

Chapter 11 Transportation

Introduction

The Harrisonburg transportation system is comprised of several varying elements including an interstate highway, principal arterial roadways, a local road system, mass public transit, pedestrian facilities, bicycle facilities, public parking, and railroads. All facets of this system require constant maintenance, upgrades, replacement, and additions in order to serve the City's population properly. Each element of the system is complimentary to the others and serves the community as a network. Increasing usage on one element will likely cause a decreased usage on another.

It is important to note that transportation and land use should be linked. Changes in land use can change traffic patterns and affect the demands on transportation resources. There is growing scientific evidence that the provision of transportation improvements can have impacts on the demand for new development as well as on the welfare of existing neighborhoods and commercial areas. In 2007, the Virginia General Assembly passed significant legislation that intends to coordinate transportation with land use. House Bill 3202 made specific provisions that require localities to coordinate major land use changes with adjoining jurisdictions.

City Road Network

Classification System: The City road system consists of multiple classification designations that correspond to traffic volumes or design criteria. The Virginia Department of Transportation (VDOT) classifies streets as local, collector, or arterial. As of 2010, the City had 316.26 lane miles of local, collector, and arterial streets. Local streets provide direct access to adjacent land and make up a majority of the transportation network, but carry a small proportion of vehicle miles traveled. All local streets are assigned a speed limit of 25 mph unless otherwise posted. Collector streets are intended to support moderate to heavy levels of traffic, routing traffic from, and sometimes through, residential areas to employment centers and shopping areas. Speed limits assigned to these streets range from 25 mph to 40 mph depending on design, traffic volumes, pedestrian presence, and other factors.

Arterials are designed and intended for consistently heavy traffic volumes, and usually connect towns and provide linkages to interstate systems. While arterial streets comprise a smaller percentage of lane miles, they support the majority of vehicle miles traveled in the City. Speed limits range from 25 to 60 mph.

Accepted streets must meet design criteria from the City's Design and Construction Standards Manual (DCSM) and also those put forth by VDOT. Unaccepted and/or private streets receive restricted City services. For the most part, the City is not responsible for maintenance on those streets and roads. The City also has a number of undeveloped "paper" streets, which are streets that were planned and platted, but have not yet been built. Some of these paper streets meet the City's requirement of 50-feet of right-of-way width, while others have considerably narrower right-of-ways. Future street construction/extension can take place in order to improve traffic flow or facilitate land development. In some cases, paper streets provide a possibility for shared use path connections. In the case of private development, construction costs are the responsibility of developers or residents.

The Street Network Map, provided at the end of this chapter, illustrates the current street classifications of City streets.

Transportation Funding: 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. Through VDOT, the City is eligible to receive funding from two sources: Highway Maintenance Account Funds and Urban Construction Funds. The former can only be used for eligible maintenance activities on existing facilities while the Urban Construction Fund is earmarked for new construction projects and allocated to projects in the Commonwealth's Six Year Improvement Program (SYIP). Funding levels that localities receive for both maintenance and construction are ultimately determined by the General Assembly through the biennial budget process and then appropriated funding is prioritized and allocated by gubernatorial appointed members of the Commonwealth Transportation Board. Cities and towns receive funding on an annual basis.

The City competes for construction funding with other localities in the Staunton District, which includes the Counties of Frederick, Shenandoah, Page, Rockingham, Augusta, Alleghany, Rockbridge, Bath, and Highland along with the qualifying incorporated towns and cities located within each. Maintenance funds are determined based on the number of lane miles in a community, and in Fiscal Year 2010 the City received \$3.7 million from the VDOT Maintenance Account.

Historically, maintenance funding increases approximately 3 to 4 percent each year. However, with the economic downturn, the Urban Construction Fund has significantly decreased for the City, which is consistent with the outcome for other localities throughout the state. In Fiscal Year 2007-2008, the City received \$1,433,000 in urban construction funds. In Fiscal Year 2010-2011, the City anticipates receiving only \$38,000. Recent economic realities have led to increased devolution by the state in allowing localities to take on more responsibility for managing and constructing road projects. However, funding restrictions have presented challenges to the City to keep projects on schedule.

The City has developed a maintenance and road project program on a three-pronged approach, which involves federal, state, and local funds. The City and its leaders have realized that it can utilize federal and state dollars to advance projects, however, significant contributions have been made from local coffers to keep projects moving forward.

Urban Construction Initiative: Harrisonburg is one of eleven urban communities in the Commonwealth that is a member of VDOT's Urban Construction Initiative. In the past, all urban localities have left road construction projects to VDOT to provide the majority of funding, project design, and construction management. The City's involvement in this initiative has resulted in finding ways to streamline the VDOT process and to take project management roles at the local level opposed to the state level. This has led to the development of a Certification Program that is available as of 2009 to qualifying localities in Virginia. This translates to less state government oversight, and more decision making responsibility at the local level. Certified localities will be required to abide by all state guidelines.

Traffic Signals & Street Capacity: As of early 2011, the City has 85 traffic signals; many of which include pedestrian crosswalks (42 intersections with signalized crosswalks; 19 intersections marked but have unsignalized crosswalks). The Street Network Map, provided at the end of this chapter, illustrates the location of current signalized intersections. Traffic signals should only be installed when and where warranted based upon the criteria set forth by the Federal Highway Administration (FHA). There are a series of warrants for traffic signals that focus on traffic volumes, time amount of delay, accident history, and pedestrian presence. The City's goal is that all streets and intersections should operate on a Level of Service (LOS) "C" or better at all times. During peak hours, congestion occurs along arterial corridors during which the LOS drops to "D," "E," or in some locations, the worst level of service, grade "F".

Transportation Management Program: This Program's mission is to improve the quality of service of all modes of transportation in the City through the optimization of traffic signal function, including the programming, timing, and coordination of plans along corridors and consultation on intersection design enhancements. The program manages and regularly updates traffic volume and composition studies used to create models of traffic flow to assist in planning decisions.

As James Madison University (JMU) experiences increasing enrollment, new development occurs causing more people to move into the Harrisonburg community, therefore, it will become increasingly important for our transportation corridors to be re-evaluated and for traffic signal functions and intersection designs to be optimized.

Transportation Safety & Advisory Commission: City Council appoints a Transportation Safety & Advisory Commission comprised of four appointed "at-large" citizens and two City staff to make recommendations on issues related to traffic safety in the City. The Commission meets on a monthly basis and discusses complaints, concerns, and suggestions that are forwarded to them by citizens or City departments. Recommendations for improvements are typically directed to the Public Works Department and are funded through the department's operating budget; larger projects may be incorporated into the Capital Improvement Program. In 2010, a 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. The subcommittee works with the Commission, staff, and citizens to identify needs and opportunities for improving the City's network of bicycle and pedestrian facilities.

