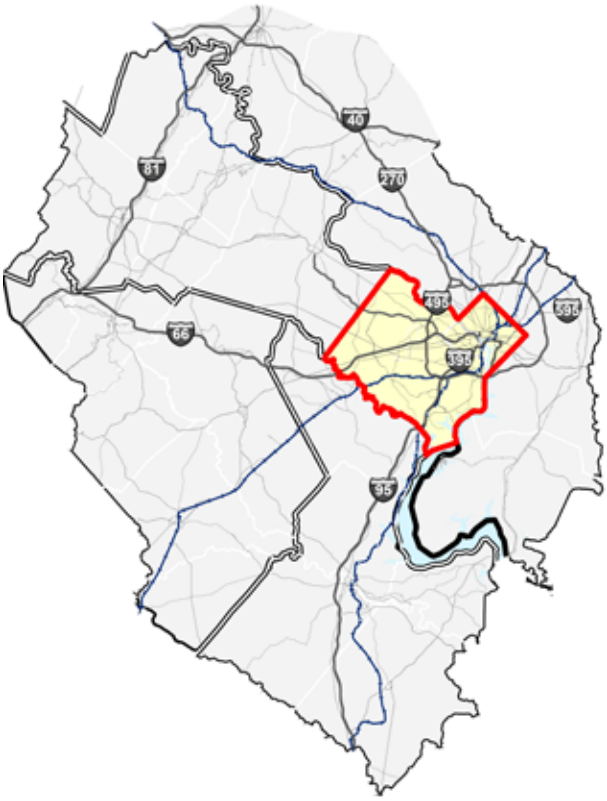
There are several public transit systems operating in the defined Super NoVa region. For purposes of this study, they have been organized into the following geographic areas:

- **Inner Subarea** – Washington, D.C.; Arlington County; Cities of Alexandria, Falls Church, and Fairfax; and Fairfax County
- **Northwest Subarea** – Loudoun County, Clarke County; Frederick County; City of Winchester; and Jefferson and Berkeley Counties, WV
- **West Subarea** – Fauquier County, Warren County, Shenandoah County, Rappahannock County, Culpeper County, and Orange County
- **South Subarea** – Prince William County, Cities of Manassas and Manassas Park, Stafford County, Spotsylvania County, City of Fredericksburg, King George County, and Caroline County
- **Maryland Subarea** – Washington County, Frederick County, Montgomery County, Prince George's County, and Charles County

Existing service information also was collected for regional rail systems. Regional rail service providers in the Super NoVa region include the Washington Metropolitan Area Transit Authority (WMATA), Virginia Railway Express (VRE), Maryland Area Regional Commuter (MARC), and Amtrak. The following information was collected for each transit system:

- Existing Transit Service Characteristics
  - Type of Services Provided
  - Service Area
  - Service Hours
  - Park-and-Ride Lots
  - Connectivity to Other Transit Systems and Regional Rail
  - Service Statistics (Ridership, Peak Vehicles, Miles, and Hours of Service)
- Short-Range Transit Plans
- Long-Range Transit Plans

Transit agency profiles are provided in the **Appendix**, with transit systems organized by geographic area. A summary of each transit agency and transit services is provided on the following page.



Inner subarea.

INNER SUBAREA BUS TRANSIT SYSTEMS

Arlington County

Potomac and Rappahannock Transportation Commission (PRTC) Omniride. Source: PRTC.

Arlington Transit (ART) is the primary local transit service provider in Arlington County. ART has 13 fixed route lines and provides service 7 days a week. ART service connects to nine Metrorail stations, and provides connections to WMATA Metrobus service, the D.C. Circulator, Alexandria DASH, Fairfax Connector, Loudoun County Transit (LC Transit), Potomac and Rappahannock Transportation Commission (PRTC) OmniRide, Georgetown University Shuttles, and VRE commuter rail service. Fiscal year 2010 fixed route ridership indicated that ART carried approximately 2 million passenger trips. WMATA's Metrobus also provides bus service within Arlington County. Paratransit service is provided through Star Transit and MetroAccess.

City of Alexandria

Alexandria DASH.

The primary local transit service provider in Alexandria is the Alexandria Transit Company, also known as DASH. There are nine routes operated by DASH, with service provided 7 days a week. DASH operates nine routes and one trolley route. DASH connects to five Metrorail Stations, WMATA Metrobus, ART, Fairfax Connector, LC Transit, PRTC OmniRide, VRE Commuter Rail, and Amtrak. Fiscal year 2010 fixed route ridership indicated that DASH carried 4.3 million passenger trips. Metrobus also provides bus service within the City of Alexandria. Paratransit service is provided by the City of Alexandria Department of Transportation & Environmental Services' DOT paratransit program and MetroAccess.

City of Fairfax

The primary local transit service provider in the City of Fairfax is the Fairfax City-University Energysaver (CUE), operated by the City of Fairfax. The CUE has two fixed routes and operates 7 days a week. Both CUE routes connect to the Vienna/Fairfax-GMU Metrorail Station. CUE also provides connections to WMATA Metrobus, George Mason University shuttle service, and the Fairfax Connector. Fiscal year 2010 fixed route ridership indicated that CUE carried more than 900,000 passenger trips. Metrobus also provides bus service within the City of Fairfax. Paratransit service is provided by City Wheels (a paratransit taxi service) and MetroAccess.

Fairfax County

Fairfax Connector. Source: Fairfax County.

The primary local transit service provider in Fairfax County is the Fairfax Connector, which operates 68 fixed routes and circulators. Service is provided 7 days a week, with 24-hour weekday service on select routes. The Fairfax Connector provides service to numerous park-and-ride lots located in the county, and to several Metrorail stations. Connections also are possible to the City of Fairfax CUE, LC Transit, DASH, and PRTC service. Fiscal year 2010 ridership was more than 9.6 million passenger trips. Metrobus also provides bus service within Fairfax County. Paratransit service in the county is provided through Fastran (provided by the county) and MetroAccess.

Washington, D.C.

The D.C. Circulator, operated by the District Department of Transportation (DDOT), provides high frequency bus service in the District of Columbia and in Rosslyn. Service is provided 7 days a week. The Circulator provides connections to Metrorail stations, VRE, MARC, and Amtrak at Union Station. There also are connections to Metrobus and ART bus service.

Regional Bus Service

Washington Metropolitan Area Transit Authority MetroBus.

WMATA provides Metrobus service throughout the inner subarea, with service in Washington, D.C., Montgomery and Prince George's Counties in Maryland; Fairfax and Arlington Counties; and the Cities of Falls Church, Fairfax, and Alexandria. Service is provided 7 days a week, with some routes operating 24-hours. Metrobus service connects to Metrorail, Amtrak, MARC, and VRE regional rail services and provides connections to all locally-operated systems, such as ART, DASH, Fairfax Connector, CUE, PRTC, and LC Transit. Fiscal year 2010 Metrobus ridership was more than 128 million passenger trips. MetroAccess provides corresponding paratransit service in the Metrobus service area.

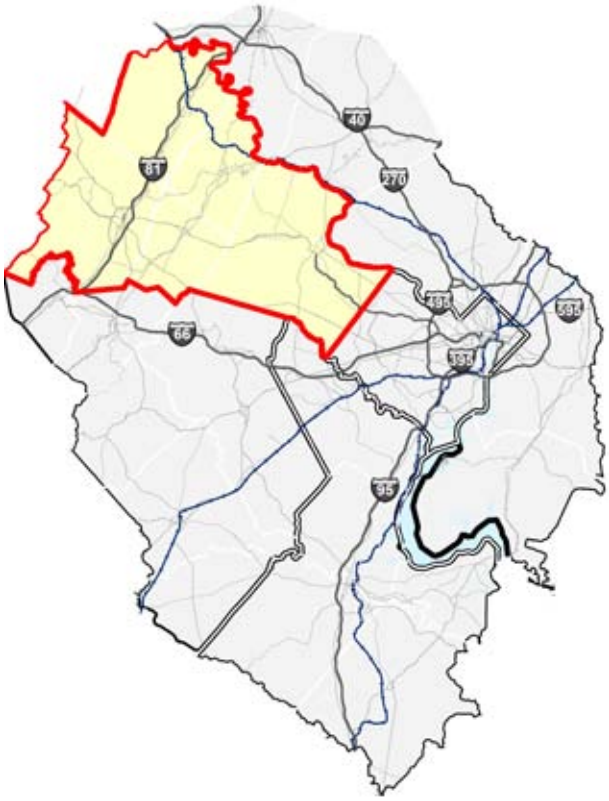
NORTHWEST SUBAREA BUS TRANSIT SYSTEMS

Tysons Express. Source: Loudoun County.

Loudoun County

Loudoun County is served by two bus systems—LC Transit and Virginia Regional Transit (VRT). LC Transit provides service between park-and-ride lots in Loudoun County and the Washington, D.C. metropolitan central area. Destinations in the inner area include Rosslyn, the State Department, the Ronald Reagan Building, the Pentagon, the Navy Yard area, and Crystal City. Destinations outside of the inner area include Tysons Center and West Falls Church Metrorail Station. Some reverse commute service is provided from West Falls Church. LC Transit service is weekdays only, with most service operating in the a.m. and p.m. peak periods. LC Transit provides connections to Metrorail stations and other regional rail service at Union Station. Fiscal year 2010 ridership was approximately one million passenger trips.

VRT provides local fixed route service (via 11 routes) and countywide demand response service in Loudoun County.



Northwest subarea.

Service is provided 7 days a week. VRT service includes connections to the West Falls Church Metrorail Station and to Fairfax Connector and Metrobus service. Fiscal year 2010 rideship was approximately 700,000 passenger trips.

City of Winchester/Frederick County

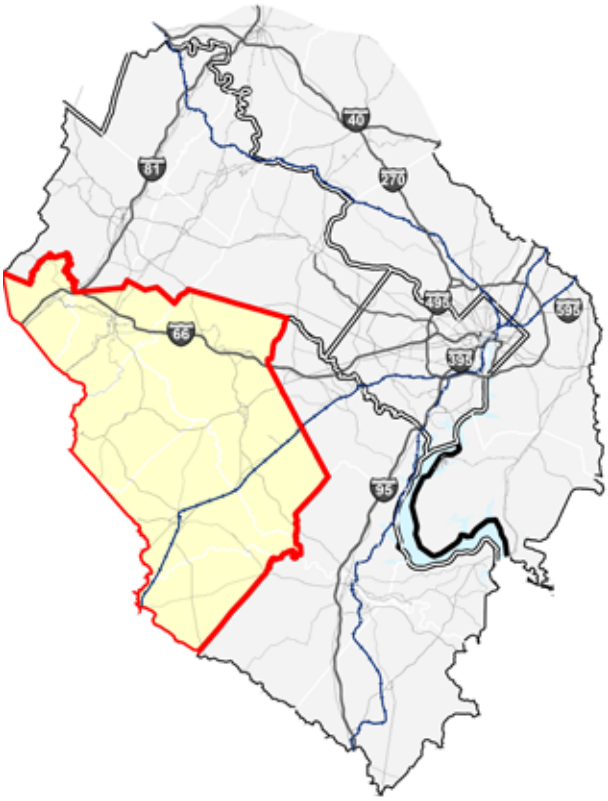
WinTran operates six fixed routes and one trolley route, and provides Americans with Disabilities (ADA) paratransit service in the City of Winchester. Service is provided Monday through Saturday. Fiscal year 2010 fixed route ridership was approximately 100,000 passenger trips.

Clark County

VRT provides demand response service in Clark County. Service is offered 3 days a week. Passengers can request service to the City of Winchester, with connection opportunities to WinTran. Fiscal year 2010 ridership was approximately 2,000 passenger trips.

Berkeley and Jefferson Counties, WV

PanTran is the local transit service provider in these two counties. There are five deviated fixed routes that serve Martinsburg, Harpers Ferry, Shepherdstown, and Charles Town, in addition to demand response service in Inwood and Hedgesville. Service is provided Monday through Saturday. PanTran provides connections to MARC and Amtrak rail service. Fiscal year 2010 total ridership (fixed route and demand response) was more than 160,000 passenger trips.



West subarea.

WEST SUBAREA BUS TRANSIT SYSTEMS

Fauquier County

Circuit Rider, operated by VRT provides fixed local route service in the Town of Warrentown. Service is operated Monday through Saturday via two routes. Countywide paratransit service also is provided. CircuitRider service connects to regional Tri-County Connector service (Fauquier, Culpeper, and Orange Counties). Fiscal year 2010 fixed route ridership was more than 31,000 passenger trips.

Culpeper County

Culpeper Trolley is operated by VRT, with two fixed routes operating in the Town of Culpeper and countywide ADA paratransit service. Service is provided Monday through Saturday. The Culpeper Trolley connects to regional Tri-County Connector service (Fauquier, Culpeper and Orange Counties). Fiscal year 2010 ridership (fixed route and paratransit) was nearly 70,000 passenger trips.

Town of Orange

The "Toot" provides local route service in the Town of Orange. Service is provided by VRT. One route deviates to meet ADA paratransit service requirements. Service is provided Monday through Saturday. This route connects to the regional Tri-County Connector service. Fiscal year 2010 ridership was nearly 26,000 passenger trips.

The "Toot". Source: Town of Orange.

Warren County/Front Royal

The Front Royal Area Transit (FRAT) is operated by VRT in the Town of Front Royal. There are two routes that deviate to meet ADA paratransit service requirements. Service is provided 7 days a week. Fiscal year 2010 ridership was more than 12,600 passenger trips.

Regional Bus Services

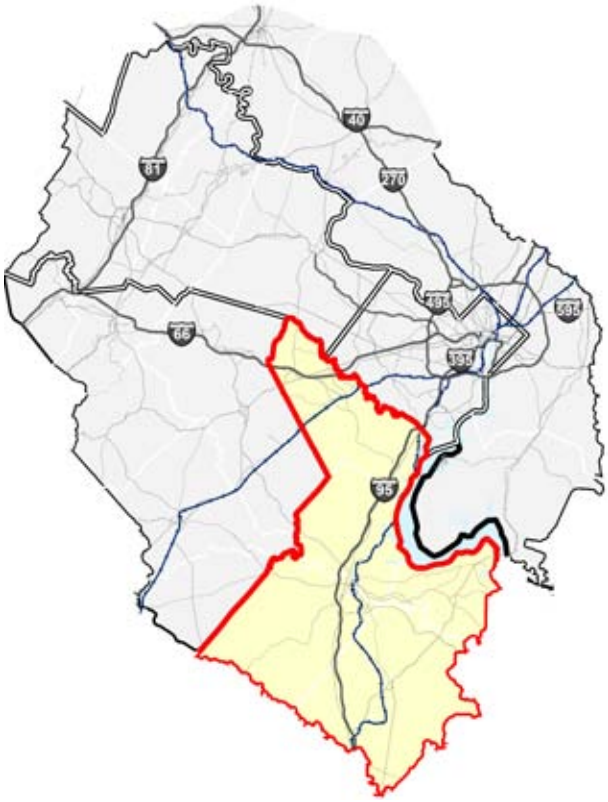
As noted in some of the individual county descriptions, the Tri-County Connector provides regional service between Fauquier, Culpeper, and Orange Counties. Service is provided on weekdays only. This service is operated by VRT. There also is regional, privately operated bus service from the West subarea into Washington, D.C. This service operates from Culpeper and Warrenton, and includes stops at the Rosslyn Metrorail station and various locations within the District. The service is operated by Academy Bus Lines, with one morning and one afternoon trip. Service originates at the Culpeper Sports Complex and includes a stop at the Warrenton commuter lot (Route 29 and Route 605). Ridership information was not available.

SOUTH SUBAREA BUS TRANSIT SYSTEMS

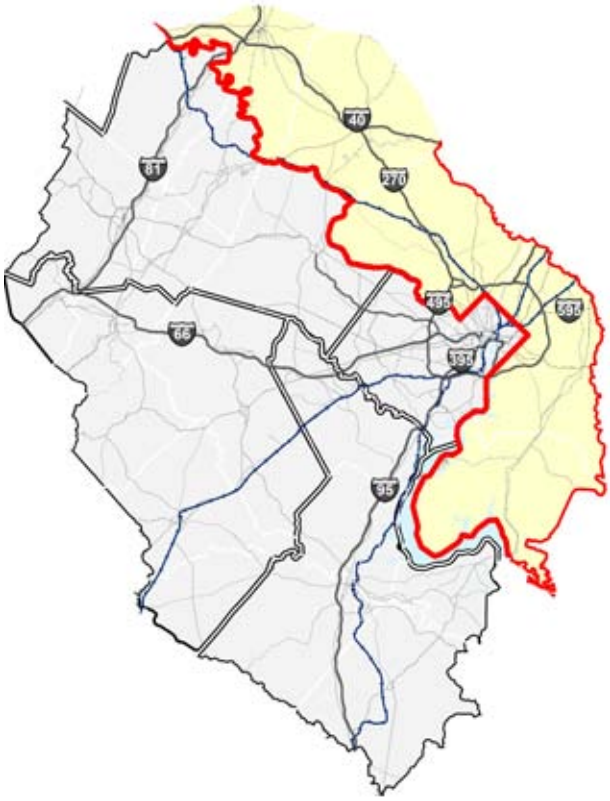
Prince William County

Potomac and Rappahannock Transportation Commission (PRTC) Omniride. Source: PRTC.

The PRTC provides regional and local bus service for Prince William County. PRTC operates 17 commuter routes (OmniRide) that provide connections to D.C. and Arlington Metrorail and VRE stations and Amtrak and MARC rail service at Union Station. Service operates out of numerous park-and-ride lots along the I-66 and I-95 corridors. OmniLink provides local flex route/demand response service within the county. There is one local fixed route service (the Cross County Connector). OmniMatch provides ridematching services for county residents. Fiscal year 2010 ridership was nearly 3.2 million passenger trips.



South subarea.



Maryland subarea.

Spotsylvania, Stafford, King George, and Caroline Counties and City of Fredericksburg

Fredericksburg Regional Transit.

Fredericksburg Regional Transit (FRED) provides local deviated fixed route service in the Fredericksburg area, including service to the University of Mary Washington, and VRE feeder routes. Service is primarily focused on the more densely developed areas of the City of Fredericksburg, the northern Spotsylvania County area, Stafford County, and select areas in King George and Caroline Counties. Service is provided on weekdays. FRED includes service to area commuter park-and-ride lots and to the VRE Fredericksburg Station. Fiscal year 2010 ridership was more than 510,000 passenger trips.

Regional Bus Service

The Martz Group and Quick's Bus Company provides privately-operated commuter bus service in the South subarea. Service is provided along I-95 between park-and-ride lots in Spotsylvania and Stafford Counties, and various destinations in the Washington, D.C. metropolitan area. Most service is to the District and to Rosslyn. There are select trips that serve the Mark Center/Baily's Crossroads, Fort Belvoir. Fiscal year 2010 estimated ridership is more than 430,000 passenger trips.

MARYLAND SUBAREA BUS TRANSIT SYSTEMS

Washington County

The County Commuter operates 10 local routes and paratransit service in the Hagerstown area. Service is provided Monday through Saturday. There are regional connections to the Maryland Transit Administrations's Route 991. Fiscal year 2010 fixed route ridership was more than 370,000 passenger trips.

Frederick County

TransIT operates local route service in Frederick City and urbanized areas of Frederick County. There are nine connector routes, six commuter shuttles, and TransIT-Plus paratransit service. Service is operated Monday through Saturday. TransIT connects to MARC service at Brunswick, Point of Rocks, Monocacy, and Frederick. TransIT also connects to Maryland Transit Administration's (MTA) Route 991 commuter bus service and connects to Montgomery County's Ride-On Route 75. Fiscal year 2010 fixed route ridership was more than 700,000 passenger trips.

Montgomery County

Ride-On provides local and express bus service in Montgomery County. Paratransit service is provided by MetroAcess, and a Call 'N' Ride taxi program provided through the county. Service is provided 7 days a week. WMATA's Metrobus also provides service in the county. Ride-On and/or Metrobus provides service to several non-rail station park-and-ride lots within Montgomery County. Ride-On has connections to Metrorail, MARC commuter rail service, and Amtrak. Fiscal year 2010 fixed route ridership was 27.9 million passenger trips.

Prince George's County

TheBus provides local and express bus service in Prince George's County. The county also operates "Call-a-Bus" paratransit service. TheBus operates weekdays only with 26 bus routes, and serves numerous park-and-ride lots in Prince George's County. There are connections to MTA's commuter bus routes 903 and 904, and connections to Metrorail, MARC commuter rail service, and Amtrak service. Fiscal year 2010 fixed route ridership was 3.45 million passenger trips.

Charles County

VanGO provides local and paratransit service in Charles County. There are 13 fixed routes. Service is provided Monday through Saturday, and includes service to numerous County park-and-ride lots. There are connections to MTA Commuter Bus routes 901, 903, 905, and 907. There also is a connection to WMATA's Metrobus Route W19. There are no connections to regional rail services. Fiscal year 2010 fixed route ridership was more than 560,000 passenger trips.

Regional Bus Service

MTA operates commuter bus service throughout Maryland. There is MTA commuter bus service in all five Maryland counties in the Super NoVa region. Service is provided weekdays only.

REGIONAL PROGRAMS

Local Transit Service

The areas nearest to the Super Nova region's inner area are served by local bus routes and operated by multiple agencies as described above. The coverage area and variety of local service decreases significantly outside the region's inner area. In the more rural areas of the Super NoVa region, fixed route service is primarily configured to serve areas with the highest concentration of housing and employment, and is usually limited to a single operator. In addition to fixed route service, some counties offer demand responsive service. Paratransit service also is an important component of local transit service. **Figure 3.1** shows the types of existing local transit service in the study area as described in the aforementioned transit profiles. **Figure 3.2** shows the local route service coverage within the study area.

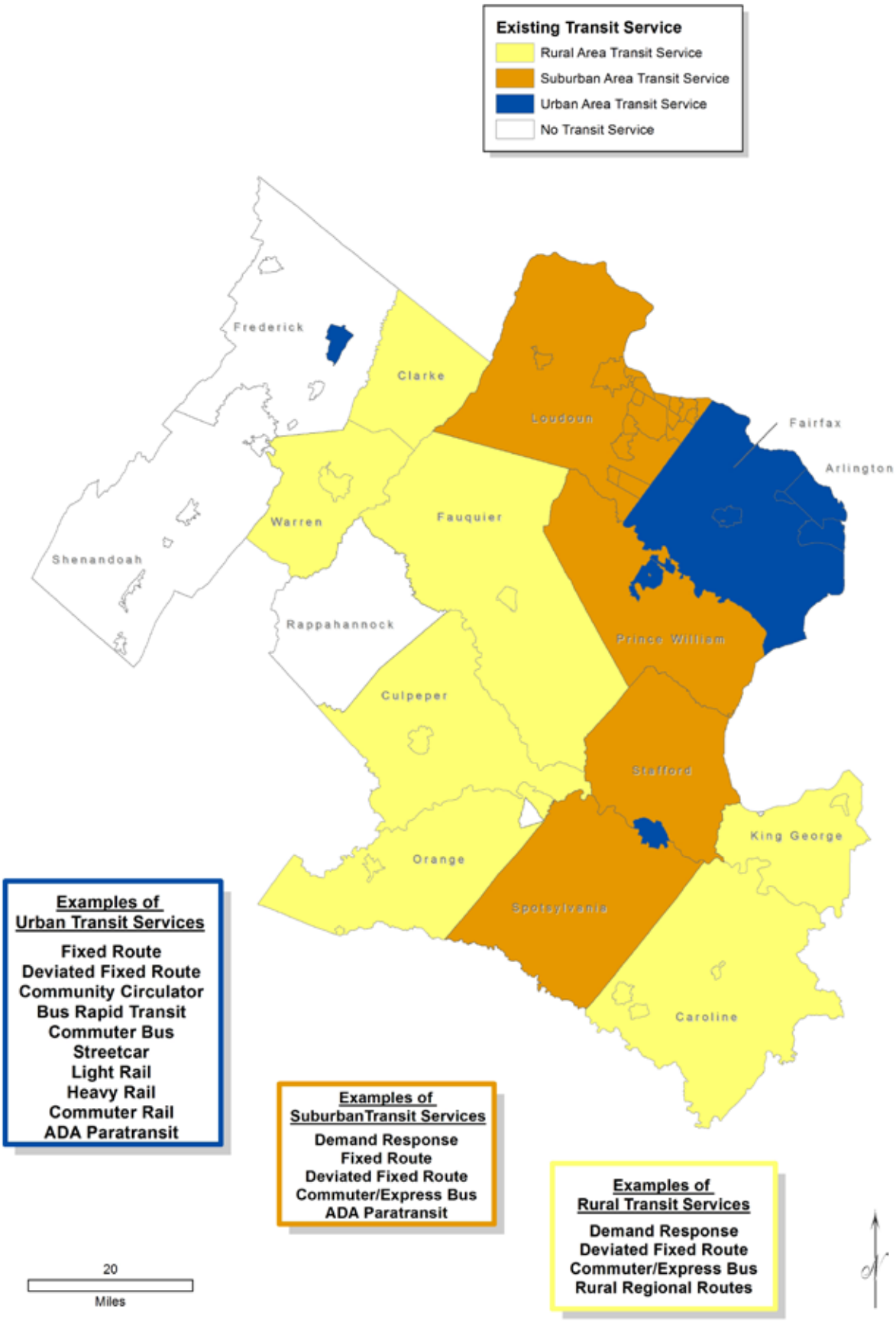


Figure 3.1: Existing Local Transit Service Types

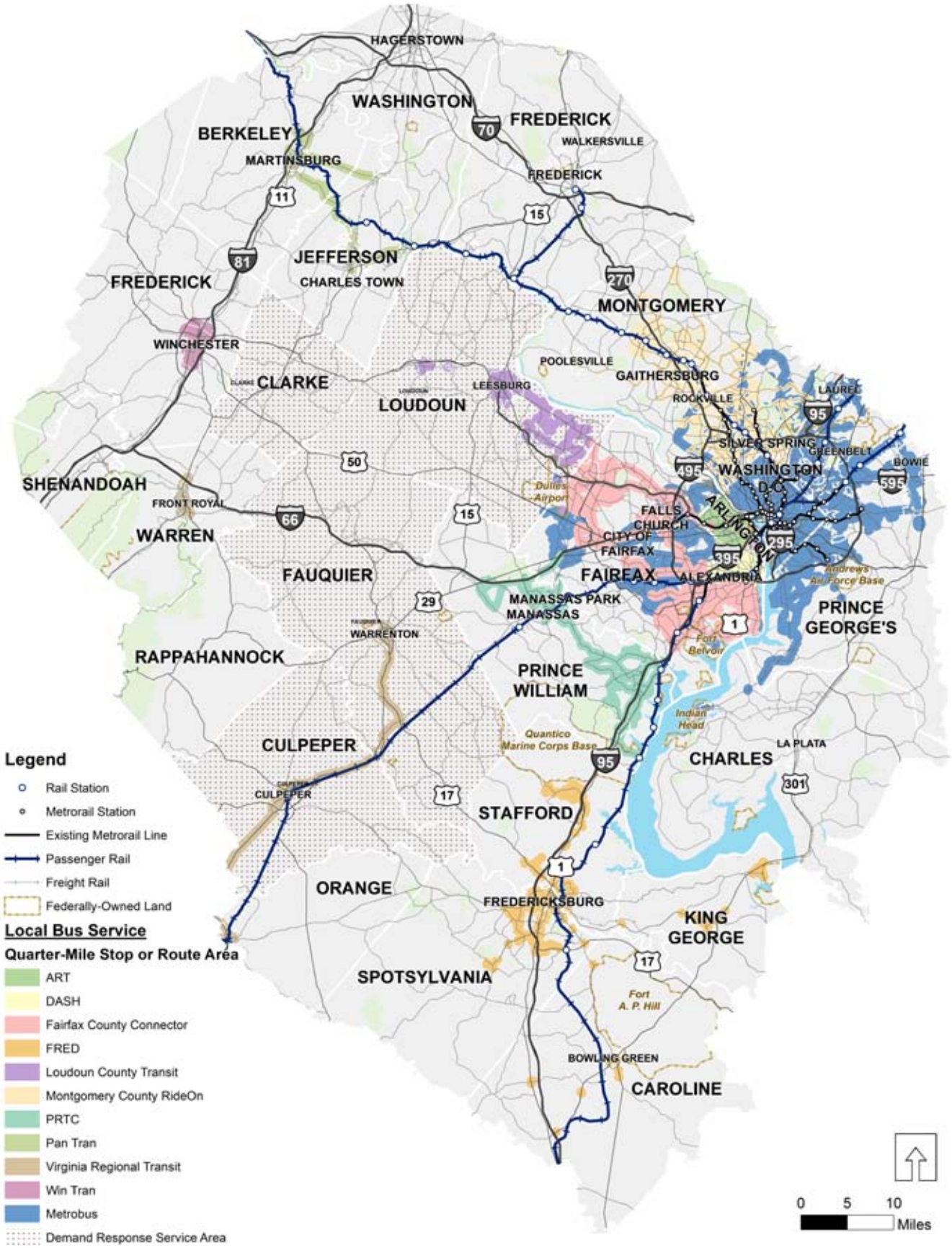


Figure 3.2: Local Transit Service Coverage

Commuter Rail and Amtrak Service

The Super NoVa region is served by a network of commuter and intercity rail lines. These are briefly summarized in the following:

Virginia Railway Express

Virginia Railway Express (VRE) train. Source: VRE.

VRE commuter rail service is operated by the Northern Virginia Transportation Commission (NVTC) and the PRTC. There are two commuter rail lines, one that originates in Fredericksburg, and the other in Manassas. Service is provided on weekdays during peak hours. Many of the stations include park-and-ride lots and bus bays for connecting local and regional bus services. Fiscal year 2010 ridership was more than 4 million passenger trips.

Maryland Area Regional Commuter

MARC train service in Maryland and in Berkeley and Jefferson Counties, WV. There are three lines that operate in the Super NoVa study area (Penn, Camden, and Brunswick). Fiscal year 2010 ridership was nearly 8.1 million passenger trips.

Amtrak

Amtrak operates seven long distance and two short distance intercity rail lines within the Super NoVa region (Cardinal, Carolinian, Crescent, Northeast Regional, Palmetto, Silver Meteor, Silver Star, and Capitol Limited). All lines converge at Union Station in Washington, D.C. Stations located within the Virginia portion of the Super NoVa region are Alexandria, Burke Center, Manassas, Culpeper, Franconia-Springfield, Woodbidge, Quantico, and Fredericksburg. The I-95 and I-270 commuting corridors are well-served by commuting and intercity rail, while the I-66 corridor is less served.

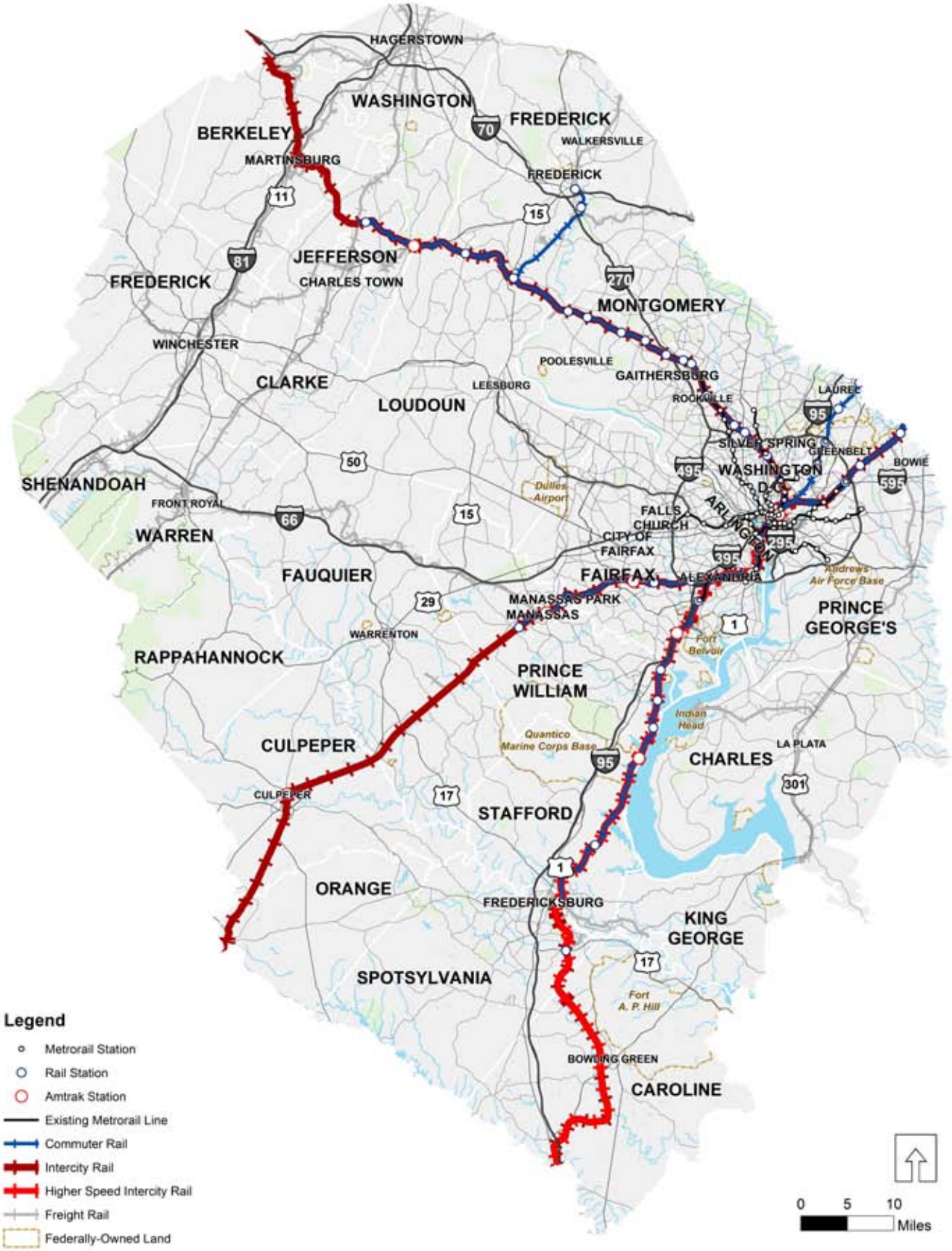


Figure 3.3: Commuter Rail and Amtrak Service Coverage

REGIONAL TRANSIT SERVICE SUMMARY

Table 3.1 presents a summary of existing available transit services by jurisdiction within the Super NoVa region. The table identifies service type as local route, rural demand response, commuter/express, reverse commute from the inner area, intercounty, and rail service. Some services are shown as "limited". This typically reflects limited service with regards to geographic coverage (e.g., local route service only available within the Town of Warrenton in Fauquier County), and/or service levels. **Figure 3.3** shows existing commuter rail and Amtrak service.

Table 3.1: Existing Available Transit Services by Jurisdiction

Subarea	Jurisdiction	Local Route Service	Rural Demand Response	Commuter Express Service	Reverse Commute from Inner	Intercounty Service	Rail Service
Inner	Arlington County, VA	●	NA	●	●	●	●
	Fairfax County., VA	●	NA	●	●	●	●
	City of Alexandria, VA	●	NA	●	●	●	●
	City of Fairfax, VA	●	NA	●	●	●	●
	City of Falls Church, VA	●	NA	●	●	●	●
	District of Columbia	●	NA	●	●	●	●
Northwest	Loudoun County, VA	●	●	●	◖	◖	○
	Clarke County, VA	○	◖	○	○	◖	○
	Frederick County, VA	◖	○	○	○	○	○
	Jefferson County, WV	◖	◖	○	○	●	●
	Berkeley County, WV	●	◖	○	○	●	●
West	Fauquier County, VA	◖	○	◖	○	◖	○
	Culpeper County, VA	◖	○	◖	○	◖	◖
	Orange County, VA	◖	○	○	○	◖	○
	Warren County, VA	◖	○	○	○	○	○
	Rappahann. County, VA	○	○	○	○	○	○
	Shenandoah County, VA	○	○	○	○	○	○
South	Prince William County, VA	●	○	●	◖	◖	●
	Stafford County, VA	●	○	●	○	●	●
	Spotsylvania County, VA	●	○	●	○	●	●
	Caroline County, VA	◖	○	○	○	◖	○
	King George County, VA	◖	○	○	○	◖	○
Maryland	Washington County, MD	●	○	●	○	○	○
	Frederick County, MD	●	○	●	○	◖	●
	Montgomery County, MD	●	○	●	●	●	●
	Prince George's County, MD	●	○	●	●	●	●
	Charles County, MD	●	○	●	○	○	○

● Service Available ◖ Service Limited ○ No Service

Metrorail

WMATA operates five heavy rail transit lines in the Washington, D.C. metropolitan area (Red, Orange, Blue, Green, and Yellow). In addition to the existing five Metrorail lines, the Silver Line is scheduled to begin operation in late 2013 or early 2014. Service is provided 7 days a week, and many of the suburban stations include park-and-ride lots and bus bays for connecting local and regional bus services. Rail frequencies are generally 6 minutes in the peak periods and 12 minutes in the midday period. Fiscal Year 2010 Metrorail ridership was more than 287 million passenger trips. **Figure 3.4** shows existing Metrorail service. The existing Metrorail system has some capacity constraints which are discussed in Chapter 5.

Park-and-Ride Lots

Commuters in the Super NoVa region who do not have direct access to transit can drive to park-and-ride lots to access transit and TDM programs and services. Some park-and-ride lots are serviced by transit, while others allow opportunities for carpooling or vanpooling. Park-and-ride lots tend to be concentrated along major commuting corridors where connections to commuter bus and/or rail service are available. **Figure 3.5** shows park-and-ride lots in the study area, and which of those lots are served by transit.

Ridesharing

A significant part of the program for the majority of TDM agencies/transportation management associations (TMA), ridematching services include managing a database of potential drivers and riders, education of support services, and follow-up. Some TDM agencies/TMAs support or provide vanpool subsidies to help start or maintain vanpools. TDM agencies also support slugging and casual carpooling, especially in the I-95 corridor. **Figure 3.6,** based on a technical memorandum study prepared for DRPT in July 2011, shows existing vanpools in the study area.

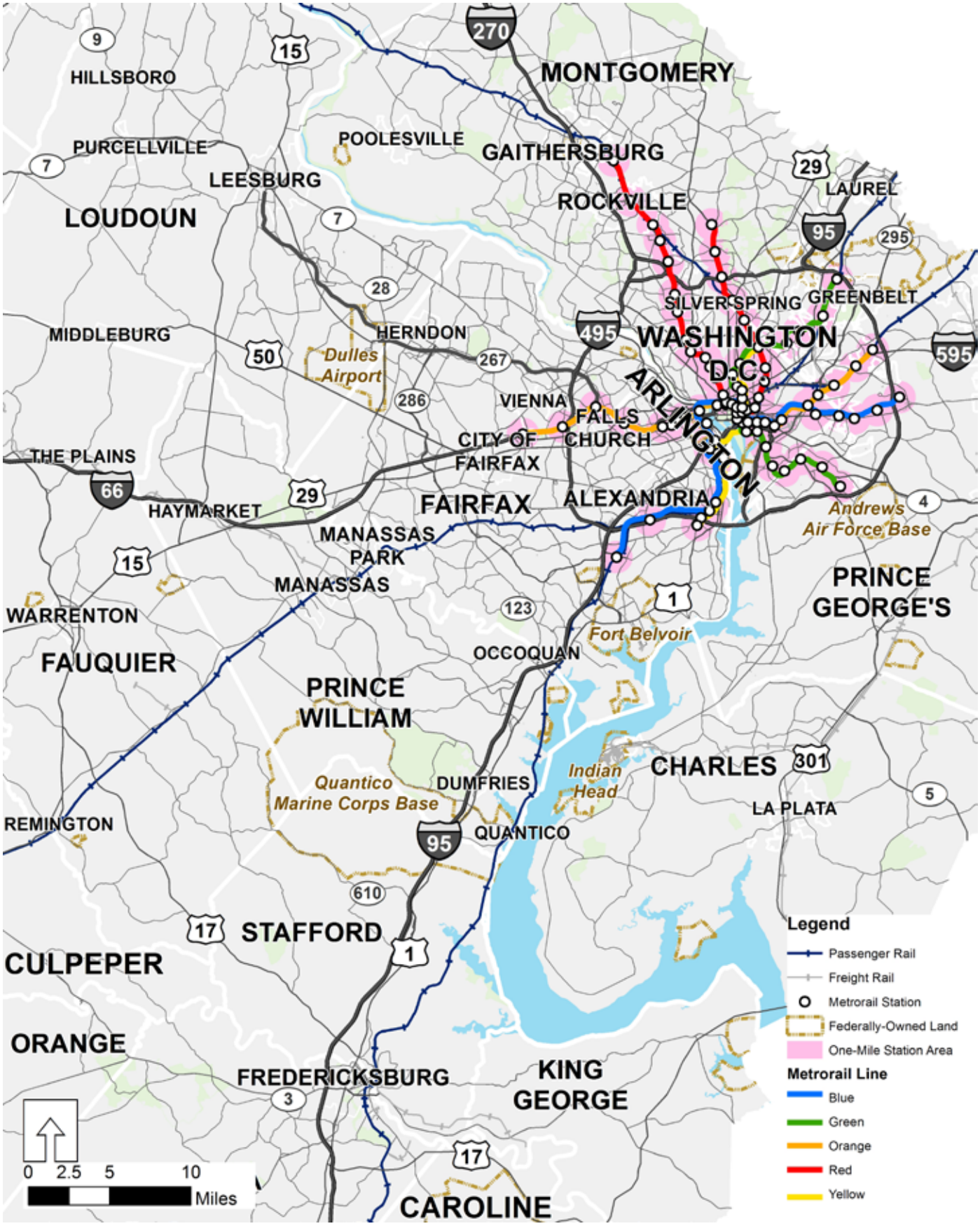


Figure 3.4: Metrorail Coverage

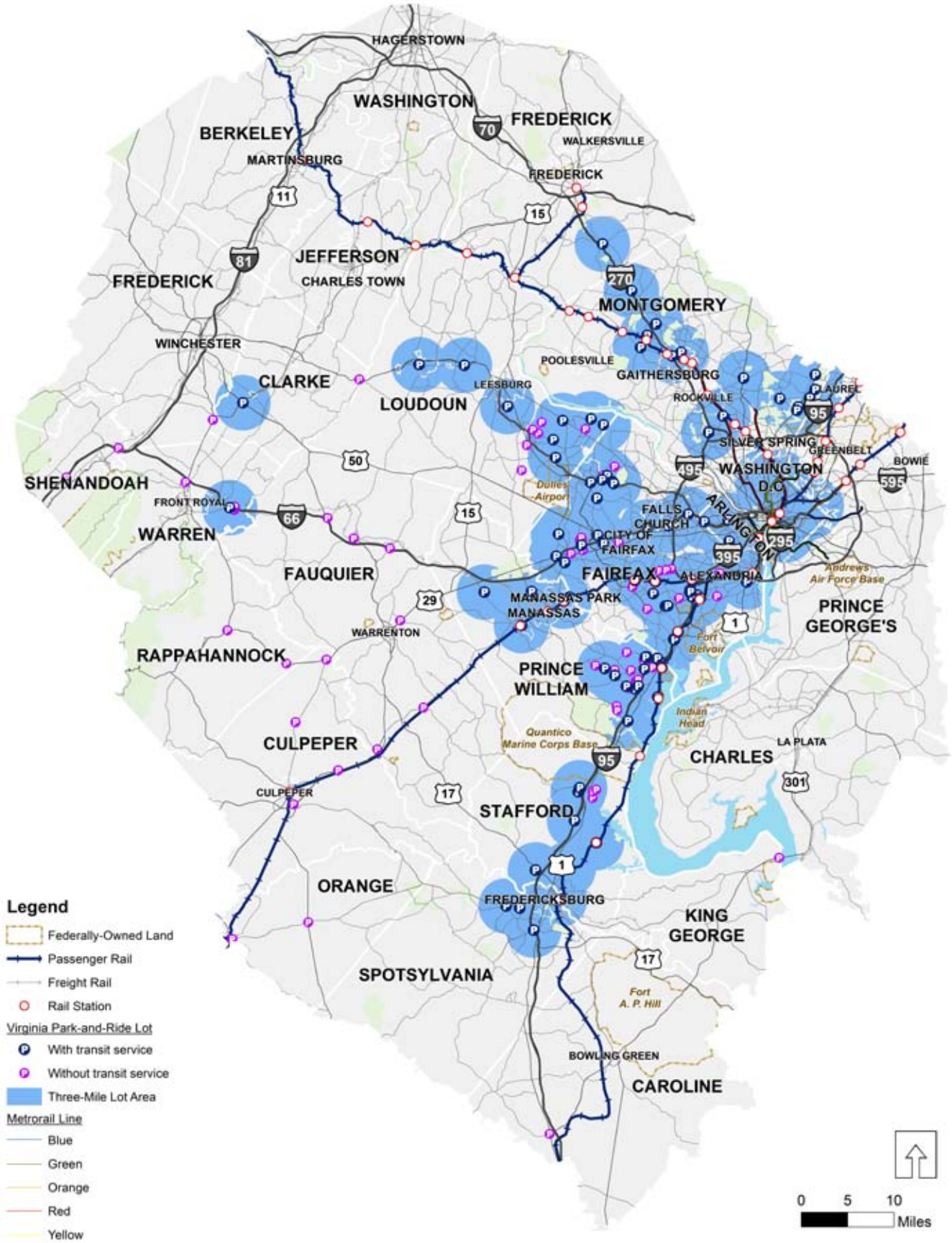


Figure 3.5: Park-and-Ride Lots

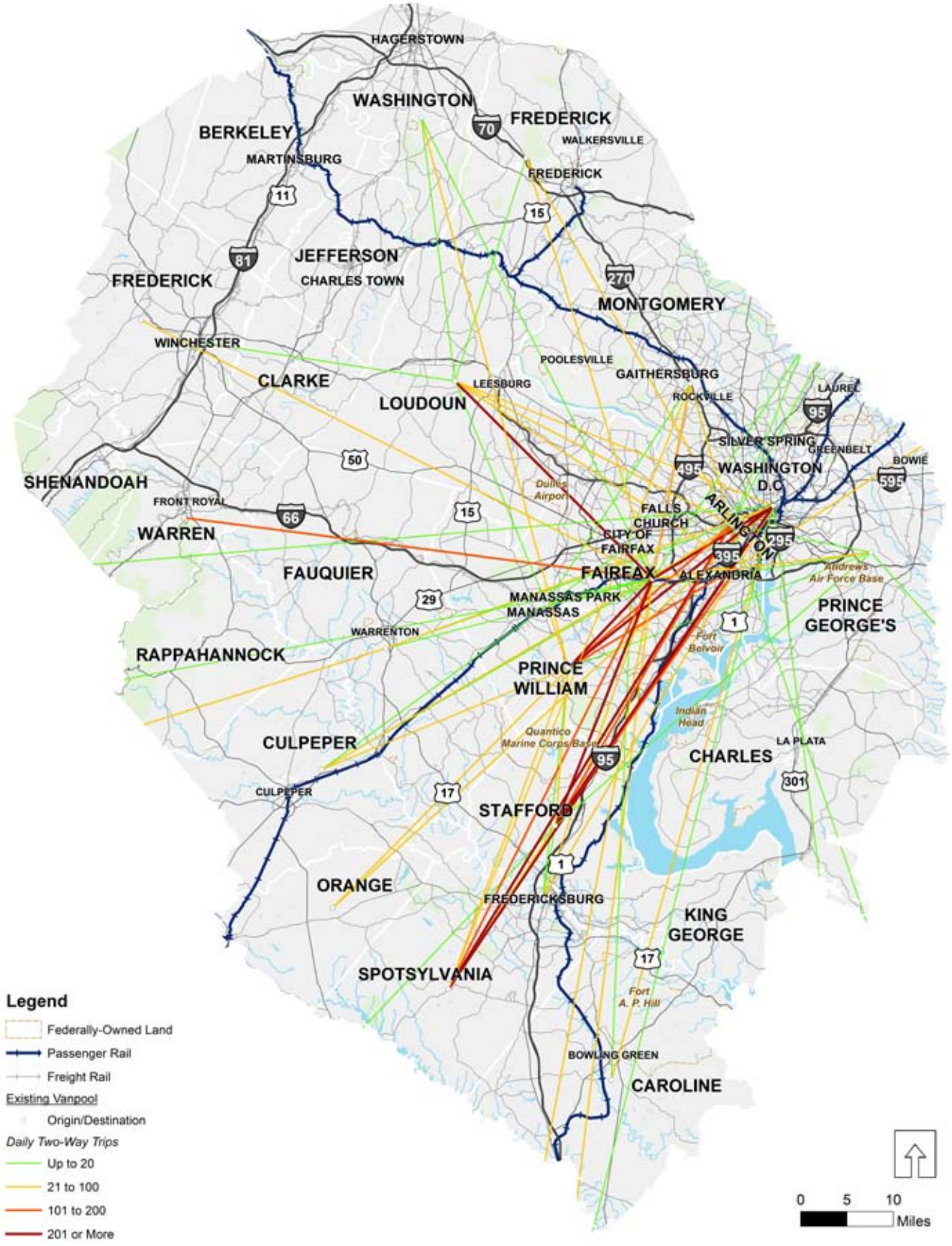


Figure 3.6: Vanpools

TDM PROGRAMS

vRide corporate vanpooling service. Source: Fairfax County.

TDM DEFINED

TDM programs go back to World War II when gasoline rationing spawned carpooling as a way to save fuel. After the war, programs encouraging carpooling went away until the oil and energy crisis of the 1970's. It was during the 1970's that ridesharing programs, as they were called, began to emerge in the Super NoVa study area. The number and magnitude of ridesharing programs grew throughout the 1980s and 1990s to manage increasing traffic congestion and address air quality issues. In the late 1990s, rideshare programs began to provide more than just carpool and vanpool matching for commuting to work. Today, TDM programs play a key roll in generating transit ridership and provide a variety of services to all types of travelers and employers.

By definition, TDM is the use of programs and services to make the entire transportation system [roads, high-occupancy vehicle (HOV)/high-occupancy toll (HOT) lanes, buses, trains, automobiles, etc.] more efficient. Greater efficiency of our transportation system is achieved by providing travelers with effective choices to improve travel reliability. It is through the application of TDM programs, projects, and policies that travel demand is reduced and/or redistributed through the change of one's mode of travel, time of travel, or travel route, or through the elimination of the trip altogether.

TDM PROGRAMS

TDM services are provided in the study area through a unique partnership between the DRPT, VDOT, MPO, planning district commissions, TMAs, and city and county governments. Federal and private agencies provide services

that complement these ongoing programs. Temporary or special services are often provided through transportation management programs.

As with the Transit System Operation section, the existing TDM programs have been organized into five geographic areas. A few programs cover the entire Super NoVa study area or all of Virginia. These programs are noted below in the following categories: 1) Inner subarea TDM programs, 2) Northwest subarea TDM programs, 3) West subarea TDM programs, 4) South subarea TDM programs, and 5) Maryland subarea TDM programs.

All of the TDM programs operating in the Super NoVA region are members of a regional network called Commuter Connections. MWGOG coordinates the regional activities of the Commuter Connections network. Regional activities include regional marketing, Bike to Work Day, Car Free Day, and a Pool Rewards program that provides financial incentives to new carpools and vanpools. MWCOG also operates and maintains a central online ridematching system/database for network members and the public, and operates a regional Guaranteed Ride Home (GRH) program. The GRH program provides commuters who carpool, vanpool, bike, or use transit to commute to work with a ride home when a personal emergency or illness occurs and the commuter must unexpectedly leave work early, or when a commuter unexpectedly has to stay late at work.

DRPT also provides regional and statewide services. Through the Telework!VA program, DRPT provides resources to employers and employees on how to establish and manage a telework program and how to take advantage of Virginia's telework tax credit administered by Department of Taxation. DRPT also provides Try Transit Week, Amtrak Virginia, and guidance to state agencies on Commuter Choice transit and vanpool benefits.

Federal programs have a significant impact in the Super NoVA region. Federal agencies have established employee transportation coordinators and telework coordinators to help employees with their commute and encourage the use of telework, transit, carpooling, vanpooling, and biking to work. These agency coordinators and federal policies, including the federal agency commuter benefit program and the Telework Enhancement Act of 2010, play a considerable role in managing traffic congestion and increasing transit, carpool, vanpool, and telework usage.

Inner Subarea TDM Programs

This subarea has the richest variety of TDM services. Employer services, telework support, Commuter Connections GRH program, ridematching, vanpool support, and bike/walk programs are offered by TDM agencies in this subarea. Carsharing, bikesharing, and slugging are provided or supported by private agencies.

Arlington County

Arlington County Commuter Services (ACCS) provides assistance to employers, employees, residents, travelers, and developers in the county. ACCS operates two retail stores—the Commuter Store, which sells bus and rail passes and tickets for all transit services in the region and provides transit schedules, maps, ridematching and trip planning, and the Mobile Commuter Store, which is a store on wheels that serves several employer locations in the region. Capital Bikeshare operates 286 bicycles at 44 bike stations in Arlington where the public can rent a bike for a few minutes or hours. Bikesharing programs like this help bridge the "last mile" between transit station or bus stop and the office.

City of Alexandria

Local Motion is Alexandria's TDM program operated by the Department of Transportation & Environmental Services and serves residents, employers, workers, and visitors. Local Motion promotes transit and commute alternatives, conducts outreach to employers, and operates the Old Town Transit Shop that provides travel information and sells transit passes and tickets. As of October 2012, Capital Bikeshare operates at eight bike stations in the city where the public can rent a bike for a few minutes or hours.

Fairfax County

RideSources provides ridematching, commute options information, and park-and-ride lot information; promotes transit; and provides assistance to employers and employees. RideSources is a program of the county's DOT, which also operates four Connector Stores that provide transit schedules, brochures, fare media, and information about the many different traveling options in the Northern Virginia region. Staff at the Connector Stores can assist in planning efficient travel itineraries for the commuter, tourist, or resident.

The Dulles Area Transportation Association (DATA) promotes commute options to its member employers, workers, and residents in the Dulles airport area. DATA promotes telework and provides ridematching information in English and Spanish.

Washington, D.C.

goDCgo is an initiative of DDOT. goDCgo is an online resource that promotes alternatives to driving alone to employees, residents, and visitors. goDCgo's employer services consultants work with businesses in the District to encourage employees to use alternatives to driving alone. As of October 2012, Capital Bikeshare operates more than 1,000 bicycles at 137 bike stations for rental by the public.

Regional Programs

Through the Commuter Connections network program, MWCOG operates a regional GRH program available to commuters that work in this subarea. GRH provides up to four rides per year to a commuter's home or commuter parking lot if the commuter uses a carpool, vanpool, transit, or bikes to work. Commuters can use GRH when one of life's unexpected emergencies arises, such as a personal illness or sick child, or when they have to unexpected work overtime. MWCOG also operates a regional Pool Rewards program that offers $200 per month for newly-formed vanpools and $2 per day up to a maximum of $130 to each new carpooler. Clean Air Partners operates Air Quality Action Days which promotes the use of transit during the summertime when ground level ozone and pollution create unhealthy air.

Northwest Subarea TDM Programs

Employer services, telework support, GRH, ridematching, and vanpool support are offered most commonly by TDM agencies in this subarea.

Loudoun County

The county's Office of Transportation Services promotes transit services, carpooling, and vanpooling and provides commute options and telework information to residents, employers, and employees.

Northern Shenandoah Valley

The RideSmart program provided by the NSVRC provides ridmematching; promotes commuting options; and provides information on park-and-ride lots, telework, vanpool start-up assistance, GRH program, transit services, and MARC commuter train.

West Subarea TDM Programs

Ridematching, vanpool start-up assistance, telework support, GRH, and park-and-ride lot information are the most commonly offered TDM services in this subarea.

Culpeper, Fauquier, Orange, and Rappahanock Counties

Commuter Services, a commuting solutions program by the RRRC, promotes the use of high-occupancy travel modes and provides residents with carpool, vanpool matching, vanpool start-up assistance, park-and-ride lot, commuter bus, GRH program, and telework information.

Shenandoah and Warren Counties

RideSmart is a program provided by the NSVRC. RideSmart provides ridmematching; promotes commuting options; and provides information on park-and-ride lots, telework, vanpool start-up assistance, GRH program, transit services, and MARC commuter train.

South Subarea TDM Programs

Employer services, telework support, ridematching, vanpool support, GRH, and park-and-ride lot information are the most commonly offered TDM services in this subarea. Slugging is provided as an independent service.

Prince William County

PRTC operates the county's OmniMatch TDM program which provides ridematching and vanpool assistance; promotes transit, carpooling, and vanpooling; and assists employers and their employees with commute options.

Spotsylvania, Stafford, King George, and Caroline Counties and City of Fredericksburg

GWRC operates GWRideConnect.

Maryland Subarea TDM Programs

Charles County

The Regional Ridesharing Program of Southern Maryland helps the residents of southern Maryland and those employed in the region to commute to work using carpool, vanpool, or commuter express bus services. The program is operated by the Tri-County Council for Southern Maryland.

Frederick County

TransIT Services provides trip planning, carpool/vanpool matching, information on transportation options and telework, and vanpool assistance.

Montgomery County

TDM services are delivered by Montgomery County Commuter Services and two TMAs. These agencies offer extensive employer outreach and commuter information programs, and the county operates a commuter store that sells transit passes and tickets.

Prince Georges County

The county's Department of Public Works and Transportation operates the RideSmart program. RideSmart staff works with county employers, their employees, and residents to provide carpool/vanpool matching and vanpool financial assistance and promote and provide information on transit options, biking, park-and-ride locations, telework, vanpooling, and the regional GRH program.

Detailed profiles of individual Virginia TDM agencies listing existing services and short- and long-range plans are included in the **Appendix.**

TRANSPORTATION MANAGEMENT PROGRAMS

Recent construction projects have provided significant improvements to services through transportation management programs (TMP) such as the I-495 Capital Beltway High Occupancy Toll Lanes TMP, Dulles Metrorail TMP, and the Base Realignment and Closure (BRAC) Act TMP.

The I-495 Capital Beltway HOT Lanes TMP had an aggressive business outreach program to inform employees of alternate commute solutions. As a result of this TMP, Tysons Express, a new bus service, was implemented between Woodbridge and Tysons to provide a new commute option. Employer assistance also was provided to develop and support telework programs, alternate work schedules, commute incentives, ridematching, GRH, and shuttle services.

The Dulles Metrorail TMP had a focused employer services technical assistance team, telework incentives and technical assistance, ridematching, GRH, and commute incentives. As a result of this TMP, the Tysons Express bus service was implemented between Leesburg and Tysons and the Loudoun County park-and-ride lot was expanded.

The BRAC Act TMPs supported telework programs, alternative work schedules, rideshare websites, shuttle service, local transit, and a pilot dynamic ridematching program.

POPULATION AND EMPLOYMENT

Capital bikeshare kiosk and bikes in Crystal City in Arlington County, VA.

Demographic considerations are important in understanding where transit services are needed and will be supported. The following section describes the characteristics of the people that live and work in the Super NoVa region.

POPULATION

Population data for all jurisdictions was obtained from the 2010 United States Census and confirmed by the following regional planning agencies[1]:

- MWCOG
- GWRC
- WinFred MPO
- HEPMPO

The population of the jurisdictions that make up Super NoVa was approximately 6 million people in 2010. **Table 3.2** shows the population by jurisdiction.

Within the Super NoVa region, the population is most concentrated in the areas in and around the region's inner area and its major highway corridors. As distance from the inner area increases, population density decreases and is primarily confined to incorporated cities and towns or unincorporated places. **Figure 3.7** and **Figure 3.8** show the population density in people per square mile of the Super NoVa region and the inner area, respectively.

[1] TAZ data were obtained from the following metropolitan planning organizations (MPO): Metropolitan Washington Council of Governments (MWCOG), Fredericksburg Area MPO, Winchester-Frederick County MPO, and the Hagerstown/Eastern Panhandle MPO. Where models overlapped, the MWCOG model was used.

Table 3.2: 2010 Population by Jurisdiction

By Name		By Rank	
Jurisdiction Name	2010 Population	Jurisdiction Name	2010 Population
Arlington County, VA	208,000	Fairfax County, VA	1,082,000
Berkeley County, WV	104,000	Montgomery County, MD	972,000
Caroline County, VA	29,000	Prince George's County, MD	863,000
Charles County, MD	147,000	Washington, D.C.	602,000
City of Alexandria, VA	140,000	Prince William County, VA	402,000
City of Fairfax, VA	23,000	Loudoun County, VA	312,000
City of Falls Church, VA	12,000	Frederick County, MD	233,000*
City of Fredericksburg, VA	24,000	Arlington County, VA	208,000
City of Manassas Park, VA	14,000	Charles County, MD	147,000*
City of Manassas, VA	38,000	Washington County, MD	147,000
City of Winchester, VA	26,000	City of Alexandria, VA	140,000
Clarke County, VA	17,000	Stafford County, VA	129,000
Culpeper County, VA	47,000	Spotsylvania County, VA	122,000
Fairfax County, VA	1,082,000	Berkeley County, WV	104,000
Fauquier County, VA	65,000	Frederick County, VA	78,000
Frederick County, MD	233,000*	Fauquier County, VA	65,000
Frederick County, VA	78,000	Jefferson County, WV	53,000
Jefferson County, WV	53,000	Culpeper County, VA	47,000
King George County, VA	24,000	Shenandoah County, VA	42,000*
Loudoun County, VA	312,000	City of Manassas, VA	38,000
Montgomery County, MD	972,000	Warren County, VA	38,000
Orange County, VA	33,000*	Orange County, VA	33,000*
Prince George's County, MD	863,000	Caroline County, VA	29,000
Prince William County, VA	402,000	City of Winchester, VA	26,000
Rappahannock County, VA	7,000	City of Fredericksburg, VA	24,000
Shenandoah County, VA	42,000*	King George County, VA	24,000
Spotsylvania County, VA	122,000	City of Fairfax, VA	23,000
Stafford County, VA	129,000	Clarke County, VA	17,000
Warren County, VA	38,000	City of Manassas Park, VA	14,000
Washington County, MD	147,000*	City of Falls Church, VA	12,000
Washington, D.C.	602,000	Rappahannock County, VA	7,000
TOTAL	6,033,000	TOTAL	6,033,000

* Entire county is not located within the Super NoVa region. Population reflects entire county.
Source: US Census Bureau – 2010 Census

Transportation Disadvantaged Population

Transportation disadvantaged populations include groups of people that have potential demographic characteristics that suggest a predisposition toward transit usage. Based on national experience, the following population subgroup characteristics have the potential to contribute to need for transit services:

- High Minority Population Percentages
- High Proportions of Persons Aged 65 and Older
- High Proportions of Linguistic Isolation
- Large Household Sizes
- Low Automobile Availability
- Low Income

Data for transportation disadvantaged populations was obtained from the US Census Bureau's 2010 5-year American Community Survey (ACS) at the census tract level. To analyze the data for transportation disadvantaged populations, an index was created that compares each tract against the region's average. For each of the six factors, a positive or negative score was given to each tract based on its deviation from that factor's mean. The six scores were summed to create the final index.

Data for transportation disadvantaged populations was obtained from the US Census Bureau's 2010 5-year ACS at the census tract level. To analyze the data for transportation disadvantaged populations, an index was created that compares each tract against the region's average. For each of the six factors, a positive or negative score was given to each tract based on its deviation from that factor's mean. The six scores were summed to create the final index. The tracts with the largest index scores represent the areas with the highest potential need for transit. **Figure 3.9** and **Figure 3.10** show the locations of transportation disadvantaged populations within Virginia.[2]

Relative to the region, transportation disadvantaged populations appear to be the most prominent along the major commuting corridors and in some of the more rural areas in the southwest portion of the study area. It is worth noting that the size of the census-defined divisions in rural areas, where the divisions are large due to low population densities, can often accentuate the perception of transit need. Two examples of this over-emphasis include the predominantly rural areas of Caroline and Culpeper Counties shown in **Figure 3.9** and **Figure 3.10**.

2 To accurately represent transportation disadvantaged populations in Virginia, data from Maryland, Washington, D.C., and West Virginia was excluded from the index.

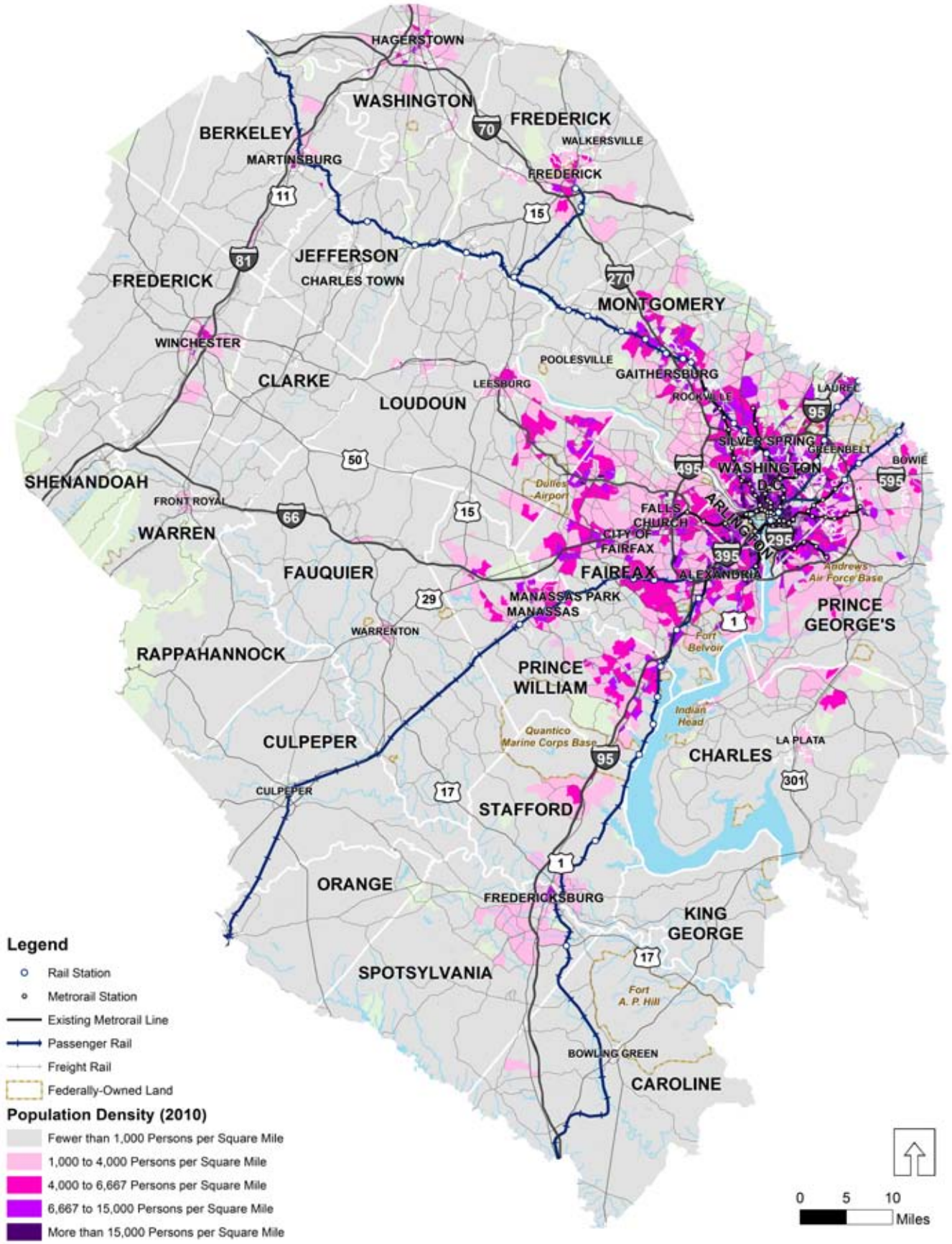


Figure 3.7: 2010 Population Density

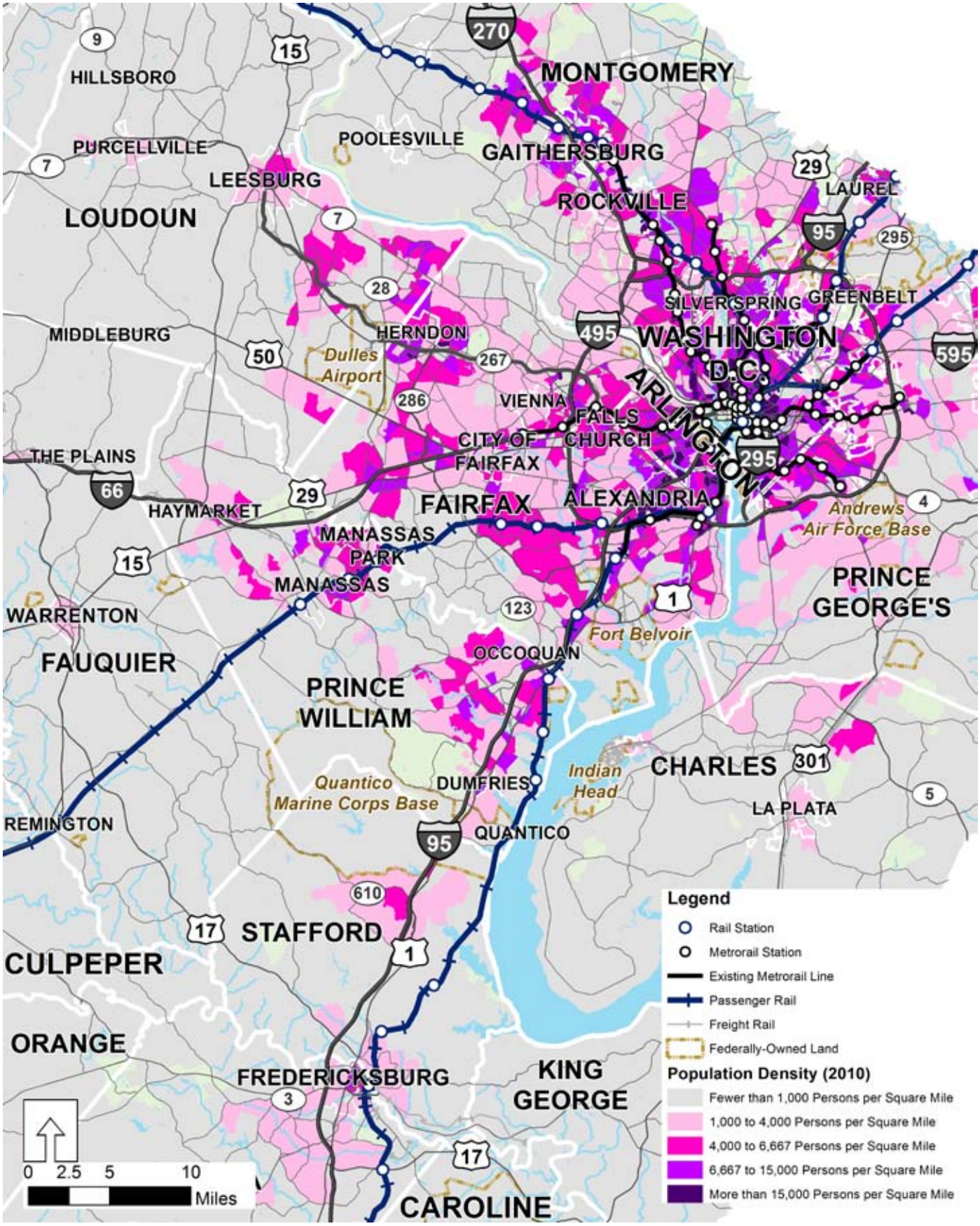


Figure 3.8: 2010 Population Density – Inner Area

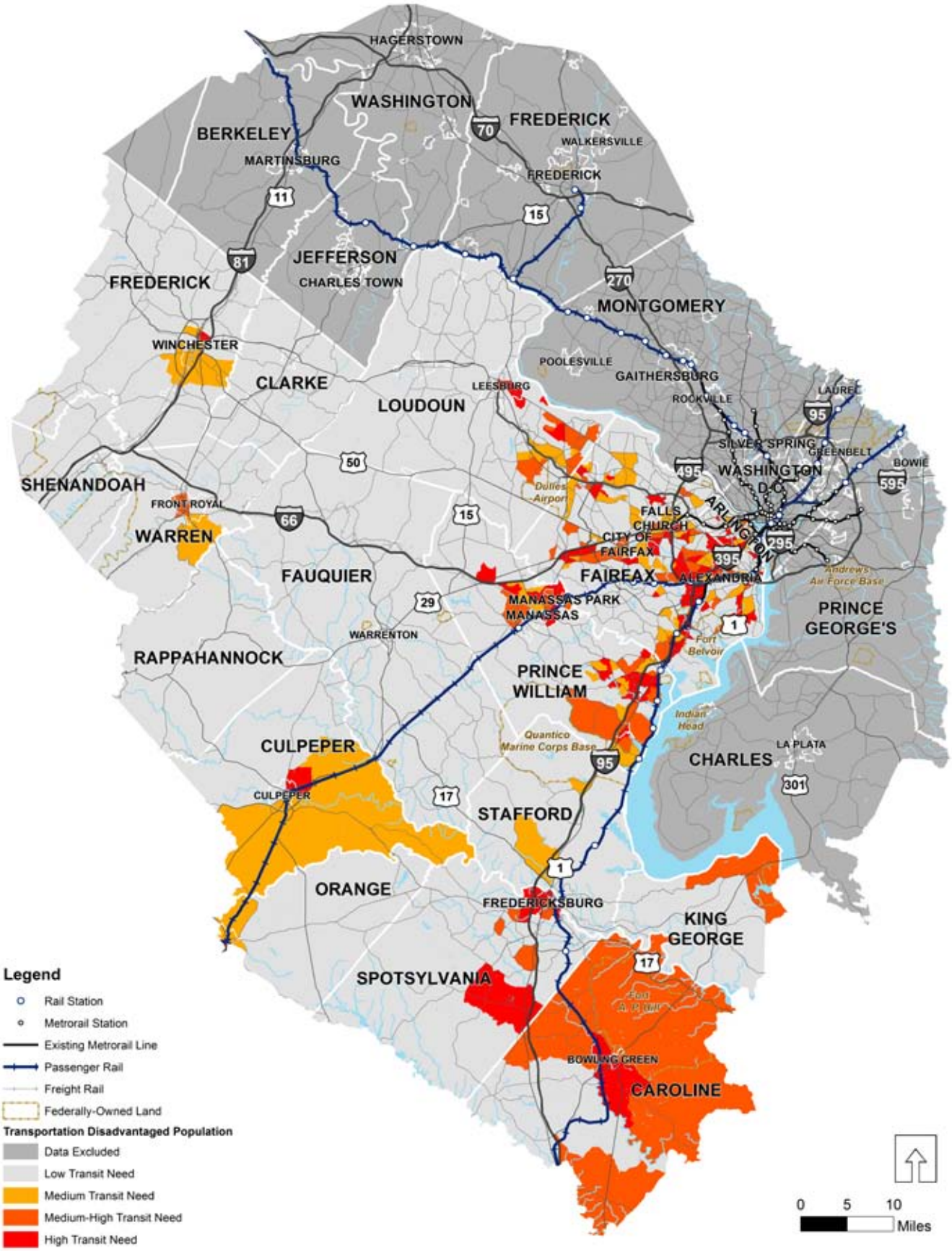


Figure 3.9: 2010 Transportation Disadvantaged Populations

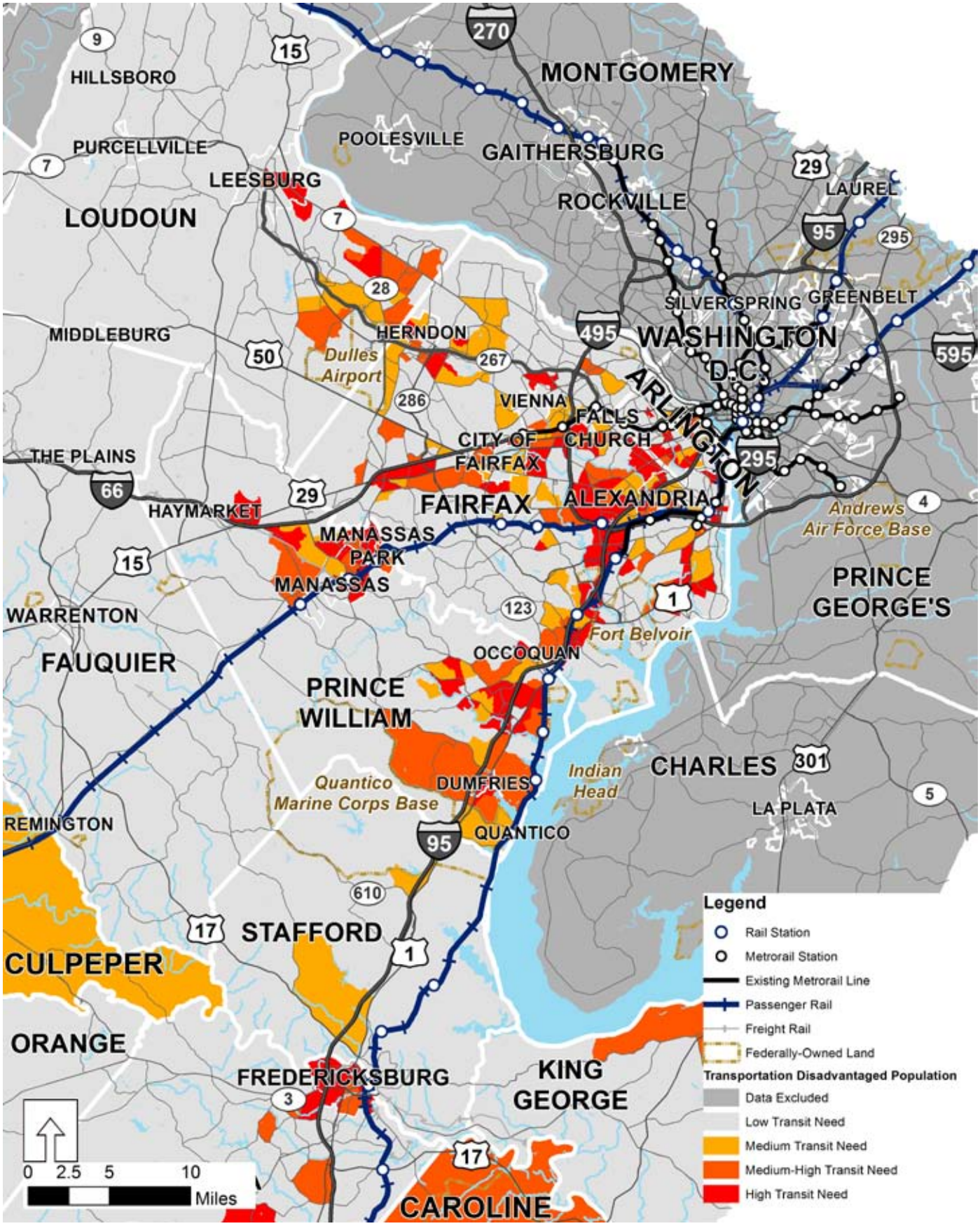


Figure 3.10: 2010 Transportation Disadvantaged Populations — Inner Area

EMPLOYMENT

For the purposes of the Super NoVa study, employment refers to the number of people whose jobs are located in the jurisdiction. Employment data for each jurisdiction was obtained from regional planning agencies where possible. For jurisdictions that are not part of an MPO, 2010 estimates were obtained from the Virginia Employment Commission. According to data obtained for this study, approximately 3.5 million people worked in the Super NoVa region in 2010. **Table 3.3** shows employment estimates by jurisdiction.

