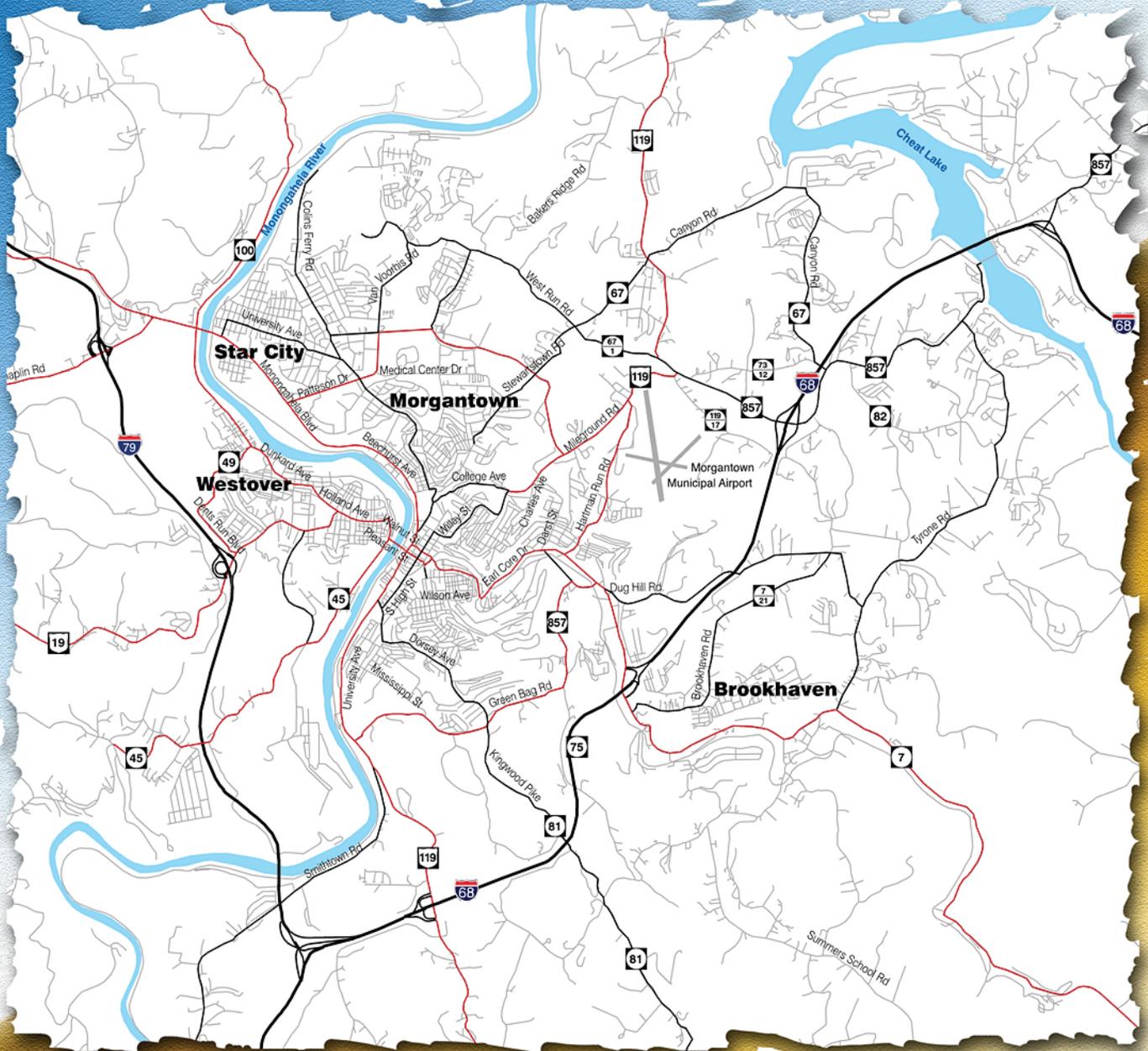


Greater Morgantown MPO Regional Transportation Plan



Morgantown

Area Transportation Study

Greater
Morgantown
MPO

Greater Morgantown Regional Transportation Plan Final Report

May 2007

Greater Morgantown
Metropolitan Planning Organization

180 Hart Field Road
Morgantown, WV 26505



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INTRODUCTION TO THE REGIONAL TRANSPORTATION PLAN

OVERVIEW

The Greater Morgantown Metropolitan Planning Organization was established in June 2003 as the regional agency responsible for administering the continuing, coordinated and comprehensive transportation planning process in Monongalia County. The MPO area is displayed in Figure 1. When the MPO was set up a set of core responsibilities and are outlined below:

1. Establish a setting: Establish and manage a fair and impartial setting for effective regional decision-making in the metropolitan area.
2. Evaluate alternatives: Evaluate transportation alternatives, scaled to the size and complexity of the region, to the nature of its transportation issues, and to the realistically available options. (These evaluations are included in the Unified Planning Work Program or UPWP).
3. Maintain a Regional Transportation Plan (RTP): At least every five years, develop and update a regional transportation plan for the metropolitan area covering a planning horizon of at least twenty years that fosters (1) mobility and access for people and goods, (2) efficient system performance and preservation, and (3) quality of life
4. Develop a Transportation Improvement Program (TIP): At least every four years, the MPO and the West Virginia Department of Transportation (WVDOT) must develop a project implementation program based on the RTP and designed to serve the area's goals, using spending, regulating, operating, management, and financial tools. The TIP period is required to extend four years into the future.
5. Involve the public: Involve the general public and all the significantly affected sub-groups in the four essential functions listed above.

