Chapter 12.

Transportation

YOUR CITY. YOUR PLAN.

Harrisonburg VIRGINIA

Chapter 12 Transportation

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Introduction

The City of Harrisonburg's transportation network is made up of a collection of interstate, regional networks, local streets, public transportation (includes public transit and school bus transportation), bicycle and pedestrian facilities, public parking, and railroads that serve the common goal to efficiently move people and products. The success of local and regional economies depends on the mobility provided by a well-planned, operated, and maintained transportation system.

The local and regional transportation systems are planned and developed based on the land use types and distributions found in the community and region. When land uses change, traffic characteristics such as the volume, mode choice, and patterns of traffic can also change, which can influence the types of transportation facilities that are needed. Conversely, transportation improvements can also drive land use changes, as increased accessibility can stimulate development. Because of this interdependence, the transportation chapter was developed in close coordination with the land use chapter.

Background

The City is part of a regional transportation system that also includes Rockingham County, several towns, and three institutions of higher education, and interacts with the neighboring Staunton/Augusta/Waynesboro and Charlottesville/Albemarle regional systems. The City plans improvements to the regional transportation system in cooperation with neighboring communities and agencies that participate in the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO).

The HRMPO was formed in 2003 and is governed by a Policy Board composed of elected and appointed officials representing the City of Harrisonburg, Rockingham County, and Towns of Bridgewater, Dayton, and Mt. Crawford, as well as, state transportation agency officials. The Policy Board appoints members to a Technical Advisory Committee (TAC) that is charged with providing professional expertise and making recommendations to the Policy Board. The TAC is generally made up of staff from member jurisdictions. The HRMPO develops the Long Range Transportation Plan (LRTP), which establishes regional transportation priorities. These plans can be found on the HRMPO website. Figure 12-0-1 shows the HRMPO planning boundary. When developing transportation plans and improvements, the City consults a variety of plans adopted by partner agencies, such as the Rockingham County Comprehensive Plan and Bicycle Plan and James Madison University's (JMU) Comprehensive Master Plan and Campus Bicycle and Pedestrian Plan.

VTRANS 2045 Mid-Term Needs is Virginia's statewide long-range, multimodal transportation plan. Led by the Commonwealth's Office of Intermodal Planning and Investment, itis a policy document that focuses on the needs of the Commonwealth's Corridors of Statewide Significance, the multimodal regional networks that support travel within metropolitan regions, and improvements to promote Urban Development Areas (UDAs). (Additional information on Harrisonburg's UDA is available in Chapter 6, Land Use and Development Quality.) VTRANS 2045 Mid-Term Needs establishes goals in the areas of economic prosperity and competitiveness; accessible and connected places; safety for all users; proactive system management; and healthy communities and sustainable transportation communities. Through this document, the state has significantly shifted mobility priorities from being primarily single-occupancy vehicle oriented to a multimodal model. State and federal transportation dollars are now allocated through the Virginia Department of Transportation (VDOT), in part based on how well projects support the goals and objectives of VTRANS 2045 Mid-Term Needs.

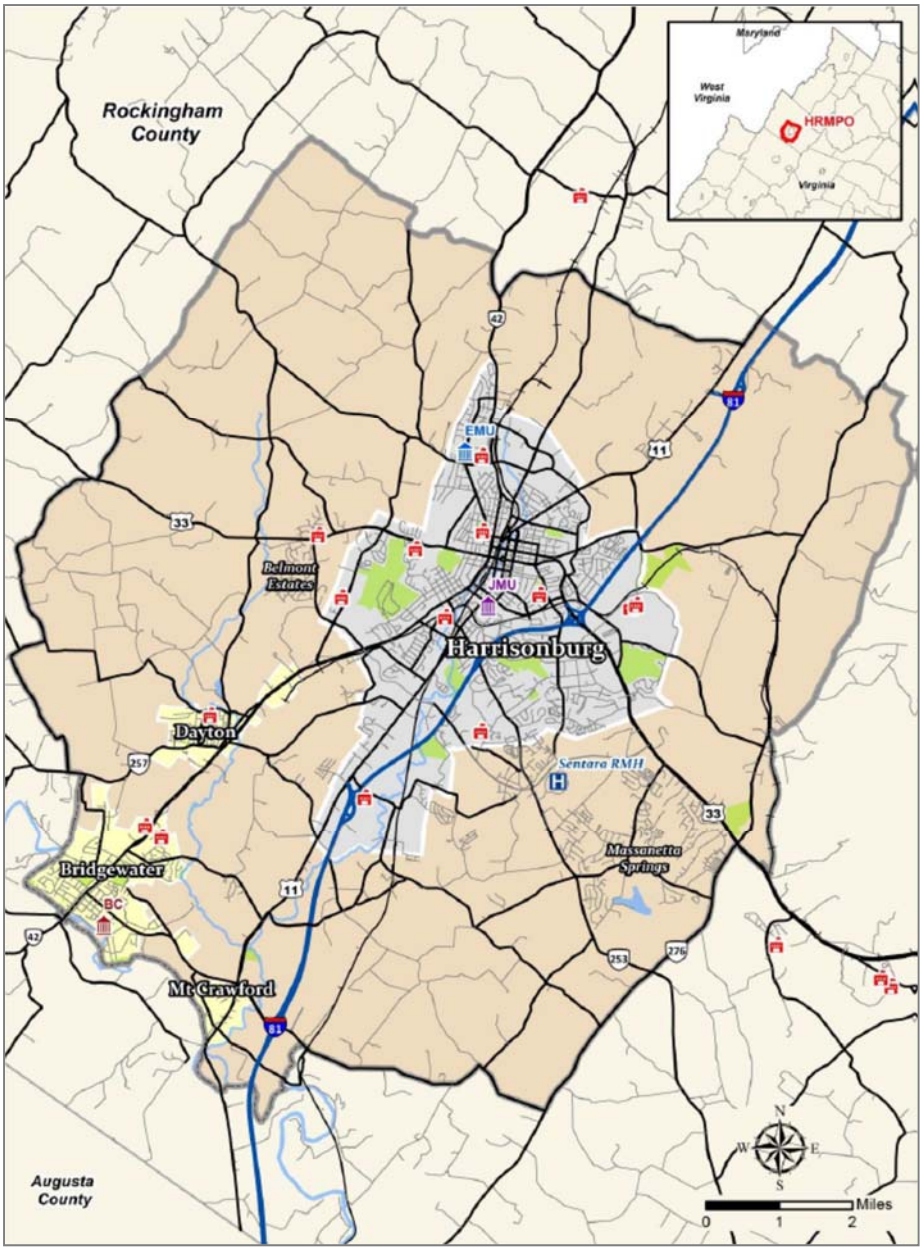

Figure 12-0-1. The Harrisonburg-Rockingham Metropolitan Planning Organization planning boundary.

Local transportation planning is conducted by the Departments of Public Works and Public Transportation with support from the Department of Community Development and other City departments, and in consultation with City management and the public. The City's Master Transportation Plan includes the Street Improvement Plan, Transit Development Plan, Bicycle and Pedestrian Plan and the Downtown Streetscape Plan, among other plans.

Transportation System Existing Conditions

The City's street network consists of a functional classification hierarchy, including: Interstate 81, principal and minor arterial streets, major and minor collector streets, and local streets; each classification serves a distinct role in the overall network, and generally relates to the purpose of individual streets to efficiently move high volumes of traffic through the City, connect neighborhoods to major thoroughfares, or provide access to destinations in the City. Arterial streets comprise of a small percentage of overall network lane miles, but support the majority of miles traveled in the City. The transportation network also includes a network of bicycle and pedestrian facilities that is continually being improved to connect additional areas of the City that already have biking and walking infrastructure. Bicycle and pedestrian facilities include sidewalks, crosswalks, pedestrian signals, bicycle lanes, and shared use paths. A map is provided at the end of this chapter of the existing street network. Existing bicycle and pedestrian facilities can be found in the Bicycle and Pedestrian Plan referenced at the end of this chapter under Chapter Resources.

The historic downtown area of the City is well connected with pedestrian infrastructure; however, as the City grew through a series of annexations, its share of roads without pedestrian or bicycle infrastructure also grew. In the post-World War II era, land use and transportation centered around the dominance of single-occupancy vehicles as the mode of choice. In recent years, however, the public and public agencies have embraced less consumptive land use forms, which are better supported by multimodal forms of transportation. The City of Harrisonburg, like many peer cities throughout Virginia and the nation, is now in a continual process of adapting its infrastructure to optimize travel for all modes of transportation, including single-occupancy vehicles, multi-occupancy vehicles, public transportation, walking, and biking. New infrastructure projects pursued by the City are developed with the "complete streets" concept in mind. Smart Growth America, a coalition of advocacy organizations, describes complete streets as serving communities so that all people regardless of age, race, culture, ability, and socioeconomic status have access to safe and pleasant means of transportation to residences, places of work, and places of leisure. Complete streets improve street design so that pedestrians, bicyclists, buses, automobiles, and other modes can be adequately accommodated.

Regional Characteristics

Harrisonburg is centrally located within the Shenandoah Valley and is bisected by Interstate 81 and US Route 11, which serve as major north-south transportation corridors. The City is also bisected by US Route 33, which serves east-west traffic from Richmond, Virginia to Indiana. US Route 11 and US Route 33 meet at Court Square, and the two routes divide the City into quadrants.

The regional transportation network serves regional traffic flows originating as far west as West Virginia, and as far east as Charlottesville, on a daily basis. Interstate 81 serves predominantly through traffic along the Appalachian mountain range between New York and Tennessee, and is heavily utilized by the trucking industry. Interstate 64 is a major east-west corridor that connects coastal metropolitan areas with inland communities as far west as St. Louis, Missouri. Interstate 64 is located approximately 25 miles south of the City. The close proximity of Harrisonburg to these interstates provides economic advantages, as it makes Harrisonburg readily accessible, allowing for efficient delivery of products and services.

Harrisonburg is located along the Crescent Corridor of Statewide Significance, according to VTRANS 2045 Mid-Term Needs. Interstate 81, US Route 11, the Norfolk Southern (railroad), and the Shenandoah Valley Regional Airport are the major components of this corridor. Regional networks identified in VTRANS 2045 Mid-Term Needs include all of the major and minor arterial roads in Harrisonburg and Rockingham County. As described in further detail in Chapter 6, Land Use and Development Quality, this Plan declares the entire incorporated limits of the City of Harrisonburg designated as an Urban Development Area (UDA).

Roadway (Street) Travel Characteristics

Tables 12-1 and 12-2 contain data that was generated by the Travel Demand Model used for the HRMPO Long Range Transportation Plan, and describes the use of the regional transportation system, in 2015, and the projection of use in 2040. The existing volume to capacity ratio, an indicator of roadway (street) congestion is provided as a map at the end of this chapter.

Table 12-1. Travel characteristics of the regional transportation system

Parameter	2015	2040
Population (people)[1]	81,411	110,965
Employment (jobs)	43,418	62,976
Vehicle Miles Traveled (VMT)	1,871,740	2,505,330
Vehicle Hours Traveled (VHT)	50,108	74,045
VMT per person per day	23.0	22.6
VHT per person per day	0.62	0.667

Source: *2040 Long Range Transportation Plan*, Harrisonburg-Rockingham Metropolitan Planning Organization. The population identified in the table is that of the MPO area. However, the Travel Demand Model includes traffic generated from within and outside of the MPO boundary.