Employment density was calculated based on the planning agency data where available. Jurisdictions that are not part of an MPO were analyzed on the county level. Employment in the Super NoVa region is most dense in the inner area and in suburban activity centers such as Tysons Corner and areas along the Dulles Toll Road and I-270. In the western and southern portions of the region, employment densities are lower. **Figure 3.11** and **Figure 3.12** show employment density in people per square mile for the Super NoVa region and inner area, respectively.

Table 3.3: 2010 Employment by Jurisdiction

By Name		By Rank	
Jurisdiction Name	2010 Employment	Jurisdiction Name	2010 Employment
Arlington County, VA	205,000	Washington, D.C.	786,000
Berkeley County, WV	44,000	Fairfax County, VA	641,000
Caroline County, VA	7,000	Montgomery County, MD	506,000
Charles County, MD	62,000	Prince George's County, MD	358,000
City of Alexandria, VA	109,000	Arlington County, VA	205,000
City of Fairfax, VA	27,000	Loudoun County, VA	144,000
City of Falls Church, VA	11,000	Frederick County, MD	139,000
City of Fredericksburg, VA	28,000	Prince William County, VA	114,000
City of Manassas Park, VA	5,000	City of Alexandria, VA	109,000
City of Manassas, VA	25,000	Washington County, MD	79,000
City of Winchester, VA	30,000	Charles County, MD	62,000
Clarke County, VA	5,000	Berkeley County, WV	44,000
Culpeper County, VA	14,000	Stafford County, VA	42,000
Fairfax County, VA	641,000	Spotsylvania County, VA	38,000
Fauquier County, VA	22,000	City of Winchester, VA	30,000
Frederick County, MD	139,000	City of Fredericksburg, VA	28,000
Frederick County, VA	24,000	City of Fairfax, VA	27,000
Jefferson County, WV	17,000	City of Manassas, VA	25,000
King George County, VA	9,000	Frederick County, VA	24,000
Loudoun County, VA	144,000	Fauquier County, VA	22,000
Montgomery County, MD	506,000	Jefferson County, WV	17,000
Orange County, VA	8,000	Culpeper County, VA	14,000
Prince George's County, MD	358,000	Shenandoah County, VA	13,000
Prince William County, VA	114,000	Warren County, VA	11,000
Rappahannock County, VA	1,000	City of Falls Church, VA	11,000
Shenandoah County, VA	13,000	King George County, VA	9,000
Spotsylvania County, VA	38,000	Orange County, VA	8,000
Stafford County, VA	42,000	Caroline County, VA	7,000
Warren County, VA	11,000	Clarke County, VA	5,000
Washington County, MD	79,000	City of Manassas Park, VA	5,000
Washington, D.C.	786,000	Rappahannock County, VA	1,000
TOTAL	**3,524,000**	**TOTAL**	**3,524,000**

Sources: Regional Travel Demand Models (MWCOG, FAMPO, Win-Fred, and HEPMPO); Virginia Employment Commission.

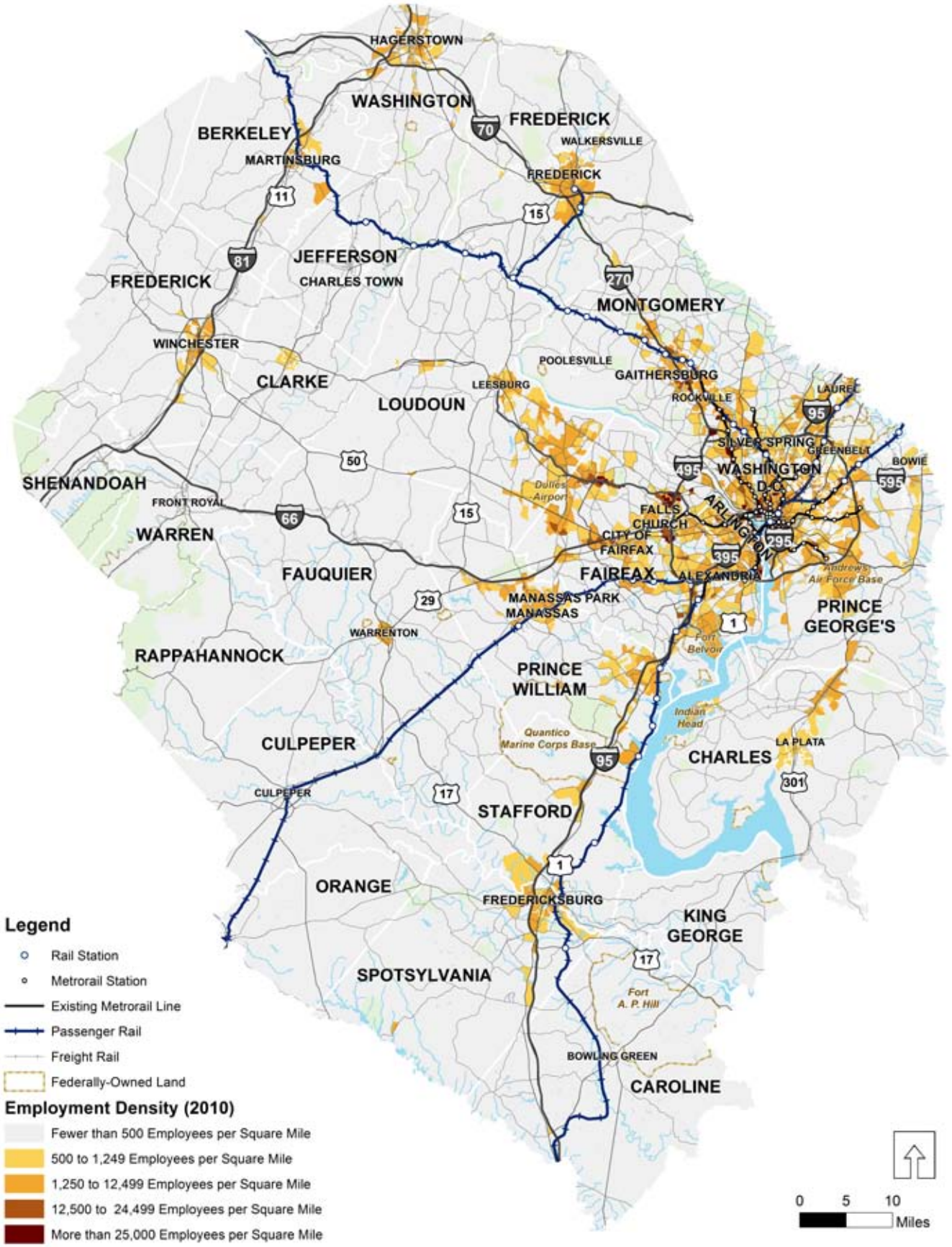


Figure 3.11: 2010 Employment Density

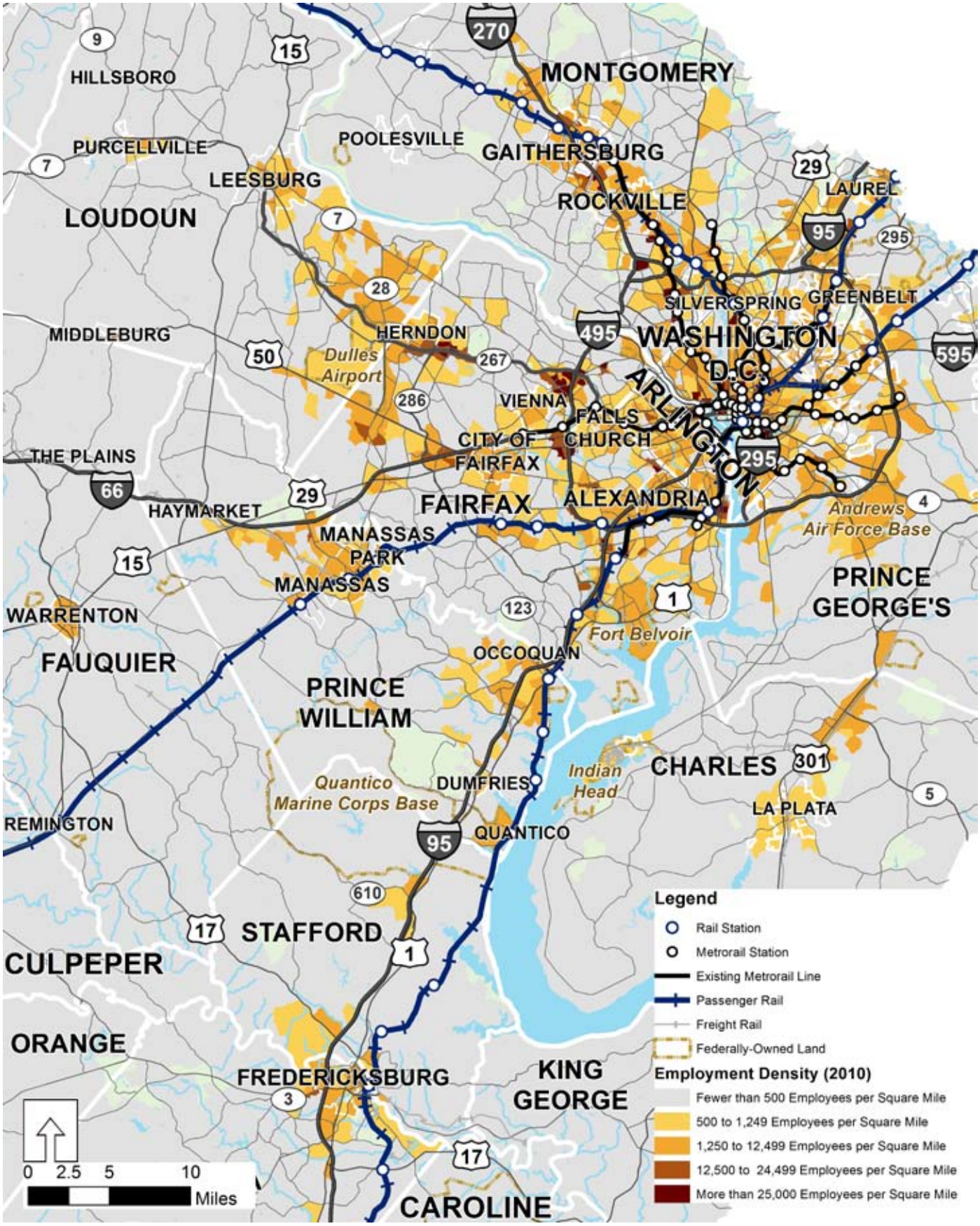


Figure 3.12: 2010 Employment Density – Inner Area

ACTIVITY

Activity in the context of the Super NoVa study was defined as the combination of population and employment. Activity analysis helps to reveal areas with a mixture of population and employment that could otherwise be missed by looking at population and employment separately. Activity density was calculated for each area by dividing the sum of the population and employment data by the acreage.

Table 3.4 shows a summary of activity by jurisdiction. The average activity density for the Super NoVa region in 2010 was approximately 1.8 jobs and people per acre. **Figure 3.13** and **Figure 3.14** show activity density in people per square acre for the Super NoVa region and inner area, respectively.

Table 3.4: 2010 Activity by Jurisdiction

By Name		By Rank	
Jurisdiction Name	2010 Activity	Jurisdiction Name	2010 Activity
Arlington County, VA	413,000	Fairfax County, VA	1,723,000
Berkeley County, WV	148,000	Montgomery County, MD	1,478,000
Caroline County, VA	36,000	Washington, D.C.	1,388,000
Charles County, MD	209,000	Prince George's County, MD	1,221,000
City of Alexandria, VA	249,000	Prince William County, VA	516,000
City of Fairfax, VA	50,000	Loudoun County, VA	456,000
City of Falls Church, VA	23,000	Arlington County, VA	413,000
City of Fredericksburg, VA	52,000	Frederick County, MD	372,000
City of Manassas Park, VA	19,000	City of Alexandria, VA	249,000
City of Manassas, VA	63,000	Washington County, MD	226,000
City of Winchester, VA	56,000	Charles County, MD	209,000
Clarke County, VA	22,000	Stafford County, VA	171,000
Culpeper County, VA	61,000	Spotsylvania County, VA	160,000
Fairfax County, VA	1,723,000	Berkeley County, WV	148,000
Fauquier County, VA	87,000	Frederick County, VA	102,000
Frederick County, MD	372,000	Fauquier County, VA	87,000
Frederick County, VA	102,000	Jefferson County, WV	70,000
Jefferson County, WV	70,000	City of Manassas, VA	63,000
King George County, VA	33,000	Culpeper County, VA	61,000
Loudoun County, VA	456,000	City of Winchester, VA	56,000
Montgomery County, MD	1,478,000	Shenandoah County, VA	55,000
Orange County, VA	41,000	City of Fredericksburg, VA	52,000
Prince George's County, MD	1,221,000	City of Fairfax, VA	50,000
Prince William County, VA	516,000	Warren County, VA	49,000
Rappahannock County, VA	8,000	Orange County, VA	41,000
Shenandoah County, VA	55,000	Caroline County, VA	36,000
Spotsylvania County, VA	160,000	King George County, VA	33,000
Stafford County, VA	171,000	City of Falls Church, VA	23,000
Warren County, VA	49,000	Clarke County, VA	22,000
Washington County, MD	226,000	City of Manassas Park, VA	19,000
Washington, D.C.	1,388,000	Rappahannock County, VA	8,000
TOTAL	**9,557,000**	**TOTAL**	**9,557,000**

Sources: Regional Travel Demand Models (MWCOG, FAMPO, Win-Fred, and HEPMPO); US Census Bureau; Virginia Employment Commission.

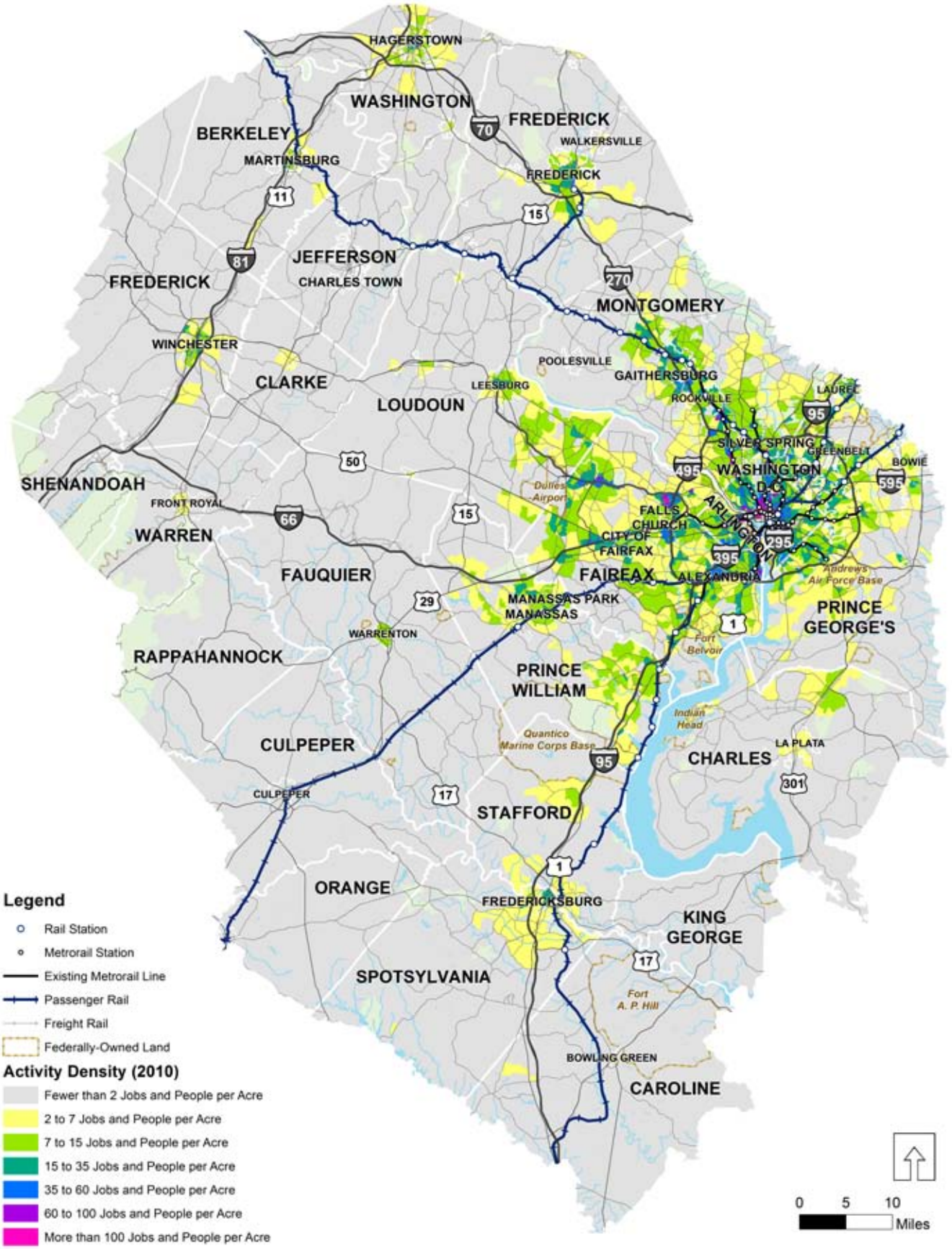


Figure 3.13: 2010 Activity Density

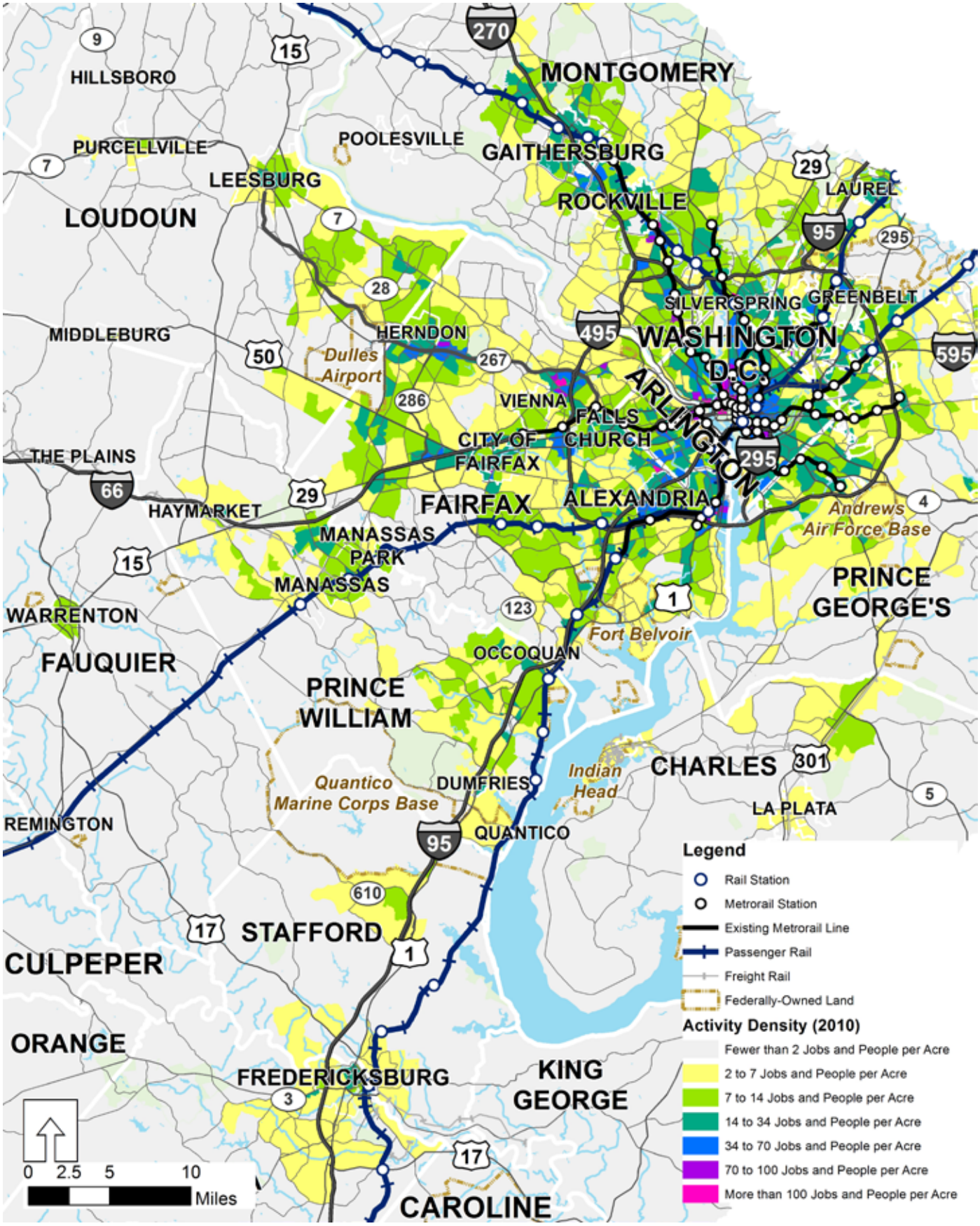


Figure 3.14: Activity Density - Inner Area

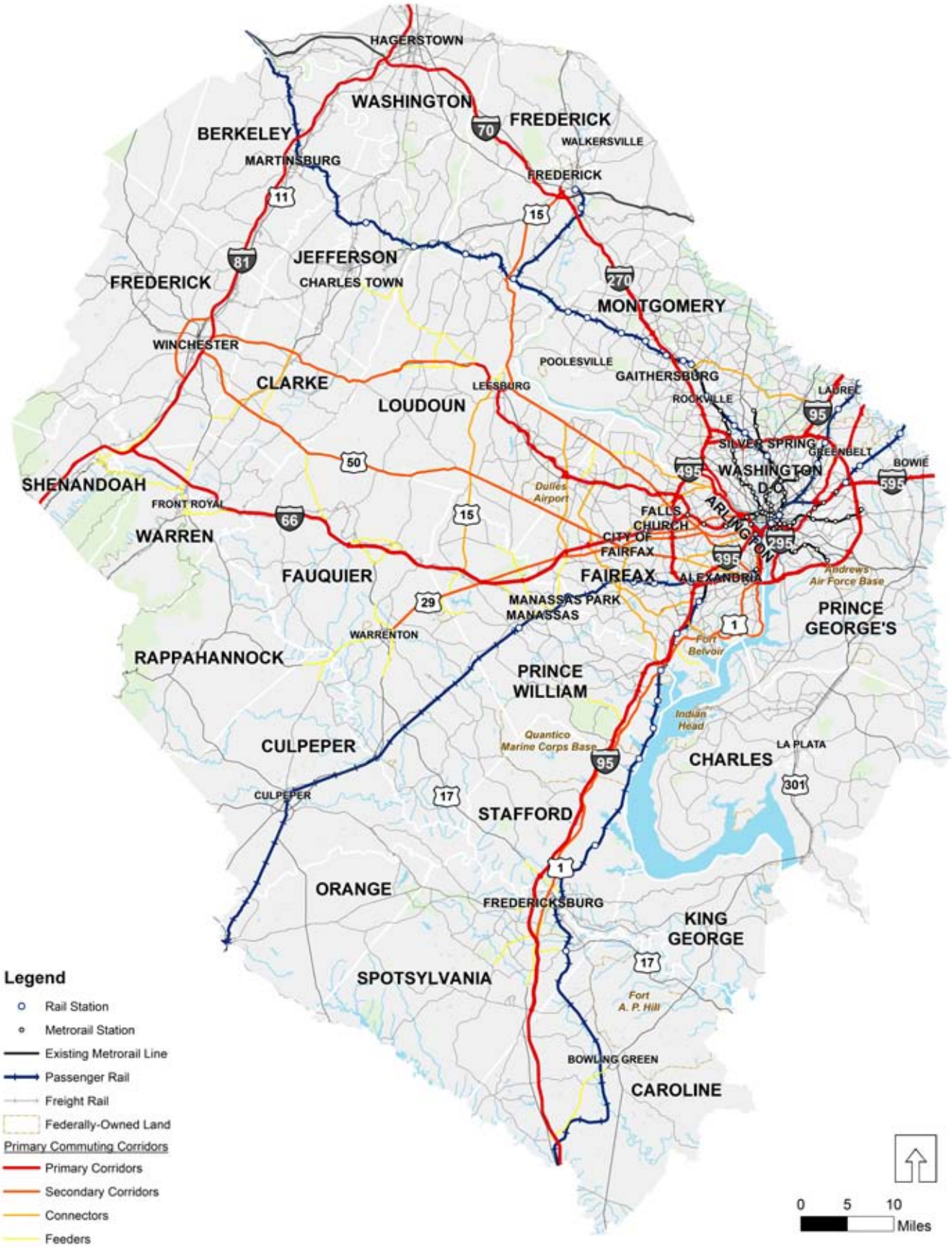


Figure 3.15: Major Commuting Corridors

TRAVEL TRENDS AND DESIRE LINES

Fairfax City-University Energysaver. Source: City of Fairfax.

The development of a Vision Plan for the Super NoVa region required a solid understanding of travel patterns. This understanding provided the basis for identifying transit and TDM service needs, and recommendations that address those needs.

MAJOR COMMUTING CORRIDORS AND TRAVEL PATTERNS

There are four major commuter sheds in the Super NoVa study area:

- The I-95/US 1 corridor
- The I-66/US 29/US 50 corridor
- The Route 7/Dulles Toll Road/Route 267
- The I-70/I-270 corridor in Maryland

Figure 3.15 on the preceding page shows the major commuting corridors.

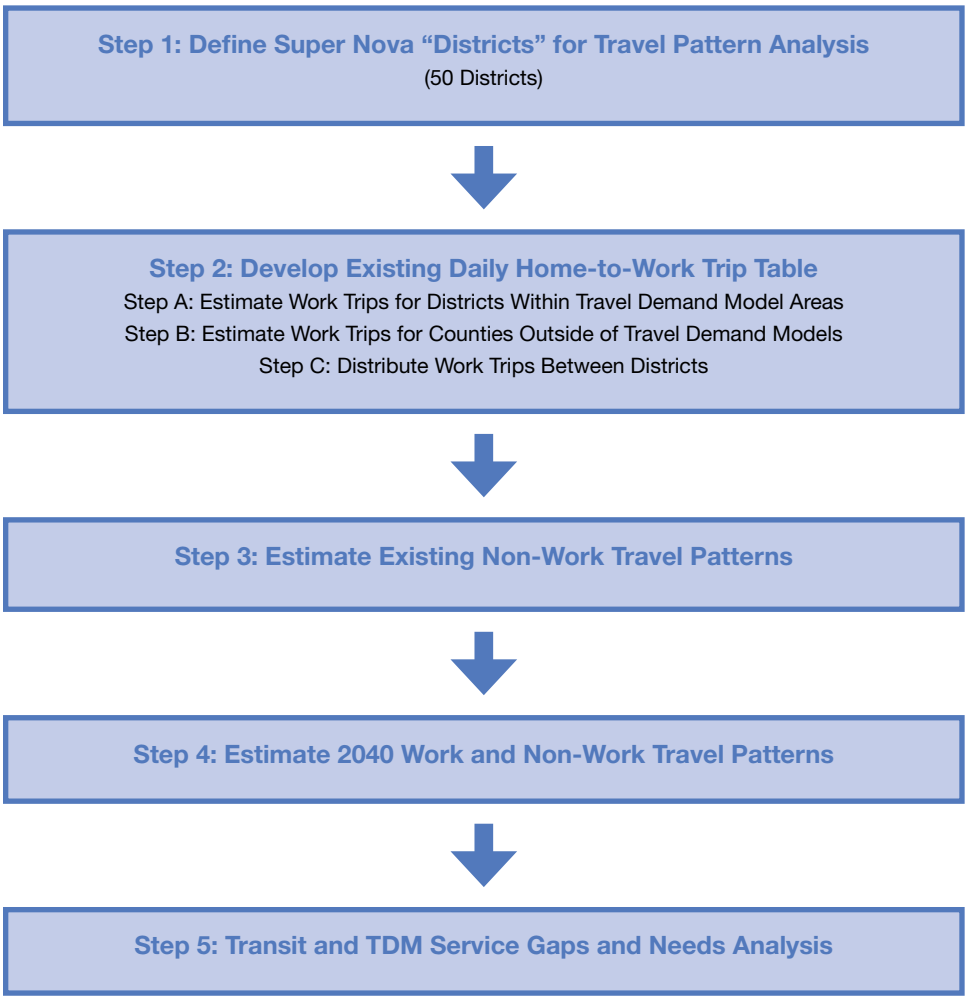


Figure 3.16: Flow Diagram of Super NoVa Travel Pattern Analysis Process

TRAVEL PATTERN ANALYSIS METHODOLOGY

A methodology, described below, was established to analyze travel patterns in the Super NoVa region. **Figure 3.16** provides an illustration of the proposed process.

- First, the Super NoVa region was broken into "districts". Outside of the D.C. metropolitan area, districts are generally defined as counties. Within the metropolitan area, US Census Public Use Microdata (PUMA) boundaries were used. Overall, 50 districts were defined, which are illustrated in **Figure 3.17**.
- Next, 50 by 50 cell matrices of work and non-work trip tables were developed. Most of this data was developed with MPO travel demand models. The MWCOG travel demand model covers a large portion of the Super NoVa study area, and includes almost 90 percent of the Super NoVa region's 2010 population.
- For the remaining 10 percent of the Super NoVa region's population base, travel patterns were assessed by incorporating trip tables from the FAMPO model (model covers Fredericksburg, Spotsylvania, Stafford, Caroline, and King George Counties), the Win-Fred model (model covers City of Winchester and Frederick County) and the HEPMPO model (model covers Berkeley and Jefferson Counties, WV and Washington County, MD). These models use 2006 through 2008 as a base year, depending on the model.
  - There are five counties within the Super NoVa region are not within a defined MPO and thus are not included in any of the above-noted travel demand models (Shenandoah, Warren, Rappahannock, Culpeper, and Orange). For those five counties, trips have been estimated based on general trip generation estimates that are tied to each county's population.

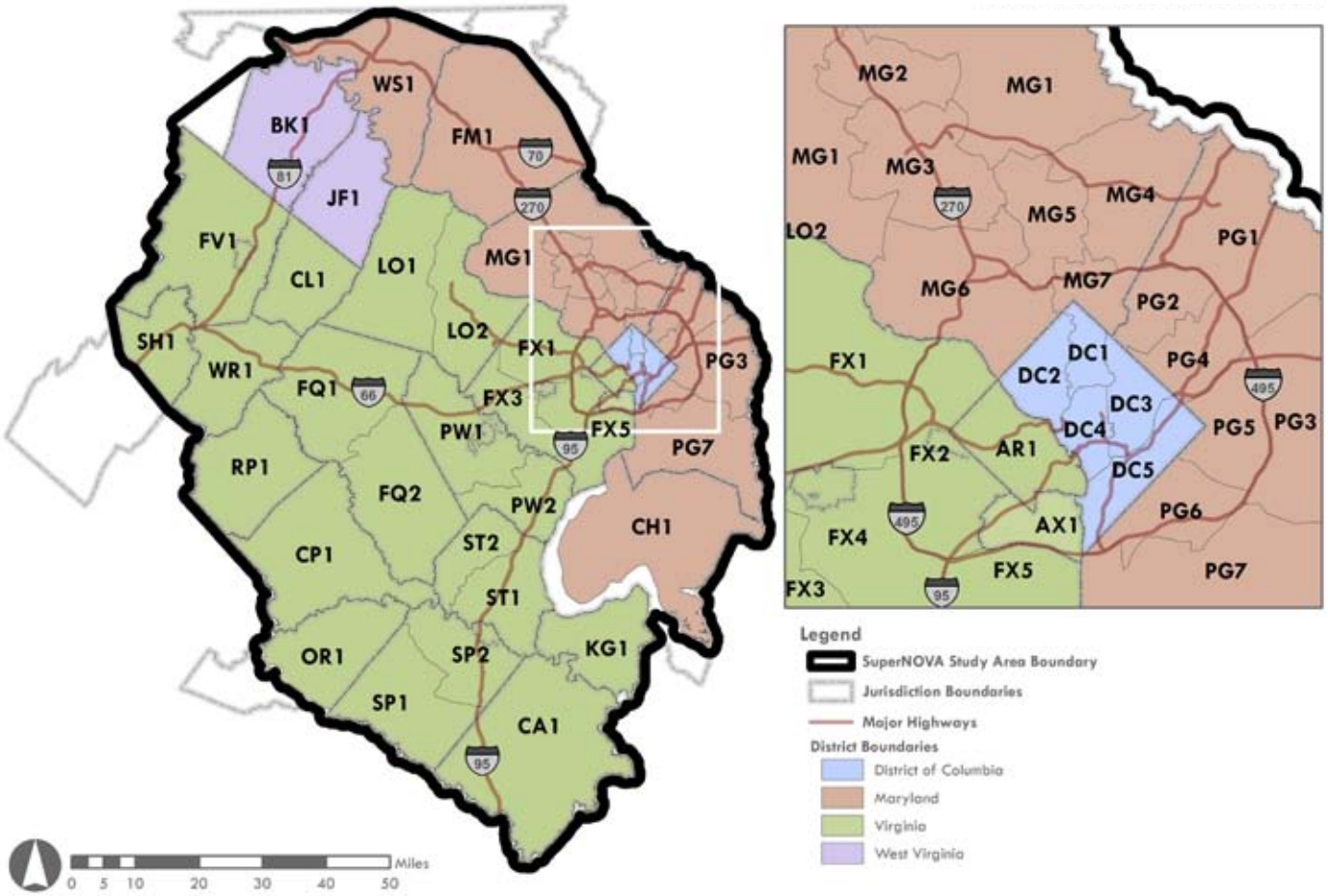


Figure 3.17: Super NoVa Defined Districts for Travel Pattern Analysis

- Trips were then distributed between the 50 districts. For trip distributions between different travel demand model areas, external trip volumes were first identified from each model area. Those trips were then distributed to other defined Super NoVa districts based on ACS journey to work data.

This process was used to develop work and non-work trip tables for 2007 (the base year for many of the travel demand models) and 2040. Transit and TDM service needs were then determined by comparing travel patterns to existing and planned transit/TDM services and identifies gaps and deficiencies. The **Appendix** presents a more thorough description of the methodology and results for both work and non-work trips. For purposes of this report, only existing work trips have been summarized.

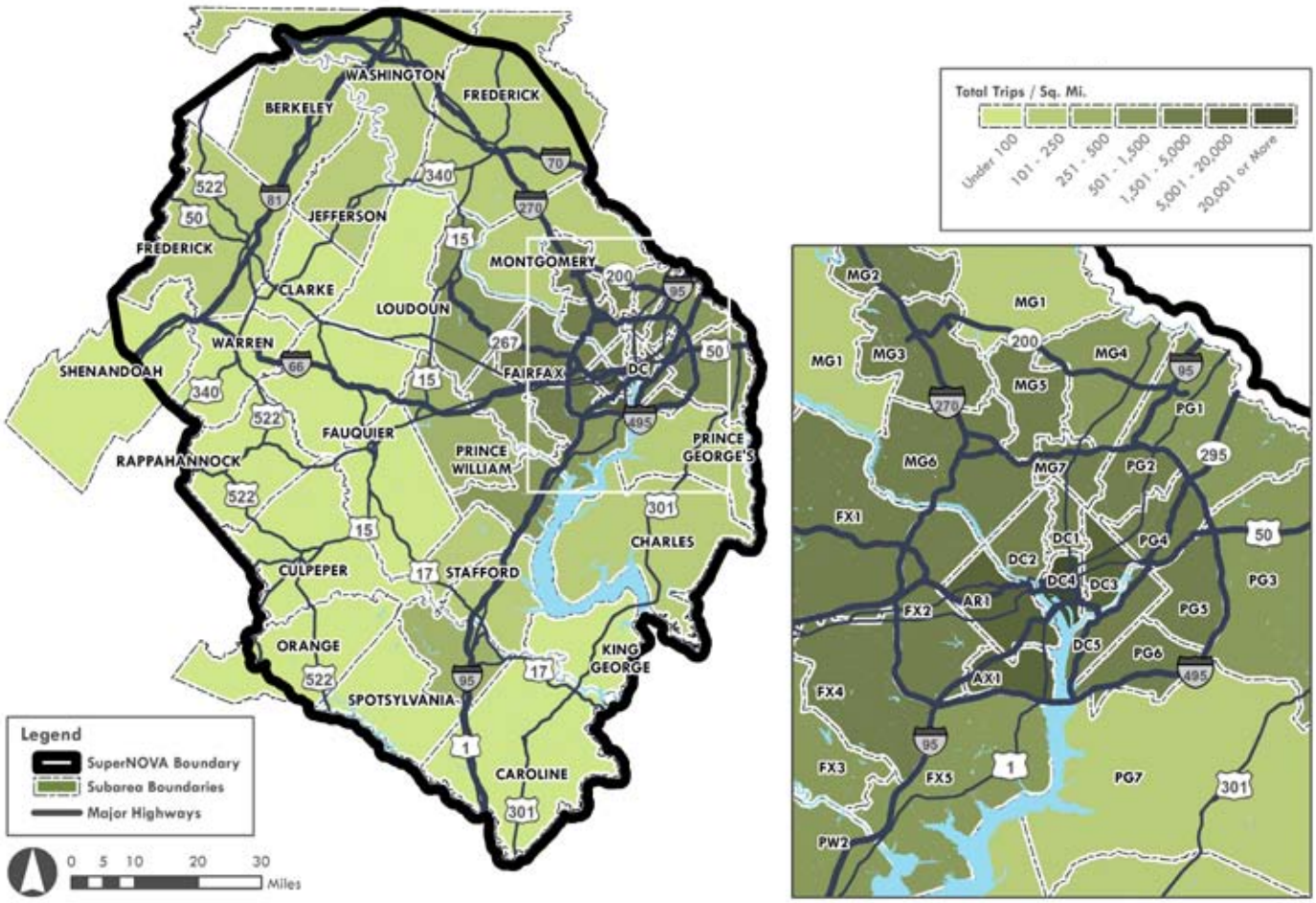


Figure 3.18: 2007 Daily Work Trips per Square Mile in Super NoVa Region

REGIONAL TRAVEL PATTERNS

Figure 3.18 illustrates base year (2007) daily home-to-work person trips per square mile for the Super NoVa region. As one would expect, the largest concentration of trips is in the metropolitan Washington, D.C. area. **Figure 3.19** illustrates 2007 home-to-work person trip travel flows. The figure illustrates the importance of key corridors (e.g., I-95, I-66, Route 7, I-270) for long-distance, work-related travel.

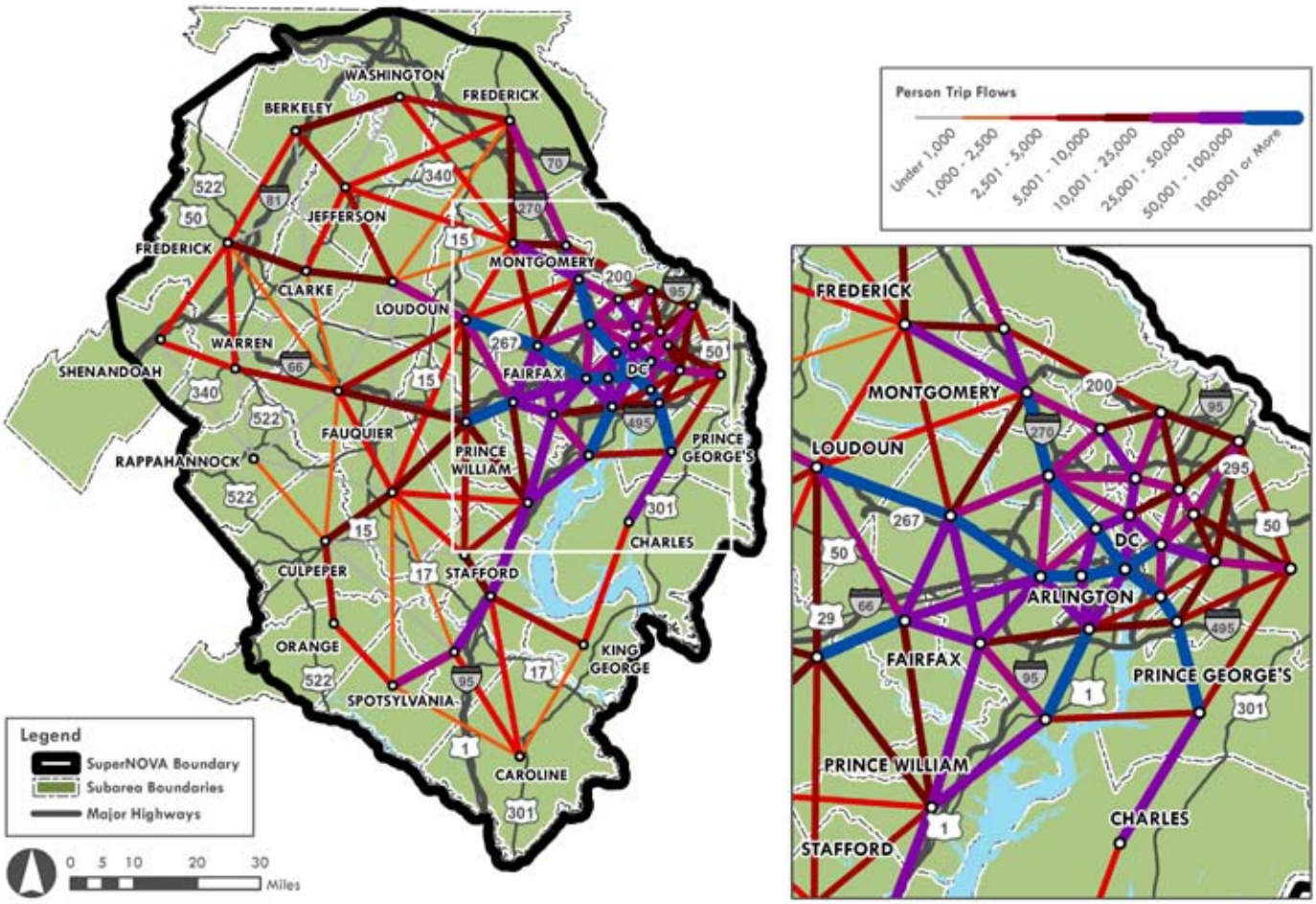


Figure 3.19: 2007 Daily Work Person Trip Travel Flows

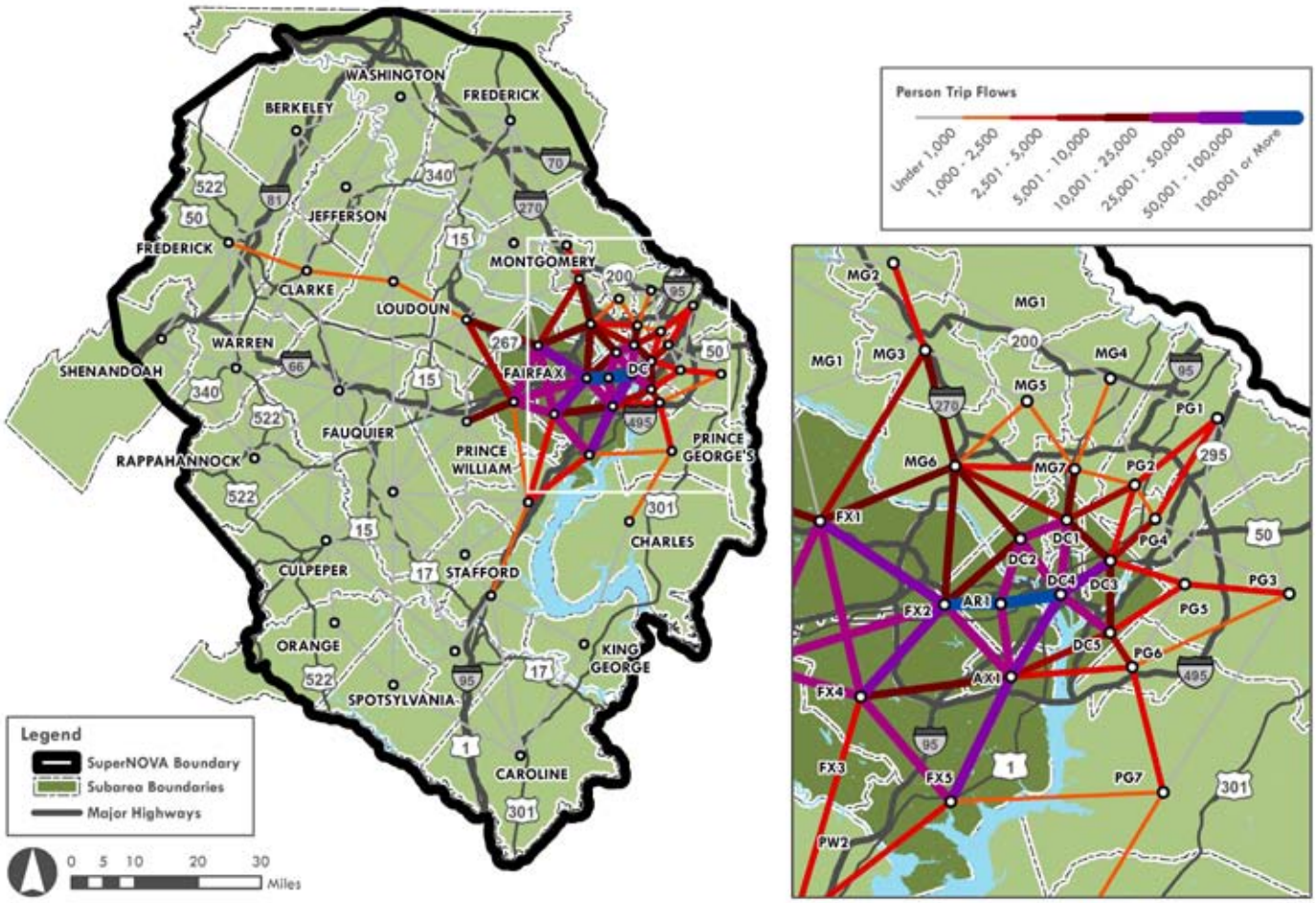


Figure 3.20: 2007 Daily Work Person Trips from Inner Subarea Travel Flows

INNER SUBAREA TRAVEL PATTERNS

Jurisdictions included in the definition of the Super NoVa's inner area are:

- District of Columbia
- Arlington County
- Fairfax County
- City of Alexandria

For purposes of this travel pattern analysis, all of the inner areas were subdivided into districts consistent with US Census PUMA boundaries. The District of Columbia and Fairfax County were each subdivided into seven districts, while Arlington County and the City of Alexandria are represented by two districts.

Table 3.5 presents total daily home-to-work trips for analysis districts in the inner areas of the Super NoVa region. The values are person trips and represent work travel to and from the inner areas. Overall, there are more than 1.2 million total daily work trips destined to work locations in the Northern Virginia/D.C. inner area (e.g., 2.4 million total daily work trips), with 60 percent of the trips coming into the inner area, and 40 percent leaving the inner area daily.

Table 3.5: Inner Area Home-to-Work Trips (Peak Direction Trips)

District	2007
D.C. (All Areas)	401,151
Arlington	155,692
Fairfax (All Areas)	553,071
Alexandria	76,469
TOTAL	1,248,390

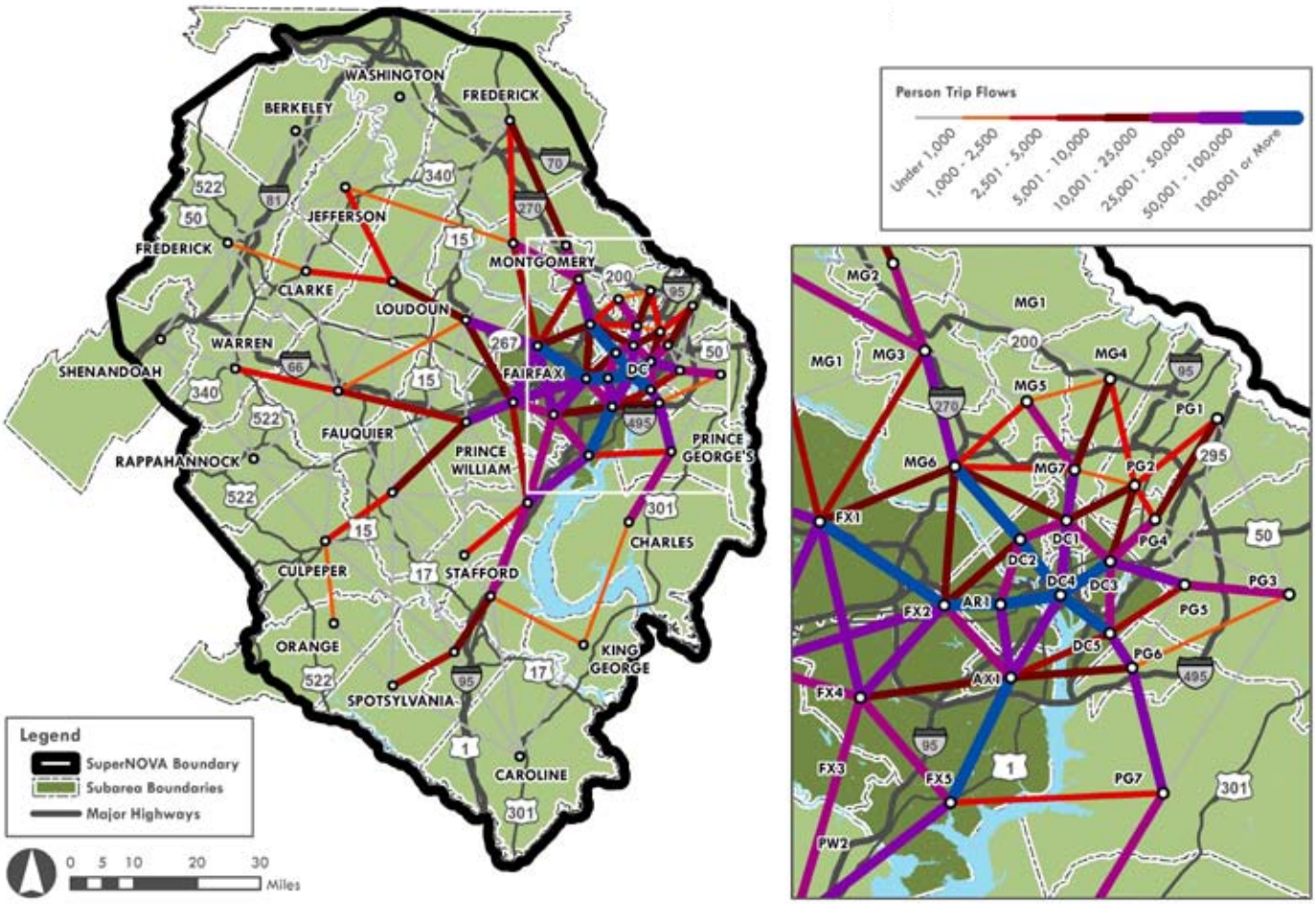


Figure 3.21: 2007 Daily Work Person Trips to Inner Subarea Travel Flows

Figure 3.20 and **Figure 3.21** present spider line diagrams of 2007 work trips coming from and going to the inner area analysis districts and going to inner area analysis districts, respectively.

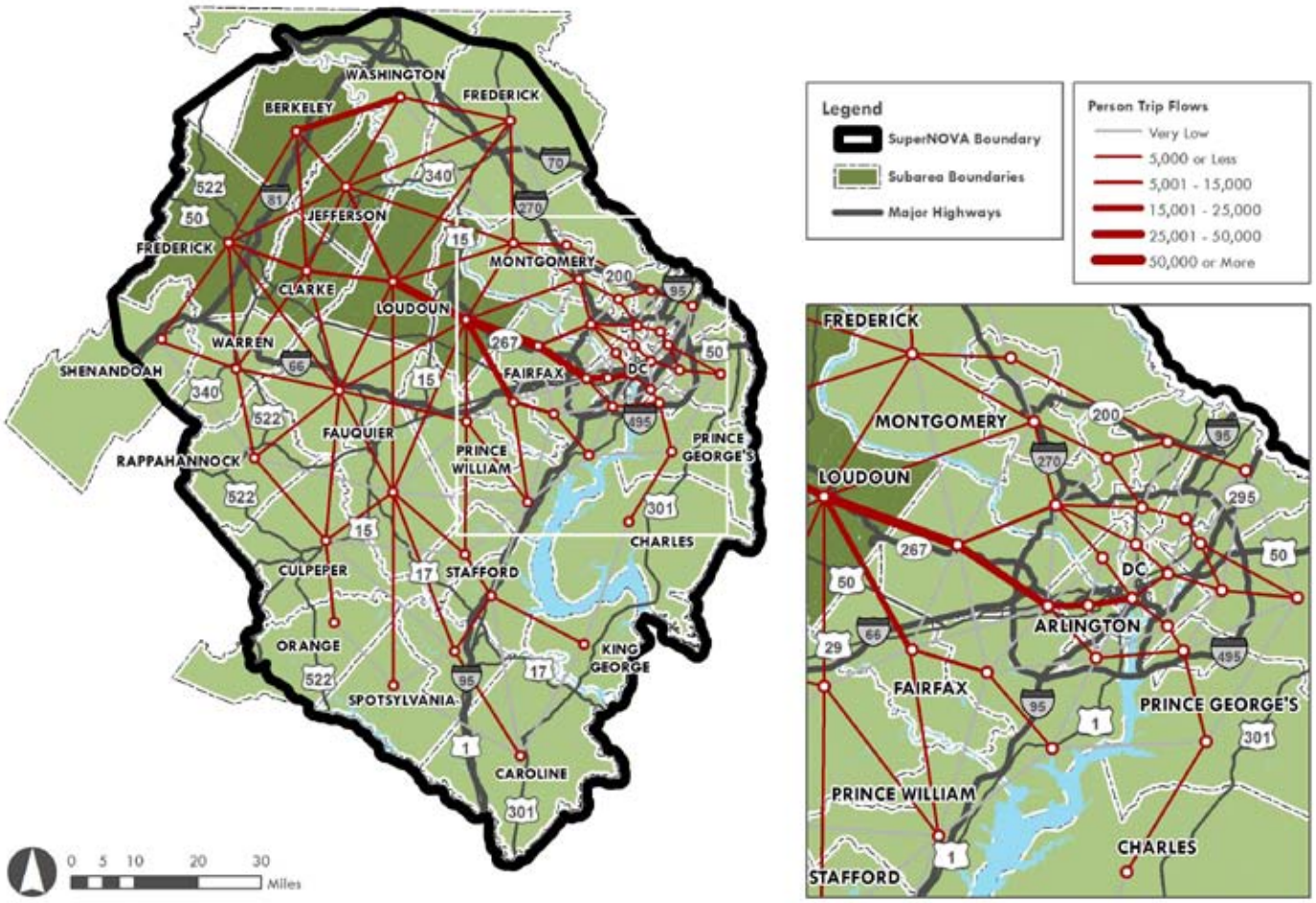


Figure 3.22: 2007 Daily Work Person Trips from Northwest Subarea Travel Flows

NORTHWEST SUBAREA TRAVEL PATTERNS

The Northwest subarea of the Super NoVa region includes the following locations:

- Loudoun County, VA
- Jefferson County, WV
- Clarke County, VA
- Berkeley County, WV
- Frederick County, VA

For the purpose of the analysis, Loudoun County has been divided into two districts—Loudoun County 1 and Loudoun County 2. The Loudoun County 2 district comprises the urbanized area of Loudoun County to the East, and the Loudoun County 1 district is the less developed western portion of the county.

Table 3.6 presents total daily home-to-work trips for the Northwest subarea counties that are within this defined Super NoVa region. There were approximately 206,000 home-to-work trips generated in the Northwest subarea in 2007 (e.g., 413,000 total daily work trips), with approximately one half of these trips generated in Loudoun County. Counties in the Northwest subarea are generally exporters of work trips, with more trips leaving the counties to other areas for work rather than traveling into the counties. Berkeley and Jefferson Counties, WV are the biggest exporters of work trips to other counties.

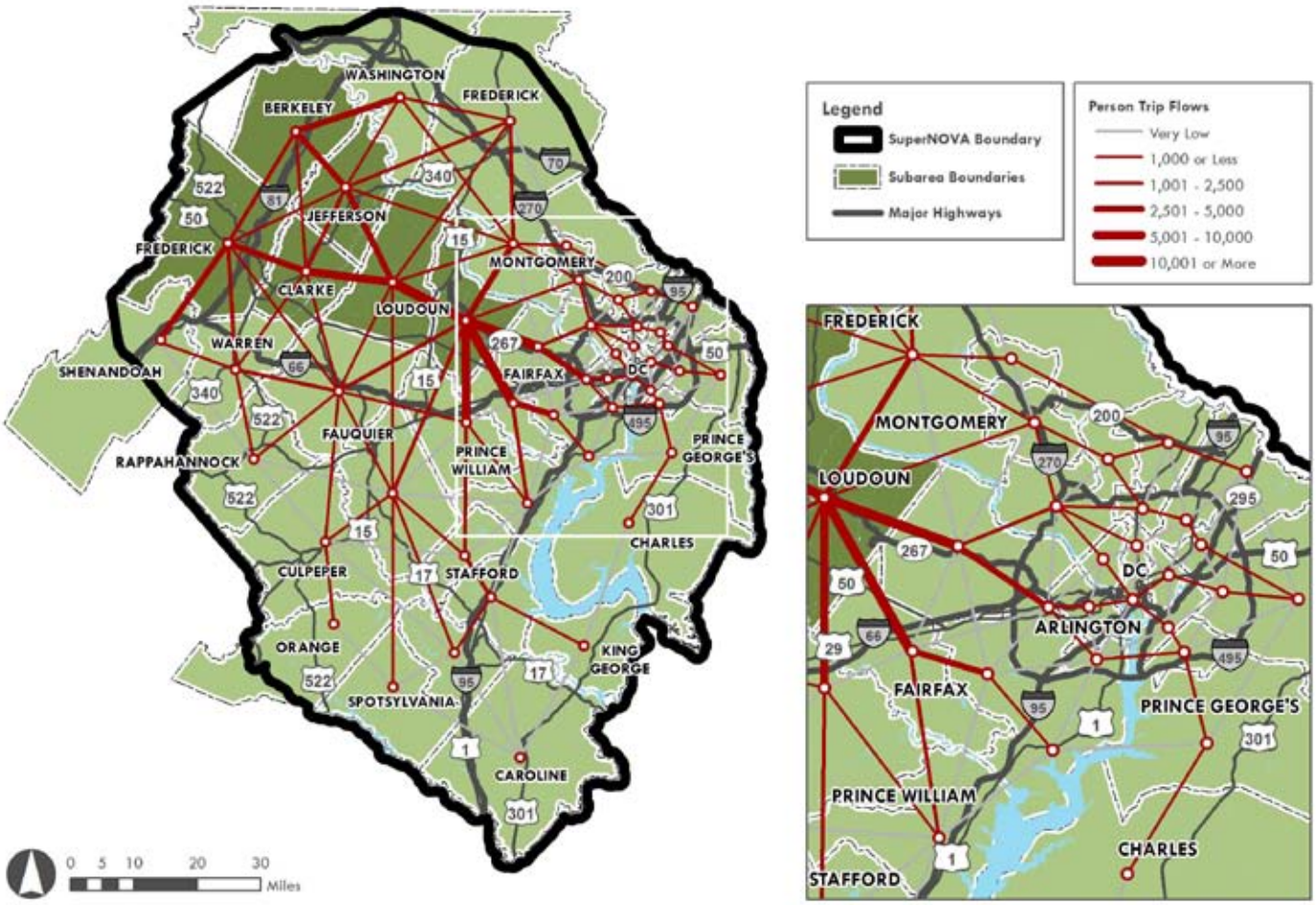


Figure 3.23: 2007 Daily Work Person Trips to Northwest Subarea Travel Flows

Table 3.6: Northwest Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007
Loudoun 1	11,457
Loudoun 2	95,560
Jefferson, WV	15,871
Clarke, VA	5,782
Berkeley, WV	34,260
Frederick, VA	43,509
TOTAL	206,440

Figure 3.22 and **Figure 3.23** present spider line diagrams of 2007 daily home-to-work trips coming from and going to the Northwest subarea districts. In 2007, predominant travel flows can clearly be seen from Loudoun County to the inner area, with a slightly lower flow noted from Berkeley County, WV to Washington County, MD.

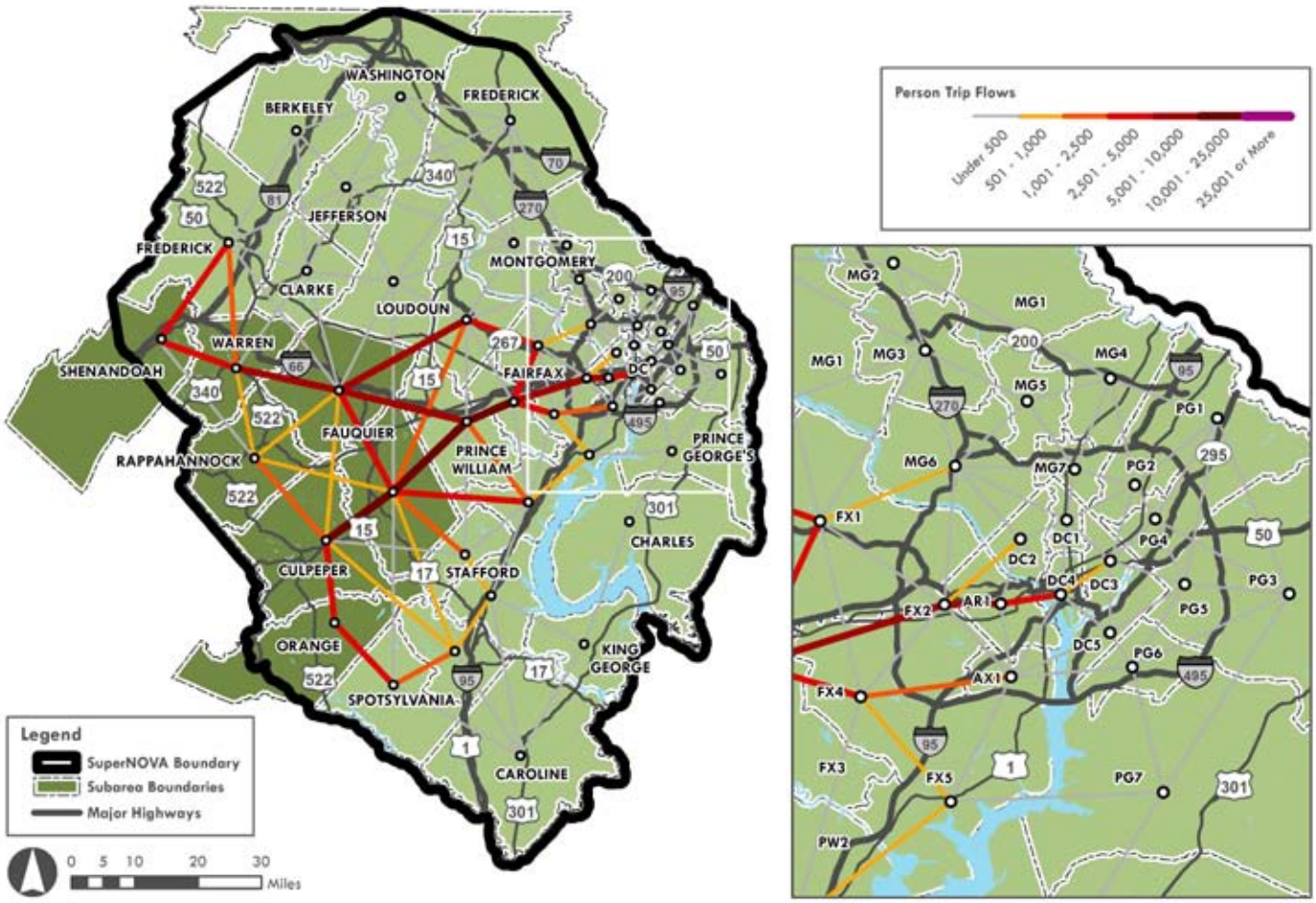


Figure 3.24: 2007 Daily Work Person Trips from West Subarea Travel Flows

WEST SUBAREA TRAVEL PATTERNS

The West subarea of the Super NoVa region encompasses the following locations:

- Culpeper County
- Fauquier County
- Orange County
- Rappahannock County
- Shenandoah County
- Warren County

For purposes of this travel pattern analysis, Fauquier County has been divided into two districts, with the Towns of Remington and Warrenton included in the southern Fauquier County district and points north of Warrenton in the northern district.

In 2007, there was an estimated 67,000 daily home-to-work-related person trips for the West subarea counties (e.g., 134,000 total daily work trips). **Table 3.7** presents total home-to-work trips for the six West subarea counties that are within this defined Super NoVa region.

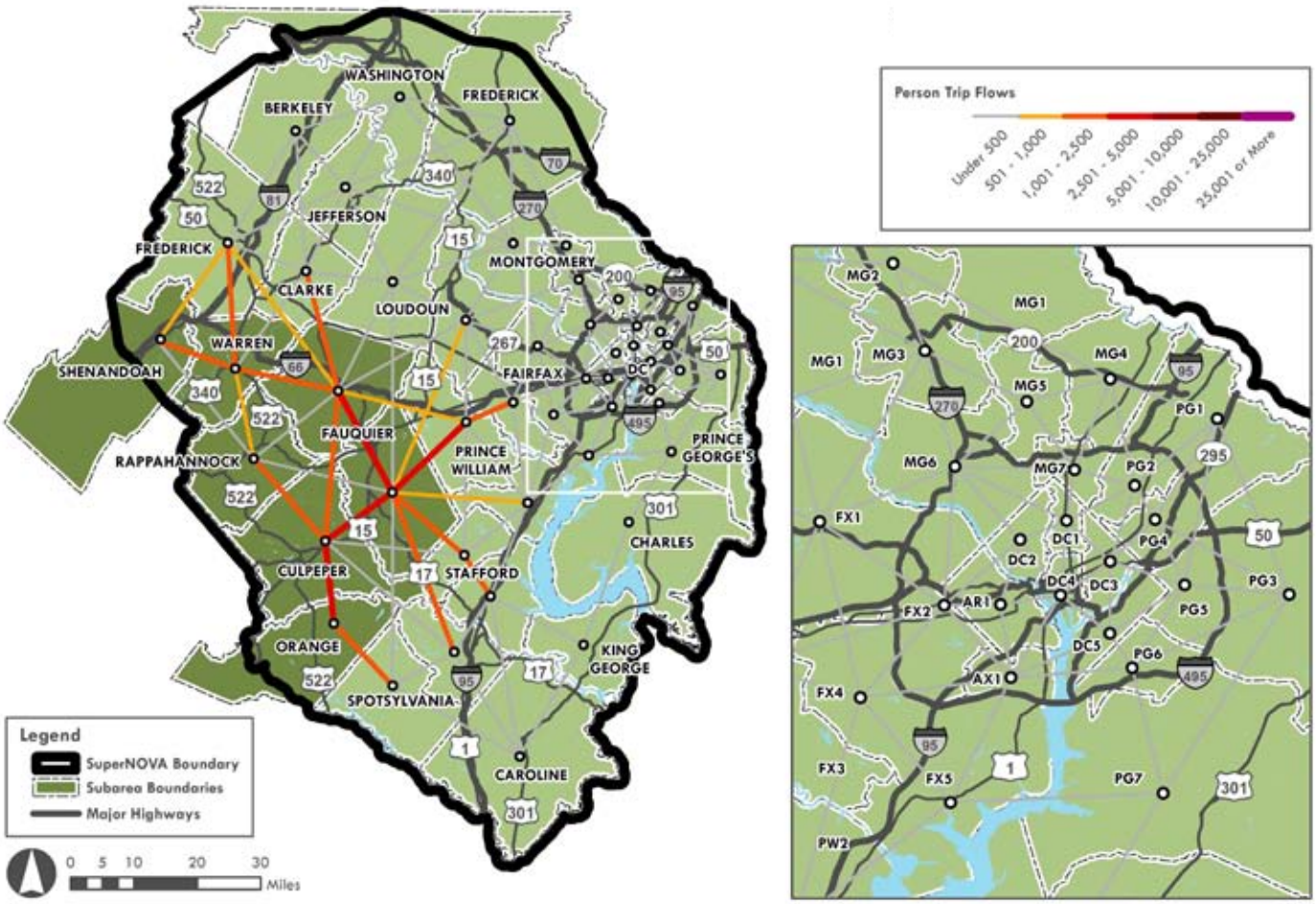


Figure 3.25: 2007 Daily Work Person Trips to West Subarea Travel Flows

Table 3.7: West Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007
Fauquier 1	5,241
Fauquier 2	19,732
Shenandoah	9,318
Warren	10,819
Culpeper	12,860
Orange	6,707
Rappahannock	1,888
TOTAL	66,564

All of the counties in the West subarea are "exporters" of work trips. In other words, there are more trips leaving each county than entering the county.

Figure 3.24 and **Figure 3.25** present spider line diagrams of 2007 daily home-to-work trips coming from and going to the West subarea districts. Predominant work trip flows from the West subarea districts tend to parallel the I-66 and US 29 corridors, with a decreasing orientation to the D.C. inner area as the distance from the inner area increases, particularly on the western I-66 corridor. Predominant work trip flows to the West subarea districts tend to be more North-South oriented from nearby districts. Activity along the US 29 corridor continues to be prominent as a work destination as well.

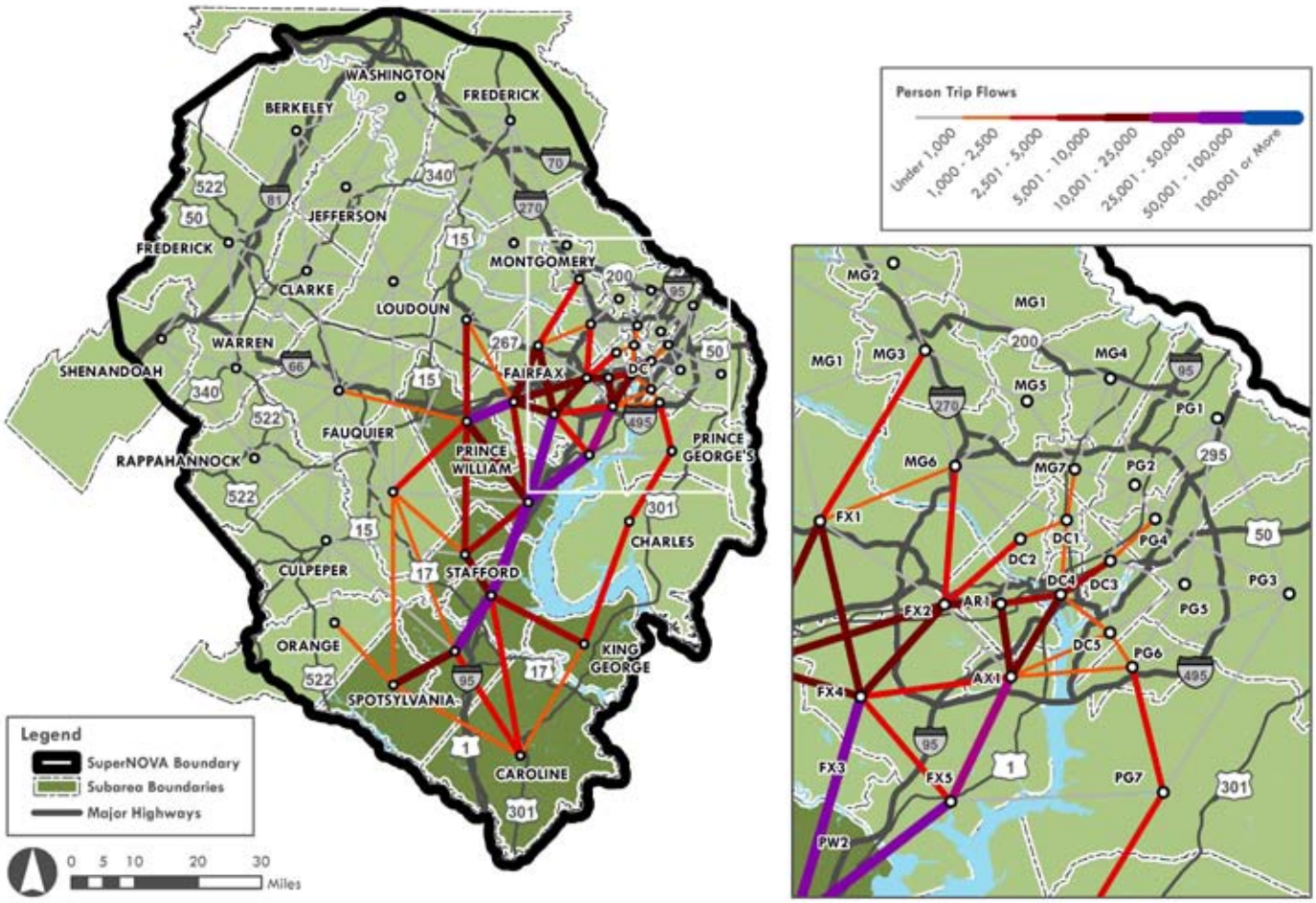


Figure 3.26: 2007 Daily Work Person Trips from South Subarea Travel Flows

SOUTH SUBAREA TRAVEL PATTERNS

The South subarea of the Super NoVa region encompasses the following locations:

- Prince William County
- Stafford County
- Spotsylvania County
- King George County
- Caroline County
- City of Fredericksburg
- Cities of Manassas and Manassas Park

For purposes of this travel pattern analysis, Prince William, Stafford, and Spotsylvania Counties have been divided into two districts each, with the City of Fredericksburg included in one of the Spotsylvania County districts and Manassas and Manassas Park included in one of the Prince William County districts.