Neighborhood Traffic Calming Program (NTCP): The Public Works Department administers the City adopted Neighborhood Traffic Calming Program in partnership with the Police Department and others to improve the character and appropriate use of local streets in neighborhood areas by incorporating community awareness and education, motorist education, enforcement, and physical devices. Neighborhood involvement in the program requires that neighbors submit an enrollment form to the Public Works Department with a majority of the residents' signatures, agreeing that there is a "perceived traffic problem." Staff conducts speed and volume studies to determine whether the perceived traffic problem can be substantiated. City staff and neighborhood representatives will then hold a neighborhood meeting to solicit input from neighbors and begin developing passive solutions to traffic problems, which may include striping, signage, education, and/or enforcement. City staff will then re-analyze after

implementation of suggested solutions. If passive traffic calming measures are deemed ineffective after being reanalyzed, physical roadway changes such as chicanes, traffic circles, raised speed tables, and/or speed humps, could be installed.

Any physical improvement that would restrict traffic must be considered by emergency response departments including Police and Fire. Physical improvements are constrained by available funds and strong neighborhood consensus. There have been five City neighborhoods that have enrolled in this program since its inception in 2002.

Master Transportation Plan: The Master Transportation Plan, which establishes the City's long-range transportation policies and road projects, includes the Street Improvement Plan, along with the Bicycle & Pedestrian Plan and the Public Transportation Department's Transportation Development Plan. The Street Improvement Plan maps the details for needed improvements and new facilities. The locations of the improvements are often within or adjacent to property that has yet to develop. Identifying future improvements allows the City to work with property owners and developers to implement complete street construction.

There are several new streets shown on the Street Improvement Plan that would be "local" streets intended to promote increased connectivity between and within residential communities. The need for these roads will be driven primarily by development of surrounding areas and not by the need of the public at large. For this reason, although the City will encourage their construction, they are anticipated to be funded and constructed by private developers as property in the surrounding area is developed.

A full list of the proposed road improvement projects, as included in the Street Improvement Plan Map, can be found in Table 11-1. The table and the associated Street Improvement Plan Map, provided at the end of this chapter, are separated into quadrants by Main Street and Market Street.

Pedestrian and bicycle facilities shall be considered with all new road projects and improvements. A list of proposed pedestrian and bicycle facilities can be found in the City's adopted Bicycle & Pedestrian Plan. These proposed improvements should also be coordinated with Rockingham County's Comprehensive Plan and JMU's Comprehensive Master Plan.

Table 11-1: Street Improvement Plan – Recommendations and Cost Estimates Northwest

<p>A. Northwest Connector. Construct a new limited-access facility extending from Garbers Church Road at West Market Street and connecting it with Interstate 81 Exit 251 in Rockingham County. Note: cost estimate provided is for improvements within City limits.</p>	<p>\$350,000</p>
<p>B. Mount Clinton Pike from proposed Northwest Connector to Virginia Avenue. Widen the street to a three- or four-lane facility with a median and bicycle and pedestrian facilities; some parts are located within Rockingham County. Note: cost estimate provided is for improvements within City limits.</p>	<p>\$4,300,000</p>
<p>C. Intersection Improvement at Mount Clinton Pike, Park Road, and Chicago Avenue. In conjunction with the Mount Clinton Pike and/or Chicago Avenue improvements; consider a possible roundabout or other intersection improvement.</p>	<p>\$430,000</p>
<p>D. Mount Clinton Pike to Acorn Drive Connector.</p>	<p>\$650,000</p>
<p>E. Acorn Drive to Friendship Drive Connection. Note: Friendship Drive is in Rockingham County.</p>	<p>\$375,000</p>
<p>F. Intersection Improvement at Virginia Avenue and Acorn Drive. Install new traffic signal.</p>	<p>\$165,000</p>
<p>G. Intersection Improvement at Liberty Street and Acorn Drive. Install new traffic signal.</p>	<p>\$165,000</p>
<p>H. Parkwood Drive. Construct a three lane facility including a median.</p>	<p>\$400,000</p>
<p>I. Summit Avenue to West Market Street Connections. Includes connecting Hillside Avenue to College Avenue.</p>	<p>\$600,000</p>
<p>J. Chicago Avenue from Mt. Clinton Pike to 3rd Street. Create a center turn lane along with pedestrian and bicycle improvements.</p>	<p>\$7,000,000</p>
<p>K. Intersection Improvement at Chicago Avenue and Waterman Drive. Consider a roundabout design or other intersection improvement.</p>	<p>\$500,000</p>
<p>L. Virginia Avenue from West Gay Street to 5th Street.</p>	<p>\$2,500,000</p>

Widen to a four-lane facility, remove on street parking, and replace storm drain system.	
M. Intersection Improvement at Virginia Avenue/High Street and West Gay Street. Widen the intersection to accommodate truck traffic and extend the westbound left turn lane.	\$350,000
N. North Liberty Street from Edom Road to North City Limits. Reconstruct and widen to create a center turn lane, add curb and gutter, bicycle lanes, and install storm drains.	\$4,600,000
O. West Washington Street. Make improvements from North Main Street to Liberty Street.	\$125,000

Northeast

A. North Main Street from Noll Drive to Charles Street. Create a center turn lane, remove parking. Consider bicycle lanes if possible.	\$600,000
B. North Main Street from Charles Street to Mt. Clinton Pike. Create a center turn lane and construct bicycle and pedestrian facilities.	\$2,000,000
C. North Main Street to Smithland Road Connector. Improve to a four-lane facility on Vine Street and construct new alignment between Vine Street and Smithland Road. Note: Cost estimate provided is for sections within city limits.	\$400,000
D. Smithland Road. Construct four lane facility with bicycle and pedestrian facilities and raised median from intersection of Linda Lane to Old Furnace Road at I-81.	\$3,000,000
E. East Washington Street Extended. Extend East Washington Street into Rockingham County to intersect with the North Main Street to Linda Lane Connector and to North Main Street at the Technology Park.	\$200,000
F. Intersection Improvement at East Washington Street and Vine Street. Widen road to add a left turn lane on East Washington Street. Add northbound left turn lane on Vine Street.	\$75,000
G. Interchange Improvement. Construct I-81 interchange ramps at Smithland Road and Buffalo Drive and reconstruct	\$20,000,000