Table 12-2.Regional travel mode choice

Mode Choice	2015	2040
Single Occupancy Vehicles	48.9%	48.1%
High Occupancy Vehicles	30.3%	31.6%
Transit	7.3%	7.0%
Bike/walk	13.5%	13.3%

Source: *2040 Long Range Transportation Plan*, Harrisonburg-Rockingham Metropolitan Planning Organization

The U.S. Census 2012-2016 American Community Survey estimates that 71 percent of workers in Harrisonburg drove to work alone and 13 percent carpooled. Among those who commuted to work, it took them an average of 16 minutes to get to work.

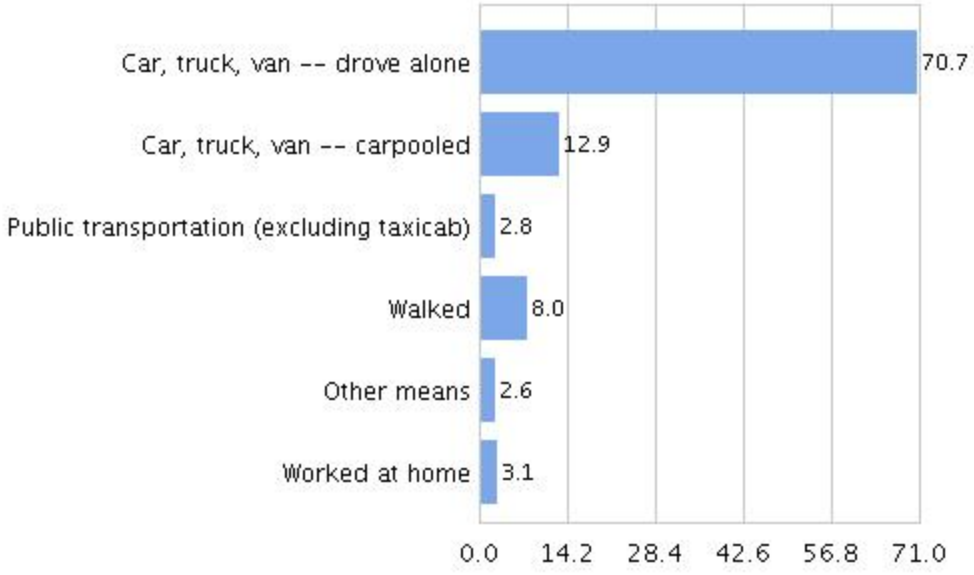

Figure 12-2. Percent of Workers 16 and over Commute by Mode, 2012-2016

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Parking

Adequate and conveniently located parking is an important component of the City's transportation network. Sufficient and well-designed public parking can assist in enhancing the City's transportation network. However, too much parking could have negative impacts such as incentivizing driving over walking, bicycling, and public transit which leads to congestion of roadways; increasing impervious surfaces, stormwater runoff, and heat island effect; and using up landarea that could have potential for other uses. The availability and location of parking also plays a role in economic viability. The Zoning Ordinance regulates the required minimum number of vehicle and bicycle parking for all new development and redevelopment.

Downtown: In the downtown area, the availability of parking is a long-standing topic of discussion for its many diverse users. Two major parking structures were built in the 1970s as economic development tools to encourage businesses to remain in the downtown area. One parking deck is located on West Water Street, the other is located on East Elizabeth Street. These parking structures are approximately 40 years old, and nearing the end of their useful service lives. The City's Capital Improvement Program calls for their replacement and expansion. The Zoning Ordinance does not require off-street parking for development or redevelopment that occurs in the B-1 Central Business District, which is what the City's downtown area is mostly zoned.

Permit Parking: By ordinance, the City has "zone parking" in designated areas, which reserves on-street parking exclusively for neighborhood property owners, tenants, and guests. To designate a street for zone parking, it must be studied and verified that 25 percent or more of cars parked on the street are nonresidents. Additionally, it is incumbent upon the residents to submit a petition of at least 50 percent of the residents to create a restricted parking zone.

James Madison University: JMU issues parking passes for a fee for the many students, faculty, and staff that commute to campus on a daily basis. A parking permit, however, does not guarantee availability of parking. Neighborhoods adjacent to the University are often attractive locations for campus-related parking. JMU's Campus Master Plan indicates the expansion of existing parking amenities and the construction of new facilities. Planning assumptions for the travel demand model (used to forecast future congestion), shown in 2040 Traffic Volume to Capacity Ratio map, include university parking forecasts, as the availability of campus-associated parking is one of the most impactful influencers of travel patterns in the City. The travel demand model used information from the JMU Campus Master Plan and included a 36 percecnt increase in JMU parking availability between 2015 and 2040. The City and JMU continue to work in collaboration to facilitate and improve the many issues associated with campus-related parking in the City.

Public Transportation

Public transportation services in the City are provided by the Harrisonburg Department of Public Transportation (HDPT), a department within the City government. HDPT operates fixed-route bus service, Americans with Disabilities Act (ADA) paratransit service, scheduled shuttles to Bridgewater and Dayton, and public school bus service. The transit system operates six year-round routes geared toward the general public (non-student population) and numerous seasonal routes during the school year geared toward the needs of JMU students.[1]

Funding for transit services is provided by the City, JMU, the Virginia Department of Rail and Public Transportation (DRPT), and the Federal Transit Administration (FTA). HDPT also generates fare revenue and has an advertising program which provides revenue as local funding. HDPT is considered a small urban 5307 property for purposes of federal funding.[2] The bus service has become an integral service to JMU, its students and staff, and helps alleviate traffic congestion. However, JMU has recently invested heavily in parking infrastructure including the development of new parking decks and the acquisition of existing parking facilities, which has contributed to increased traffic congestion on City streets. If additional apartment complexes are built farther away from JMU's campus in Rockingham County, it will be important for transit routes to be designed accordingly, making it appealing for students to ride transit versus driving to class. Expansion of public transit services in Rockingham County will require support and financial participation from the County Board of Supervisors.

The City recognizes that successful public transportation operations develop in tandem with an environment that provides effective pedestrian and bicycle infrastructure. The City also recognizes that a healthy transportation network should provide links between pedestrian and bicycle users to allow multi-modal opportunities for motor vehicle users. With this in mind, the City is committed to participating in

[1] The distinction of City routes and JMU routes relates to HDPT's contact with JMU to provided transit services geared towards JMU students. References to "City routes" and the "non-student" population are those routes not supported by the JMU contract and do not necessarily travel through the JMU campus.

[2] 5307 refers to the Urban Area Formula Funding Program (49 U.S.C. 5307) that makes federal resources available to urbanized areas and to state governors for transit capital and operating assistance in urbanized areas and for transportation-related planning. HDPT is referred to as a small urban 5307 property.

planning for a vibrant multi-modal transportation environment with the appropriate federal, state, and local authorities.

Rail Access

Class 1 freight rail service is provided by Norfolk Southern over its own rails. Class 1 freight service is typically long-haul service; there are only eight companies designated as Class I in the United States. The Shenandoah Valley Railroad runs on its own tracks southeast of Harrisonburg in Pleasant Valley to Staunton and interchanges with Norfolk Southern on the north end of the line. The Chesapeake Western Branch of Norfolk Southern is a short-line service that runs from Elkton to Harrisonburg, and from Broadway to Pleasant Valley; these two shortlines intersect in Harrisonburg. The HRMPO region has many opportunities to access rail facilities for moving freight. There are two transloading facilities on Pleasant Valley Road; one in the City, and the other in Rockingham County. Transloading facilities are used to transfer freight from one mode of transport to another and are critical to maintaining the intermodal freight network. Freight transported via semi-truck relies on local street networks to access inter-regional transportation networks, interstates, and railroads. To maintain or expand the opportunities for intermodal freight connections, it is critical to maintain industrial zoning on parcels adjacent to the railroads. These sites provide additional opportunities for developing transloading facilities and the ability to move more freight via rail.

Norfolk Southern runs along the entire length of the Crescent Corridor, an existing 2,500-mile rail network through 13 states from Louisiana to New Jersey that touches 26 percent of the nation's population and 30 percent of the nation's manufacturing output. In Virginia, the Crescent Corridor runs along the Appalachian Mountains in the western part of the state, and is generally defined by Interstate 81. It provides access to the Virginia Inland Port in Front Royal, as well as multiple junction points to other Norfolk Southern lines. The Crescent Corridor serves as a major trucking and freight corridor along the east coast. In 2010, Norfolk Southern was awarded federal funds to make improvements to the Crescent Corridor, including six projects in Virginia to ease congestion on Interstate 81 by displacing long distance freight carried by truck.

Air Transportation

The Shenandoah Valley Regional Airport (SHD), located in Weyers Cave, offers scheduled air service. In the spring of 2018, SHD contracted with United's regional partner, SkyWest. Through this service, the region's air customers now have access to United's global network of flights through two major hubs – Washington-Dulles International Airport (IAD) and Chicago O'Hare International Airport (ORD). SHD offers a number of ways to get to and from the airport, including free airport parking, a door-to-door shuttle service between the airport and locations within the region, and several rental car options operating on-site. Charlottesville Albemarle Airport (CHO) is located just over an hour from Harrisonburg and has scheduled service from five commercial carriers. Daily nonstop flights are offered to Washington Dulles, Charlotte, Atlanta, Philadelphia, New York LaGuardia, and Chicago. Two private aviation airports are located in the region; Frank Field Airport is located 4-miles northwest of the City, and Bridgewater Airpark is located south of the Town of Bridgewater.

Master Transportation Plan

The Master Transportation Plan includes the Street Improvement Plan, Transit Development Plan, Bicycle and Pedestrian Plan, and the Downtown Streetscape Plan, among other plans. The Master Transportation and its subplans establishes a vision for the future transportation network in the City.

Transit Development Plan

The Virginia Department of Rail and Public Transportation (DRTP) requires that any public transit (bus, rail, ferry) operator receiving state funding must prepare, adopt and submit a Transit Development Plan (TDP) at least every six years, with annual updates. A TDP is a short-range transit plan that outlines services that a public transit provider intends to implement during the 10-year planning period, estimates what resources will be needed, and what funding opportunities are likely to be available. Some of the issues considered by the TDP are summarized below. (Additional information and a weblink to the Harrisonburg Transit Development Plan (TDP) is available at the end of this chapter under Chapter Resources.)

Transit Operating Hours

To better meet the needs of our community members, transit service should be available to them when they most need it. The current operating hours for City routes are from approximately 7:00 a.m. until approximately 7:00 p.m. The 2017 TDP recommends scheduling improvements to add service earlier in the morning and later in the evening for City routes, Monday through Friday; to operate a full schedule on Saturday; and to add service on Sundays for City routes. The aim will be to implement additional operating hours for riders employed in industries and jobs that are not limited to traditional working hours.

James Madison University

JMU is a major generator of trips that are served by public transit. JMU has a contract with HDPT to provide a significant level of public transit services to help meet the needs of students. The FY2017-2018 contract is just over $1.64 million.

Historically, ridership associated with JMU has accounted for about 90 percent of the total system ridership. FY2016, total transit ridership was 2,807,730. The historic growth of JMU has provided a great deal of impetus for the City to grow and expand its public transit services. As described in Chapter 4, Planning Context, JMU's Fall 2017 enrollment stood at 21,836 and by 2022 the State Council for Higher Education in Virginia (SCHEV) projects a total JMU fall enrollment of 24,368, an increase of more than percent in less than five years. This growth will place a greater demand for public transit services.