One of the responsibilities that the MPO has in administering the regional transportation program is updating and implementation of the

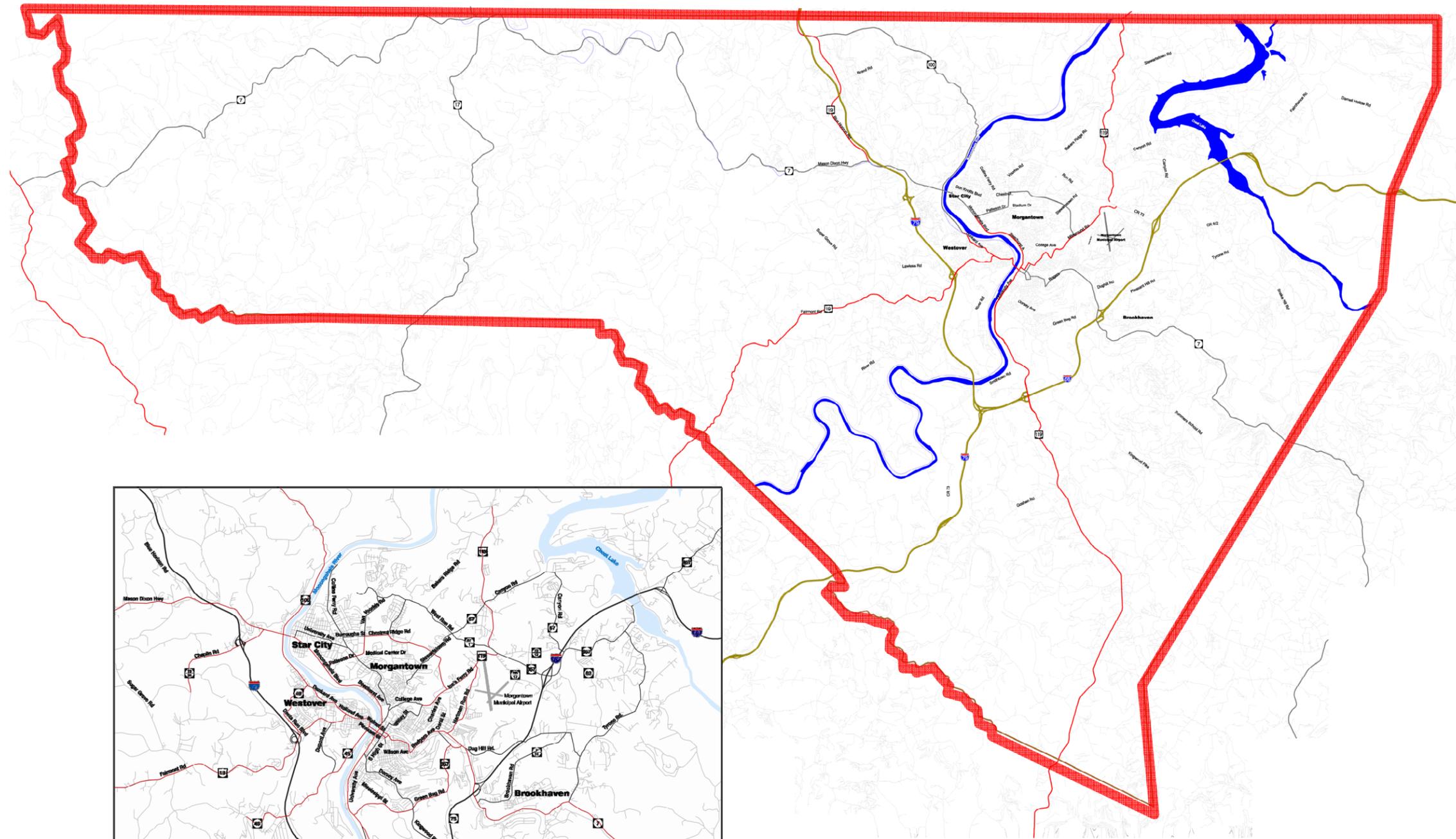
long range transportation plan encompassing the roadway, pedestrian and bicycle, and transit systems serving the county study area. The primary purpose of the 2030 RTP is to provide a vision for addressing existing and anticipated travel demand on the multimodal transportation system serving the county-wide metropolitan planning area.

The RTP serves as a guide for transportation system improvements in the metropolitan area, and is a focal point of the MPO's planning programs and activities. The 2030 RTP is essentially a "blueprint" for the next 25-plus years, and in accordance with federal requirements addresses transportation system needs and provides a set of methods, strategies, and actions for developing an integrated multimodal transportation system that supports the efficient movement of people and goods.

The RTP covers the transportation systems of the jurisdictions located within the Greater Morgantown MPO service area, along with those components of the West Virginia Department of Transportation (WVDOT) system located in the county. The Morgantown area RTP considers the interdependent nature of the metropolitan area's multimodal transportation systems through addressing the region's highway, transit, bicycle, and pedestrian modes in a combined effort.