the bridge.	
H. Intersection Improvement at Smithland Road and Old Furnace Road. Construct possible roundabout.	\$200,000
I. Longview Drive and Vine Street. Reconstruct intersection and extend new road to City limits to connect with Leyland Drive in Rockingham County.	\$150,000
J. Keezletown Road. Construct a two-lane facility with median and bicycle and pedestrian facilities.	\$2,000,000
K. Interchange Improvements at East Market Street and I-81 (Exit 247). Remove clover leaves and install new traffic signals and other improvements.	\$4,000,000
L. East Market Street. Add lane to westbound facilities between east City limits and Country Club Road for a total of three lanes.	\$1,500,000
M. Rebuild the two East Market Street bridges over Railroad and improve East Market Street from I-81 to Cantrell Avenue.	\$16,000,000
N. Country Club Road from East Market Street to I-81 Bridge. Construct a three lane facility including a center turn lane with bicycle and pedestrian facilities.	\$3,400,000
O. Cantrell Avenue Extended and Country Club Road from I-81 Bridge to Vine Street. Extend Cantrell Avenue from East Market Street into Country Club Road. Create new intersection with Country Club Road and Country Club Court. Add sidewalk and bike facilities to Cantrell Avenue and Country Club Road.	\$2,500,000
P. Linda Lane from East Market Street to Country Club Road. Widen to a five-lane facility with pedestrian facilities.	\$7,100,000
Q. Old Furnace Road. Between Vine Street and Smithland Road, improve to a three lane facility including center turn lanes and bicycle and pedestrian improvements.	\$2,500,000
R. North Carlton Street. Improve to a three lane facility including center turn lanes, sidewalks and storm drain facilities.	\$450,000
S. East Market Street Safety Improvements between Linda	\$1,000,000

Lane and Chestnut Ridge Drive. Redesign crossovers from private entrances at three locations to reduce motor vehicle conflicts, improve turning lanes, construct new sidewalks, and install pedestrian crosswalk signals.	
T. Intersection Improvement at University Boulevard and East Market Street. Extend eastbound left turn lane.	\$150,000
U. Intersection Improvement at East Market Street and Country Club Road. Widen Country Club Road at East Market Street to accommodate dual left turn lanes off of Country Club Road.	\$500,000
V. Intersection Improvement at Keezletown Road and Country Club Road. Include new traffic light.	\$300,000

Southeast

A. Reservoir Street. Improve Reservoir Street to a four lane facility between East Market Street and Cantrell Avenue with turn lanes at specific intersections and bicycle and pedestrian facilities.	\$1,200,000
B. Reservoir Street from University Boulevard to Health Campus Drive in Rockingham County. Create a four lane facility with a center turn lane, including pedestrian and bicycle facilities and enhancing traffic flow at intersections. Note: Cost estimate provided is for sections within City limits.	\$8,000,000
C. Lucy Drive from Purple and Gold Way to Reservoir Street. Construct a three-lane facility.	\$200,000
D. Intersection Improvement at Ridgeville Lane and Foley Road.	\$1,200,000
E. Norwood Street to East Market Street Connections. Construct a local street to connect Norwood Street, Hawkins Street, Franklin Street, Highland Avenue, Long Avenue and East Market Street.	\$200,000
F. Port Republic Road, Neff Avenue, University Boulevard Connection. Construct connection for, at minimum, pedestrian and bicycle use, and consider public transit use.	\$400,000
G. Intersection Improvement at University Boulevard and Evelyn Byrd Avenue. Widen lanes to accommodate new	\$300,000

left turn lanes in all directions.	
H. Intersection Improvement at University Boulevard and Carrier Drive. Install new traffic signal.	\$170,000
I. Neff Avenue from Port Republic Road to Turner Ashby Lane. Widen roadway and add median.	\$1,400,000
J. Interchange Improvement at Port Republic Road and I-81 (Exit 245) and Capacity Improvements on Port Republic Road.	\$20,000,000
K. Skylark Lane to Port Republic Road Connections. Note: Cost estimate provided is for sections within City limits.	\$300,000
L. Southeast Connector. Construct in Rockingham County, a facility that connects Route 33, Port Republic Road, and the new Erickson Avenue-Stone Spring Road.	In Rockingham County
M. Peach Grove Avenue Extended From Terminus of Peach Grove Avenue and Greendale Road in Rockingham County.	In Rockingham County
N. Devon Lane to Stone Spring Road Connection.	\$150,000
O. Mineral Springs Road to Stone Spring Road Connection.	\$150,000
P. South Main Street from Grattan Street to Port Republic Road. Construct landscaped median, replace waterline where necessary, install enhanced crosswalks, upgrade traffic signals, and replace street lighting.	\$1,400,000
Q. Intersection Improvement at South Main Street and Port Republic Road. Create slip lane and pedestrian refuge on Port Republic Road traveling westbound turning right northbound onto South Main Street.	\$250,000
R. South Main Street from Interstate 81 (Exit 243) to Route 704 in Rockingham County. Widen to a four-lane facility with a median. Improve the intersection of South Main Street and Covenant Drive. Note: cost estimate provided is for improvements within City limits.	\$7,400,000
S. East Kaylor Park Drive to South Gate and Boxwood Court Connection. Realign Boxwood Court.	\$500,000
T. Pleasant Valley Road from South Main Street to south City limits. Improve to a three lane facility including a	\$5,000,000

center turn lane with bicycle and pedestrian facilities.	
U. Greendale Road to Early Road Connection. Widen to three lane roadway with bicycle lanes and bridge over railroad.	\$8,400,000
V. Willow Springs Road to Cecil Wampler Road Connection in Rockingham County.	In Rockingham County
W. Intersection Improvement at South Main Street and South Avenue. Widen intersection at South Main Street and South Avenue to accommodate additional lanes on South Avenue.	\$250,000
X. Intersection Improvement at Reservoir Street and Carlton Street with roundabout or other improvement.	\$350,000
Y. Intersection Improvement at Reservoir Street and Cantrell Avenue. On Cantrell Avenue traveling eastbound onto Reservoir Street, construct dedicated right turn lane, slip lane and pedestrian refuge and provide for dual left turn lanes off of Reservoir Street.	\$350,000
Z. Cantrell Avenue between South Main Street and Ott Street and Intersection Improvement at Cantrell Avenue and South Main Street. Add a fifth lane on Cantrell Avenue from South Main Street to approximately 300 feet east of Ott Street with bicycle lane accommodations if possible. At intersection on South Main Street, add northbound right turn lane.	\$1,000,000
AA. Interchange Improvement. Reconstruct Exit 243.	\$25,000,000
BB. South Connector. Construct a new limited-access facility connecting South Main Street at Exit 243 to proposed Southeastern Bypass in Rockingham County. (Alternative routes considered.) Note: Cost estimate provided is for sections within City limits.	\$2,000,000
CC. (Old) Stone Spring Road Intersection Removal. Cul-de-sac old Stone Spring Road.	\$100,000