Harrisonburg City Public Schools

As stated previously, HDPT provides transportation services for the city's public schools. As described in Chapter 8, Education, Workforce Development, and Lifelong Learning, Harrisonburg City Public Schools' (HCPS) enrollment at the beginning of the 2017-2018 school year was 5,886 students. During the 2017-2018 school year total school bus ridership was estimated at 746,820.[3] According to the Weldon Cooper

[3] Source: Harrisonburg Department of Public Transportation. The 2017-2018 bus ridership was estimated by using a sample week in October 2017 that coincided with a request from the Virginia Deparmtent of Education. The

Center, HCPS enrollment is projected to be 6,617 by the 2021-2022 school year, an increase of 12.4 percent in five years. This growth will require HDPT to expand service by purchasing new school buses and hiring additional drivers.

Downtown Harrisonburg

The accessibility of the many commercial, cultural, and governmental services that exist in the downtown area is important to the City. As more revitalization in the form of development and redevelopment takes place downtown, the need for public transit services will grow. The 2017 TDP recommended exploration additional routes between JMU and downtown, as well as connecting downtown locations with parking opportunities. This type of route could be helpful for event dates at JMU, where there is a significant increase in visitors and a high demand for parking at JMU and in downtown.

Transit/Transfer Station and Park-and-Ride

The 2017 TDP recommends consideration of building a bus transit/transfer station that would include a covered passenger waiting area, bicycle and pedestrian facilities and accommodations, driver restroom, and information kiosk, and also to consider a park-and-ride lot to be located and constructed in conjunction with the bus transfer station. While there are currently no park-and-ride lots in Harrisonburg, it was identified as a need in the Harrisonburg-Rockingham Long Range Transportation Plan. A park-and-ride lot would be a logical amenity to accompany the City's transit transfer station, and fill a transportation demand management (TDM)[4] gap now, and in the future. The co-location of the transit/transfer center and park-and-ride lot would also be conducive to the use of the transfer station as a stop along a future intercity bus and interregional bus stop.

Expand Services in Rockingham County

The provision of seamless transportation services for community members in the Harrisonburg urbanized area requires that the City work with Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) member localities to find ways to seamlessly offer transportation services across and between existing political boundaries. A substantial amount of development is being experienced around the eastern and southeastern City/Rockingham County boundary lines along Reservoir Road and Port Republic Street. Student housing complexes are being approved in Rockingham County close to the City/ County boundary giving rise to a greater need for expanded transit services into Rockingham County to cater to students travelling to and from JMU. Additionally, increased traffic congestion negatively impacts HDPT's on-time performance.

Sentara RMH Medical Center, located in Rockingham County, draws a large number of people from the Harrisonburg/Rockingham urbanized area and beyond. HDPT currently provides service to Sentara RMH Medical Center, however, service is limited. Public transit service for City residents to access the hospital on two routes started after Sentara RMH moved into Rockingham County. HDPT provides complimentary

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highest number of students riding buses on any given day that week, for either morning or afternoon, was 4,149 students. There are 180 days of school per year. (4,149 students x 180 days/year = 746,820 students/year.)

[4] Transportation Demand Management (TDM) is defined as a set of strategies aimed at mazimizing travel choices. Instead of focusing on infrastructure, TDM focuses on understanding how people make transportation decisions and helping people use the infrastructure in place for transit, ridesharing, walking, biking, and teleworking.

ADA paratransit service within ¾-mile of the public transit routes that travel into the County – this is federally mandated. Passengers who use the service pay $2 per trip.

In January of 2017, Rockingham County embarked on the process of adopting an urban development area (UDA) plan that will be incorporated into its. A UDA is designated by a locality in their comprehensive plan for higher density development that incorporates the principles of traditional neighborhood development (TND). Greater density and growth within the designated UDA located along City/County boundaries lends credence to a greater need for mutual understanding/agreements between the City and Rockingham County for transportation services serving community members.

Employees, patients, and visitors of Sentara RMH and County residents would benefit greatly from provision of additional public transit services between adjoining jurisdictions. To provide additional public transit services in Rockingham County, County Board of Supervisor support and financial commitments would be needed.

Street Network Planning

The Department of Public Works, with support from the Department of Planning and Community Development and the Harrisonburg Police Department, leads a number of activities that determine the evolution of the street network in the near and long term. The street network includes facilities that support motorized vehicles, as well as, bicycle and pedestrian facilities.

Long-range planning: In addition to the Street Improvement Plan, which is a component of the Comprehensive Plan, the City also adopts and implements the Bicycle and Pedestrian Plan and the Downtown Streetscape Plan, among others. Collectively, these plans are referred to as being part of the City's Master Transportation Plan. These plans can be found on the City website and in Chapter Resources at the end of this chapter.

Development review: City staff reviews engineered comprehensive site plans for new developments for consistency with the criteria required by the City's Design and Construction Standards Manual (DCSM), VDOT, and Federal Highway Administration (FHWA) standards. Streets must meet these standards to be accepted by the City for future operation and maintenance. Staff also may require any new development that meets criteria thresholds generating particular increases in vehicle trips to prepare and submit a traffic impact analysis (TIA) for review. This document provides traffic mitigation measures due to the impact of the new development on the City's existing street network.

Neighborhood Traffic Calming Program (NTCP): The Department of Public Works and the Harrisonburg Police Department jointly administers the City-adopted Neighborhood Traffic Calming Program. The typical 25 mile/hour neighborhood speed limit allows for safe sharing of public space between motorist, bicycles, and pedestrians. However, average speeds through some neighborhoods exceed this limit, causing safety concerns. The program applies a phased approach of community awareness, motorist education, enforcement, and physical design elements to reduce traffic speeds and restore public safety. This program requires significant participation from the neighborhood residents. Five City neighborhoods

have enrolled in this program since its inception in 2002. More about this program can be found on the City website.

Transportation Safety & Advisory Commission: The Department of Public Works facilitates this Council-appointed Commission and its Bicycle and Pedestrian Subcommittee to review and recommend solutions to issues related to traffic safety in the City. Recommendations for improvements are typically directed to the Department of Public Works and are funded through the department's operating budget; larger projects may be incorporated into the Capital Improvement Program. In 2010, the Bicycle & Pedestrian Subcommittee was established by the Commission following City Council action to formally add bicycle and pedestrian matters as an additional area of responsibility of the Commission.

Funding for Maintenance and Construction of Streets

In the Commonwealth of Virginia, any town or city with a population of 3,500 or greater is responsible for maintaining their own transportation facilities. The City receives funds for maintenance through the VDOT Highway Maintenance Account, which is a state funded program that appropriates funds based on moving lane miles within the locality. The City receives funds for construction through various programs and grants made available by VDOT; however, all of those funds are appropriated through competitive application processes.

Maintenance Funding: The maintenance funding received by the City can only be used for eligible maintenance activities on existing transportation infrastructure within the City. Eligible maintenance activities include repaving roadways, curb and gutter and sidewalk repair/replacement, traffic signals, pavement markings, street signage, brush cutting, bridge maintenance, and other activities. Funding levels for the VDOT Highway Maintenance Account are set by the Commonwealth Transportation Board (CTB), which is a state board appointed by the Governor, and has historically increased at a rate equal to the yearly Consumer Price Index. Those funds are then appropriated to each locality based on the number moving lane miles of arterial and local/collector Streets. In FY2016-2017 the City received $4.8 million from the Highway Maintenance Account. The City has historically contributed additional funds for the maintenance of the transportation system.

Construction Funding: The process by which the City receives construction funding has dramatically changed over the past four years. Previously, the City was allocated funds through the Urban Construction Funding program. In 2015, that program was removed and replaced with the Smart Scale program, which was established as a means of increasing the transparency of transportation funding decisions made by CTB. The Smart Scale program is a competitive grant program that prioritizes transportation projects for funding based on their value in addressing the most critical regional and state-wide transportation needs.

In addition to the Smart Scale program, the City is eligible to apply for various other competitive VDOT grants that can be utilized for transportation projects including Revenue Sharing, the Transportation Alternatives Program, the Highway Safety Improvement Program, and others.

The City has developed its transportation construction and maintenance program based on a three-pronged approach that includes federal, state, and local funds. City leadership recognizes that it can utilize federal and state dollars to advance projects, but that significant local financial contributions are

necessary to deliver timely transportation improvements. As competition increases for the limited federal and state dollars available, increased planning and foresight will be required to ensure the City's success in obtaining grant funds.

Street Improvement Plan

As previously discussed, the Street Improvement Plan (SIP), is one component of the Master Transportation Plan. The SIP project descriptions in

Table 12-3 and map (at the end of this chapter) identify transportation infrastructure improvements that the City may pursued to address safety, congestion, bicycle and pedestrian needs, and new development. The SIP is also a tool that provides an oppprtunity for the City to engage with private entities, such as developers, industry, and institutions, to share the responsibility of evolving the transportation network.

The Street Improvement Plan continues to include project priorities found in the HRMPO Long Range Transportation Plan, those that support the goals and objectives of VTRANS 2045 Mid-Term Needs, and projects that improve the local network, based on the goals and objectives established in this chapter.

Planning Process

To prepare the SIP, city staff created Volume to Capacity (V/C) maps for 2017 and 2040, using the regional travel demand model completed by the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO)'s Long Range Transportation Plan, amended in 2018. V/C is a measurement of the operating capacity of a roadway where the number of vehicles passing through is divided by the number of vehicles that could theoretically pass through when at capacity. Streets with a V/C ratio between 0.8 – 1.0 are considered congested, and streets with a V/C ratio great than 1.0 are considered over capacity. The travel demand model used to create the V/C maps used various planning assumption inputs to forecast traffic volumes on City streets in the year 2040. Among these assumptions were the future land use locations (found in the Land Use Guide map and descriptions in Chapter 6, Land Use and Development), population and employment growth, and regional development trends, all of which affect trip generation and distribution.

Streets with a forecasted V/C greater than 0.8 were considered deficient for the purpose of developing the SIP. The 2017 and 2040 Volume to Capacity (V/C) maps are available at the end of this chapter. The travel demand model analyzes the transportation network as a system, and is not capable of localized analysis of deficiencies. Staff's knowledge of known and anticipated localized deficiencies throughout the network was also utilized in developing the SIP. Another item of importance that was used to determine appropriate projects for inclusion in the SIP was traffic safety. A map of locations that have potential for safety improvements can be found at the end of this chapter. Finally, bicycle and pedestrian needs, and network connectivity were also considered in developing the SIP, as strategies to reduce vehicle miles traveled, thus reducing demand on the transportation network. Bicycle and pedestrian facilities to accompany street improvements are included here, in the SIP, and stand-alone bicycle and pedestrian improvements can be found in the City's Bicycle and Pedestrian Plan, a component of the City's Master Transportation Plan.

The 2011 SIP list was compared to these deficiencies and it was determined that it includes proposed projects to address many of the segments predicted to be congested by 2040. Staff identified additional projects for segments predicted to become congested that were not addressed by projects in the 2011 SIP and address operational deficiencies and improve safety. Additionally, the city has partnered with VDOT and the HRMPO to complete multiple small area studies and STARS (Strategically Targeted and Affordable Roadway Solutions) studies. The projects recommended by these studies to improve traffic operations, congestion, and safety have been included in the SIP. Capacity challenges on segments for which an improvement is not identified in the SIP can be assumed to be managed through transportation demand management strategies found in the objectives and strategies of this chapter. Updated project cost estimates were developed as part of this process, using the VDOT Planning Cost Estimating System.