Daily home-to-work-related person trips for the South subarea districts are estimated to be 271,000 trips in 2007 (e.g., 542,000 total daily work trips). Work trips in 2007 are highest in the two Prince William County districts (accounting for slightly more than half of the South subarea's work trips). **Table 3.8** presents total home-to-work trips for the South subarea counties that are within this defined Super NoVa region.

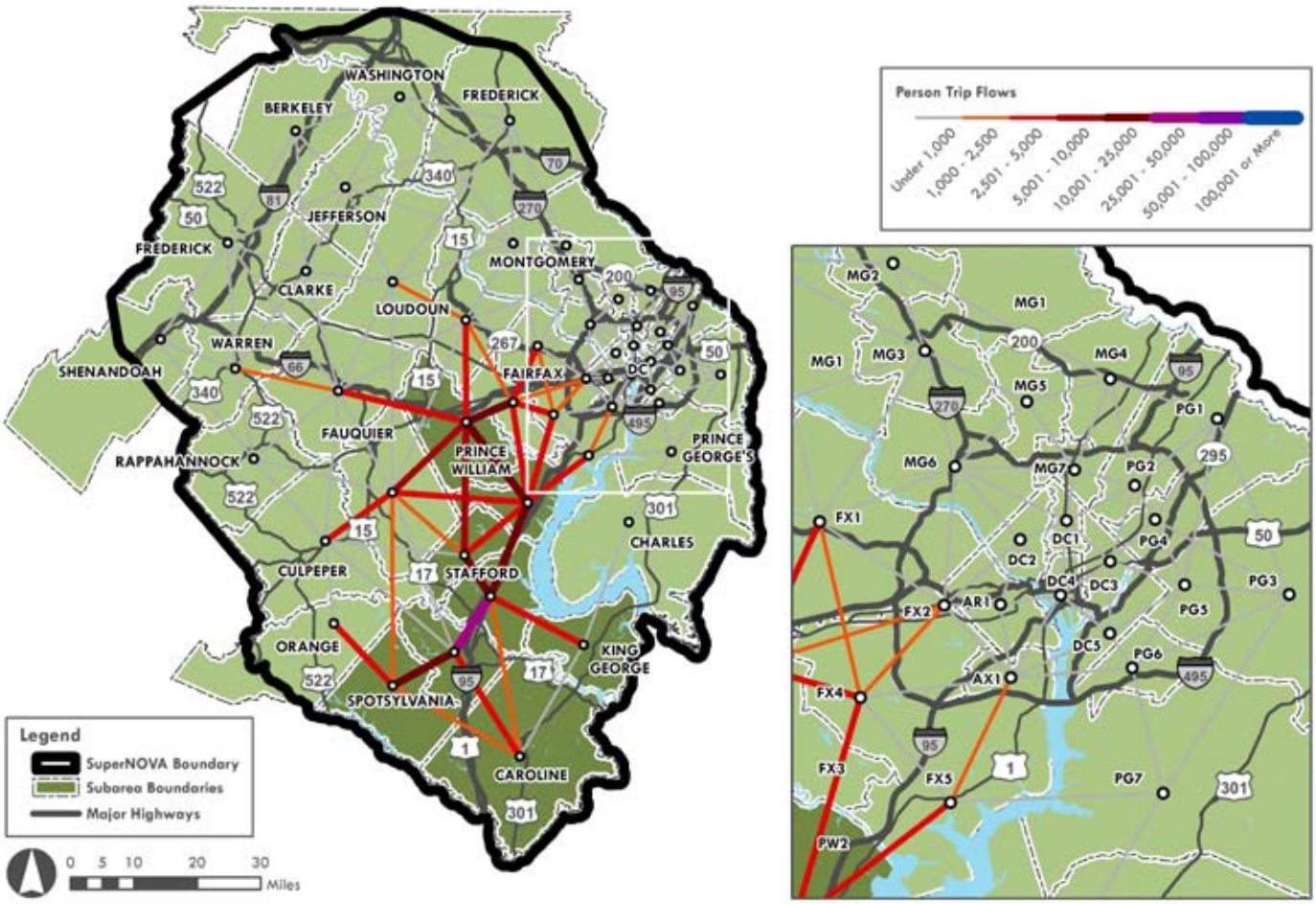


Figure 3.27: 2007 Daily Work Person Trips to South Subarea Travel Flows

Table 3.8: South Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007
Prince William 1	78,249
Prince William 2	76,563
Stafford 1	33,839
Stafford 2	10,782
Spotsylvania 1	11,894
Spotsylvania 2	46,749
Caroline	6,506
King George	6,873
TOTAL	271,454

All of the districts in the South subarea are net "exporters" of work trips. In other words, there are more trips originating from rather than drawn to each district.

Figure 3.26 and **Figure 3.27** present spider line diagrams of 2007 daily home-to-work trips coming from and going to South subarea districts, respectively. Predominant work trip flows from the South subarea districts tend to parallel the I-66 and I-95 corridors, with a decreasing orientation to the inner area as the distance from the inner area increases. Predominant work trip flows to the South subarea districts tend to be from nearby districts to existing and emerging employment centers in Prince William County, Spotsylvania County, and Stafford County.

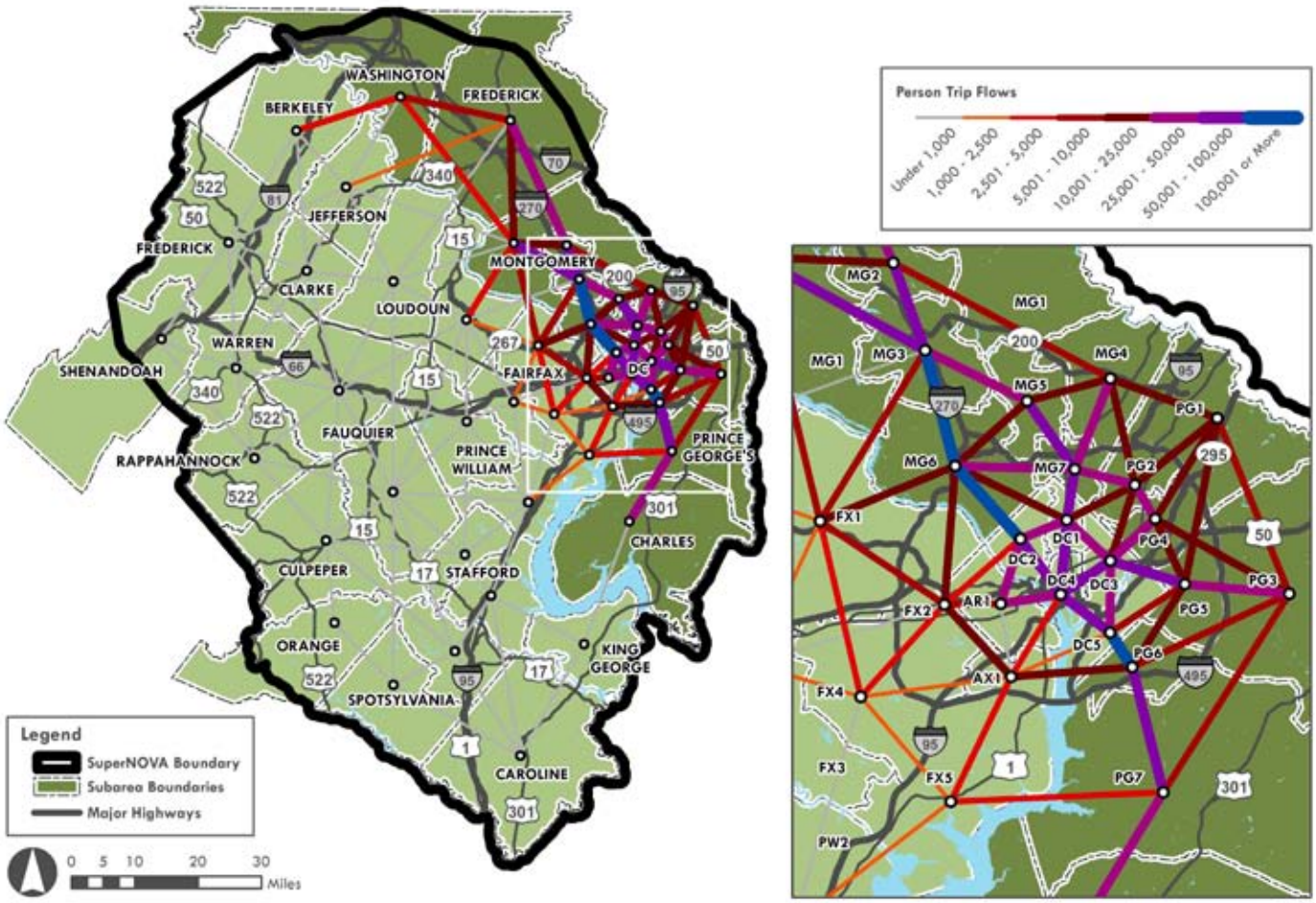


Figure 3.28: 2007 Daily Work Person Trips from Maryland Subarea Travel Flows

MARYLAND SUBAREA TRAVEL PATTERNS

The Super NoVa region includes the following Maryland counties:

- Charles County
- Prince George's County
- Montgomery County
- Frederick County
- Washington County

For purposes of this travel pattern analysis, Prince George's and Montgomery Counties were each subdivided into seven districts, consistent with US Census PUMA boundaries.

Daily home-to-work-related person trips for the Maryland counties within the Super NoVa region are approximatley 888,000 (e.g., 1.7 million total daily work trips). **Table 3.9** presents total home-to-work trips for the five Maryland counties that are within the defined Super NoVa region.

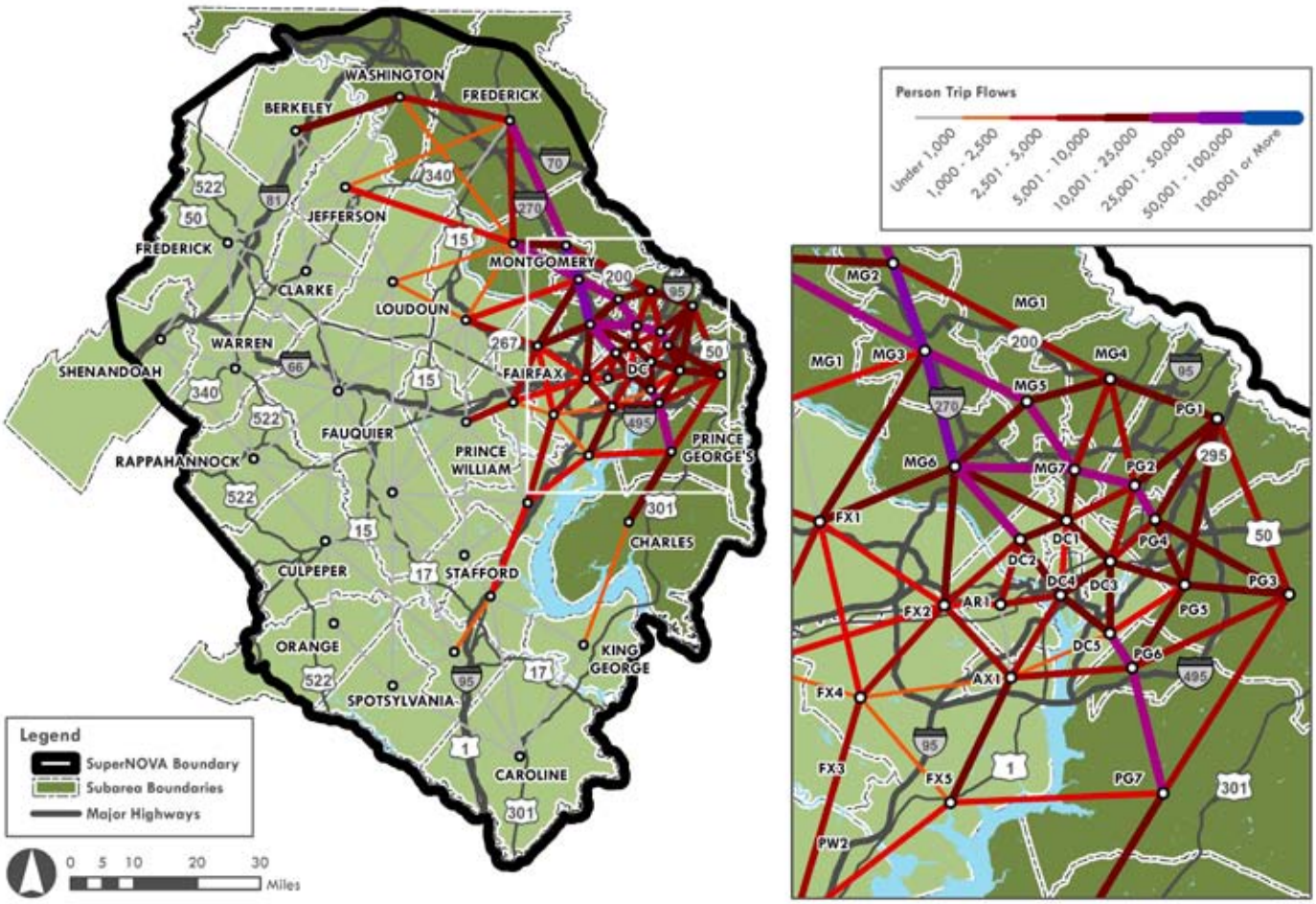


Figure 3.29: 2007 Daily Work Person Trips to Maryland Subarea Travel Flows

Table 3.9: Maryland Counties Daily Home-to-Work Trips (Peak Direction Trips)

District	2007
Montgomery	414,097
Prince George's	310,455
Frederick	71,163
Charles	40,435
Washington	52,424
TOTAL	888,574

All counties but one (Washington County) are "exporters" of work trips. In other words, there are more trips leaving the county than entering the county in the morning peak period.

Figure 3.28 and **Figure 3.29** present spider line diagrams of 2007 daily home-to-work trips coming from and going to Maryland Counties, respectively. As noted in these figures, predominant work trip flows tend to remain within Maryland or to/from the District of Columbia, with some flows reaching to the Arlington/Alexandria area.

Chapter 4

Future Conditions

INTRODUCTION

vRide corporate vanpooling service. Source: Fairfax County.

GROWTH AND CHANGE

As a part of the Vision Plan development process, a rigorous future conditions and gap analysis effort was conducted. This future conditions analysis compiled recommendations from plans from across the study area and evaluated them against Super NoVa plan development goals as well as forecasted population, employment, travel demand, and land use information. The collective set of future conditions information was used to identify anticipated gaps in programs, services, and policies that would need to be addressed during the follow-up needs analysis.

This chapter looks at a summary of future adopted comprehensive, transportation, and other relevant plans from localities across the region. It evaluates the effects of anticipated future growth of the region and the system currently planned. This section also documents travel demand for work and non-work trips, population and employment forecasts, and future land use plans.

REGIONAL COMPREHENSIVE PLANNING

Passengers board a train at the East Falls Church Metrorail station.

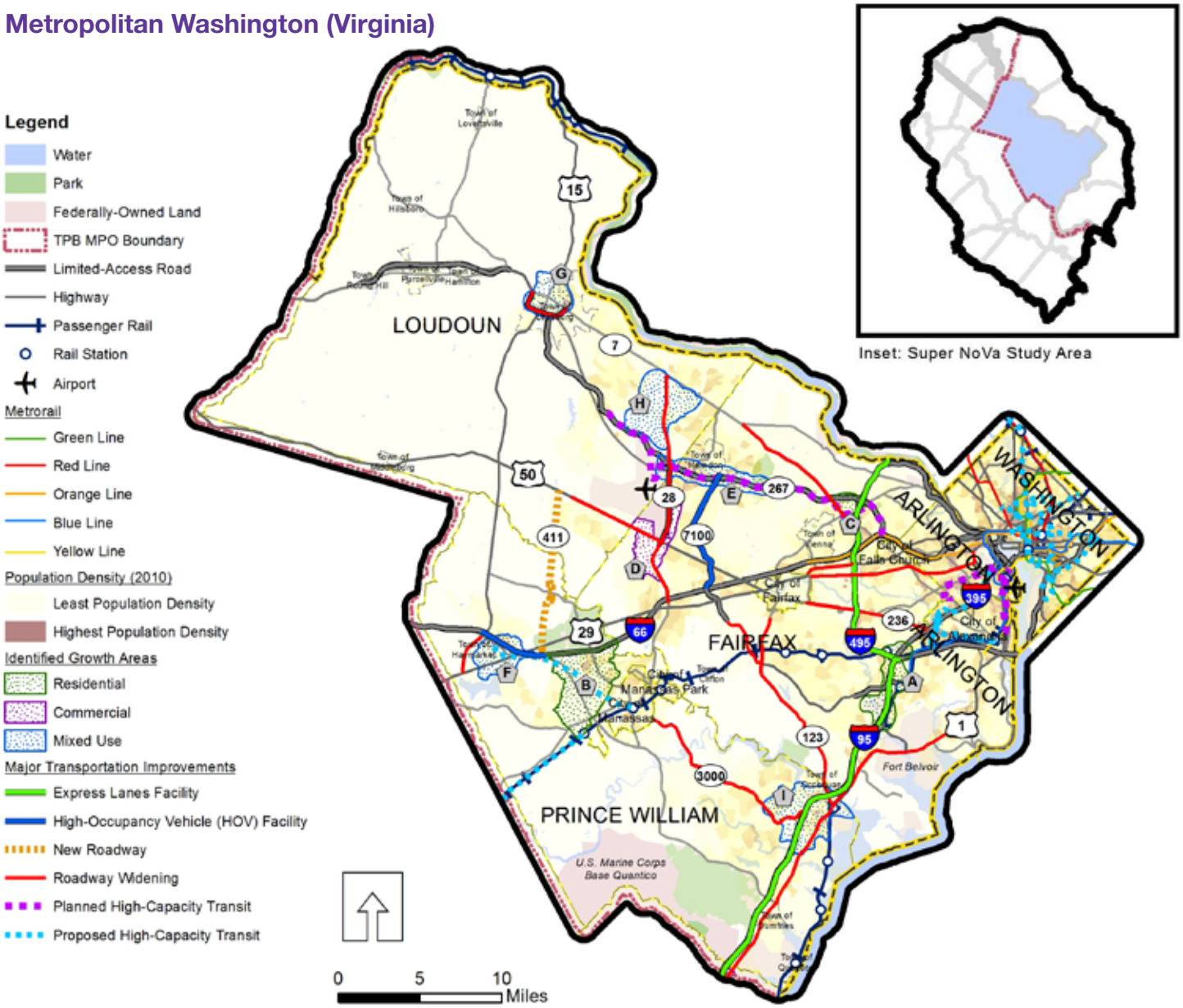
When developing recommendations for the future, it is important to understand the plans and projects that have been previously developed by different jurisdictions and agencies. Master transportation and comprehensive plans from metropolitan planning organizations (MPO), state and federal agencies, and local jurisdictions were reviewed to ensure that the recommendations set forth by Super NoVa could build on the framework for the future of the region already in place. A list of all plans that were considered can be found in the **Appendix**.

While all plans contain recommendations and policies specific to the jurisdiction or agency, common themes in many of the plans include:

- The need to accommodate forecast growth and activity shifts in the region
- Promoting multimodal solutions to increased congestion on the region's roadways
- Incorporating land use and transit-oriented development into planning
- Creating a safe and interconnected network for bicyclists and pedestrians
- Maintaining public open space and sensitive environmental areas
- Using transportation demand management (TDM) and technology to reduce dependence of single occupancy vehicle trip

Summaries of the reviewed comprehensive and transportation plans are shown in **Figure 4.1** though **Figure 4.6.**

Metropolitan Washington (Virginia)



Growth Areas

Residential

A. I-95/Springfield
B. Manassas
C. Tysons Corner

Commercial

D. South Dulles

Mixed Use

E. Dulles Corridor
F. Gainesville
G. Leesburg
H. North Dulles
I. Potomac/Woodbridge

Primary Transportations Corridors

Primary East-West Corridors

- I-66, I-395, and I-495
- US Routes 1, 29, and 50
- VA State Route 236

Primary North-South Corridors

- I-95, I-270, and I-495
- US Route 15
- VA State Routes 7, 28, 123, 267, 3000, and 286

TDM Agencies

- Arlington County Commuter Services
- City of Alexandria Local Motion
- Dulles Area Transportation Association (DATA)
- Fairfax County Transportation Services Group
- goDCgo
- Loudoun County Office of Transportation Services
- MWCOG Commuter Connections
- Potomac and Rappahannock Transportation Commission (PRTC) (OmniMatch)

Sources: 2010 Congestion Management Process Technical Report, *National Capital Region Transportation Planning Board, September 2010;* The Financially Constrained Long-Range Transportation Plan for the National Capital Region, *National Capital Regional Transportation Planning Board, November 2010;* Metropolitan Washington Regional Activity Centers and Clusters, *Metropolitan Washington Coalition of Governments, April 2007.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Figure 4.1: Comprehensive and Transportation Plans Summary – Inner Subarea
Metropolitan Washington Council of Governments (MWCOG) and National Capital Region Transportation Planning Board (TPB)
Arlington, Fairfax, Loudoun, and Prince William Counties; the District of Columbia; and Cities of Alexandria, Falls Church, Fairfax, and Manassas and Manassas Park

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Arlington County#	VA	208,000	252,000	44,000	21%	0.6%
City of Alexandria#	VA	140,000	188,000	48,000	35%	1.0%
City of Fairfax*	VA	23,000	27,000	4,000	21%	0.6%
City of Falls Church*	VA	12,000	17,000	5,000	40%	1.1%
City of Manassas*	VA	38,000	54,000	16,000	44%	1.2%
City of Manassas Park!	VA	14,000	21,000	7,000	52%	1.4%
District of Columbia#	D.C.	602,000	761,000	159,000	26%	0.8%
Fairfax County#	VA	1,082,000	1,281,000	199,000	18%	0.6%
Loudoun County#	VA	312,000	440,000	128,000	41%	1.1%
Prince William County#	VA	402,000	564,000	162,000	40%	1.1%
Total		2,833,000	3,605,000	772,000	27%	0.8%

*Sources: * Jurisdiction Comprehensive Plan or Staff Projection # MWCOG Round 8.0 Forecasts ! Virginia Employment Commission*

Transit Service Providers

Washington, D.C.
- Metrobus
- D.C. Circulator
- Metrorail
- Virginia Railway Express (VRE)
- Maryland Area Regional Commuter (MARC)
- Amtrak

Arlington County
- ART
- Metrobus
- Metrorail
- VRE

Fairfax County
- Fairfax Connector
- Metrobus
- Metrorail
- VRE

Loudoun County
- Loudoun County Transit (LC Transit)
- Virginia Regional Transit (VRT)
- Prince William County
- PRTC OmniRide and OmniLink
- VRE and Amtrak

City of Alexandria
- DASH
- Metrobus
- Metrorail, VRE, and Amtrak

City of Falls Church
- Metrobus
- Metrorail

City of Fairfax
- City-University Energysaver (CUE)
- Metrobus

Mobility Issues

Existing
- Top Delay Corridors [level of service (LOS) E or worse] – a.m. peak period
  - I-66 eastbound from VA 234 and VA 267
  - I-95 northbound between Dale Boulevard and Lorton Road
  - I-395 northbound between Franconia Road and VA 7
- Top Delay Corridor (LOS E or worse) – p.m. peak period
  - Southwest/Southeast Freeway northbound between VA 27 and Pennsylvania Avenue
- Arterial Congestion (LOS E or worse) – p.m. peak period
  - Virginia – US 1, US 29, VA 123, and VA 286 (Fairfax County Parkway)
  - D.C. – Wisconsin Avenue, 17th Street, I Street, and H Street

Future (2040)
- Daily vehicle miles of travel to increase 22 percent by 2040
- Daily lane-miles of congestion to increase 38 percent by 2040
- I-95 and I-495 in Virginia forecast to improve due high-occupancy toll (HOT) lanes
- Loudoun and Prince William to experience greatest increase in congestion of the region

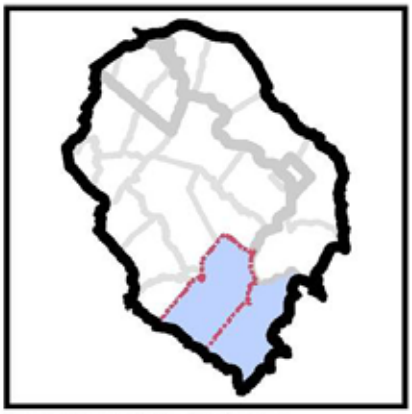
Committed Roadway Projects

Facility	Improvement Type	Lanes From	Lanes To	Limits	Year
I-66	Add 2 HOV Lanes	4	6	US 15 and US 29	2018
I-95	Widen	6	8	VA 286 and Prince William County	2011
I-395 HOV	Widen HOV Lanes	2	3	Turkeycock Run and I-495	2015
I-495	Add 4 HOT Lanes	8	12	VA 193 (Georgetown Pike) and I-95	2030
I-95 HOT	Convert 2 HOV Lanes to HOT	2	2	I-495 and VA 234 (Dumfries Road)	2012
I-95 HOT	Add 2 HOT Lanes	0	2	VA 234 (Dumfries Road) and VA 610	2015
US 1	Widen	4	6	VA 235 (Mt. Vernon Hwy) and VA 611	2020
US 1	Widen	4	6	Brady's Hill Road and VA 638	2025
US 15	Widen	2	4	I-66 and US 29	2040
US 29	Widen	4	6	City of Fairfax and Falls Church	2025
US 50	Widen	4	6	US 15 and VA 28	2015
US 50	Widen	4	6	City of Fairfax and Arlington County	2025
VA 7	Widen	4	6	Rolling Holly Dr. and Lewinsville Road	2030
VA 7	Widen	6	8	VA 267 and I-495	2030
VA 7 Bypass	Widen	4	6	US 15 (North) and US 15 (South)	2020
VA 28	Widen	6	8	I-66 and VA 7	2025
VA 123	Widen	4	6	Burke Center Pky and Braddock Road	2025
VA 236	Widen	4	6	Pickett Road and Braddock Road	2030
VA 411	Construct	0	4 - 6	US 50 and I-66	2035
VA 286	Add 2 HOV Lanes	4	6	VA 123 and VA 267	2035

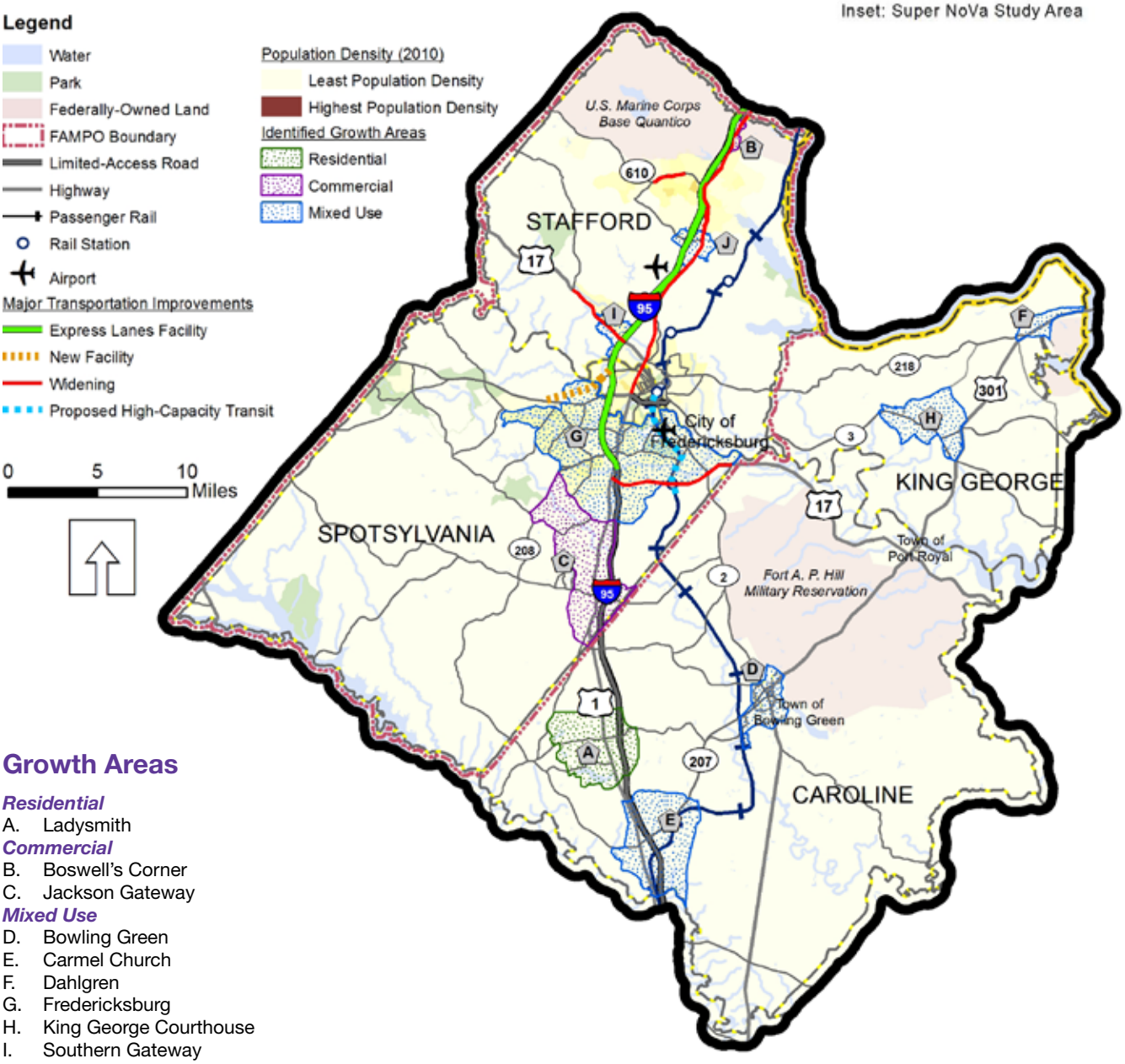
Committed Transit Projects

- Crystal City/Potomac Yard Transitway
- Columbia Pike Streetcar
- Dulles Metrorail Silver Line, Phase I

George Washington Region



Inset: Super NoVa Study Area



Growth Areas

Residential

A. Ladysmith

Commercial

B. Boswell's Corner
C. Jackson Gateway

Mixed Use

D. Bowling Green
E. Carmel Church
F. Dahlgren
G. Fredericksburg
H. King George Courthouse
I. Southern Gateway
J. Stafford Courthouse

Figure 4.2: Comprehensive and Transportation Plans Summary – George Washington Region (GWRC)

GWRC and Fredericksburg Area Metropolitan Planning Organization (FAMPO)

Caroline, King George, Spotsylvania, and Stafford Counties and City of Fredericksburg

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Caroline County*	VA	29,000	51,000	22,000	80%	2.0%
City of Fredericksburg#	VA	24,000	31,000	7,000	29%	0.9%
King George County*	VA	24,000	47,000	23,000	99%	2.3%
Spotsylvania County*	VA	122,000	270,000	148,000	121%	2.7%
Stafford County*	VA	129,000	269,000	140,000	109%	2.5%
Total		328,000	668,000	340,000	104%	2.4%

*Sources: * Jurisdiction Comprehensive Plan or Staff Projection # MWCOG Round 8.0 Forecasts*

Primary Transportations Corridors

Primary East-West Corridors

- US 17
- VA State Routes 3, 208, 218, and 610

Primary North-South Corridors

- I-95
- US 1 and 301
- VA State Routes 2 and 207

TDM Agency

- GW Ride Connect

Transit Service Providers

Stafford County

- Fredericksburg Regional Transit (FRED)
- Quick's, Martz
- VRE and Amtrak

Spotsylvania County

- FRED (Local Bus)
- Quick's and Martz (Commuter Bus)

Caroline and King George Counties

- FRED (Local Bus)

Mobility Issues

Existing

- I-95 operates at LOS E or worse from south of Fredericksburg to the Prince William County line
- Primary routes in the vicinity of the City of Fredericksburg operate at LOS E or F

Future (2040)

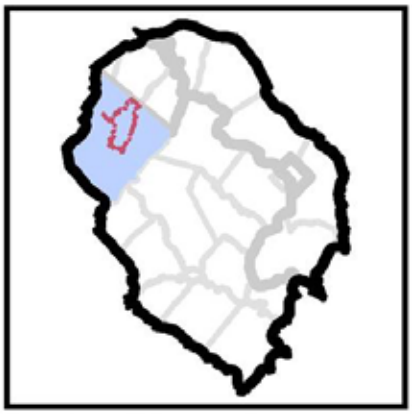
- Without improvements to I-95, US 1 and almost all primary routes operate at LOS E or worse
- With fiscally-constrained projects built, I-95 will operate at LOS F north of Fredericksburg and LOS E in Caroline County

Committed Roadway Projects

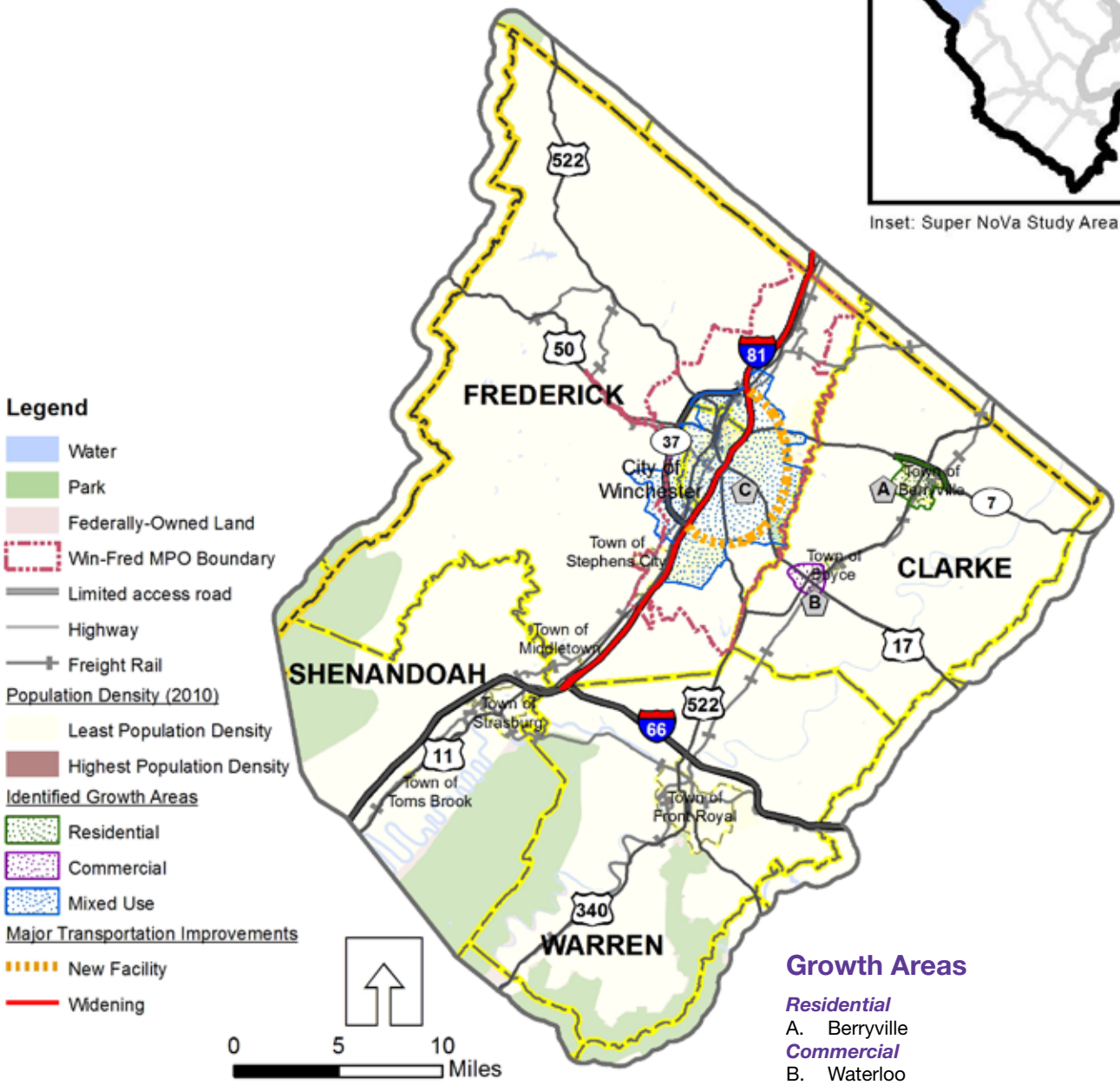
Facility	Improvement Type	Lanes		Limits	Year
		From	To		
I-95 HOT	Construct 2 HOT Lanes	0	2	Interchange #126 and Prince William County Line	2015
US 1	Widen	4	6	US 17 and Prince William County Line	2020
US 17	Widen	2	4	Tidewater Trail and I-95	2015
US 17	Widen	4	6	Berea Church Road and Hartwood Road	2030
—	Construct New Toll Road	0	4	I-95 and US 3, West of Fredericksburg	2020
VA 610	Widen	5	6	Shelton Shop Road and Onville Road	2035

Sources: 2035 George Washington Regional Long Range Transportation Plan, *Fredericksburg Area Metropolitan Planning Organization, January 2009;* Your Vision, Our Future: *The George Washington Regional Scenario Planning Study, George Washington Regional Commission, October 2010.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Shenandoan Valley



Inset: Super NoVa Study Area



Growth Areas

Residential
A. Berryville
Commercial
B. Waterloo
Mixed Use
C. Winchester

About one third of the population in the region will be located in the Win-Fred MPO area.

New development will be primarily limited to the expansion of existing towns and cities, especially Winchester.

Figure 4.3: Comprehensive and Transportation Plans Summary – Shenandoah Valley Subarea
Northern Shenandoah Valley Regional Commission (NSVRC) and Win-Fred Metropolitan Planning Organization (Win-Fred)
Clarke, Frederick, Shenandoah, and Warren Counties and City of Winchester

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Frederick County*	VA	78,000	139,000	61,000	77%	1.9%
Warren County*	VA	38,000	63,000	25,000	68%	1.7%
Shenandoah County*	VA	42,000	53,000	11,000	26%	0.8%
City of Winchester*	VA	26,000	36,000	10,000	38%	1.1%
Clarke County*	VA	17,000	23,000	6,000	35%	1.0%
Total		304,000	417,000	113,000	37%	1.1%

*Source: * Jurisdiction Comprehensive Plan or Staff Projection*

Primary Transportations Corridors

Primary East-West Corridors

- I-66
- US Route 50
- VA State Route 7

Primary North-South Corridors

- I-95
- US Routes 1 and 301
- VA State Routes 2 and 207

TDM Agency

- NSVRC RideSmart

Transit Service Providers

Clarke County

- VRT Demand Response Service

Warren County

- Royal Trolley (FRAT)

Frederick County and Winchester

- WinTran

Mobility Issues

Existing

- I-66, I-81, US 340, and VA 7 throughout the region have operational deficiencies, especially in the vicinity of Winchester

Future (2040)

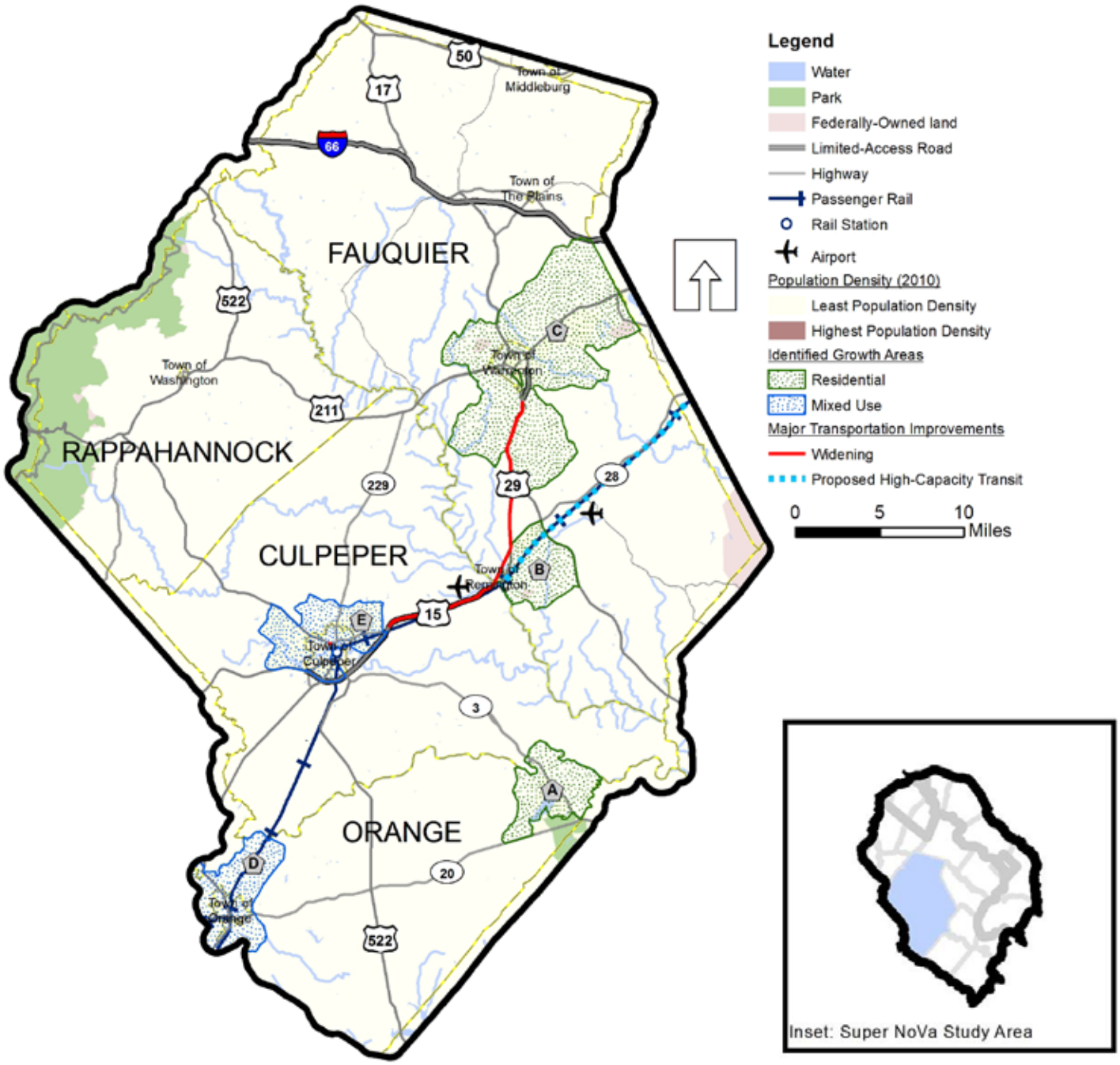
- Severe congestion will occur on major routes in and around the City of Winchester, especially on VA 7 and US 17/50

Committed Roadway Projects

Facility	Improvement Type	Lanes		Limits	Year
		From	To		
I-81	Widen	4	6	South MPO Boundary and Mile 310	2030
I-81	Construct Collector-Distributor	0	4	Mile 310 and Mile 313	2030
I-81	Widen	4	6	Mile 313 and North MPO Boundary	2030
VA 37	Complete Bypass	0	4	Around Winchester to the East	2030

Sources: Northern Shenandoah Valley Regional Commission 2035 Rural Long Range Transportation Plan, Northern Shenandoah Valley Regional Commission, *August 2011;* 2030 Transportation Plan, *Win-Fred Metropolitan Planning Organization, October 2005.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Rappahannock-Rapidan Region



Growth Areas

Residential

A. Locust Grove
B. Remington-Bealton
C. Warrenton

Mixed Use

D. Orange
E. Culpeper

Figure 4.4: Comprehensive and Transportation Plans Summary – Rapidan Region

Rappahannock – Rapidan Regional Commission (RRRC)

Culpeper, Fauquier, Orange, and Rappahannock Counties

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Culpeper County*	VA	47,000	98,000	51,000	109%	2.5%
Fauquier County*	VA	65,000	94,000	29,000	45%	1.2%
Orange County*	VA	33,000	62,000	29,000	87%	2.1%
Rappahannock County!	VA	7,000	10,000	3,000	36%	1.0%
Total		152,000	264,000	112,000	74%	1.9%

*Sources: * Jurisdiction Comprehensive Plan or Staff Projection ! Virginia Employment Commission*

Primary Transportations Corridors

Primary East-West Corridors

- I-66
- US Routes 50 and 211
- VA State Route 20

Primary North-South Corridors

- US Routes 15, 17, 29, and 522
- Virginia Routes 3, 28, 229, and 231

TDM Agency

- RRRC Commuter Services

Transit Service Providers

Fauquier County

- Circuit Rider (Warrenton)

Culpeper County

- Town of Culpeper Trolley
- Amtrak

Orange County

- Town of Orange Toot

Mobility Issues

Existing

- Heavy traffic congestion caused by through trips in the Towns of Culpeper and Warrenton
- Large amount of traffic growth on VA 3 and VA 20 north of the Town of Orange

Future (2040)

- Operational deficiencies on VA 229 between the Town of Culpepper and US 211
- Operational deficiencies on VA 20, west of the Town of Orange

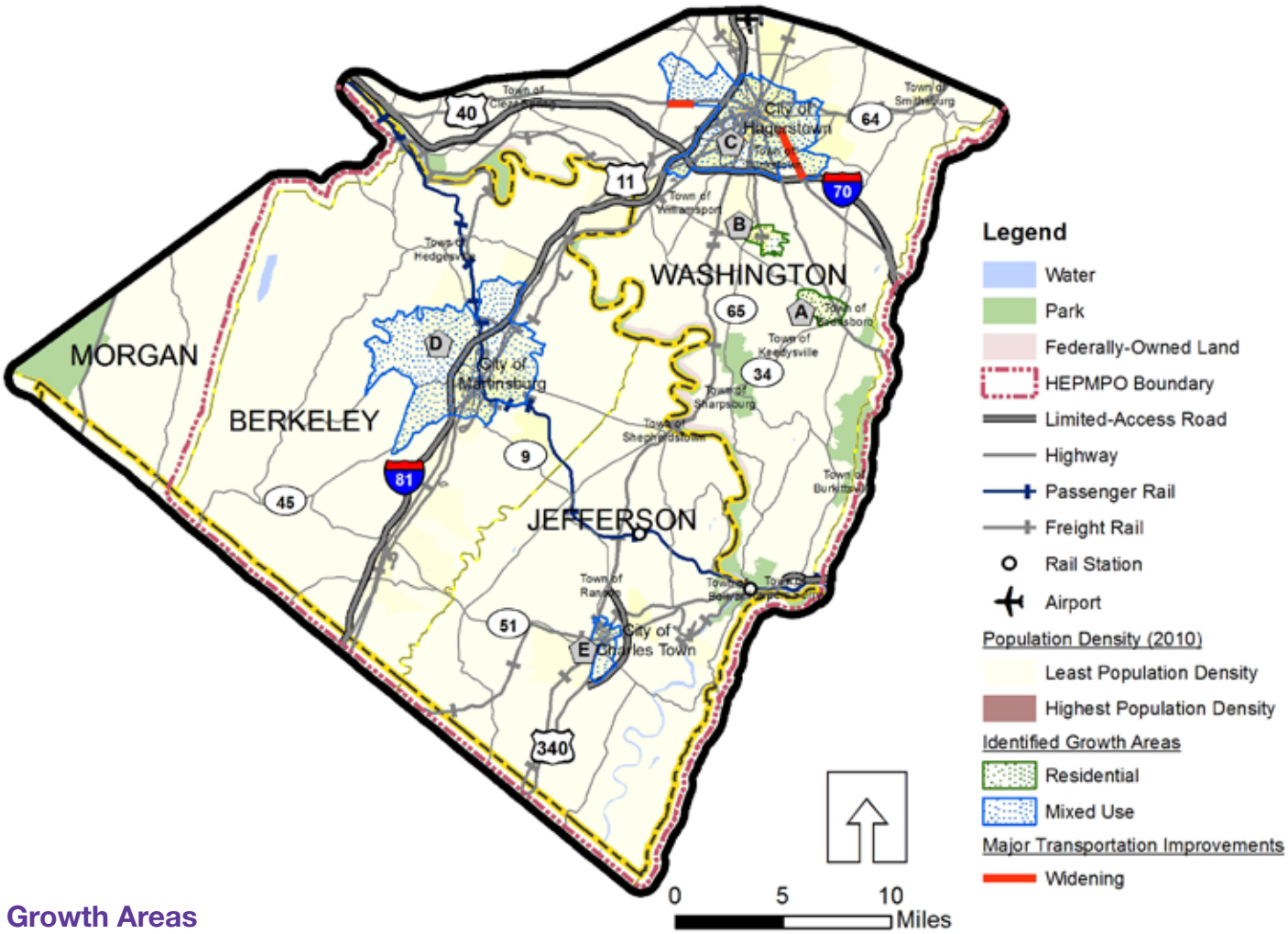
Committed Roadway Projects

Facility	Improvement Type	Lanes		Limits	Year
		From	To		
US 15	Widen	3	4	Montebello Road and VA 20	2035
US 15/29	Widen	2	4	VA 666 and VA 665	2035
VA 3	Widen	2	4	Stevensburg and Lingnum	2035
VA 3	Widen	2	4	S. Main Street and Southeastern Town of Culpeper Line	2035
VA 20	Widen	2	4	VA 15S and VA 612	2035
VA 28	Widen	2	3 -4	US 17 and US 15/29	2035

Sources: A Study of the Transportation and Land Use Planning Connection in the Rappahannock-Rapidan Region, *Rappahannock-Rapidan Regional Commission (RRRC), July 2005;* Rappahannock-Rapidan Regional Commission 2035 Long Range Transportation Plan, RRRC, *June 2011;* Rappahannock-Rapidan Regional Commission Congestion Management System Plan, *RRRC, May 2008.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Hagerstown/Eastern Panhandle

Inset: Super NoVa Study Area



Growth Areas

Residential

A. St. James
B. Boonsboro

Mixed Use

C. Hagerstown
D. Martinsburg
E. Ranson-Charles Town

Figure 4.5: Comprehensive and Transportation Plans Summary – Hagerstown/Eastern Panhandle

Easter Panhandle Regional Planning and Development Council and Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO)

Counties of Berkley (WV), Jefferson (WV), and Washington (MD)

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Berkeley County*	WV	104,000	129,000	25,000	24%	0.7%
Jefferson County*	WV	53,000	86,000	33,000	61%	1.6%
Washington County!	MD	147,000	202,000	55,000	37%	1.1%
Total		304,000	417,000	113,000	37%	1.1%

*Sources: * Jurisdiction Comprehensive Plan or Staff Projection ! Virginia Employment Commission*

Primary Transportations Corridors

Primary East-West Corridors

- I-70
- US Route 40
- MD State Routes 34 and 64
- WV State Routes 45 and 51

Primary North-South Corridors

- I-81
- US Routes 11 and 340
- MD State Route 65
- WV State Routes 9 and 25

Transit Service Providers

Berkeley and Jefferson Counties

- PanTran
- Amtrak

Washington County

- County Commuter
- Maryland Transit Administration (MTA) Commuter Bus
- Metrorail, MARC, and Amtrak

Mobility Issues

Existing

- I-81 and I-70 has heavy congestion with more than 40,000 annual average daily traffic (AADT)
- US 40, US 340, MD 65, and WV 9 have mild congestion with AADT between 20,000 and 40,000
- Eighteen percent of lane miles in urbanized areas are deficient (LOS E or F)

Future (2040)

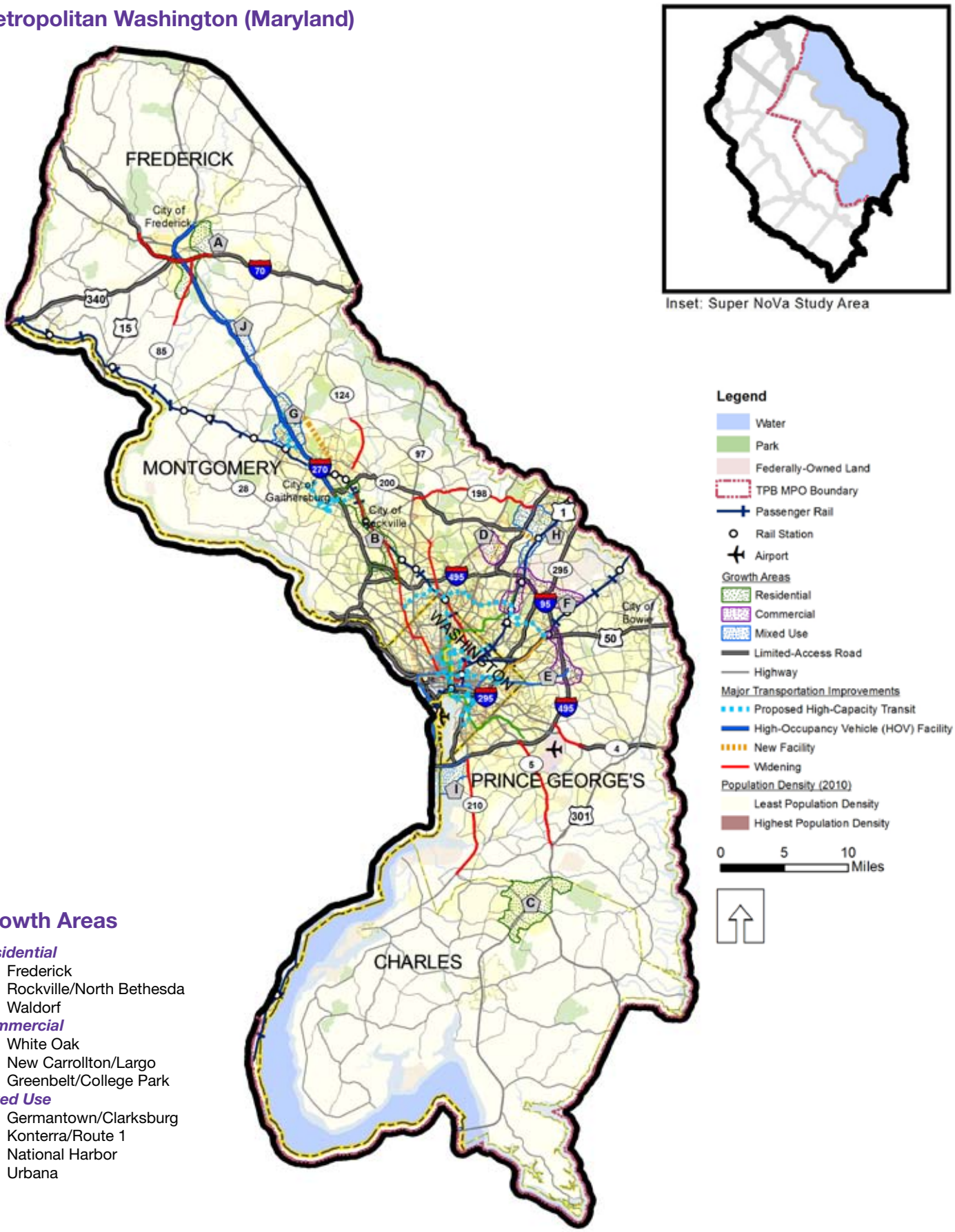
- Regional vehicle miles traveled increases by 40 percent (28 percent on freeways, 53 percent on arterials, and 57 percent on local roads)
- Regional delay increases by 175 percent (278 percent on freeways, 137 percent on arterials, and 180 percent on local roads)
- Twenty-seven percent of lane miles in urbanized areas will be deficient (LOS E or F)

Committed Roadway Projects

Facility	Improvement Type	Lanes		Limits	Year
		From	To		
US 11	Widen	2	4	Burhans Boulevard and Terminal Drive	2035
US 11	Widen	2	4	Tabler Station Road and WV 45/9	2035
US 40	Widen	2	4	MD 63 and MD 144	2035
US 40	Widen	4	6	I-70 Interchange and Eastern Boulevard	2035
WV 9	Widen	4	6	I-81 and Industrial Park	2025

Sources: Direction 2035: A Regional Framework for a Safe and Efficient Multimodal Transportation Network, *Hagerstown/Eastern Panhandle Metropolitan Planning Organization, June 2010;* Comprehensive Economic Development Strategy 2009-2013, *Eastern Panhandle Regional Planning and Development Council, August 2012.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Metropolitan Washington (Maryland)



Growth Areas

Residential

A. Frederick
B. Rockville/North Bethesda
C. Waldorf

Commercial

D. White Oak
E. New Carrollton/Largo
F. Greenbelt/College Park

Mixed Use

G. Germantown/Clarksburg
H. Konterra/Route 1
I. National Harbor
J. Urbana

Figure 4.6: Comprehensive and Transportation Plans Summary – Maryland Subarea

MWCOG and National Capital Region TPB

Counties of Charles, Frederick (MD), Montgomery, and Prince George's

Population

Jurisdiction Name	State	2010 Population	2040 Population	Overall Growth	Overall Percentage Growth	Annual Growth
Charles County$	MD	147,000	222,000	75,000	51%	1.4%
Frederick County$	MD	233,000	364,000	131,000	56%	1.5%
Montgomery County$	MD	972,000	1,199,000	227,000	23%	0.7%
Prince George's County$	MD	863,000	945,000	82,000	9%	0.3%
Total		1,835,000	2,144,000	309,000	17%	0.5%

Source: $ Maryland State Data Center

Primary Transportations Corridors

Primary East-West Corridors

- I-70 and I-370
- US Route 50
- MD Routes 4, 28, and 200

Primary North-South Corridors

- I-95, I-270, I-295, and I-495
- US Routes 1 and 301
- MD State Routes 5, 85, 97, 124, and 295

TDM Agencies

- Frederick County Commuter Services
- Montgomery County Commuter Services
- Prince George's County (RideSmart)
- Tri-County Council for Southern Maryland

Transit Service Providers

Charles County

- VanGo
- MTA Commuter Bus

Frederick County

- TransIT
- MTA Commuter Bus
- MARC and Amtrak

Montgomery County

- Ride-On
- WMATA Metrobus
- MTA Commuter Bus

Prince George's County

- TheBus
- WMATA Metrobus
- MTA Commuter Bus
- Metrorail, MARC, and Amtrak

Mobility Issues

Existing

- During the a.m. peak period, there is severe congestion (LOS E or worse) on I-495 between I-270 and I-95 and near the interchange of US 50 and MD-295
- During the p.m. peak period, there is severe congestion (LOS E or worse) in both directions throughout Montgomery County and north of US 50 in Prince George's County
- I-270 is severely congested (LOS E or worse) in the peak direction in both the a.m. and p.m. peak periods

2040

- Congestion on MD 295 worsens
- The proposed HOV or HOT lanes on I-270 alleviate some congestion
- Overall vehicle miles traveled will increase by 22 percent between 2010 to 2040
- Lane-miles of congestion will increase by 38 percent by 2040

Committed Roadway Projects

Facility	Improvement Type	Lanes		Limits	Year
		From	To		
I-70	Widen	4	6	MD 144 and Mt. Phillip Road	2020
I-270/ US 15 Corridor	Widen and Add HOV or HOT Lanes	-	-	Shady Grove Metro and Biggs Ford Road	2030
MD 4	Widen	6	8	I-495 and MD 223	2035
MD 5	Widen	6	8	I-495 and US 301	2035
MD 28/198	Widen	2/4	4/6	MD 97 and I-95	2025
M 83	Construct	0	4	Gaithersburg and Clarksville	2020
MD 85	Widen	2/4	4/6	Westview Development to Grove Road	2020
MD 124	Widen	2	6	Midcounty Highway to Warfield Road	2020
MD 200	Construct	0	6	I-95 and US 1	2015
MD 210	Widen	6	8	I-495 and Berry Road	2030

Committed Transit Projects

- Purple Line
- Corridor Cities Transitway

Sources: 2010 Congestion Management Process Technical Report, *National Capital Region Transportation Planning Board, September 2010;* The Financially Constrained Long-Range Transportation Plan for the National Capital Region, *National Capital Regional Transportation Planning Board, November 2010;* Metropolitan Washington Regional Activity Centers and Clusters, *Metropolitan Washington Coalition of Governments, April 2007.*
Note: Individual jurisdiction comprehensive and transportation plans (where applicable) also were consulted.

Table 4.1: 2040 Population by Jurisdiction

Jurisdiction Name	2010 Census Population	2040 Forecast Population	Annual Growth Percentage
Arlington County, VA[2]	208,000	252,000	0.6%
Berkeley County, WV[1]	104,000	129,000	0.7%
Caroline County, VA[1]	29,000	51,000	2.0%
Charles County, MD[3]	147,000	222,000	1.4%
City of Alexandria, VA[2]	140,000	188,000	1.0%
City of Fairfax, VA[1]	23,000	27,000	0.6%
City of Falls Church, VA[1]	12,000	17,000	1.1%
City of Fredericksburg, VA[2]	24,000	31,000	0.9%
City of Manassas Park, VA[1]	14,000	21,000	1.4%
City of Manassas, VA [4]	38,000	54,000	1.2%
City of Winchester, VA[1]	26,000	36,000	1.1%
Clarke County, VA[1]	17,000	23,000	1.0%
Culpeper County, VA[1]	47,000	98,000	2.5%
Fairfax County, VA[2]	1,082,000	1,281,000	0.6%
Fauquier County, VA[1]	65,000	94,000	1.2%
Frederick County, MD[3]	233,000*	364,000*	1.5%
Frederick County, VA[1]	78,000	139,000	1.9%
Jefferson County, WV[1]	53,000	86,000	1.6%
King George County, VA[1]	24,000	47,000	2.3%
Loudoun County, VA[2]	312,000	440,000	1.1%
Montgomery County, MD[3]	972,000	1,199,000	0.7%
Orange County, VA[1]	33,000*	62,000*	2.1%
Prince George's County, MD[3]	863,000	945,000	0.3%
Prince William County, VA[2]	402,000	564,000	1.1%
Rappahannock County, VA[4]	7,000	10,000	1.0%
Shenandoah County, VA[1]	42,000*	53,000*	0.8%
Spotsylvania County, VA[1]	122,000	270,000	2.7%
Stafford County, VA[1]	129,000	269,000	2.5%
Warren County, VA[1]	38,000	63,000	1.7%
Washington County, MD[4]	147,000*	202,000*	1.1%
Washington, D.C.[2]	602,000	761,000	0.8%
TOTAL	**6,033,000**	**7,998,000**	**0.9%**

*Entire county is not located within the Super NoVa region. Population reflects entire county.

2010 Source: US Census Bureau – 2010 Census

2040 Sources:

[1] Jurisdiction Comprehensive Plan or staff

[2] MWCOG Round 8.0 Forecasts

[3] Maryland State Data Center

[4] Virginia Employment Commission

FUTURE POPULATION AND EMPLOYMENT

Bicycle parking at East Falls Church Metrorail station.

The Super NoVa region is continually growing and is one of the largest metropolitan areas in the country. This section describes the forecast population, employment, and activity conditions forecast for 2040.

POPULATION

Population and employment forecasts used in the Super NoVa study were developed by the following regional planning agencies[1] with input from local jurisdictions:

- MWCOG
- GWRC
- WinFred MPO
- HEPMPO

For jurisdictions that are not part of a metropolitan planning organization, forecasts obtained from comprehensive plans or jurisdictional staff were used.

By the year 2040, the population of the Super NoVa region is forecast to grow to approximately 8 million people. This represents an increase of approximately 2 million people, or 35 percent of the 2010 population. Population by jurisdiction is shown in **Table 4.1** on the preceding page.

Growth in population will occur in existing residential areas and spread to new areas. While the densest areas are still located in the region's inner area, population is forecast to spread further into the suburbs. **Figure 4.7** and **Figure 4.8** show the forecast 2040 population density for the entire Super NoVa region and the inner area, respectively.

The change in population between 2010 and 2040 highlights areas with increased population that may need new or increased transit service. In addition to growth in the inner area and along major commuting corridors, a pronounced increase in growth is forecast to occur in many parts of outer suburbs, such as eastern Loudoun and Prince William Counties. In the more rural areas of the region, growth is more concentrated to areas that have existing development. **Figure 4.9** and **Figure 4.10** show the forecast change in population density from 2010 to 2040 (people per square mile) for the Super NoVa region and inner area, respectively.

1 TAZ data was obtained from the following metropolitan planning organizations (MPO): Metropolitan Washington Council of Governments (MWCOG), Fredericksburg Area MPO, Win-Fred County MPO, and Hagerstown/Eastern Panhandle MPO. Where models overlapped, the MWCOG model was used.

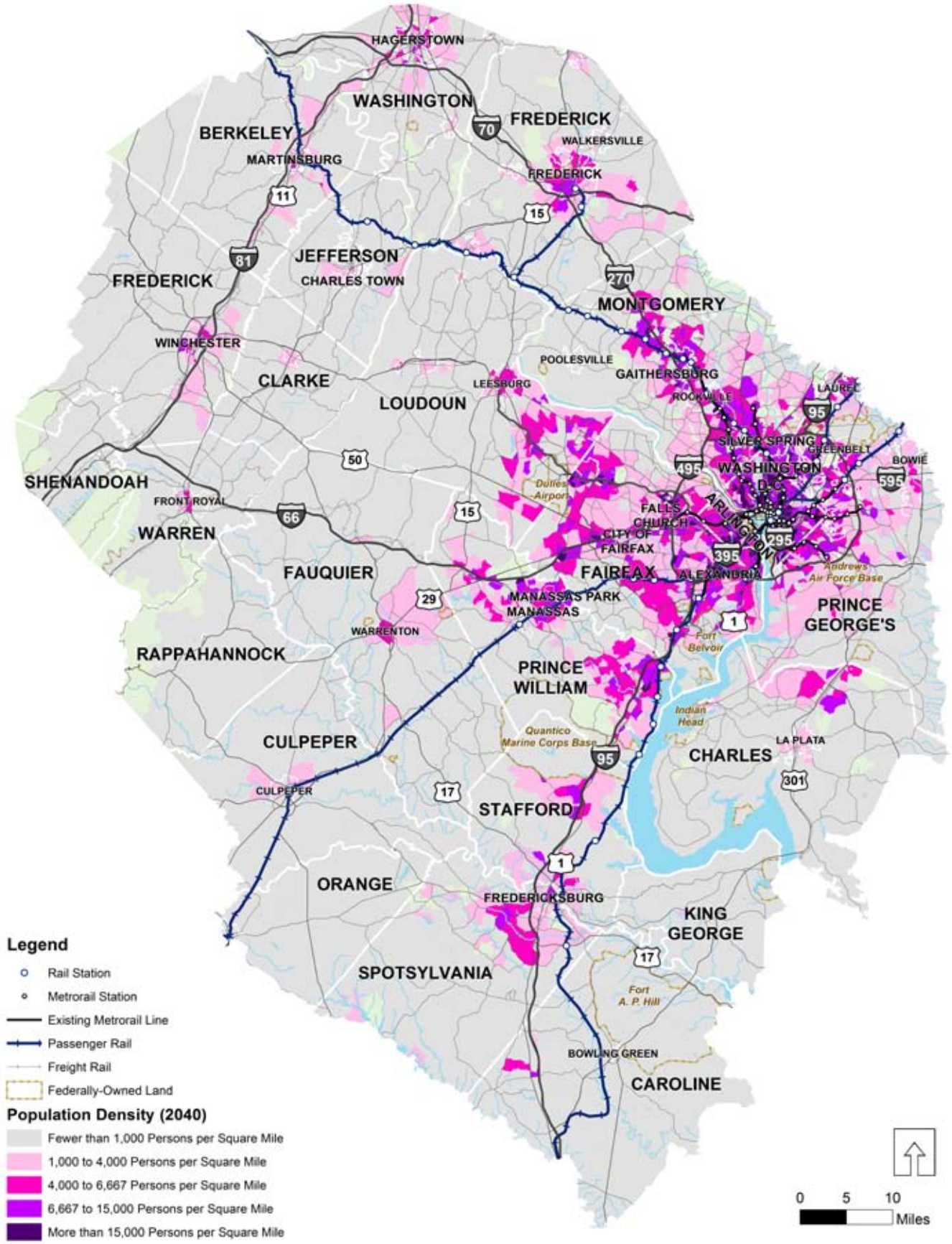


Figure 4.7: 2040 Population Density

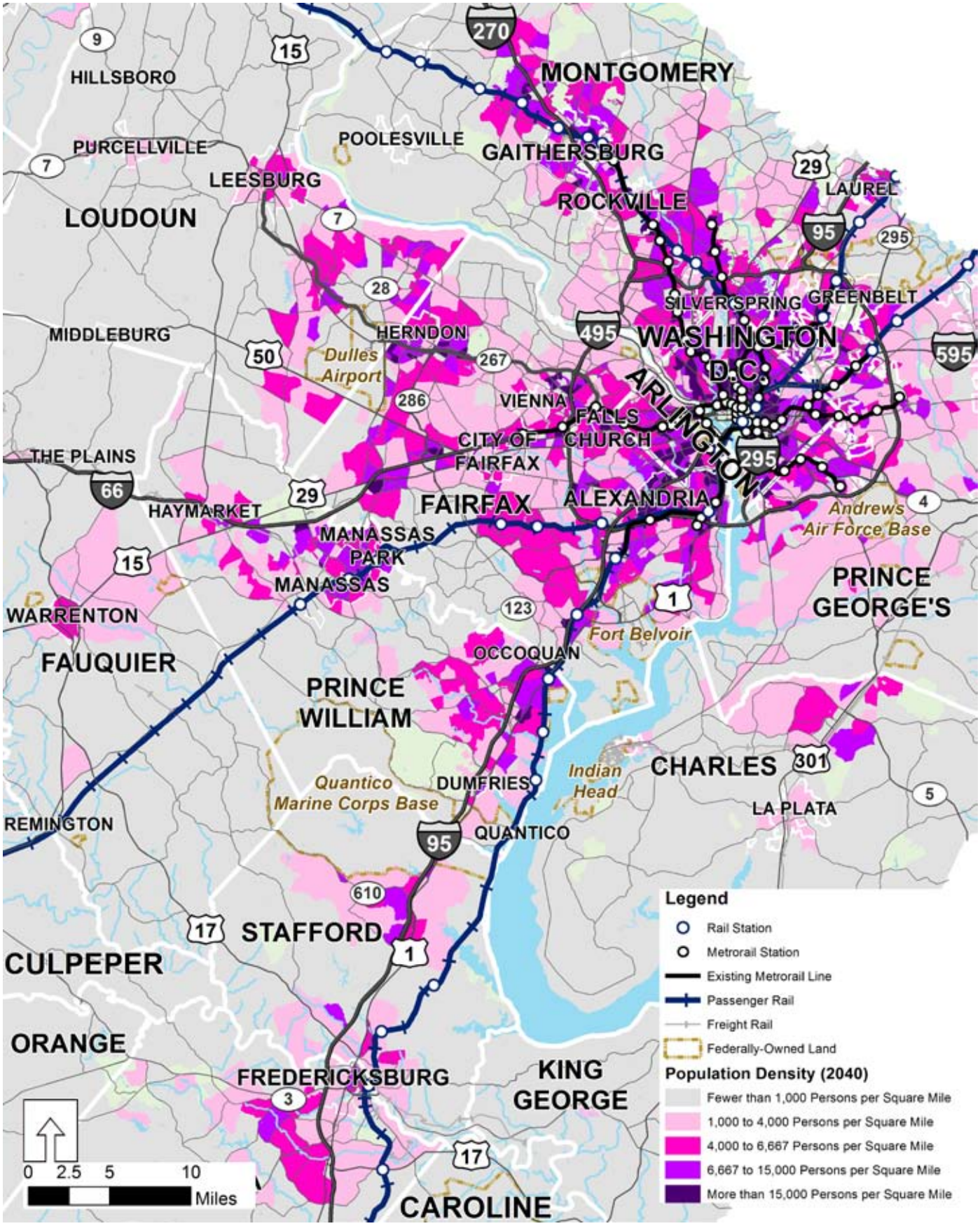


Figure 4.8: 2040 Population Density – Inner Area

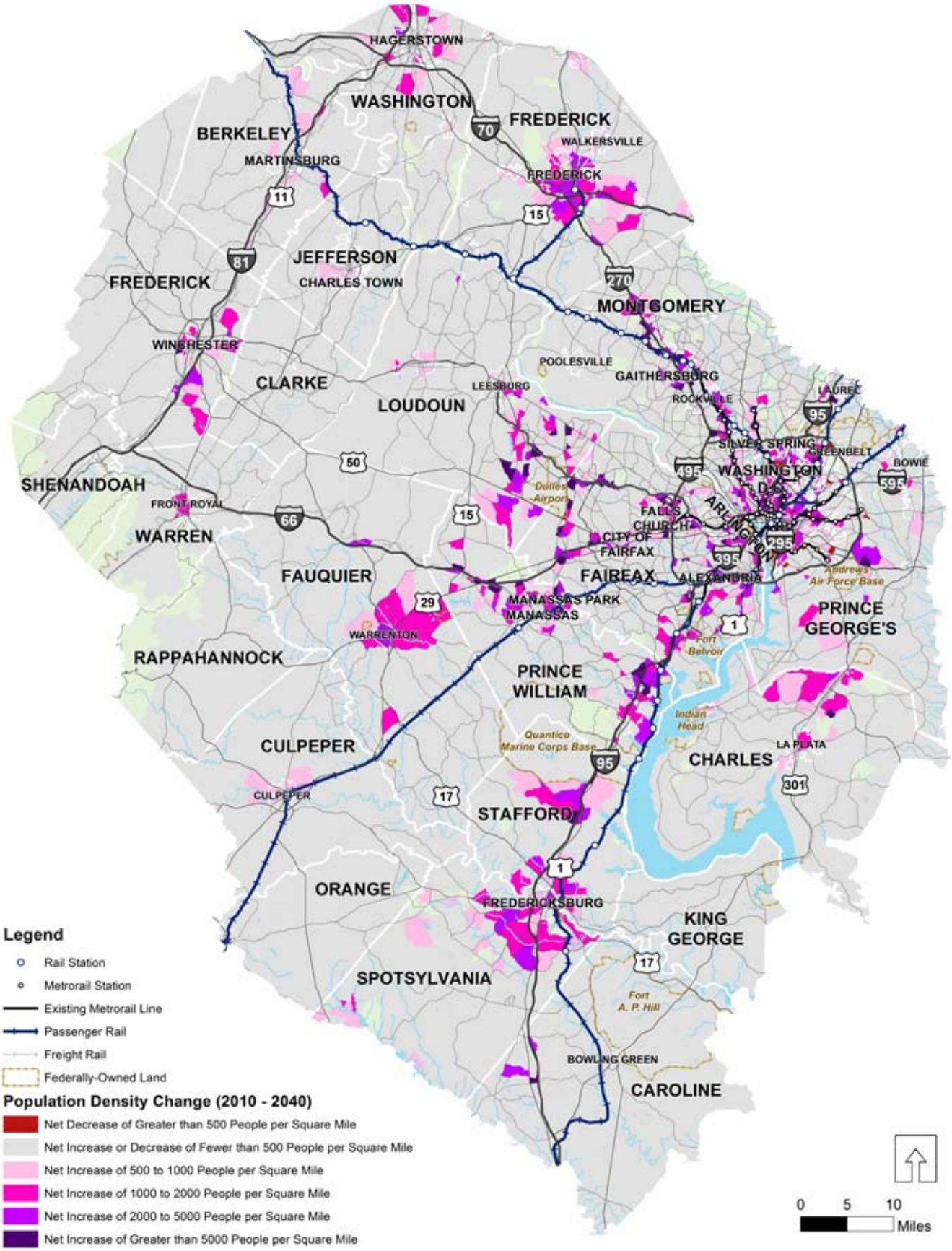


Figure 4.9: Change in Population Density (2010 to 2040)

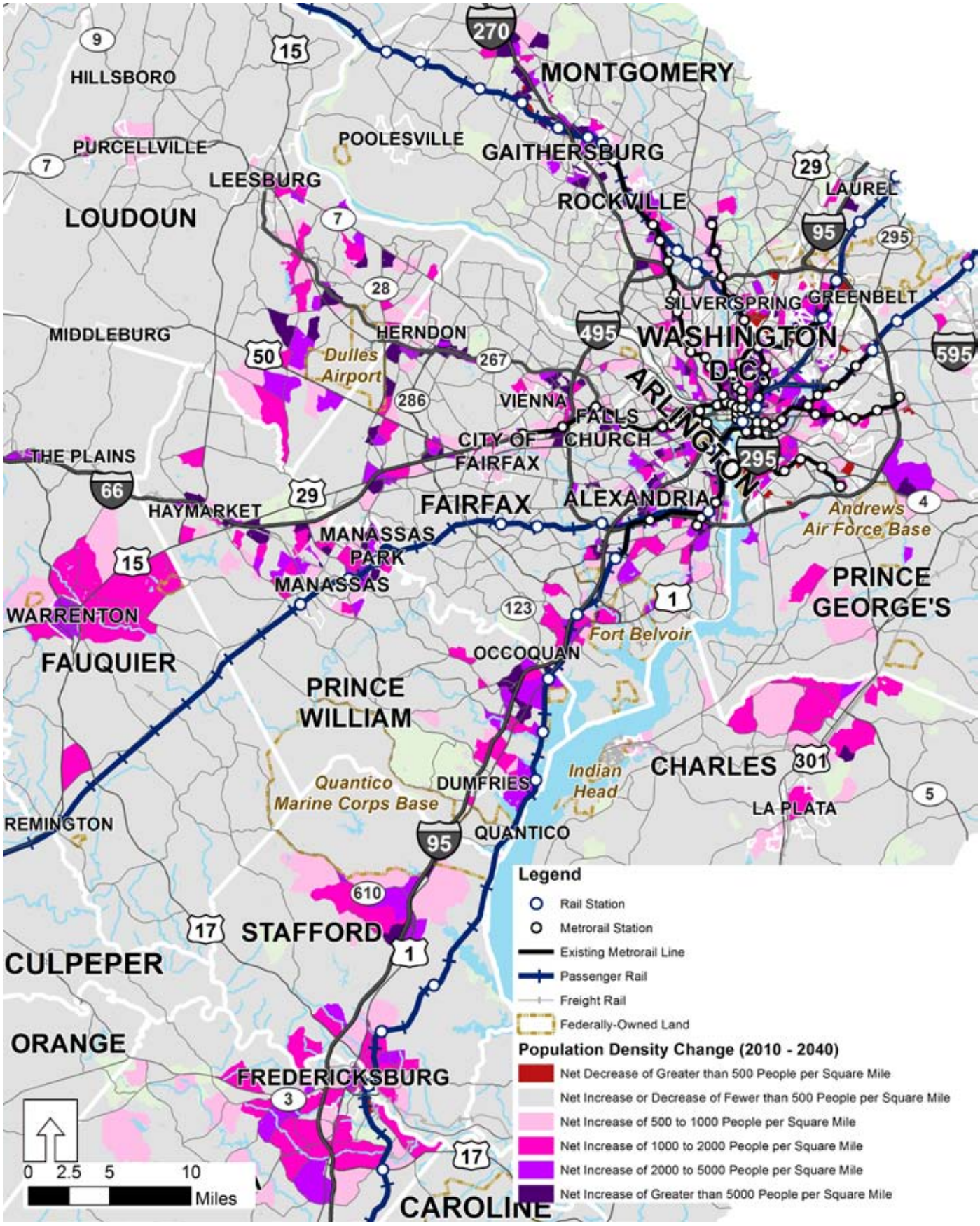


Figure 4.10: Change in Population Density – Inner Area (2010 to 2040)

EMPLOYMENT

For the purposes of the Super NoVa study, employment refers to the number of people whose jobs are located in the jurisdiction. Employment by jurisdiction is shown in **Table 4.2** on the following page. Employment forecasts used in the Super NoVa study relied on data provided by metropolitan planning agencies. For jurisdictions that are not part of a MPO, Virginia Employment Commission (VEC)-projected regional employment growth rates were applied.