Southwest

A. Erickson Avenue-Stone Spring Road Connector. Construct four to five lane facility between west City limits on Erickson Avenue to east City limits on Stone Spring	\$64,000,000
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Road. Connections to Route 33 and Port Republic Road in Rockingham County. Phase I has been completed, and Phase II is under construction. Phases III and IV remain to be funded. Note: cost estimate provided is for total improvements within city limits.	
B. Pear Street and South High Street Intersection. Removal of intersection and street crossing at railroad. Construct cul-de-sac on Pear Street.	\$150,000
C. Baxter Drive Extended. Construct facility between South Main Street and West Mosby Road in Rockingham County.	In Rockingham County
D. Peoples Drive Extended From the Terminus of Peoples Drive to Baxter Drive at Tasha Circle.	\$150,000
E. Carpenter Lane. Realign Carpenter Lane with intersection of Pike Church Road at South Main Street.	\$480,000
F. Southwestern Connector Proposed. Construct a new limited-access facility from southern terminus of Garbers Church Road and Cecil Wampler Road. Improvements to Garbers Church Road from South High Street (Route 42) to Erickson Avenue. Note: Two possible routes proposed.	In Rockingham County
G. Hidden Creek Lane Extended From Terminus of Hidden Creek Lane to Garbers Church Road with Connection to Erickson Avenue.	\$500,000
H. Willow Hill Drive Connection to Pleasant Hill Road.	\$200,000
I. Neyland Drive to Wyndham Drive Connection.	\$200,000
J. Intersection Improvement at South Main Street and Fairview Drive. Create a “right-in right-out” only at the end of Fairview Drive onto South Main Street or remove the intersection by constructing cul-de-sac or other terminus at the end of Fairview Drive.	\$50,000
K. Maplehurst Avenue Extended. Construct a road between Harrison Street and South Main Street.	\$60,000

Other

A. Interstate 81 from South City Limits to North City Limits. Widen to six lanes or more and include the reconstruction of Buffalo Drive and additionally reconstruct Exit 251 in Rockingham County. Consider additional access points at Route 704 south of the

City in Rockingham County and at Old Furnace Road in the City.

B. Railroad Relocation. Relocation of the Norfolk Southern Railroad from within City limits to Rockingham County.

Bicycle & Pedestrian Facilities

In 2010, a Bicycle & Pedestrian Subcommittee was formally established by the Transportation Safety & Advisory Commission following City Council action to formally add bicycle and pedestrian matters as an additional area of responsibility of the commission. The subcommittee works with the Commission, staff, and citizens to identify needs and opportunities for improving the City's network of bicycle and pedestrian facilities.

The City recognizes the need to encourage bicycle and pedestrian travel, as they reduce traffic congestion, contribute to cleaner air, conserve energy, promote physical fitness, and result in a more pleasant atmosphere. The City's Bicycle and Pedestrian Plan lists project priorities so the City can appropriately plan and implement improvements when necessary and feasible.

As traffic levels and associated congestion increase within the City, so does the need for a more encompassing system of bicycle facilities and pedestrian walkways. This deficiency is something that many residents in the City would like to see remedied. Better sidewalks, bicycle facilities or shared use paths placed between high-density residences and points of common destinations would help alleviate some of the growing traffic numbers throughout the City. Citizens are interested in having sidewalks installed leading to parks, schools, and other frequented destinations.

Pedestrian Facilities: The Public Works Department maintains all public sidewalks within the City limits, which for the most part are parallel to streets located within the street right-of-way. Though as of 2009 the Public Works Department presently maintains over 60 miles of sidewalk within the City, opportunities for pedestrian traffic remain limited. This deficiency is something many residents of the City would like to see remedied.

In addition to pedestrian infrastructure needs collected by the City's Bicycle & Pedestrian Committee, in partnership with schools and parents, the City has been evaluating and improving safe routes to schools and applying for funding through the VDOT Safe Routes to School program, which has resulted in funding for new sidewalk construction around Keister and Waterman Elementary Schools. According to the Comprehensive Recreation and Parks Master Plan, walking trails are one of the most requested improvements those polled within the City would like to see made.

Bicycle Facilities: The City adopted its first Bicycle Plan in 1994, and then adopted an update in 1999, 2005, and 2010. The 2010 Plan is a combined bicycle and pedestrian plan. By generating an awareness of bicycling issues, the plan prompted the City to include bicycle facilities in the design and construction of several new streets including Neff Avenue, Port Republic Road, Linda Lane, and within the Erickson Avenue-Stone Spring Road project and to retrofit existing roadways to add bicycle lanes such as those on South Main Street, Vine Street, and Park Road.

The Plan also promotes awareness of funding mechanisms the City has used to obtain grant funds for changes to existing roadways.

Off Road vs. On Road Facilities: Planning and designing new transportation routes that include sidewalks, bicycle routes, and shared use paths are essential to the success of an alternative transportation system. Where feasible and possible, the City makes adjustments during regular routine maintenance to accommodate bicyclists and pedestrians. The City works proactively to incorporate these elements into new roadway projects and retroactively when developing street widening projects. It is recognized that there are many residents that enjoy riding bicycles, walking, or jogging on shared use paths that are separated from the roadway, while some bicyclists prefer to ride on existing streets, preferably in bicycle lanes, but also with motorized traffic. There are challenges with providing off road facilities adjacent to streets that serve adjacent land uses that create confusion for motorists and bicyclists alike. The City has identified that in the event of creating a limited access roadway—one which restricts or prohibits private drive entrance connections—a shared use path is ideal. This creates a safer environment for bicyclists where motorized traffic is generally traveling at higher speed rates. Where adjacent land use access connections are prevalent, the on-street bicycle lane is preferred.

Blacks Run Greenway Plan: Blacks Run is a six-mile-long stream that runs through the City, connecting neighborhoods in the north and south with downtown businesses, parks, and housing. Friends of Blacks Run Greenway (FBRG), a public-private organization that was formed in the fall of 2000, worked to establish a greenway path that would parallel Blacks Run and developed a Master Plan to develop concepts for construction of the trail. Significant challenges existed in the Master Plan and required the acquisition of significant easements and right-of-way. The trail was proposed to be adjacent to or directly through many industrial uses in the southern end of the City. The City's adopted Bicycle & Pedestrian Plan includes complementary and alternative routes to the Greenway Master Plan, which still meet the intent of the plan developed by FBRG.