Additional projects are included in the SIP beyond those which are intended to mitigate congestion and operational deficiencies. As noted in the SIP map, the Plan includes several streets that are intended to be built only when a property is developed. These are identified in the plan so that the City and developers have a point from which to begin discussion on street accommodations for new development. There are also projects of a more regional nature identified in the SIP. The City will coordinate with Rockingham County and VDOT on these projects to facilitate regional movement of traffic, which will also serve to manage congestion on through-routes in the City. Projects shown on the map that are outside of the City boundary are also included in the Harrisonburg-Rockingham Metropolitan Planning Organization's Long Range Transportation Plan (LRTP). The LRTP is the regional transportation plan and is discussed earlier in this chapter.

Project List

Projects identified in the SIP are grouped in

Table 12-3 and the Street Improvement Plan map by location within one of four quadrants (Northwest, Northeast, Southeast, and Southwest) of the City divided by Main Street and Market Street. Additionally, each project identifies which transportation need or needs it is intended to address, as represented by the following icons:

Safety Improvement

Congestion mitigation/ Alternative route

Bicycle & Pedestrian Improvement

New Development/ Connectivity

Street improvements in the SIP map are color coded as:

- Intersection Improvement – a new or modified intersection control is proposed at an existing intersection.
- New Intersection – an intersection is proposed where one does not currently exist.
- Intersection removal – to eliminate an existing intersection by removing the connection between the two streets, such as by building a cul-de-sac at the end of a currently connected street.

- Improvement on Existing Street Alignment – Street improvements are planned to be made along, adjacent to, and/or at one or more points on the existing street. Private developments are required by the Design and Construction Standards Manual (DCSM) to make improvements to the street in front of their property at the time of development, which contributes to the process of achieving the vision for the particular street, as described in the Street Improvement Plan. Improvements required by developing properties can include right-of-way dedication, as well as, construction of sidewalks, curb and gutter, and street widening.
- New Street Alignment – A street is planned to be built at a new location where no street currently exists. Lines on the map do not necessarily represent actual alignments. Some of the new streets identified will serve new development. These street alignments will be determined when the layout of the development is planned.
- Street removal – the physical elimination of a street or segment of a street. This would occur only when there has been a reconfiguration of traffic patterns, and the segment to be removed is in conflict with the new pattern and/or the segment to be removed no longer severs a purpose.

Table 12-3. Street Improvement Plan Project List

Cost estimates provided in
Table 12-3 are at 2019 levels using an average cost from VDOT's Planning Cost Estimate spreadsheet.

Northwest Quadrant

NW-1	**Northwest Connector.** Construct new limited-access two-lane road with sidewalks and bicycle lanes from Garbers Church Road at West Market Street to Interstate 81 Exit 251 in Rockingham County. Note: cost estimate provided is for improvements within City limits only.	$ 5,600,000
NW-2	**Mount Clinton Pike from Proposed Northwest Connector to College Avenue.** Widen the road to three lanes to provide access management with sidewalks and bicycle lanes. Note: cost estimate provided is for improvements within City limits.	$ 3,400,000
NW-3	**Mount Clinton Pike from College Avenue to Virginia Avenue.** Widen the road to three lanes with sidewalk on one side, a shared use path on the other side, and a roundabout to connect Park Road and Chicago Avenue.	$ 11,600,000
NW-4	**Mount Clinton Pike to Acorn Drive Connector.** Construct new two-lane road with sidewalks from Mount Clinton Pike to Acorn Drive.	$ 5,300,000
NW-5	**Acorn Drive to Friendship Drive Connector.** Construct new two-lane road with sidewalks from Acorn Drive to Friendship Drive in Rockingham County. Note: cost estimate provided is for improvements within City limits.	$ 2,900,000
NW-6	**Intersection Improvement at Virginia Avenue and Acorn Drive.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement.	$ 500,000
NW-7	**Intersection Improvement at Liberty Street and Acorn Drive.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement..	$ 500,000

NW-8	**Parkwood Drive from Park Road to Virginia Avenue.** Widen the road to three lanes with sidewalks and bike lanes.	$ 5,800,000
NW-9	**Summit Avenue to West Market Street Connections.** Construct new two-lane roads with sidewalks from Summit Avenue, Hillside Avenue, and College Avenue to West Market Street. Construct new roadway connection to Waterman Drive.	$ 12,800,000
NW-10	**Chicago Avenue from Mount Clinton Pike to West Gay Street.** Widen the road to three lanes with sidewalk on one side and a shared use path on the other side.	$ 19,300,000
NW-11	**Intersection Improvement at Chicago Avenue and Waterman Drive.** Construct a roundabout.	$ 2,700,000
NW-12	**Virginia Avenue from West Gay Street to 5th Street.** Widen the road to four lanes with sidewalks. Remove on-street parking, improve the parallel alleyways, and replace the storm drain system.	$ 25,000,000
NW-13	**Intersection Improvement at Virginia Avenue/North High Street and West Gay Street.** Widen the intersection to accommodate northbound truck traffic turning onto West Gay Street and extend the westbound left turn lane.	$ 900,000
NW-14	**North Liberty Street from Edom Road to North City Limits.** Widen the road to three lanes with sidewalk on one side and a shared use path on the other side.	$ 21,200,000
NW-15	**Acorn Drive to City limit between North Liberty Street and Mount Clinton Pike.** Construct two-lane roadway with sidewalk on both sides.	$2,000,000
NW-16	**Intersection Improvement at Mount Clinton Pike and Technology Drive.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement.	$ 500,000
NW-17	**Intersection Improvement at Mount Clinton Pike and Acorn Drive.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement.	$ 500,000

Northeast Quadrant

NE-1	**North Main Street from Noll Drive to Charles Street.** Widen the road to three lanes with sidewalks and bicycle lanes. Remove on-street parking.	$ 1,100,000
NE-2	**North Main Street from Charles Street to Mount Clinton Pike.** Widen the road to three lanes with sidewalk and bicycle lanes.	$ 1,200,000
NE-3	**North Main Street to Smithland Road Connector.** Construct new 4-lane divided road with sidewalk on one side and a shared use path on the other side. Note: cost estimate provided is for improvements within City limits.	$ 12,100,000
NE-4	**Interchange at Interstate 81 and Smithland Road.** Construct new interchange at Interstate 81 and Smithland Road/Buffalo Drive.	$ 93,000,000

NE-5	**Smithland Road from Old Furnace Road to Linda Lane.** Widen the road to four lanes, divided, sidewalk on one side, and a shared use path on the other side.	$ 28,200,000
NE-6	**Old Furnace Road from Vine Street to Smithland Road.** Widen the road to three lanes with sidewalk on one side and a shared use path on the other side.	$ 16,700,000
NE-7	**Old Furnace Road @ Smithland Road to Research Drive Connector.** Construct 4-lane divided limited access major collector with center median, sidewalk one side and shared use path on the other. Note: cost estimate provided is for improvements within City limits.	$ 2,145,000
NE-8	**Intersection Improvement at East Washington Street and Vine Street.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement. Widen East Washington Street to three lanes at the intersection to include a left turn lane.	$ 1,700,000
NE-9	**(Reserved.)**	
NE-10	**Keezletown Road from Country Club Road to East City Limits.** Reconstruct Keezletown Road to include curb and gutter, sidewalks, and bicycle lanes.	$ 11,000,000
NE-11	**Intersection Improvement at Keezletown Road and Country Club Road.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement..	$ 500,000
NE-12	**East Market Street from Interstate 81 to Carlton Street.** Widen each direction to three travel lanes with sidewalks. Reconstruct the bridges over the railroad tracks. Bridges funded (See VDOT Six Year Improvement Program).	$ 52,000,000
NE-13	**Interchange Improvements at Interstate 81 and East Market Street:** Realignment and signalization of NB on- and off-ramps of Exit 247 at East Market Street, and channelization of dual left turn lanes onto Linda Lane. Not yet funded: Realignment of southbound off-ramp to lengthen merge area onto East Market Street; median shared use path through interchange on Eeast Market Street (Linda Lane/Burgess Road to Martin Luther King Jr Way). Funded project (See VDOT Six Year Improvement Program).	$ 6,700,000 $ 7,600,000
NE-14	**East Market Street from East City Limits to Country Club Road.** Widen the westbound lanes to three lanes with a shared use path.	$ 13,800,000
NE-15	**East Market Street Safety Improvements between University Boulevard and Chestnut Ridge Drive.** Redesign crossovers from private entrances at two locations to reduce motor vehicle conflicts and improve turning lanes.	$ 2,500,000
NE-16	**Country Club Road from East Market Street to Interstate 81.** Widen the road to three lanes with sidewalk on one side and a shared use path on the other side.	$ 20,300,000
NE-17	**Country Club Road from Interstate 81 to Vine Street and Martin Luther King Jr Way Connector, and Associated Intersection Improvement.** Widen Country Club Road to three lanes with sidewalk on one side and a shared use path on the other side (I-81 to proposed intersection with Martin Luther King Jr Way extension). Construct new three lane road extension of Martin Luther King Jr Way from East Market Street to Country Club Road, with sidewalk on one side and a shared use path on the other side. Construct transit transfer center and	$ 14,200,000

	park and ride lot near to East Market Street and I-81 interchange, accessed by Martin Luther King Jr Way extension. Install traffic signal at intersection of Country Club Road and Martin Luther King Jr Way extension. Note: estimate includes road improvements, only. See Transit Development Plan for transit center information.)	
NE-18	**Linda Lane from East Market Street to Country Club Road.** Widen the road to five lanes with sidewalk on one side and a shared use path on the other side.	$ 8,300,000
NE-19	**East Market Street from Mason Street to Reservoir Street** - Reduce to a two-lane street with median, left turn lanes at public streets, and bike lanes. Convert the signalized intersection of East Market Street & Mason Street to a roundabout. See also SE-36.	$7,219,800
NE-20	**Smithland Road, Linda Lane, Keezletown Road connections.** Construct two-lane roadway with sidewalks on both sides.	$ 13,900,000
NE-21	**Linda Lane street connection and intersection modification/removal.** Eliminate eastbound left turns at intersection of frontage road and Linda Lane. Modify traffic signal to serve southbound traffic, only. Long-term: new street connection to Linda Lane, further north on Linda Lane, to replace the parcel access currently provided by the frontage road that connects to Linda Lane in the functional area of the Linda Lane/East Market Street signalized intersection. Remove the frontage road intersection, including traffic signal.	$ 1,200,000
NE-22	**Intersection Improvements at Vine Street, East Market Street, and Country Club Road.** Change median location to run from East Market Street through Country Club Road. Reconfigure left turn lanes on westbound Vine Street approach. Replace traffic signal at Vine Street/Country Club Road intersection with a right-in, right-out configuration on northbound Country Club Road approach.	$570,500