LEGISLATIVE MANDATES

The Federal Highway Administration and the Federal Transit Administration mandate that each urbanized area with a base population of 50,000 or more must have an organized planning process that results in a transportation plan that addresses the planned development for the area. Any metropolitan region that fails to meet this requirement may be penalized by denial of federal capital and operating funds.



Legend
 - MPO Coverage Area

Primary Focus Area

Morgantown Area MPO Study Area



Figure 1

The 2030 RTP has been prepared under the federally mandated regulations of the Clean Air Act Amendments (CAAA) of 1990, Transportation Equity Act for the 21st Century (TEA-21) and, the Safe Accountable Flexible Efficient Transportation Equity Act a Legacy for User (SAFETEA-LU). SAFETEA-LU requires that long range transportation plans consider eight planning factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users.
4. Increase the accessibility and mobility of people and for freight.
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

These federal initiatives, along with the current transportation guidance, requires long range metropolitan transportation plans to include only those projects that can be delivered with funds reasonably expected to be available during the 20-plus year planning period. The breadth of transportation system considerations is also expanded under SAFETEA-LU and transfers additional decision-making authority from states to local governments. Local transportation plan elements are designed to meet the requirements of federal legislation as well as transportation system goals of both the state and the Morgantown region.

MPO STRUCTURE

The MPO functions under a committee structure comprised of:

- The MPO Policy Board.
- Technical Advisory Committee (TAC).
- Citizen's Advisory Committee (CAC).

MPO POLICY BOARD

The MPO Policy Board provides overall direction and a forum for transportation decisions. Voting members of the Policy Board are primarily elected officials from incorporated communities in the county, the County Commission and representatives of other jurisdictions in the county including the Monongalia County Board of Education, WVU and the Mountain Line Transit Authority. Also, based on title 23 CFR § 450.306 a representative of the West Virginia Department of Transportation is a voting member of the Policy Board. The Policy Board meets monthly to discuss issues and review and approve major planning reports, documents, activities, and proposed modifications to both the RTP and WVDOT Transportation Improvement Program (TIP). Representation on the Policy Board is listed below:

- Three county commissioners representing Monongalia County.
- Three elected officials representing the City of Morgantown.
- One elected official representing the City of Westover.
- One elected official representing the Town of Star City.
- One elected official representing the Town of Granville.
- One elected official representing the Town of Blacksville.
- One elected representative of the Monongalia County Board of Education.
- One appointed official of the Mountain Line Transit Authority.
- One representative of the WVDOT
- One representative from WVU (as of January 2007)

ADVISORY COMMITTEES

The Technical Advisory Committee (TAC) and the Citizen’s Advisory Committee (CAC) also meet monthly and are responsible for providing advice to MPO staff and to the MPO Policy Board regarding planning reports, documents, activities, and proposed modifications to the RTP and TIP. TAC members are appointed by the Policy Board Chairperson and approved by the remainder of the Policy Board. In addition to appointments by the Policy Board, each of the following agencies may be represented on the TAC:

- Morgantown Planning Department.
- Monongalia County Planning Department.
- West Virginia Department of Transportation.
- Federal Highway Administration (FHWA).
- Mountain Line Transit Authority.
- Harley O. Staggers National Transportation Center at WVU.

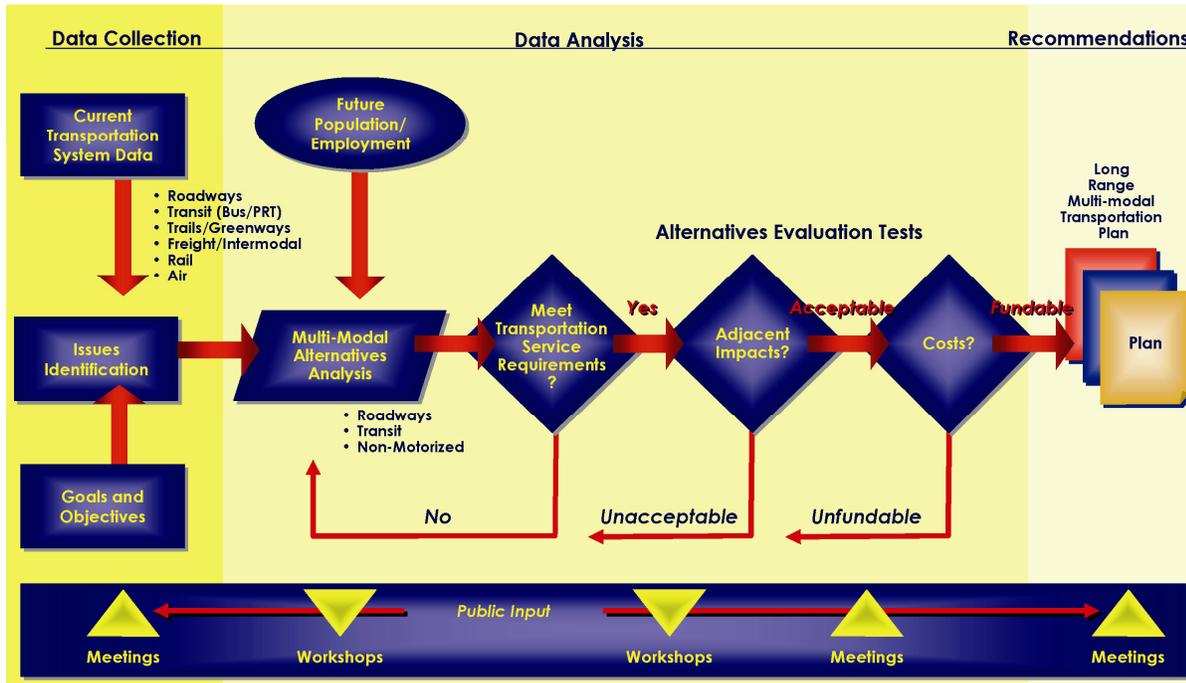
The CAC is an MPO standing committee with the Chairperson appointed by the Policy Board Chair and approved by the remainder of the Policy Board. A single individual representing the following interests can be appointed to the CAC by the Chairperson:

- Mountain Line Transit Authority.

- WVDOT.
- West Virginia University.
- Monongalia County Development Authority.
- Morgantown Area Economic Partnership.
- Morgantown Area Chamber of Commerce.
- Federal Highway Administration.
- Federal Aviation Administration.
- West Virginia Governor’s Office.
- Resident Associations.
- Local Commercial Associations.
- Emergency Service Organizations.

TRANSPORTATION PLANNING PROCESS

In general, the 2030 RTP covers the transportation systems of the jurisdictions comprising the Morgantown metropolitan planning area that are eligible for federal funding as well as the state transportation system located within the metropolitan planning area. The Morgantown Area RTP



Summary of the Transportation Planning Process

GREATER MORGANTOWN REGIONAL TRANSPORTATION PLAN

considers the multimodal, interdependent nature of the region's transportation system, and addresses highways, public transportation, bicycle and pedestrian facilities, as well as projects and programs to better manage transportation demand and congestion.

The long range transportation planning process consisted of the development of several major components. These included the preparation of:

- Transportation system goals, objectives, and measures of effectiveness.
- Travel demand model update and validation to 2000.
- Land use and traffic forecasts through 2030.
- Congestion management strategies.
- Multi-modal transportation needs.
- Funding level estimates.
- Multimodal alternative analysis.
- 2030 Fundable Improvement Plan and Future Needs Plan (project lists).

STAKEHOLDER INVOLVEMENT

The Morgantown/Monongalia County Long Range Transportation Plan should be founded on the consent of the general community as well as the various committees and bodies formed within the area. Long term support for implementation of the plan requires that the plan reflect the community's expectations for its transportation system as well as what tradeoffs the community is willing to make in order to achieve those expectations.

The Morgantown Area MPO is continually working to incorporate stakeholder involvement in the overall planning process. Throughout the planning process, the MPO has provided a broad range of opportunities for the public and agencies to be actively involved, particularly in development of the recommended improvement plan.

A variety of public involvement methods have been used throughout development of 2030 plan and will continue to be used during implementation of the recommendations and on-going updates to the document.

COMMITTEE MEETINGS/PRESENTATIONS

The MPO committees were integral to development and review of each of the key products of the plan, including:

- Identification of current transportation system issues. Workshops were held with both the TAC and the CAC at which members of the committees were asked to map and document areas of congestion, missing links in the systems, development areas that did not have adequate transportation facilities, programs that were needed (carpools, vanpools, etc.). MPO staff and the consultants documented the issues and distributed them to the committees for comment and published the issues in the Existing Conditions Report.
- Development of RTP goals and objectives.
- Development of the measures of effectiveness to be used in evaluating system improvement alternatives by mode.
- Assessment and review of the existing transportation system, including:
 - Traffic volumes and congested locations.
 - Accident (crash) locations and rates.
 - Pedestrian and bicycle facilities and their condition.
 - Transit routes and transit system ridership including Mountain Line Transit and the VWU personal rapid transit (PRT) systems.
 - Functional classification of the roadway system.
 - Freight movement.
 - Airport facilities and activity levels.
- 2030 population, household and employment level estimates for the county and distribution of the 2005 to 2030 change in household and employment to subareas within the county.
- Daily traffic forecasts for 2030 and the forecasted congested corridors.
- Development of alternatives for addressing the congested locations

and system improvements that support the land use development concept.

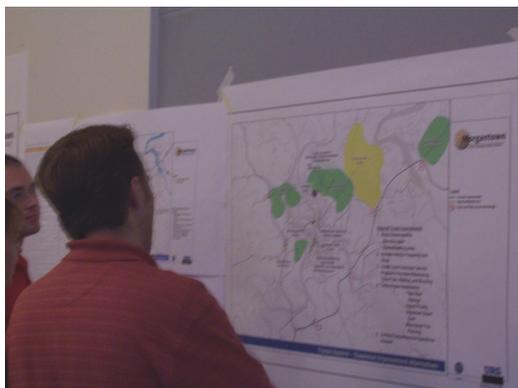
- Methods for evaluating the range of improvements.
- Review and narrowing the range of identified improvement concepts to those that best addressed the local needs.
- Estimation of the future funding levels for transportation system improvements within the study area.
- Determination of the roadway, non-motorized, transit system improvements included in the Funded and Future Needs plans.