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 alternative transportation network. Parking decisions have shifted from a Council appointed authority to City staff.

In the downtown area, the availability of parking is a long standing concern for its many diverse users. Two major parking structures were built in the 1970's as economic development tools to encourage businesses to remain in the downtown area. In 2006, metered parking spaces were removed throughout downtown.

By ordinance, in designated areas, the City has "zone parking," which makes on-street parking reserved only for neighborhood residents and their guests. For zone parking to be available, it must be verified that at least 25 percent of cars parked on-street of a residential zone must be 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. Three zones have been established, all of which have differing criteria.

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 Comprehensive Master Plan indicates the expansion of existing parking amenities while also proposing new parking facilities. The City and JMU continue to work in collaboration to facilitate and improve the many issues with parking in the City, including improving bicycling, walking, and public transportation options.

Mass Transit

The Harrisonburg Department of Public Transportation (HDPT) began operation in November 1976 with the purchase of two taxi companies that were operating at a deficit and had planned to discontinue operations. Immediately after this purchase, efforts were made by the HDPT to coordinate all mass transit operations within the City. The Harrisonburg City School System, the Valley Program for Aging Services, Harrisonburg Social Services, the Health Department, and various other organizations participated in this coordination. In May 1977, City Council approved the purchase of three mini buses to begin a fixed-route system within the City. In October 1978, transit service began, with emphasis on the transportation needs of students and the elderly. HDPT also took over the operation of the public school's special education van and a vehicle that was used by the Valley Program for Aging Services.

Today, HDPT controls all of the public transportation operations that the City offers to its residents and visitors. In 2007, total transit ridership was 1,492,318. Transportation services provided by HDPT include: fixed-route mass transit buses, school buses, and paratransit operations to serve persons with disabilities—these include wheelchair-accessible buses.

Funding for these services is provided by the City, JMU, the Virginia Department of Rail and Public Transportation (VDRPT), and the Federal Transit Administration (FTA). HDPT is considered a small urban 5311 property for purposes of federal funding. The bus service has become an integral service to JMU, its students and staff, and helps alleviate traffic congestion. In the past few years, however, concerns have arisen over an increase in the number of commuter student parking permits issued by JMU, which has encouraged off campus students to drive to campus in place of utilizing the transit buses. The projected growth in the JMU student population and the corresponding increase in vehicular traffic, on roadways adjacent to the university, are a cause of great concern to the City as increasing traffic congestion has a direct and deleterious impact on our ability to operate mass transit services on a reasonable timetable.

Expanded Transit Operating Hours: To better meet the needs of our citizens, transit service should be available to them when they most need it. The current operating hours of the City routes are from approximately 7:00 a.m. until approximately 7:00 p.m. As many of our riders are employed in industries that are not limited to traditional working hours, an effort should be made to expand existing hours of service to provide more service hours later each day to better serve the transportation needs of City citizens.

Operational Upgrades at JMU: JMU is a major generator of trips that are served by public transportation. The historic growth of JMU has provided a great deal of impetus for the City to grow and expand its mass transit services. According to the JMU Office of Institutional

Research, in 2002 JMU's fall enrollment stood at 15,612; by 2013 the State Council for Higher Education in Virginia (SCHEV) projects a total JMU fall enrollment of 19,996, an increase of 28 percent in a little more than a decade. This growth will place a greater demand for mass transit services. The proposed closure of the JMU campus to private vehicles, as outlined in their Master Plan, will most likely cause demand for transit services to increase as well.

- a. On/Near campus transit center: HDPT has currently reached a virtual limit to the number of transit buses that can be housed in the Godwin Hall Parking Lot. The addition of more vehicles to serve the growing campus population will require the identification of suitable layover points for buses and may require the construction of a dedicated mass transit center on or adjacent to the JMU campus.
- b. Dedicated Transit Bus-Way: The current operation of HDPT buses in mixed traffic conditions without dedicated pull-off lanes, especially on roads adjacent to campus such as Port Republic Road, South Main Street, Cantrell Avenue, and Reservoir Street, create operational inefficiencies in both the delivery of transit services—having to contend with private vehicles—as well as the flow of private vehicular traffic. To address these operational inefficiencies, City staff will seek to identify appropriate corridors and deploy the required mechanisms for dedicated mass transit facilities where feasible.
- c. Bus pull-offs on JMU Campus: Mass transit operations on the JMU campus could be made considerably more effective with the installation of dedicated bus pull-offs on Carrier Drive and Bluestone Drive, as well as the proposed Grace Street Transit corridor. The ability for a bus to pull out of the flow of traffic and standby at strategic locations to await passenger boarding and alighting increases can do a great deal to improve the efficiency and schedule adherence of mass transit. HDPT hopes to work with JMU to identify and construct the appropriate bus pull-off facilities on and around the JMU campus.
- d. Bus arrival time system: HDPT plans to deploy an electronic system that will allow transit customers to receive real-time bus arrival estimates at bus stops for transit services. The information can be received by automated instant messages, accessed by web-browsers on computers or by cell phones equipped with mobile web-browsing software, or even display on LCD/LED displays deployed at individual bus stops. This system would aim to reduce the anxiety associated with uncertainty about bus arrival times and increase the confidence that a passenger had not missed the bus.

Service Expansion to Rockingham Memorial Hospital (RMH): The opening of the new RMH campus provides a unique set of challenges to the City in its provision of mass transit services to the Harrisonburg community. As the hospital has moved from a location within the City limits to a site in the County, increased coordination and communication with Rockingham County and the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) is essential to future public transit infrastructure in the area.

Downtown Harrisonburg: The accessibility of the many commercial, cultural, and governmental services that exist in the downtown area is important to HDPT. As more urban renewal takes place downtown, the need for mass transit services will grow. Along with the growth in demand for transit services there will be a need for a dedicated downtown transfer center that can

accommodate a larger number of vehicles than currently serve the downtown area. The existing transfer location at the Hardesty-Higgins House is not sufficient to accommodate the number of buses that currently serve the downtown area nor can it handle more buses from the increased demand that downtown development would require. As is it not an exclusive transit facility, drivers and passengers must continually contend with traffic generated by delivery trucks, private vehicles, and many other users of Bruce Street.