Southeast Quadrant

SE-1	**South Carlton Street from Reservoir Street to East Market Street.** Widen the road to three lanes with sidewalks.	$ 3,300,000
SE-2	**Norwood Street to East Market Street Connections.** Construct new two-lane road with sidewalks from Norwood Street and Franklin Street to East Market Street at Old Furnace Road.	$ 3,500,000
SE-3	**Reservoir Street from E Market Street to Martin Luther King Jr Way.** Widen the road to include bicycle lanes and sidewalks on each side.	$ 6,700,000
SE-4	**Intersection Improvement at Reservoir Street and Martin Luther King Jr Way.** Widen the eastbound leg of Martin Luther King Jr Way and the northbound leg of Reservoir Street to five lanes. Eastbound Martin Luther King Jr Way will have two through lanes and one right turn lane at the intersection. Northbound Reservoir Street will have one through lane and two left turn lanes at the intersection.	$ 3,200,000
SE-5	**Intersection Improvement at Ridgeville Lane and Foley Road.**	$ 1,200,000

SE-6	**Neff Avenue from Port Republic Road to Sunchase Court.** Widen the road to four lanes with a median, sidewalk on one side, and a shared use path on the other side.	$ 22,200,000
SE-7	**Port Republic Road from South Main Street to Devon Lane.** Construct a median island and turn lanes to provide access management. Reconstruct sidewalk on one side and a shared use path on the other side.	$ 28,800,000
SE-8	**Maplehurst Avenue to Harrison Street Connector, Intersection Improvement at South Main Street and East Fairview Drive, and South Main Street Turn Lane Extension.** Construct new two-lane road with sidewalks. Reconfigure East Fairview Drive to "right-in/right-out" only (ultimately, remove East and West Fairview Drive connections to South Main Street). Widen South Main Street to extend the southbound left turn lanes.	$ 2,800,000
SE-9	**Intersection Improvement at South Main Street and South Avenue.** Widen South Avenue to three lanes at the intersection to include a left turn lane.	$ 700,000
SE-10	**Skylark Lane to Port Republic Road Connector.** Construct new two-lane road with sidewalks from Skylark Lane to Port Republic Road at Westmoreland Drive and from Decca Drive to Port Republic Road at Nelson Drive.	$ 6,400,000
SE-11	**Peach Grove Avenue to Greendale Road Connector.** Construct new four-lane road with wide shoulders from Ridgedale/Greendale road to Stone Spring Road.	In Rockingham County
SE-12	**Devon Lane to Leland Circle Connector.** Construct new two-lane road with sidewalks from Devon Lane to Leland Circle.	$ 2,800,000
SE-13	**Mineral Springs Road to Stone Spring Road Connector.** Construct new two-lane road with sidewalks from Mineral Springs Road to Stone Spring Road.	$ 3,600,000
SE-14	**South Main Street from Interstate 81 to Route 704/Cecil Wampler Road.** Widen road to four lanes with a median, sidewalks, and bicycle lanes. Note: cost estimate provided is for improvements within City limits. Note: County portion is funded in VDOT Six Year Improvement Plan.	$ 28,000,000
SE-15	**East Kaylor Park Drive to Boxwood Court Connector.** Construct new two-lane road with sidewalks from East Kaylor Park Drive to Boxwood Court. Realign Boxwood Court to meet Pointe Drive at South Main Street.	$ 10,100,000
SE-16	**Pleasant Valley Road from South Main Street to South City Limits.** Widen the road to three lanes with sidewalks and bicycle lanes.	$ 23,800,000
SE-17	**Greendale Road to Early Road Connector.** Construct new two-lane road with sidewalks from Greendale Road to Early Road.	$ 16,400,000
SE-18	**Willow Springs Road to Route 704/Pleasant Valley Road Connector.** Construct new two-lane road with sidewalks from Willow Springs Road to Route 704/Pleasant Valley Road in Rockingham County. Note: cost estimate provided is for improvements within City limits.	$ 2,200,000

SE-19	**Interchange Improvements at Interstate 81 and South Main Street.** Capacity and safety improvements. Long-term: reconstruct Exit 243.	$ 60,000,000
SE-20	**Southern Connector.** Construct new limited-access four-lane road with sidewalks from the proposed Southwestern Connector in Rockingham County to Route 704/Pleasant Valley Road in Rockingham County. Note: cost estimate provided is for improvements within City limits. Two alternative routes are proposed.	$ 32,000,000
SE-21	**University Boulevard, East Market Street to Reservoir Street.** Convert from four lanes to two through lanes and a center turn lane. Add sidewalks and bike lanes on both sides. Funded project (See VDOT Six Year Improvement Program).	$ 1,100,000
SE-22	**Evelyn Byrd Avenue, East Market Street to Reservoir Street.** Convert from four lanes to two through lanes and a center turn lane. Add sidewalks and bike lanes on both sides. Funded project (See VDOT Six Year Improvement Program).	$ 2,000,000
SE-23	Reserved.	
SE-24	Reserved.	
SE-25	**Martin Luther King Jr. Way turn-lane.** Widen road to 5 lanes from 300' west of Ott Street to 150' east of Ott Street to provide a dedicated left turn lane at Ott Street intersection.	$ 6,725,000
SE-26	**Intersection Improvement at Stone Spring Road and Ramblewood Road.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement.	$ 500,000
SE-27	**Intersection Improvement at University Boulevard and Deyerle Avenue.** Install a new intersection treatment to address safety, when future traffic volumes/conflicts warrant an improvement.	$ 500,000
SE-28	**South Main Street between Mosby Road and Stone Spring Road/Erickson Avenue.** Add median.	$1,800,000
SE-29	**Intersection Improvement at Port Republic Road and Bradley Drive.** Install traffic signal.	$600,000
SE-30	**Intersection Improvement at Evelyn Byrd Avenue and East Market Street.** Reconfigure to Continuous Green-T intersection.	$961,000
SE-31	**Intersection Improvement at Port Republic Road and Forest Hill Road.** Widen Port Republic Road to include a westbound right turn lane.	$440,000
SE-32	**Intersection Improvement at Devon Lane and Port Republic Road.** Reconfigure the northbound approach of Devon Lane to include one left turn lane, one through lane and one right turn lane. Widen the southbound approach to include one left turn lane, one through lane and one right turn lane.	$672,500
SE-33	**Intersection Improvement at Port Republic Road and Bluestone Drive.** Construct pedestrian overpass over Port Republic Road, aligned with the Bluestone Trail.	$4,221,000

SE-34	**Interchange Improvement at I-81 Exit 245 Southbound Off-ramp.** Capacity and saftey improvement. Widen ramp to extend the left and right turn lanes.	$765,000
SE-35	**Intersection Improvement at Stone Spring Road/Erickson Avenue and South Main Street.** Construct quadrant roadway connecting the west and north legs of the intersection.	$6,400,000
SE-36	**South Mason Street between East Market Street and East Water Street.** Convert the northbound approach to two travel lanes (one left/through and one through/right) for the full length of the block, when warranted, prior to the implementation of NE-19.	Negligable
SE-37	**Burgess Road between East Market Street and 1600 block of East Market Street.** Install median and delineate turn lanes on segment.	$500,000
SE-38	**Intersection Improvement at Hunters Road and Port Republic Road.** Install a right-in, right-out channelizing island to eliminate left turns.	$1,500
SE-39	**University Boulevard from old Convocation Center parking lot to Forest Hill Road/Oak Hill Drive intersection.** Realign University Boulevard to more directly connect to Forest Hill Drive. Add shared use path from Port Republic Road to Carrier Drive on west/north side, and sidewalk on south side from Oak Hill Drive to Arboretum.	$9,500,000

Southwest Quadrant

SW-1	**Erickson Avenue Phase IV.** Widen the road to five lanes with sidewalks and bicycle lanes from end of Phase III near South High Street intersection to west city limits. Intersection improvements at Garbers Church Road, in the interim. Rockingham County portion (west city limits to Route 33), add bicycle lanes.	$ 7,000,000
SW-2	**(Reserved.)**	
SW-3	**Garbers Church Road to West Kaylor Park Drive Connector.** See Harrisonburg-Rockingham Long Range Transportation Plan.	In Rockingham County
SW-4	**Peoples Drive to Tasha Circle Connector.** Construct new two-lane road with sidewalk from Peoples Drive to Baxter Drive.	$ 2,000,000
SW-5	**Carpenter Lane Realignment.** Realign Carpenter Lane to meet Pike Church Road at South Main Street.	$ 1,500,000
SW-6	**(Reserved.)**	
SW-7	**Hidden Creek Lane to Garbers Church Road and Erickson Avenue Connectors.** Construct new two-lane roads with sidewalks from Hidden Creek Lane to Garbers Church Road and Erickson Avenue.	$ 6,100,000
SW-8	**Willow Hill Drive to Pleasant Hill Road Connector.** Construct new two-lane road with sidewalks from Willow Hill Drive to Pleasant Hill Road.	$ 2,700,000
SW-9	**Neyland Drive to Wyndham Drive Connector.** Construct new two-lane road with sidewalks from Neyland Drive to Wyndham Drive.	$ 2,400,000
SW-10	**Intersection Improvement at Garbers Church Road and Bluestone Elementary School.** Install a new intersection treatment to address safety.	$ 500,000

SW-11	**Intersection Improvement at Pear Street and Erickson Avenue.** Install modified Restricted Crossing U-turn.	$1,851,000

Other

O-1	**Interstate 81 from South City Limits to North City Limits.** Widen the interstate to six or more lanes, reconstruct Buffalo Drive, and reconstruct Exit 251 in Rockingham County. Widening funded (See VDOT Six Year Improvement Program).
O-2	**Railroad Relocation.** Relocate the Norfolk Southern Railroad from within City limits to Rockingham County.

Project Prioritization

The City did not prioiritize projects in the SIP. Instead the City will utilize the HRMPO's adopted Long Range Transportation Plan (LRTP) to represent priority projects. The HRMPO's prioritization process scored a limited number of projects based on their performance in the categories found below. These performance measures are the criteria used to measure a project's worthiness of state and federal funding. As such, the prioritized projects found in the LRTP serves as a guide for projects the City is likely to pursue in the near term. However, exclusion from the prioritized LRTP list does not mean a project is not a priority. Other projects may still be near term, but require a greater share of local funding in order to be constructed. Performance measures used to prioritize the LRTP project list include:

- Safety – Reduction in injury and fatal crashes
- Accessibility – distance to disadvantaged populations; inclusion of multimodal enhancement
- Economic Development – Distance to a job growth area; enhancement of freight movement
- Congestion Reduction – Reduction in vehicle hours traveled per capita
- Environment – Impact to natural and cultural resources
- Land Use – Reduction of vehicle miles traveled per capita

City Gateways

Gateways into the City are identified on the Gateways and Corridor Enhancement Areas map at the end of this chapter. Gateways serve as the community's front door, establishing first impressions and reinforcing images and perceptions of Harrisonburg's character, quality of life, and vitality. The Plan recommends that the City should prepare an evaluation of the visual quality and entry experience at each gateway and plan for appropriate improvements. Such improvements could include updated entry signage, landscape plantings, screening of unsightly views, and new development and redevelopment recommendations.

Primary gateways are identified at the City's interstate interchanges. Secondary gateways are found at major secondary road corridor entrances, the entrances for Route 33 (Market Street), Route 11 (Main Street), Route 42 (High Street and Virginia Avenue), Route 253 (Port Republic Road), Route 710 (Reservoir Street) and Route 280 (Erickson Avenue and Stone Spring Road).