Employment in 2040 is forecast to grow to approximately 5 million jobs. This represents an increase of about 1.5 million jobs, or 41 percent of the 2010 employment estimate. Major employment centers today remain the most concentrated areas of employment. **Figure 4.11** and **Figure 4.12** show the forecast 2040 employment density for the Super NoVa region and inner area, respectively.

Analysis of the forecast change in employment highlights significant employment growth throughout the region. **Figure 4.13** and **Figure 4.14** show the forecast change in employment density from 2010 to 2040 (employees per square mile) for the Super NoVa region and inner area, respectively.

Table 4.2: 2040 Employment by Jurisdiction

Jurisdiction Name	2010 Employment	2040 Employment	Annual Growth Percentage
Arlington County, VA	205,000	281,000	1.1%
Berkeley County, WV	44,000	63,000	1.2%
Caroline County, VA	7,000	16,000	2.7%
Charles County, MD	62,000	83,000	1.0%
City of Alexandria, VA	109,000	160,000	1.3%
City of Fairfax, VA	27,000	38,000	1.1%
City of Falls Church, VA	11,000	18,000	1.6%
City of Fredericksburg, VA	28,000	46,000	1.6%
City of Manassas Park, VA	5,000	5,000	0.4%
City of Manassas, VA	25,000	35,000	1.2%
City of Winchester, VA	30,000	43,000	1.2%
Clarke County, VA	5,000	7,000	1.1%
Culpeper County, VA	14,000	22,000	1.3%
Fairfax County, VA	641,000	862,000	1.0%
Fauquier County, VA	22,000	43,000	2.2%
Frederick County, MD	139,000	171,000	0.7%
Frederick County, VA	24,000	37,000	1.5%
Jefferson County, WV	17,000	29,000	1.8%
King George County, VA	9,000	19,000	2.6%
Loudoun County, VA	144,000	285,000	2.3%
Montgomery County, MD	506,000	723,000	1.2%
Orange County, VA	8,000	12,000	1.3%
Prince George's County, MD	358,000	475,000	0.9%
Prince William County, VA	114,000	238,000	2.5%
Rappahannock County, VA	1,000	2,000	1.3%
Shenandoah County, VA	13,000	18,000	1.1%
Spotsylvania County, VA	38,000	67,000	1.9%
Stafford County, VA	42,000	74,000	1.9%
Warren County, VA	11,000	16,000	1.1%
Washington County, MD	79,000	91,000	0.5%
Washington, D.C.	786,000	976,000	0.7%
TOTAL	**3,524,000**	**4,955,000**	**1.1%**

Sources: Regional Travel Demand Models (MWCOG, FAMPO, Win-Fred, HEPMPO); Virginia Employment Commission.

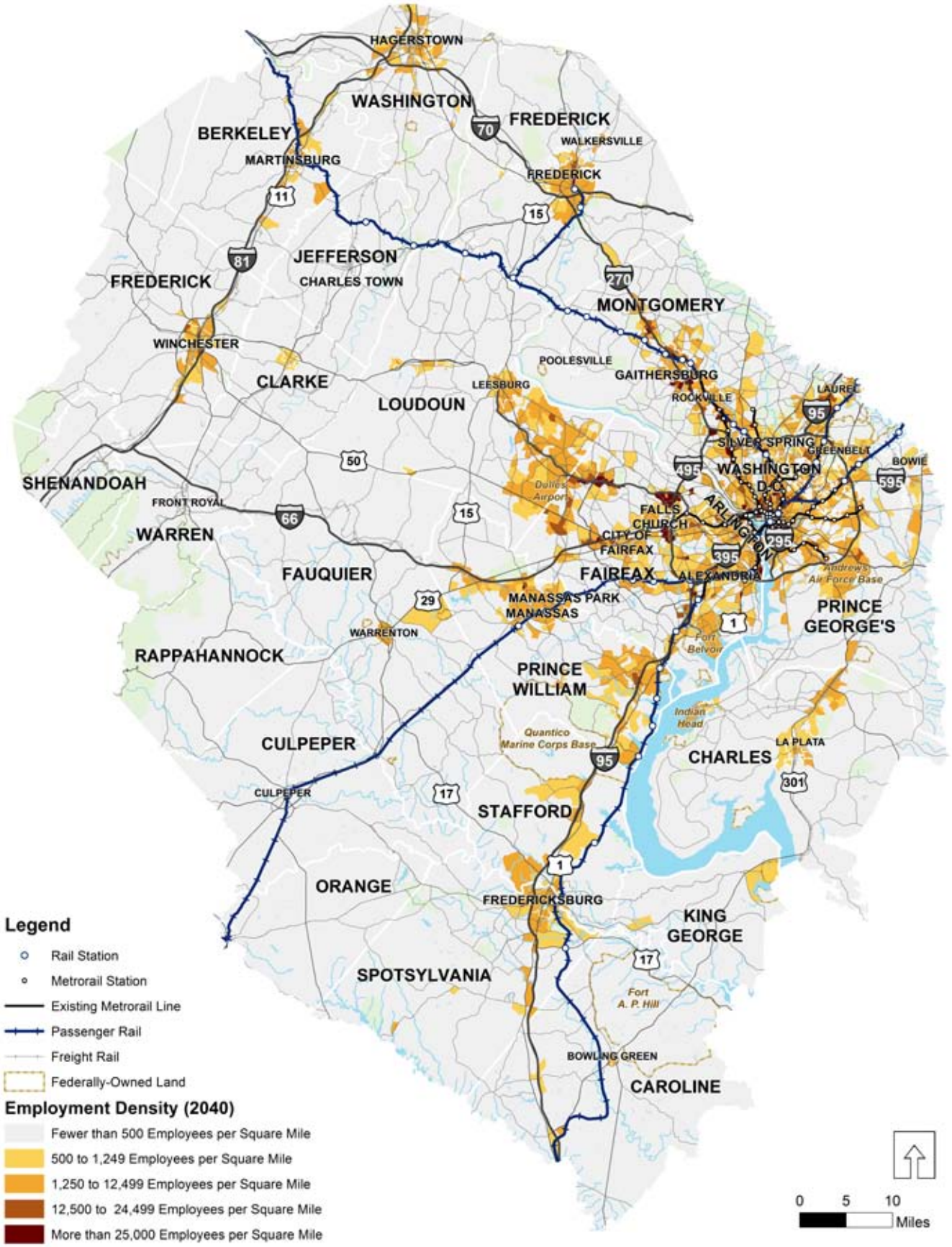


Figure 4.11: 2040 Employment Density

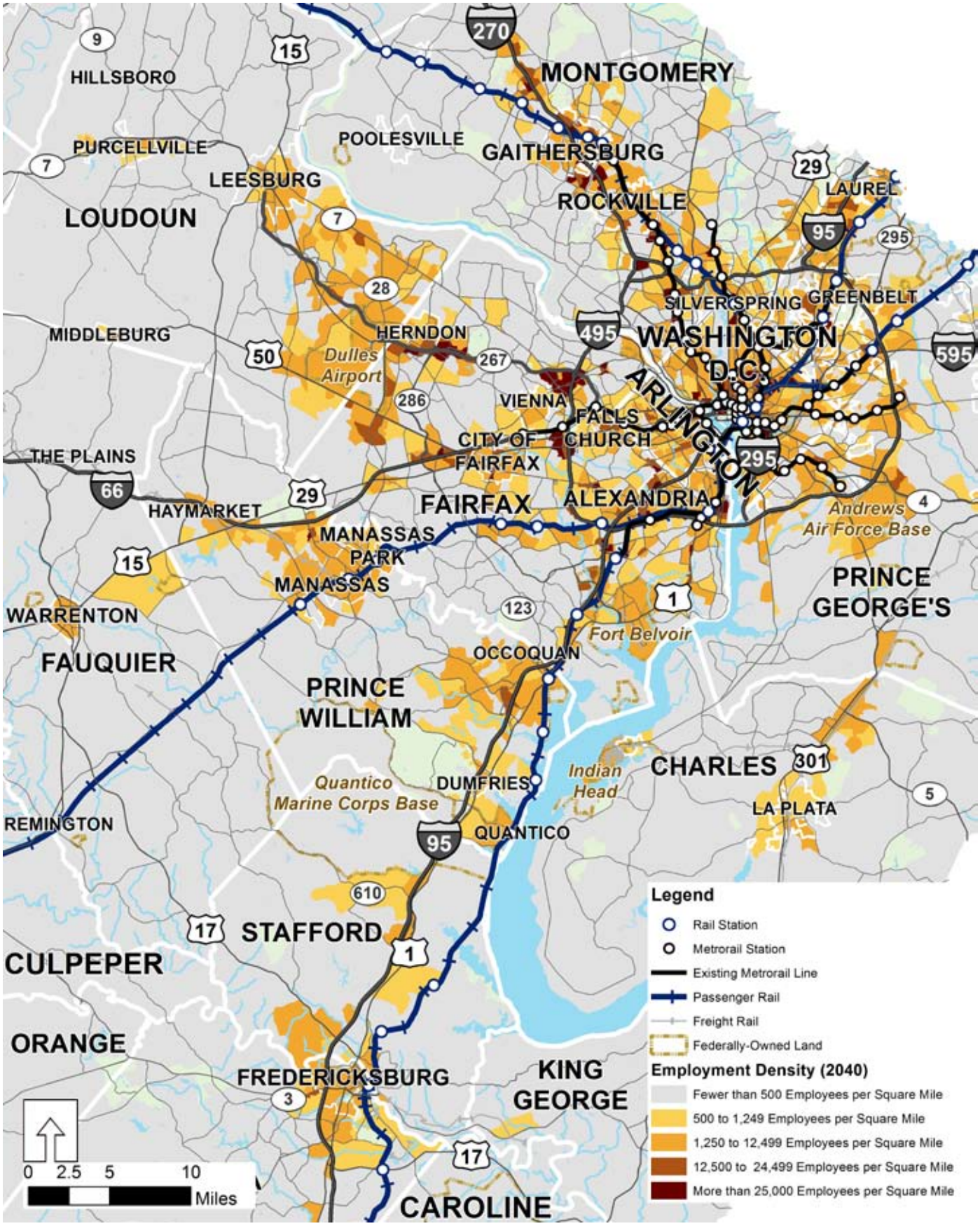


Figure 4.12: 2040 Employment Density – Inner Area

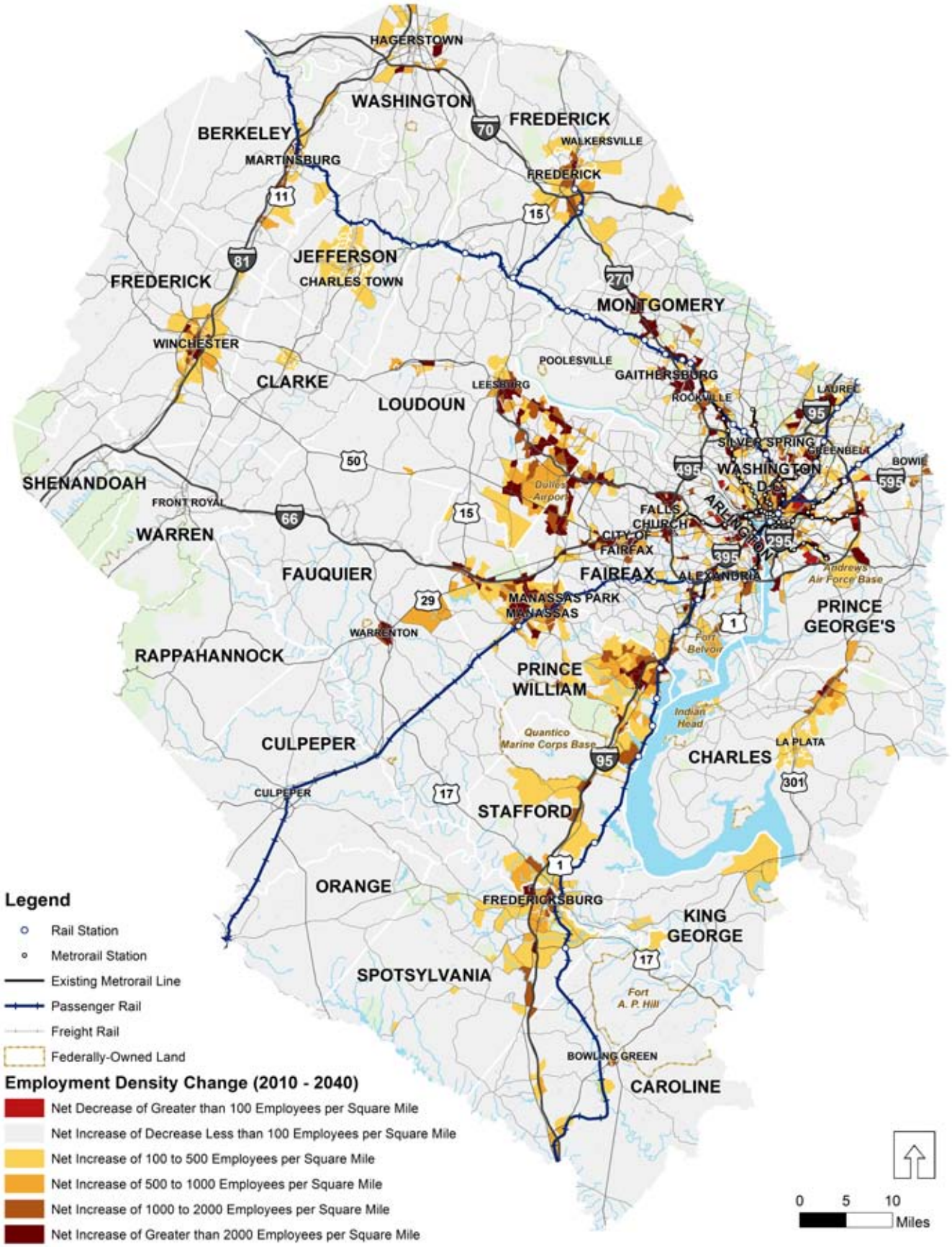


Figure 4.13: Change in Employment Density (2010 to 2040)

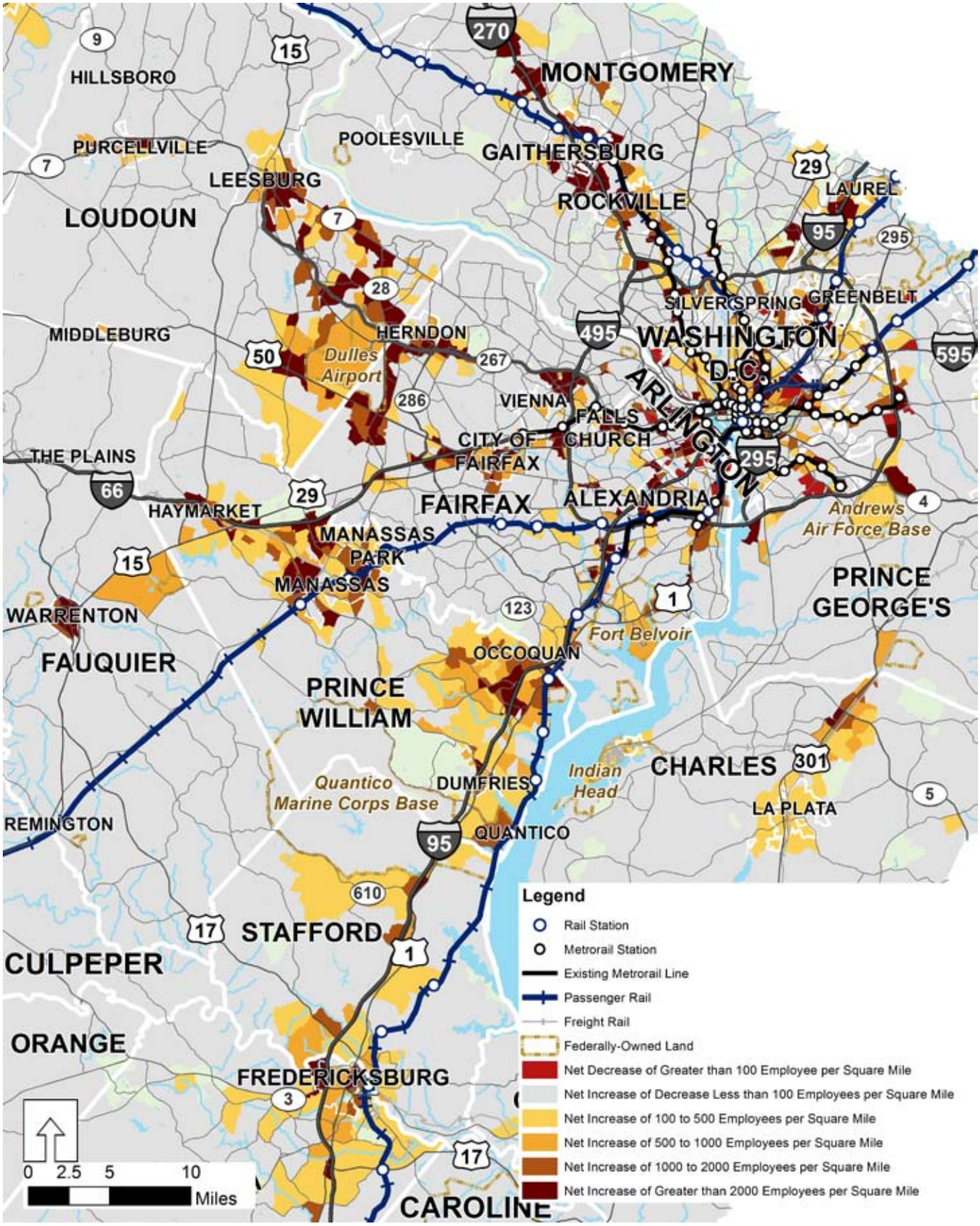


Figure 4.14: Change in Employment Density – Inner Area (2010 to 2040)

ACTIVITY

Population and employment forecasts were combined to create activity forecasts for 2040. **Table 4.3** shows activity by jurisdiction.

By 2040, the region is forecast to have 2.45 jobs and people per acre, or a 37 percent increase from the 2010 activity density. The majority of the activity of the region remains close to the region's inner area. As distances increase from the inner area, activity is primarily concentrated in centers. **Figure 4.15** and **Figure 4.16** show the forecast 2040 activity density in jobs and people per acre for the Super NoVa region and inner area, respectively.

Change in activity density is forecast to be most pronounced along the major commuting corridors and in existing employment centers. Forecasted increases in population and employment will expand the urbanized inner part of the region through Fairfax County and into portions of Prince William County and eastern Loudoun County. **Figure 4.17** and **Figure 4.18** show the forecast change in activity density from 2010 to 2040 (jobs and people per acre) for the Super NoVa region and inner area, respectively.

Table 4.3: 2040 Activity by Jurisdiction

Jurisdiction Name	2010 Activity	2040 Activity	Annual Growth Percentage
Arlington County, VA	413,000	533,000	0.9%
Berkeley County, WV	148,000	192,000	0.9%
Caroline County, VA	36,000	67,000	2.1%
Charles County, MD	209,000	305,000	1.3%
City of Alexandria, VA	249,000	348,000	1.1%
City of Fairfax, VA	50,000	65,000	0.9%
City of Falls Church, VA	23,000	35,000	1.4%
City of Fredericksburg, VA	52,000	77,000	1.3%
City of Manassas Park, VA	19,000	26,000	1.1%
City of Manassas, VA	63,000	89,000	1.2%
City of Winchester, VA	56,000	79,000	1.2%
Clarke County, VA	22,000	30,000	1.0%
Culpeper County, VA	61,000	120,000	2.3%
Fairfax County, VA	1,723,000	2,143,000	0.7%
Fauquier County, VA	87,000	137,000	1.5%
Frederick County, MD	372,000	535,000	1.2%
Frederick County, VA	102,000	176,000	1.8%
Jefferson County, WV	70,000	115,000	1.7%
King George County, VA	33,000	66,000	2.3%
Loudoun County, VA	456,000	725,000	1.6%
Montgomery County, MD	1,478,000	1,922,000	0.9%
Orange County, VA	41,000	74,000	2.0%
Prince George's County, MD	1,221,000	1,420,000	0.5%
Prince William County, VA	516,000	802,000	1.5%
Rappahannock County, VA	8,000	12,000	1.4%
Shenandoah County, VA	55,000	71,000	0.9%
Spotsylvania County, VA	160,000	337,000	2.5%
Stafford County, VA	171,000	343,000	2.3%
Warren County, VA	49,000	79,000	1.6%
Washington County, MD	226,000	293,000	0.9%
Washington, D.C.	1,388,000	1,737,000	0.8%
TOTAL	**9,557,000**	**12,953,000**	**1.0%**

Sources: Regional Travel Demand Models (MWCOG, FAMPO, Win-Fred, and HEPMPO); US Census Bureau; Virginia Employment Commission; Jurisdiction Comprehensive Plan or Staff; Maryland State Data Center.

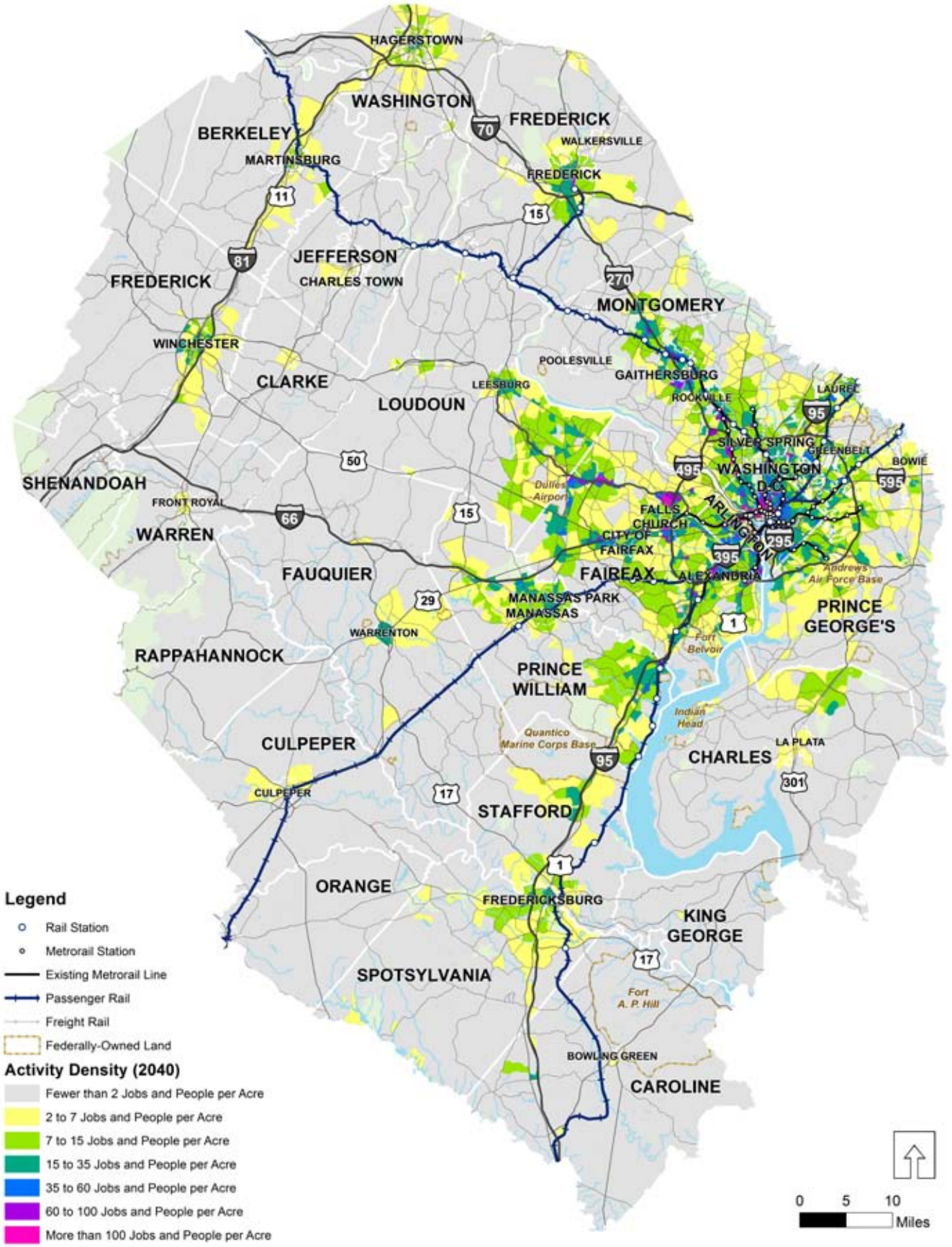


Figure 4.15: 2040 Activity Density

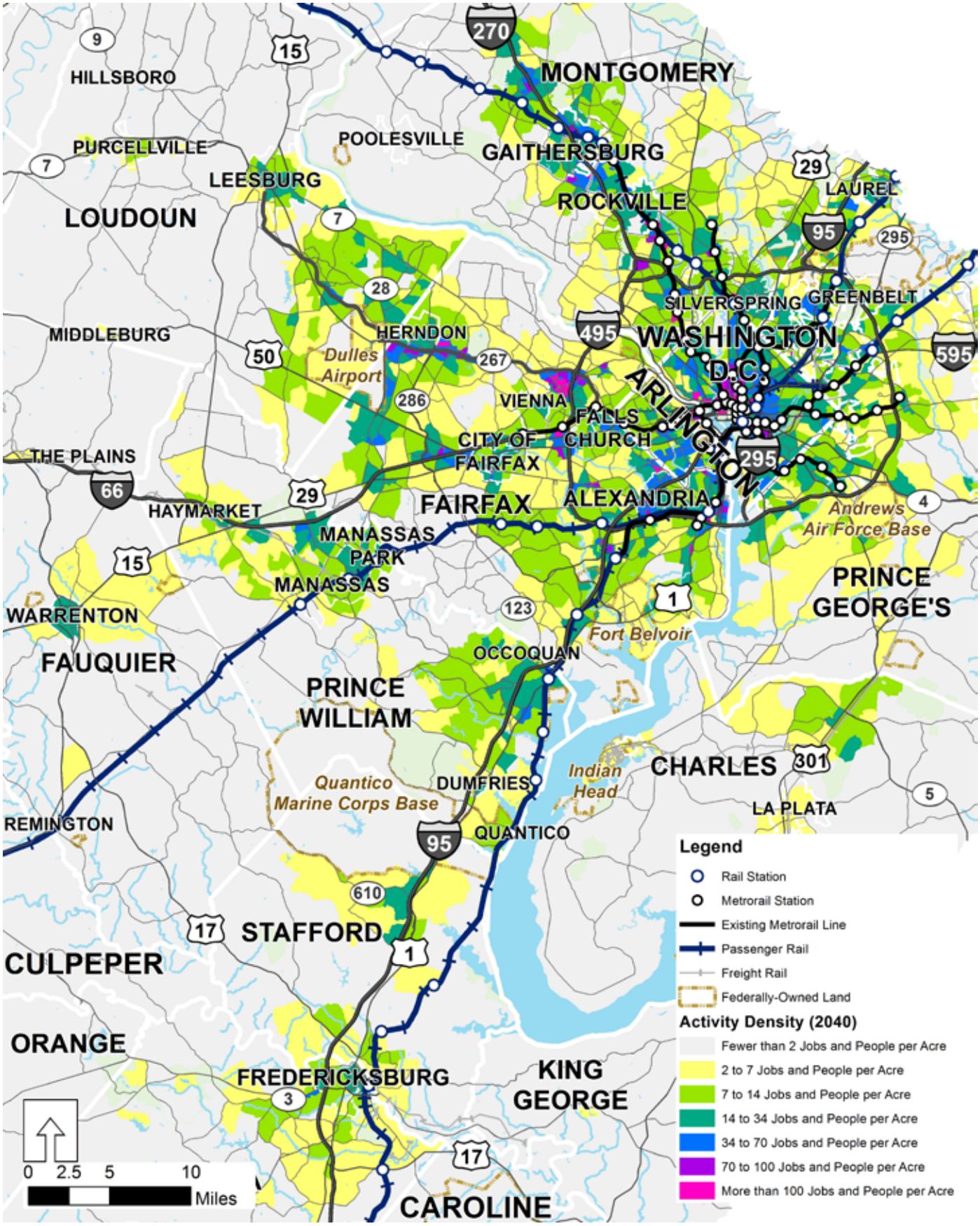


Figure 4.16: 2040 Activity Density – Inner Area

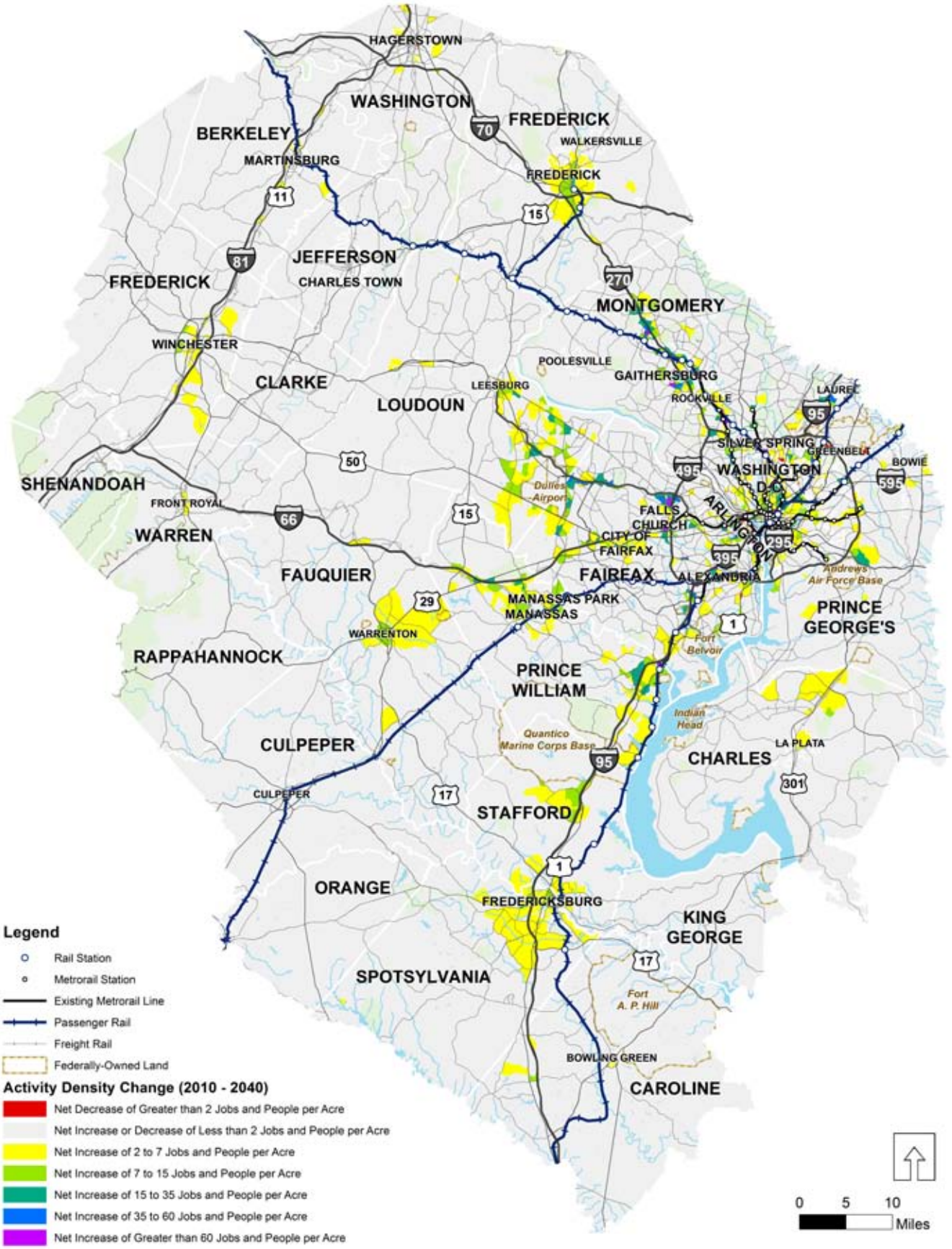


Figure 4.17: Change in Activity Density (2010 to 2040)

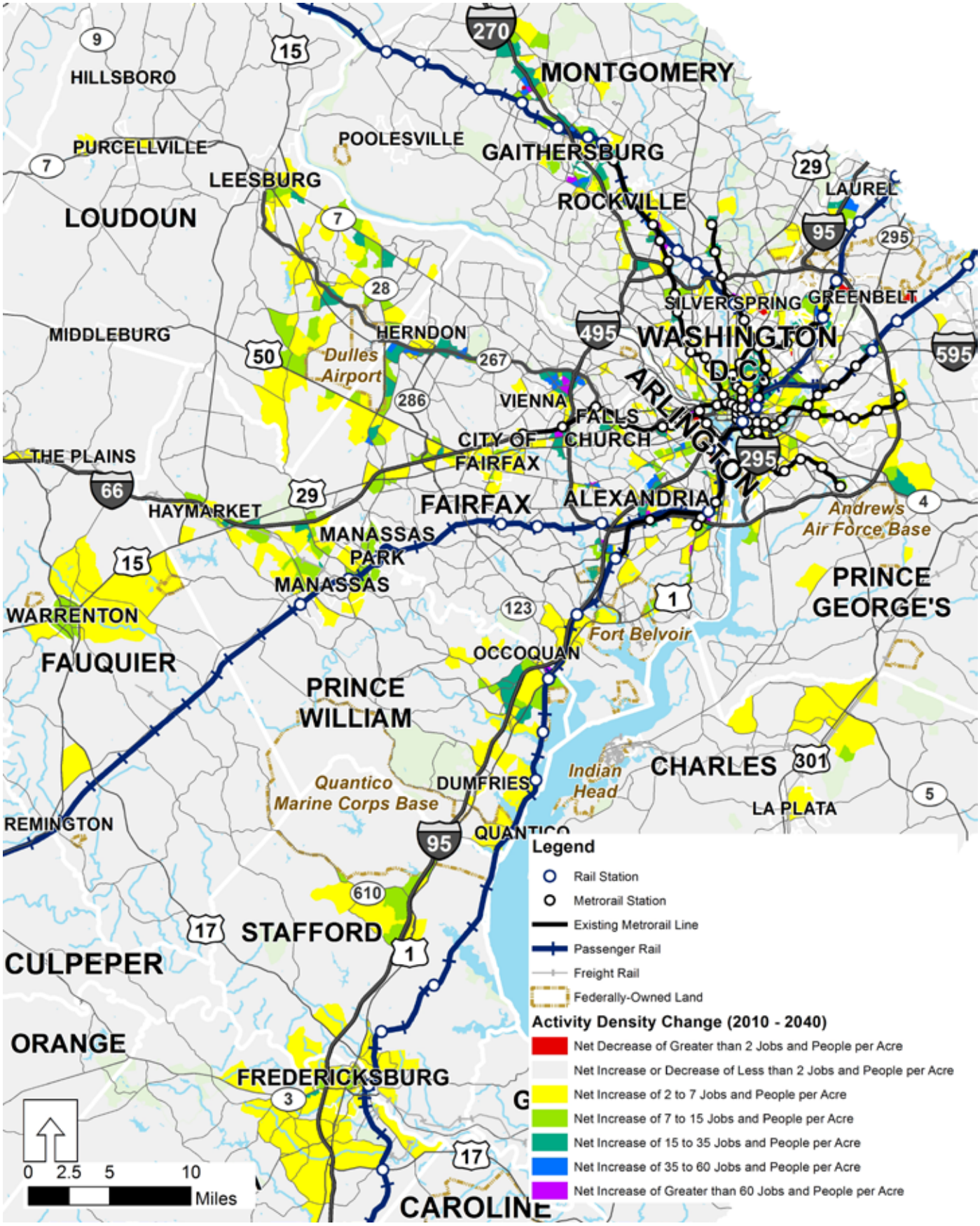


Figure 4.18: Change in Activity Density – Inner Area (2010 to 2040)

FUTURE LAND USE

Commuters make their way to Crystal City Metrorail station.

The third evaluation criterion for analysis, in addition to travel demand and demographic conditions, was land use. To analyze the entire region, a consistent set of land use definitions and terms was needed. A set of common regional place types and land use definitions were developed. Each area was categorized as one of the common place types using comprehensive plan land use and zoning data from local jurisdictions. This section describes the development of these place types and what they reveal about the region in 2040.

PLACE TYPES

The place types that were developed extend from highly urban to rural and natural. Place types were developed using the activity thresholds provided in DRPT's Multimodal and Public Space Design Guidelines. Other place types were developed using guidelines that included residential lot size, floor area ratio, and employee density. **Figure 4.19** shows the place types, including corresponding density guidelines and examples.

Core or Center Place Types			
Place Type	Activity Density Guideline (jobs + people / acre)	Example Place	Photos
Urban core	> 70	Downtown D.C., Rossyln	
Urban center	70 to > 34	Reston Town Center	
Large town or suburban center	34 to > 14	Leesburg business district	
Medium town or suburban center	14 to > 7	Fredericksburg or Culpeper business district	
Small town or suburban center	7 to > 2	Purcellville business district	
Rural or village center	2 to > 1	Lucketts, Loudoun County	

Figure 4.19: Place Type Descriptions

Other Place Types			
Place Type	Density Guideline	Characteristics	Photos
Mixed use neighborhood	> 14 jobs and people/acre	Mix of uses, lacking traditional center	
Regional retail center	.5 to 1.0 FAR* 4 employees/ 1,000 sf	Destination retail	
Suburban commercial	0.2 FAR* 3-4 employees/1,000 sf	Strip centers, shopping center	
Suburban office	0.2 to 1.0 FAR* 4 employees/ 1,000 sf	Office parks, buildings, campuses	
High density residential	< 0.25 acres/household	Multifamily, some townhomes on small lots	
Medium density residential	0.25 to 1 acres/household	Single family homes and townhomes on small lots	
Low density residential	1 to 5 acres/household	Single family homes on large lots	
Rural/natural/ very low density residential	> 5 acres/household	Parks, farmland, wetlands, single family homes on very large lots	
Industrial	0.2 FAR* 2 employees/ 1,000 sf	All industrial uses	
Institutional/ Military/Other	—	Schools, military installation, government uses, airports	

* FAR refers to floor area ratio, or the total area of a building divided by the total area of the lot on which it's located.

REGIONAL PLACE TYPE SUMMARY

After the place types were developed, each zoning or land use classification from local jurisdictions was assigned a place type and the data was mapped. The future place types do not reflect exiting conditions or necessarily future conditions in all cases, but represent what a place may become using existing comprehensive plan definitions and zoning. Near Washington, D.C., center place types tend to be closer in proximity to one another and larger in area than in the outer jurisdictions. Land area that is not part of a center in the inner suburbs tends to be residential, whereas the outer counties are generally comprised of rural or natural land with isolated rural centers.

Figure 4.20 and **Figure 4.21** show the future place types for the Super NoVa region and inner area, respectively.

PLANNED TRANSIT PROJECTS

Another factor that was taken into account when developing the recommendations for this study was regional transit projects, either under construction, programmed (funding allocated), or planned. This section briefly describes these major improvements to the region's transit service.

- **Dulles Rail Project** — Silver Metrorail Line will extend Metrorail service to Loudoun County, primarily along VA 267 west of the East Falls Church station. Heavy rail service will serve major activity centers such as Tysons Corner, Reston Town Center, and Dulles Airport.
- **I-95 Express Lanes** — HOT lanes from Stafford County to I-495. Bus transit will be able to use these lanes to avoid congestion.
- **I-495 Express Lanes** — HOT lanes on I-495 from I-95 to north of VA 267. Bus transit will be able to use these lanes to avoid congestion. Park-and-ride lot and bus service expansion is being advanced by DRPT in conjunction with this HOT/HOV lane project.
- **Potomac Yard Metrorail Station** — Infill station between National Airport and Braddock Road stations in the Potomac Yard area of the City of Alexandria.
- **Columbia Pike Streetcar** — Streetcar service between Pentagon City and Skyline along Columbia Pike (VA 244).
- **Crystal City/Potomac Yard Transitway** — High-capacity bus service between the Braddock Road Metrorail station in Alexandria and the Pentagon/ Pentagon City Metrorail station in Arlington County. Mode may transition to a streetcar north of the planned Potomac Yard Metrorail station in the future.
- **VRE Extensions** — VRE may extend the Manassas line west in Prince William County and will extend the Fredericksburg Line south to Crossroads in Spotsylvania County.
- **I-66 Environmental Study** — Tier 1 from I-495 west to Route 15 — Ongoing.
- **Route 7 Alternatives Analysis Study for Alexandria to Tysons** — Will begin Fall 2012.

Dulles Corridor Metrorail project at I-495.

Many of the improvements in the aforementioned list are either under construction or in final planning and design. In addition to these major corridor projects, planning documents such as transit development plans and corridor feasibility studies were reviewed to identify other planned projects that are not as large in scale or far along in the project development stage as the projects listed on the previous page. These plans identify potential transit service improvements for arterial corridors such a US Route 1 in Fairfax and Prince William Counties, Route 3 in Spotsylvania County, arterial transitway corridors in Alexandria, a priority transit network (PTN) in Arlington County, and enhanced public transportation corridors (EPTC) in Fairfax County. These and other planned projects were used as a framework for creating a final set of recommendations to ensure consistency and interconnectivity.

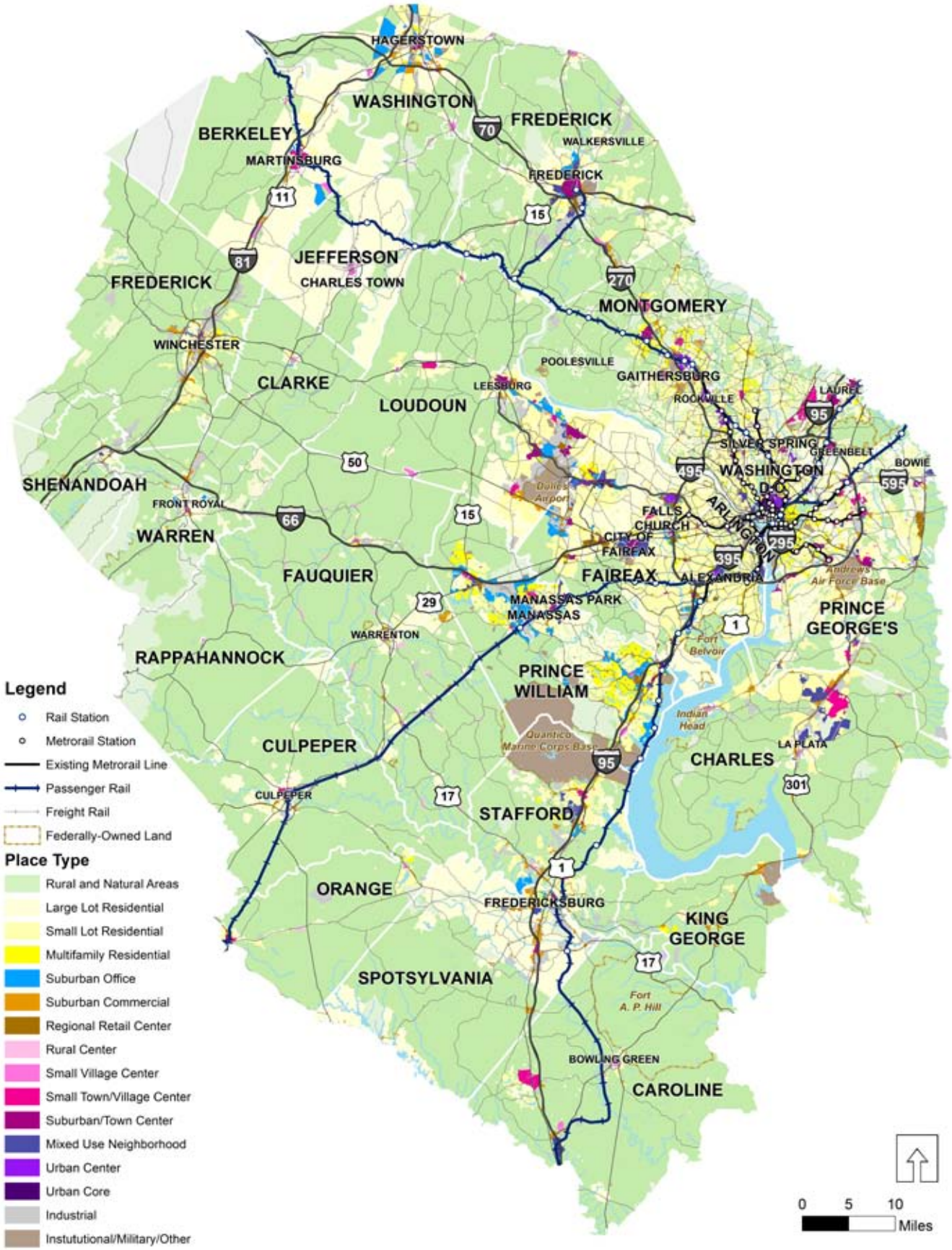


Figure 4.20: Future Place Types

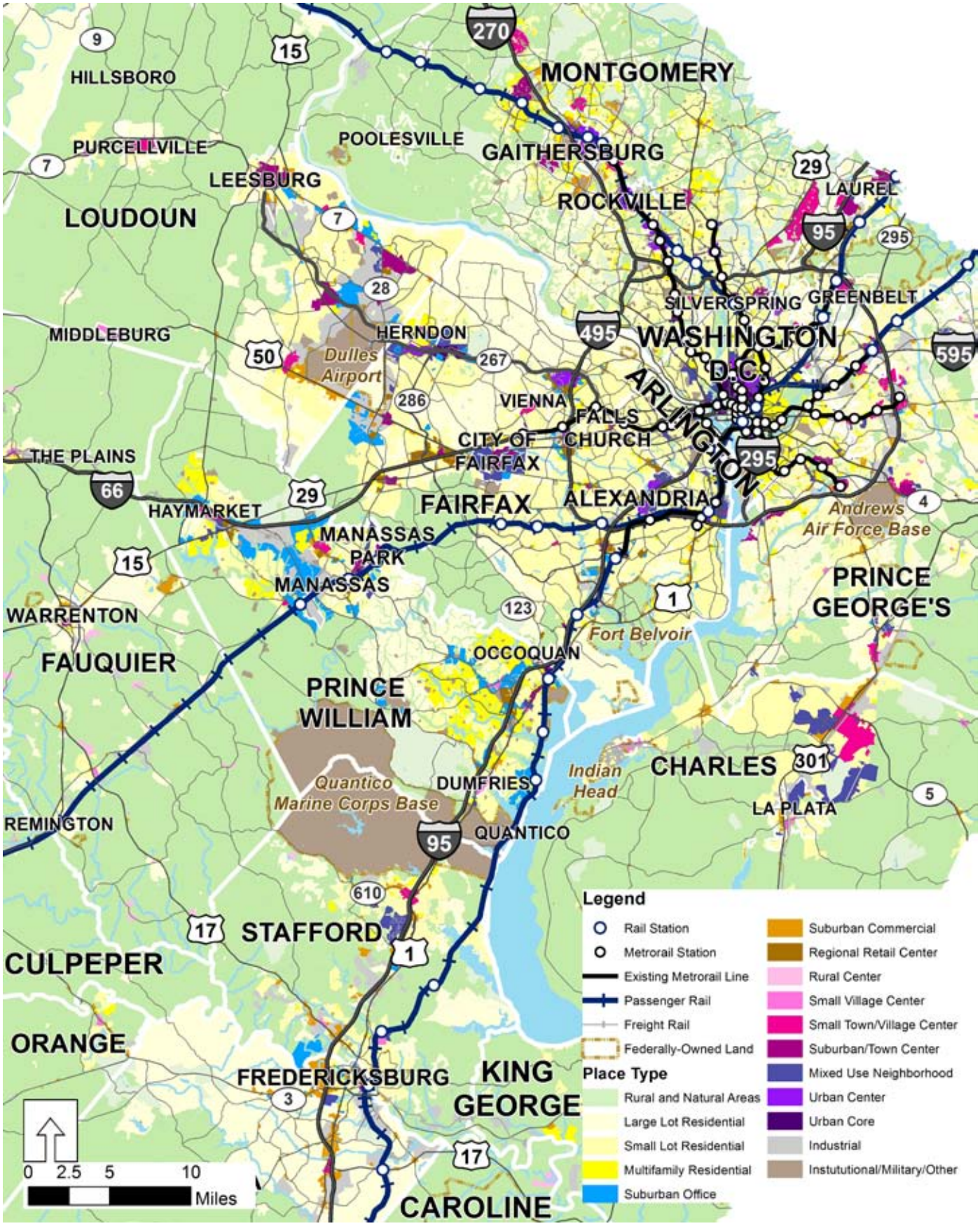


Figure 4.21: Future Place Types – Inner Area

FUTURE TRAVEL DEMAND

Reston Town Center Transit Station in Reston, VA.

FORECAST METHODOLOGY

A strong understanding of travel patterns provides an informational basis for identifying transit and TDM service needs, and recommendations that address those needs. The methodology used to analyze travel patterns in the Super NoVa region was briefly described in Chapter 3, and is summarized in the following:

- **District Development** — The Super NoVa region was broken into "districts". Outside of the traditionally-defined Washington Metropolitan area, districts were generally defined as counties. Within the metropolitan area, US Census Public Use Microdata (PUMA) boundaries were used. Overall, 50 districts were defined.
- **Trip Tables** — Fifty by 50 cell matrices of work and non-work trip tables were developed. Most of this data was developed with MPO travel demand models. The MWCOG travel demand model covers a large portion of the Super NoVa study area, and includes almost 90 percent of the Super NoVa region's 2010 population. For the remaining 10 percent of the Super NoVa region's population base, travel patterns were assessed by incorporating trip tables from the FAMPO model (model covers Fredericksburg, Spotsylvania, Stafford, Caroline, and King George Counties), the Win-Fred model (model covers City of Winchester and Frederick County) and the HEPMPO model (model covers Berkeley and Jefferson Counties, WV and Washington County, MD). The MWCOG model uses 2040 as a horizon year. The HEPMPO, FAMPO, and Win-Fred models use 2035 as a horizon year. Trips for those areas were extrapolated to 2040 based on population growth rates.

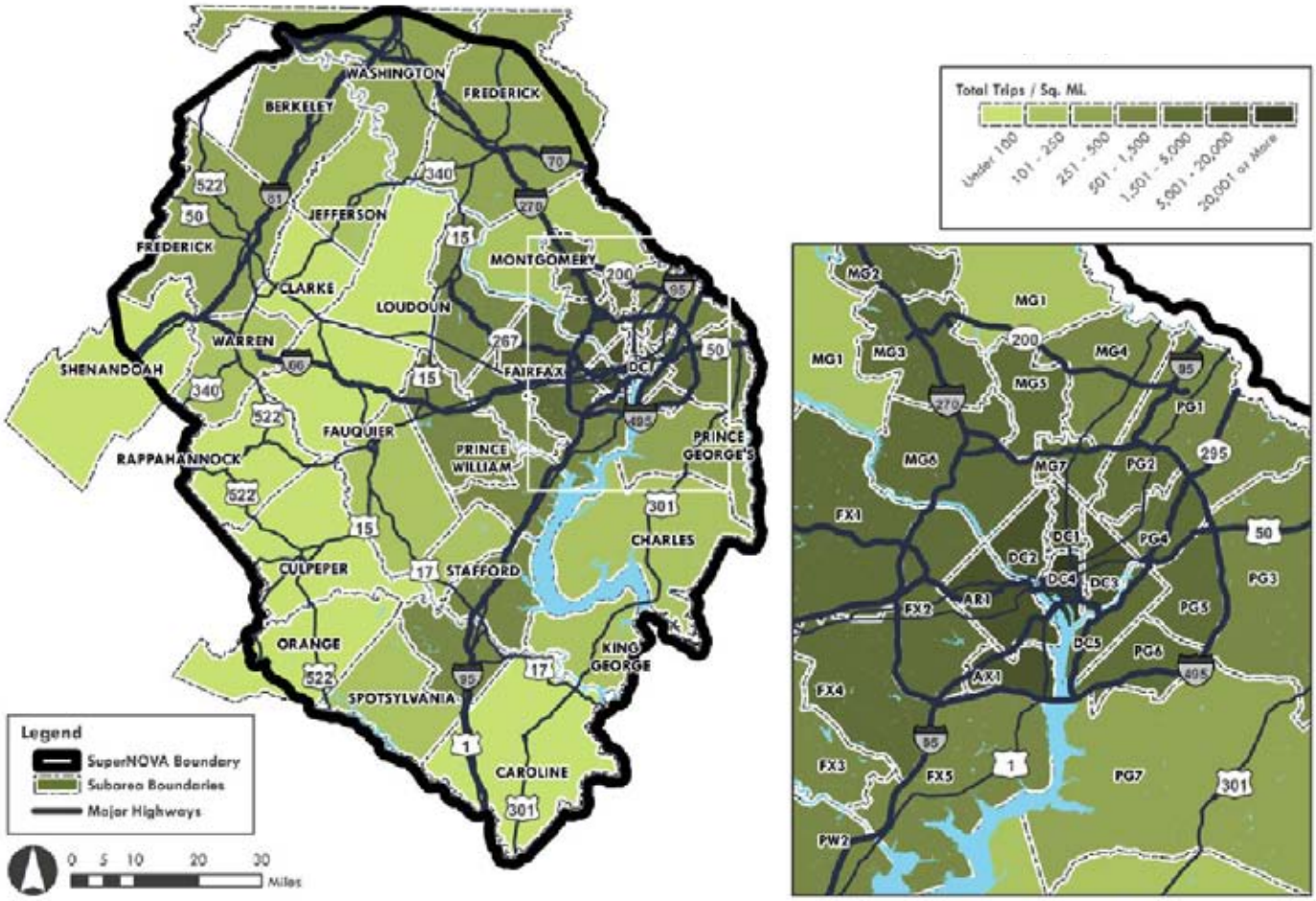


Figure 4.22: 2040 Daily Trips per Square Mile in Super NoVa Region

There are five counties within the Super NoVa region that are not within a defined MPO and, thus, are not included in any of the above-noted travel demand models (Shenandoah, Warren, Rappahannock, Culpeper, and Orange Counties). For those five counties, trips have been estimated based on general trip generation estimates that are tied to each county's population projections.

- **Trip Distribution** — Trips were distributed between the 50 districts. For trip distributions between different travel demand model areas, external trip volumes were first identified from each model area. Those trips were then distributed to other defined Super NoVa districts based on ACS journey to work data.
- **Needs** — Transit and TDM service needs were then determined by comparing travel patterns to existing and planned transit/TDM services and identifying gaps and deficiencies. The **Appendix** presents a more thorough description of the methodology and results for work and non-work trips. For the purpose of this report, only existing work trips have been summarized.

FUTURE TRAVEL TRENDS

Figure 4.22 illustrates horizon year (2040) daily home-to-work person trips per square mile for the Super NoVa region. As one would expect, the largest concentration of trips is in the metropolitan Washington, D.C. area. **Figure 4.23** illustrates 2040 home-to-work person trip travel flows. This figure illustrates the importance of key corridors (e.g., I-95, I-66, Route 7, and I-270) for long-distance, work-related travel. Following, is a closer look at work travel pattern characteristics by subarea.

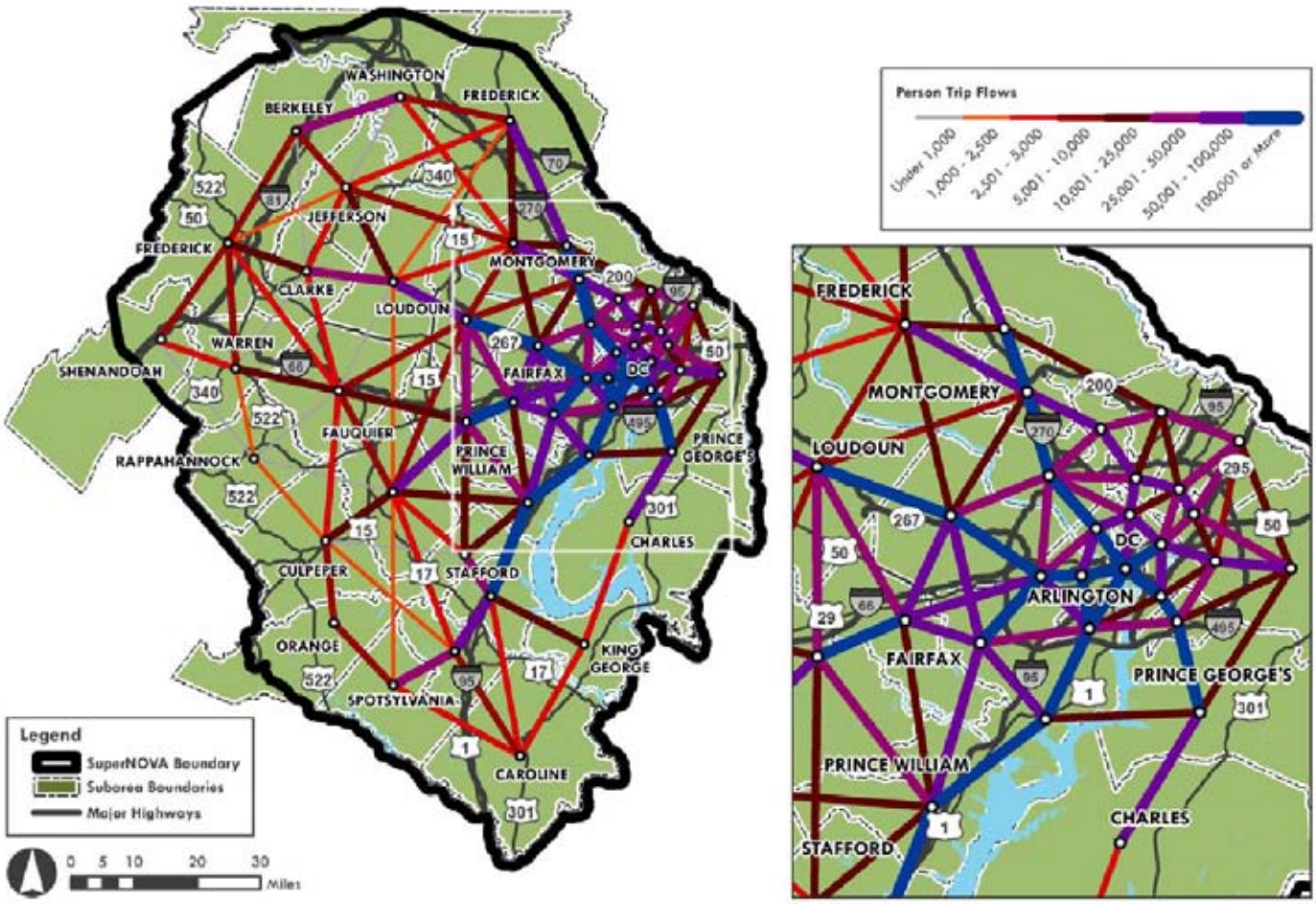


Figure 4.23: 2040 Daily Work Person Trip Travel Flows

Inner Area Subarea Travel Patterns

Jurisdictions included in the definition of the Super NoVa's inner subarea are:

- District of Columbia
- Arlington County
- Fairfax County
- City of Alexandria

Table 4.4 presents total home-to-work trips for analysis districts in the inner areas of the Super NoVa region. The values are person trips and represent work travel to and from the inner areas. Overall, there is a projected 34.2 percent growth rate in daily home-to-work person trips, with a total of 1.675 million daily home-to-work trips from 2007 to 2040 (e.g., more than 3.3 million daily work trips).

Table 4.4: Inner Area Daily Home-to-Work Trips (Peak Direction Trips)

District	2007	2040	Difference	Growth Rate
D.C. (All Areas)	461,151	576,678	115,527	25.1%
Arlington	155,692	227,660	71,968	46.2%
Fairfax (All Areas)	553,071	761,000	207,930	37.6%
Alexandria	76,469	108,248	31,779	41.6%
TOTAL	1,248,390	1,675,627	427,205	34.2%

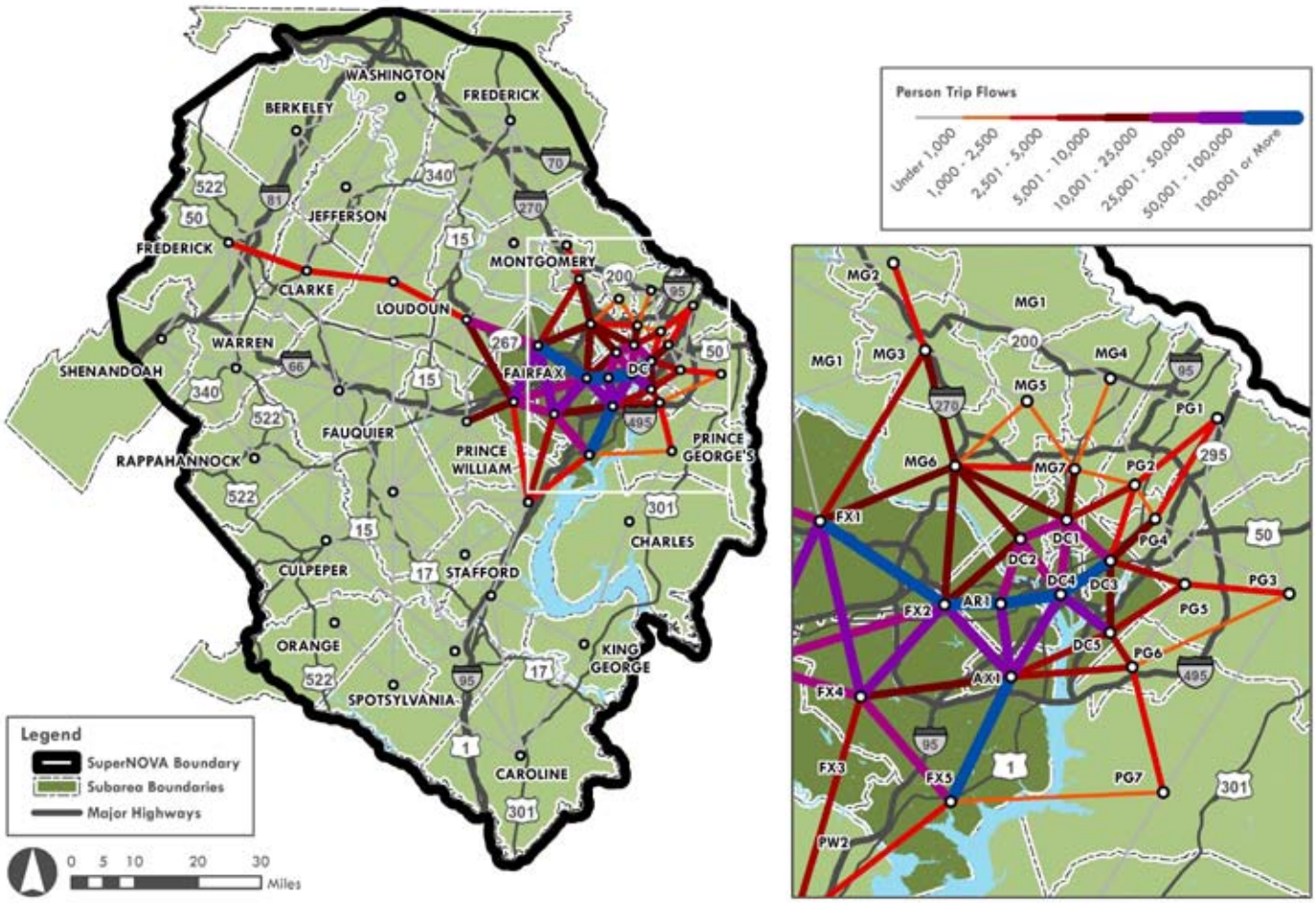


Figure 4.24: 2040 Daily Work Person Trips from Inner Subarea

Figure 4.24 and **Figure 4.25** present spider line diagrams of 2040 work trips coming from and going to inner area analysis districts. As these figures illustrate, the trips coming to employment within the inner area have much longer travel sheds than trips coming from households in the inner area.

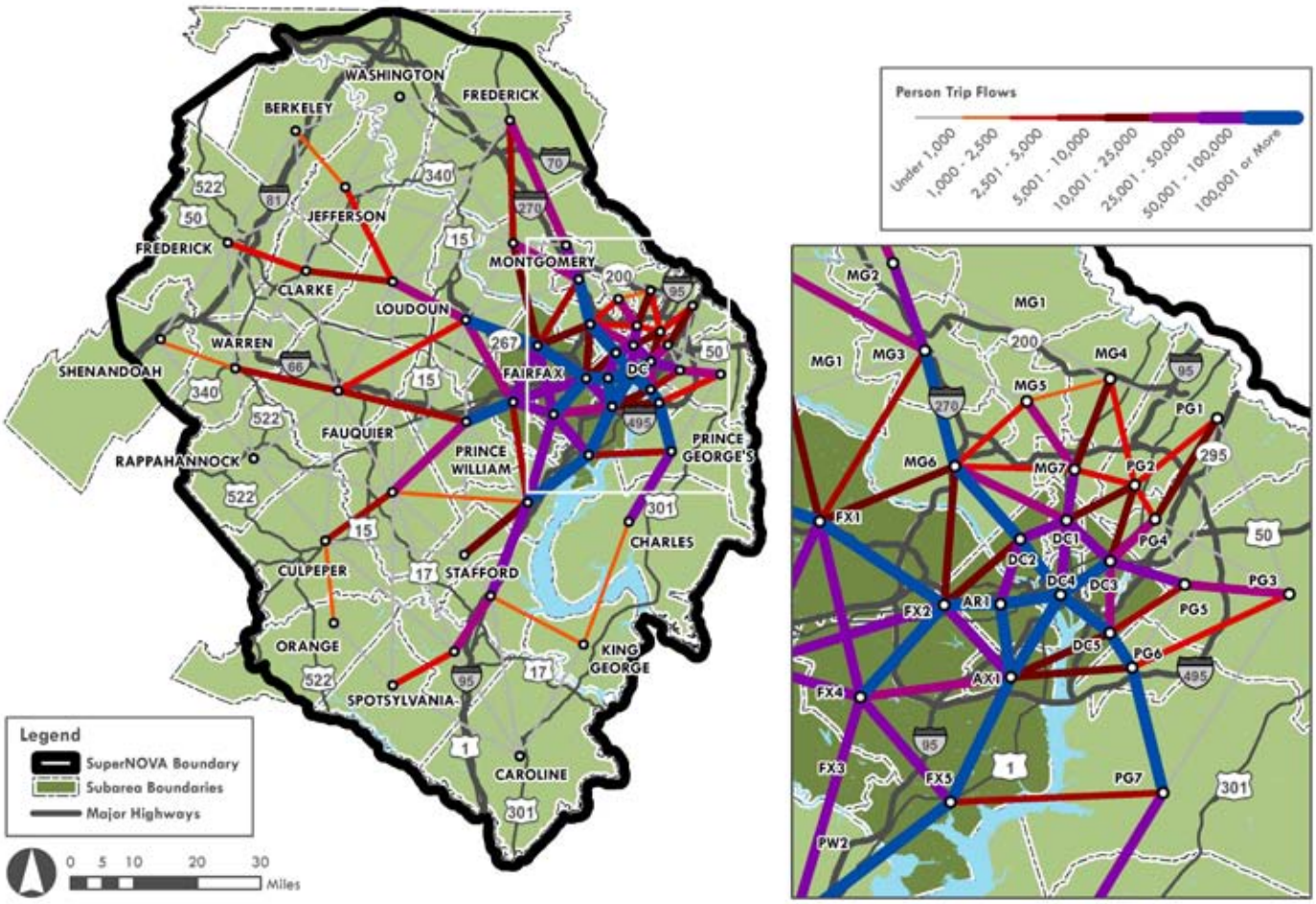


Figure 4.25: 2040 Daily Work Person Trips to Inner Subarea

Northwest Subarea Travel Patterns

The Northwest subarea of the Super NoVa region includes the following locations:

- Loudoun County, VA
- Jefferson County, WV
- Clarke County, VA
- Frederick County, VA
- Berkeley County, WV

For the purpose of the analysis, Loudoun County has been divided into two districts—Loudoun County 1 and Loudoun County 2. The Loudoun County 2 district comprises the urbanized area of Loudoun County to the east, and the Loudoun County 1 district is the less developed western portion of the county.

There is projected to be a 78 percent increase in daily home-to-work person trips between 2007 and 2040, as illustrated in **Table 4.5**.

Table 4.5: Northwest Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007	2040	Difference	Growth Rate
Loudoun 1	11,457	23,798	12,340	107.7%
Loudoun 2	95,560	173,797	78,237	81.9%
Jefferson, WV	15,871	28,850	12,979	81.8%
Clarke, VA	5,782	8,263	2,480	42.9%
Frederick, VA	43,509	77,778	34,269	78.8%
Berkeley, WV	34,260	55,381	21,121	61.7%
TOTAL	206,440	367,866	161,427	78.2%

All counties are anticipated to continue to be an exporter of home-to-work trips; however, there is anticipated to be a significant increase in work trips traveling to Loudoun District 2 (East Loudoun County), as illustrated in **Figure 4.26** and **Figure 4.27**.