In light of these facts, the City intends to identify suitable locations in or around the downtown area on which to construct a dedicated transfer location that can accommodate a sufficient number of buses. Additionally, this transfer location may contain bicycle and pedestrian accommodations, a taxi cab stand, and a location for the launching of intercity bus operations that may locate in the City. In effect, it would serve as a hub for multi-modal transportation operations with easy access to the downtown area.

Construction of New Transit Facility: The current facility which houses HDPT operations was originally constructed in 1982, and despite subsequent additions, is currently approaching the end of its useful life. The growth in mass transit services provided by HDPT has placed a great deal of stress on the existing facility. The City commissioned Parsons-Brinckerhoff to conduct a feasibility study to evaluate HDPT's needs for a new transit facility and hopes to have a new building constructed within the next three to five years.

Bus Stop Evaluation, Monitoring, and Improvement Program: Bus stops are an integral part of any mass transit system and HDPT is placing an increased emphasis on the need to upgrade the amenities at its more popular bus stops.

- a. Bus Shelter/Bench Installation: HDPT continues to use data collected by an Automated Passenger Counter system used to identify high traffic bus stops. Continued efforts are being made to install concrete pads, benches, shelters, trash cans, bus information display boards, and lighting as appropriate. Additional efforts will be made to install benches and/or bicycle racks at appropriate bus stops that complement existing or planned bicycle and pedestrian facilities.
- b. Solar powered bus shelter lighting: HDPT will attempt to place bus stop improvements in areas that take advantage of existing street lights. When this is not possible, HDPT will investigate the installation of solar power at bus shelters to provide power to illuminate the bus shelter.

Multi-Modal Nature of Transit Planning: The City recognizes that successful mass transit 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 planning for a vibrant multi-modal transportation environment with the appropriate federal, state, and local authorities.

Expansion of Transit Service into the Harrisonburg-Rockingham (UZA): The provision of seamless transportation services for citizens in the Harrisonburg urbanized area requires that the City work with MPO member localities to find ways to seamlessly offer transportation services across and between existing political boundaries. Specific areas for future service expansion

include the Massanetta Springs Area, an intercity bus service (i.e. to Charlottesville), and other transit service.

Investigate Methods of Electronic Fare Collection: Currently, HDPT collects all fare box revenues in a simple mechanical fare box, and is therefore incapable of integrating electronic fare media into its operations. Since the majority of HDPT passengers are JMU students, faculty, and/or staff, it would make a great deal of sense for HDPT to implement a system that would be capable of reading a JMU Access Card (JAC Card) and check to make certain that the card was valid. This system would allow HDPT to capture a greater number of dollars at the fare box, since JAC Cards from those who no longer attend or are employed at JMU continue to be used.

Computer-Aided-Dispatching/Automatic Vehicle Location: The effective scheduling and dispatching of paratransit vehicles can go a long way to creating more cost-effective service deployment. A computer program can use a GPS database to plan scheduled calls by geographical location and plan the most efficient manifest for each paratransit driver. As HDPT is very interested in reducing the cost of complementary paratransit service without compromising its quality, HDPT wishes to pursue the installation of Mobile Data Terminals and Automatic Vehicle Location technology on its paratransit fleet to achieve the cost savings that this technology promises.

Regional Transportation System

Harrisonburg is centrally located within the Shenandoah Valley and is bisected by Interstate 81, which serves as the major north-south transportation corridor along the Appalachian mountain range between New York and Tennessee. The portion of Interstate 81 located within the City's boundaries carries between 47,000-52,000 vehicles per day, which is heavily utilized by the trucking industry. Interstate 64, which carries approximately 37,000 vehicles per day, is a major east-west corridor that connects coastal metropolitan areas with inland communities as far west as St. Louis, Missouri. The interstate is accessible to the south via Interstate 81, which is approximately twenty-five miles south of the City. The close proximity of Harrisonburg to these interstates allows efficient delivery of services and makes Harrisonburg more accessible.

Metropolitan Planning Organization (MPO): Every urban region in the U.S. exceeding a population of 50,000 has a designated MPO to assist with transportation-related issues and to place the decision making process concerning transportation improvements in the hands of the localities, as opposed to being completely in the hands of VDOT. As transportation needs typically transverse political boundaries, it is important for growing jurisdictions to coordinate transportation programs and projects. The HRMPO was formed after the 2000 census, which determined that the Harrisonburg urbanized area exceeded the population threshold. The area that received this designation includes Harrisonburg, the Towns of Bridgewater, Dayton, Mount Crawford, and a portion of surrounding Rockingham County.

A policy board, comprised of local elected officials and state and local transportation agency officials, heads the HRMPO and looks at transportation on a regional scale. The board is assisted by the Technical Advisory Committee (TAC) and other special sub-committees, which provide both professional advice and relay public input to the board. The board and committees are responsible for developing a twenty-year, long-range transportation plan every five years. The

plan was last developed in August 2005. From the long-range plan, the three-year, short-term Transportation Improvement Plan (TIP) is developed and used for budgeting construction projects.

Rail Access: The City is served by three railroad companies: the Norfolk and Western Railway part of the Norfolk Southern Corporation, which travels north-south and provides local freight service to Grottoes and Elkton on a daily and requested basis; the Chesapeake Western Railway, which supplies local freight service to Harrisonburg and Elkton; and the Southern Railway, also part of the Norfolk Southern Corporation, which provides daily service to Harrisonburg and the Towns of Broadway and Timberville. There is no passenger rail service to Harrisonburg. The nearest passenger rail service is in the City of Staunton, approximately twenty-five miles to the south.

With limited grade separated crossings, this creates significant delay at railroad crossings on a daily basis. This has led to preliminary discussions between the City, County, and JMU to relocate a section of the Chesapeake & Western Railway around the northern edge of the City. This section of track currently traverses through the JMU campus. Possible alignments that would redirect this line through Rockingham County were proposed in 2005. Relocation would better serve Norfolk Southern customers and improve traffic congestion in and around the City. Relocation of the railroad could result in a conversion of portions of the existing Chesapeake & Western railway to a multi use greenway, or potentially serve as a short line trolley service to and from destinations within the City. The City had identified a federal program with dedicated funding to railroad relocations. However, since 2005, there has been little movement by stakeholders.