Corridor Enhancement Areas

The Gateways and Corridor Enhancement Areas map highlights the important local and regional travel routes into and throughout the City, many of which are commercial destinations. Their quality and character strongly influence the City's accessibility, attractiveness, and economic vitality. The Plan recommends that a special study of each corridor enhancement area be carried out to address issues such as land use and design quality; streetscape improvements; vehicle, pedestrian, and bicycle circulation; access management; development, redevelopment and reuse opportunities; conservation of special features; improvements to utilities and public facilities; and signage. The Potential Small Area Plans map in Chapter 15, Revitalization, roughly identifies sections of street corridors that could be prioritized for study first. Actual boundaries for study will be identified at a future time in further consultation with community members.

Transportation Goals, Objectives, and Strategies

Goal 13. To develop and maintain a safe and convenient transportation system serving all modes of travel, including driving, walking, biking, and taking public transportation.

Objective 13.1 To improve the ability of people and goods to move efficiently and safely throughout the City, while considering existing and future needs of people and planned land uses.

Strategy 13.1.1 To coordinate and implement the recommendations of the City's Master Transportation Plan and the transportation plans of the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO), Central Shenandoah Planning District Commission (CSPDC), the Virginia Department of Transportation (VDOT), Rockingham County, and James Madison University (JMU).

Strategy 13.1.2 To plan and design for "complete streets" to serve all users of the transportation system, including drivers, bicyclists, pedestrians, and public transportation users, on all new street and street improvement projects. A complete streets policy may be explored.

Strategy 13.1.3 To update the Subdivision Ordinance and Design and Construction Standards Manual (DCSM), as necessary, to ensure that transportation infrastructure built by the City and private developers meets quality and safety standards. Standards should be updated or developed for the following: interconnectivity of the public and private street system; access management that balances the need for entrances to businesses with safe and efficient management of traffic; street widths to adequately handle projected traffic volumes while avoiding excessive pavement widths; on and off-street parking strategies; accommodations for public transit such as bus shelters and bus pull offs; and bicycle and pedestrian facilities.

Strategy 13.1.4 To develop pedestrian and bicycle-friendly environments in the City that connect residential neighborhoods to community facilities, to commercial areas and employment centers, and that connect residential neighborhoods to each other, to promote a healthier community.

Strategy 13.1.5 To continue to implement measures to expand the network of pedestrian infrastructure (sidewalks and shared use paths) so that all streets will have pedestrian accommodations on both sides of the street.

Strategy 13.1.6 To continue to ensure that all new public sidewalks and sidewalk repairs meet the Americans with Disabilities Act (ADA) accessibility standards, as required, and to promote private development projects connecting to sidewalks to also meet ADA accessibility standards.

Strategy 13.1.7 To provide design features on roadways, where appropriate, such as street trees within buffers and medians, street furniture and sidewalk widths that improve the safety and comfort level of all users and to contribute to the City's environmental goals.

Strategy 13.1.8 To incorporate traffic calming measures in neighborhoods, near schools and universities, and other appropriate areas to discourage speeding and improve safety for all travelers.

Strategy 13.1.9 To seek to reduce conflicts between street and railroad operations.

Strategy 13.1.10 To assess and improve the transportation impacts of both public and private development and redevelopment projects by continuing to require traffic impact studies with rezonings, special use permits, preliminary plats, and engineered comprehensive site plans, as appropriate.

Strategy 13.1.11 To consider ways to reduce traffic congestion, including but not limited to, expanding public transportation service, integrating optimized traffic signal timings, re-marking travel lanes on streets, constructing bicycle and pedestrian infrastructure, and promoting ridesharing.

Strategy 13.1.12 To install and maintain broadband connections to all traffic signal systems to allow real-time traffic monitoring and the expansion of the current traffic management system, which provides for signal coordination and improved traffic flow.

Strategy 13.1.13 To maintain and rehabilitate bridges, as needed, to maximize the life of the structures.

Strategy 13.1.14 To resurface pavement as necessary to obtain maximum substructure life for streets, shared use paths, and sidewalks.

Strategy 13.1.15 To maintain storm drainage facilities to ensure protection of transportation facilities from flooding, erosion, undermining, and to protect water quality.

Objective 13.2 To increase opportunities for alternative modes of transportation (such as walking, bicycling, public transportation, and ridesharing) and to reduce motorized traffic demand on City streets.

Strategy 13.2.1 To promote mixed use neighborhoods as recommended by the Land Use Guide so that people can easily walk, bike, or take public transportation to work, shopping, schools, places of worship, and for recreation.

Strategy 13.2.2 To encourage the construction of non-motorized connectivity between existing and new developments if street connections do not exist.

Strategy 13.2.3 To implement the vision, goals, objectives, and recommendations of the City's Bicycle & Pedestrian Plan.

Strategy 13.2.4 To establish a community bike share program.

Strategy 13.2.5 To implement long-term bicycle parking requirements for new developments and redevelopment, as appropriate.

Strategy 13.2.6 To seek conversion of the easternmost line of the Norfolk Southern railroad system in Harrisonburg to a rail-trail. This would include planning and supporting the relocation of the rail line's access to the northern boundary of the City as described in the City's Street Improvement Plan and Bicycle & Pedestrian Plan.

Strategy 13.2.7 To promote Bike Month, Bike to School Day, Bike to Work Day, Walk to School Day, and other similar events that promote biking and walking.

Strategy 13.2.8 To work with Harrisonburg City Public Schools to promote school buses, walking, and bicycling as primary forms of transportation to school rather than private vehicles.

Strategy 13.2.9 To work with local employers to provide incentives to employees to travel to work by walking, bicycling, taking public transportation, or ridesharing. An example incentive program is "guaranteed ride home" provided by the Rideshare Program.

Strategy 13.2.10 To promote ridesharing by providing commuter parking options, such as park-and-ride lots that are strategically located in proximity to major

employers and are connected to public transit and walking and biking infrastructure. See related Strategy 13.4.4.

Strategy 13.2.11 To establish wayfinding signage for bicyclists and pedestrians.

Strategy 13.2.12 To construct a dedicated transfer station to accommodate a sufficient number of buses. Transfer locations may also serve as a hub for multi-modal transportation operations by containing accommodations for bicycling, walking, and ridesharing. See related Strategy 13.3.4.

Strategy 13.2.13 To explore the creation of dedicated public transit bus-ways on appropriate corridors to remove public transit buses from mixed traffic conditions in order to improve efficiency.

Strategy 13.2.14 To continue to support an electronic system that allows public transit customers to receive real-time bus arrival estimates at bus stops for transit services.

Strategy 13.2.15 To continue to review and improve City bus routes and schedules to serve residential areas and major destinations (such as universities, medical centers, major employment sites, shopping centers, and downtown).

Strategy 13.2.16 To continue to grow public transit operations to keep pace with the increased demand stemming from population growth, development in the City and growth of James Madison University.

Strategy 13.2.17 To expand opportunities for reductions in parking requirements for development projects designed to take advantage of public transit and for mixed use developments where shared parking is feasible. Repeated in Chapter 6, Land Use and Development Quality as Strategy 4.4.2.

Strategy 13.2.18 To encourage developers of new development and redevelopment projects, employers, and others to offer showers and locker rooms to encourage people to commute to work by bicycle and to exercise during breaks.

Strategy 13.2.19 To continue implementing measures to receive the City's designation as a Bicycle Friendly Community.

Strategy 13.2.20 To implement the goals, objectives, and recommendations of the Transit Development Plan (TDP).

Strategy 13.2.21 To continue to install bus shelters and benches at high volume bus stops.

Strategy 13.2.22 To seek improvement of public transit and paratransit services for the elderly and persons with disabilities.

Objective 13.3 To improve or create new regional public transit services.

Strategy 13.3.1 To work with surrounding localities such as Rockingham County and the Towns of Bridgewater, Dayton, and Mount Crawford to offer transportation services across and between jurisdictions.

Strategy 13.3.2 To promote the development of a shuttle service from the City to the Shenandoah Valley Regional Airport in Weyers Cave, Virginia.

Strategy 13.3.3 To continue to monitor the need and explore the feasibility of implementing public transit services in the Interstate 81 and 64 corridors to connect the Cities of Harrisonburg, Staunton, Waynesboro, Charlottesville, and surrounding counties.

Strategy 13.3.4 To promote park-and-ride lots that are strategically located with access to Interstate 81. See related Strategy 13.2.12.

Chapter Resources

City of Harrisonburg, Bicycle and Pedestrian Plan, https://www.harrisonburgva.gov/bicycle-pedestrian-plan

City of Harrisonburg, Downtown Streetscape Plan, https://www.harrisonburgva.gov/downtown-streetscape-plan

City of Harrisonburg, Neighborhood Traffic Calming Program (NTCP), https://www.harrisonburgva.gov/neighborhood-traffic-calming-program

City of Harrisonburg, Transit Development Plan (TDP), https://www.harrisonburgva.gov/bus-service

City of Harrisonburg, Transportation Safety and Advisory Commission (TSAC), https://www.harrisonburgva.gov/transportation-safety-advisory-commission

Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO), http://www.hrvampo.org/

Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) Long Range Transportation Plan (LRTP), http://www.hrvampo.org/long-range-transportation-plan-lrtp

James Madison University (JMU), 2017 Campus Master Plan, https://www.jmu.edu/jmuplans/supporting-plans/JMU%20Master%20Plan%20Update%202017.pdf

James Madison University (JMU), Bicycle Pedestrian Plan, http://www.jmu.edu/bikepedplan/documents-maps.shtml

Rockingham County, Comprehensive Plan, http://www.rockinghamcountyva.gov/404/Comprehensive-Plan

Virginia Department of Transportation (VDOT), Functional Classification, http://www.virginiadot.org/projects/fxn_class/home.asp

Virginia Department of Transportation (VDOT), Urban Construction Initiative Overview, http://www.virginiadot.org/business/local-assistance-firstCities.asp

Virginia Office of Intermodal Planning and Investment, Smart Scale Program, http://vasmartscale.org/

Virginia Office of Intermodal Planning and Investment, VTRANS 2045 Mid-Term Needs, https://www.vtrans.org/mid-term-planning/mid-term-needs

Virginia Department of Transportation, Six Year Improvement Program, http://syip.virginiadot.org/Pages/allProjects.aspx

Virginia Department of Transportation Comments and City Responses

The Code of Virginia Section 15.2-2223 requires that prior to adoption of the Comprehensive Plan or any amendment to the transportation plan, the locality shall submit the plan to the Virginia Department of Transportation (VDOT) for review and comment. Following are comments from the VDOT Staunton District staff and the City's responses.

COMMONWEALTH of VIRGINIA
DEPARTMENT OF TRANSPORTATION
811 COMMERCE ROAD
STAUNTON, VIRGINIA 24401-9029
www.VirginiaDOT.org

Stephen C. Brich, P.E.
Commissioner

5/22/2020

Erin Yancey, AICP
Public Works Planning Manager
Department of Public Works
320 E. Mosby Road
Harrisonburg, Virginia 22801

Dear Ms. Yancey:

Thank you for submitting the City of Harrisonburg's proposed Comprehensive Plan transportation chapter amendment to the Virginia Department of Transportation (VDOT) for review on May 12, 2020 in accordance with the Virginia Traffic Impact Analysis Regulations, 24VAC30-155. VDOT Staunton District Planning has evaluated the updates to the transportation chapter of the plan for conformity with Chapter 729 regulations of state code 15.2-2223. Chapter 729 requires that locality Comprehensive Plans include four principle elements: an inventory of the existing transportation network, planning assumptions that will influence the transportation network, an existing and future needs assessment, and recommendations addressing those needs. In addition, the Comprehensive Plan must be consistent with VTrans, the SYIP (Six-Year Improvement Program), and the selected location of state highways set by the Commonwealth Transportation Board. In this case, consistency is defined as inclusion in the Comprehensive Plan of significant new, improved, or relocated highway projects on roadways with a functional classification of major collector or higher.