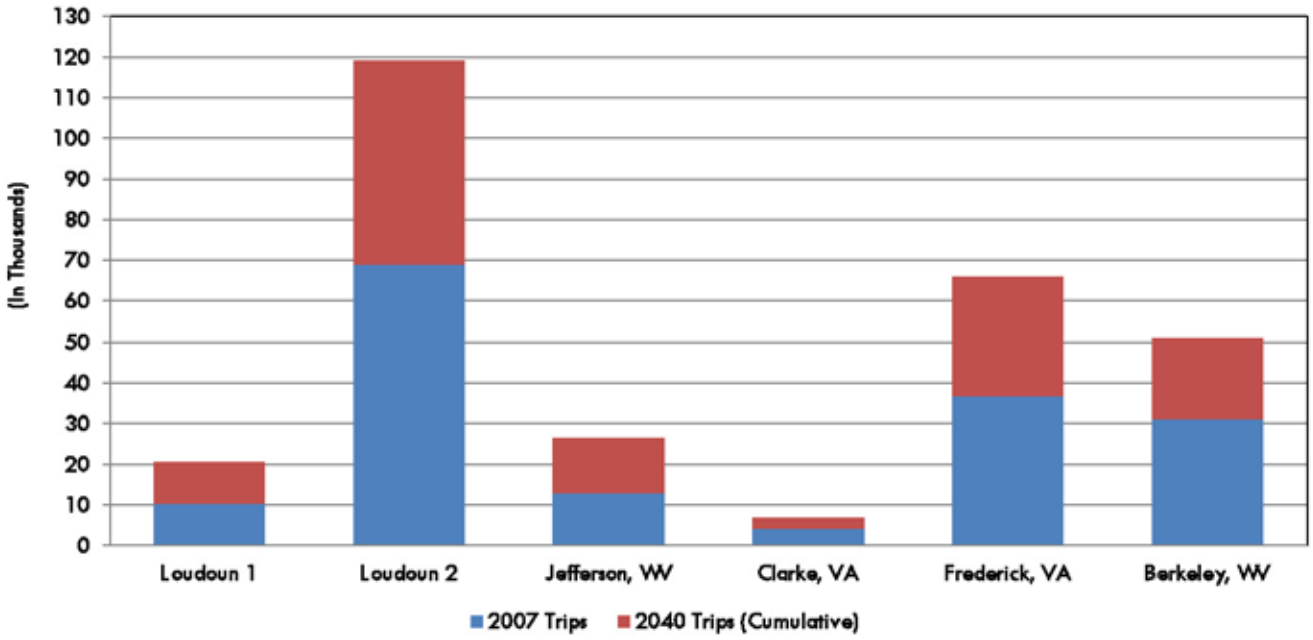


Figure 4.26: 2007 and 2040 Daily Work Trips From Northwest Subarea Counties

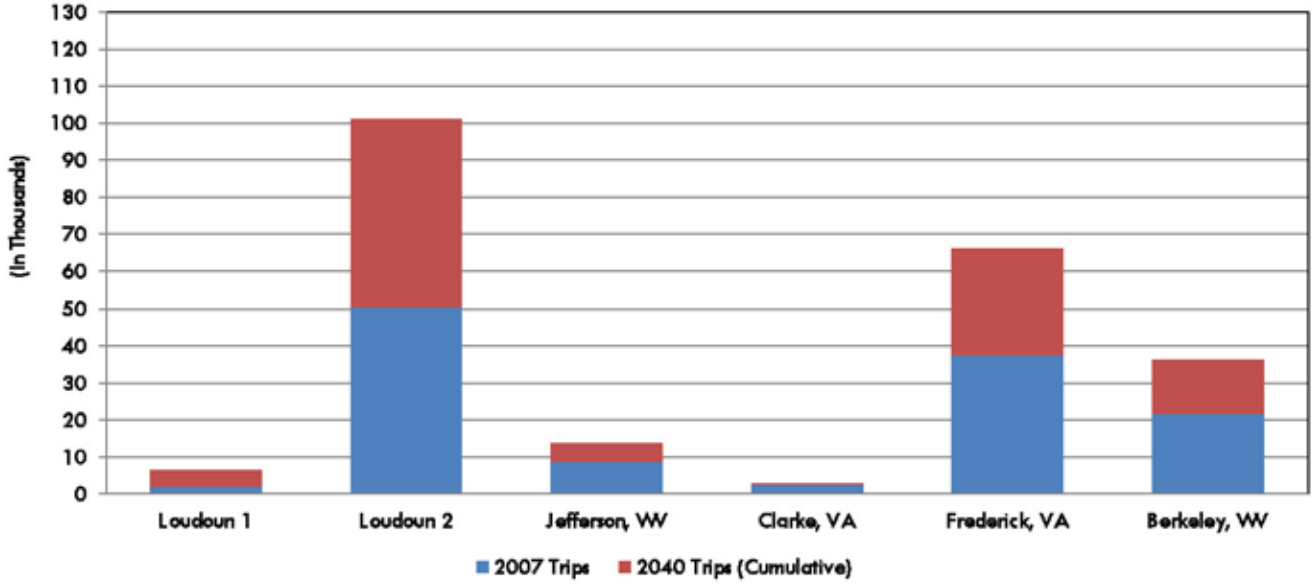


Figure 4.27: 2007 and 2040 Daily Work Trips To Northwest Subarea Counties

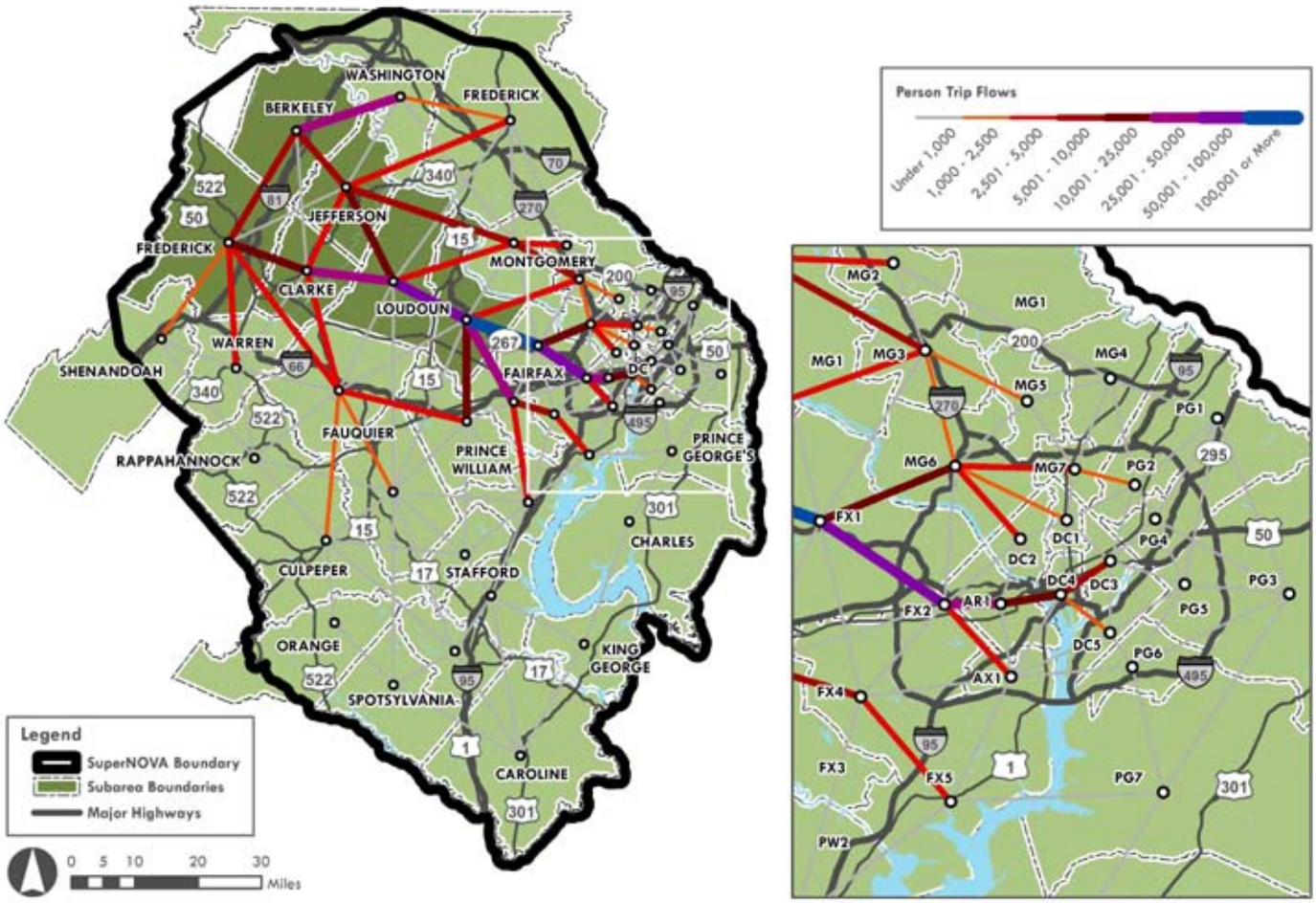


Figure 4.28: 2040 Daily Work Person Trips from Northwest Subarea

Figure 4.28 and **Figure 4.29** present spider line diagrams of daily work trips coming from and going to the Northwest subarea districts, respectively.

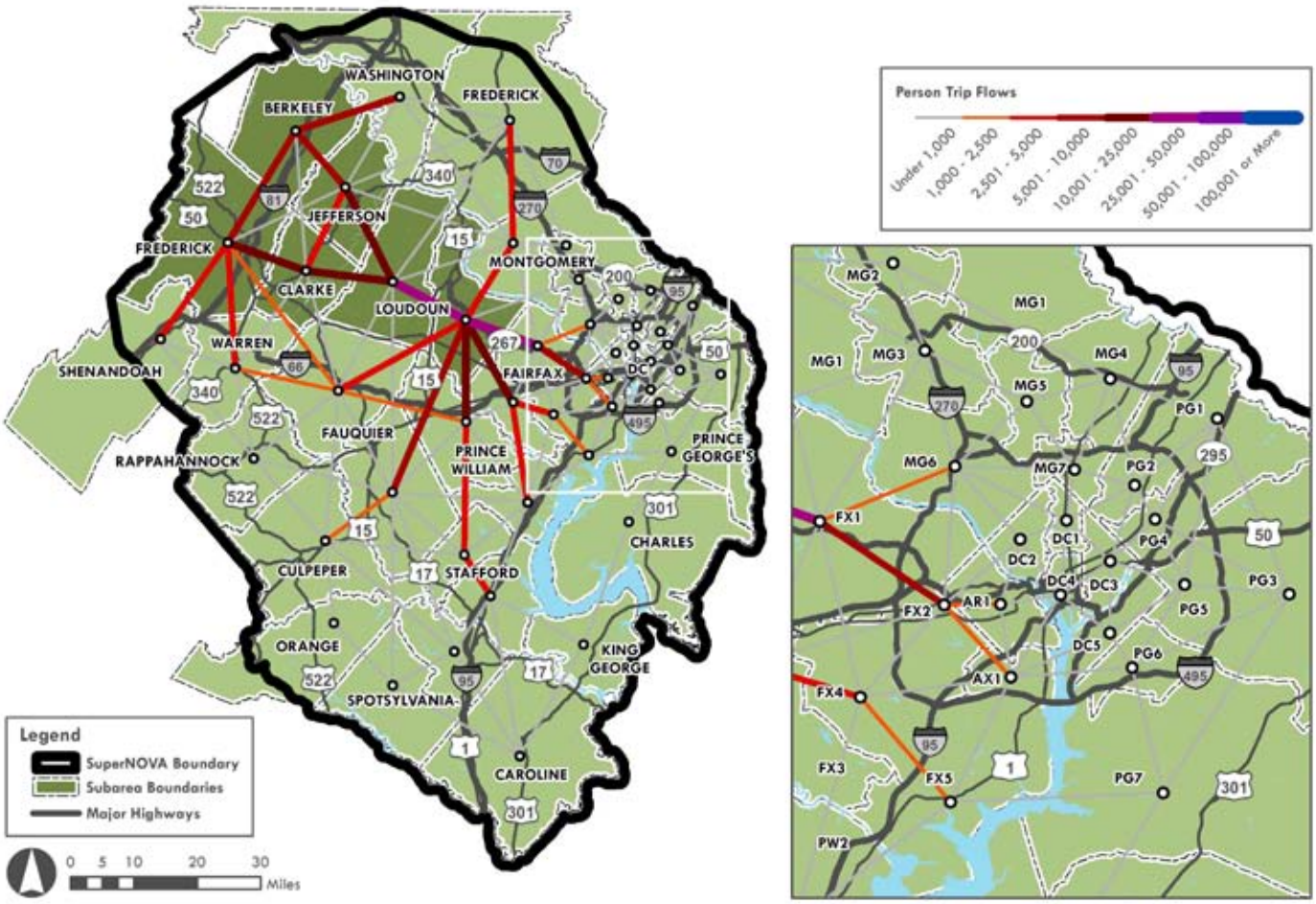


Figure 4.29: 2040 Daily Work Person Trips to Northwest Subarea

West Subarea Travel Patterns

The West subarea of the Super NoVa region encompasses the following locations:

- Fauquier County
- Shenandoah County
- Warren County
- Culpeper County
- Orange County
- Rappahannock County

For purposes of this travel pattern analysis, Fauquier County has been divided into two districts, with the Towns of Remington and Warrenton included in the southern Fauquier County district and points north of Warrenton in the northern district.

In 2007, there are an estimated 67,000 daily home-to-work-related person trips for the West subarea counties (e.g., 134,000 total daily work trips). This is anticipated to grow by 93 percent by 2040. **Table 4.6** presents total daily home-to-work trips for the six West subarea counties that are within this defined Super NoVa region.

Table 4.6: West Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007	2040	Difference	Growth Rate
Fauquier 1	5,241	8,928	3,688	70.4%
Fauquier 2	19,732	49,591	29,859	151.3%
Shenandoah	9,318	15,225	5,907	63.4%
Warren	10,819	18,515	7,696	71.1%
Culpeper	12,860	25,348	12,488	97.1%
Orange	6,707	8,327	1,620	24.2%
Rappahannock	1,888	2,712	824	43.6%
TOTAL	66,564	128,646	62,082	93.3%

All of the counties in the West subarea are “exporters” of work trips. In other words, there are more trips leaving each county than entering the county. This is illustrated in **Figure 4.30** and **Figure 4.31**.

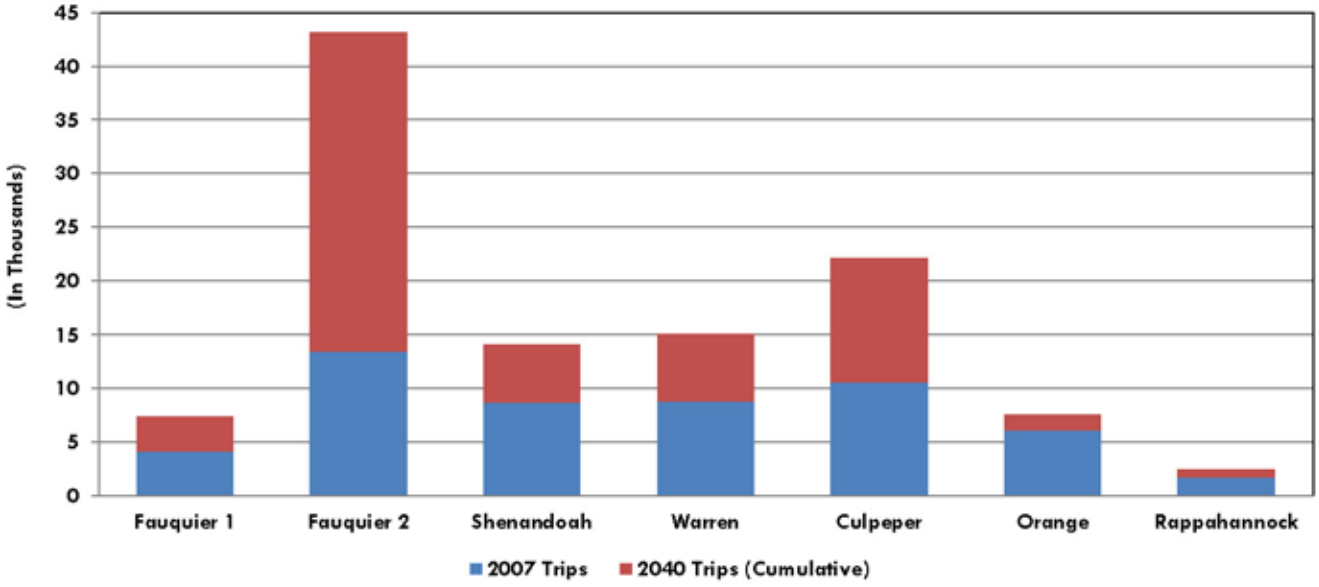


Figure 4.30: 2007 and 2040 Daily Work Trips From West Subarea Counties

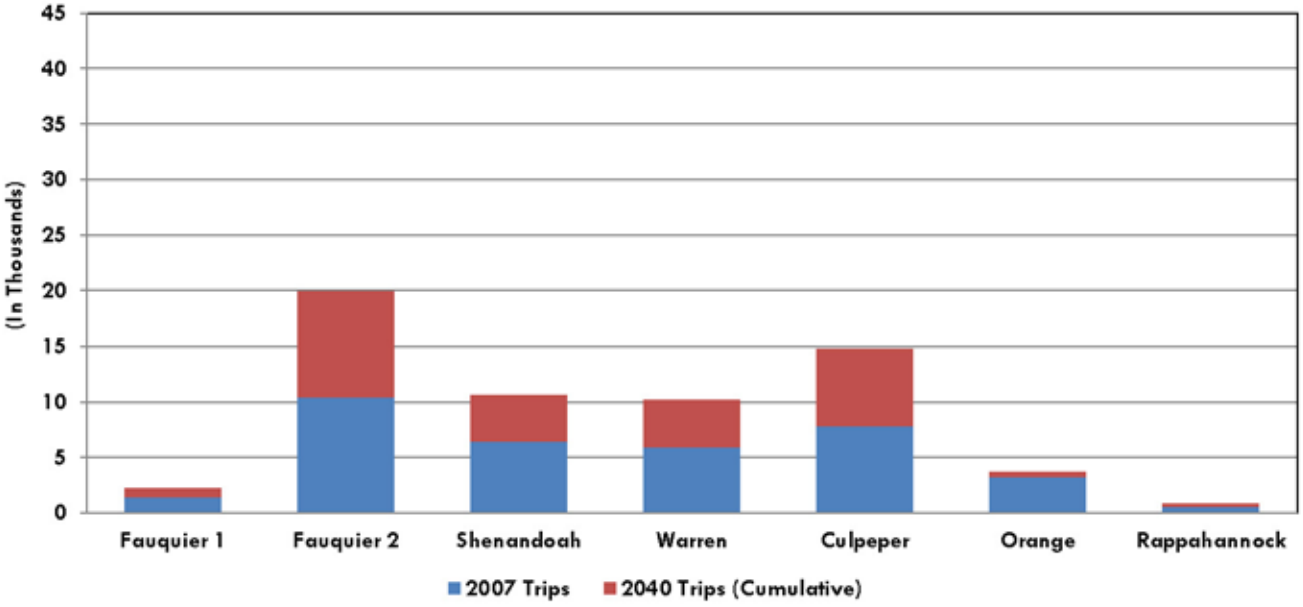


Figure 4.31: 2007 and 2040 Daily Work Trips To West Subarea Counties

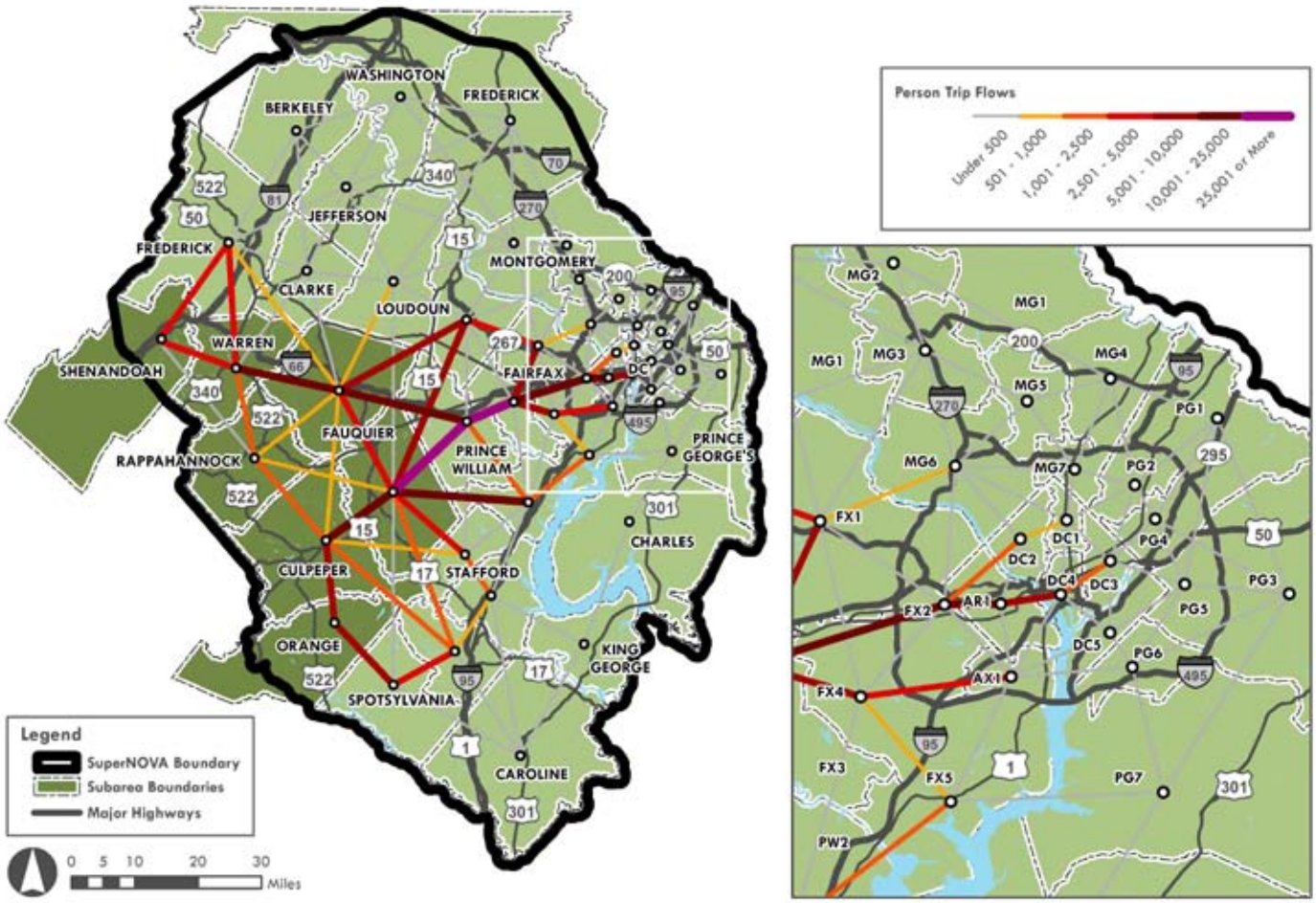


Figure 4.32: 2040 Daily Work Person Trips from West Subarea

Figure 4.32 and **Figure 4.33** present spider line diagrams of 2007 daily work trips coming from and going to West subarea districts, respectively.

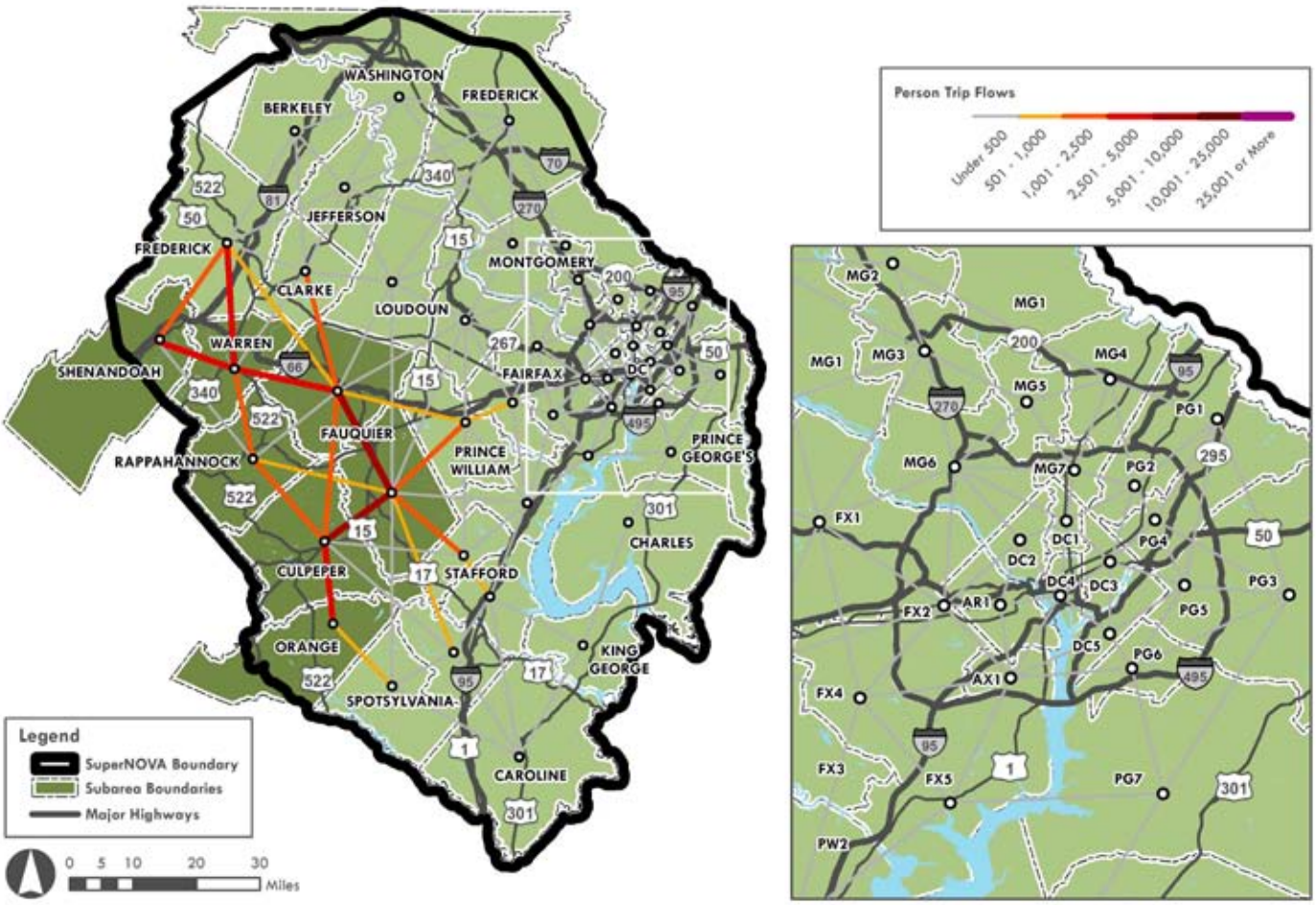


Figure 4.33: 2040 Daily Work Person Trips to West Subarea

South Subarea Travel Pattern

The South subarea of the Super NoVa region encompasses the following locations:

- Prince William County
- Stafford County
- Spotsylvania County
- Caroline County
- King George County
- City of Fredericksburg
- Cities of Manassas and Manassas Park

For purposes of this travel pattern analysis, Prince William and Stafford and Spotsylvania Counties have been divided into two districts each, with the City of Fredericksburg included in one of the Spotsylvania County districts, and Manassas and Manassas Park included in one of the Prince William County districts.

Daily home-to-work-related person trips for the South subarea districts are estimated to be 271,000 trips in 2007 (e.g., 542,000 total daily work trips). By 2040, daily home-to-work trips are anticipated to grow by nearly 90 percent.

Table 4.7: South Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007	2040	Difference	Growth Rate
Prince William 1	78,249	134,823	56,574	72.3%
Prince William 2	76,563	135,815	59,251	77.4%
Stafford 1	33,839	71,662	37,823	111.8%
Stafford 2	10,782	21,187	10,405	96.5%
Spotsylvania 1	11,894	29,254	17,360	146.0%
Spotsylvania 2	46,749	90,435	43,686	93.4%
Caroline	6,506	14,033	7,528	115.7%
King George	6,873	14,849	7,976	116.1%
TOTAL	271,454	512,058	240,604	88.6%

The districts in the South subarea are net “exporters” of work trips. In other words, there are more trips originating from rather than drawn to each district, as noted in **Figure 4.34** and **Figure 4.35**.

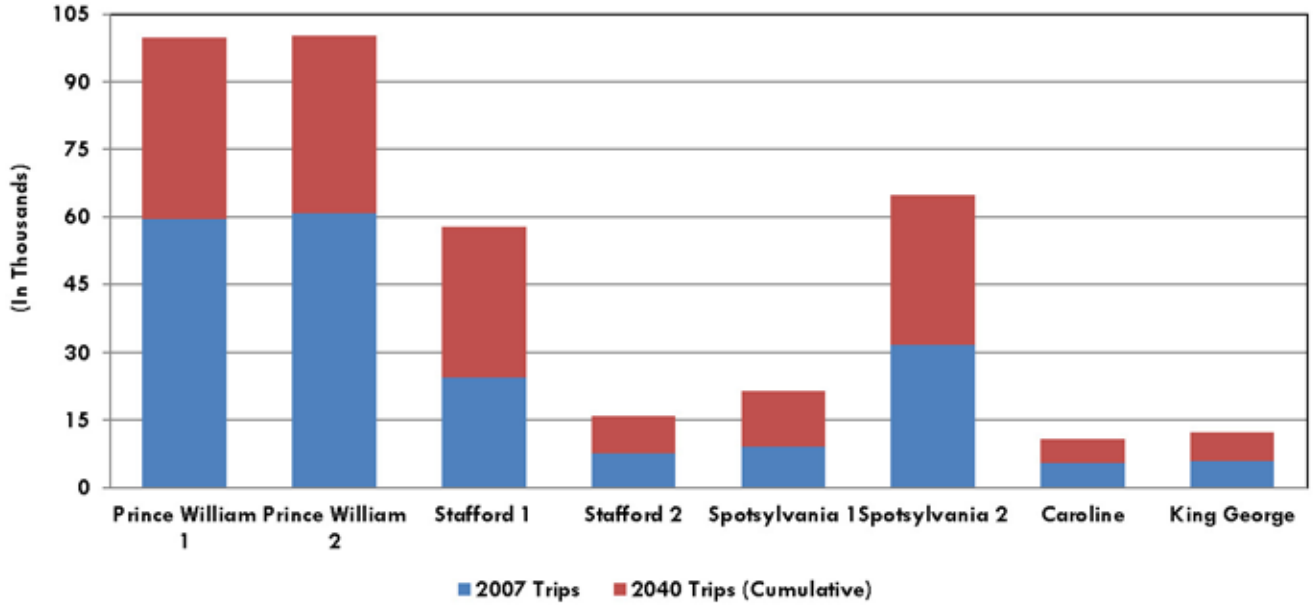


Figure 4.34: 2007 and 2040 Daily Work Trips From South Subarea Districts

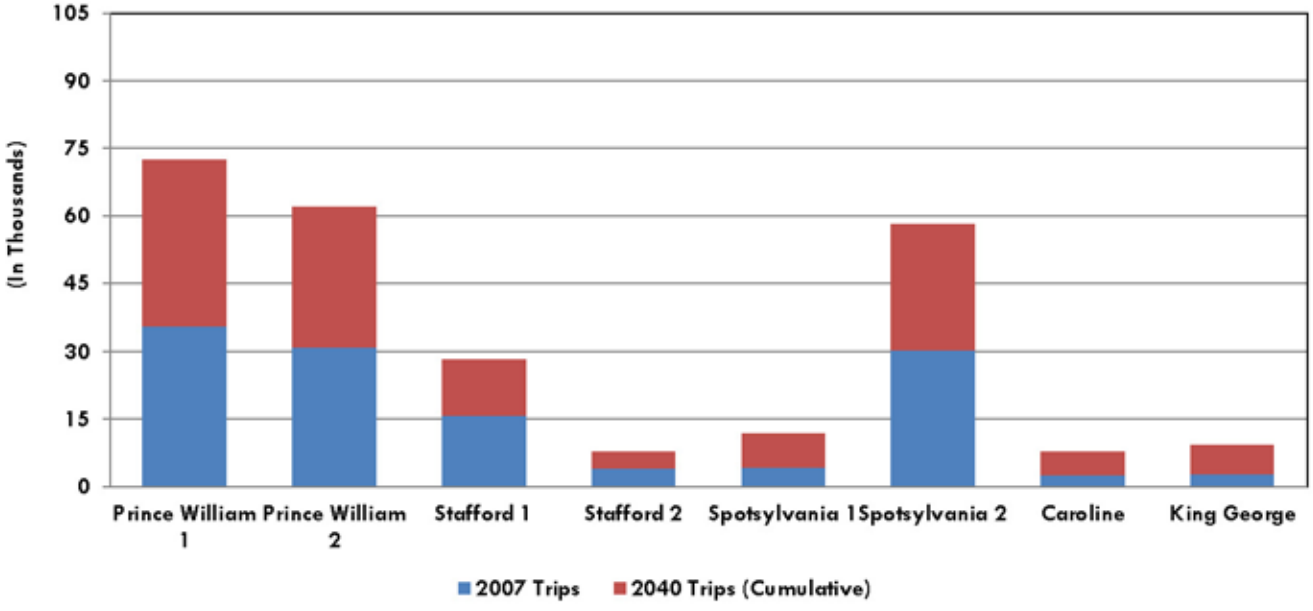


Figure 4.35: 2007 and 2040 Daily Work Trips To South Subarea Districts

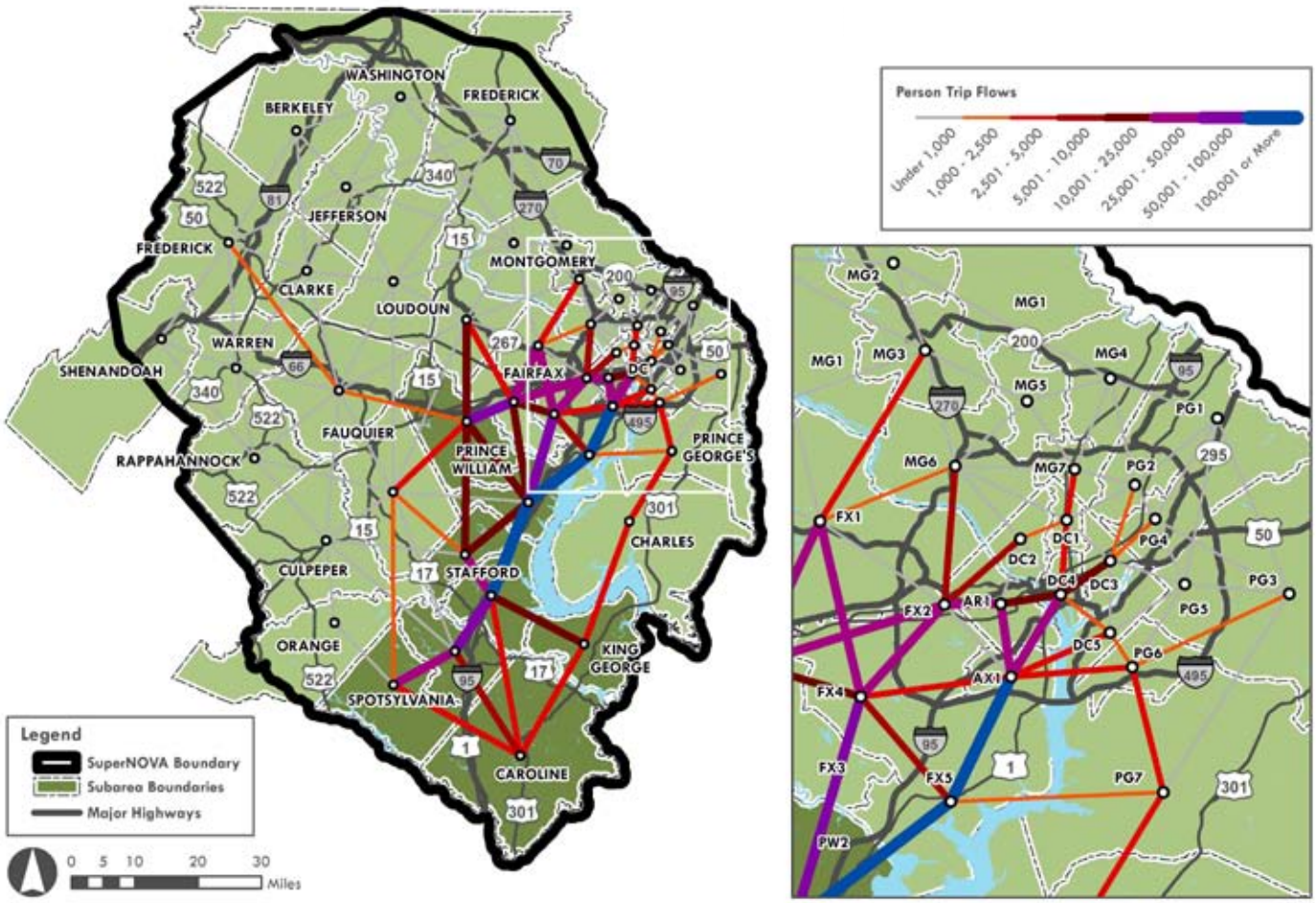


Figure 4.36: 2040 Daily Work Person Trips from South Subarea

Figure 4.36 and **Figure 4.37** present spider line diagrams of 2007 daily work trips coming from and going to South subarea districts, respectively.

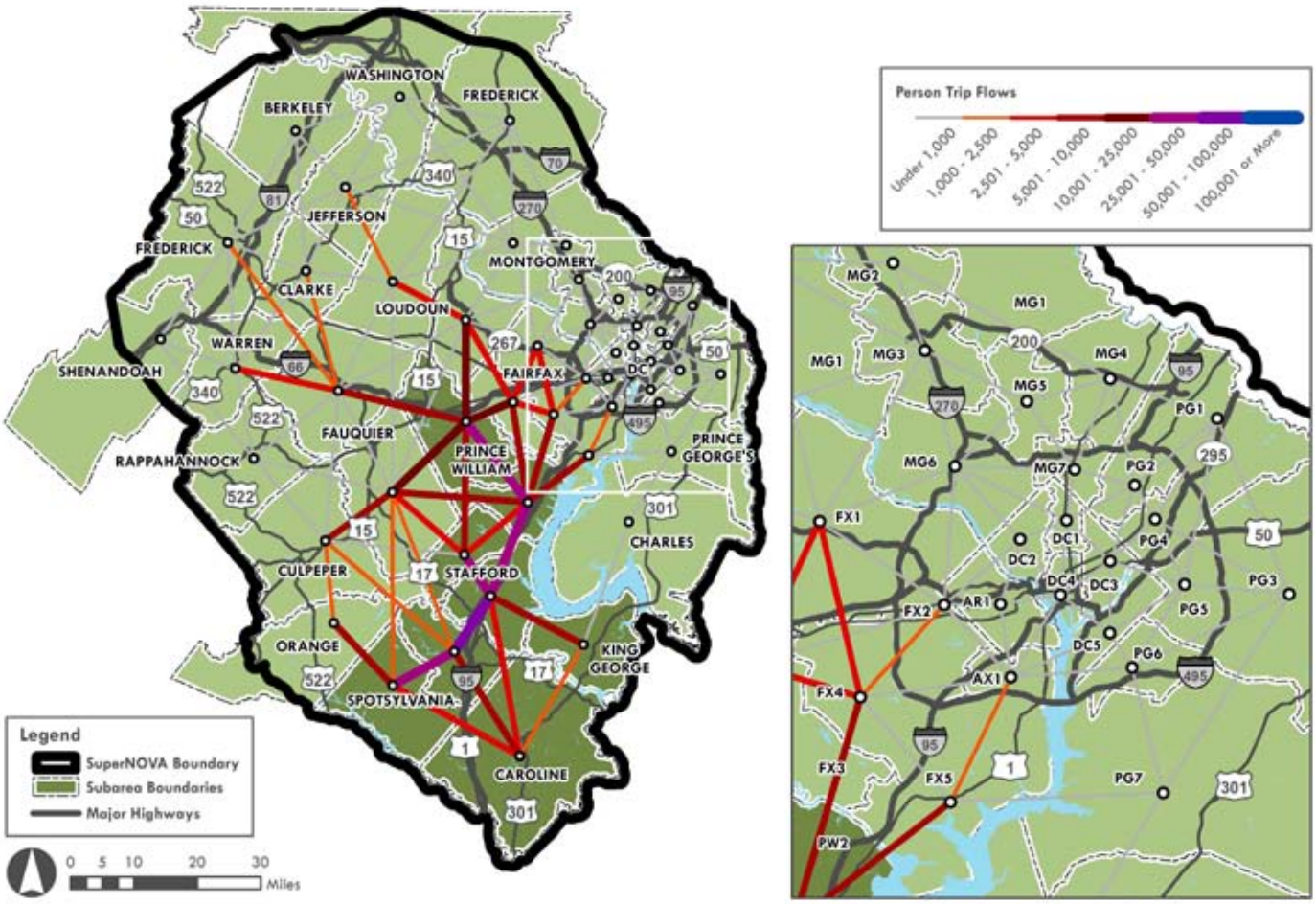


Figure 4.37: 2040 Daily Work Person Trips to South Subarea

Maryland Subarea Travel Patterns

The Super NoVa region includes the following Maryland counties:

- Montgomery County
- Prince George's County
- Frederick County
- Charles County
- Washington County

For purposes of this travel pattern analysis, Prince George's and Montgomery Counties were each subdivided into seven districts, consistent with US Census PUMA boundaries.

Daily home-to-work-related person trips for the Maryland counties within the Super NoVa region are approximately 888,000 (e.g., 1.7 million total daily work trips). **Table 4.8** presents total daily home-to-work trips for the five Maryland counties that are within the defined Super NoVa region.

Table 4.8: Maryland Subarea Daily Home-to-Work Trips (Peak Direction Trips)

District	2007	2040	Difference	Growth Rate
Montgomery	414,097	568,935	154,838	37.4%
Prince George's	310,455	394,494	84,040	27.1%
Frederick	71,163	123,806	52,643	74.0%
Charles	40,435	66,643	26,207	64.8%
Washington	52,424	77,959	25,535	48.7%
TOTAL	888,574	1,231,838	343,264	38.6%

All counties but one (Washington County) are "exporters" of work trips. In other words, there are more trips leaving the county than entering the county in the morning peak period, as illustrated in **Figure 4.38** and **Figure 4.39**.

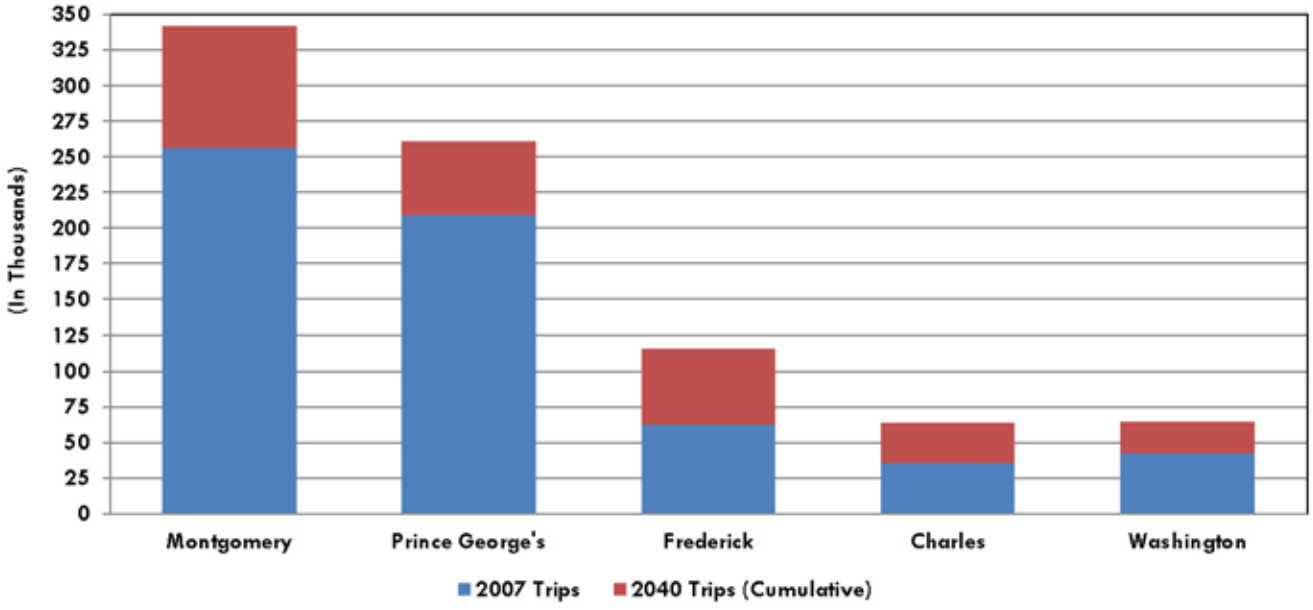


Figure 4.38: 2007 and 2040 Daily Work Trips From Maryland Counties

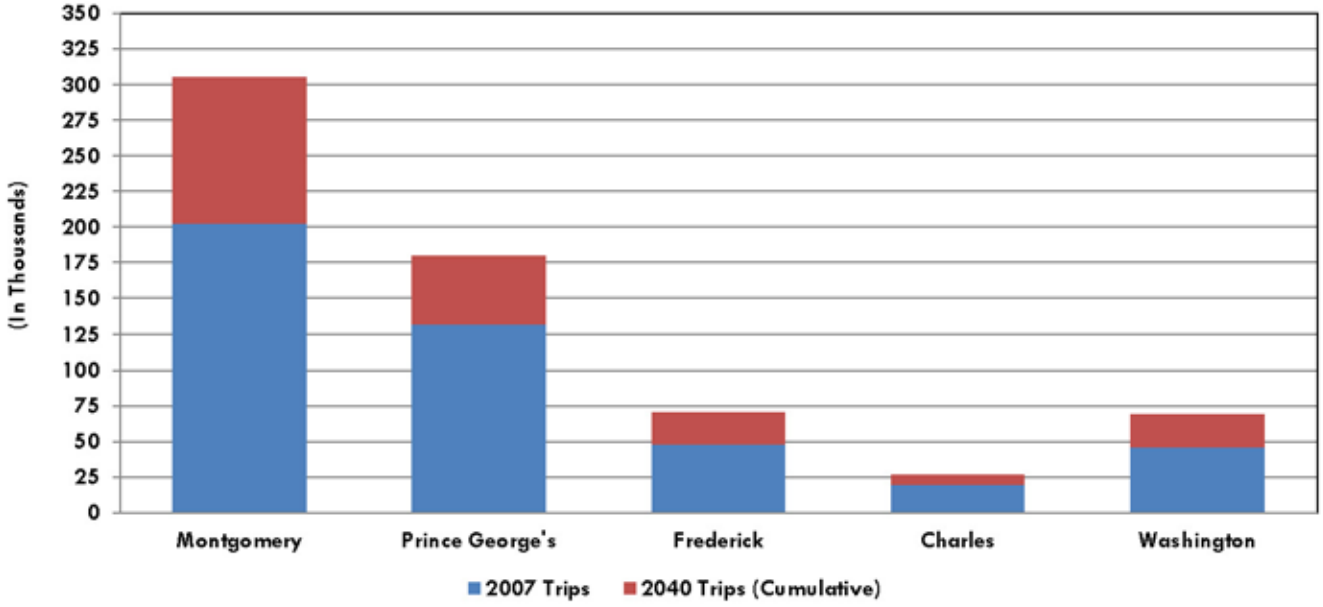


Figure 4.39: 2007 and 2040 Daily Work Trips To Maryland Counties

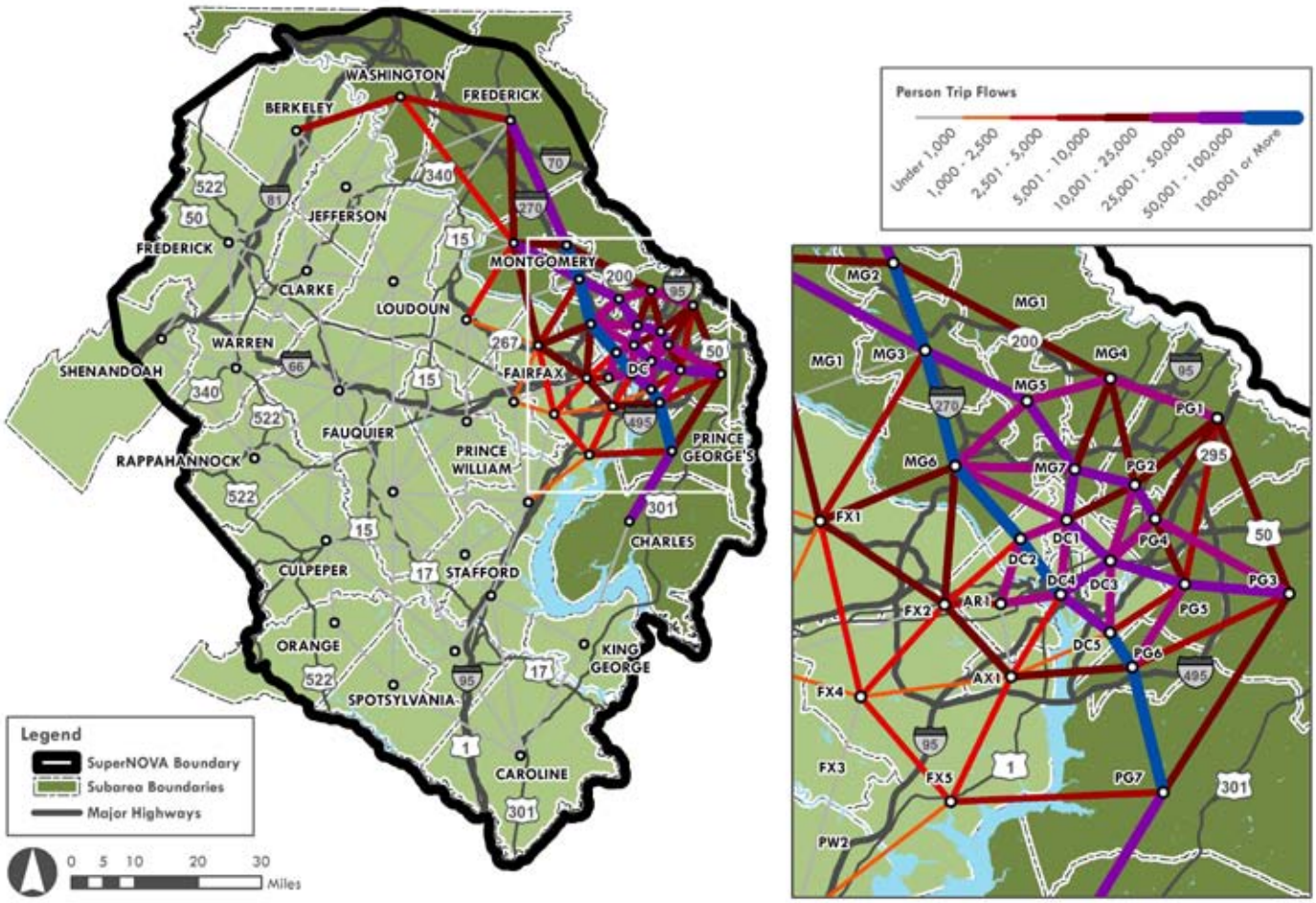


Figure 4.40: 2040 Daily Work Person Trips from Maryland Subarea

Figure 4.40 and **Figure 4.41** present spider line diagrams of 2040 daily work trips coming from and going to Maryland Counties. As noted in these figures, predominant work trip flows tend to remain within Maryland or to/from D.C., with some flows reaching to the Arlington/Alexandria area.

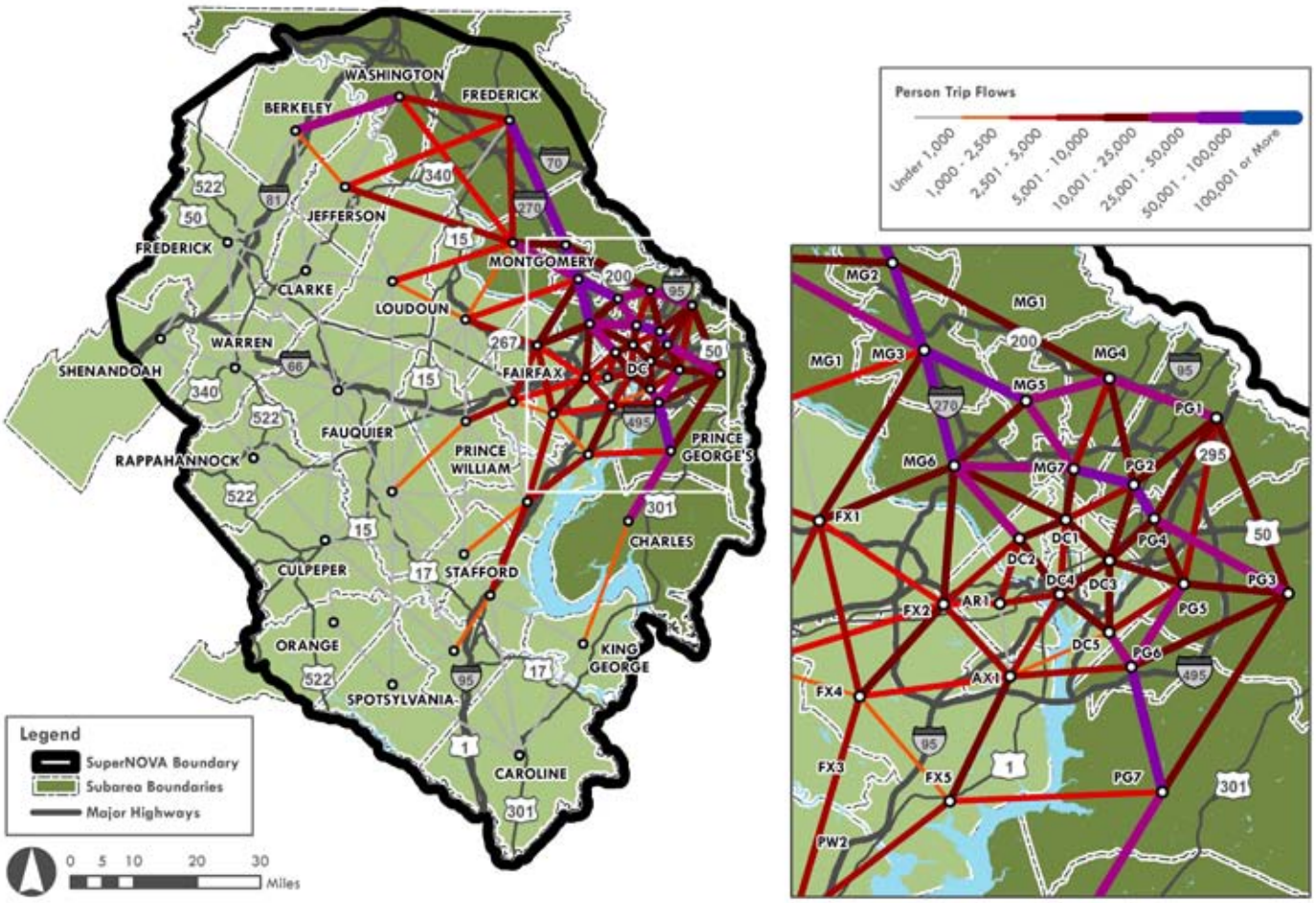


Figure 4.41: 2040 Daily Work Person Trips to Maryland Subarea

POTENTIAL FUTURE TRANSIT SERVICE AND PROGRAM GAPS AND NEEDS

Inner Subarea Needs

The inner subarea, as defined for this Super NoVa analysis, includes D.C., Arlington County, the City of Alexandria, and Fairfax County. Overall, work and non-work trips generated in Arlington, Alexandria, and Fairfax are anticipated to grow by more than 30 percent by 2040. Transit service needs for Maryland counties that are typically considered as part of the region's inner area (Prince George's and Montegomery Counties) are addressed in a subsequent section that covers all five Maryland counties that have been included in the Super NoVa study area. The following focuses on mobility needs from the inner area to non-inner activity centers, as well as localized service needs.

Mobility Needs to Other Subarea Activity Centers

- 2040 travel volumes from the designated inner jurisdictions to other jurisdictions are largest to eastern Prince William County, northern Prince William County, and eastern Loudoun County. Transit service from the inner area to all three of these jurisdictions is limited. There are presently strong commuter services into the inner area from these three areas (VRE and commuter bus), but minimal reverse commuter services from the inner area to these three areas.
- 2040 travel volumes also are somewhat strong between segments of Fairfax County and the I-95 corridor. Travel volumes for this particular corridor are anticipated to more than double. As was noted for the other travel patterns, there is presently strong commuter services into the inner area from the I-95 corridor (VRE and commute bus), but no reverse commuter services from the inner area to this area.

Mobility Needs to Serve Localized Trips

- Washington, D.C., Arlington and Fairfax Counties, and the City of Alexandria are already served by Metrobus and Metrorail, with more localized services offered by the Fairfax Connector, ART, and DASH.
- Metrorail's existing core capacity constraints limit the ability for expanded peak period usage for both localized and regional travel.
- The travel pattern analysis that has been completed for this study indicates significant interaction between portions of Fairfax County and neighboring Loudoun County and Prince William County. There are presently limited services that cross these jurisdictional lines.

Northwest Subarea Needs

The Northwest subarea includes Loudoun County, Clarke County, and Frederick County, VA; and Berkeley County and Jefferson County, WV. Work and non-work person trips are anticipated to grow by 78 percent in this subarea. The largest volume of trips presently generated in the Northwest subarea is from eastern Loudoun County. This will continue to be the case in 2040, with almost half of this subarea's trips coming from this district.

Mobility Needs to the Inner Subarea

- There is presently significant work-related travel from Loudoun County to the inner area (specifically, Central D.C., Tysons, and Arlington). This will continue to be a significant travel movement in the future, with an anticipated trip growth of more than 50 percent. LC Transit presently provides commuter bus service that addresses this travel movement; however, LC Transit buses and county park-and-ride lots are presently operating near or at capacity. The planned Metrorail Silver Line will help address this need.
- Work-related travel volumes to the inner area from other counties in the Northwest subarea are much lower than the Loudoun County volumes.

Mobility Needs to Other Subarea Employment Centers

- Eastern Loudoun County is the biggest work attraction in the Northwest subarea. Significant travel flows to this district are coming from Fairfax County, northern Prince William County, and Frederick County, VA; Jefferson County, WV; and Frederick County, MD; thus, travel to this district is very dispersed. There is presently very limited reverse commute transit services from Fairfax County to this district. There are no direct transit services between Loudoun County and the other counties listed above.
- There also is substantial travel from Northwest subarea counties to Tysons Corner/Dulles Corridor. This Fairfax area was one of the top three destinations for Loudoun County and Clarke County, VA and Jefferson County, WV trips.

Mobility Needs to Serve Localized Trips

- Significant travel growth is anticipated in Loudoun County. This includes growth in localized trips—both work and non-work. Loudoun County is served by a local transit system that serves primarily the Town of Leesburg and portions of eastern Loudoun County. Significant local service expansion will be needed to keep pace with the anticipated travel growth.
- Future year trip tables also indicate significant interaction with adjacent counties, particularly with Fairfax County; thus, suggesting the need for integrated local transit needs across county boundaries.
- Frederick County, VA has the second highest volume of work and non-work trips in this subarea, (second to Loudoun County). There are significant volumes of trips within the county, and to/from adjacent counties, such as Warren County to the south and Berkeley County to the north. Currently, the only transit service in Frederick County, VA is within the Winchester city limits. Although future plans call for connections to MARC trains and Loudoun County, there are presently no connections to regional bus or rail.
- Local transit service in Clarke County is presently demand-response service. Of the work trips that originate in Clarke County, 51 percent are projected to stay in 2040; thus, expanded local service to Clarke County may be warranted.
- Non-work related trips traveling from Clarke County and Frederick County, VA tend to travel to the western subarea to Culpeper, Orange, Fauquier, and Warren Counties, where there is no indirect or direct transit service available. Jefferson County and Loudoun County District 1 non-work trips leaving the county tend to go to Loudoun County District 2, and non-work trips that leave Loudoun County District 2 travel to Fairfax County, all of which have indirect or direct transit service.

West Subarea Needs

The West subarea, as defined for the Super NoVa project, includes Fauquier, Culpeper, Orange, Rappahannock, Warren, and Shenandoah Counties. Some of the counties within the West subarea presently have the lowest populations and population densities in the Super NoVa region, thus have low volumes of trips; however, work-related travel in this subarea is anticipated to grow by an overall 93 percent and non-work travel by an overall 83 percent. A substantial amount of this growth is expected to occur in Fauquier County.

Mobility Needs to the Inner Subarea

- The largest travel flows to the inner area are coming from Central and South Fauquier County, with those travel flows going to central D.C., Tysons, and Arlington. This travel market is served by one commuter bus route that makes just one morning and one afternoon trip; thus, there is a clear need for substantial expansion of transit service to address this market, given the anticipated travel growth projections.
- Travel flows into the inner area diminish significantly west and south of Fauquier County.

Mobility Needs to Other Subarea Employment Centers

- There are anticipated to be significant travel flows to Tysons/Dulles Corridor from Fauquier County, Culpeper County, and Warren County (e.g., the I-66 and US 15/29 corridors). There is presently no transit service available to address these travel markets.
- There also are anticipated to be significant travel flows to western Prince William County from these same three counties. Once again, there are no transit services available to address these travel markets.

Mobility Needs to Serve Localized Trips

- The travel pattern analysis suggests there will be a substantial increase in both work and non-work travel that remains within Fauquier County, and travels to adjacent counties. Existing local transit service in Fauquier County is limited to Warrenton.
- Culpeper County also is anticipated to see large increases in localized travel demand, with much of that demand going into neighboring Fauquier and Orange Counties, thus suggesting the need for expanded localized transit services.
- There is somewhat significant trip interaction between Warren and Frederick Counties. Existing service in Warren County is presently limited to the Town of Front Royal.
- There is no public transit service in Rappahannock or Shenandoah Counties.

South Subarea Needs

The South subarea, as defined for the Super NoVa project, includes Prince William, Stafford, Spotsylvania, Caroline, and King George Counties and the City of Fredericksburg. Substantial travel growth is anticipated in the South subarea of the Super NoVa region (89 percent), with Prince William County travel increasing by more than 75 percent and travel from the other counties more than doubling in size.

Mobility Needs to the Inner Subarea

- Several of the South subarea districts have a strong commuter orientation to the inner area via I-66 and I-95, including those in Prince William and Stafford Counties, and Northern Spotsylvania/Fredericksburg.
- Looking first at the I-66 corridor and the western Prince William, approximately half of all work trips produced in this district are attracted to the inner area, both now and in 2040. This movement is directly served by PRTC's commuter bus services (OmniRide and Metro Direct) and rail service (VRE and Amtrak). These trips are likely being produced not only in Manassas and Manassas Park, but also in growing population centers such as Gainesville and Haymarket. Destinations are fairly concentrated in D.C., Arlington, and Alexandria, but dispersed within Fairfax County. PRTC currently only provides connections to Washington Metropolitan Area Transit Authority (WMATA) Metrorail stations at West Falls Church and Vienna to serve locations in Fairfax County.
- The majority of the work trips attracted to the inner area of the I-95 corridor are produced in the eastern Prince William. The districts in Stafford County and northern Spotsylvania/Fredericksburg also produce a significant number of work trips, which are anticipated to grow by 86 percent by 2040. Destinations are fairly concentrated in D.C., Arlington, and Alexandria, but dispersed within Fairfax County. Commuter bus service from Prince William County is provided by PRTC, while Stafford and Fredericksburg are currently served (Quick's and MARTZ) operating limited peak period service. VRE and Amtrak also operate in this corridor. Growth in commuter service to meet the growing demand is currently limited by park-and-ride lot and train capacities.
- Reverse commute trips from the inner area, primarily from Fairfax County, are anticipated to grow to both Prince William County districts. VRE service from the inner area to both Prince William County districts is presently peak direction service only; thus, it does not serve this particular travel pattern.

Mobility Needs to Other Subarea Employment Centers

- Work trips attracted to South subarea districts are primarily produced in the immediate surrounding districts.
- In the I-66 corridor, a large number of work trips are presently attracted to western Prince William, which is anticipated to double from 2007 to 2040. The highest numbers of trips are anticipated to come from southern Fauquier County, eastern Prince William, and eastern Loudoun/Dulles Airport districts. While direct transit service is currently available from eastern Prince William via PRTC's Cross County Connector, service from eastern Loudoun/Dulles Airport and southern Fauquier is very limited or non-existent.
- In the I-95 corridor, a large number of work trips attracted to the eastern Prince William district are anticipated to come from eastern Stafford, western Prince William, and northern Spotsylvania/Fredericksburg districts. Direct transit service is currently available from western Prince William via PRTC's Cross County Connector and from eastern Stafford and Fredericksburg via VRE's Fredericksburg line.
- A large number of trips also are attracted to northern Spotsylvania/Fredericksburg districts. Those trips are more localized and coming from adjacent counties. There is transit service provided by FRED in portions of this district, but service is limited and does not fully reach out to areas where trips are originating. For example, there are a significant number of trips coming from Orange County.

Mobility Needs to Serve Localized Trips

- Areas supportive of transit service based on population and employment density within the South subarea are presently served directly by transit, through PRTC or FRED.
- There are areas of special population characteristics, particularly within the southern Spotsylvania district and Caroline County that have none or very limited transit service.
- The projected large increase in both work and non-work trips will require expansion of existing local transit services.

Maryland Subarea Needs

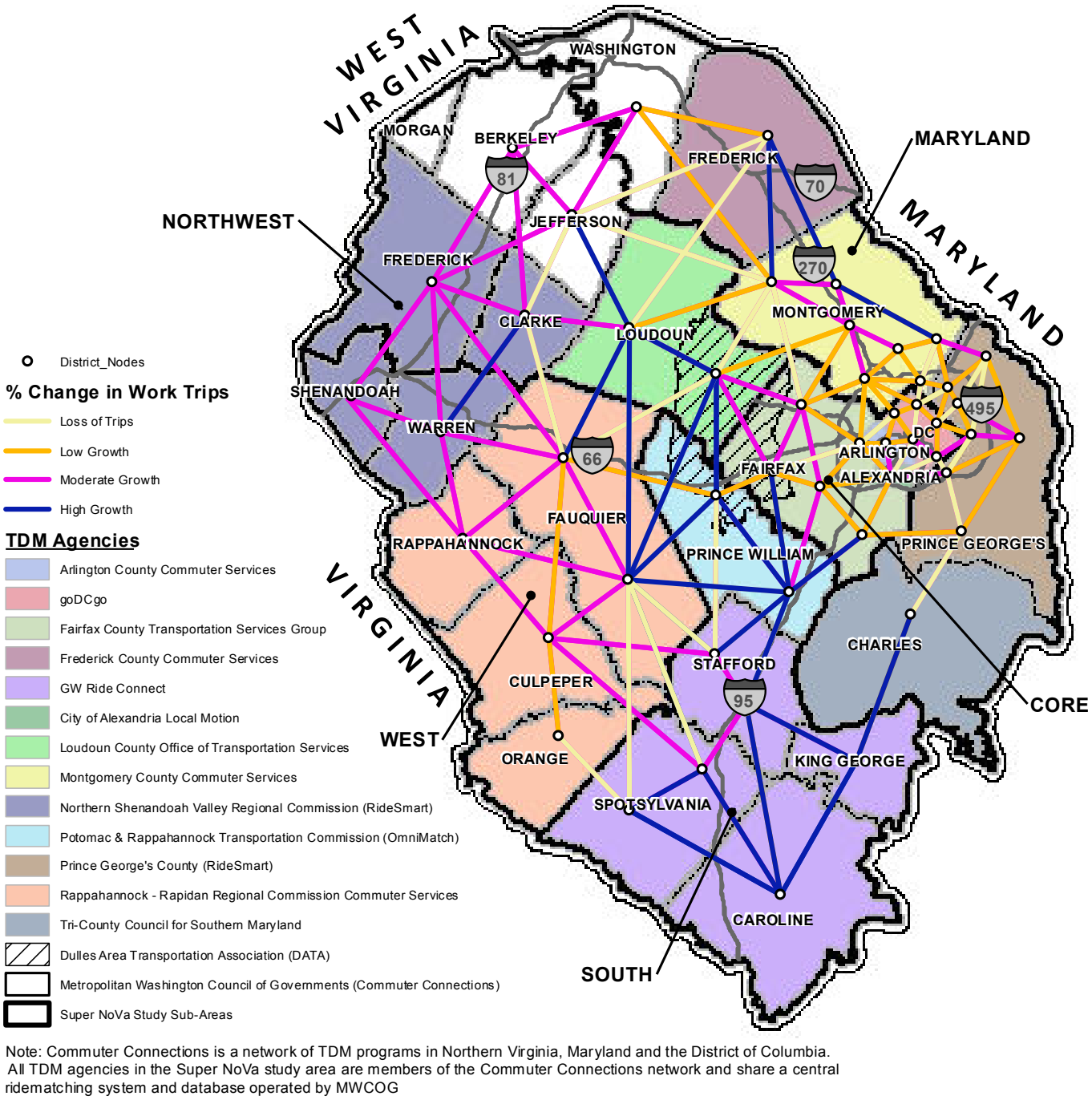
Overall, trips in the five Maryland counties (Charles, Prince George's, Montgomery, Frederick, and Washington Counties) are anticipated to grow by more than 30 percent, with Montgomery County being the largest generator of both work and non-work trips. The largest travel growth rates are expected to occur in Frederick, Charles, and Washington Counties, with Frederick County trips growing by nearly 75 percent. The following list of potential service gaps and needs is structured differently than those provided for the other subareas. This list focuses on travel patterns between Virginia jurisdictions.

Mobility Needs to the Inner Subarea

- There are existing large travel movements to Arlington from Montgomery, Prince George's, Frederick, and Charles Counties. Travel from these four counties to Arlington is anticipated to grow by more than 35 percent by 2040. Metrorail presently provides direct connectivity from three of these Maryland counties to Arlington; however, Metrorail trains presently operate at capacity in the peak periods. These core capacity issues, as noted in numerous prior studies, severely limit the ability for Metrorail to accommodate this large growth in travel to/from Arlington County.
- Although travel volumes to/from Alexandria are lower than Arlington's volume, the core capacity constraints noted above also will adversely impact Metrorail's ability to accommodate increased travel needs to Alexandria.

Mobility Needs to Other Subarea Activity Centers

- Tysons Corner/Dulles Corridor is the primary non-inner activity center in Virginia that is a destination for Maryland trips, particularly from Montgomery County. There is no direct service from these markets to this corridor; however, that will change with the opening of the Metrorail Silver Line. The core capacity constraints will adversely impact Metrorail's ability to accommodate increased travel needs to this area. Further, Metrorail service will not be direct from Frederick County and portions of Montgomery County.
- The other Virginia area that shows up as a destination for Maryland is eastern Loudoun County. This is particularly true for travel between Frederick, MD and Loudoun County. There are no existing or planned direct services between these two locations.

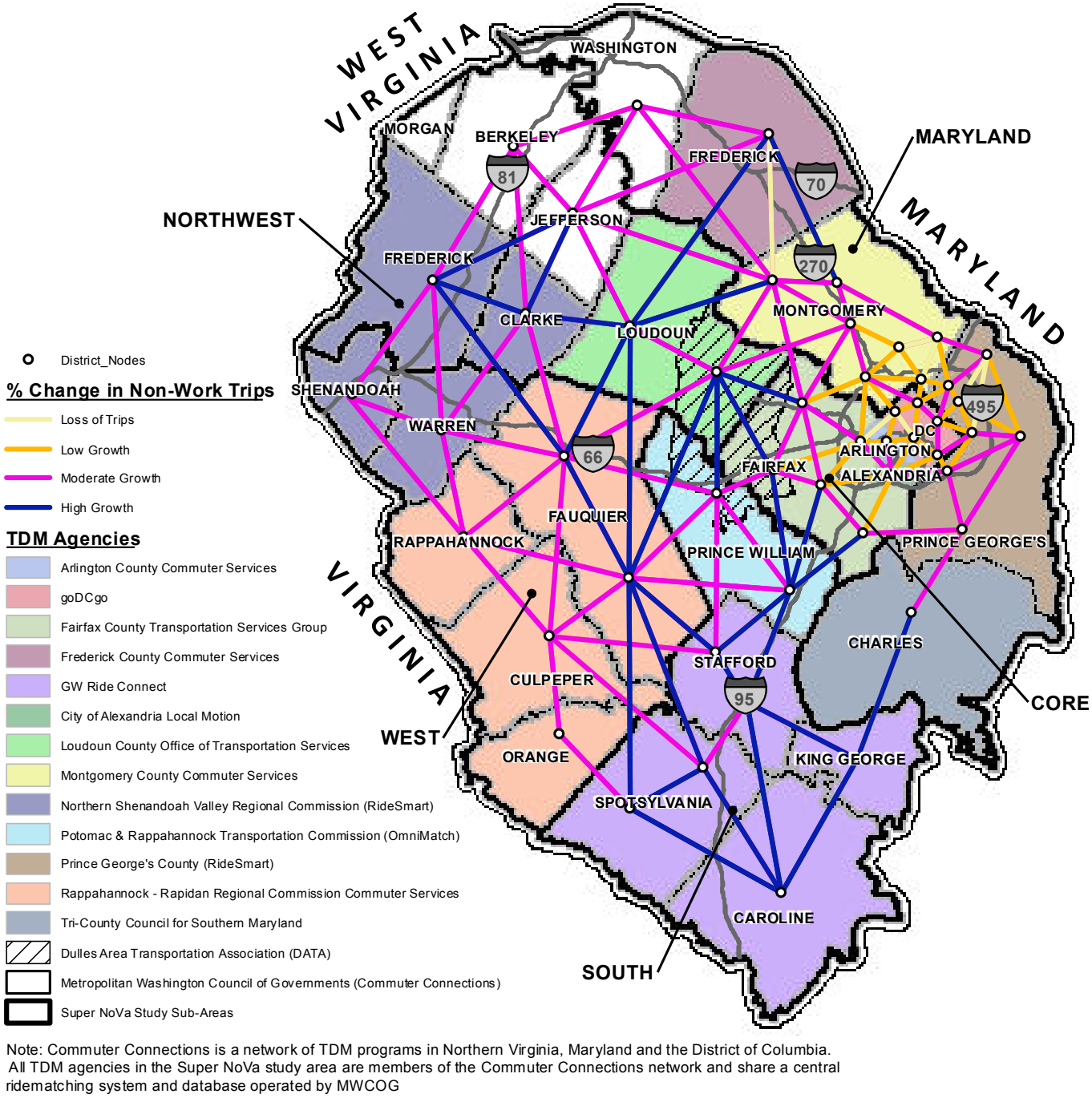


Note: Commuter Connections is a network of TDM programs in Northern Virginia, Maryland and the District of Columbia. All TDM agencies in the Super NoVa study area are members of the Commuter Connections network and share a central ridematching system and database operated by MWCOG

Figure 4.42: Rate of Change of Work Trips (2007 to 2040)

FUTURE TDM SERVICE AND PROGRAM NEEDS

Figure 4.42 shows the rate of change in work trips by 2040. The highest rates of growth in work trips occur between Loudoun, Fauquier, Stafford, Prince William, Caroline, Spotsylvania, and King George Counties in Virginia, and Frederick, Montgomery, and Charles Counties in Maryland. These areas form a ring outside the inner area. Moderate rates of growth also are anticipated in the outer ring formed by Washington, Berkeley, and Jefferson Counties in West Virginia, and Frederick, Clarke, Shenandoah, Warren, Fauquier, Rappahannock, and Culpeper Counties in Virginia. While most of these areas are served by TDM agencies, programs and service intensities will need to be expanded or increased to keep up with the travel demand.



Note: Commuter Connections is a network of TDM programs in Northern Virginia, Maryland and the District of Columbia. All TDM agencies in the Super NoVa study area are members of the Commuter Connections network and share a central ridematching system and database operated by MWCOG

Figure 4.43: Rate of Change of Non-Work Trips (2007 to 2040)

Figure 4.43 shows the rate of change in non-work trips by 2040. Similar to the rate of growth of work trips described above, the highest rates of growth in non-work trips occur in the middle ring (e.g., a ring outside the Capital Beltway and the inner area). Moderate rates of growth are anticipated in the outer ring. TDM agencies in these areas have generally focused their services for commute trips. New programs and service will be needed to serve the increasing travel demand for non-work trips.

Chapter 5

Needs Assessment

INTRODUCTION

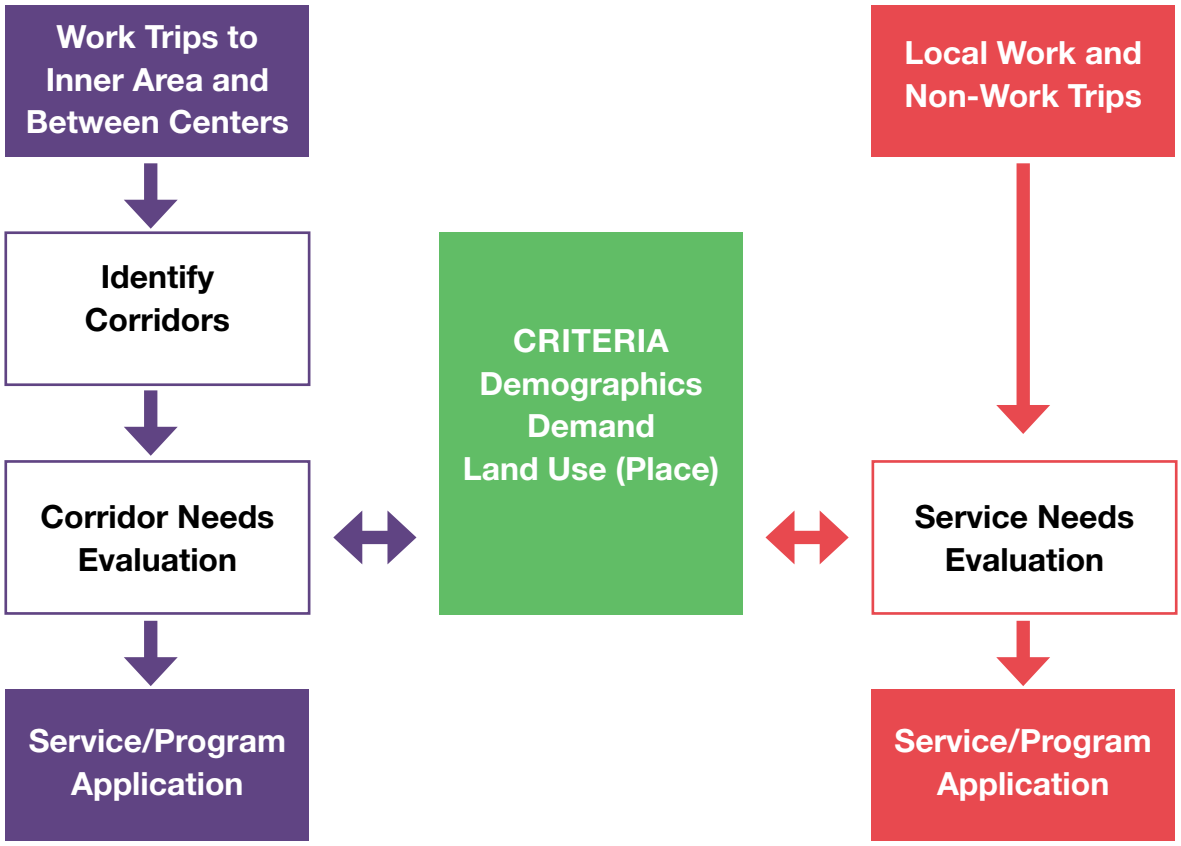


Figure 5.1: Needs Assessment and Recommendations Process

The combination of transition in land use throughout time, continued population and employment growth throughout the region, and increases in travel demand associated with changes in and outside the region will contribute to significant demand for expanded transit and transportation demand management (TDM) in the region in the future. The needs analysis that was prepared evaluated transit and TDM needs at the regional, subregional, and local levels. It quantified the effects of changing land use, population and employment growth, and travel demand growth and advised the development of commuter-oriented and all-day transit service, transit and TDM policy, and transit facility recommendations. **Figure 5.1** shows the process used to assess travel needs and develop service and program recommendations. This chapter discusses the needs assessment and recommendation development process for transportation corridors, local transit service and TDM.