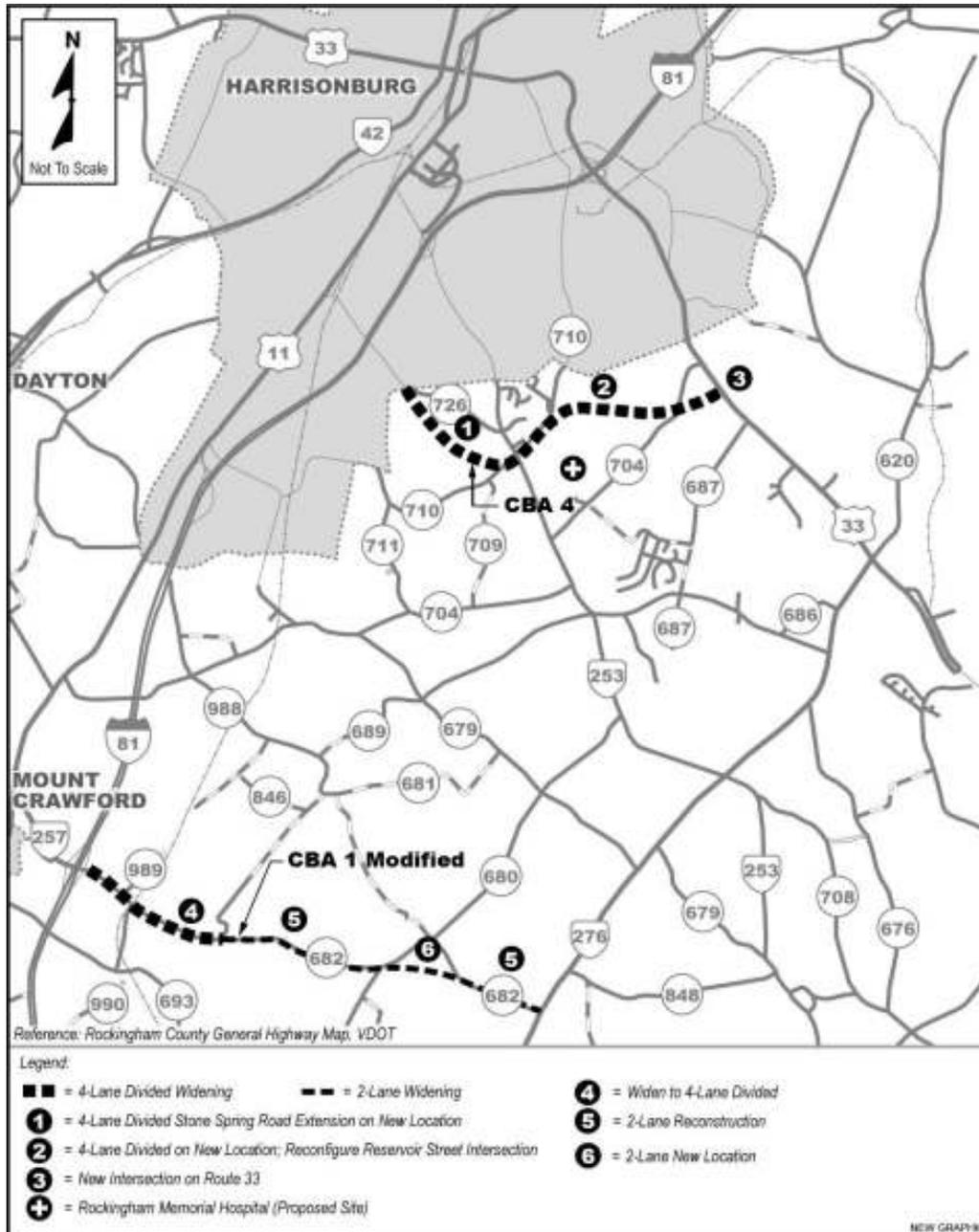
Air Transportation: The Shenandoah Valley Regional Airport is located in Weyers Cave, about 15 miles south of the City. Harrisonburg is a member of the Shenandoah Valley Regional Airport Commission, along with the cities of Waynesboro, Staunton, and the counties of Augusta and Rockingham. The airport supplies commercial flights to Dulles International Airport near Washington, DC. The airport offers door to door shuttle service to residents and visitors of the Airport's service area.

The Bridgewater Air Park is located approximately eight miles south of the City just outside of Bridgewater. The airport serves Rockingham County and is owned and privately operated by Rockingham Aviation Corporation. The paved runway extends 2,745 feet.

Southeast Connector: For many years, the City and County have recognized the importance of finding an alternate route to divert traffic around the City. The movement from Route 11, south of the City, to Route 33, east of the City, has been identified as a priority. A significant challenge in developing a route concept is balancing the need for efficient transportation service while maintaining a rural and agricultural base in Rockingham County. Two alignments have been developed and endorsed by the Commonwealth Board of Transportation and the Federal Highway Administration. Candidate Build Alternative 4 (CBA 4) has been prioritized and funded through VDOT's Six Year Improvement Program. This route extends the City's Stone Spring Road-Erickson Avenue project into the County, connecting with the newly relocated RMH location and eventually connecting to Route 33 close to its intersection with Boyers Road

(Route 704). A longer range vision is considered in Candidate Build Alternative 1 (CBA 1), which begins at the Mount Crawford/Bridgewater Exit 240 and would connect with Route 33 via Cross Keys Road (Route 276).

Figure 11-1: Harrisonburg Southeast Connector Location Study



**Harrisonburg Southeast Connector
Location Study**

RECOMMENDED ALTERNATIVE

Transportation Goal, Objectives and Strategies

Goal 10. To develop and maintain a safe and convenient transportation system serving all modes of travel, such as, automobile, pedestrian, bicycle and mass transit.

Objective 10.1 To adopt, update regularly, and implement a City Street Improvement Plan of needed road improvements that serves existing and future land uses and is coordinated with road improvement plans of the Metropolitan Planning Organization, the Virginia Department of Transportation, and Rockingham County.

Strategy 10.1.1 To work with Rockingham County and VDOT to maintain a regional transportation plan for the MPO.

Strategy 10.1.2 To seek inclusion of the road improvements recommended in the City Street Improvement Plan in the MPO regional transportation plan and to coordinate the two plans.

Strategy 10.1.3 To seek developer participation in completing the street network as shown on the City Street Improvement Plan.

Strategy 10.1.4 To expand the Design & Construction Standards Manual to include design standards for streets that reduce traffic congestion within the transportation system while accommodating all transportation modes. Standards should be included both for streets constructed by the City and those by the private sector specifying appropriate:

- interconnectivity of the street system
- street widths adequate to handle projected traffic volumes based on traffic impact analyses while avoiding excessive pavement widths
- pull-off areas for buses on collector and arterial streets
- bicycle facilities
- sidewalk widths and location within the street right-of-way.

Strategy 10.1.5 To include applicable standards developed under Strategy 10.1.4 in the Subdivision Ordinance, as appropriate.