PUBLIC INFORMATION MEETINGS

Over the 24 months in which the plan was developed the MPO hosted four public meetings at locations throughout the county. The meetings were organized to be a combination of presentation by MPO staff and the consultant on the study progress and information to be covered in the meeting; opportunities for the public to provide comment, ask questions and



Public Information Meeting #3



Public Information Meeting #4

openly discuss the meeting material; and opportunities for the public to place their individual fingerprint on the plan through identifying transportation issues, potential solutions and priorities of the recommendations to pursue.

To better ensure that ideas, concepts and recommendations were clearly presented, graphics, images, charts, and maps were extensively used in each of the meetings. People in attendance were encouraged to make notes on the maps and forms were distributed for recording comments, questions and general input. The comment forms were collected after each meeting and summaries were prepared.

Listed below are brief summaries of each of the four groups of public meetings:

- Public Meeting Series #1: May 4 and 5, 2005. A series of three meetings were held in various locations. Two meetings were held on the evening of May 4, 2005 (Morgantown Downtown Public Library and at the Cheat Lake Middle School) and one meeting was held on May 5, 2005 (Suncrest Middle School). The information covered in these meetings included:
 - Introduction to the transportation planning process.
 - Overview of the tasks included in the plan development.
 - Identification of local transportation issues. Attendees and MPO staff/consultants located issue areas on maps of the county.
- Public Meeting #2: May 24, 2006. This meeting was held at Westwood Middle School in Westover. Material presented included:
 - 2030 population and employment estimates and proposed distribution areas around the county for the increment between 2005 and 2030.
 - 2030 daily traffic forecasts and summaries of travel pattern changes associated with the land use development concept.
 - Locations of capacity deficiencies forecasted for 2030.
 - The range concepts tested and the measures used to compare the

alternatives applied in the multimodal alternatives analysis.

- The results of the first-level screening of alternatives.
- Public Meeting #3: October 4, 2006 at the Erickson Alumni Center on the WVU Evansdale Campus. The focus of this meeting was the initial project and program recommendations to include in the Funded and Future Needs elements of the recommended plan. Maps displaying the multimodal improvement plan were provided for review and a presentation of how the plans were developed was provided. Forms were provided for each of the approximately 155 persons in attendance to record their comments. Based on the input provided at this meeting, a second recommendations public meeting was scheduled. The purpose of the second meeting was to review the details of each of the recommended improvement concepts.
- Public Meeting #4: November 30, 2006 at the Erickson Alumni Center on the WVU Evansdale Campus. As a follow-up to the October 2006 recommendations information meeting, the presentation at this meeting focused on the specific roadway network improvements that were included in the Funded Improvement Plan of the RTP. The general elements of each project proposed for the Funded Improvement Plan was presented to the crowd of approximately 80. The audience asked questions about the improvement concepts, with MPO staff and the consultants providing responses. In addition to the presentation, maps and tables of the recommendations were provided and comment forms were available for recording input.



May 2006 Public Meeting

MPO WEBSITE

An additional tool used to involve the general public is the Transportation Plan section of the MPO's website. The MPO website (www.planttogether.org) provides a current, always available resource for disseminating information and receiving feedback from the general public. Information at the website includes both the telephone and email contact information for the MPO staff.



**Public Information Meeting
2030 Regional
Transportation Plan**

The Greater Morgantown Metropolitan Planning Organization (MPO) and its member organizations will be hosting a public information meeting to provide an update on the multimodal long range transportation plan and to take input from the local community.

Topics to be covered as part of the meeting include:

- Where residential and employment growth are expected to occur in the county.
- 2030 traffic and congestion.
- Range of roadway, transit and non-motorized system alternatives being reviewed to address current and future transportation needs.
- Next steps in the planning process.

Meeting Information

**Westwood Middle School
670 River Road
Westover
Wednesday, May 24, 2006
7:00 PM**

For More Information Call:
Chet Parsons, MPO Executive Director
291-9571
www.planttogether.org
Or
Bill Troe, URS Corporation (866) 671-5309 (Toll Free)

**Take a Look at the Future of
Morgantown and Monongalia County**

2030
2006



Public Meeting Newspaper Ad

Greater Morgantown MPO Website – Regional Transportation Plan Page

OTHER INFORMATION DISTRIBUTION METHODS

Various other methods for disseminating information to stakeholders and/or receiving their feedback were used throughout the study. These additional methods have included:

- **Local Media:** Interviews were provided throughout the plan development period with the Morgantown Dominion Post newspaper and the WVU Daily Athenaeum. From November 19-22, 2006 the Dominion Post published the Recommended Improvement section of the RTP.
- **Study Travel Survey (Unscientific):** Through the website and at each early event/presentation, members of the study team provided copies of a survey requesting individuals to allocate a mythical \$100 transportation budget to various focus areas. The travel survey included a question that asked “What specific transportation issues do you think need to be addressed in the Morgantown area?”. Issues were summarized and reported to the TAC and on the website. The results of the survey, while unscientific in its distribution, were considered throughout the study process.