The transportation chapter update was found to be in conformance with state code.

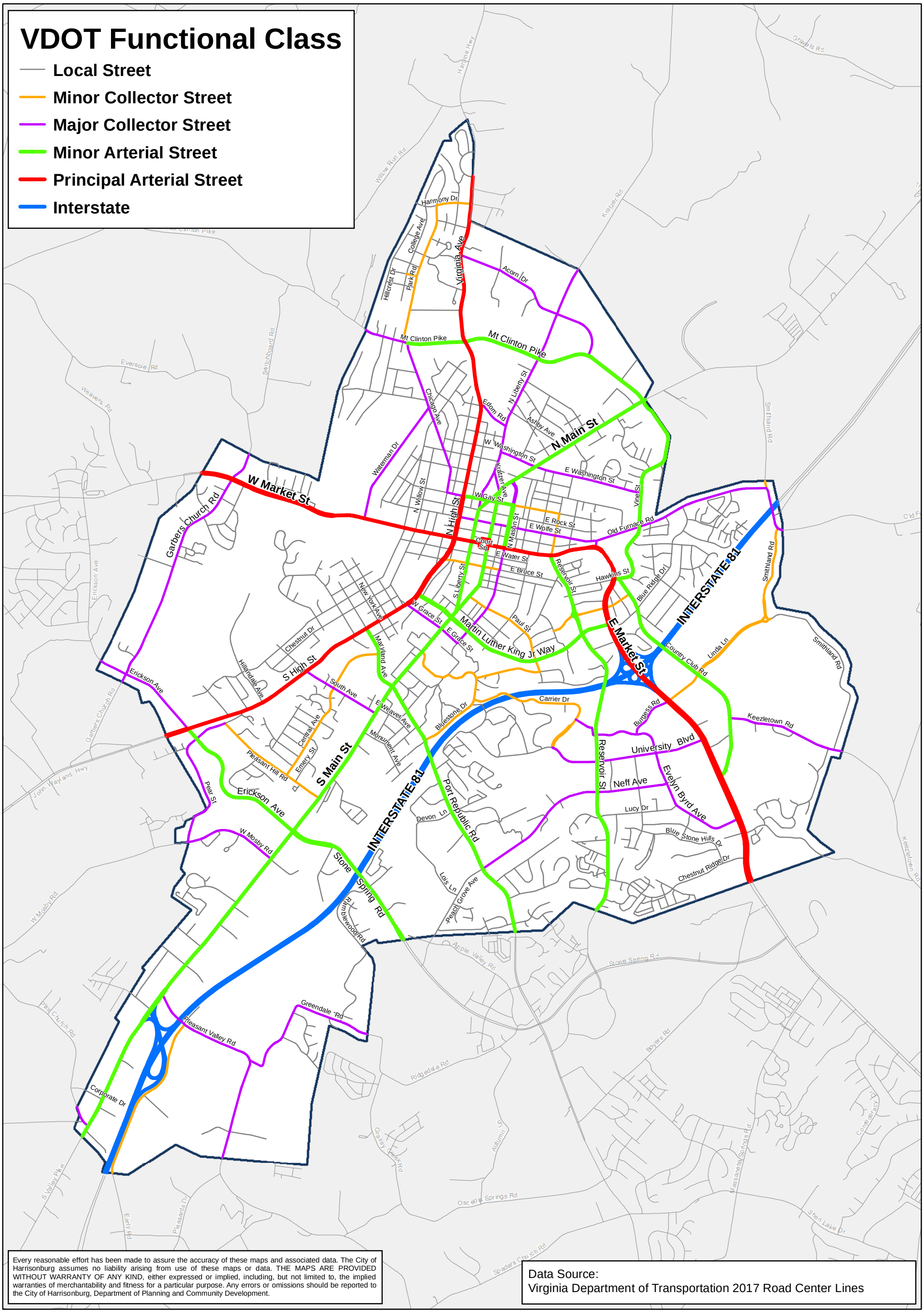
I ask that you arrange to have VDOT's comments from this letter included in the locality's official public records for the Comprehensive Plan. Once the transportation chapter update is officially adopted by the city, VDOT requests that you forward a digital copy to us for our records.

Please feel welcome to contact me if you have any questions about this review or if you would like to request VDOT assistance with any further comprehensive planning efforts.

Sincerely,

Brad W. Reed, AICP
Assistant District Planner
Staunton District Planning

CC: Terry Short, Jr., VDOT
David Atwood, PE, VDOT



Existing Street Network

Comprehensive Plan

Map created: September 30, 2018

N
W E
S

0 ¼ ½ 1 Miles

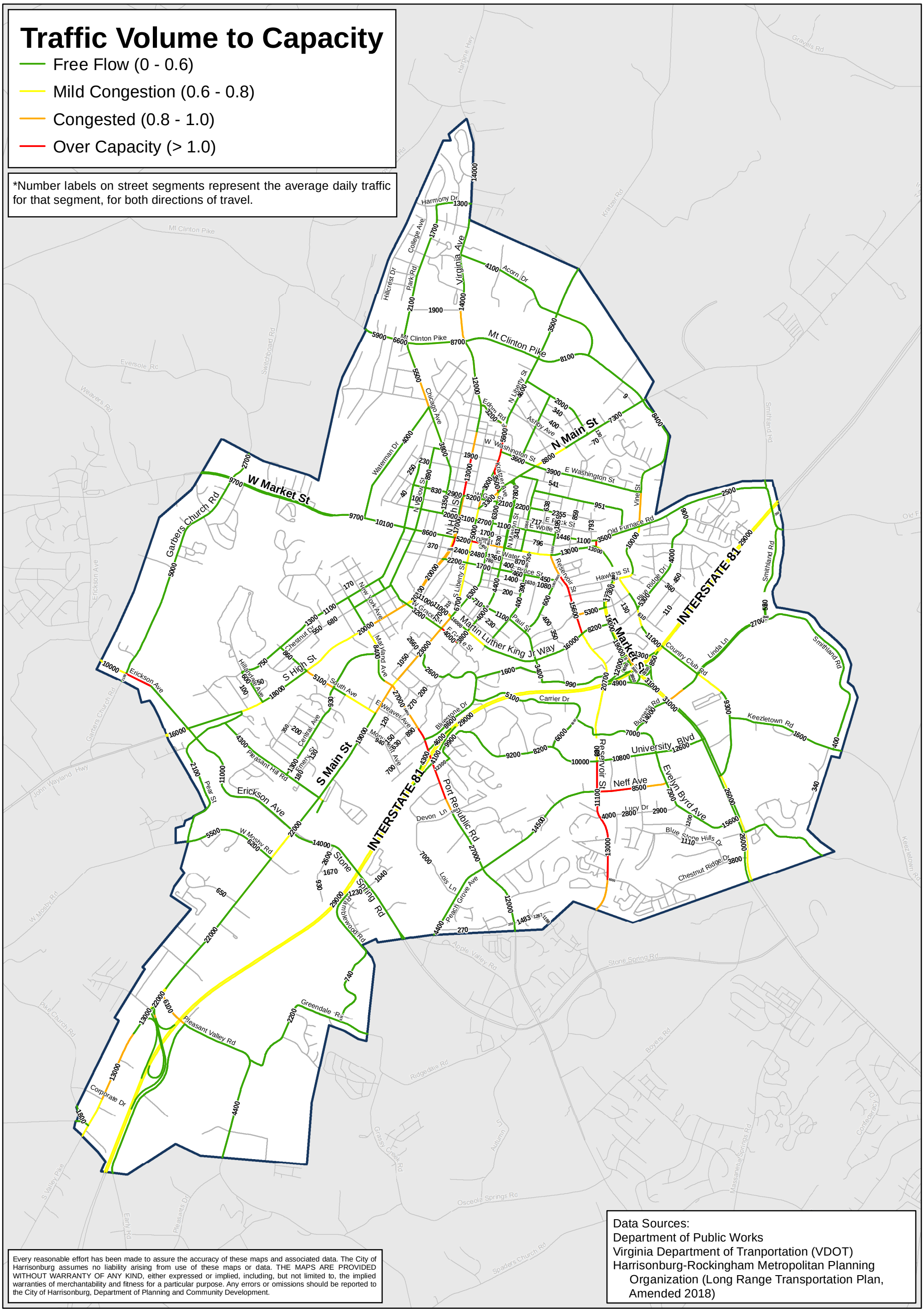
YOUR CITY. YOUR PLAN.

Harrisonburg VIRGINIA

Traffic Volume to Capacity

- Free Flow (0 - 0.6)
- Mild Congestion (0.6 - 0.8)
- Congested (0.8 - 1.0)
- Over Capacity (> 1.0)

*Number labels on street segments represent the average daily traffic for that segment, for both directions of travel.



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Data Sources:
Department of Public Works
Virginia Department of Tranportation (VDOT)
Harrisonburg-Rockingham Metropolitan Planning Organization (Long Range Transportation Plan, Amended 2018)