TRANSIT MODES SUMMARY

Fairfax Connector bus.

A range of transit modes are recommended throughout the study area. Key characteristics of the range of mode technologies are described in **Table 5.1** on the following pages.

Table 5.1: Transit Mode Characteristics

Transit Mode	Description
Heavy Rail Transit	Heavy rail transit (HRT) is an electric railway characterized by high speed and rapid acceleration passenger rail cars typically operating in multi-car trains on fixed rails; separated right-of-way from which all other vehicular and foot traffic are excluded; sophisticated signaling; and high platform level entry loading. Substantial and sophisticated passenger amenities are typically provided in HRT systems. **Operating Speed:** 50 mph to 70 mph **Station Spacing:** Inner area ~ ½ mile; Periphery ~ 1 to 5 miles **Runningway Type:** Exclusive dedicated **Example Systems:** Chicago 'L', New York City Subway, BART, Washington, D.C. Metrorail
Light Rail Transit	Light rail transit (LRT) is an electrically powered, high-capacity rail technology capable of operating in a wide range of physical configurations. LRT typically operates in single vehicle or short trains in mostly or fully-dedicated runningway. Substantial and sophisticated passenger amenities are typically provided in LRT systems. **Operating Speed:** 20 mph (on street) to 60 mph (dedicated lanes) **Station Spacing:** ½ to 1 mile **Runningway Type:** Mostly dedicated, minimal shared with traffic **Example Systems:** Baltimore, Portland, Minneapolis, Dallas, Salt Lake City, Denver, Charlotte, Norfolk
Bus Rapid Transit	Bus rapid transit (BRT) combines much of the quality of rail transit with the flexibility and cost-effectiveness of buses. BRT system elements are similar to those more commonly found in rail transit systems. BRT typically employs specifically branded special vehicles, sophisticated transit stations, off-board fare collection, level boarding, transit priority at intersections, and fully to mostly dedicated transit runningways. **Operating Speed:** Greater than 15 mph (arterial roadways); up to 55 mph (limited access facilities) **Station Spacing:** ¼ mile or more **Runningway Type:** Primarily dedicated **Example Systems:** Cleveland, Eugene, Los Angeles, Boston, Kansas City
Rapid Bus	Rapid bus systems share some elements with BRT systems; however, the level of accommodation for transit vehicles and passengers is typically less than with BRT. Rapid bus typically operates in a mixture of dedicated [including high-occupancy vehicle (HOV) and managed lanes] and general purpose travel lanes. Rapid bus may benefit from transit signal priority, queue jump lanes, dedicated/specifically designed stops, and enhanced passenger amenities such as level boarding, off-board fare collection, and covered/enclosed waiting areas. Some branding is typical of rapid bus services. **Operating Speed:** 12 mph to 15 mph (arterial roadways); up to 55 mph (limited access facilities) **Station Spacing:** ¼ mile to 2 miles **Runningway Type:** Mixed flow and dedicated lane **Example Systems:** Bay area, New York, Chicago, Los Angeles
Streetcar	Modern streetcars are rail transit vehicles typically intended for short trip making and circulation in areas with a high concentration of destinations and density of transit trips. Modern streetcars are typically powered by electricity received from an overhead wire; however, some streetcars use batteries and diesel electric technologies. Modern streetcars typically operate in mixed (traffic) flow in local streets with other vehicles. Like LRT and BRT, streetcar systems have significant facilities for passengers and also benefit from specific branding and identity. **Operating Speed:** 8 mph to 12 mph **Station Spacing:** ¼ mile or several urban blocks **Runningway Type:** Mixed flow **Example Systems:** Portland, Seattle, Toronto

Table 5.1: Transit Mode Characteristics *(continued)*

Transit Mode	Description
Intercity Passenger Rail	Intercity passenger rail service typically is provided between major urban areas. For example, between Baltimore, Washington, D.C., and Richmond. This service may be controlled or managed at a state level, but is typically operated by a national or regional passenger railroad such as Amtrak. **Operating Speed:** 30 mph to 60 mph (speeds can be higher) **Station Spacing:** Depends on distance between major cities along the line **Runningway Type:** Railroad **Example Systems:** Amtrak Northeast Regional and Lynchburg to D.C. Amtrak service
Commuter Rail	Commuter Rail is an electric or diesel propelled railway for urban passenger train service. It often runs in a corridor shared with freight and passenger rail services. Typically, commuter rail carries moderate- to long-distance commuter trips in corridors with a high density of trips with similar origins and destinations between suburbs and a central city. **Operating Speed:** 30 mph to 60 mph **Station Spacing:** 2 to 5 miles **Runningway Type:** Railroad **Example Systems:** Virginia Railway Express (VRE), Maryland Area Regional Commuter (MARC), NJ Transit, Tri-Rail
Express Bus	Express bus service is typically designed to reduce moderate distance transit trip travel time in major metropolitan areas during heavily patronized peak commuting hours by operating in a limited stop configuration. Some systems also run express bus services outside of peak commuting periods. Express bus services often operate between park-and-ride or other passenger collection facilities and employment centers. Often, express bus services will have several stops in the vicinity of route termini, with few if any stops in the middle of the route. **Operating Speed:** 15 mph to 19 mph (arterial roadways); up to 55 mph (limited access facilities) **Station/Stop Spacing:** Limited stops, primarily at route termini **Runningway Type:** Mostly mixed flow, may benefit from HOV or other managed lanes **Example Systems:** Most major cities, Richmond Highway Express (REX) in Fairfax County and Alexandria
Regional Commuter Bus	Regional commuter bus service is typically designed to serve specific long-distance travel markets and specific employment centers to reduce travel time and increase convenience and attractiveness for its patrons. Services typically have stops only at termini and operate with limited frequency during off-peak periods. **Operating Speed:** Up to 55 mph (limited access facilities) **Station/Stop Spacing:** Stops only at route termini **Runningway Type:** Mostly mixed flow, may benefit from HOV or other managed lanes **Example Systems:** Potomac and Rappahannock Transportation Commission (PRTC), Loudoun County Transit (LC Transit), Maryland Transit Administration (MTA), and most major U.S. cities

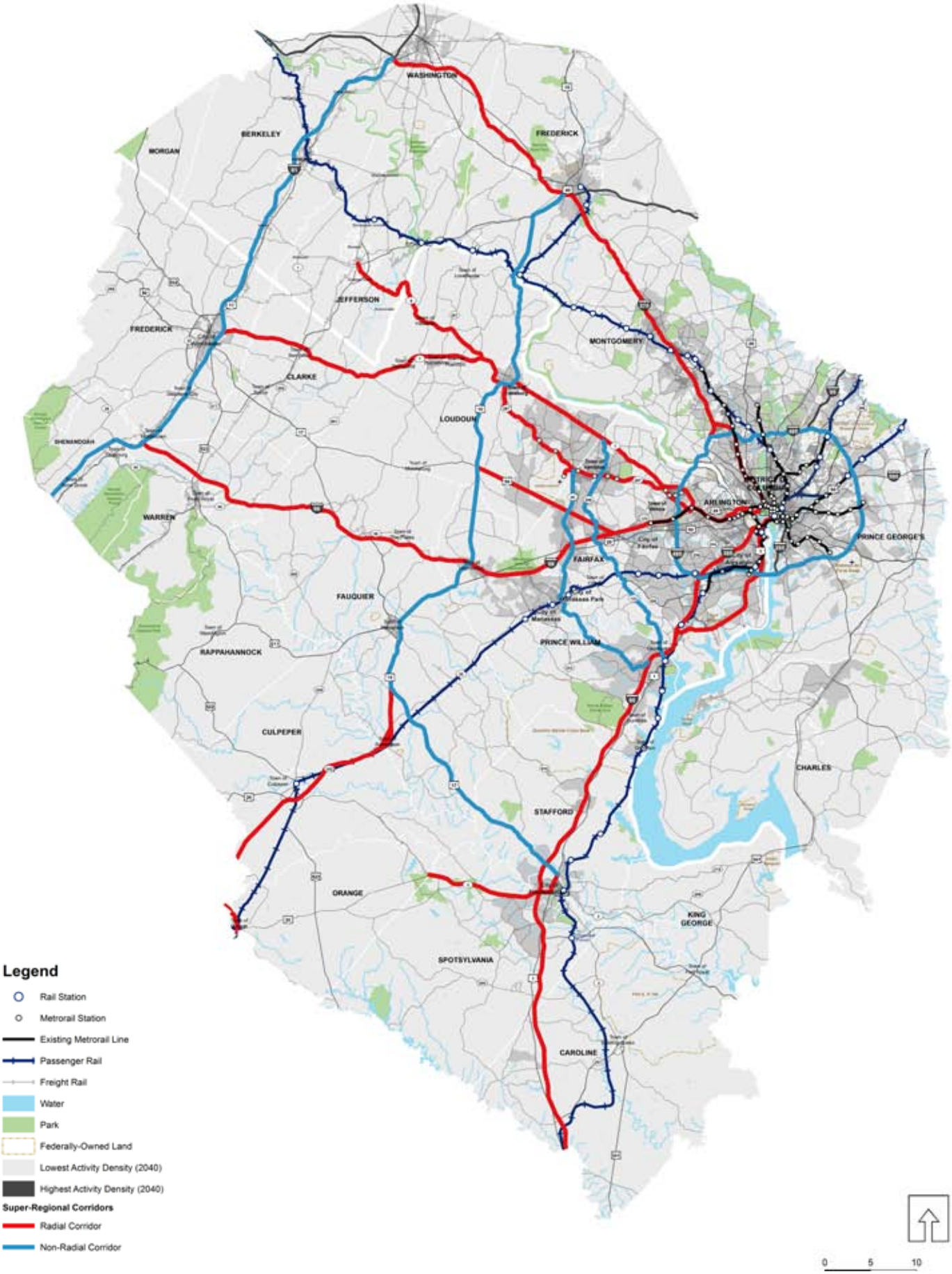


Figure 5.2: Super-Regional Corridors

CORRIDOR ANALYSIS

Arlington Transit (ART) bus.

SUPER-REGIONAL CORRIDORS

The super-regional corridors include the major travel sheds in the Super NoVa region and generally follow the major interstates and major highways in the region. An analysis of person trip characteristics confirmed the importance of these corridors for regional travel (as presented in the prior chapter of this report). These super-regional corridors carry large volumes of trips to and from the inner area, and to and from major suburban activity centers. Super-regional corridors in the Super NoVa region are shown in **Figure 5.2** on the preceding page, and are as follows:

Radial Corridors

- Northwest – Dulles/Route 7
- West – I-66/US 50/US 29
- South – I-95/US 1
- I-270/I-70

Non-Radial Corridors

- I-495
- Fairfax County Parkway/Route 123
- Route 28/Prince William Parkway
- US 15/US 17
- I-81

All of the super-regional corridors in the Super NoVa study area warrant regional transit service, based on the travel pattern analysis presented in the prior chapters of this report. A more detailed assessment of travel patterns was completed to determine which corridors require a higher level of transit service and service type (mode).

Analysis Methodology

Three-mile buffers were defined for each corridor. The corridors were used to determine the regional work trip flows for each corridor. Year 2040 work trips that begin and end within each buffered corridor and are greater than 10 miles in length were determined and categorized as regional trips. Corridor work trips that also begin and/or end in adjacent corridors also were determined and categorized as regional trips. These regional work trips have the greatest potential for being captured by new or expanded regional transit services. The regional work trips were then normalized on a trips per acre basis. Corridor segment travel flows were ranked on a comparative basis to other corridor segments.

Analysis

Table 5.2 on the following pages presents results of this analysis, with an overall ranking for each corridor segment. **Figure 5.3** shows the same results. Segments with a ranking of Tier 2 or Tier 3 regional trip characteristics warrant consideration of a higher level of transit service and service type (e.g., BRT and LRT). Corridor segments with low rankings are likely candidates for expanded or new regional and express bus services. Following is a summary of key findings from this analysis of 2040 work trip characteristics by corridor.

Northwest Corridor

- The Dulles Corridor and Route 7 have medium to high regional work trip travel characteristics from the inner area to Leesburg.
- There is a significant drop in regional work trip activity on US 15, Route 9, and Route 7 west/north of Leesburg.

West Corridor

- I-66 exhibits high regional work trip characteristics from the inner area to Haymarket, and US 50 exhibits medium trip characteristics to US 15. US 29/US 15 south of I-66 and I-66 west of Haymarket exhibit lower regional work trip characteristics.

South Corridor

- I-95 exhibits strong regional work trip characteristics to Quantico/Northern Stafford County, and medium trip characteristics to Fredericksburg.
- US 1 has strong regional work trip volumes.
- US 17 west of I-95 is an important extension of regional work trips in the I-95 corridor, with medium trip characteristics.
- US 3 is an important corridor that brings regional trips into the I-95 corridor, but with lower regional work trip volumes than the US 17 corridor.
- Work trip volumes on I-95/US 1 drop off south of Fredericksburg.

I-270/I-70

- This corridor exhibits strong regional work trip characteristics from the inner area to Frederick, MD.
- Regional work trip activity drops off north of Frederick.

I-495

- This corridor carries high volumes of regional work trips on all segments.
- The segment—with the highest volume of regional work trips—is the southern segment that travels along Alexandria between I-295 in Maryland and the Dulles Access/Toll Road.

Fairfax County Parkway/Route 123

- The northern segment of this corridor exhibits high levels of regional work trips.

Route 28/Prince William Parkway

- The northern segment of this corridor exhibits high levels of regional work trips.

US 15/US 17

- The entire corridor exhibits low regional work trip volumes, when compared to the other regional corridors.

I-81

- The entire corridor exhibits low regional work trip volumes, when compared to the other regional corridors.

Results

Based on this analysis of super-regional corridors, those corridors that have the greatest potential for higher transit capacity services are as follows:

- Northwest (Dulles) Corridor – Leesburg to Washington, D.C.
- West (I-66) Corridor – Haymarket to Washington, D.C.
- South (I-95) Corridor – Fredericksburg to Washington, D.C.
- Beltway (I-495)
- Fairfax County Parkway/Route 123 – Route 267 to I-66
- Route 28 – Route 7 (Dulles North) to I-66

All of the super-regional corridors in the Super NoVa study area warrant regional transit service. Appropriate transit service recommendations were developed for all super-regional corridors. Segments of the corridors with greatest potential for higher transit capacity were analyzed further as part of the subregional corridor analysis described below.

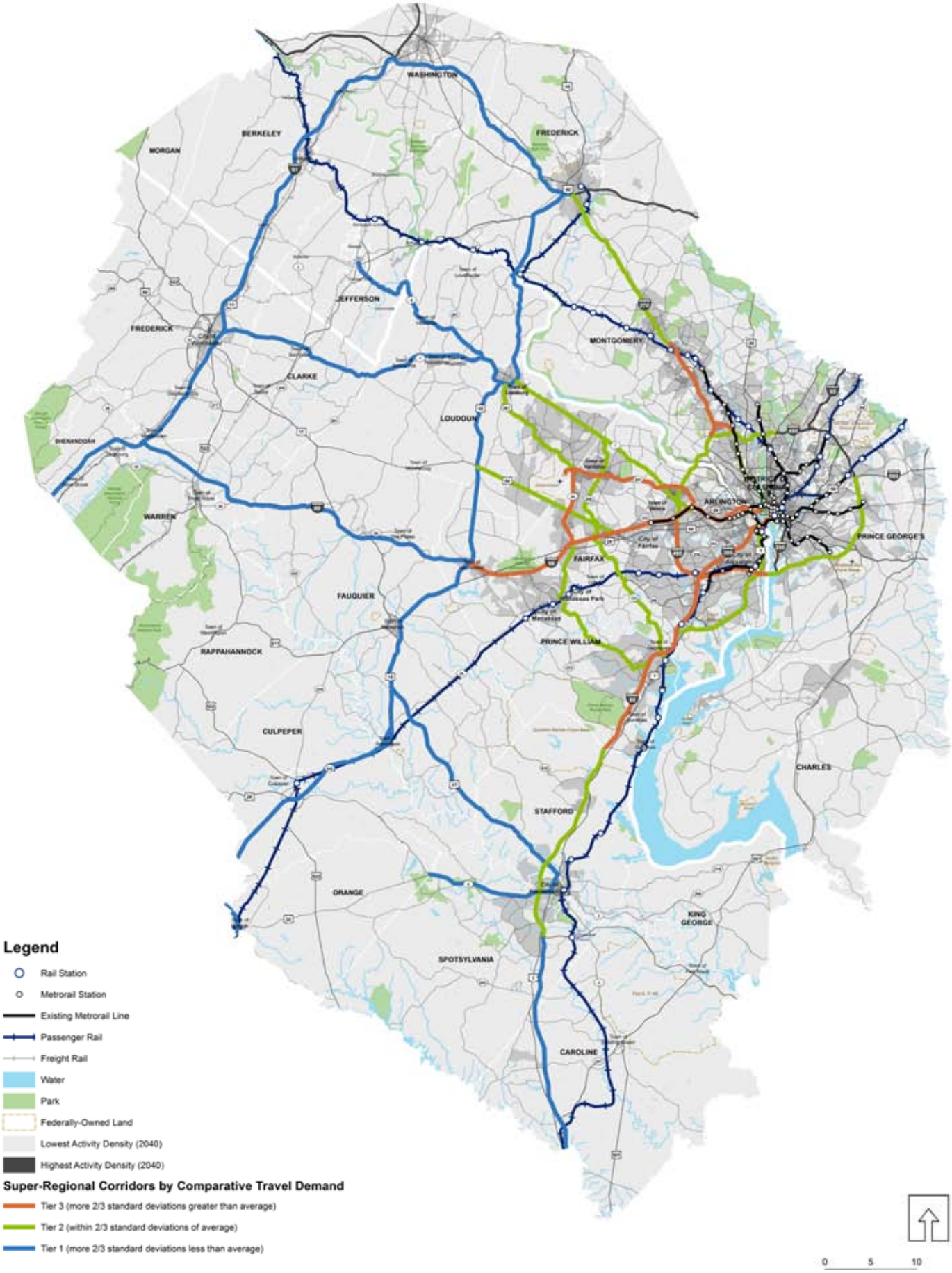


Figure 5.3: Super-Regional Corridor Analysis

Table 5.2: Super-Regional Corridor Analysis

			Corridor Regional 2040 Work Trip Flows								
	Area	Corridor	Reg Corr. Trips	Reg. Trips per Acre	%	Multi-corr. Trips	Multi-corr. Trips per Acre	%	Total Regional Trip Flows	Total Reg. Trips per Acre	Rank
Radial	Northwest/Dulles	Route 9: Charlestown-Leesburg	9,478	0.18	92%	781	0.02	8%	10,259	0.20	Tier 1
		Route 7: Winchester-Leesburg	32,668	0.31	94%	2,253	0.02	6%	34,921	0.33	Tier 1
		US 15: Frederick-Potomac River	14,607	0.18	66%	7,593	0.10	34%	22,200	0.28	Tier 1
		Dulles Toll Road: Leesburg-Dulles	94,542	2.17	80%	24,250	0.56	20%	118,793	2.72	Tier 2
		Route 267: Dulles-Reston	109,034	2.60	60%	73,624	1.76	40%	182,658	4.36	Tier 3
		Route 267: Reston-I-495	88,520	4.56	60%	58,651	3.02	40%	147,171	7.58	Tier 3
		Dulles Connector: Inside I-495	62,276	2.15	87%	9,161	0.32	13%	71,437	2.47	Tier 2
	Northwest/Route 7	Route 7: Leesburg-Dulles North	11,384	0.36	65%	6,045	0.19	35%	17,429	0.55	Tier 2
		Route 7: Dulles North-Reston	18,225	0.47	79%	4,922	0.13	21%	23,148	0.60	Tier 2
		Route 7: Reston-I-495	12,173	0.78	82%	2,715	0.18	18%	14,888	0.96	Tier 2
	West/I-66/US 29	US 29: Orange-Warrenton	4,489	0.04	90%	520	0.00	10%	5,009	0.04	Tier 1
		US 29: Warrenton-Haymarket	13,221	0.36	78%	3,705	0.10	22%	16,925	0.46	Tier 1
		I-66: Front Royal-Haymarket	20,135	0.19	91%	2,025	0.02	9%	22,161	0.21	Tier 1
		I-66: Haymarket-Centreville	68,341	1.79	75%	22,598	0.59	25%	90,939	2.39	Tier 2
		US 50: Route 28-Fairfax	19,247	0.63	58%	13,935	0.46	42%	33,182	1.09	Tier 2
		I-66: Centreville-Fairfax	78,270	3.92	63%	46,496	2.33	37%	124,766	6.24	Tier 3
		I-66: Fairfax-I-495	108,148	5.18	62%	66,072	3.16	38%	174,220	8.34	Tier 3
		I-66: Inside I-495	92,763	2.58	100%	0	0.00	0%	92,763	2.58	Tier 2
	South/I-95	Route 3: West of Fredericksburg	9,333	0.19	100%	0	0.00	0%	9,333	0.19	Tier 1
		US 17: West of Fredericksburg	2,464	0.04	84%	480	0.01	16%	2,943	0.05	Tier 1
		I-95: South of US 17	7,523	0.10	91%	753	0.01	9%	8,276	0.11	Tier 1
		I-95: US 17 to US 17	31,572	1.21	88%	4,381	0.17	12%	35,953	1.38	Tier 2
		I-95: US 17-Stafford Co. Line	51,013	1.10	82%	11,347	0.24	18%	62,360	1.35	Tier 2
		I-95: Stafford Co. Line-Dale City	60,349	2.24	75%	20,346	0.76	25%	80,695	3.00	Tier 3
		I-95: Dale City-Lorton	95,398	3.62	71%	39,795	1.51	29%	135,193	5.13	Tier 3
		I-95: Lorton-I-495	121,732	6.35	70%	53,352	2.78	30%	175,084	9.14	Tier 3
		I-395: Inside I-495	127,735	3.63	96%	4,649	0.13	4%	132,384	3.76	Tier 3
	South/US 1	US 1: Lorton-I-495	43,204	0.93	90%	5,003	0.11	10%	48,208	1.04	Tier 2
		US 1: Inside I-495	42,370	1.78	100%	0	0.00	0%	42,370	1.78	Tier 2
	I-70/I-270	I-70: Hagertown-Frederick	18,879	0.23	86%	3,151	0.04	14%	22,030	0.27	Tier 1
		I-270: Frederick-Germantown	52,765	0.88	76%	16,804	0.28	24%	69,569	1.16	Tier 2
		I-270: Germantown-I-495	122,490	2.44	72%	47,477	0.95	28%	169,967	3.39	Tier 3
		Red Line Corridor: Inside I-495	98,548	2.56	100%	0	0.00	0%	98,548	2.56	Tier 2

Table 5.2: Super-Regional Corridor Analysis (continued)

			Corridor Regional 2040 Work Trip Flows								
	Area	Corridor	Reg Corr. Trips	Reg. Trips per Acre	%	Multi-corr. Trips	Multi-corr. Trips per Acre	%	Total Regional Trip Flows	Total Reg. Trips per Acre	Rank
Circumferential	I-495/Beltway	Beltway: S. Potomac River-US 29 (in MD)	53,837	0.66	48%	57,480	0.71	52%	111,317	1.37	Tier 2
		Beltway: I-66-S. Potomac River (in VA)	66,868	3.00	51%	63,661	2.85	49%	130,529	5.85	Tier 3
		Beltway: N. Potomac River-I-66 (in VA)	72,320	1.54	86%	12,080	0.26	14%	84,400	1.80	Tier 2
		Betlway: US 29-N. Potomac River (in MD)	56,506	1.14	53%	49,552	1.00	47%	106,057	2.14	Tier 2
	Rte 7100/Rte 123	Route 286 (7100): North of I-66	10,400	0.27	12%	73,095	1.89	88%	83,495	2.15	Tier 2
		Route 286 (7100)/Route 123: South of I-66	11,978	0.23	19%	49,989	0.97	81%	61,967	1.21	Tier 2
	Route 28/PW Parkway	Route 28: North of I-66	33,429	0.81	27%	90,754	2.19	73%	124,183	3.00	Tier 3
		Route 28/Prince William Parkway: South of I-66	31,345	0.83	49%	32,989	0.88	51%	64,334	1.71	Tier 2
	US 15 & US 17	US 15: Frederick-Potomac River	11,522	0.15	86%	1,948	0.02	14%	13,470	0.17	Tier 1
		US 15: Potomac River-Leesburg-US 50	5,430	0.15	49%	5,717	0.16	51%	11,147	0.31	Tier 1
		US 15: US 50-I-66	5,644	0.12	39%	8,867	0.18	61%	14,512	0.30	Tier 1
		US 15: I-66-Warrenton	3,138	0.09	30%	7,372	0.20	70%	10,510	0.29	Tier 1
		US 17: Warrenton-Stafford Co.	1,118	0.01	11%	9,313	0.08	89%	10,432	0.09	Tier 1
		US 17: Stafford Co.-Fredericksburg	599	0.01	4%	13,785	0.22	96%	14,384	0.23	Tier 1
	I-81	I-81: West Virginia/Maryland	20,799	0.19	85%	3,682	0.03	15%	24,481	0.22	Tier 1
		I-81: Virginia Segment	17,678	0.16	77%	5,220	0.05	23%	22,898	0.21	Tier 1

Key

Tier 3: more than 2/3 standard deviations greater than average
Tier 2: within 2/3 standard deviations of average
Tier 1: more than 2/3 standard deviations less than average

SUBREGIONAL CORRIDORS

Subregional corridors are segments of super-regional corridors with the greatest potential for higher capacity transit service based on travel demand. **Figure 5.4** shows the subregional corridors evaluated.

Analysis Methodology

The subregional corridor analysis focuses on demographics and place type along the corridors. The analysis was focused on the suitability of an area to support higher capacity transit service. The corridors were evaluated based on two sets of data—activity density and place type. Activity density and place type mix were evaluated within a 0.25-mile radius of each corridor. The analysis was used to identify an initial transit service mode technology for each corridor. The following describes the evaluation methodology.

Demographics

Activity density was used to determine the level of transit service appropriate for each corridor. Based on the average 2040 activity density (people and employees per acre) in the 0.25-mile analysis area, each corridor was assigned one of four service levels—highest, medium-high, medium, and lowest. Thresholds for the four service levels were adapted from the Department of Rail and Public Transportation (DRPT) Transit Service Guidelines. **Table 5.3** shows the four levels of transit service and their corresponding activity density ranges.

Table 5.3: Transit Service Level by Activity Density

Service Level	Activity Density Range (people and employees per acre)
Highest	Above 39
Medium-High	16-39
Medium	4.5-16
Lowest	Below 4.5

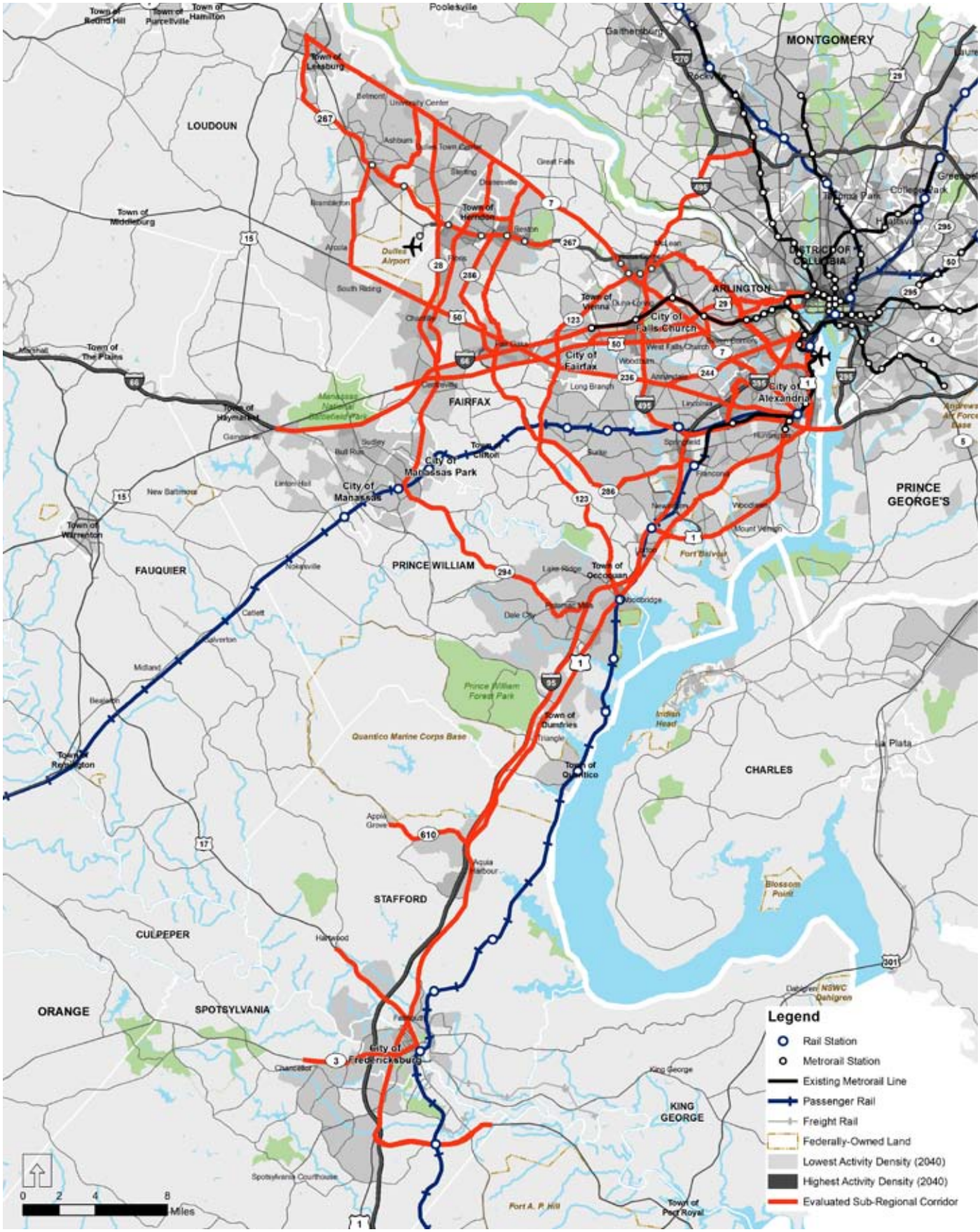


Figure 5.4: Subregional Corridors

Place Type

Place type analysis was used to determine the type of transit service appropriate for each corridor. Each corridor was assigned one of the following three service types—high all day, medium all day, and commuter. For each quarter-mile analysis area, the percentage of each place type was determined. The place types, described in Chapter 4, were classified as either suitable for medium-capacity all day service or high-capacity all day service. **Table 5.4** shows the categorization of place types.

Columbia Pike in Arlington County, VA.

Table 5.4: Place Type Suitability for Higher Capacity Transit

Place Type	Suitable for Medium-Capacity, All-Day Transit Service	Suitable for High-Capacity, All-Day Transit Service
Rural/Natural/Very Low Density Residential		
Low Density Residential		
Medium Density Residential		
High Density Residential		√
Suburban Office	√	
Suburban Commercial	√	
Regional Retail Center	√	
Rural or Village Center		
Small Town or Suburban Center	√	
Medium Town or Suburban Center		√
Large Town or Suburban Center		√
Mixed Use Neighborhood		√
Urban Center		√
Urban Core		√
Industrial		
Institutional/Military/Other		

Based on the mix of place types in the 0.25-mile analysis area, each corridor was assigned one of two service types—all day or commuter-oriented. Thresholds for the service types were developed based on the percentages of place types suitable for medium- and high-capacity transit service. **Table 5.5** shows the three service types and their corresponding place type suitability thresholds.

Table 5.5: Transit Service Type by Place Type

Service Type	Percentage of Place Types Suitable for Medium-Capacity Transit	Percentage of Place Types Suitable for High-Capacity Transit
High All-Day	Above 85% OR	Above 35%
Medium All-Day	50% - 85%	N/A
Commuter	Below 50%	N/A

Analysis

Based on the demographic and place type analysis, an initial transit mode was assigned to each subregional corridor. Transit modes were determined based on the combination of service levels and types. **Table 5.6** shows the transit mode recommendations based on service type and service level analysis. The transit modes are intended as a guide to a transit mode that could be suitable in a corridor in the future.

Table 5.6: Transit Mode by Service Type and Service Level

Service Level	Commuter Service	All-Day Service
Highest	Commuter Rail (VRE)	Heavy Rail (Metrorail)
Medium High	Express Bus (Direct or limited stop, potential for off-peak service)	LRT/BRT (Mostly or fully dedicated runningway)
Medium		Rapid Bus (Partial dedicated runningway)
Lowest	Commuter Bus (Limited stop, peak oriented)	Local Bus

The results of the subregional corridor analysis for 2040 are shown in **Figure 5.5**, **Figure 5.6**, and **Table 5.7**. The results of this analysis were used as a starting point for individual corridor recommendations. Recommendations were subsequently adjusted based on local plans, stakeholder and public input, and considerations related to the super-regional transit network.

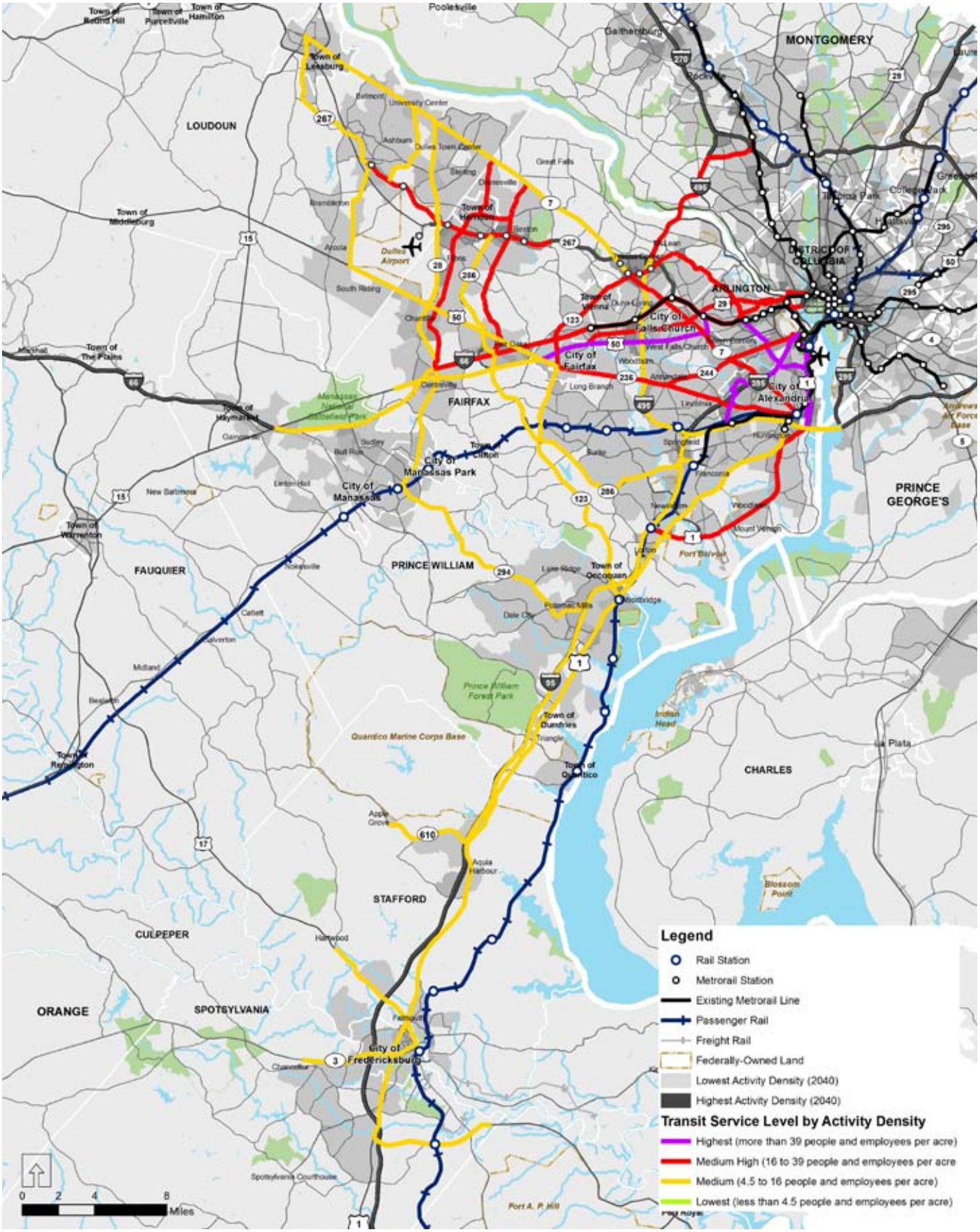


Figure 5.5: Subregional Corridor Demographic Analysis

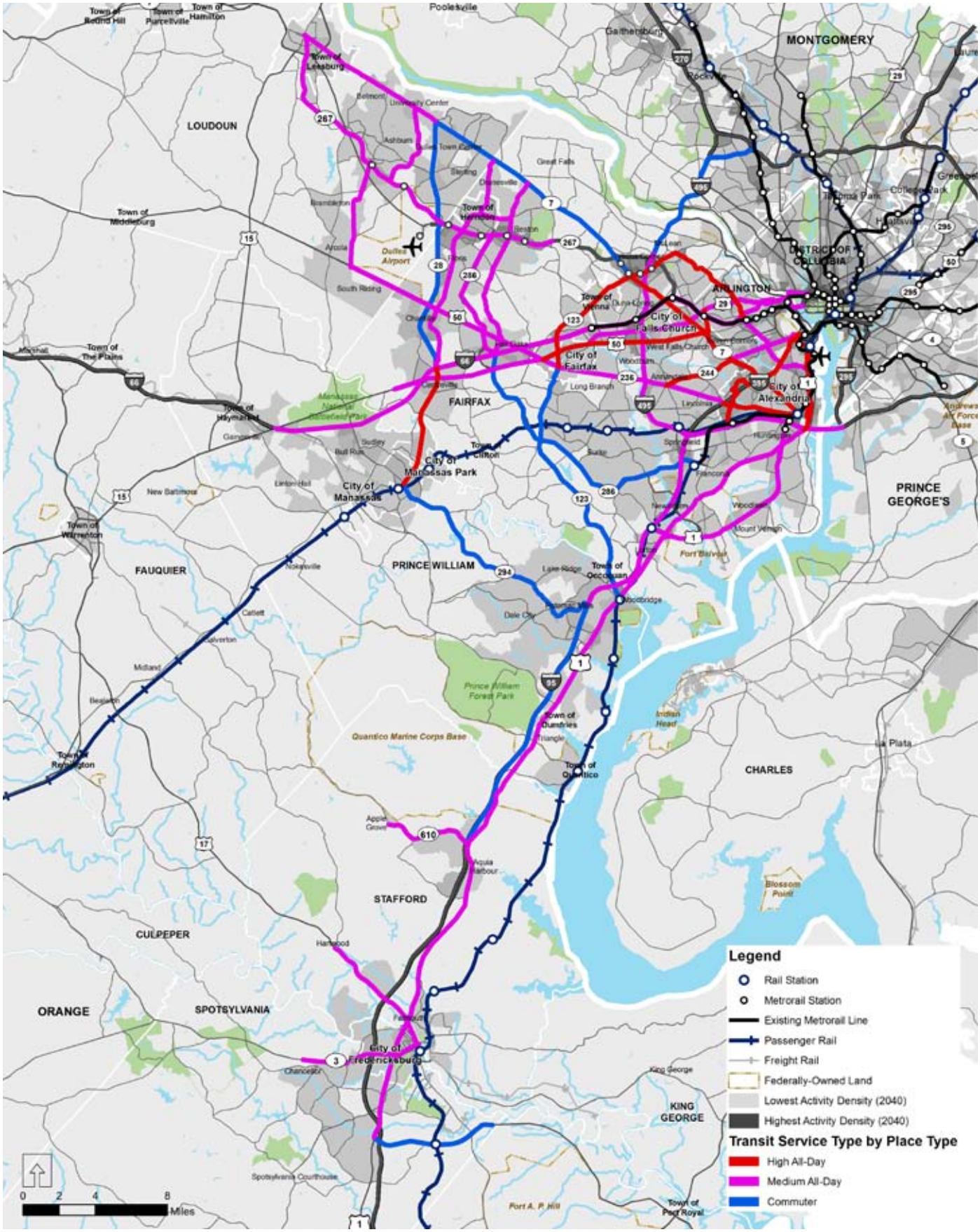


Figure 5.6: Subregional Corridor Place Type Analysis

Table 5.7: Subregional Corridor Analysis

Corridor	Average Acitivty Density - 2040 (people and employees per acre)	Service Level by Activity Density	High Place Type Suitability	Medium + High Place Type Suitability	Service Level by Place Type	Analysis Outcome
I-66: Washington, D.C. to Vienna	27.5	Medium High	10%	73%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
I-66: Vienna to Centreville	20.4	Medium High	19%	74%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
I-66: Centreville to Haymarket	9.2	Medium	34%	50%	Medium All-Day	Rapid Bus
I-95: Beltway to Lorton	15.2	Medium	7%	52%	Medium All-Day	Rapid Bus
I-95: Lorton to Dale City	14.7	Medium	16%	58%	Medium All-Day	Rapid Bus
I-95: Dale City to Stafford County	8.6	Medium	12%	45%	Commuter	Express Bus
I-495: I-270 (MD) to VA 267 (Dulles Toll Road)	24.1	Medium High	4%	39%	Commuter	Express Bus
I-495: VA 267 (Dulles Toll Road) to I-395	6.5	Medium	17%	80%	Medium All-Day	Rapid Bus
I-495: I-395 to MD Route 214	13.1	Medium	14%	50%	Medium All-Day	Rapid Bus
Route 1: Pentagon City to Beltway	76.0	Highest	70%	78%	High All-Day	Heavy Rail
Route 1: Beltway to Fort Belvoir	19.0	Medium High	0%	73%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 1: Fort Belvoir to Quantico	13.5	Medium	26%	66%	Medium All-Day	Rapid Bus
Route 1: Quantico to Fredericksburg	6.9	Medium	11%	64%	Medium All-Day	Rapid Bus
Route 120 (Glebe Road): Ballston to Route 1	53.5	Highest	34%	74%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 123: McLean to City of Fairfax	30.6	Medium High	38%	86%	High All-Day	Light Rail Transit/ Bus Rapid Transit
Route 123: City of Fairfax to Woodbridge	6.3	Medium	5%	19%	Commuter	Express Bus
Route 17: Stafford County to Fredericksburg	7.6	Medium	2%	68%	Medium All-Day	Rapid Bus
Route 17: Fredericksburg to Spotsylvania County	5.3	Medium	6%	33%	Commuter	Express Bus
Route 236 (Duke Street): Alexandria to I-395	38.6	Medium High	39%	74%	High All-Day	Light Rail Transit/ Bus Rapid Transit
Route 236 (Little River Turnpike): I-395 to City of Fairfax	16.9	Medium High	27%	83%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 244 (Columbia Pike): Pentagon to Bailey's Crossroads	38.6	Medium High	14%	69%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 244: Bailey's Crossroads to Annandale	19.7	Medium High	10%	100%	High All-Day	Light Rail Transit/ Bus Rapid Transit

Table 5.7: Subregional Corridor Analysis (continued)

Corridor	Average Acitivty Density - 2040 (people and employees per acre)	Service Level by Activity Density	High Place Type Suitability	Medium + High Place Type Suitability	Service Level by Place Type	Analysis Outcome
Route 267 (Dulles Corridor): Beltway to Reston	40.0	Highest	15%	43%	Commuter	Commuter Rail
Route 267 (Dulles Corridor): Reston to Dulles	27.9	Medium High	28%	52%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 267 (Dulles Corridor): Dulles to Leesburg	10.4	Medium	22%	60%	Medium All-Day	Rapid Bus
Route 28: Route 7 to Centreville	15.3	Medium	16%	32%	Commuter	Express Bus
Route 28: Manassas to Centreville	15.2	Medium	42%	83%	High All-Day	Light Rail Transit/ Bus Rapid Transit
Route 286: Herndon to Fair Lakes	14.4	Medium	6%	70%	Medium All-Day	Rapid Bus
Route 286: Fair Lakes to Franconia-Springfield	7.8	Medium	2%	39%	Commuter	Express Bus
Route 29: Georgetown to City of Fairfax	34.3	Medium High	27%	81%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 29: City of Fairfax to Centreville	13.9	Medium	18%	57%	Medium All-Day	Rapid Bus
Route 294 (Prince William Pkwy): Manassas to Potomac Mills	8.2	Medium	10%	45%	Commuter	Express Bus
Route 3: Spotsylvania to Fredericksburg	12.1	Medium	10%	81%	Medium All-Day	Rapid Bus
Route 309 (Old Dominion): Ballston to McLean	23.3	Medium High	7%	92%	High All-Day	Light Rail Transit/ Bus Rapid Transit
Route 401 (Van Dorn)/ Beauregard/I-395: Pentagon to Beltway	39.8	Highest	51%	69%	High All-Day	Heavy Rail
Route 50: Washington, D.C. to City of Fairfax	39.4	Highest	38%	79%	High All-Day	Heavy Rail
Route 50: City of Fairfax to Loudoun County	15.4	Medium	22%	75%	Medium All-Day	Rapid Bus
Route 606/Loudoun Co. Pwky: Route 7 to Braddock Road	9.2	Medium	9%	58%	Medium All-Day	Rapid Bus
Route 608/Reston Pkwy: Route 7 to Fair Lakes	17.4	Medium High	12%	63%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 610 (Garrisonville Road): Stafford County to Route 1	8.6	Medium	17%	74%	Medium All-Day	Rapid Bus
Route 611/Kings Highway: Huntington to Lorton	10.8	Medium	5%	59%	Medium All-Day	Rapid Bus
Route 657 (Centreville Road): Route 7 to Centreville	17.1	Medium High	26%	62%	Medium All-Day	Light Rail Transit/ Bus Rapid Transit
Route 7: Alexandria to Tysons	38.5	Medium High	24%	90%	High All-Day	Light Rail Transit/ Bus Rapid Transit
Route 7: Tysons to Dulles Town Center	15.7	Medium	5%	27%	Commuter	Express Bus

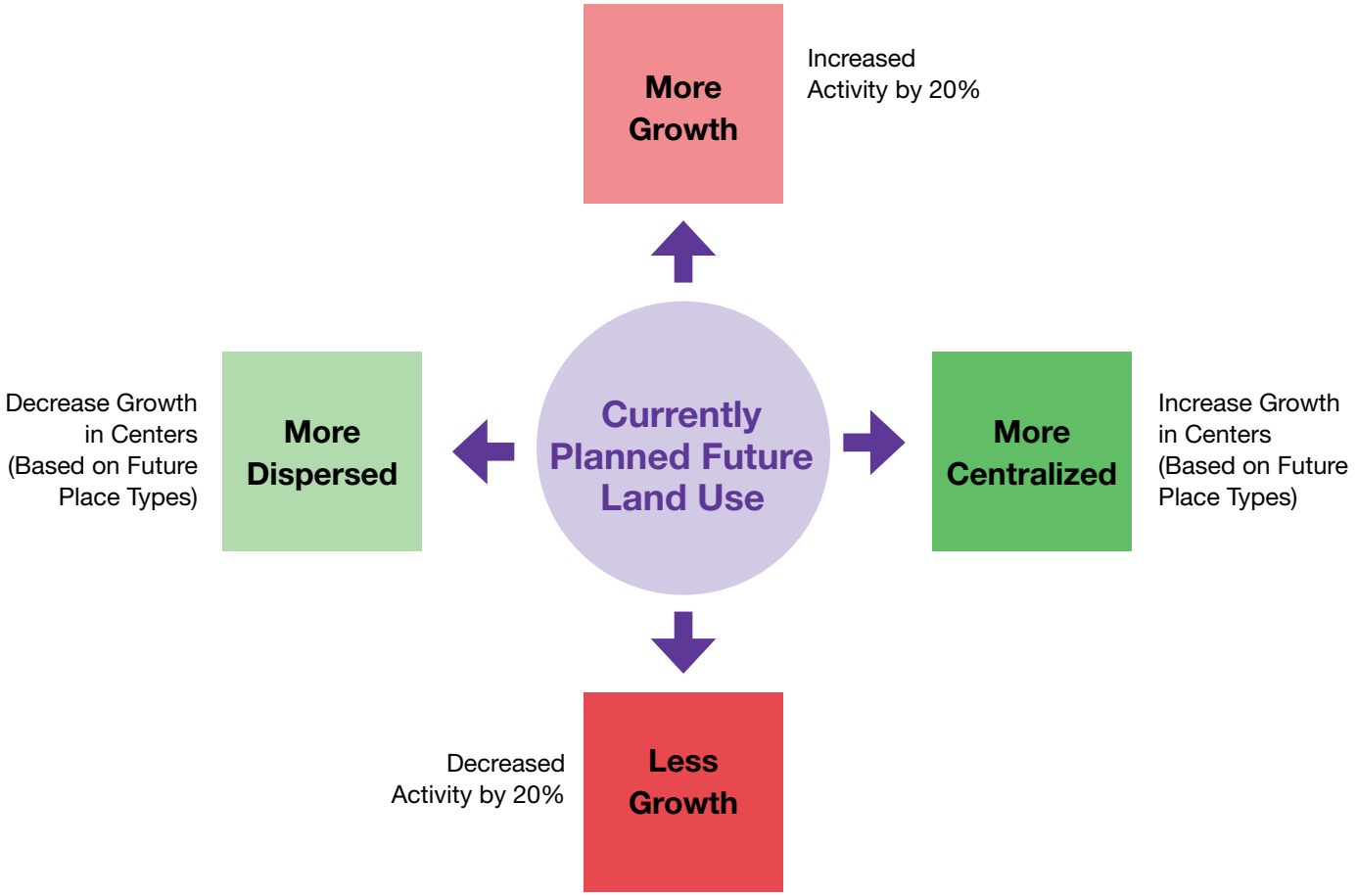


Figure 5.7: Sensitivity Analysis Scenarios

Sensitivity Analysis

The evaluation described in the previous sections was based on the currently forecast growth for the region. A sensitivity analysis was conducted to determine how the recommendations would be affected if the region grew differently. The analysis looked at four scenarios which covered fluctuation in the amount of growth as well as in the predicted patterns. **Figure 5.7** shows each scenario.

High and low growth scenarios were developed by increasing or decreasing the population and employment forecasts for the region by 20 percent. The more centralized and dispersed scenarios maintained the base forecast number of jobs and people, but redistributed them regionally. Findings of the sensitivity analysis included:

- Regional transit and TDM needs are significant irrespective of any of the four scenarios
- Shifts in population and employment would minimally affect high-capacity transit needs identified by future base forecasts
- Increasing density in already urbanized areas increases local and regional transit needs in those areas and would increase demand for high-capacity transit services
- Modest shifts in density from urban areas to rural areas does not create significant additional high-capacity transit need in those areas

Patterns of growth that increase densities in already urbanized areas, particularly those in the inner areas of the region, support investments in higher capacity transit modes better than other scenarios.

Refined Corridor Recommendations

The travel flow analysis was used to determine the highest tiered travel demand corridors. Corridors with the highest comparative travel demand were evaluated for transit suitability based on demographics and place types within 0.25-miles of the corridor. The analysis led the assignment of an "analysis transit service mode recommendation" for the subregional corridors and a recommendation for regional commuter bus service on Tier 1 super-regional corridors.

The recommendations for each corridor were then compared to existing high-capacity transit services, comprehensive plan-designated transit corridors, and detailed feasibility or environmental study recommendations for transit service. The future network was considered as a whole. Based on these evaluations, adjustments were made to the "analysis transit service mode recommendation" and resulted in the "preliminary transit service mode recommendation." The preliminary corridor recommendations were shared with agency, jurisdictional, and planning body stakeholders as well as with the public, as described in Chapter 2. Comments related to the corridor transit service modes were summarized and, in some cases, recommendations were adjusted.

Table 5.8 summarizes the development of transit service mode recommendations for each subregional corridor. The final recommendations for the corridors are described in Chapter 6. The recommendations identify transit mode technology and general corridor location based on a regional planning-level analyses of potential future need and suitability based on land use, demographics, and travel demand.

The Vision Plan includes a number of corridor-specific recommendations not currently included in local or regional plans. **Table 5.8** identifies corridors included in existing local or regional plans, corridors where the Northern Virginia Transportation Authority (NVTA) TransAction 2040 plan recommends a substantially different transit facility, and corridors for which studies are currently ongoing.

The Super NoVa Vision Plan recommendations for these corridors do not prescribe a particular approach for the implementation of the recommended service and accompanying facility type. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of Super NoVa corridor recommendations. In some cases, more detailed study and analysis with different approaches and goals will lead to different recommendations. Specific instances where additional analysis has already been conducted or is currently being conducted is summarized in the following:

- **Columbia Pike** — Arlington County and Fairfax County Boards have adopted, as the locally preferred alternative, modern streetcar service and continued bus service between Pentagon City in Arlington County and the Skyline area of Fairfax County.
- **US Route 1** — Arlington County Board and Alexandria City Council have a coordination agreement for the joint Route 1 Corridor Streetcar Conversion project which would convert the bus transitway (currently under construction) to a streetcar between Crystal City in Arlington County and the potential new Potomac Yard Metrorail station in the City of Alexandria.
- **US Route 1** — City of Alexandria is currently constructing a bus transitway between East Glebe Road and the Braddock Road Metrorail station.
- **Duke Street** — Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for Duke Street between the King Street Metrorail station and Landmark Mall.
- **Van Dorn Street/Beauregard Street** — Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for sections of Van Dorn Street and Beauregard Street between the Van Dorn Metrorail station and the Mark Center. At the Mark Center, the high-capacity bus transitway would branch into two lines with one serving Pentagon/Pentagon City via I-395 and the second serving the Northern Virginia Community College, Shirlington, and Pentagon/Pentagon City via Beauregard Street, S. Arlington Mill Drive, and I-395.
- Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.

Table 5.8: Development of Corridor Transit Service Mode Recommendations

Corridor	Existing High-Capacity Service	Programmed High-Capacity Service	Analysis Outcome Service	Preliminary Service Recommendation	Justification for Adjustment from Analysis Outcome	Stakeholder Input
I-66: Washington, D.C. to Vienna	Metrorail Orange Line		Light Rail Transit/ Bus Rapid Transit	Express Bus	Existing Metrorail in Corridor	▪ Coordinate I-66/Route 29/ Route 50 corridors
I-66: Vienna to Centreville			Light Rail Transit/ Bus Rapid Transit	Heavy Rail	Local/Regional Plans for Metrorail Extension	
I-66: Centreville to Haymarket			Rapid Bus	Rapid Bus		
I-95: Beltway to Lorton		I-95 Express Lanes	Rapid Bus	Rapid Bus		
I-95: Lorton to Dale City		I-95 Express Lanes	Rapid Bus	Rapid Bus		
I-95: Dale City to Stafford County		I-95 Express Lanes	Express Bus	Regional Commuter Bus	I-95/I-395 Rapid Bus Transit Study	
I-495: I-270 (MD) to VA 267 (Dulles Toll Road)		I-495 Express Lanes (Maryland State Line to Dulles Toll Road	Express Bus	Rapid Bus	Provide All-Day Service in Corridor Using I-495 Express Lanes	
I-495: VA 267 (Dulles Toll Road) to I-395		I-495 Express Lanes	Rapid Bus	Rapid Bus		
I-495: I-395 to MD Route 214			Rapid Bus	Rapid Bus		

Local or Regional Plan Recommendation	MPO Constrained Long-Range Plan Recommendation	NVTA TransAction 2040 Draft Recommendation	Ongoing Study	Final Vision Plan Service Recommendation
Express Lanes (I-66 Multimodal Inside the Beltway Study); Enhanced Public Transportation Corridor (EPTC) (Fairfax County Comp. Plan)		Express Priority Bus Service D.C. to Gainesville	I-66 Tier 1 Environmental Impact Statement; Fairfax Countywide Transit Network Study	Regional Commuter Bus on Existing Express or HOV Lane
Metrorail Extension to Centreville (Fairfax County Comp. Plan)		Express Priority Bus Service D.C. to Gainesville; Metrorail Orange Line Extension to Centreville	I-66 Tier 1 EIS; Fairfax Countywide Transit Network Study	Heavy Rail; Regional Commuter Bus on Existing Express or HOV Lane
EPTC (Fairfax County Comp. Plan); Metrorail Extension to Gainesville and BRT to Haymarket (Prince William County Comp. Plan)	Add HOV Lanes	Express Priority Bus Service D.C. to Gainesville; Metrorail Orange Line Extension to Gainesville	I-66 Tier 1 EIS; Fairfax Countywide Transit Network Study	Rapid Bus (Centreville to Gainesville); Regional Commuter Bus on Existing Express or HOV Lane
I-95 Express Lanes, Priority Bus Route (I-95/I-395 Bus Rapid Transit Study); EPTC (Fairfax County Comp. Plan)	I-95 Express Lanes	Metrorail Blue Line Extension to Potomac Mills; Expanded Express and Commuter Bus Service	Fairfax Countywide Transit Network Study	Regional Commuter Bus on Existing Express or HOV Lane
I-95 Express Lanes, Priority Bus Route (I-95/I-395 Bus Rapid Transit Study); EPTC (Fairfax County Comp. Plan); Metrorail Extension to Potomac Mills and BRT (Prince William County Comp. Plan)	I-95 Express Lanes	Metrorail Blue Line Extension to Potomac Mills; Expanded Express and Commuter Bus Service	Fairfax Countywide Transit Network Study	Regional Commuter Bus on Existing Express or HOV Lane
I-95 Express Lanes, Priority Bus Route (I-95/I-395 Bus Rapid Transit Study)	I-95 Express Lanes (Dale City to Stafford County Line; I-95 Express Lanes (Stafford County Line to Route 17 in Spotsylvania County)			Regional Commuter Bus on Existing Express or HOV Lane
EPTC (Fairfax County Comp. Plan)	I-495 Express Lanes (Maryland State Line to Dulles Toll Road)	Priority Bus Service (in Virginia); New Metrorail Line from Dunn Loring to Bethesda	Fairfax Countywide Transit Network Study	Rapid Bus; Regional Commuter Bus
I-495 Express Lanes, Priority Bus Route (I-95/I-395 Bus Rapid Transit Study); EPTC (Fairfax County Comp. Plan)	I-495 Express Lanes	Priority Bus Service (in Virginia); New Metrorail Line from Dunn Loring to Bethesda; Expanded Express and Commuter Bus Service	Fairfax Countywide Transit Network Study	Rapid Bus; Regional Commuter Bus on Existing Express or HOV Lane
EPTC (Fairfax County Comp. Plan)		Priority Bus Service (I-495 in Virginia), Metrorail Extension Across the Wilson Bridge (Eisenhower Avenue Station to Branch Avenue Station)	Fairfax Countywide Transit Network Study	Rapid Bus; Regional Commuter Bus

Table 5.8: Development of Corridor Transit Service Mode Recommendations (continued)

Corridor	Existing High-Capacity Service	Programmed High-Capacity Service	Analysis Outcome Service	Preliminary Service Recommendation	Justification for Adjustment from Analysis Outcome	Stakeholder Input
Route 1: Pentagon City to Beltway	Metrorail Blue and Yellow Lines/VRE Fredericksburg Line	Crystal City/ Potomac Yard Transitway Pentagon City to Braddock Road Metrorail Station	Heavy Rail	Light Rail Transit/ Bus Rapid Transit	Existing Metrorail in Corridor, Planned Crystal City/Potomac Yard	▪ Consider Connection to Huntington ▪ No Transitway Between Braddock Road Metrorail Station and Beltway
Route 1: Beltway to Fort Belvoir	VRE Fredericksburg Line		Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ Concern that Corridor 11 (Route 1) and Corridor 40 (Route 611) are Not Both Needed ▪ Consider Connection to Woodbridge VRE
Route 1: Fort Belvoir to Quantico	VRE Fredericksburg Line		Rapid Bus	Rapid Bus		
Route 1: Quantico to Fredericksburg	VRE Fredericksburg Line		Rapid Bus	Rapid Bus		
Route 120 (Glebe Road): Ballston to Route 1			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ Consider HOV Instead of Dedicated Runningway
Route 123: McLean to City of Fairfax			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 123: City of Fairfax to Woodbridge			Express Bus	Express Bus		
Route 17: Stafford County to Fredericksburg			Rapid Bus	Rapid Bus		
Route 236 (Duke Street): Alexandria to I-395			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 236 (Little River Turnpike): I-395 to City of Fairfax			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 244 (Columbia Pike): Pentagon to Bailey's Crossroads		Columbia Pike Streetcar Service	Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		

Local or Regional Plan Recommendation	MPO Constrained Long-Range Plan Recommendation	NVTA TransAction 2040 Draft Recommendation	Ongoing Study	Final Vision Plan Service Recommendation
Crystal City/Potomac Yard Transitway Pentagon City to Braddock Road Metrorail Station (Corridor Transit Improvement Project)	Crystal City/Potomac Yard Transitway; US 1 Streetcar	Crystal City/Potomac Yard Transitway (Conversion from Bus to Streetcar)	Planned Environmental Studies for Potential Conversion to Streetcar Pentagon City to Future Potomac Yard Metrorail Station	Streetcar (Pentagon City to Future Potomac Yard Metrorail Station;) Light Rail Transit/Bus Rapid Transit (Potomac Yard to Braddock Road Metrorail Station)
EPTC (Fairfax County Comp. Plan)		Priority Bus Service	Fairfax Countywide Transit Network Study	Light Rail Transit/ Bus Rapid Transit (Huntington Metro to Lorton VRE)
EPTC (Fairfax County Comp. Plan); BRT (Prince William County Comp. Plan)		Conduct Transit Study and Alternative Analysis (Huntington to Quantico)	Fairfax Countywide Transit Network Study	Rapid Bus (Lorton to Quantico)
	Regional Bus Service (Stafford County to Route 17 in Spotsylvania County)			Rapid Bus (Quantico to Route 17 in Spotsylvania County)
Primary Transit Network (PTN) (Arlington County Master Transportation Plan)				Light Rail Transit/ Bus Rapid Transit (Lee Highway to Route 1)
			Fairfax Countywide Transit Network Study	Light Rail Transit/ Bus Rapid Transit
				Express Bus
	Local Bus Service			Rapid Bus
High-Capacity Transitway (Alexandria Transportation Master Plan)		High-Capacity Transitway Within the City of Alexandria	City of Alexandria Transitway Corridors Feasibility Study	Light Rail Transit/ Bus Rapid Transit
		Priority Bus Service	Fairfax Countywide Transit Network Study	Light Rail Transit/ Bus Rapid Transit
Columbia Pike Streetcar (Locally Preferred Alternative for Arlington and Fairfax Counties)	Streetcar (Pentagon City to Skyline)		Columbia Pike Transit Initiative	Streetcar

Table 5.8: Development of Corridor Transit Service Mode Recommendations (continued)

Corridor	Existing High-Capacity Service	Programmed High-Capacity Service	Analysis Outcome Service	Preliminary Service Recommendation	Justification for Adjustment from Analysis Outcome	Stakeholder Input
Route 244: Bailey's Crossroads to Annandale			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 267 (Dulles Corridor): Beltway to Reston		Metrorail Silver Line: Tysons Corner to Reston	Commuter Rail	Heavy Rail/ Express Bus	Planned Metrorail Silver Line	
Route 267 (Dulles Corridor): Reston to Dulles		Metrorail Silver Line: Reston to Dulles	Light Rail Transit/ Bus Rapid Transit	Heavy Rail/ Express Bus	Planned Metrorail Silver Line	
Route 267 (Dulles Corridor): Dulles to Leesburg		Metrorail Silver Line: Dulles to Route 707	Rapid Bus	Rapid Bus		
Route 28: Route 7 to Centreville			Express Bus	Rapid Bus	Planned EPTC, Connectivity	▪ Concern with the Amount of Transit Service Recommended in the Area of Route 28/ Centreville Road/Fairfax County Parkway (286) ▪ Focus on Route 28 or Route 286
Route 28: Manassas to Centreville			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 286: Herndon to Fair Lakes			Rapid Bus	Express Bus	Travel Demand Indicated High Percentage of Through Trips	▪ Concern with the Amount of Transit Service Recommended in the Area of Route 28/ Centreville Road/Fairfax County Parkway (286) ▪ Fairfax County has HOV Planned on 286
Route 286: Fair Lakes to Franconia-Springfield			Express Bus	Express Bus		▪ Consider Connection to Fort Belvoir
Route 29: Georgetown to City of Fairfax			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ Rapid Bus/LRT/BRT ▪ Coordinate I-66/Route 29/ Route 50 Corridors ▪ Avoid Dedicated Lanes in City of Fairfax
Route 29: City of Fairfax to Centreville			Rapid Bus	Rapid Bus		▪ Provide Connectivity to Hub in City of Fairfax

Local or Regional Plan Recommendation	MPO Constrained Long-Range Plan Recommendation	NVTA TransAction 2040 Draft Recommendation	Ongoing Study	Final Vision Plan Service Recommendation
			Fairfax Countywide Transit Network Study	Light Rail Transit/ Bus Rapid Transit
Metrorail Silver Line: Tysons Corner to Reston	Dulles Corridor Metrorail			Heavy Rail (Silver Line-Tysons Corner to Reston), Regional Commuter Bus on Existing Express or HOV Lane
Metrorail Silver Line: Reston to Dulles	Dulles Corridor Metrorail			Heavy Rail (Silver Line-Reston to Dulles), Regional Commuter Bus on Existing Express or HOV Lane
Metrorail Silver Line: Dulles to Route 707	Dulles Corridor Metrorail			Heavy Rail (Silver Line-Dulles to Route 707), Rapid Bus (Route 707 to Leesburg), Regional Commuter Bus on Existing Express or HOV Lane
EPTC (Fairfax County Comp. Plan); LRT or BRT (Prince William County Comp. Plan)		Light Rail (Dulles Airport to Manassas)	Fairfax Countywide Transit Network Study	Rapid Bus; Regional Commuter Bus (Centreville to Dulles Airport)
EPTC (Fairfax County Comp. Plan)		Light Rail (Dulles Airport to Manassas)	Fairfax Countywide Transit Network Study	Light Rail Transit/ Bus Rapid Transit
EPTC (Fairfax County Comp. Plan)	Add HOV Lanes	Priority Bus Service (Herndon/Monroe Metrorail to Fort Belvoir)	Fairfax Countywide Transit Network Study	Express Bus (Reston Town Center to Fair Lakes)
EPTC (Fairfax County Comp. Plan)		Priority Bus Service (Herndon/Monroe Metrorail to Fort Belvoir)	Fairfax Countywide Transit Network Study	Express Bus (Fair Lakes to Lorton VRE)
Enhanced Priority Bus Service (I-66 Multimodal Inside the Beltway Study); PTN (Arlington County Master Transportation Plan)		Priority Bus Service (D.C. to Fair Oaks)		Light Rail Transit/ Bus Rapid Transit (Washington, D.C. to Seven Corners)

Table 5.8: Development of Corridor Transit Service Mode Recommendations (continued)

Corridor	Existing High-Capacity Service	Programmed High-Capacity Service	Analysis Outcome Service	Preliminary Service Recommendation	Justification for Adjustment from Analysis Outcome	Stakeholder Input
Route 294 (Prince William Pkwy): Manassas to Potomac Mills			Express Bus	Express Bus		
Route 3: Spotsylvania to Fredericksburg			Rapid Bus	Rapid Bus		
Route 309 (Old Dominion): Ballston to McLean			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ No Transit Due to Constraints
Route 401 (Van Dorn Street)/ Beauregard Street/I-395: Pentagon to Beltway			Heavy Rail	Rapid Bus/ Light Rail Transit/ Bus Rapid Transit	Existing Metrorail to Van Dorn, Rapid Bus on I-395, Planned Transitway	
Route 50: Washington, D.C. to City of Fairfax			Heavy Rail	Rapid Bus/ Light Rail Transit/ Bus Rapid Transit	Existing Metrorail in Part of Corridor	▪ Rapid Bus, Arlington County - BRT ▪ Coordinate I-66/Route 29/ Route 50 Corridors ▪ Avoid Dedicated Lanes in City of Fairfax
Route 50: City of Fairfax to Loudoun County			Rapid Bus	Rapid Bus		▪ Avoid Dedicated Runningways in City of Fairfax
Route 606/ Loudoun Co. Pwky: Route 7 to Braddock Road			Rapid Bus	Rapid Bus		
Route 608/ Reston Pkwy: Route 7 to Fair Lakes			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 610 (Garrisonville Road): Stafford County to Route 1			Rapid Bus	Rapid Bus		
Route 611/ Kings Highway: Huntington to Lorton			Rapid Bus	Rapid Bus		▪ Concern that Corridor 11 (Route 1) and Corridor 40 (Route 611) are Not Both Needed ▪ Concern that Density Value for Corridor May have Skewed by High Densities at Termini

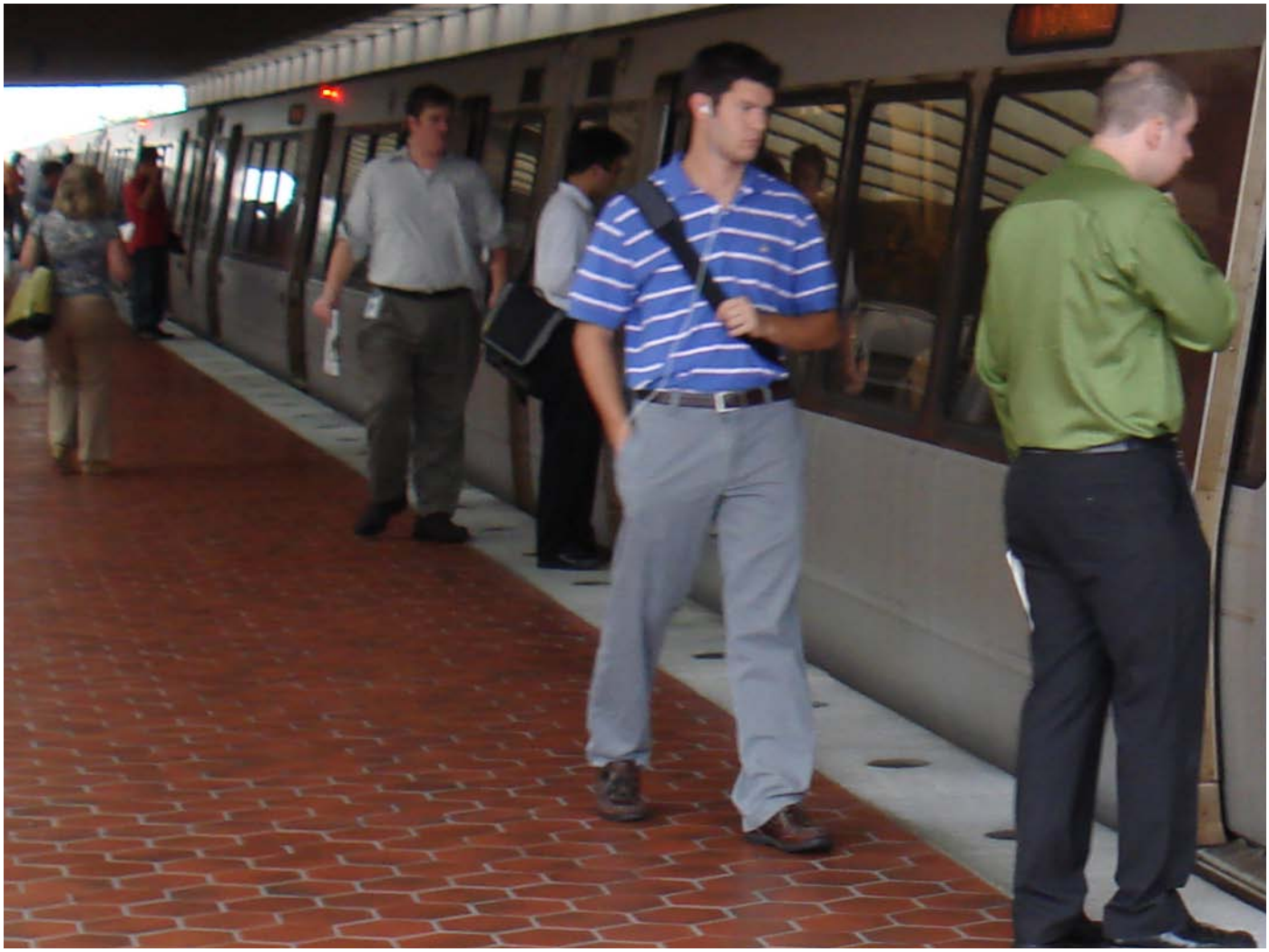
Local or Regional Plan Recommendation	MPO Constrained Long-Range Plan Recommendation	NVTA TransAction 2040 Draft Recommendation	Ongoing Study	Final Vision Plan Service Recommendation
BRT Between Gainesville and Potomac Mills and Transitway Gainesville to Loudoun County (Prince William County Comp. Plan)				Express Bus (Manassas to Route 1)
	High Quality Transit Service Corrirdor			Rapid Bus
High-Capacity Transitway (Alexandria Transportation Master Plan)	Bus Rapid Transit (Pentagon Metrorail to Van Dorn Street Metrorail)	Dedicated Bus Lanes (Van Dorn Metro Station to Arlington County)		Light Rail Transit/ Bus Rapid Transit (Franconia Metrorail Station to Mark Center); Rapid Bus (Mark Center to Pentagon via I-395)
Enhanced Priority Bus Service (I-66 Multimodal Inside the Beltway Study)		Priority Bus Service (D.C. to Fair Oaks)	Fairfax Countywide Transit Network Study	Rapid Bus (Washington, D.C. to Seven Corners); Light Rail Transit/Bus Rapid Transit (Seven Corners to City of Fairfax)
		Priority Bus Service (City of Fairfax to Chantilly)	Fairfax Countywide Transit Network Study	Light Rail Transit/Bus Rapid Transit (Fair Lakes to City of Fairfax); Rapid Bus (Loudoun County Parkway to Fair Lakes)
				Rapid Bus (Route 7 to Route 50)
				Light Rail Transit/ Bus Rapid Transit (Route 606 to Fair Lakes)
				Rapid Bus
				No High-Capacity Transit Service

Table 5.8: Development of Corridor Transit Service Mode Recommendations (continued)

Corridor	Existing High-Capacity Service	Programmed High-Capacity Service	Analysis Outcome Service	Preliminary Service Recommendation	Justification for Adjustment from Analysis Outcome	Stakeholder Input
Route 657 (Centreville Road): Route 7 to Centreville			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ Concern with the Amount of Transit Service Recommended in the Area of Route 28/ Centreville Road/Fairfax County Parkway (286) ▪ Focus on Route 28 or Route 286
Route 7: Old Town to Beauregard Street			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		▪ No transit due to constraints
Route 7: Alexandria to Tysons			Light Rail Transit/ Bus Rapid Transit	Light Rail Transit/ Bus Rapid Transit		
Route 7: Tysons to Dulles Town Center			Express Bus	Express Bus		
Route 7: Dulles Town Center to Leesburg			Rapid Bus	Rapid Bus		

Local or Regional Plan Recommendation	MPO Constrained Long-Range Plan Recommendation	NVTA TransAction 2040 Draft Recommendation	Ongoing Study	Final Vision Plan Service Recommendation
				Light Rail Transit/ Bus Rapid Transit (Reston Parkway to Centreville)
			Route 7 Alternatives Analysis	
EPTC (Fairfax County Comp. Plan)		Light Rail (Baileys Crossroads to Tysons Corner)	Route 7 Alternatives Analysis	Light Rail Transit/Bus Rapid Transit (Beauregard Street to Tysons Corner)
			Fairfax Countywide Transit Network Study	Express Bus
				Rapid Bus

CORE CAPACITY CONSTRAINTS



Passengers board the Washington Metropolitan Area Transit Authority Metro.