Strategy 10.1.6 To limit driveway access along arterial and collector streets, thus increasing safety and facilitating efficient traffic flow.

Strategy 10.1.7 To replace and rehabilitate bridges as needed to maintain the functionality and safety of the road network.

Strategy 10.1.8 To resurface pavement as necessary to obtain maximum substructure life.

Strategy 10.1.9 To maintain storm drainage facilities to ensure protection of roadways from flooding, erosion or undermining, and environmental water quality.

Strategy 10.1.10 To install broadband connections to all traffic signal systems.

Strategy 10.1.11 To establish a transportation management center that would enable real-time monitoring of signals and traffic flow throughout the City.

Objective 10.2 To promote alternative modes of transportation, and develop strategies that reduce motorized traffic demand on City streets.

- Strategy 10.2.1 To plan for “complete streets” that are designed and operated to enable safe access for all users including bus, bicycle and pedestrian access into all new street and street improvement projects.
- Strategy 10.2.2 To complete development of an on-ground bicycle/pedestrian network that is continuous and interconnected.
- Strategy 10.2.3 To consider alternative techniques to reduce traffic congestion such as expanded transit service, integrated and optimized traffic signal timings, re-marking lanes, and integrating bicycle/pedestrian enhancements.
- Strategy 10.2.4 To prioritize, implement and regularly update the Harrisonburg Bicycle & Pedestrian Plan.
- Strategy 10.2.5 To seek conversion of the eastern most line of the Norfolk Southern system in Harrisonburg to a rail-trail as shown on the City Street Improvement Plan.
- Strategy 10.2.6 To require private developers to implement bikeway improvements in the City Bicycle & Pedestrian Plan that directly serves their property.
- Strategy 10.2.7 To review the following areas and make recommendations for sidewalk and shared use path improvements to at least one-half mile of schools/universities, parks, and public facilities and to fulfill the goals of the Bicycle and Pedestrian Plan.
- Strategy 10.2.8 To continue to require all development and redevelopment projects to provide desired sidewalks on both sides of the street.
- Strategy 10.2.9 To continue to ensure that all new sidewalks and sidewalk repairs meet American’s with Disability Act (ADA) accessibility standards and for projects in or around sidewalks to maintain ADA accessibility standards.
- Strategy 10.2.10 To indicate specific projects for the annual allocation of funds for sidewalk, bicycle, and shared use path improvements in the Capital Improvement Program.
- Strategy 10.2.11 To establish wayfinding signage for bicycles.
- Strategy 10.2.12 To install bicycle racks at or around all public facilities.
- Strategy 10.2.13 To coordinate planning for regional bicycle facilities with the Central Shenandoah Planning District Commission.

Objective 10.4 To promote and seek to increase transit ridership.

- Strategy 10.4.1 To continue to work with JMU and EMU to increase transit use by students, faculty and staff.
- Strategy 10.4.2 To promote bus, bike or walk to work and school days.
- Strategy 10.4.3 To work with the City School Board to promote school buses, walking or bicycling as the primary forms of transportation to school rather than private vehicles, i.e. Walk to School Days and Safe Routes to School.

- Strategy 10.4.4 To continue to revise and improve City bus routes and schedules to serve residential areas and major destinations (universities, major employment sites, shopping centers, downtown).
- Strategy 10.4.5 To work with local employers to provide incentives to employees to travel to work by bus, bicycle or walking.
- Strategy 10.4.6 To seek improvement of transit and paratransit services for the elderly and handicapped.
- Strategy 10.4.7 To work with Rockingham County and other MPO member localities to expand existing and provide new transit routes from County growth areas to the City.
- Strategy 10.4.8 To promote the development of a shuttle service from the City to the Shenandoah Valley Regional Airport at Weyers Cave.
- Strategy 10.4.9 To promote the availability of public transportation connectivity between Harrisonburg and various destinations.
- Strategy 10.4.10 To implement technologies that allow for both increased information to be accessible to transit users and increased efficiency in resource deployment.
- Strategy 10.4.11 To identify and construct the appropriate facilities to accommodate future transit operations with an eye toward establishing transit-only facilities in appropriate corridors.
- Strategy 10.4.12 To continue to grow mass transit operations to keep pace with the increased demand stemming from development in the City, JMU, and other jurisdictions falling within the planning area of the Harrisonburg-Rockingham MPO.
- Strategy 10.4.13 To increase operational hours to make transit access more available.
- Strategy 10.4.14 To improve the amenities at transit stops to create a more comfortable experience for HDPT customers.
- Strategy 10.4.15 To work with all relevant parties to engage in truly multi-modal transportation planning.
- Objective 10.5 To assess and seek to mitigate and improve the transportation impacts of both public and private development and redevelopment projects.
- Strategy 10.5.1 To continue requiring and reviewing traffic impact studies with all rezoning and special use permit applications proposing development of sufficient size to create a significant traffic impact. Such studies should include:
- Impacts of project vehicular traffic on the road network
 - Impacts of the project on pedestrian and bicycle circulation and transit use
 - Mitigation measures that would lessen adverse impacts and maintain a desired level of service of “C” or better on nearby roadway links and intersections
- Strategy 10.5.2 To perform similar traffic impact studies for public facilities projects.
- Strategy 10.5.3 To review Zoning Ordinance parking requirements for multifamily projects to determine their adequacy. Consideration in this review

should be given not only to increasing required parking, but also to measures to reduce parking demand.

Objective 10.6 To reduce automobile trips through innovative means.

Strategy 10.6.1 To promote mixed use neighborhoods as recommended by the Land Use Guide so that residents of these neighborhoods can easily walk, ride a bicycle, or take transit to work, shopping, school, place of worship, and recreation.

Strategy 10.6.2 To expand opportunities for reductions in parking requirements for commercial and residential projects designed to take advantage of transit and for mixed use developments where shared parking is feasible.

Strategy 10.6.3 To promote carpooling through incentive programs, such as, a “guaranteed ride home” program.

Strategy 10.6.4 To encourage community bike share programs.

Objective 10.7 To improve the safety of all modes of travel.

Strategy 10.7.1 To incorporate safety considerations for all travel modes (vehicular, pedestrian, bicycle, public transit) in the design of roadways.

Strategy 10.7.2 To incorporate traffic calming measures in neighborhoods, near schools and universities, and other appropriate areas to discourage speeding and improve pedestrian safety.

Strategy 10.7.3 To relocate the eastern most line of the Norfolk Southern Rail system in Harrisonburg to a location outside the City so as to remove conflicts between rail traffic and vehicular, pedestrian and bicycle traffic.