Morgantown Dominion Post – November 19, 2006

GREATER MORGANTOWN REGIONAL TRANSPORTATION PLAN

- Organization Outreach: Throughout the plan development period the MPO and consultant staff made presentations to local organizations as a part of the stakeholder involvement plan. Included in the list of organizations are:
 - North Rotary Club – March 9, 2005: Overview of the transportation planning process and information on opportunities for involvement.
 - Bicycle and Pedestrian Coordinating Committee – April 15, 2005: Overview of the transportation planning process and information on opportunities for involvement.
 - Downtown Economic Development Organization – May 12, 2005: Overview of the transportation planning process, unique transportation issues impacting the downtown area.
 - WVU Infrastructure Committee – October 11, 2006: Overview of the process and summary of the recommended improvements.

ADDRESSING THE EIGHT METROPOLITAN AREA PLANNING FACTORS

OVERVIEW

Compliance with the SAFETEA-LU planning factors is an integral key to successfully updating the regional transportation planning process for the Morgantown and Monongalia County study area.

The eight metropolitan planning factors have been addressed throughout the planning process from development of the transportation system goals and objectives to the project list established as a primary study product. The following sections provide documentation of how the planning factors were addressed in the plan and the planning process.

HOW THE TRANSPORTATION GOALS ADDRESS THE EIGHT PLANNING FACTORS

The eight planning factors were a primary consideration in development of the planning goals and objectives. Table 1 documents how the regional transportation plan goals address each of the SAFETEA-LU planning factors. The transportation system goals are outlined in the next chapter of the RTP.

HOW THE PLAN RECOMMENDATIONS AND/OR PLANNING PROCESS ADDRESSES THE PLANNING FACTORS

Documentation of how each of the eight SAFETEA-LU planning factors is addressed through the Regional Transportation Plan goals and the recommendations is provided below.

Planning Factor 1 - Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

Economic vitality is the primary focus of the purpose for maintaining and enhancing the transportation system, and the importance is

demonstrated through the emphasis in each of the four transportation planning goals developed as part of the update process. The plan recommendations support economic vitality through focusing on reducing congestion in corridors that provide access to the primary commercial, education and residential activity areas in the county. Through reducing the level of congestion in these corridors, accessibility within and through the community (a measure employed in determining where companies and residents locate) will be enhanced. In addition, the regional plan includes the recommended improvements for the Morgantown Municipal Airport that are intended to improve regional and global competitiveness of Morgantown and Monongalia County.

Planning Factor 2 - Increase the safety of the transportation system for all motorized and non-motorized users.

The RTP includes projects at high crash areas and within congested corridors that have been demonstrated to reduce crashes. Transportation systems management techniques such as access management, the addition of turn lanes at key intersections, and the installation of traffic signals, which are recommendations included in the RTP, have been proven to reduce vehicle crashes. Also included are expansion projects in congested corridors and addition of new facilities that have been forecasted to remove volume from congested corridors. Reducing the volume in congested corridors will generally result in a reduction in crashes in those corridors. Additionally, the design of the new facilities will meet current design standards which incorporate an elevated level of techniques for addressing conflicts that are linked to crashes than the design standards to which most of the routes in the study area are built. Table 2 documents forecasted changes in crash rates associated with the types of improvements

recommended for the current roadway system.

TABLE 1: ADDRESSING THE EIGHT PLANNING FACTORS IN THE TRANSPORTATION PLAN GOALS

Goals and Objectives	SAFETA-LU Planning Factors							
	Support Metro Area Economic Vitality	Increase System Safety	Increase System Security	Increase Accessibility/Mobility (People/Freight)	Environment, Energy Conservation, Quality of Life	Promote Multimodal Integration (People/Freight)	Promote System Management/Operation	Emphasize System Preservation
<p>Goal 1: Develop an interconnected, intermodal transportation network that provides reliability, equity, efficiency, choice, safety, and opportunity for all potential users.</p> <p>OBJECTIVES</p> <p>Focus transportation system improvements on reducing weekday peak hour delay.</p> <p>Create a transportation system that provides viable travel mode (auto, bike, walk, transit) and route choices between key origins and destinations.</p> <p>Provide a transportation plan project/program list that provides for long-term community support for implementation through:</p> <ul style="list-style-type: none"> Establishing a phasing plan based on the utility provided by individual elements. Equitably distributing projects between the various modes (create more win-win conditions). <p>Establish local guidelines/thresholds/definition of "acceptable" delay.</p> <p>Incorporate, to the extent feasible, projects that separate (horizontally/vertically) pedestrian/bike facilities from auto/truck facilities.</p> <p>Provide intermodal connectivity [e.g., auto-transit, auto-bike/walk, transit-bike/walk, transit (bus)-transit (PRT)].</p> <p>Incorporate facilities for alternate modes (bike, pedestrian, transit) into roadway projects unless constraints exist that make providing the facilities unreasonable and the constraints can be documented.</p> <p>Develop access management standards and associated model ordinance language. Apply the standards in assessing proposed roadway system improvements and as a viable approach to improving safety and operations along existing corridors.</p> <p>Identify gateway corridors and develop aesthetic treatments to be applied within the corridors.</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