Despite robust transit systems operating in many parts of the center of the region, significant capacity constraints exist and threaten the ability for these systems to expand and meet current and future transit demand. While many of these constraints are physically located in the center of the region—Arlington County, Alexandria, Fairfax County, and the District of Columbia—their operational impact creates ripple effects across the Super NoVa region. Significant investments are already, and will continue to be, needed in the inner area of the region to support regional transit demand. Core capacity will need to become an increasingly important regional priority if it is to be resolved.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

In December 2001, Washington Metropolitan Area Transit Authority (WMATA) performed a comprehensive assessment of issues related to rail and bus transit lines and facilities rapidly approaching or exceeding capacity. WMATA used the results of this assessment to outline a program of capital and operational improvements intended to address the continued crowding and degradation in the level of service. Since this time, WMATA has performed additional evaluations of individual proposed rail capital system improvements intended to address some of the more critical areas of capacity. This includes recommended station improvements at key transfer stations such as Gallery Place, L'Enfant Plaza, Metro Center, Farragut North/Farragut West, and Union Station. WMATA developed a capital needs inventory in 2010 that looks at systemwide needs and projected costs. WMATA is currently working on Metro's Regional Transit System Plan (RTSP) that assesses a variety of options for capacity enhancement and expansion. At the time of Vision Plan publication, final recommendations were not available.

WMATA's Office of Long Range Planning provided the Super NoVa study the following overview of the core capacity issues through 2040 associated with stations, trains, and lines:

Stations

Issues

- Ridership growth throughout the years has resulted in passenger crowding on platforms and conflicts on platforms, mezzanines, and escalators at key transfer stations such as Metro Center, Gallery Place, and Union Station. Because each station was designed to have one way to get to a platform (i.e., at Gallery Place, all Green/Yellow riders who transfer to the West/Northbound Red Line gather at the end of the train), crowding is common and increases the dwell time of trains in the station, reducing the line capacity.

Needs

- Short- and long-term solutions are being studied for transfer stations:
  - **Gallery Place** — Study currently underway to identify short-, medium-, and long-term improvements. Previous recommendations have included extending the Red Line mezzanine across the entire length of the platform and building a pedestrian tunnel between Gallery Place and Metro Center.
  - **L'Enfant Plaza** — Study currently underway to identify short-, medium-, and long-term improvements. Recommendations could include expanding mezzanine/fare payment area, platform modifications, and/or vertical transportation changes.
  - **Metro Center** — Projects at Gallery Place and Farragut West/North would help capacity issues at Metro Center, though intrastation improvements also could be made. A study on Metro Center has yet to be undertaken.
  - **Farragut West/North** — Free transfer at ground level currently in operation, though usage is minimal. Previous recommendations have included building a pedestrian tunnel between Farragut West/North.
  - **Union Station** — A study was conducted in 2011 and recommendations included improvements to the North Mezzanine, Metrorail platform, and Amtrak (commuter rail) concourse.

Trains

Issues

- There are opportunities to expand core capacity by enabling 100 percent eight-car trains during peak periods; however, there is currently no funding allocated in the current 2040 Constrained Long-Range Plan (CLRP) for additional cars and the supporting infrastructure. WMATA currently operates about 30-35 percent eight-car trains during peak periods. It is expected that the overall system will reach capacity using the current configuration between 2025 and 2030.
- Adding rail cars to the existing trains will likely exacerbate issues in the stations, such as clearing platforms.

Needs

- Additional 360 rail cars (system growth, not including needs for Silver Line), based on the draft 2012 Rail Fleet Plan
  - Improvements to traction power system
  - Rail car storage
  - Personnel

Lines

Issues

- In the current configuration without changes or improvements in technology, approximately 26 total trains per hour can travel through the core lines (i.e., only 26 trains can run east of Rosslyn and north of L'Enfant Plaza). Surveys have shown congested segments on many lines in the core.
- **Blue/Orange/Silver** — Because of the merge at Rosslyn, the number of Blue and Orange trains that can operate in Virginia is limited. The current service plan (after commencing Rush+ service) during the peak is 19 Orange Line trains including trippers and six to seven Blue Line trains per hour during peak periods. Congestion on the Orange Line east of East Falls Church will be further exacerbated once the Silver Line comes online in 2013. The Silver Line service plan is still under development.
- **Yellow/Green** — The merge south of L'Enfant Plaza has limited the number of Green and Yellow trains that can operate in Southeast Washington, D.C. and Virginia. The current service plan (after commencing Rush+ service) is 13 Yellow Line trains and 13 Green Line trains per hour during peak periods including trippers.

Needs

- Line capacity issues are being studied in Metro's RTSP. WMATA is assessing a variety of options that include separating the Blue Line from the Orange/Silver Lines, an express line through Arlington, and separating the Yellow Line from the Green Line.

VIRGINIA RAILWAY EXPRESS

VRE's ability to expand services is limited by the ability of Union Station to accommodate more train sets midday as well as other constraints. VRE's Strategic Plan for 2004 through 2025 describes these constraints which include:

Rail Infrastructure

Issues

- VRE trains operate in a shared-rail environment with intercity passenger and freight rail.

Needs

- Rail capacity improvements

Rolling Stock

Issues

- The effective carrying capacity of the existing fleet and system have been reached with several peak period trains having standees. Existing cars need to be replaced based on maximum life-expectancy. Locomotives do not meet new federal clean air standards.

Needs

- New bi-level railcars
- Upgrade or acquire new diesel locomotive fleet

Station Parking

Issues

- Many rail station parking lots are at or exceeding their practical capacity before the end of the morning peak period. Demand at end of line stations is well in excess of supply.

Needs

- Capital funding for parking expansion

Train Storage

Issues

- There is no additional space in Washington, D.C. for midday train storage.

Needs

- More midday storage is needed in or near Washington Terminal

COMMUTER BUS

PRTC, LC Transit, and numerous other commuter service providers are hindered by insufficient or inconvenient midday storage facilities in the inner area. Due to limited storage facilities, operators must deadhead most or all of their fleet back to their overnight storage locations, idle in places they are not intended to layover, or circle city streets waiting for their return runs. All of these options represent a significant cost to operators and increase in deadhead trips back to overnight storage facilities which subject services to additional traffic uncertainty. Additional midday storage facilities in the inner area would help transit agencies operate some services more efficiency and with greater reliability. In addition to midday storage facilities, operators need support for new, expanded, and renovated vehicle maintenance facilities to accommodate existing and future demand for transit in the region.

LOCAL TRANSIT SERVICE ANALYSIS

The Trolley in Leesburg, VA. Source: Virginia Regional Transit.

METHODOLOGY/APPROACH

Local transit service needs are influenced by the land use characteristics of a community. Service needs for a rural community are much different than for an urbanized area. The Super NoVa region has been categorized into the following nine generalized land use "area types":

- Rural
- Rural Village
- Emerging
- Suburban
- Urbanizing
- Small Urban
- Medium Urban
- Large Urban
- Urban Core

Area type categorization was completed for all census designated places, and is based primarily on population densities. These area type categories are the same categories being used in the DRPT Statewide Transit/TDM Plan. **Figure 5.8** shows the area type categorization by jurisdiction in the Virginia portion of the study area for 2010 and 2040.

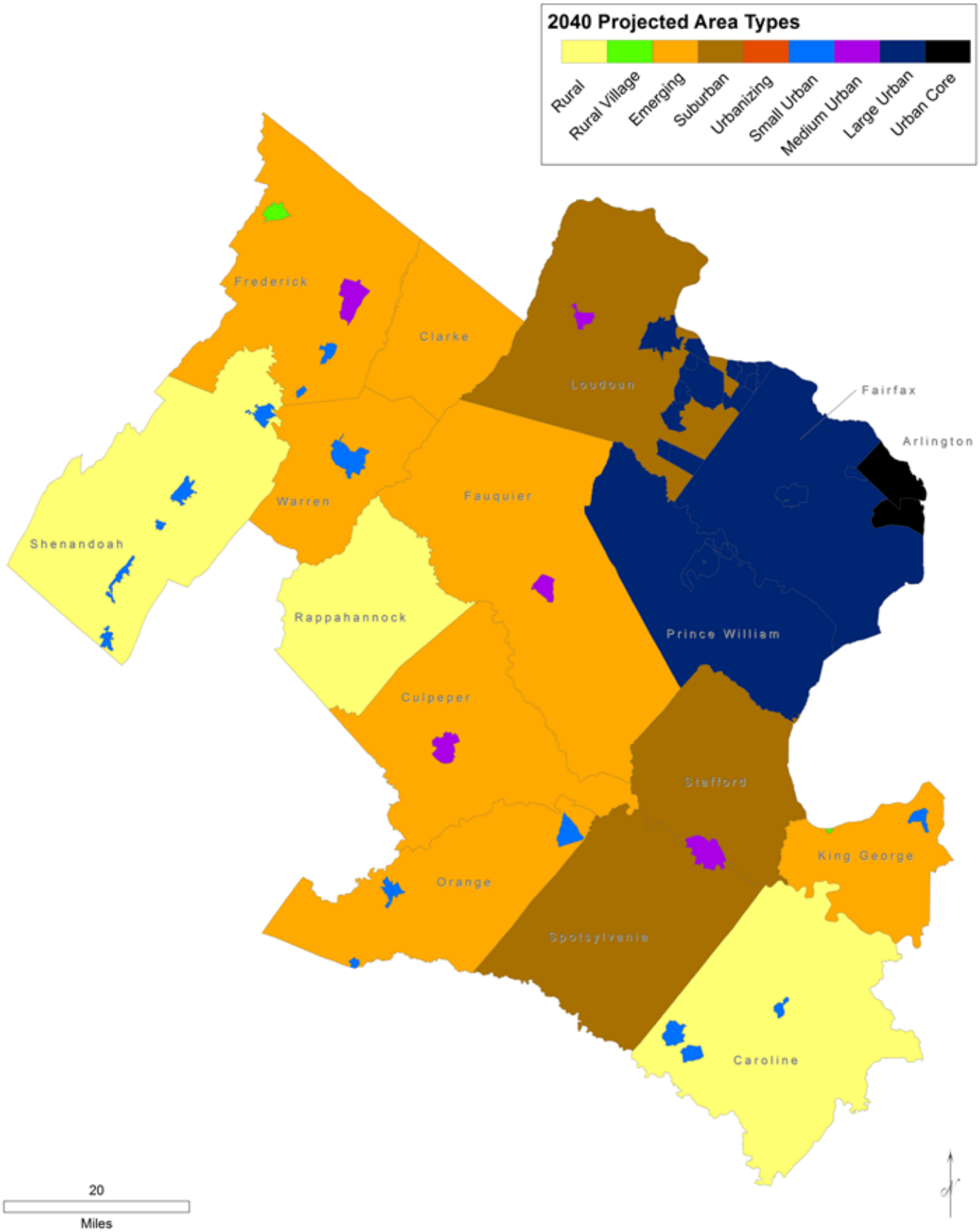


Figure 5.8: Super NoVa Area Type Categorization (Virginia Only)

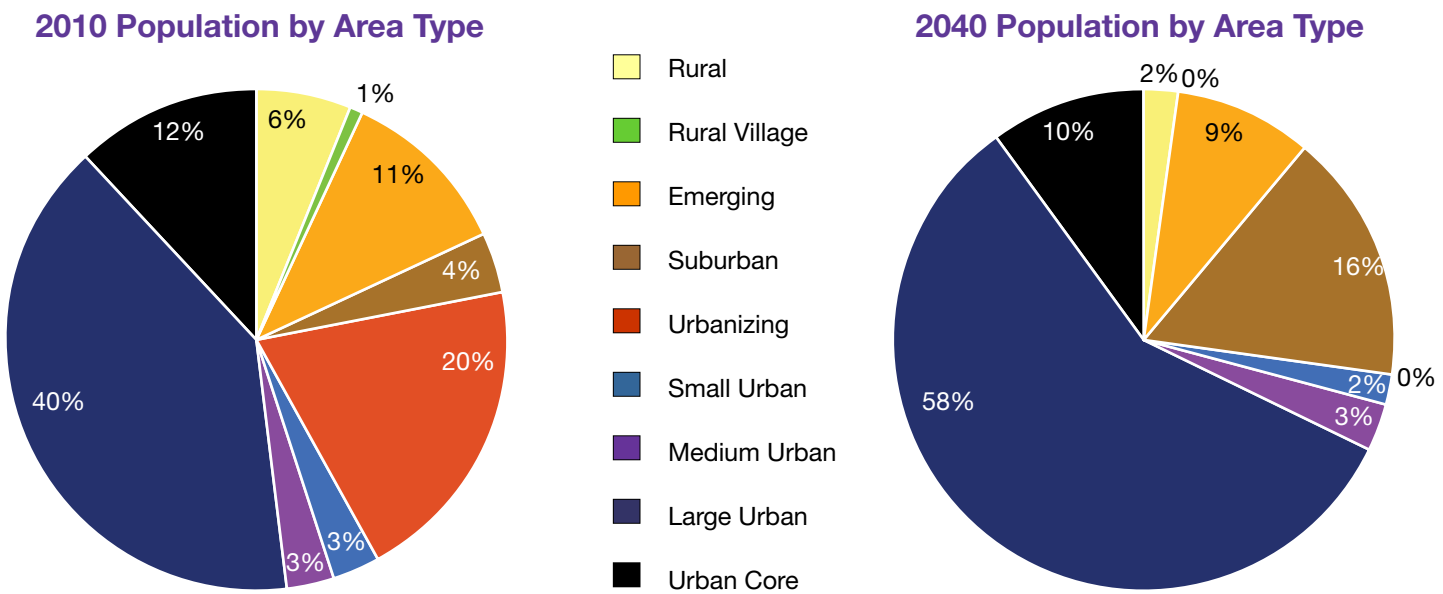


Figure 5.9: Super NoVa Population by Area Type (Virginia Only)

Figure 5.9 presents percentages of the Super NoVa population in each place type category. In 2010, the Super NoVa population (Virginia portion only) was 2.9 million. Approximately 52 percent of the Super NoVa population fell in either the "urban core" or "large urban" categories (e.g., Arlington, Alexandria, and Fairfax County). Approximately 18 percent of the population fell in the "rural", "rural village", or "emerging" categories.

The projected population for 2040 (Virginia portion only) is 4.6 million, representing a 58 percent increase from 2010. The portion that is projected to be living in urban core and large urban areas increases from 52 percent to 68 percent. The portion that is living in rural, rural village, and emerging place type areas decreases from 18 percent to 11 percent; thus, large numbers of people in the Super NoVa region will be shifting to higher density area type categories.

The change in area type triggers the need for increased transit service levels. There is an increased need for transit service for the higher area type classifications. For example, rural demand-response transit service may be sufficient for an area categorized as rural village. This same area could require all-day, fixed route services if its densities trigger an area type change to small urban.

Transit service needs were determined on the basis of transit service hours per capita. For areas that change area types, service requirement needs are at least equivalent or better than the statewide average for that specific area type. For example, an area that transitions to a "medium urban" classification requires at least 1.2 transit service hours per capita (the statewide average for this specific area type). This determination of local transit service needs is consistent with the methodology used in the Statewide Transit and TDM Plan.

ANALYSIS

Table 5.9 presents 2011 estimated service hours in the Super NoVa region by area type, and a range of potential 2040 service hour needs by area type. A range has been provided, with the lower end of the range reflecting the level of transit service required to meet the statewide average for each specified area type, and the upper end of the range reflecting a service hour bump for areas that presently perform above the statewide average. As noted in this table, 2040 estimated local transit service needs are 111 percent to 137 percent higher than 2011 service levels. Population for the Super NoVa region (Virginia portion only) is projected to increase by 58 percent, but transit service needs are expected to be approximately twice this rate because of the transition of population into higher area type categories. **Table 5.10** presents transit service needs by subarea and jurisdiction.

This analysis indicates that areas like Prince William County and Eastern Loudoun County are likely to require transit service levels similar to what is presently provided in Fairfax County. Areas like Fauquier County and Spotsylvania County are likely to require transit service levels similar to levels presently provided in Loudoun County and Prince William County. Those service needs could include expanded all-day transit services, weekend, and evening services. Local transit service needs also are likely to be interjurisdictional. For example, eastern Loudoun and Fairfax Counties fall in the "large urban" area type category by 2040. This means there will be an increase in cross-jurisdictional trips and an increased need for local transit services that cross county boundaries.

Table 5.9: Service Needs by Area Type

Area Type	Est. 2011 Serv. Hrs.	Potential 2040 Service Hour Range	
Rural	4,000	24,000	25,000
Rural Village	3,000	2,000	2,000
Emerging	40,000	129,000	145,000
Suburban	13,000	259,000	285,000
Urbanizing	194,000	0	0
Small Urban	19,000	53,000	55,000
Medium Urban	65,000	226,000	229,000
Large Urban	1,388,000	3,656,000	4,089,000
Urban Core	1,087,000	1,590,000	1,843,000
TOTAL	2,813,000	5,939,000	6,673,000
Percent Change		111%	137%

Table 5.10: Service Needs by Jurisdictional Area

Subarea	Jurisdictional Area	Estimated 2011 Service Hours	Potential 2040 Service Hour Range	
Inner Subarea	Alexandria/Arlington/Falls Church	1,099,000	1,607,000	1,862,000
	Fairfax City/County	1,358,000	1,966,000	2,276,000
	Subtotal	**2,457,000**	**3,573,000**	**4,138,000**
Northwest Subarea	Loudoun County	105,000	679,000	690,000
	Clark County	1,000	7,000	9,000
	Frederick County/Winchester	20,000	87,000	93,000
	Subtotal	**126,000**	**773,000**	**792,000**
West Subarea	Fauquier County	4,000	55,000	58,000
	Culpeper County	7,000	55,000	58,000
	Orange County	4,000	24,000	24,000
	Warren County	3,000	23,000	26,000
	Rappahannock/Shenandoah Counties	0	24,000	24,000
	Subtotal	**18,000**	**181,000**	**190,000**
South Subarea	Prince William/Manassas/M. Park	156,000	1,064,000	1,182,000
	Stafford/Spotsy/Fredericksburg	50,000	310,000	331,000
	Caroline/King George Counties	6,000	37,000	40,000
	Subtotal	**212,000**	**1,411,000**	**1,553,000**
	TOTAL FOR SUPER NOVA REGION	2,813,000	5,938,000	6,673,000
	Percent Change		111%	137%

TDM ANALYSIS

Commuter Store in Rosslyn, VA. Source: Arlington County.

METHODOLOGY/APPROACH

The analysis of the TDM programs in the Super NoVA region required identifying the goals and objectives to be achieved by these programs, identifying the strategies and services currently being provided in the study area, and assessing whether goals and objectives were being met by these programs. This analysis resulted in a gap and needs assessment that helped in the development of TDM recommendations (described in the next chapter).

Goals

The goals for TDM programs, as outlined in the Virginia Surface Transportation Plan 2035 (Nov 2010), are:

- Mobility, Connectivity, and Accessibility
- Economic Vitality
- Environmental Stewardship
- Coordination of Transportation and Land Use

Objectives

Since TDM needs vary by the place type (i.e. the density and character of the built environment), the number of origins and destinations in the area, and community values, objectives for each TDM program will differ based on the place types being served. The place types developed for the SuperNOVA region (described earlier in this study) were aggregated to match the four area types developed in the 2035 Virginia Surface Transportation Plan — urban core, suburban/feeder, small urban, and non-urban. **Table 5.11** lists the objectives of TDM strategies for each area type.

Table 5.11: TDM Service Levels Based on the 2035 Virginia Surface Transportation Plan

Urban	Suburban/Feeder	Small Urban	Non-Urban
■ Build on existing transit options and bike/walk options ■ Develop suburban transit links for inbound/reverse commute ■ Address short-trip lengths ■ Strong focus on employment end outreach ■ Target commute trips and non-work travel of residents ■ Integrate TDM into local planning, MTPs, and LRTPs ■ Increase parking management ■ Promote alternative work hours and telework at employment ■ Enhance cross-jurisdictional coordination for TDM	■ Expand non-SOV use for non-work trips in suburban centers ■ Strong focus on employment outreach in suburban centers ■ Promote feeder area ridesharing for long-distance commutes ■ Promote telework to employers and residents ■ Expand transit options; develop transit links to urban and suburban employment ■ Integrate TDM into the land development process; encourage mixed-use ■ Integrate TDM into local planning, MTPs, and LRTPs ■ Enhance cross-jurisdictional coordination for TDM	■ Expand employer outreach, especially in suburban centers ■ Primary focus on resident/commute travel ■ Promote carpool and vanpool for long-distance commutes to areas outside region ■ Promote telework to residents ■ Develop transit links to urban and suburban employment ■ Integrate TDM into the land development processes; encourage mixed-use ■ Integrate TDM into local planning, MTPs, and LRTPs ■ Enhance cross-jurisdictional coordination for TDM	■ Primarily residence-based programs for commuting within and outside the area ■ Promote telework to residents ■ Establish modest commute outreach in areas with no current program ■ Support long-distance commute markets ■ Coordinate with neighboring employment areas for outbound commuting ■ Integrate TDM into local planning, MTPs, and LRTPs

Source: Based on the *2035 Virginia Surface Transportation Plan.*

Existing Conditions

TDM programs in the Super NoVa area vary considerably. To consistently compare TDM services across different agencies and regions, services were classified into the eight TDM service categories listed below. Although each TDM service category may be provided in very different ways and at different levels by each TDM agency, the objective of the service is generally the same across TDM agencies.

- **Transportation Information** — This service is provided to help travelers identify transportation options available in the area and to help with trip planning. Information may be disseminated through retail or mobile stores; call centers or help lines; radio, TV, newspapers, or other print media; and websites and social media. Real-time travel information also can help increase convenience and reliability of trips. The majority of the TDM agencies/transportation management associations (TMA) provide information through websites, over the phone, radio/TV, or newspapers. Retail outlets or mobile stores where travelers may obtain information or buy fare media in person are less common. There is great potential for increasing service levels for real-time travel information in the future.
- **Employer Services** — Targeted education and outreach campaigns are developed by TDM agencies for employers and employees within the service area. Employer services generally include help with commute planning for employees, telework training and support, setting up and administering commuter benefit programs, and initiating or enhancing compressed or alternate work schedules for eligible employees. The majority of TDM agencies/TMAs offer some level of employer services. Employer services are acknowledged to have significant measurable impacts on commute patterns of employees and reductions in traffic congestion during peak hours. Employer services will continue to be a major focus for TDM programs in all area types, and will need to be enhanced in areas where employment is expected to increase.

Figure 5.10: Gaps and Needs Assessment Methodology

- **Education and Outreach** — Targeted campaigns are developed for specific travel corridors, modes of travel (e.g., transit), or types of travel (e.g., commutes, events, and tourism). While some temporary corridor-level education and outreach programs may be supported by TDM agencies/TMAs, these are currently not provided on an ongoing basis. Many TDM agencies/TMAs promote bicycling and walking through education and outreach, and a select few provide new resident kits to create awareness of transportation options for work and non-work trips around multifamily buildings or residential areas.
- **Ridesharing (Including Carpool/Vanpool)** — Ridematching services are a significant part of the program for the majority of TDM agencies/TMAs and include managing a database of potential drivers and riders, education of support services, and follow-up. Some TDM agencies/TMAs support or provide vanpool subsidies to help start or maintain vanpools. A regional vanpool program is being implemented to help coordinate, track, and subsidize vanpools in the future. TDM agencies also support slugging or casual carpooling, especially in the I-95 corridor in the study area.
- **Infrastructure** — While TDM agencies/TMAs typically do not own or maintain infrastructure, they may be instrumental in the planning and provision of park-and-ride lots, private shuttles, carshare, and bikeshare services. Support for infrastructure may include increasing awareness and convenience for travelers, or incentivizing trial or usage of services.
- **Financial Incentives** — When used judiciously, incentives help to encourage trial or boost usage of TDM services. Incentive programs provide best results when they are tailored to meet specific goals. Incentive programs, including NuRide and Pool Rewards, are supported by several TDM agencies.
- **Support Services** — Guaranteed Ride Home is a necessary support service that is provided in all parts of the study area served by TDM agencies/TMAs; however, the level of service differs in different jurisdictions.
- **Land Use and Zoning** — TDM agencies/TMAs can play a crucial role during the approval phase for new development to require provision of TDM services, incentives, or personnel to support establishment and maintenance of desired travel patterns for new development. Evaluation of layouts and management plans for parking areas also can help support the desired travel patterns for employees or residents of a new development. Currently, TDM agencies in the urbanized areas use land use and zoning tools to support existing or provide new TDM services and TMAs. TDM policies included in site plan developments need to be enforced by the local government and aided in implementation by TDM agencies to be effective.

Gaps and Needs Assessment

The TDM service gaps and needs analysis methodology **(Figure 5.10)** was developed to evaluate how well the goals and objectives are achieved by current and future TDM services.

New strategies that could be implemented or expanded in the future include education and outreach for visitors and tourists; ridematching for school trips; and developing and deploying technology to support trip planning, realtime transit information, and online or mobile applications for dynamic ridematching.

Table 5.12 lists the types of TDM services and strategies that are appropriate for the four aggregated area types, the place types developed for this study, and the primary audiences for the TDM strategies. While several strategies may be appropriate for various area types, the intensity will vary based on demand.

Future Conditions

This study identified the following services that could be implemented or expanded in the future. While some of these services may be provided currently by a few TDM agencies, the strategies were expected to evolve, expand, and need more focus in the future.

- Education and outreach for visitors and tourists
- Ridematching for school trips
- Developing and deploying technology to support trip planning, realtime transit information, and online or mobile applications for dynamic ridematching

Table 5.12 Appropriate TDM Services/Strategies by Area/Place Type

Service Category	Aggregated Areas	Urban	Small Urban	Suburban/Feeder		Non-Urban	
	Place Types	Urban Core/ Urban Center	Mixed Use/ Large Town or Suburban Center/ Medium Town or Suburban Center	Regional Retail Center/ Suburban Commercial/ Suburban Office/ Industrial/High Density Residential/ Medium Density Residential		Small Town or Suburban Center/Rural or Village Center/Low Density Residential/ Rural, Natural, or Very Low Density Residential	
	Primary Audience for TDM Strategies	Employees and Residents	Employees and Residents	Employees	Residents	Employees	Residents
Transportation Information	Retail/Mobile Store	√					
	Call Center/Help Line	√	√	√	√	√	√
	Radio/TV/Paper	√	√	√	√	√	√
	Websites/Social Media	√	√	√	√	√	√
	Realtime Travel Information	√	√	√	√		√
Employer Services	Commute Planning	√	√	√		√	
	Telework Support	√	√	√		√	
	Commuter Benefit Programs	√	√	√		√	
	Alternative Work Schedule	√	√	√		√	
Education and Outreach	Transit Marketing	√	√	√	√	√	√
	Corridor-Level Programs	√	√	√	√		√
	Bike	√	√		√		
	Walk	√	√	√	√		
	New Resident Kits	√	√		√		
Ridesharing	Ridematching	√	√	√	√	√	√
	Vanpool Subsidy	√	√	√		√	
	Slug Lines	√	√	√			
Infrastructure	Park-and-Ride Lots		√	√			
	Private Shuttles	√		√		√	
	Carshare	√		√		√	
	Bikeshare	√					
Financial Incentives	Goal-Based Programs	√	√	√	√	√	
Support Services	Guaranteed Ride Home	√	√	√	√	√	√
Land Use and Zoning	TDM Conditions	√	√	√	√	√	
	Parking Management	√		√		√	

FINDINGS AND CONCEPTS

Gaps and needs for TDM programs in the study area were identified through the process described above. Discussion and feedback from stakeholder meetings and team workshops helped to summarize findings into the following themes:

- TDM can help improve reliability of transportation options by:
  - Providing information on multiple travel options by location
- TDM can increase the convenience of the transportation system by:
  - Better coordination of services so that the customer sees one unified service
  - Developing consistent branding for transportation services across the region
  - Providing travel-shed/corridor-based programs
- TDM can help with response to personal emergencies by:
  - Improving/Expanding the Guaranteed Ride Home program
  - Improving/Expanding the 511 Call Center to include all transportation options
- Funding for TDM needs to be increased by:
  - Improving TDM planning and programming processes
  - Creating efficiencies through better coordination
  - Removing barriers to interjurisdictional cooperation
  - Identifying more funding streams (e.g., DRPT, other transportation funds, other public sector organizations, public-private ventures, and the open market)
- TDM can create or support first and last mile solutions by:
  - Expanding Capital Bikeshare
  - Expanding walkable communities
- TDM can evolve and expand in the future by:
  - Developing new programs for streetcar marketing
  - Supporting placemaking in transit-oriented developments and small urban areas
  - Supporting the car-free lifestyle for work and non-work travel in inner areas
  - Supporting affordability, aging in place, and Wounded Warriors

The overall goals for TDM strategies are to develop targeted TDM campaigns for major corridors and specific origins and destinations, and to encourage shorter commutes. TDM strategies also can increase awareness of how transportation choices impact affordability of an area and the health of individuals, the environment, the economy, and the community. TDM programs can be tailored to support Aging in Place and Wounded Warrior initiatives; reduce the cost of travel through more collaborative consumption models (e.g., carshare, bikeshare, transit, and rideshare); and improve community health, access, and diversity by expanding walkable/bikable areas.

Regional coordination was considered to be of prime importance for improving the provision of TDM services. This may require establishment of a regional entity focused on multimodal mobility across boundaries. There is potential for enhancing some of the existing TDM services by providing support and coordination at a regional level. Consistent regional branding for TDM and commuter assistance programs can be developed and marketed throughout the study area, and all available transportation options can be integrated to provide a single, truly multimodal system. A scalable system of hubs can be developed and appropriate TDM services could be provided at hubs.

Technology improvements and innovations also were an imperative need. Due to the multitude of travel options and discrete systems, technology is needed to improve the customer experience of travel in the region by increasing coordination and reliability. A needs assessment of the

information technology infrastructure should be conducted from a customer perspective to identify improvements. It is necessary to provide a one-stop shop for realtime information for all regional transportation options. Realtime information can improve reliability and boost traveler confidence, provide one-seat rides, and reduce reliance or need for Guaranteed Ride Home by providing information about additional travel options.

Other TDM needs include expanding outreach of the Air Quality program to feeder markets; providing TDM services at park-and-ride lots such as realtime high-occupancy toll (HOT) lanes and transit information, bike storage, access trails, and wifi coverage; developing bicycle and pedestrian plans to provide first and last mile solutions to transit; expanding the Guaranteed Ride Home service area and intensity; identifying opportunities for funding new shuttle service or supporting/expanding existing transit service through private development funds; implementing financial incentives with clear goals and an evaluation strategy; communicating the emergency response plan for transit; improving and coordinating roadway signage throughout commuter/feeder regions; expanding public-private partnerships for vanpools; improving the utility of call centers/help lines for all travel options; targeting outreach to airports and military bases; developing activity center transportation management associations;

Significant policy needs for TDM also were identified, including the need to evaluate current TDM planning and programming processes; develop a regional long-range TDM plan; coordinate TDM data collection and program evaluation; and develop performance measures that support regional mobility. Adequate and consistent funding is a special concern for TDM. There is a need to encourage public-private partnerships to expand TDM services and develop TDM strategies that address broader goals to expand potential funding streams.

The results of the needs assessment were the basis of developing the TDM vision and recommendations for the Super NoVA study area.

Note on Super NoVa Analysis

The analysis prepared for the Super NoVa vision plan was performed at a vision planning level of detail. Traditional transportation planning using four-step modeling processes and tools was of a level of complexity and detail beyond this vision planning effort. The traditional transportation planning model forces a mode choice selection process and discussion often creating a highway versus transit view. Super NoVa by definition is visioning mobility beyond boundaries, with a view of how applicable transit and TDM is within the region without mode choice tension.

At the vision level, the Super NoVa analysis began with pure demand at a high-level considering person trips from origins and destinations for work and non-work trips. These were derived from a merging of trip tables from the four representative regional MPO transportation planning models available. This information provided a basis to understand growth and growth patterns in percentage change from existing to 2040 conditions and how this change may effect established travel sheds and corridors. From there, an analysis of population and employment density was completed which further enhanced the high-level understanding of density mapping and growth activity influence mapped out in GIS form. Adding to the GIS analysis, proposed land-use as directed by each local jurisdiction was recorded and mapped in standard place type form. Local land-use considerations both existing and proposed have a direct influence on the character and future characteristics of travel mode options. As land-use becomes more dense and there is a greater density of person activity, there is a direct corresponding higher capacity transit mode that becomes applicable. Essentially a more densely developed corridor may support a higher transit mode and greater TDM activity.

At the vision level, analyses were not conducted regarding the feasibility nor impacts of implementing improvements with partially or fully dedicated transit runningways.

Recommendations for transit and TDM are presented at the vision level with respect to transit demand and applicability to any individual corridor. As corridor analysis is defined for the purposes of environmental planning for programming and mode selection purpose, the traditional transportation planning process would be defined and purposed.

Chapter 6

Recommendations

INTRODUCTION

Passengers board an OmniRide bus. Source: Potomac and Rappahannock Transportation Commission.

The following sections summarize Super NoVa Vision Plan recommendations for transit and transportation demand management (TDM). The sections address policies, corridors, local transit services, transit facilities, and TDM. The recommendations are based on the outcomes of the stakeholder and public processes; the evaluation of existing conditions; future needs based on land use, demographics, and travel demand; and regional constraints.

POLICY RECOMMENDATIONS

Lobby transit display. Source: Arlington County.

The Super NoVa vision plan developed a set of policy statements that reflect the local regional and state point of view for vision level policy for transit and TDM. Policy statements were drafted in a number of distinct areas and presented to stakeholders and the public for review and comment. Most of the draft policy statements were accepted outright and some were revised to accommodate local, regional, and state consensus. In the end, this vision plan remains a strong set of policy statements that are agreed upon. Policy topic areas include:

- Marketing and communication
- Planning
- Operations
- Transit facilities
- Access to transit
- Technology
- TDM

The sections that follow discuss the policies in each of the above topic areas.

MARKETING AND COMMUNICATION

Targeted, consistent, and clear communication is essential to the success of transportation service, and for the public to understand the travel options available to them. The public at large is not interested in all of the subtle technical nuances that result in the naming and branding of services, programs, and service providers. The public is interested in understanding the options that are available and how they may be able to accommodate their travel needs, regardless of who provides the service, administers

the program, or operates the facility. A recent example of successful coordinated marketing is the Tysons Express service. Loudoun County (Loudoun County Transit) and Prince William County [Potomac and Rappahannock Transportation Commission (PRTC)] are delivering this service to Tysons Corner under a single brand, as marketed under Tysons Express, despite it being operated by two different entities. To the public, it is one service operating in two different corridors. The following are recommended marketing and communication policies.

- Coordinated marketing (services, programs, and facilities)
- Consistent branding (i.e., route names and service types)
- Common language to refer to transit and TDM services, facilities, and programs
- Educational programs tailored to serve:
  - Users (young, old, captive riders, and choice riders)
  - Travel markets (long distance, local, specific corridors, and destinations)
- Cross-marketing with related industry and other modal [bicycle, pedestrian, and high-occupancy vehicle (HOV) efforts]
- Consolidated locations for consumers to obtain information on services, facilities, and programs
- Social media and mobile device application support

PLANNING

The Super NoVa study area was defined to extend beyond traditional local, regional, and state boundaries. The study captured the vast majority of the Northern Virginia travel market. The result of planning within an area of this geographic scale and with the agencies that operate within the area was the identification of a better understanding of collective regional need and opportunities. As the region grows, solutions to transportation challenges become increasing multijurisdictional and sophisticated. Planning at a broader scale will become increasingly important so that relatively scarce resources can be used to create the greatest benefit. The following are recommended policies related to planning:

- Multijurisdictional transit and TDM planning
- Coordinated land use and transportation planning and policy-making
- Context-sensitive regional transit performance standards
- Regional systems interoperability planning
- Continued Super NoVa transit and TDM dialogue (regular)
- Department of Rail and Public Transit (DRPT) guidance on transit-supportive land use characteristics and densities

OPERATIONS

The efficient operation of services is at the core of the Vision Plan. Avoiding service duplication and generally increasing service efficiency has the potential to improve the experience for transit patrons and increase service marketability. Over the course of the planning process, many different approaches were discussed on how best to achieve the goal of an efficient, customer-focused operation. The following reflect the outcome of the discussions and summarize recommended policies related to transit operations:

- Super NoVa region multijurisdictional transit service provider(s) or coordinated operating plan(s)
- Simplify bus routes
- Local bus services coordinated to interface with regional transit services such as commuter bus, commuter rail, intercity passenger rail, and Metrorail
- Public-private partnership in operations
- Fare structures (reduce penalty for transfers, route pricing, private and public) to incentivize transfers
- Universal transit payment system
- Integrated corridor management
- Regional transit system interoperability
- Operating cost sharing for cross-jurisdictional service
- Performance standards guidelines

FACILITIES

Transit facilities are an essential element of successful transit systems and support TDM programs and services. Transit facilities range from appropriately appointed bus stops to the most sophisticated intermodal transportation hubs. They also include key support infrastructure such as vehicle storage and maintenance facilities that accommodate essential maintenance functions of operators and allow transit vehicles to be stored securely and environmentally while they are not in service. Often, the most significant transit facilities become the responsibility of the locality in which the facility is located, regardless of

whether it is used by more than that locality. As the region's transit demand becomes increasingly multijurisdictional, more dedicated transit runningways [for bus rapid transit (BRT), light rail transit (LRT), and streetcar] will cross jurisdictional boundaries and more storage, maintenance, and intermodal/transfer facilities will be needed. Planning for, constructing, and operating these "region" serving facilities should be at a regional level in close coordination with the communities in which they are located. The following are recommended policies related to transit facilities:

- Capacity improvements for Virginia Railway Express (VRE) and Metrorail
- System of intermodal transit centers (including park-and-rides) with supporting infrastructure, services, programs, and technology
- Development of a system of hubs
- Innovative delivery methods for transit facilities
- Quality, context-sensitive community growth related to transit facilities
- Transit vehicle storage and maintenance facilities
- Guidance on the shared use of roadway/high-occupancy toll (HOT)/HOV/Express Lane facilities for transit
- Accommodations for private bus and shuttle operations
- Shared- or joint-use facilities (i.e., park-and-ride at sports facility) that benefit transit and TDM

ACCESS TO AND FROM TRANSIT

Expanding access to transit through strategic investments in pedestrian and bicycle infrastructure can have tremendous benefits to transit use. Many of the study area's localities already have successful programs that encourage walking and bicycling as well as capital improvement funds programmed for pedestrian and bicycle infrastructure projects. The arrival of Capital Bikeshare (CaBi) in the District of Columbia, Arlington County, and the City of Alexandria is expanding access to transit, while at the same time, serving as a mode itself. The following are recommended policies related to access to transit:

- Pedestrian and bicycle facilities in transit corridors
- Programs to expand bicycling and walking to/from transit
- Transit stops and stations that offer good access for pedestrians and bicyclists
- Secure bicycle parking at transit stops and stations
- Vehicle-sharing systems at transit stops and stations
- Paratransit support
- Guidance for access to transit provisions in local development ordinances
- Access for transit-dependent populations

TECHNOLOGY

Intelligent transportation systems (ITS) is the application of advanced communication and information technologies and management strategies to optimize the performance of surface transportation systems. Transit operators across the country have deployed ITS applications to improve on-time performance, enhance route planning, and provide better customer service. These investments in ITS have helped to mitigate the need for new infrastructure and vehicles, while also reducing operating costs.

Transit operators across Virginia are continuing to deploy a variety of technologies for improving transit service planning and operations. Statewide, ITS planning and deployment has been a loosely coordinated process driven primarily by local interest or an emerging local need, rather than a cooperatively planned deployment that focuses on the comparative needs between providers across the region. There is tremendous benefit in coordinated transit ITS at a regional and statewide level. The following are recommended policies related to transit ITS:

- Comprehensive, simple travel information for transit and TDM
- Develop a regional automatic vehicle location (AVL) system
- Open-source data
- Private investment in traveler information applications
- ITS as transportation infrastructure
- Interagency/intra-agency technology integration (i.e., common ridematching databases)
- Multijurisdictional technology planning
- Consistent policy on technology infrastructure and platforms
- Expand and coordinate regional transit signal priority application and deployment
- Support systems engineering process

TDM

TDM is the application of strategies and policies to reduce travel demand (specifically that of single-occupancy private vehicles) or to redistribute this demand. Managing transportation demand is often a cost-effective alternative to increasing capacity. A demand management approach to transportation has the potential to deliver better environmental outcomes, improved public health, stronger communities, and more prosperous and livable cities. The following are recommended policies related to TDM:

- TDM to support affordability, tourism, military, airports, aging in place, and transit-dependent populations
- Programs for specific corridors and activity centers
- Transportation management associations (TMA) in activity centers support for TDM
- Sustainability through collaborative consumption (carshare, bikeshare, transit, rideshare, etc.)
- Public-private partnerships
- Super-regional coordination for TDM
- Parking pricing
- Expansion of Guaranteed Ride Home
- Infrastructure to support TDM (i.e., HOV lanes and park-and-ride lots)
- Support for shuttles and connecting services
- Common ridematching database among all TDM agencies
- Transit and TDM information delivered in multiple languages and accessible formats

RECOMMENDED TRANSIT NETWORK

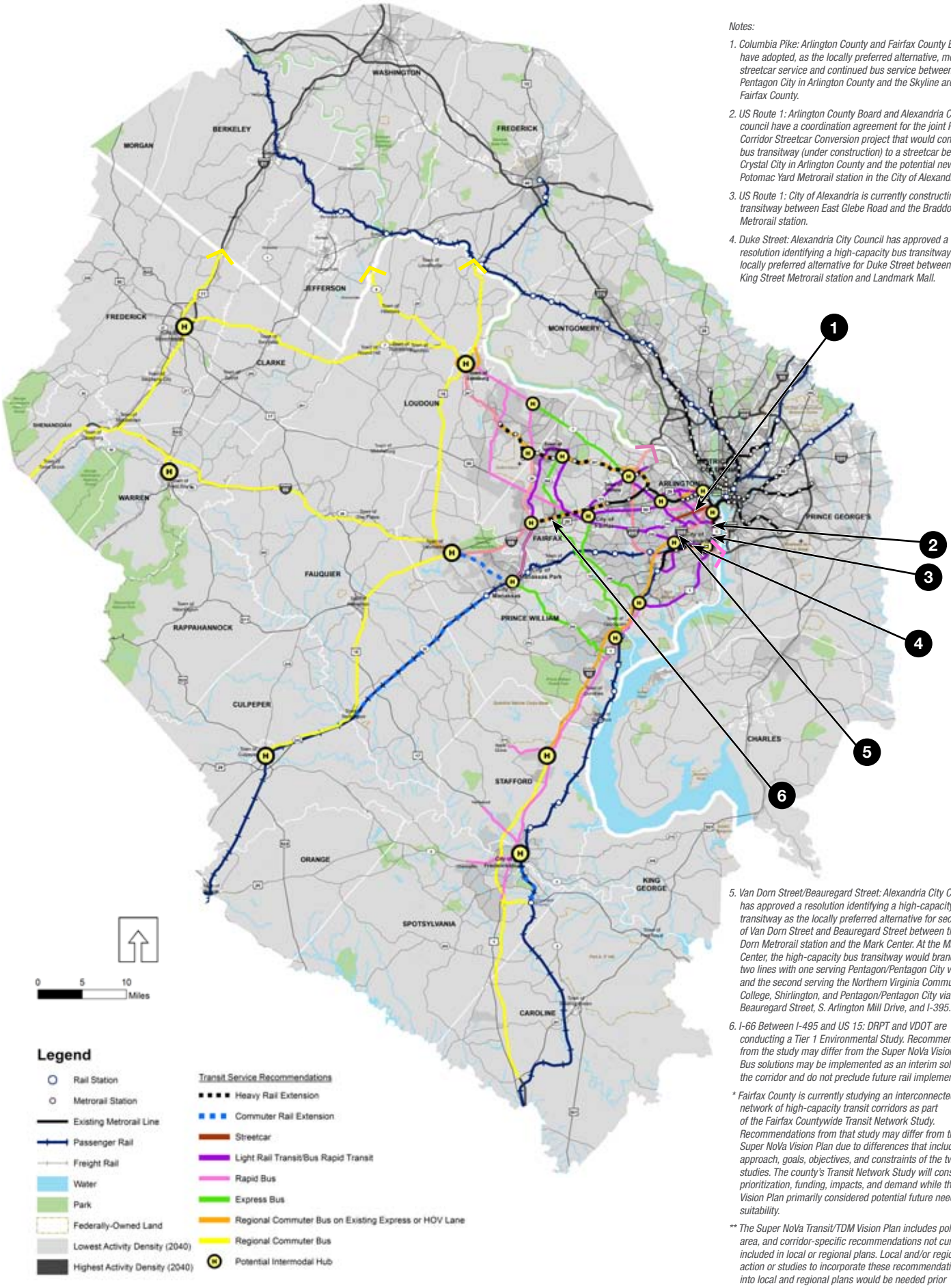
The Tide in downtown Norfolk, VA.

The vision for the future Super NoVa regional transit network was developed throughout the course of the study. Corridor transit needs were identified using future travel demand forecasts, population and employment density analyses, and land use analysis.

The recommended regional transit network is comprised of an array of corridor-focused recommendations intended to serve many different trip purposes. The recommended network was developed by identifying the most important regional travel corridors in addition to reviewing regional and local plans for proposed transit projects. The recommendations for each corridor were developed through an analysis of travel demand, land use, and population and employment. Stakeholder and public input was used to refine recommendations.

The recommended transit network shown in **Figure 6.1** encompasses the entirety of the Virginia portion of the Super NoVa region. The recommended network is an interconnected system of the following:

- Intercity passenger rail
- Commuter rail
- Local bus
- Regional commuter bus
- Express bus
- Rapid bus
- BRT
- LRT
- Heavy rail transit



Notes:

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6. *I-66 Between I-495 and US 15: DRPT and VDOT are conducting a Tier 1 Environmental Study. Recommendations from the study may differ from the Super NoVa Vision Plan. Bus solutions may be implemented as an interim solution in the corridor and do not preclude future rail implementation.*

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

Figure 6.1: Future Regional Transit Network

RAIL NETWORK

The recommended rail network includes the existing and an expanded network of higher speed passenger rail services, standard intercity passenger rail, commuter rail, and heavy rail corridors in the study area. The recommended rail network is shown in **Figure 6.2** and key recommendations are summarized in the following:

- Higher speed and standard intercity passenger rail service between Washington, D.C. and Richmond (as well as support for services to Norfolk and Newport News)
- Standard intercity passenger rail service between Washington, D.C. and Lynchburg
- VRE service extension on the Manassas Line to Gainesville and the Town of Remington
- VRE service extension on the Fredericksburg Line to Crossroads in Spotsylvania County
- Run-through service for Maryland Area Regional Commuter (MARC) and VRE
- Metrorail Orange Line extension to Centerville
- Metrorail Silver Line completion to Loudoun County

CORE CAPACITY IMPROVEMENTS

Metrorail (Washington Metropolitan Area Transit Authority)

- Transfer station improvements
- Platform improvements
- Eight-car trains on all lines during the peak period
- Additional rail cars and storage
- Traction power system improvements
- Under further study by Washington Metropolitan Area Transit Authority (WMATA)
    - Express line through Arlington County
    - Silver-Orange-Blue line separation
    - Yellow-Green line separation

Virginia Railway Express

- Additional train storage (in core)
- Additional train cars
- Rail infrastructure (track, signaling, and similar) improvements
- Maintenance facility improvements

Surface Transit Connections

The recommended transit network shown in the Vision Plan is limited to Virginia. DRPT is a state agency and did not feel it appropriate to make service and facility recommendations to areas outside Virginia. In addition to improvements to transit and rail infrastructure and bus services that already cross state boundaries, new surface transit services recommended in the Vision Plan could mitigate core capacity limitations. These connections would need to be implemented in conjunction with other state and regional agencies, jurisdictions, and localities. Potential surface transit connection corridors are summarized in the following and on **Figures 6.1**, **6.3**, and **6.4**.

- I-495 between City of Alexandria and Prince George's County
- I-495 between Fairfax County and Montgomery County
- I-395/US 1 between Arlington County and the District of Columbia (potential connection to planned D.C. streetcar)
- I-66/US 29 between Arlington County and the District of Columbia (potential connection to planned D.C. streetcar)

Notes:

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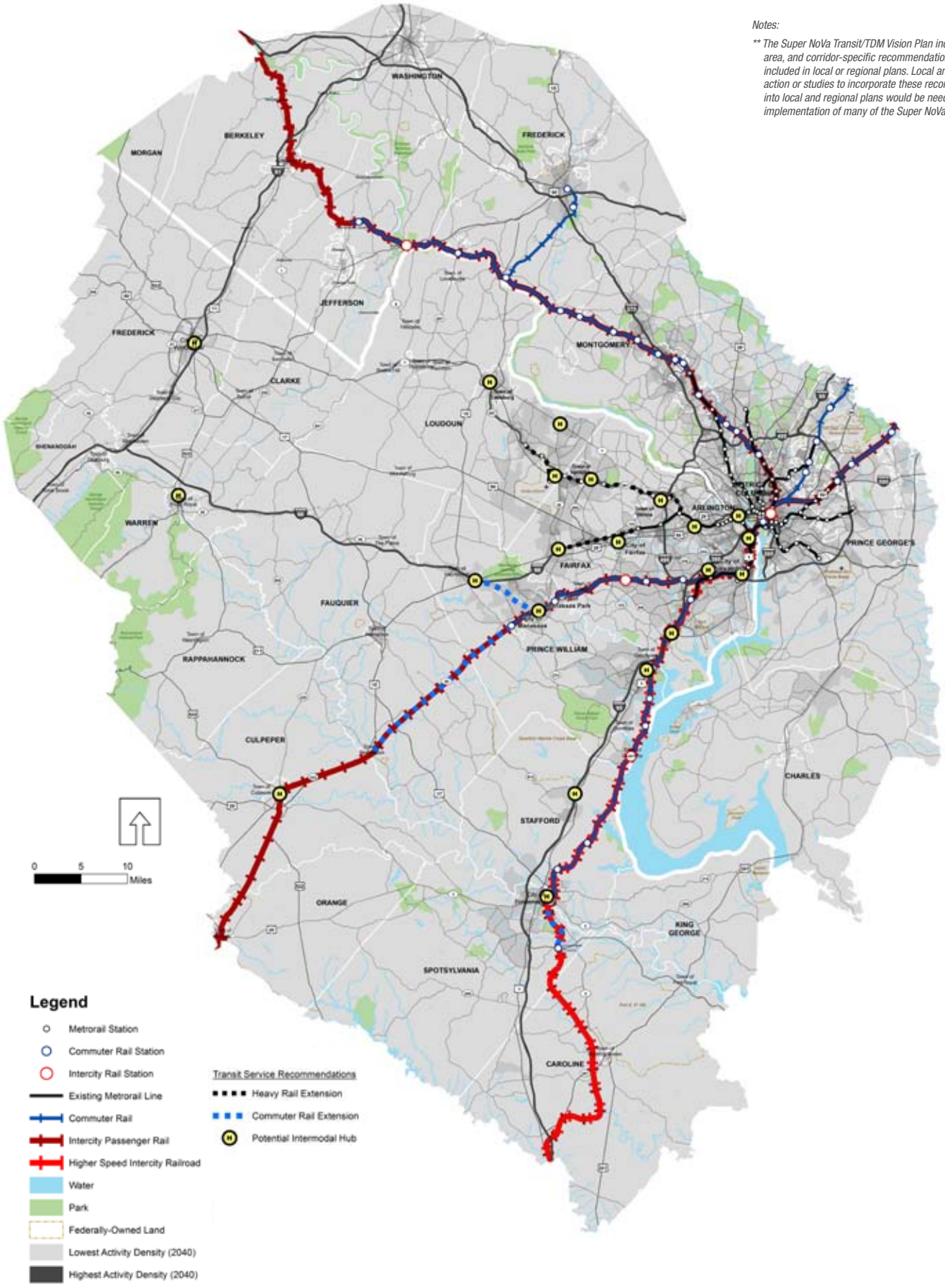

Figure 6.2: Future Rail Network

COMMUTER-ORIENTED TRANSIT NETWORK

The recommended commuter-oriented transit network includes commuter rail and bus transit services that are primarily intended to serve work trips throughout the Super NoVa region. For a large portion of this recommended network, future travel demand was significant and supportive of peak-oriented transit investments such as express and regional commuter bus services.

The recommended commuter-oriented transit network includes services operating in general purpose travel lanes as well as in existing and future express or HOV lanes. Existing and future Express and HOV lanes are shown along portions of I-495 and I-95, I-66, I-395, Route 267, and the Dulles Greenway. The recommended network shown in **Figure 6.3** highlights major corridors recommended for commuter-oriented services. The corridors shown are intended to represent connections between origins and destinations, rather than specific routes. These corridors include:

- I-66
- I-81
- I-95/I-395
- I-495
- US 17 between I-95 and future VRE Crossroads station
- US 29 south of Gainesville
- Route 7 between Tyson's Corner and Dulles Town Center
- Route 7 west of Leesburg
- Route 9 west of Leesburg
- Dulles Greenway/Dulles Toll Road/Dulles Connector Road

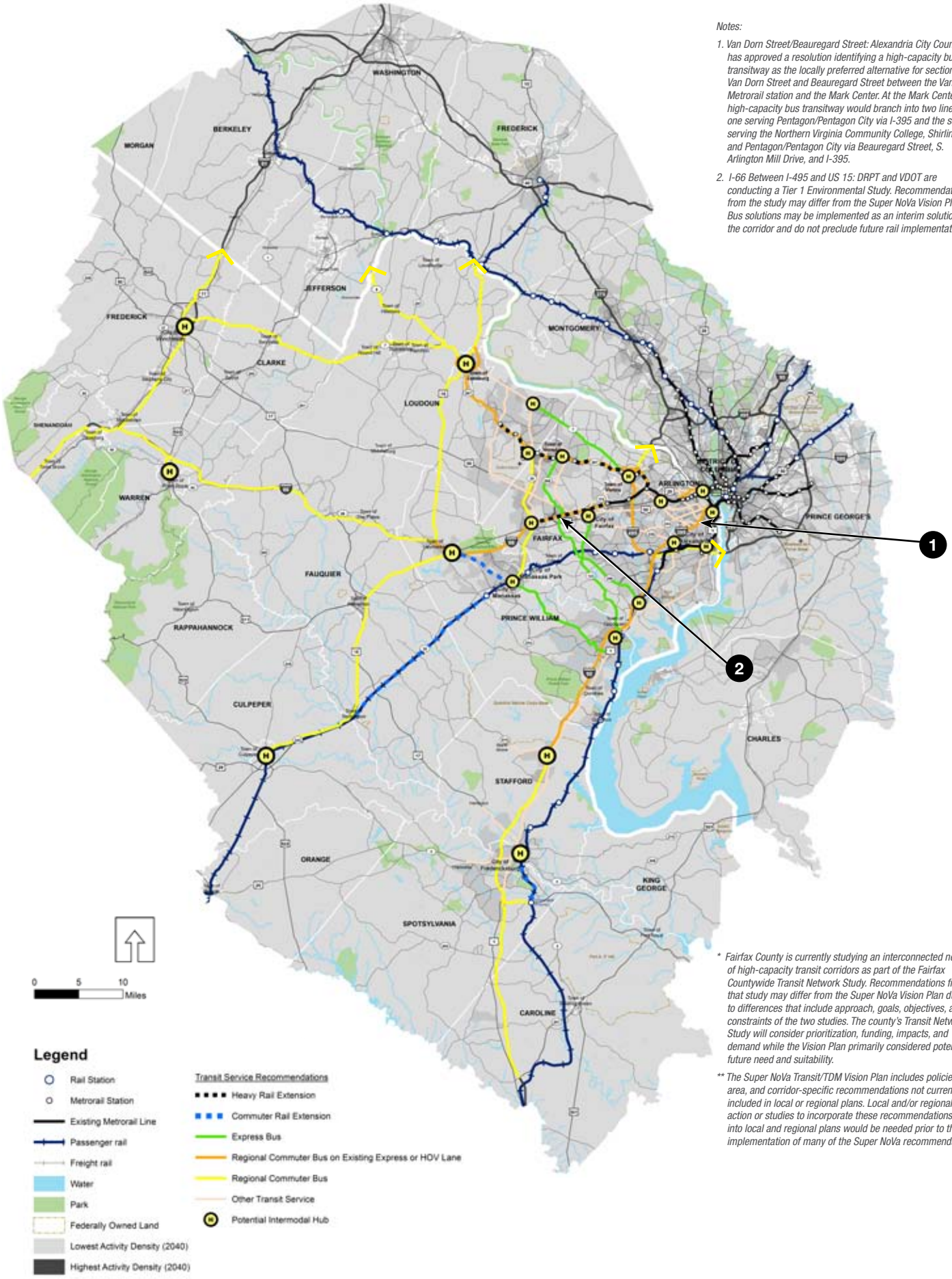

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Figure 6.3: Future Commuter-Oriented Transit Network

HIGHER CAPACITY TRANSIT NETWORK

The recommended higher capacity transit network includes rapid bus, BRT, and LRT corridors. This network of corridors would support frequent, higher speed all-day transit services with longer spans of service and more sophisticated facilities. Generally, higher capacity transit services would benefit from some or all of the following:

- Fully dedicated transit runningways separated from non-transit traffic (most BRT and LRT)
- Partially dedicated transit runningways separated from non-transit traffic (some BRT and most rapid bus)
- Traffic signal pre-emption (some BRT and LRT)
- Transit signal priority
- Queue jump lanes (rapid bus and some BRT)
- Level or nearly level boarding and off-board fare collection
- Substantial stations with significant passenger amenities (BRT and LRT and some rapid bus)
- Service- and line-specific branding and identity
- Real-time passenger information
- Special vehicles

The system of higher capacity transit corridors shown in **Figure 6.4** represents a series of connections along existing major roadway corridors between origins and destinations. Many of these corridors serve existing and currently urbanizing areas, whereas others anticipate future growth and development of transit-friendly places. The corridors identified provide for improved radial and circumferential mobility.

The recommendations for these corridors do not prescribe a particular approach for the implementation of the recommended service and accompanying facility type. The recommendations suggest a particular transit mode technology and general corridor location based on analyses conducted related to land use, demographics, and travel demand.

It should be noted that several localities in the study area are undertaking, or have recently undertaken, detailed evaluations of some of these corridors. These localities may adopt recommendations that differ from those shown in this Vision Plan. The more detailed analyses and outcomes of the studies by these localities should be considered carefully as corridors are programmed for more detailed study project development and implementation.

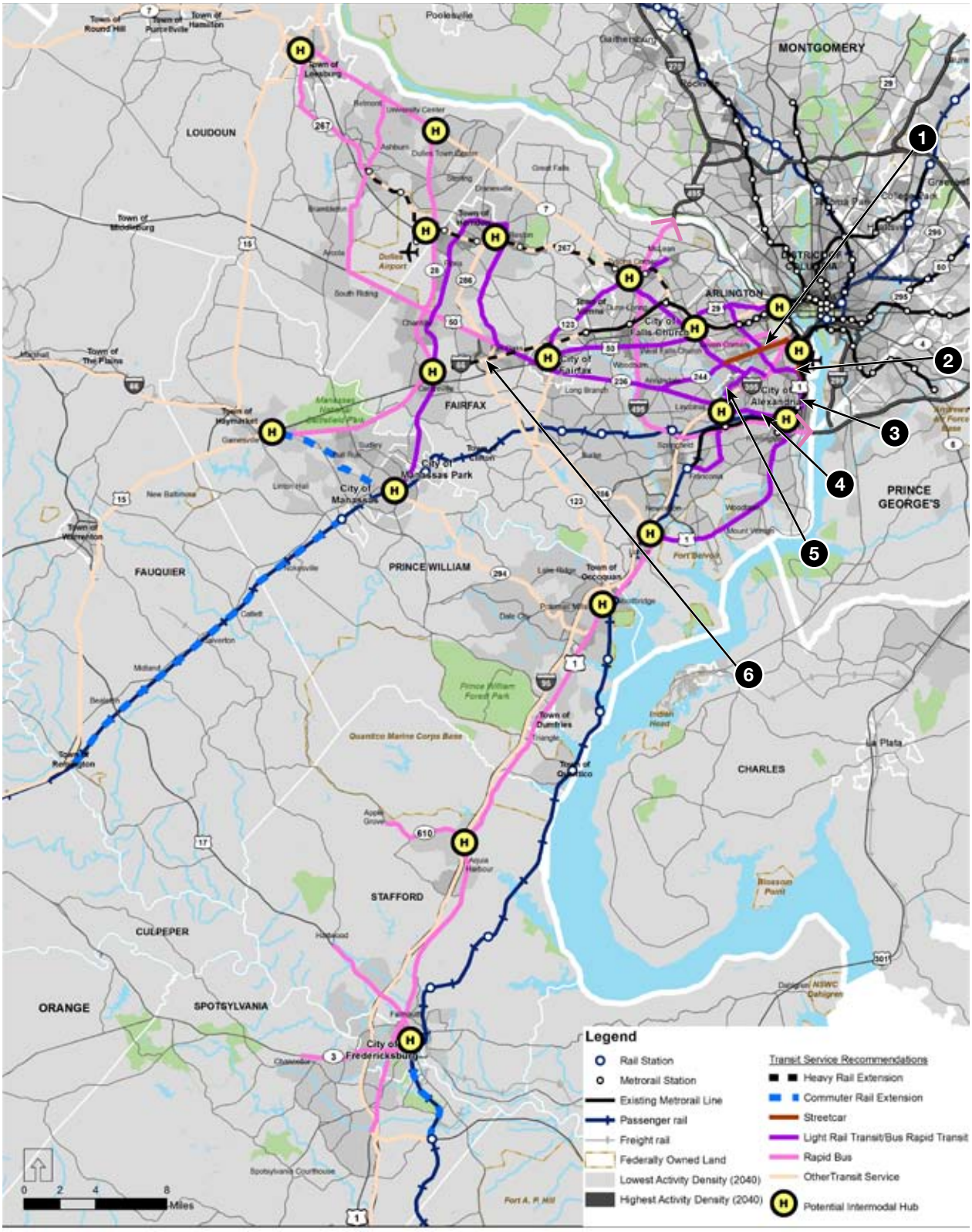

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Figure 6.4: Future Higher Capacity Transit Network

TRANSIT PROJECT DEVELOPMENT

The Super NoVa Transit/TDM Vision Plan includes corridor-specific recommendations not currently included in adopted or ongoing local or regional plans. Local and/or regional action or studies to incorporate Vision Plan recommendations into local and regional plans is likely to be needed prior to the implementation of many of the Super NoVa recommendations. In addition, formal efforts to further develop recommendations into specific projects and document those projects will be needed. The names and requirements of these steps differ depending on funding and desired outcome; however, projects can generally be expected to move through the following general steps:

- Feasibility study or analysis
- Environmental study/analysis/documentation
- Identification of a preferred alternative/solution
- Identification of funding and programming
- Design and construction documentation
- Bidding and construction
- Project acceptance, testing, and operation

Beyond initial study, project development for transit projects can follow many different paths based on factors such as the project size, complexity, delivery method, and funding source. Ultimately, many of the recommendations in the Vision Plan could become capital projects. Capital projects can be implemented through many different programs and by different lead agencies. The following briefly summarizes potential implementation mechanisms for transit projects.

- **Local or Regional Agency Programs** — Capital improvement programs typically encompass infrastructure and facility development projects for the jurisdiction. These programs can typically be used to plan and study, design, and construct identified projects. Local transit and TDM projects could be programmed through local and agency capital improvement programs.
- **State Programs** — A number of state programs provide funding for infrastructure and facility projects. These programs offer funding assistance to better leverage local and federal funding sources and can be used to plan and study, design, and construct identified projects. Local, regional, and statewide transit and TDM projects could be programmed through state programs working in cooperation or exclusive from local, regional, and federal programs.
- **Federal Programs** — A number of federal programs provide assistance in the implementation of transit and TDM projects. At the time of the publication of this report, Moving Ahead for Progress in the 21st Century (MAP-21) was the current transportation authorization. MAP-21 offered numerous opportunities for partnership in transit and TDM project implementation. Successful Federal Transit Administration programs such as New Starts/Small Starts continued to be offered and are complemented by expansions of existing programs that offer low-cost financing for projects. Many other project development programs also are available.

TRANSIT FACILITIES

Virginia Railway Express station in Crystal City, VA.

The interconnected system of transit services recommended in the Vision Plan will need to be supported by a strategically deployed set of nodal transit facilities. These facilities will need to include transfer hubs, intermodal and multimodal hubs, park-and-ride facilities, storage and maintenance facilities, and transit stops and stations. Traditionally, individual jurisdictions have been responsible for planning, development, and operation of these facilities, even when they serve needs well beyond those of the local jurisdiction. In the future, there may be an increased need for regional ownership of planning, development, and operation of major, region-serving facilities. These facilities are likely to be needed to support increasingly multijurisdictional transit services. The following sections briefly summarize recommendations for key transit facility types in the Super NoVa region.

TRANSIT STOPS AND STATIONS

Depending on the type, frequency, and anticipated use of a particular transit mode, these facilities can take on many different forms, serve different purposes, and have a wide range of capital and operating costs. Some level of standardization should be developed for stop and station facilities within the region to improve the passenger, transit operator, and community experience with these facilities. Creating a predictable experience related to transit stops and stations for the traveling public as well as transit operators has many measurable benefits. The standard should address stop and station elements such as:

- **Location** — Consider availability and quality of pedestrian and bicycle access, proximity and relationship to nearby destinations, impact on transit service and traffic operations, and safety.

- **Configuration and Accommodation** — Consider space requirements for anticipated use, technology, branding/information, level of amenity/features provided, and impact on transit service and traffic operations.
- **Responsibility and Ownership** — Consider initial planning and development as well as ongoing operations and maintenance for the facility and interconnected infrastructure. Identify opportunities for partnership with adjacent uses.

STORAGE AND MAINTENANCE FACILITIES

Transit vehicle storage and maintenance facilities are critical to the successful and efficient operation of transit services. The appropriate location and level of accommodation at these facilities enables operators to best serve their markets efficiently. Generally, transit vehicle storage and maintenance facilities are significant infrastructure investments. These facilities are often planned, developed, operated, and maintained by a single jurisdiction or operator at considerable expense for a region-serving purpose.

If the region's transit services evolve to be more regionally-focused and increasingly cross-locally and -regionally defined boundaries in serving the traveling public, it is likely that facility infrastructure and development processes will need to evolve. Already, VRE's ability to expand services to the inner area of the region is limited by the ability of Union Station to accommodate more train sets midday. PRTC, Loudoun County Transit (LC Transit), and numerous other commuter service providers are forced to deadhead most or all of their fleet back to their overnight storage locations due to limited midday storage in the inner area. Deadheading is a significant cost to operators. Preventing it by building storage facilities would create significant cost for the urban localities (under the current approach to building facilities) where storage is most needed. The following are recommended related to future transit vehicle storage and maintenance facilities:

- Identify and implement strategies to reduce demand for midday and off-peak transit vehicle storage
- Develop regional forecasts of transit vehicle storage and maintenance needs for overnight and midday (off-peak) periods
- Conduct regional planning as to the most beneficial location of new facilities
- Identify public and private partnerships in development, operation, and maintenance of new facilities
- Plan, develop, operate, and maintain new facilities to support regional transit services

HUBS

The recommended interconnected set of transit services will need to be supported by appropriately scaled transfer, intermodal, and multimodal hubs. Locations within the region are already serving as hubs. The area's two international airports, many of its Metrorail, Amtrak, and VRE stations, and the series of specifically designated transfer centers (i.e., Shirlington, Reston Town Center, and Tysons) help facilitate transfers between travel modes and transit modes and services.

The Super NoVa Vision Plan envisions transit hubs as purposefully developed facilities where transit connections can be easily made and where travelers can have easy and comprehensive access to transit and TDM services. **Figures 6.1 through 6.4**, shown on the previous pages, show the recommended general location of hubs. The specific location of these facilities would need to be identified through cooperative planning for transit operations and community development.

It is recommended that hubs be of many different scales and purposes in coordination with the context within which they exist and their role in the region's transportation system. Some hubs would stand alone as transit facilities, while others may be integrated into other facilities and development. Generally, hubs should be locations where multiple travel options are available, access is available by many travel modes, travelers feel safe and secure, and information is provided for regional transportation options and TDM services. Features and services that may be provided at hubs include:

- Real-time traveler information
- Bikesharing and carsharing
- Park-and-Ride spaces
- Transit services
- TDM services
- Ridesharing services and accommodations
- Vanpool parking
- Secure bicycle storage
- Taxi, private shuttle, and private transit services
- Retail development
- Mixed use development
- Access to area bicycle and pedestrian facilities

TRAVEL SHED RECOMMENDATIONS

Washington Metropolitan Area Transit Authority Metrobus.

The following sections briefly describe and summarize Vision Plan recommendations for travel sheds in the Super NoVa area. The sections are the following:

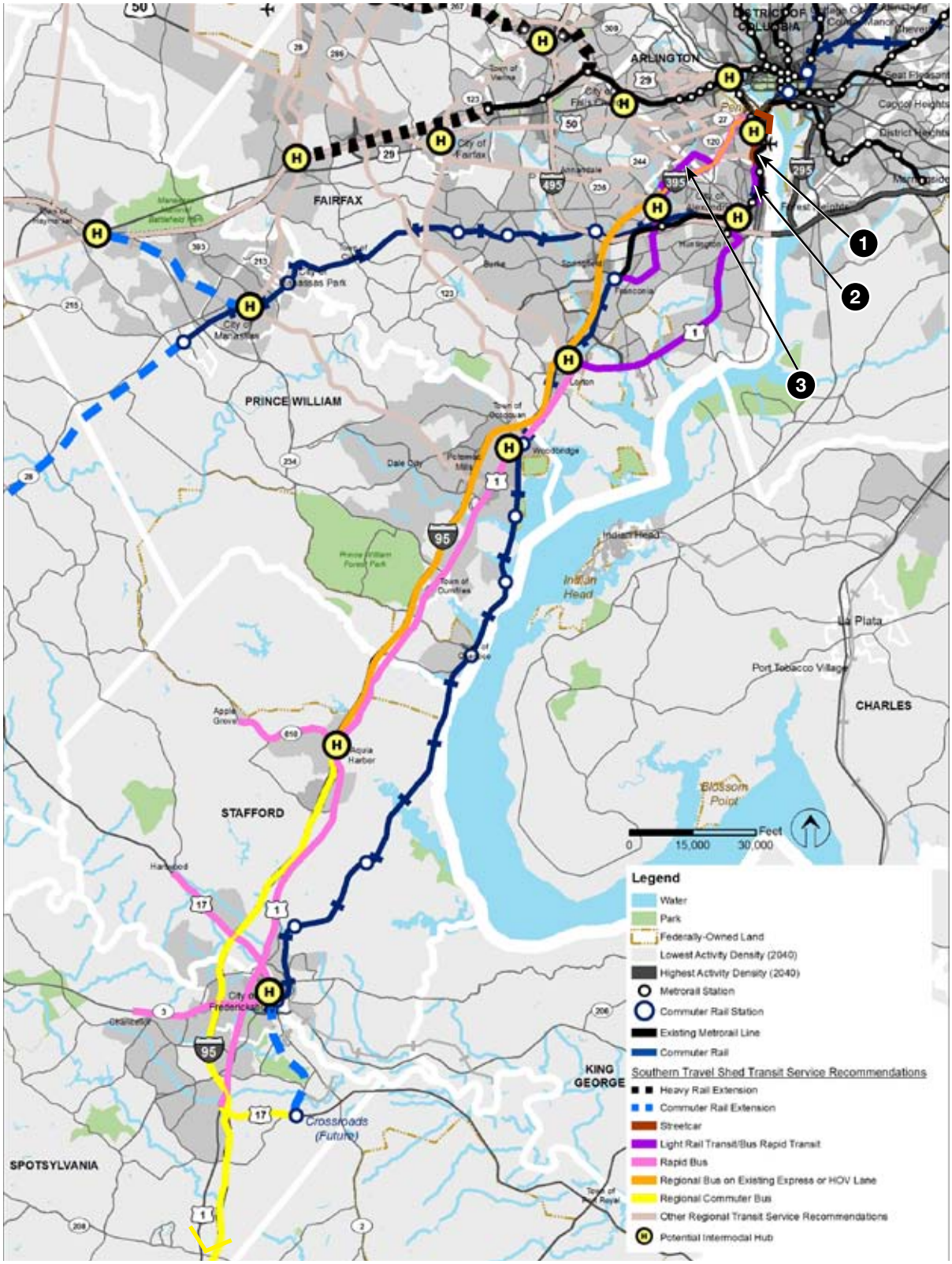
- **Southern** — Generally follows the I-95/I-395 corridor between the District of Columbia and Caroline County, VA
- **Western** — Generally follows the I-66 corridor between the District of Columbia and Front Royal, VA
- **Northwestern** — Generally follows the Route 267/Dulles Greenway/Route 7/Route 9 corridors between Tysons Corner and Winchester, VA
- **Inner** — Area inside I-495 made up of an interconnected system of major roadway and transit corridors
- **Circumferential** — Major circumferential corridors outside the Capital Beltway (I-495) include US 15, Route 123, Route 286 (Fairfax County Parkway), Route 234, and Route 28

SOUTHERN TRAVEL SHED

This travel shed, shown in **Figure 6.5**, generally follows the I-95/I-395 corridor between the District of Columbia and Caroline County. Key radial routes in the corridor in addition to I-95 include US 1 (Jefferson Davis Highway), Telegraph Road, and VRE's Fredericksburg Line. Generally, the corridor is heavily traveled by commuter bus services and vanpools in the section between Fredericksburg and the District of Columbia. The corridor also has significant HOV use during peak periods. I-95 currently benefits from a reversible HOV facility between Dumfries and the District of Columbia. It will soon benefit further from a modification of this facility to an Express Lane configuration as well as an extension of the facility to Route 610 (Garrisonville Road) in Stafford County.

The VRE Fredericksburg Line currently parallels this corridor to the east and the Metrorail Blue and Yellow Lines provide service to portions of this corridor in Arlington County, Alexandria, and northeastern Fairfax County. The following transit projects are currently programmed within the southern travel shed:

- Extension of VRE to Crossroads in Spotsylvania County
- I-95 Express Lanes from I-495 to Route 610 (Garrisonville Road) in Stafford County. Park-and-ride lot and bus service expansion is being advanced by DRPT in conjunction with this project.
- Expanded commuter bus service on I-95
- Crystal City/Potomac Yard Transitway



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1. *US Route 1: Arlington County Board and Alexandria City council have a coordination agreement for the joint Route 1 Corridor Streetcar Conversion project that would convert the bus transitway (under construction) to a streetcar between Crystal City in Arlington County and the potential new Potomac Yard Metrorail station in the City of Alexandria.*
2. *US Route 1: City of Alexandria is currently constructing a bus transitway between East Glebe Road and the Braddock Road Metrorail station.*
3. *Van Dorn Street/Beauregard Street: Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for sections of Van Dorn Street and Beauregard Street between the Van Dorn Metrorail station and the Mark Center. At the Mark Center, the high-capacity bus transitway would branch into two lines with one serving Pentagon/Pentagon City via I-395 and the second serving the Northern Virginia Community College, Shirlington, and Pentagon/Pentagon City via Beauregard Street, S. Arlington Mill Drive, and I-395.*

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

Figure 6.5: Southern Travel Shed

Other unprogrammed projects are described in Chapter 4.