2018 Average Daily Traffic Counts and Traffic Volume to Capacity Ratios

Comprehensive Plan

Map created: September 30, 2018

N W E S

0 ¼ ½ 1 Miles

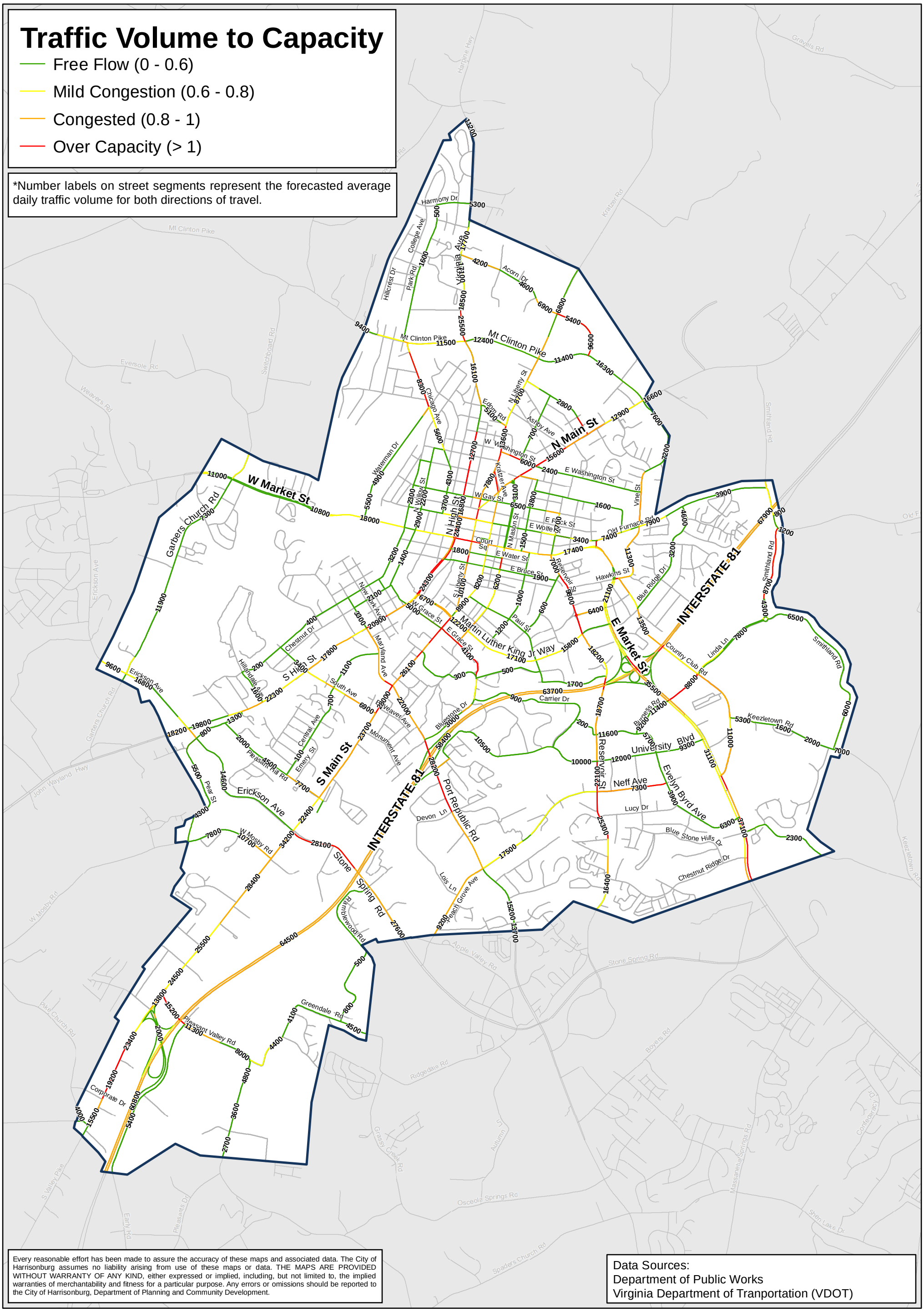
YOUR CITY. YOUR PLAN.

Harrisonburg VIRGINIA

Traffic Volume to Capacity

- Free Flow (0 - 0.6)
- Mild Congestion (0.6 - 0.8)
- Congested (0.8 - 1)
- Over Capacity (> 1)

*Number labels on street segments represent the forecasted average daily traffic volume for both directions of travel.



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Data Sources:
Department of Public Works
Virginia Department of Tranportation (VDOT)

2040 Estimated Traffic Volume to Capacity Ratio

Comprehensive Plan

Map created: September 30, 2018

N W E S

0 ¼ ½ 1 Miles

YOUR CITY. YOUR PLAN.

Harrisonburg VIRGINIA

Potential for Safety Improvement

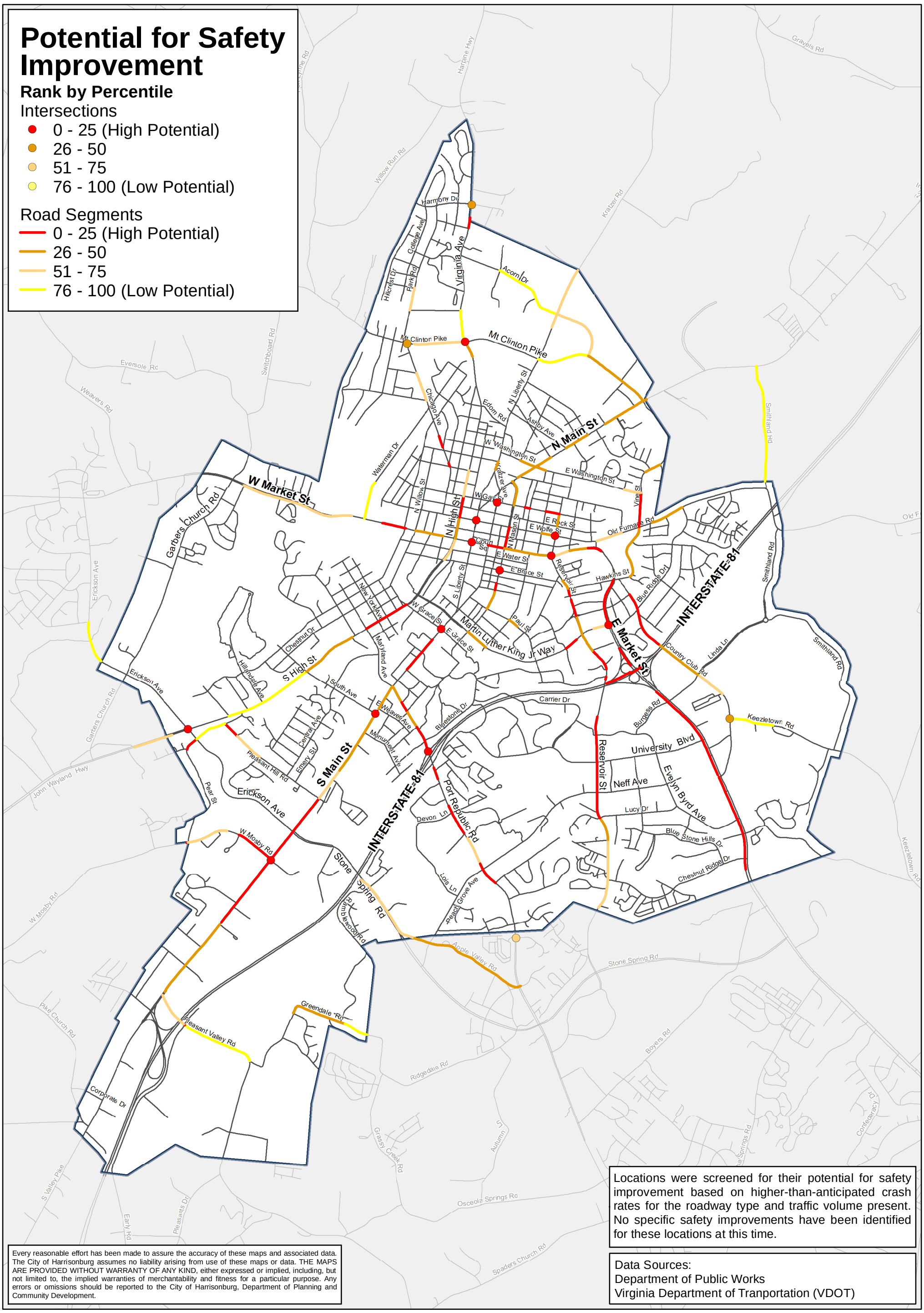
Rank by Percentile

Intersections

- 0 - 25 (High Potential)
- 26 - 50
- 51 - 75
- 76 - 100 (Low Potential)

Road Segments

- 0 - 25 (High Potential)
- 26 - 50
- 51 - 75
- 76 - 100 (Low Potential)



Locations were screened for their potential for safety improvement based on higher-than-anticipated crash rates for the roadway type and traffic volume present. No specific safety improvements have been identified for these locations at this time.

Data Sources:
Department of Public Works
Virginia Department of Tranportation (VDOT)

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Potential for Safety Improvement

Comprehensive Plan

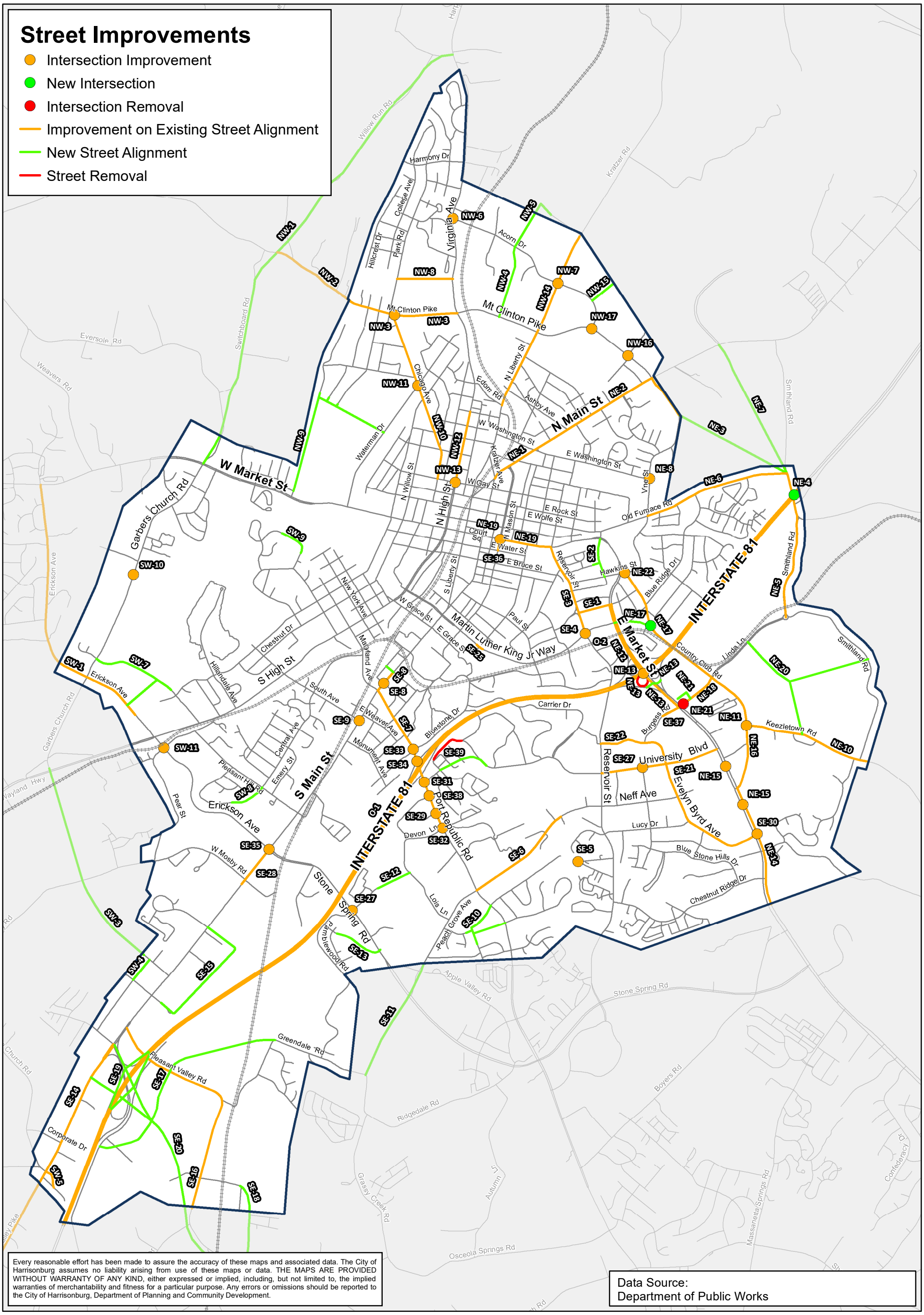
Map created: September 30, 2018

N W E S

0 ¼ ½ 1 Miles

YOUR CITY. YOUR PLAN.

Harrisonburg VIRGINIA



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Data Source:
Department of Public Works

Street Improvement Plan

Comprehensive Plan

Adopted: November 13, 2018
Amended: July 14, 2020

N
W E
S

0 ¼ ½ 1 Miles

YOUR CITY. YOUR PLAN.
Harrisonburg VIRGINIA