TABLE 1: ADDRESSING THE EIGHT PLANNING FACTORS IN THE TRANSPORTATION PLAN GOALS

Goals and Objectives	SAFETA-LU Planning Factors							
	Support Metro Area Economic Vitality	Increase System Safety	Increase System Security	Increase Accessibility/Mobility (People/Freight)	Environment, Energy Conservation, Quality of Life	Promote Multimodal Integration (People/Freight)	Promote System Management/Operation	Emphasize System Preservation
<p>Goal 2: Implement and promote transportation system improvements that provide effective movement of people and goods.</p> <p>OBJECTIVES</p> <p>Establish a multimodal transportation system to meet the needs of whole community.</p> <p>Incorporate maintenance costs into the financial assessment of the project/program development process that is employed to determine the elements of the recommended long range transportation plan.</p> <p>Identify system modifications/improvements or land development patterns that provide for more efficient use of the current transportation system.</p> <p>When evaluating additional parking facilities and in assessment of current issues consider the vehicle flow and pedestrian safety impacts that parking facilities create.</p> <p>The feasibility of remote parking with transit/pedestrian/bicycle connections should be addressed in the transportation system improvement analysis.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Goal 3: Provide a transportation system that supports regional economic development and that balances transportation service with potential impacts to the surrounding physical and social environment.</p> <p>OBJECTIVES</p> <p>Develop a transportation system that addresses the current unacceptable congestion into and through downtown and provides the level of access required to maintain the vitality of the downtown business district.</p> <p>Incorporate the potential for community/neighborhood impacts into the evaluation criteria applied in the multimodal alternatives analysis.</p> <p>Address the potential for positive and negative environmental impacts (air quality, noise, historical properties, etc.) in the transportation alternatives analysis.</p> <p>For expansion/improvement projects in outlying areas, assess and document the potential for impacts and benefits to the existing community.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TABLE 1: ADDRESSING THE EIGHT PLANNING FACTORS IN THE TRANSPORTATION PLAN GOALS

Goals and Objectives	SAFETA-LU Planning Factors							
	Support Metro Area Economic Vitality	Increase System Safety	Increase System Security	Increase Accessibility/Mobility (People/Freight)	Environment, Energy of Life Conservation, Quality of Life	Promote Multimodal Integration (People/Freight)	Promote System Management/ Operation	Emphasize System Preservation
Goal 4: Promote efficiency in land use and development patterns.								
OBJECTIVES								
Provide a transportation improvement plan that is flexible to changes in the development market of the Morgantown area (modal and infrastructure flexibility).	<input type="radio"/>			<input type="radio"/>				
Create policies for coordinating transportation system improvements with land development to tie road/trail/sidewalk/transit improvements to development as it occurs.	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
Incorporate transportation system needs/current facilities with regional land use planning/development decisions.	<input type="radio"/>			<input type="radio"/>	<input type="radio"/>			

TABLE 2: CRASH RATE REDUCTION ASSOCIATED WITH TRANSPORTATION IMPROVEMENTS

Modification Type/ Measures	Estimated Crash Rate Reduction
Provide Left Turn Lane – No Signal	12%
Install Traffic Signal/Major Signal Upgrade	27%
Add Left Turn Lane and Signal Phase	40% - Principally in crashes involving left turning vehicles
Add Left Turn Phase – Left turn Lanes Existing	30% - Principally in crashes involving left turning vehicles
Add warning signs on Curves	20%
Prohibit Right Turn on Red	20% - Crashes involving right turning vehicles
Widen Travel Lanes (≤10.5 feet to 11 feet+)	15%
Prohibit Left Turns	40% - Principally in crashes involving left turning vehicles.
Add Center Median Barrier	61%
Add Pedestrian Signal at Intersection	50% - Pedestrian involved crashes
Convert 4-Lane to 3-Lane (two-way Left turn lane)	19%
Upgrade/Replace Pavement Markings	13%
Add Shoulder Rumble Strips	30%
Convert to One-way Pair	50%
Install Roundabout (From signalized Intersection)	40%
Widen Bridge (From Signed Narrow Bridge)	62%
Increase Shoulder Width (to 8 (Feet))	10%
Advanced Warning Flasher for Signal	15%
Railroad Crossing Gates	60%

Sources: Compilation of Numerous Studies.

Safety for non-motorized users will be improved by providing enhancements to the existing non-motorized system as well as providing separation of non-motorized and motorized modes in appropriate locations. System safety enhancements include recommendations to improve pedestrian crossings along major thoroughfares, the addition of bike lanes/ expanded paved shoulders, and sidewalks along several highly

traveled corridors. At high crash locations such as Grumbein's Island and the intersection at Monongahela Boulevard/Patteson Drive, grade separated crossings that reduce or eliminate pedestrian-motor vehicle conflicts points are recommended.

Planning Factor 3 - Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users.

Following September 11, 2001 and events since, security of our nation's transportation system has become an issue on the forefront. Security functions are becoming an ever-increasing demand on systems that were once focused on transportation purposes. Within metropolitan and rural areas, transportation departments have initiated planning, design and implementation of intelligent transportation systems (ITS) that have greatly assisted with necessary Homeland Security functions. The use of cameras along critical transportation infrastructure can identify security threats to that infrastructure. Critical bridges, communication infrastructure, rivers and ports, industrial areas, and mass transit systems should be monitored through the use of closed-circuit television (CCTV) and the images transmitted back to the appropriate agency or responsible party. The use of traveler information dissemination devices such as dynamic message signs, highway advisory radio, 511, and the media are critical in the event of a mass evacuation scenario. The need to include the transportation and ITS community in emergency operations planning is critical and is encouraged in the transportation plan recommendations.