Table 6.1 summarizes primary Vision Plan corridor recommendations for the southern travel shed. Hub locations recommended in the southern travel shed are the following:

- Crystal City (Arlington County)
- Landmark area (Alexandria)
- King Street Station (Alexandria)
- Lorton (Fairfax County)
- Woodbridge/Potomac Mills (Prince William County)
- Garrisonville (Stafford County)
- Fredericksburg (Spotsylvania County or City of Fredericksburg)

Table 6.1 Summary of Vision Plan Corridor Recommendations for the Southern Travel Shed

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
VRE Fredericksburg Line	Extend from Current Terminus to Crossroads	Commuter-Oriented Service	Long-Distance	Programmed improvement.
Washington, D.C. to Richmond	Higher Speed Intercity Passenger Rail Service	Scheduled Passenger Rail Service	Long-Distance	Programmed improvement.
I-395 from Washington, D.C. to I-495	Regional Bus on Existing Express or HOV Lane	Commuter-Oriented	Long- to Medium-Distance	Commuter bus service serves specific origin-destination pairs including those outside the corridor. Use of existing peak direction HOV lanes improves travel time.
	Rapid Bus from Pentagon/Pentagon City to Mark Center	All-Day	Medium- to Short-Distance	Part of Alexandria Transitway Corridor C (planned improvement) to Van Dorn Metrorail Station.
I-95 from I-495 to Garrisonville	Regional Bus on Existing Express or HOV Lane	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor. Use of Express Lanes (programmed improvement) decreases travel time.
I-95 from Garrisonville to Caroline County	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor.
US 1 from Washington, D.C. to Alexandria	Streetcar and Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Programmed Crystal City/Potomac Yard Transitway between Pentagon City and Braddock Road Metrorail Stations. Serves local destinations and provides connection to other transit services such as Metrorail. May extend to meet future D.C. Streetcar with cooperation from Washington, D.C.
US 1 from Huntington to Lorton	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Operates with similar hours and headways as Metrorail, acting as a less capital extensive extension. Serves local destinations and provides connection to other transit services such as Metrorail.
US 1 from Lorton to US 17 in Spotsylvania County	Rapid Bus	All-Day	Any Distance	Provides all-day service in the travel shed that compliments commuter-oriented service on I-95 and offers local connectivity.
US 17 from Stafford County to City of Fredericksburg	Rapid Bus	All-Day	Medium- to Short-Distance	Provides all-day service connecting to the I-95 corridor and offers local connectivity.
US 17 from US 1 to Crossroads in Spotsylvania County	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Provides service connecting the I-95 corridor and the planned Crossroads VRE station. Serves specific origin-destination pairs including those outside the corridor.
Route 3 from Spotsylvania County to City of Fredericksburg	Rapid Bus	All-Day	Medium- to Short-Distance	Provides all-day service connecting to the I-95 corridor and offers local connectivity.
Route 610 from Stafford County to Route 1	Rapid Bus	All-Day	Medium- to Short-Distance	Provides all-day service connecting to the I-95 corridor and offers local connectivity.
Beauregard Street/Route 401 (Van Dorn Street)/ Route 613 (Van Dorn Street and Manchester Boulevard) from Alexandria to Franconia	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Part of Alexandria Transitway Corridor C from I-395 to Van Down Metrorail Station and extension south to Franconia in Fairfax County. Serves local destinations and provides connection to other transit services such as Metrorail.

WESTERN TRAVEL SHED

The western travel shed, shown in **Figure 6.6**, generally follows the I-66 corridor between the District of Columbia and Front Royal. Key radial routes in the corridor in addition to I-66 include US 50, US 29, VRE's Manassas Line, and Metrorail's Orange Line. I-66 has bi-directional HOV lanes between Vienna and Gainesville and also operates HOV only in the morning peak in the eastbound direction and evening peak in the westbound direction between I-495 and the District of Columbia. In general, the corridor is heavily traveled by commuter bus service, vanpools, and HOV in morning and evening peak periods between Gainesville and the District of Columbia.

The VRE Manassas Line currently parallels the corridor to the south between Gainesville and the District of Columbia and the Metrorail Orange Line provides service between Vienna and the District of Columbia. There are currently no programmed transit projects in the western travel shed, but a variety of projects are included in local comprehensive and other regional plans or studies as described in Chapter 4. **Table 6.2** summarizes primary Vision Plan corridor recommendations for the western travel shed. Hub locations recommended in the western travel shed are the following:

- Rosslyn (Arlington County)
- East Falls Church/Seven Corners (Arlington County/ Falls Church)
- City of Fairfax
- Centreville (Fairfax County)
- Manassas (Prince William County)
- Gainesville (Prince William County)
- Front Royal (Fauquier County)

Table 6.2: Summary of Vision Plan Corridor Recommendations for the Western Travel Shed

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
Metrorail Orange Line	Extend Metrorail from Current Terminus in Vienna to Centreville	All-Day	Long- to Medium-Distance	Fairfax County policy supports this extension.
VRE Manassas Line	Extend from Current Terminus to Gainesville	Commuter-Oriented	Long-Distance	Alternatives Analysis Study has been prepared for this extension by VRE.
I-66 from Washington, D.C. to Centreville	Regional Bus on Express or HOV Lanes	Commuter-Oriented	Long-Distance	Commuter bus service supplements Metrorail service and serves specific origin-destination pairs. Use of existing peak-direction HOV lanes improves travel time.
I-66 from Centreville to Gainesville	Rapid Bus	All-Day	Long- to Medium-Distance	Operates with similar hours and headways as Metrorail, acting as a less capital extensive extension.
	Regional Bus on Express or HOV Lanes	Commuter-Oriented	Long-Distance	Supplements Rapid Bus service and serves specific origin-destination pairs. Use of existing peak-direction HOV lanes improves travel time.
I-66 from Gainesville to Haymarket	Regional Bus on Express or HOV Lanes	Commuter-Oriented		Serves specific origin-destination pairs including those outside the corridor. Use of future peak-direction HOV lanes would improve travel time.
I-66 from Haymarket to Front Royal	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor.
US 29 from Washington, D.C. to Falls Church	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Transitions to US 50 at East Falls Church Metrorail Station. Serves local destinations and provides connection to other transit services such as Metrorail. May extend to meet future D.C. Streetcar with cooperation from Washington, D.C.
US 29 from Centreville to Town of Culpeper	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor.
US 50 from Washington, D.C. to Seven Corners/Falls Church	Rapid Bus	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
US 50 from Seven Corners/ Falls Church to City of Fairfax	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.

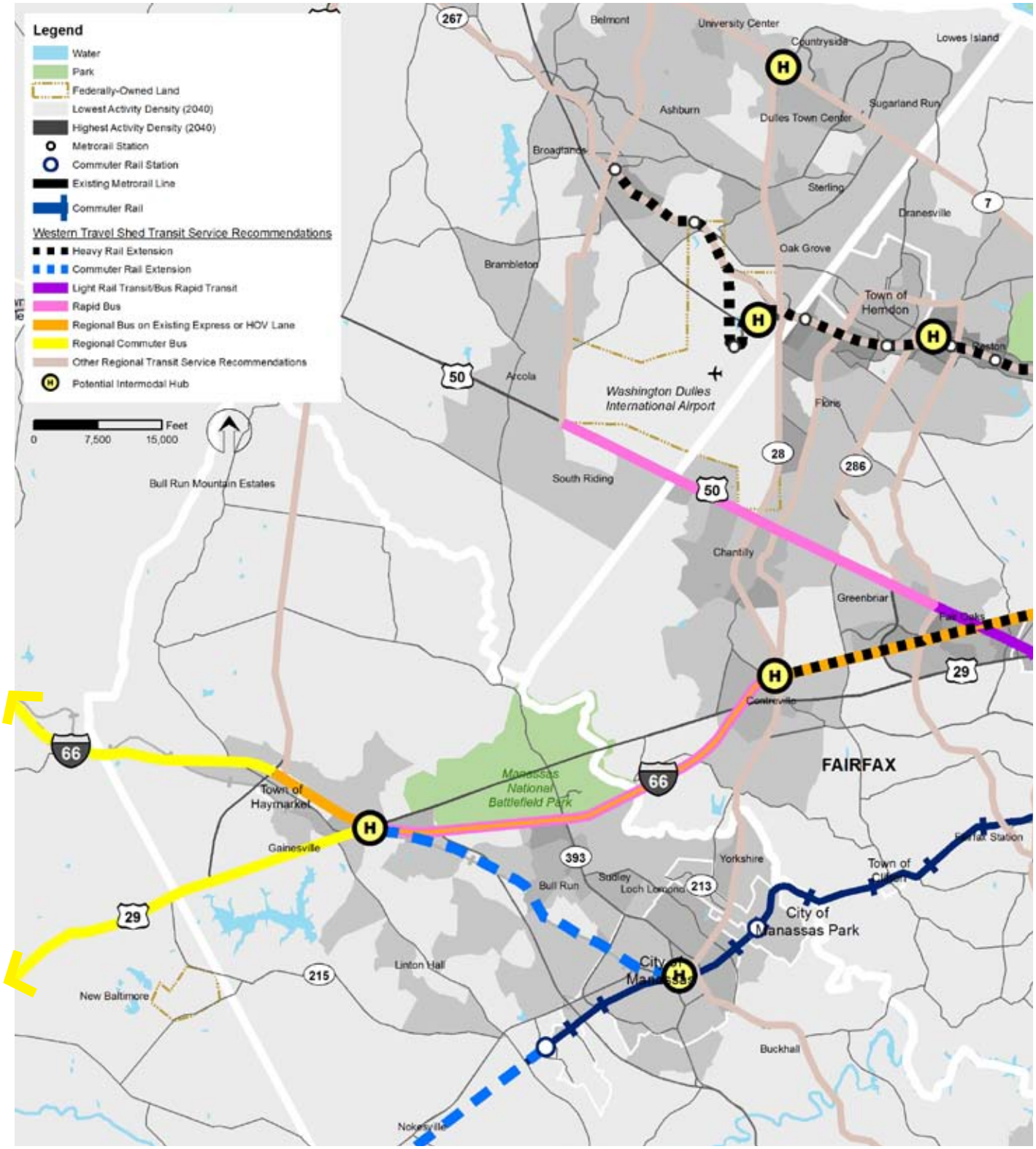
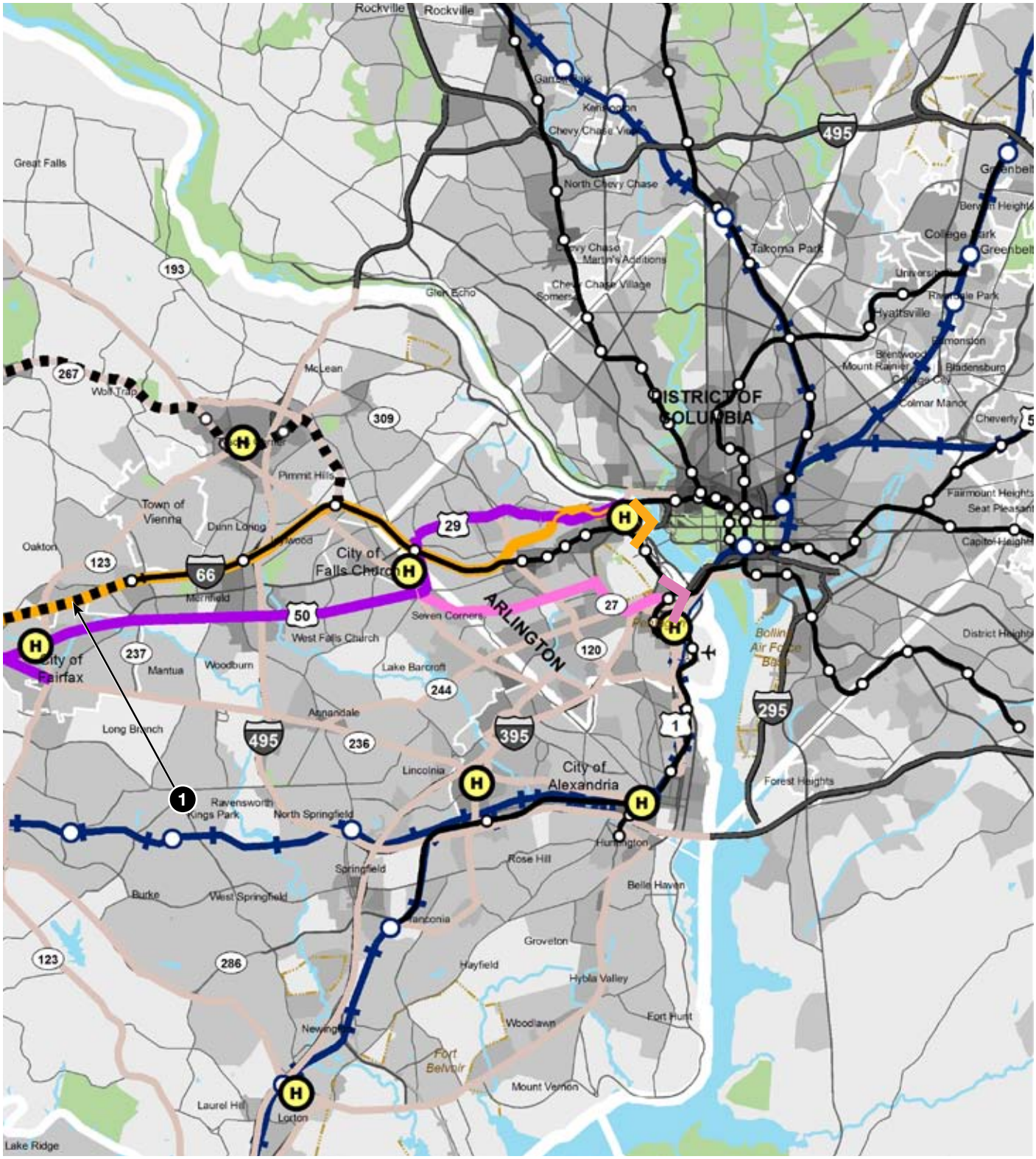


Figure 6.6: Western Travel Shed



Notes:

1. *I-66 Between I-495 and US 15: DRPT and VDOT are conducting a Tier 1 Environmental Study. Recommendations from the study may differ from the Super NoVa Vision Plan. Bus solutions may be implemented as an interim solution in the corridor and do not preclude future rail implementation.*

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

NORTHWESTERN TRAVEL SHED

This travel shed, shown in **Figure 6.7**, generally follows the Route 267/Dulles Greenway/Route 7/Route 9 corridor between I-495 and Winchester. The primary route parallel to Route 267 and the Dulles Greenway is Route 7. Today, the corridor has considerable commuter-oriented transit services in operation including those operated by Fairfax Connector and Loudoun County Transit. Route 267 also has significant HOV use during peak periods. Transit operating in the corridor benefits from the Dulles International Airport Access Highway (DIAAH), which runs in the median of Route 267 between the airport and McLean.

Phase I of the Metrorail Silver Line is nearing completion between East Falls Church and Wiehle Avenue in Reston. The other major programmed transit project in the travel shed is the second phase of the Metrorail Silver Line, which will run from Wiehle Avenue to Route 707 in Loudoun County. Other unprogrammed projects are described in Chapter 4. **Table 6.3** summarizes primary Vision Plan corridor recommendations for the northwestern travel shed. Hub locations recommended in the northwestern travel shed are the following:

- Tysons Corner (Fairfax County)
- Reston/Herndon (Fairfax County)
- Dulles Airport (Loudoun County)
- Dulles Town Center (Loudoun County)
- Town of Leesburg

Table 6.3: Summary of Vision Plan Corridor Recommendations for the Northwestern Travel Shed

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
Metrorail Silver Line	Heavy Rail Between East Falls Church and Wiehle Avenue	All-Day	Medium- to Short-Distance	Programmed improvement, under construction.
Metrorail Silver Line	Heavy Rail Between Wiehle Avenue and Route 707	All-Day	Medium- to Short-Distance	Programmed improvement.
I-66/Dulles Connector Road/Route 267/Dulles Greenway from Washington, D.C. to Loudoun County	Regional Bus on Existing Express or HOV Lane	Commuter-Oriented	Long- to Medium-Distance	Commuter bus service supplements Metrorail service and serves specific origin-destination pairs. Use of existing toll, airport, shoulder and peak direction HOV lanes improves travel time.
Dulles Greenway from Loudoun County to Leesburg	Rapid Bus	All-Day	Medium- to Short-Distance	Operates with similar hours and headways as Metrorail, acting as a less capital extensive extension.
Route 7 from Alexandria to Tysons Corner	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 7 from Tysons Cornder to Dulles Town Center	Express Bus	Commuter-Oriented	Medium-Distance	Express Bus spine serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
Route 7 from Dulles Town Center to Leesburg	Rapid Bus	All-Day	Medium- to Short-Distance	Provides an interjurisdicitonal service with focus on local destinations. Use of potential future HOV lanes would improve travel time.
Route 7 from Leesburg to West Virginia Line	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from West Virginia with interstate cooperation.
Route 9 from Leesburg to West Virginia Line	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from West Virginia with interstate cooperation.
US 15 from Leesburg to Maryland Line	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from Maryland with interstate cooperation.
US 50 from Seven Corners/ Falls Church to City of Fairfax	Light Rail Transit/ Bus Rapid Transit	All-Day Service	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.

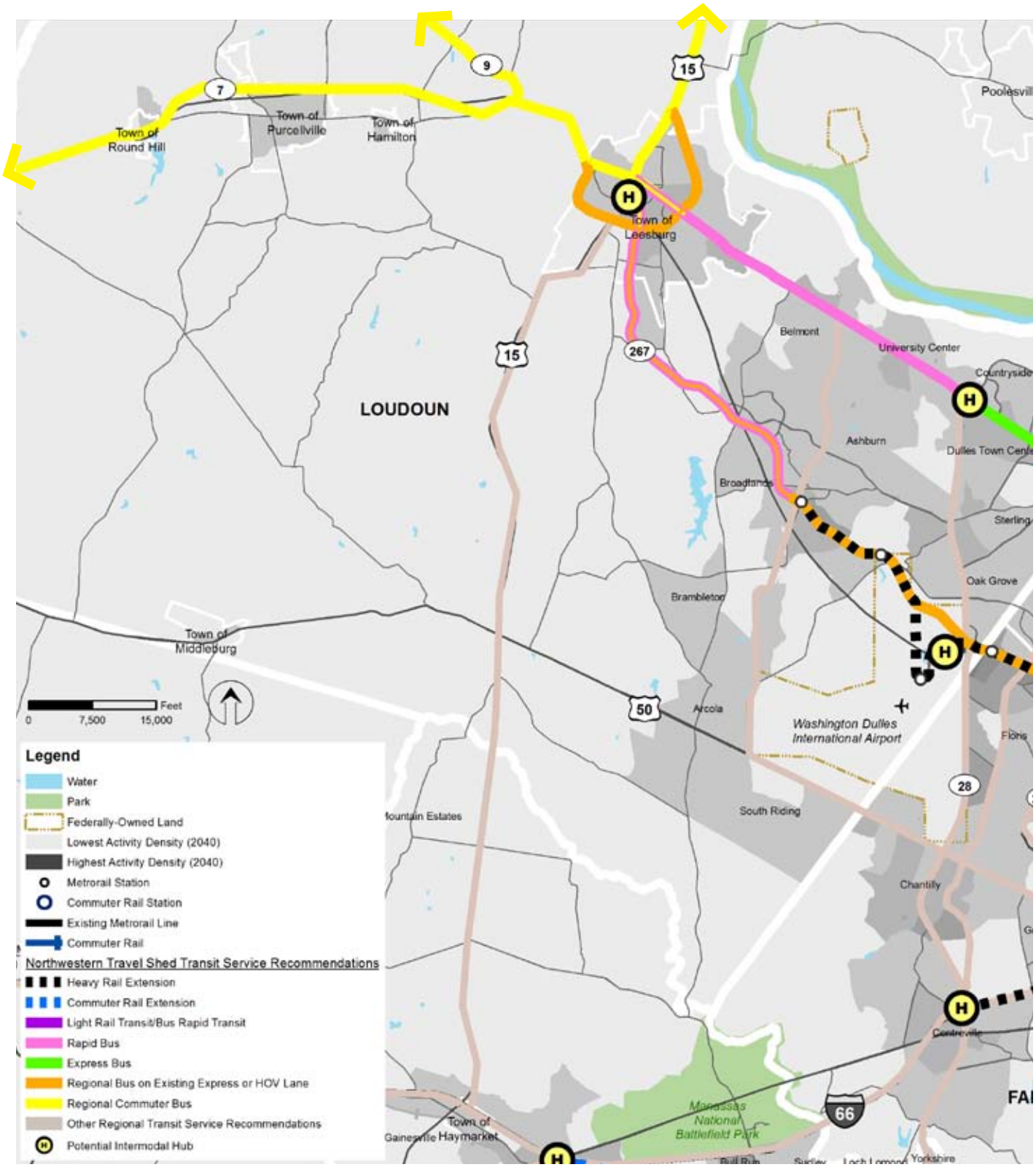
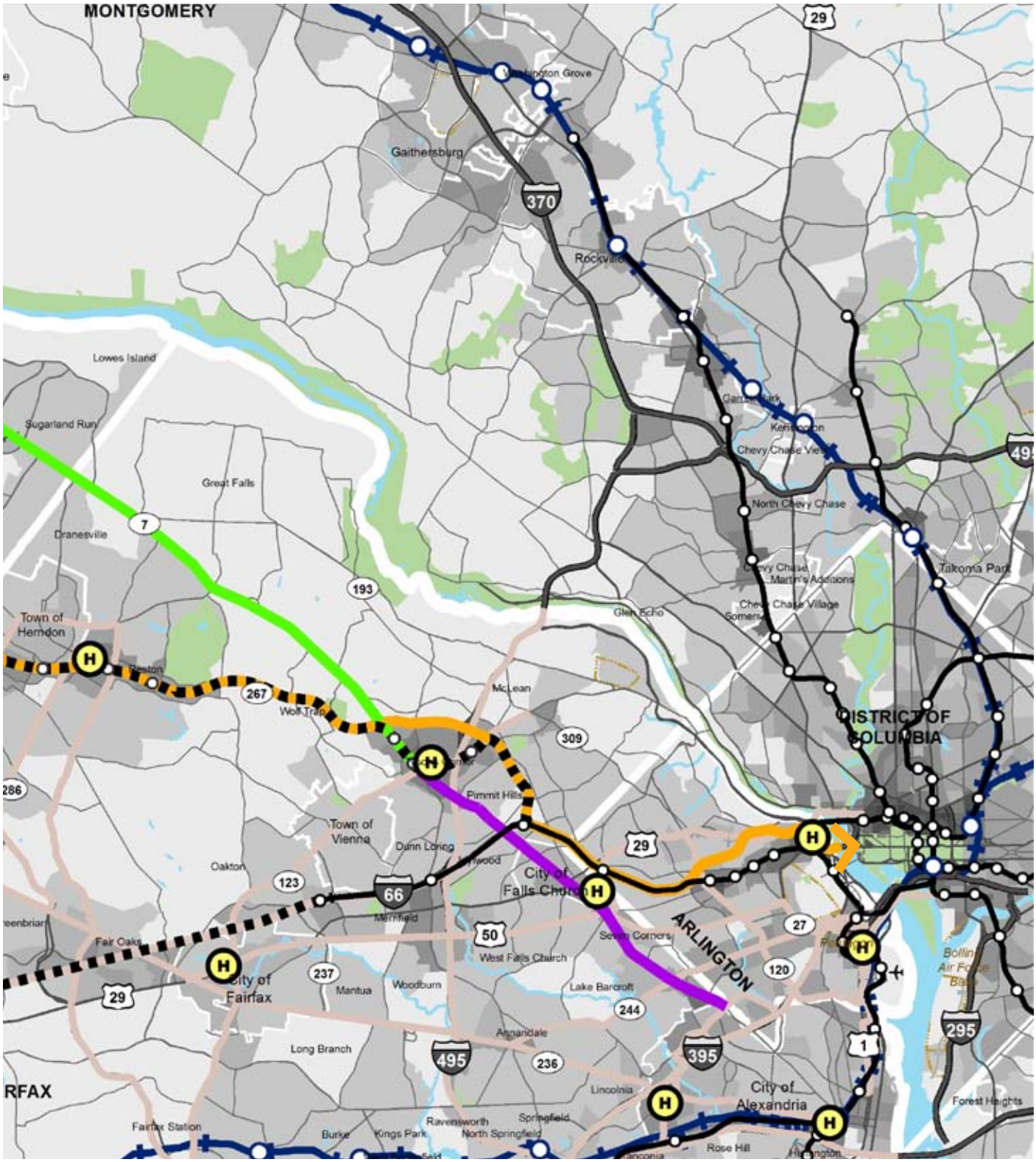


Figure 6.7: Northwestern Travel Shed



Notes:

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

INNER TRAVEL SHED

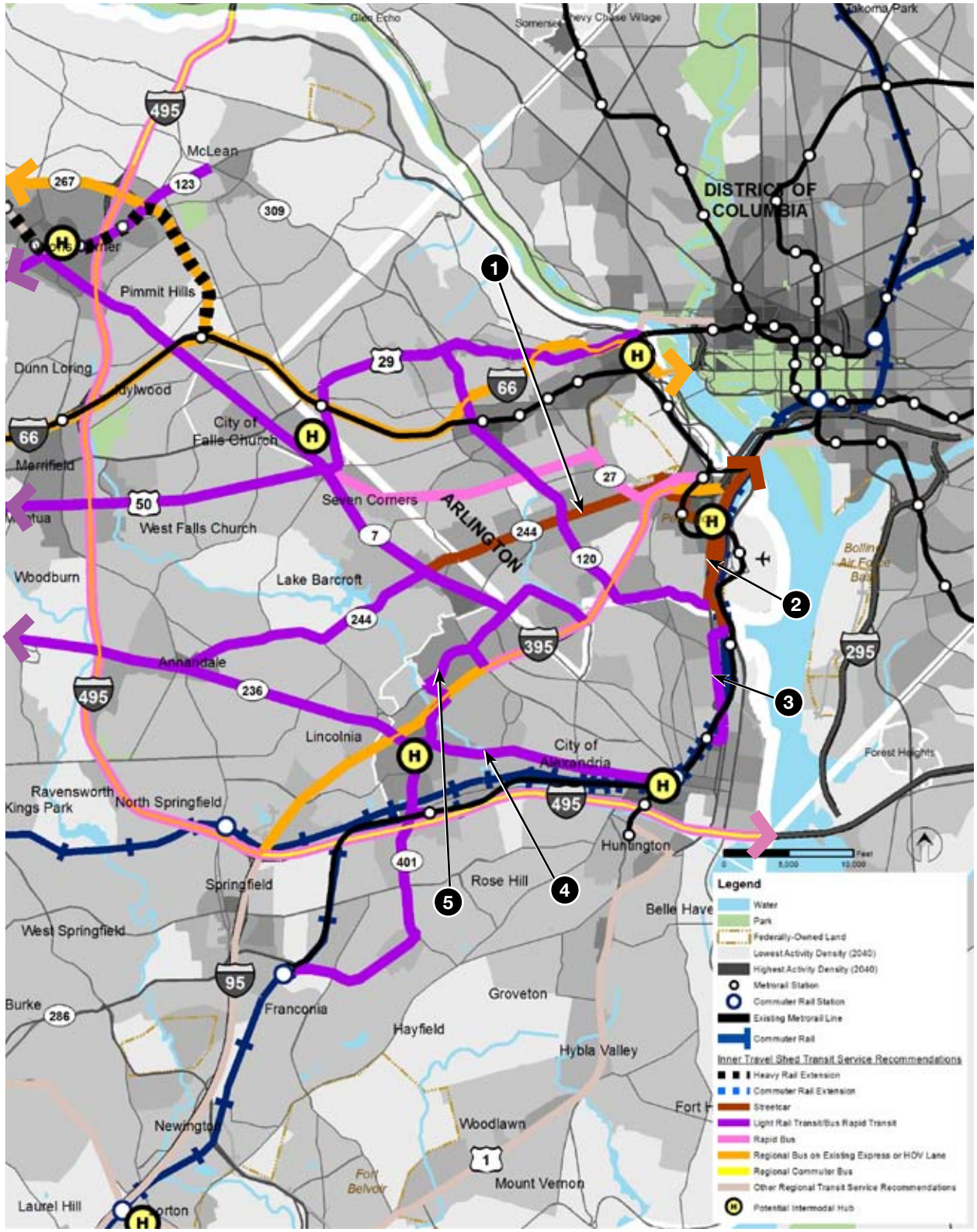
This travel shed, shown in **Figure 6.8**, is defined as the area inside I-495 for the purposes of providing a summary of recommendations. Unlike the previously defined travel sheds, the inner travel shed is an interconnected system of major roadway and transit corridors. These include I-395, I-495, I-66, US 1, US 29, US 50, and Route 7, the Metrorail Orange, Blue, Silver (future), and Yellow lines, and the VRE Manassas and Fredericksburg Lines. Significant traffic congestion exists on many of the major roadways in this area and the area also experiences significant rail and bus transit ridership.

Each of the jurisdictions within the inner area have significant capital projects programmed that will improve transit facilities and services. Many of these projects are cross-jurisdictional and will require cooperation in project implementation and service operation. The following transit projects are currently programmed in this travel shed:

- Metrorail Silver Line Phase I between East Falls Church and Wiehle Avenue
- I-495 Express Lanes
- Crystal City/Potomac Yard Transitway
- Columbia Pike Streetcar

Other unprogrammed projects are described in Chapter 4. **Table 6.4** on the following pages summarizes primary Vision Plan corridor recommendations for the inner travel shed. Hub locations recommended in the inner travel shed are the following:

- Rossyln (Arlington County)
- Crystal City (Arlington County)
- East Falls Church/Seven Corners (Arlington County and Falls Church)
- Tysons Corner (Fairfax County)
- King Street Station (Alexandria)
- Landmark area (Alexandria)



Notes:

1. *Columbia Pike: Arlington County and Fairfax County Boards have adopted, as the locally preferred alternative, modern streetcar service and continued bus service between Pentagon City in Arlington County and the Skyline area of Fairfax County.*
2. *US Route 1: Arlington County Board and Alexandria City council have a coordination agreement for the joint Route 1 Corridor Streetcar Conversion project that would convert the bus transitway (under construction) to a streetcar between Crystal City in Arlington County and the potential new Potomac Yard Metrorail station in the City of Alexandria.*
3. *US Route 1: City of Alexandria is currently constructing a bus transitway between East Glebe Road and the Braddock Road Metrorail station.*
4. *Duke Street: Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for Duke Street between the King Street Metrorail station and Landmark Mall.*
5. *Van Dorn Street/Beauregard Street: Alexandria City Council has approved a resolution identifying a high-capacity bus transitway as the locally preferred alternative for sections of Van Dorn Street and Beauregard Street between the Van Dorn Metrorail station and the Mark Center. At the Mark Center, the high-capacity bus transitway would branch into two lines with one serving Pentagon/Pentagon City via I-395 and the second serving the Northern Virginia Community College, Shirlington, and Pentagon/Pentagon City via Beauregard Street, S. Arlington Mill Drive, and I-395.*

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

Figure 6.8: Inner Travel Shed

Table 6.4: Summary of Vision Plan Corridor Recommendations for the Inner Travel Shed

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
Metrorail Silver Line	Heavy Rail from East Falls Church to Wiehle Avenue	All-Day	Medium- to Short-Distance	Programmed improvement, under construction.
I-66 from Washington, D.C. to Centreville	Regional Bus on Existing Express or HOV Lane	Commuter-Oriented	Long- to Medium-Distance	Supplements Metrorail service and serves specific origin-destination pairs including those outside the corridor. Use of existing peak direction HOV lanes improves travel time.
I-395 from Washington, D.C. to I-495	Commuter Bus on Existing Express or HOV Lane	Commuter-Oriented	Long- to Medium-Distance	Serves specific origin-destination pairs including those outside the corridor. Use of existing peak direction HOV lanes lanes improves travel time.
	Rapid Bus from Pentagon/Pentagon City to Mark Center	All-Day	Medium- to Short-Distance	Part of Alexandria Transitway Corridor C (planned improvement) to Van Dorn Metrorail Station.
I-495 from Montgomery County to Prince George's County	Rapid Bus	All-Day	Medium- to Short-Distance	Provides an interjurisdicitonal service with focus on local destinations. Use of express lanes (under construction) improves travel time. Corridor could provide service to/ from Maryland with interstate cooperation.
	Regional Bus on Existing Express or HOV Lanes from I-395 to VA 267	Commuter-Oriented	Long- to Medium-Distance	Supplements rapid bus service and serves specific origin-destination pairs including those outside the corridor. Use of express lanes (under construction) improves travel time.
	Regional Commuter Bus	Commuter-Oriented	Long- to Medium-Distance	Supplements rapid bus service and serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from Maryland with interstate cooperation.
US 1 from Washington, D.C. to Alexandria	Streetcar and Light Rail Transit/Bus Rapid Transit	All-Day	Medium- to Short-Distance	Programmed Crystal City/Potomac Yard Transitway between Pentagon City and Braddock Road Metrorail Stations. Serves local destinations and provides connection to other transit services such as Metrorail. May extend to meet future D.C. Streetcar with cooperation from Washington, D.C.
US 29 from Washington, D.C. to Falls Church	Light Rail Transit/ Bus Rapid Transit	All-Day Service	Medium- to Short-Distance	Transitions to US 50 at East Falls Church Metrorail Station. Serves local destinations and provides connection to other transit services such as Metrorail. May extend to meet future D.C. Streetcar with cooperation from Washington, D.C.
US 50 from Washington, D.C. to Seven Corners/ Falls Church	Rapid Bus	All-Day Service	Medium- to Short-Distance	Provides an interjurisdicitonal service with focus on local destinations. Provides connection to other transit services such as Metrorail.
US 50 from Seven Corners/ Falls Church to City of Fairfax	Light Rail Transit/ Bus Rapid Transit	All-Day Service	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 7 from Alexandria to Tysons Corner	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 120 (Glebe Road)	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 236 (Duke Street/ Little River Turnpike) from King Street Station in Alexandria to City of Fairfax	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.

Table 6.4: Summary of Vision Plan Corridor Recommendations for the Inner Travel Shed (continued)

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
Route 244 (Columbia Pike) from Pentagon City to Annandale	Streetcar from Pentagon City to Bailey's Crossroads	All-Day	Medium- to Short-Distance	Programmed Columbia Pike Streetcar. Serves local destinations and provides connection to other transit services such as Metrorail.
	Light Rail Transit/Bus Rapid Transit from Bailey's Crossroads to Annandale	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail. May be streetcar extension.
Beauregard Street/Route 401 (Van Dorn Street)/ Route 613 (Van Dorn Street and Manchester Boulevard) from Alexandria to Franconia	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Part of Alexandria Transitway Corridor C from I-395 to Van Down Metrorail Station and extension south to Franconia in Fairfax County. Serves local destinations and provides connection to other transit services such as Metrorail.

OUTSIDE THE BELTWAY, CIRCUMFERENTIAL TRAVEL SHED

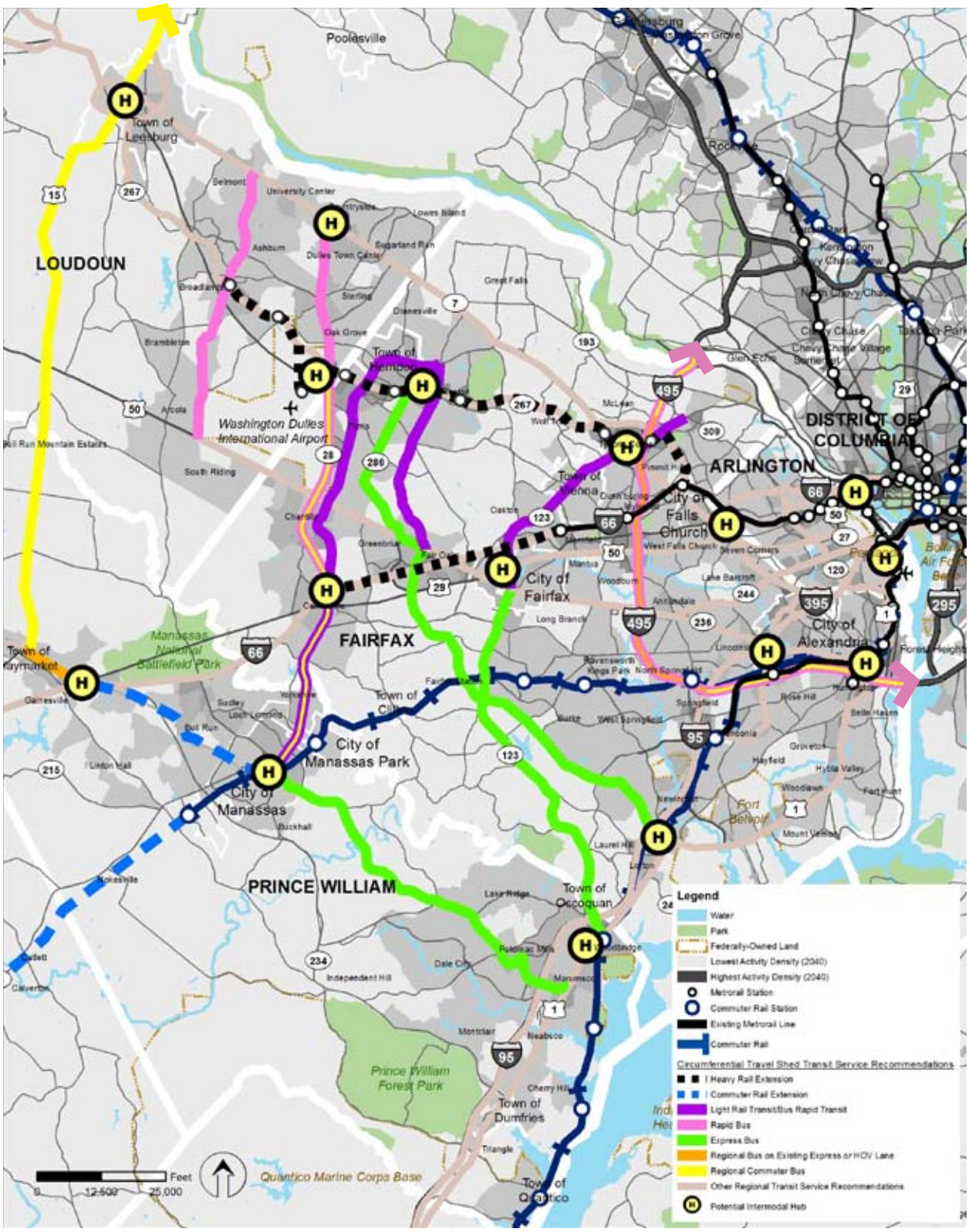
This travel shed, shown in **Figure 6.9**, includes the circumferential routes outside the Capital Beltway (I-495). Major corridors include I-495, Route 123, Route 286 (Fairfax County Parkway), Route 234, and Route 28. Currently, there is not fixed guideway transit in any of the circumferential corridors in the Super NoVa region. In the future, significant travel demand growth is forecast along circumferential routes. In addition, the communities along many of these corridors are planned to experience considerable population and employment growth that will contribute to the creation of more transit-suitable places along these corridors. Fairfax County is currently evaluating a number of circumferential corridors for high-capacity transit services. The I-495 Express Lanes project is the only currently programmed transit project in this travel shed.

Other unprogrammed projects are described in Chapter 4. **Table 6.5** summarizes primary Vision Plan corridor recommendations for the circumferential travel shed. Hub locations recommended in the circumferential travel shed are the following:

- Tyson's Corner (Fairfax County)
- City of Fairfax
- Lorton (Fairfax County)
- Reston (Fairfax County)
- Woodbridge/Potomac Mills (Prince William County)
- Dulles Town Center (Loudoun County)
- Dulles Airport (Loudoun County)
- Centreville (Fairfax County)
- Manassas (Prince William County)
- Town of Leesburg
- Gainesville (Prince William County)

Table 6.5: Summary of Vision Plan Corridor Recommendations for the Outside the Beltway, Circumferential Travel Shed

Route/Termini	Vision Plan Recommendation	Service Type	Trip Type Served	Notes
US 15 from Maryland to Gainesville	Regional Commuter Bus	Commuter-Oriented	Long-Distance	Serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from Maryland with interstate cooperation.
I-66 from Gainesville to Haymarket	Regional Bus on Existing Express or HOV Lanes	Commuter-Oriented	Long-to-Medium Distance	Serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
I-495 from Montgomery County to Prince George's County	Rapid Bus	All-Day	Medium- to Short-Distance	Provides an interjurisdictional service with focus on local destinations. Provides connection to other transit services such as Metrorail. Use of express lanes (under construction) improves travel time. Corridor could provide service to/from Maryland with interstate cooperation.
	Regional Bus on Existing Express or HOV Lanes from I-395 to VA 267	Commuter-Oriented	Long-to-Medium Distance	Supplements rapid bus service and serves specific origin-destination pairs including those outside the corridor. Use of express lanes (under construction) improves travel time.
	Regional Commuter Bus	Commuter-Oriented	Long- to Medium-Distance	Supplements rapid bus service and serves specific origin-destination pairs including those outside the corridor. Corridor could provide service to/from Maryland with interstate cooperation.
Route 123 from McLean to City of Fairfax	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 123 from City of Fairfax to Woodbridge	Express Bus	Commuter-Oriented	Medium-Distance	Express bus spine serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
Reston Parkway from Fair Oaks to Reston Town Center	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 286 (Fairfax County Parkway) from Reston to Lorton	Express Bus	Commuter-Oriented	Medium-Distance	Express bus spine serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
Route 657 (Centreville Road) from Centreville to Herndon and Reston Town Center	Light Rail Transit/ Bus Rapid Transit	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
Route 28 from Manassas to Dulles Town Center.	Light Rail Transit/ Bus Rapid Transit from Manassas to Centreville	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.
	Rapid Bus from Centreville to Dulles Town Center	All-Day	Medium- to Short-Distance	Rapid bus serves local destinations and provides connection to other transit services such as Metrorail. All-day service is important because of Dulles Airport.
	Regional Commuter Bus from Manassas to Dulles Airport	Commuter-Oriented	Long- to Medium-Distance	Serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
Route 294 (Prince William Parkway) from Manassas to I-95	Express Bus	Commuter-Oriented	Medium-Distance	Express bus spine serves specific origin-destination pairs including those outside the corridor. Use of potential future HOV lanes would improve travel time.
Future Loudoun County route from South Riding to Lansdowne	Rapid Bus	All-Day	Medium- to Short-Distance	Serves local destinations and provides connection to other transit services such as Metrorail.



Notes:

** Fairfax County is currently studying an interconnected network of high-capacity transit corridors as part of the Fairfax Countywide Transit Network Study. Recommendations from that study may differ from the Super NoVa Vision Plan due to differences that include approach, goals, objectives, and constraints of the two studies. The county's Transit Network Study will consider prioritization, funding, impacts, and demand while the Vision Plan primarily considered potential future need and suitability.*

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

Figure 6.9: Outside the Beltway, Circumferential Travel Shed

LOCAL TRANSIT SERVICE RECOMMENDATIONS

The Fairfax Connector bus, which is wheelchair accessible.

Chapter 5 identified local service needs in the Super NoVa region based on area type. Anticipated future growth and development of the Super NoVa region will contribute to the need for local transit service to more than double for much of the region. This is in-part due to the area being underserved today, but also attributed to portions of the area's transition to a more urbanized character that requires a higher level of transit service per capita. **Figure 6.10** illustrates the change in service hours per capita by jurisdiction for the Super NoVa region, and **Table 6.6** (on page 248) presents transit service recommendations by subarea and jurisdiction.

This analysis indicates that by 2040 areas like Prince William County and Eastern Loudoun County are likely to require transit service levels similar to what is presently provided in Fairfax County. Areas like Fauquier County and Spotsylvania County are likely to require transit service levels similar to levels presently provided in Loudoun County and Prince William County. Those service needs could include expanded all-day transit services, weekend, and evening services. Local transit service needs are also likely to be interjurisdictional. For example, eastern Loudoun and Fairfax Counties fall in the "large urban" area type category by 2040. There will be increased cross-jurisdictional trips since they both fall in the same area type category, thus an increased need for local transit services that cross county boundaries.

It is important to note that transit service ranges by jurisdiction should be considered as a range of "potential" service that is based on the anticipated mix of area types for each jurisdiction (e.g., large urban, medium urban, rural village, etc.). The actual level of service provided will need to take into account more specific land use and demographic characteristics. Nevertheless, this

2010 Service Hours/Capita

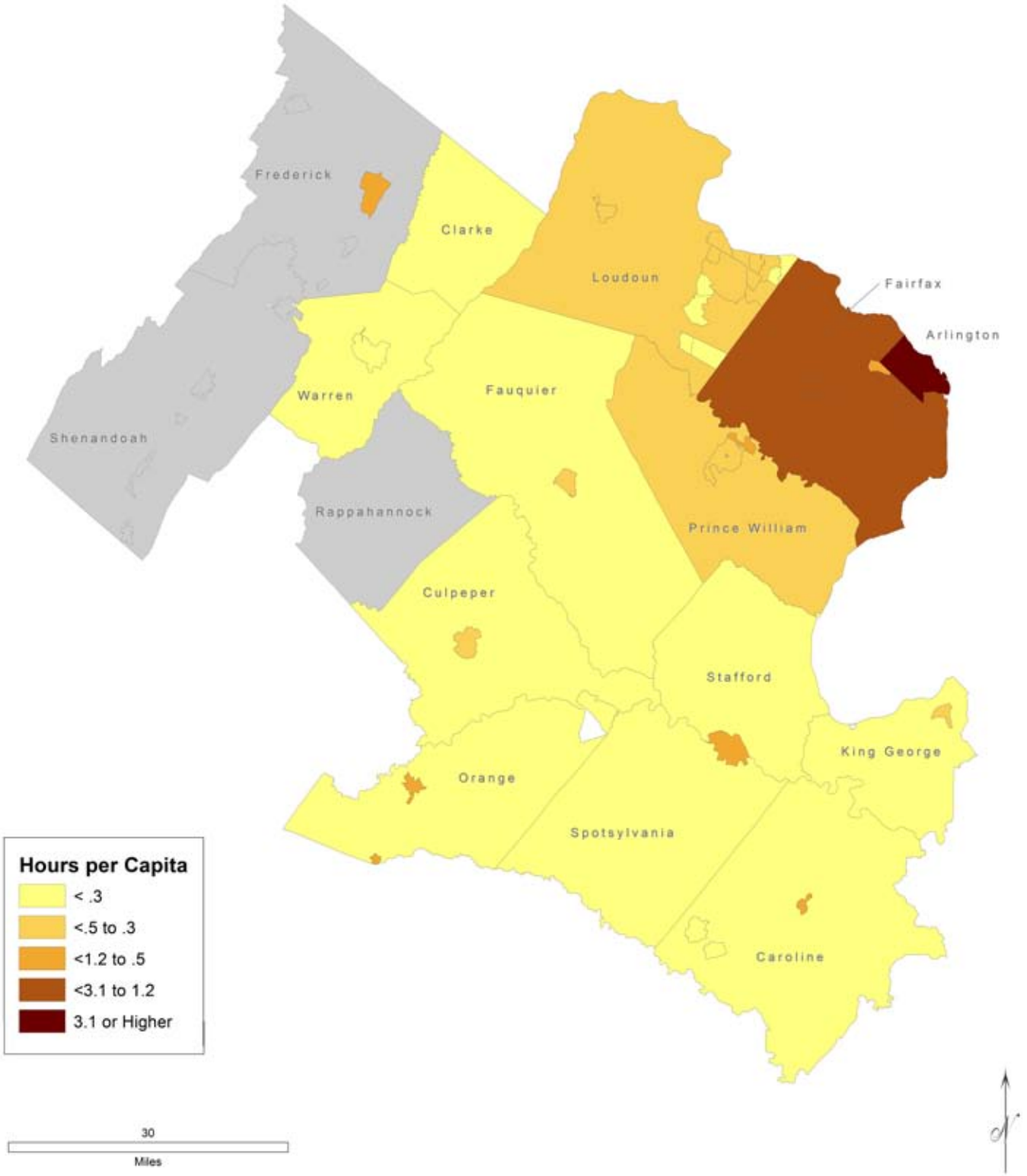


Figure 6.10: Change in Service Hours per Capita

2040 Service Hours/Capita

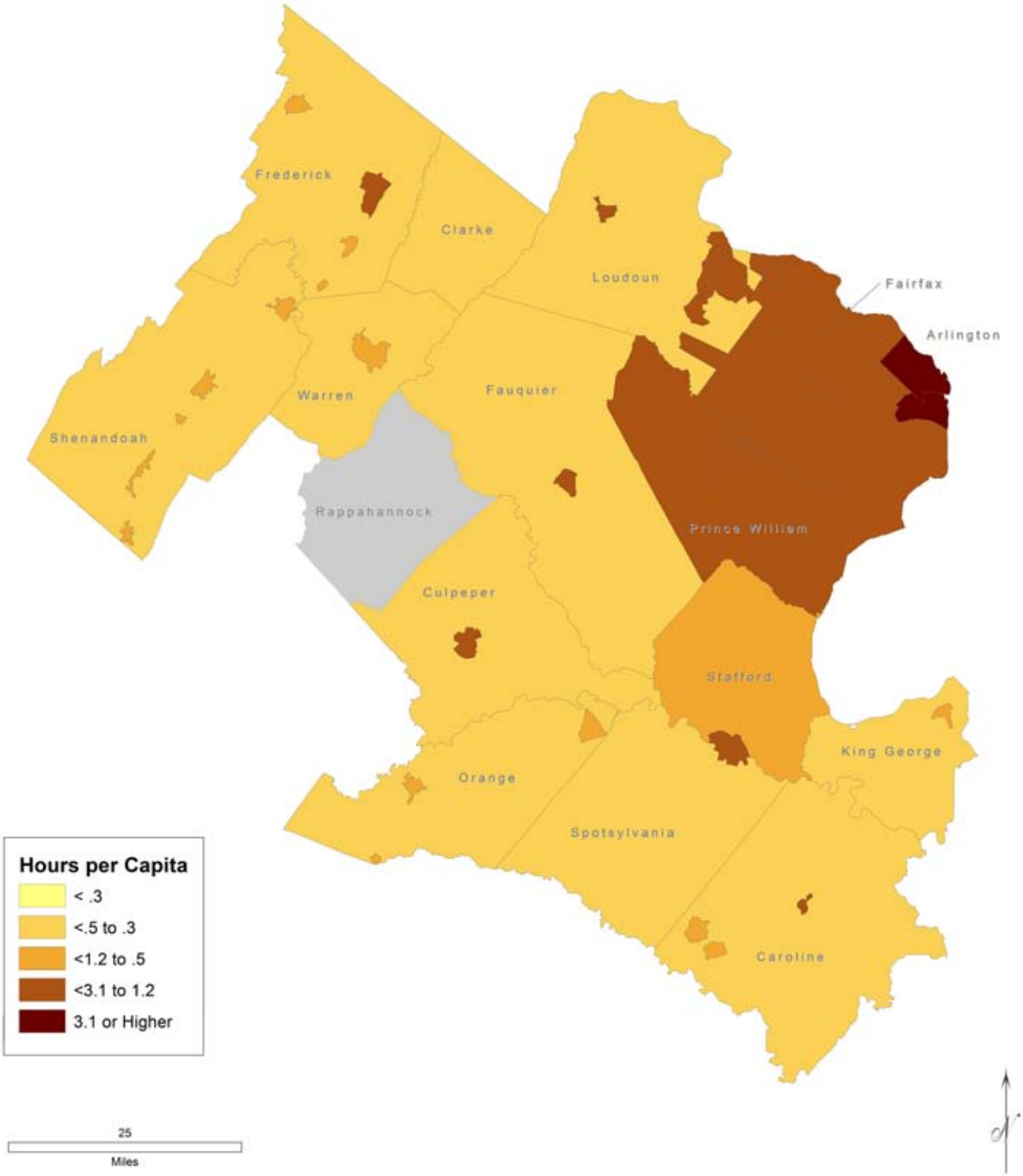
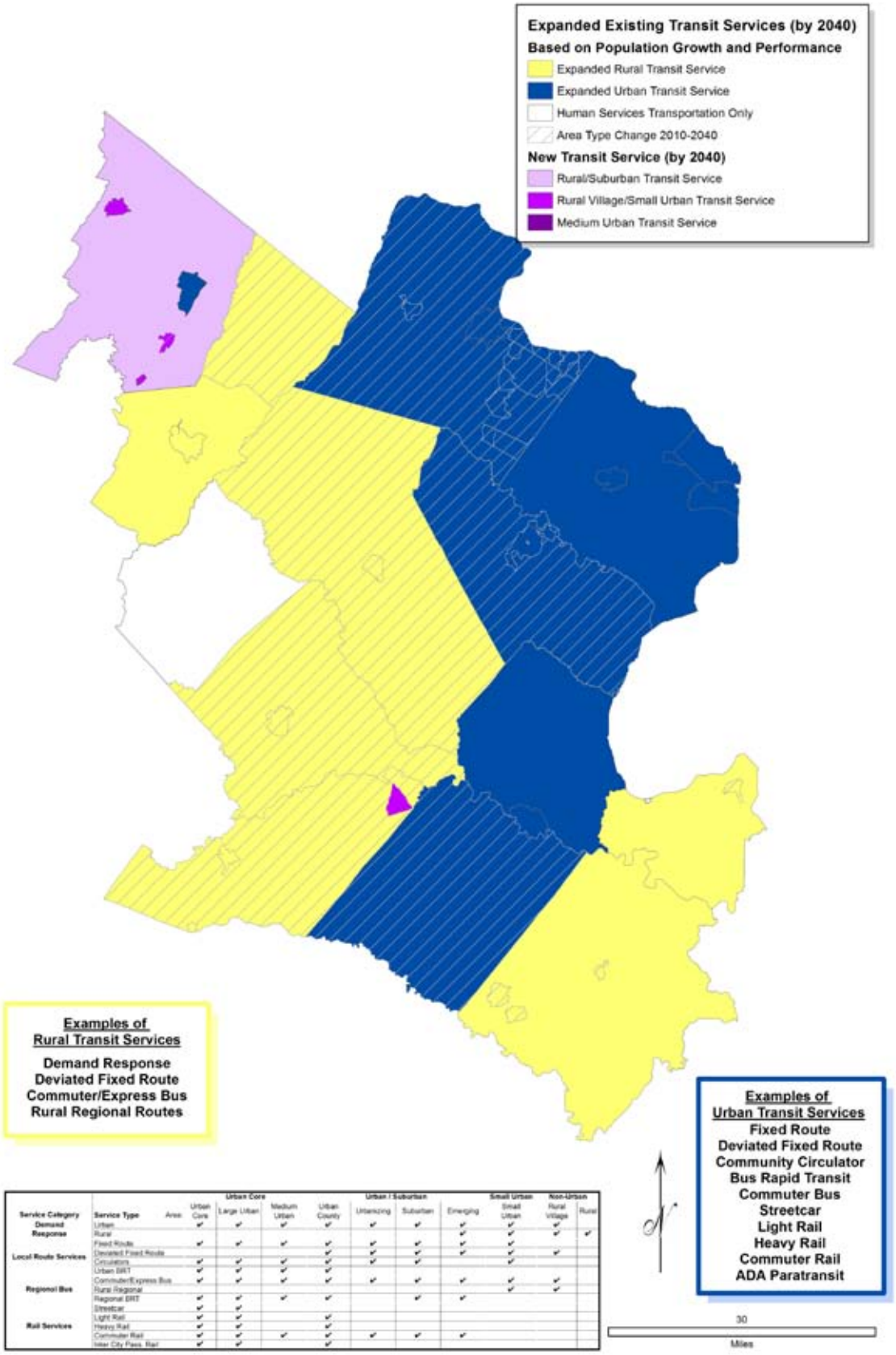


Table 6.6: Service Needs by Jurisdictional Area

Subarea	Jurisdictional Area	Est. 2011 Service Hours	Potential 2040 Service Hour Range	
Inner Subarea	Alexandria/Arlington/Falls Church	1,099,000	1,607,000	1,862,000
	Fairfax City/County	1,358,000	1,966,000	2,276,000
	Subtotal	**2,457,000**	**3,573,000**	**4,138,000**
Northwest Subarea	Loudoun County	105,000	679,000	690,000
	Clark County	1,000	7,000	9,000
	Frederick County/Winchester	20,000	87,000	93,000
	Subtotal	**126,000**	**773,000**	**792,000**
West Subarea	Fauquier County	4,000	55,000	58,000
	Culpeper County	7,000	55,000	58,000
	Orange County	4,000	24,000	24,000
	Warren County	3,000	23,000	26,000
	Rappahannock/Shenandoah Counties	0	24,000	24,000
	Subtotal	**18,000**	**181,000**	**190,000**
South Subarea	Pr. William/Manassas/M. Park	156,000	1,064,000	1,182,000
	Stafford/Spotsy/Fredericksburg	50,000	310,000	331,000
	Caroline/King George Counties	6,000	37,000	40,000
	Subtotal	**212,000**	**1,411,000**	**1,553,000**
	TOTAL FOR SUPER NOVA REGION	2,813,000	5,938,000	6,673,000
	Percent Change		111%	137%

analysis does indicate a need for a significant increase in the investment of local transit services, to address the increasing urbanization of the Super NoVa region. **Figure 6.11** shows the potential types of transit services that may be provided based on area characteristics.

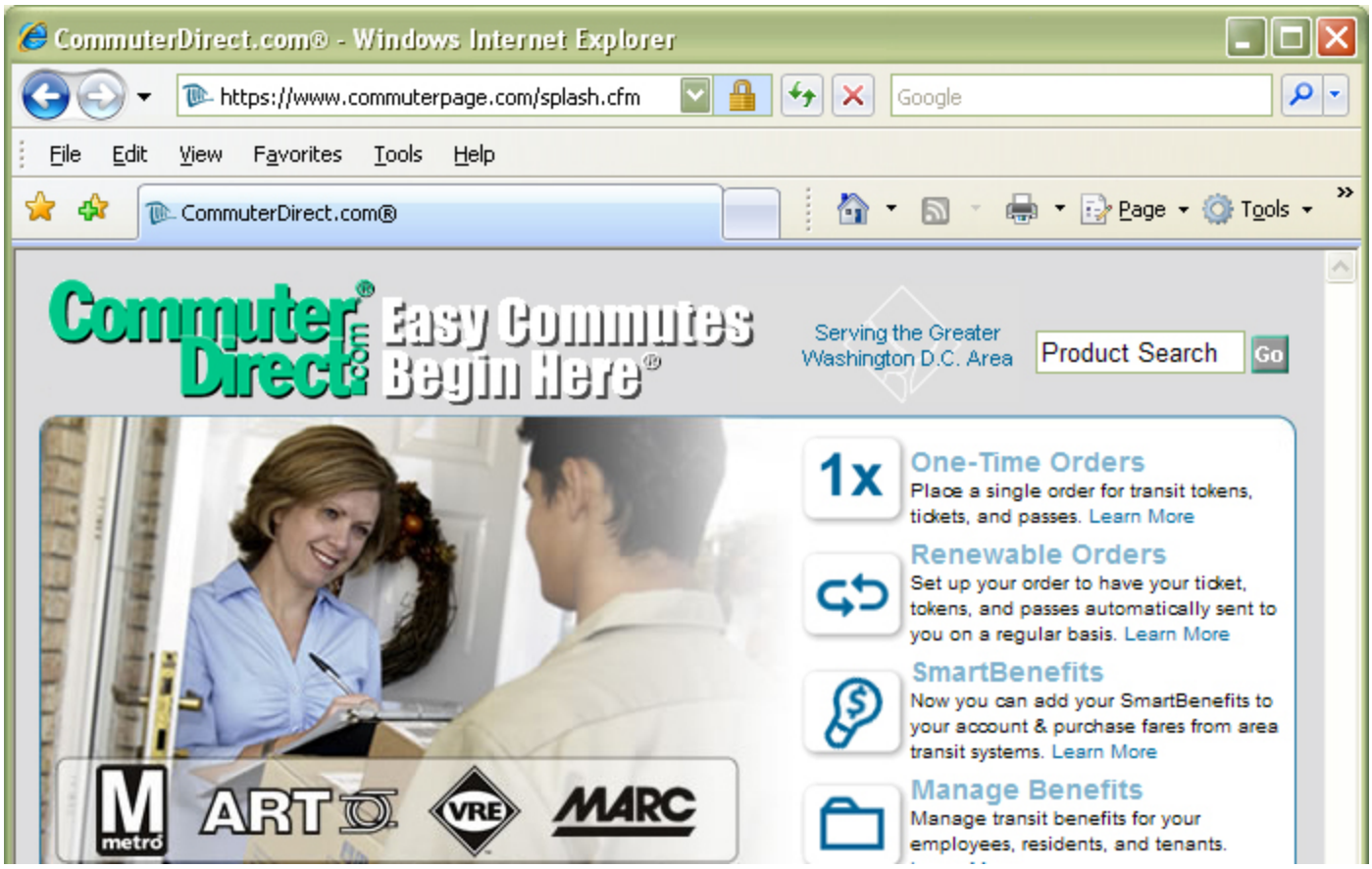
It also is important to keep in mind the need for expanded paratransit services. In areas presently served by transit, there will be a need to expand paratransit service levels to keep pace with anticipated population growth; however, much of the proposed growth in local transit service is associated with providing service in areas that presently do not have transit service. Thus, there will be a need for corresponding paratransit service with any new local transit service. The potential range of transit service growth shown in **Table 6.6** and **Figure 6.10** are inclusive of paratransit service needs.



Service Category	Service Type	Area:	Urban Core: Urban Core	Urban Core: Large Urban	Urban Core: Medium Urban	Urban Core: Urban County	Urban / Suburban: Urbanizing	Urban / Suburban: Suburban	Urban / Suburban: Emerging	Small Urban: Small Urban	Non-Urban: Rural Village	Non-Urban: Rural
Demand Response	Urban		✔	✔	✔	✔	✔	✔	✔	✔	✔	
	Rural								✔	✔	✔	✔
Local Route Services	Fixed Route		✔	✔	✔	✔	✔	✔	✔	✔		
	Deviated Fixed Route					✔	✔	✔	✔	✔	✔	
	Circulators		✔	✔	✔	✔	✔	✔		✔		
Regional Bus	Urban BRT		✔	✔	✔	✔						
	Commuter/Express Bus		✔	✔	✔	✔	✔	✔	✔	✔	✔	
	Rural Regional									✔	✔	
	Regional BRT		✔	✔	✔	✔		✔	✔			
Rail Services	Streetcar		✔	✔								
	Light Rail		✔	✔		✔						
	Heavy Rail		✔	✔		✔						
	Commuter Rail		✔	✔	✔	✔	✔	✔	✔			
	Inter City Pass. Rail		✔	✔		✔						

Figure 6.11: Local Transit Service Type by Area Characteristics

TDM RECOMMENDATIONS



Commuter Direct is an online commuter store provided by Arlington County Commuter Services. Source: Arlington County.

TDM in the Super NoVa region will need to go beyond its traditional role of providing alternatives to single-occupancy commuter travel in order to realize its full benefit. The aim of TDM is to manage travel demand while optimizing transportation system performance for all types of trips including non-recurring events. From the traveler's point of view, the role of TDM is to deliver viable transportation choices and information that support cost-effective travel, reliable travel times, a cleaner environment, healthy communities, and a more prosperous and livable region. The following definition best encapsulates the vision for TDM in this region:

TDM, also called Mobility Management, will be defined as helping various types of travelers in a community explore and identify appropriate travel options for various types of trips at various times of the day.

TDM is the use of policies, programs services and programs, services, and products to influence whether, why, when, where, and how people travel.[1]

TDM will aim to "better balance people's needs to travel a particular route at a particular time with the capacity of available facilities to efficiently handle this demand."[2]

1 Green Paper 4: Transportation Demand Management, Metrolinx, March 2008.

2 Mitigating Traffic Congestion-The Role of Demand-Side Strategies, US Department of Transportation - Federal Highway Administration, October 2004.

THEMES

An expansion of TDM can be realized through incremental shifts and adjustments in individual programs throughout the course of time. Consistency and collaboration between the various TDM providers can be achieved through common policy and guidance. The following are themes that should be considered when designing, updating, and implementing TDM programs and strategies in the Super NoVa region:

1. **Super-Regional Coordination** — There is a need to expand the region beyond current jurisdictional and conceptual boundaries. The transportation network and TDM service providers need to serve the Super NoVa region seamlessly.
2. **Coordinate Marketing and Outreach Efforts** — Marketing and outreach efforts should be coordinated to achieve economies of scale and reduce the need to have specialists at every TDM agency for marketing and coordination.
3. **Address Travel Needs of Special Populations**
    a. **Tourism and Airports:** Travel needs for tourism and airports are distinctly different than the types of travel traditionally targeted by TDM strategies. Addressing these needs through special TDM programs and strategies can support the economic development benefits of such travel.
    b. **Military:** Travel to and around military installations can be made less challenging in the future through close coordination between local and federal organizations to provide infrastructure and by developing TDM programs that improve the quality of transitions required to connect destinations inside and outside these installations.
    c. **Affordability:** TDM programs and strategies should be designed to support affordability initiatives and allow for cost-effective travel. For example, transportation costs may be included in the evaluation of affordable housing options.
    d. **Aging in Place:** The aging of the population will increase demand for non-peak trips and door-to-door services. These types of trips and the services that accommodate them will be a new area of focus for TDM.
    e. **Disabled:** TDM services such as Commuter Stores and demand-responsive transit services can be beneficial to disabled populations. In addition, programs that reduce barriers to walkability and increase access to public transportation also are beneficial to this population group. Frequently, the easiest and most efficient method of accommodating the disabilities of some groups is to make driving between origin and destination convenient and cost-effective.
4. **Design Programs for Specific Corridors and Activity Centers** — A customer-centric approach to providing transportation options of the future can be supported by a transition to planning and providing TDM programs for specific travel movements and/or zones of activity. Such a TDM program will require coordination and collaboration between various jurisdictions and private entities. In case of activity centers, TMAs can provide that overlay for coordination.
5. **Promote Sustainability Through Collaborative Consumption** — TDM strategies that promote and expand viable transportation options through sharing of infrastructure and resources should be encouraged. These options are more cost-effective for the individual and the community, and often use a pay-per-use model. Examples include carshare, bikeshare, transit, and ridesharing.
6. **Encourage Public-Private Partnerships** — Many TDM strategies are most effectively provided through public-private partnerships. Identification of potential or needs, coordination to install infrastructure, and support start-up and ongoing operations are key roles for public agencies.
7. **Coordinate Regional Parking Pricing** — Availability and price of parking at both the final destination as well as an interim parking location (e.g., park-and-ride lot) can significantly influence choice of travel mode. A regional parking study is needed to provide guidance on appropriate parking policies that are supportive of the vision for transportation in the Super NoVa region.
8. **Expand Guaranteed Ride Home** — Guaranteed Ride Home is regarded a key support service that enhances confidence in trial and use of transit and other options. Services need to be expanded in geography and scope (e.g., number of trips allowed annually, integration with a call center, etc).

STRATEGIES

Land use and travel patterns are not uniform across the study area; however, similar patterns of land use exist in lesser concentration from the regional center as shown on **Figure 6.12**. There are distinctions in the overall philosophy and goals for providing transportation services in these three rings. This section highlights a selection of TDM strategies that best suit the goals for the Super NoVa region.

Notes:

*** The Super NoVa Transit/TDM Vision Plan includes policies, area, and corridor-specific recommendations not currently included in local or regional plans. Local and/or regional action or studies to incorporate these recommendations into local and regional plans would be needed prior to the implementation of many of the Super NoVa recommendations.*

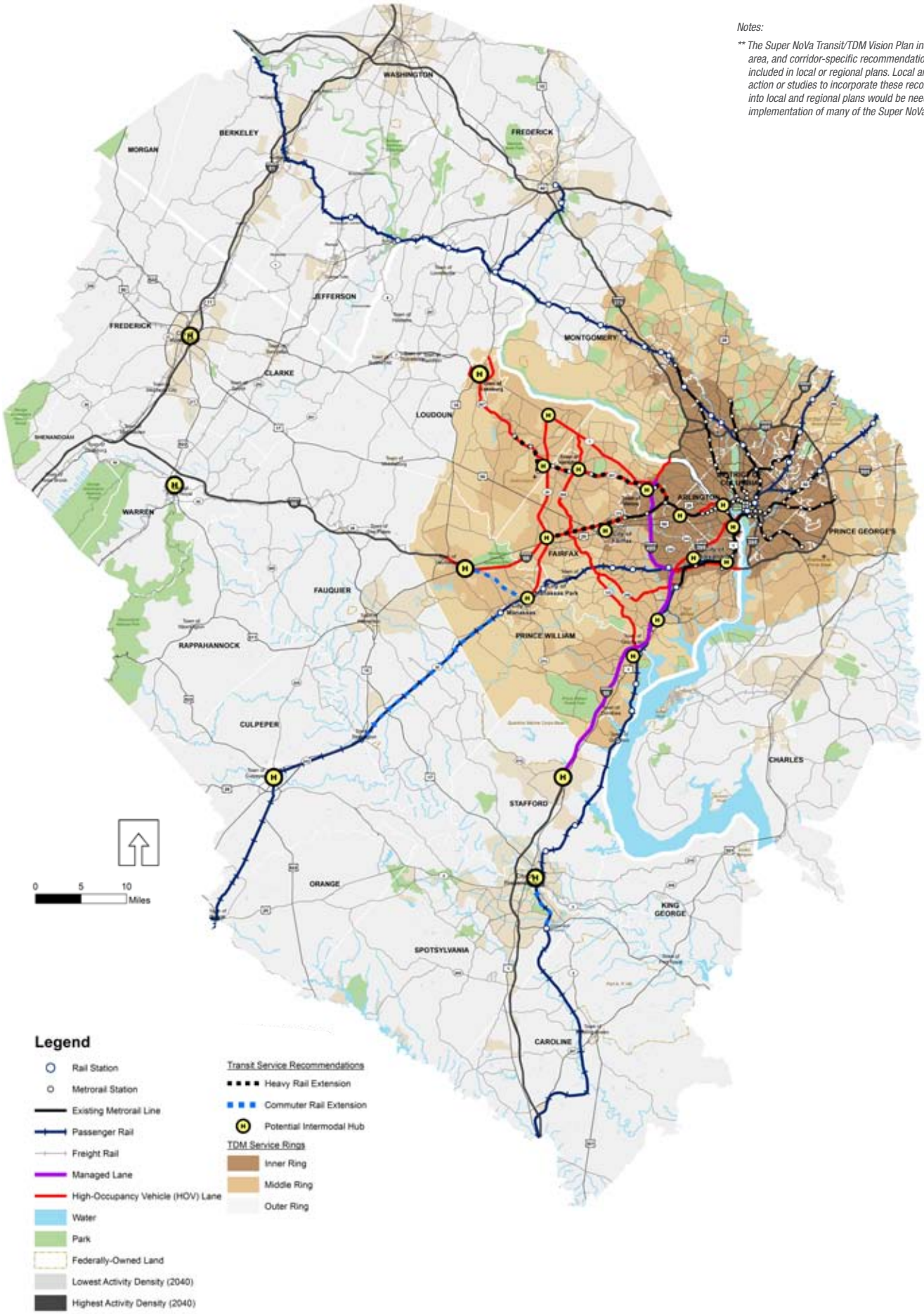


Figure 6.12: TDM Strategies

Inner Area

The inner area has the highest density of trips and the most transportation choices. Accordingly, TDM efforts should be the most intensive. The overall goal of TDM in this area is to promote a car-free lifestyle with multimodal options for all trips at all times of the day. Recommended strategies for this area include:

- Coordinated real-time travel information
- Employee commuter benefits package
- Telework support
- Multimodal travel marketing and promotion
- Bikeshare, carshare, and pay-per-use transportation options
- Transportation funding through site development conditions

Middle Area

The middle area has pockets of relatively high levels of activity separated by lower density, less intense areas. In this ring, transportation choice is greatest during peak periods. The overall focus of TDM in this area is on providing options for work trips. The majority of non-work, local trips, and trips during off-peak periods is likely to be made by single-occupant vehicles. Recommended strategies for this area include:

- Trip planners
- Employer services
- Financial incentives for trial/use of new modes
- Ridesharing support
- Transportation services through site development conditions

Outer Area

The outer area has the lowest overall population density of the three area. By land area, it is mostly rural. Within the outer area are numerous small towns, villages, and cities. The overall focus of TDM in this area is on providing access to jobs and services. Trips served by TDM in this area range from local trips to long-distance work trips. Recommended strategies for this area include:

- Traditional media for travel information
- Marketing and promotions to highlight accessibility
- Financial incentives for ridesharing to improve attractiveness
- Telework support for employees
- Vanpool services
- Guaranteed Ride Home services

STRATEGIES FOR CORRIDORS AND HUBS

In addition to the areawide overlays, the Vision Plan identified the need to identify specific strategies for major travel corridors and hubs. Strategies for corridors and hubs are summarized in the following sections.

Corridors

The primary goal of TDM strategies along major corridors in the Super NoVa region is to increase people's awareness of available travel options, encourage travelers to try different travel means, and increase people's confidence in car-free travel. The following are recommended corridor-focused TDM strategies:

- Targeted campaign for individual travel sheds and key travel patterns
- Customized marketing materials to key travel markets and corridors
- Coordinated local TDM services
- Organization of events at hubs and major destinations
- Regular assessment surveys of transportation programs, facilities, and services
- Goal-based financial incentives

Hubs

The recommended network of hubs in the Super NoVa region are intended to become natural transfer and collection points between different modes of transportation. They also are intended to become convenient points to deliver TDM services. Recommended TDM strategies for hubs are focused on expanding services to increase people's travel convenience. The following are recommended hub-focused TDM strategies:

- Real-time transit service and transportation facility information
- Adequate park-and-ride capacity
- Well-marked and specifically designated ridesharing and slugging areas
- Overnight vanpool parking
- Secure bike storage
- Quality pedestrian and bicycle access to/from hubs to the surrounding community
- Carshare service
- Bikeshare service (at some hubs)
- Private shuttles and transit service
- Mixed use development

ACHIEVING MOBILITY BEYOND BOUNDARIES

A bus passenger loads his bike onto a rack at the front of the bus. Source: Fairfax County.

The Super NoVa Transit/TDM Vision Plan development process was a successful start to broader regional coordination on transit and TDM. Actions will need to follow and support facility, service, and policy recommendations outlined by the vision plan. Achieving mobility beyond boundaries will take commitment and collective will from local, regional, state, and federal officials as well as the traveling public. The following actions are recommended as a starting point for continued dialog and coordination on the Super NoVa Transit/TDM Vision Plan:

Follow the Policy Articulated in the Vision Plan

The policy recommendations of the Vision Plan address topics related to improving mobility through transit and TDM. The policy statements are intentionally simple to allow local, regional, and state policy-makers the opportunity to mold the policies to fit the local context, while maintaining the intent of the statement.

Integrate Vision Plan Recommendations into Local and Regional Policies, Plans, and Programs

There is value for local and regional planning organizations to take the Vision Plan into consideration as input into their local and regional plans and programs. The Vision Plan's recommendations provide a high-level view of the super region based projected travel demand, demographics, and land use. As local and regional plans are updated in the future, Super NoVa recommendations should be an input for consideration by local and regional agencies.

Develop an Action Plan to Pursue Implementation

The Vision Plan is a long-range vision. The series of recommendations that form the plan will need to be incorporated into local and regional plans so that they can be prioritized and implemented. Additionally, an implementation plan identifying roles, responsibilities, costs/benefits, priorities, and timetables should be developed as a tool to guide local and regional decision-making and programming.

Create a Mechanism for Regular Super-Regional Coordination for Transit and TDM Planning and Programming

The dialog that has been started by the Vision Plan should be continued. Planning and programming at a scale that is consistent with travel desires and transportation demand of the super region has the potential to be beneficial in better meeting regional needs and increasing the region's competitiveness in terms of receiving federal assistance on transportation programs.

Identify and Support Strong and Comprehensive Regional Leadership and Champions

As the Super NoVa area is discussed and coordination efforts continue, there will be the need to foster and encourage multimodal leadership at all levels of state, regional, and local government. Without a super-regional mandate to coordinate, there is tremendous need for voluntary cooperation and coordination.