Within the RTP, a listing of priority venues and assets has been identified for further coordination as part of a regional homeland security plan. These assets include Monongahela River Crossings, the Morgantown Monongahela River lock and dam, and interchanges along I-79 and I-68. Additionally, security recommendations included in the plan support development of evacuation plans for the Coliseum and Milan Puskar Stadium/Mountaineer Field in the event of a natural disaster or security threat.

Planning Factor 4 - Increase accessibility and mobility of people and freight.

Projects included in the Fundable Improvement Plan result in:

- Reductions in the level of forecasted congestion throughout the system relative to the 2030 Existing Plus Committed network.
- New facilities that provide improved accessibility to development areas in Morgantown and Monongalia County and areas in the region outside the county and to Interstate routes that support the movement of persons and freight nationally.
- Improvements of the multimodal transportation systems in the county that provide connectivity to the most intense trip generation areas.
- The product of the plan recommendations is a system that better supports the local, regional, and nation movement of persons and goods.

The recommended increase in transit funding will significantly enhance county residents' accessibility to jobs, education, and services among others. Mobility will be further improved if some of the funding is also used to expand transit into currently underserved and unserved areas of the county, such as Route 19 North near the new University High School site. Pedestrian mobility will be improved in many areas where provisions were never considered before. For example, sidewalks are recommended to be installed on Willowdale Road, a major connector between WVU's Evansdale Campus and the nearby residential areas. Recommendations for bike lanes and/or paved shoulders implemented as a stand alone project or part of a roadway project will reduce barriers to bicycling throughout the county.

Planning Factor 5 - Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.

This planning factor is directly addressed through Goals #2 through #4. The alternatives analysis process used in development of the recommended transportation system

incorporated a broad range of evaluation criteria from the following categories:

- Social benefits and impacts.
- Engineering feasibility.
- Environmental impacts and benefits.

The transportation improvement project list developed through the locally supported alternatives analysis balances the positives and negatives of each project as viewed from each of the listed perspectives. This broad range of criteria approach was critical to the alternatives analysis because no project will be unanimously supported by all in the community and each project results in many positive and negative impacts. The goal of the planning process was to take into account, and discuss publicly, the positives and negatives of each potential improvement project.

The projects included in the multimodal improvement list address this planning factor by:

- Reducing congestion in the region can provide a positive impact on the cumulative level of vehicle emissions, which will reduce the burden that the transportation system has on the environment.
- Providing improved connectivity of the non-motorized system to current and future development areas resulting in providing greater opportunities to bike and walk between activity centers. Thus, reducing the dependence on auto travel.

Recommended improvements to the transportation system are focused on corridors that directly serve the most intense activity centers in the region, including WVU (Evansdale and downtown), the Medical Center area, University Town Center, downtown Morgantown, downtown Westover, and north side high-density residential developments.

Planning Factor 6 - Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

The RTP addresses this factor, calling for the maintenance of an interconnected transportation system through

recommendations for multimodal connections in the regional core and activity centers, and improved ground access to the airport. Numerous improvements in the plan contribute to a system of multimodal connections between the university core and regional activity centers, an increased emphasis on transit and reducing vehicle travel through travel demand management techniques. The plan contains improvements to current truck routes and advocates development of new truck routes to provide increased efficiency and reduce the negative impacts on downtown Morgantown of trucks passing through.

Planning Factor 7 - Promote efficient system management and operation.

This factor is addressed by several goals provided in the transportation plan. First, Goal #1 addresses this factor by recommending development of access management standards into local planning documents. Goal #2 incorporates accounting for system maintenance and operations costs into the planning process, not simply the construction costs of building more facility mileage and promotes use of travel demand management techniques to reduce the burden on the existing system. Goal #3 focuses on addressing congestion and circulation in the downtown area, which will require maintenance of the current system in a multi-faceted approach. Finally, system management is addressed in Goal #4 through considering and development as an integral part of the overall transportation system. Through considering transportation, and specifically where additional vehicle capacity does and does not exist in the system, more efficient use of scarce resources can be accomplished by focusing transportation and development dollars where there is capacity, or where improvements to the system can reasonably be made to accommodate development.

Planning Factor 8 - Emphasize the preservation of the existing transportation system.

The recommended improvement plan directly addresses this factor by highlighting the need to remove maintenance and operations costs from the total regional funding estimates before reporting an estimated funding level of transportation system improvements. In the region, it is anticipated that over \$100 million will

be expended in over the 25 year planning period on maintenance and operations programs in the county.

The emphasis of the RTP improvements is on system preservation. As the plan is required to balance with the anticipated reasonable funding estimates for the planning period, focusing on new corridor projects, such as a northern bypass, would essentially limit the region's ability to make any meaningful improvements to the existing system in the next 20 years. Through the public involvement process the benefits and impacts of new corridors relative to improvements to the current network were discussed and debated. The product of this step in the overall planning process was a greater emphasis on management improvements to existing facilities supplemented with development of strategic new corridors that support the current system in areas difficult to expand. Over the next 25 years, several major existing corridors will be improved including Beechurst, the Mileground, University Avenue, Van Voorhis Road, Green Bag Road, and US 19/Holland Avenue in Westover among others.

T TRANSPORTATION SYSTEM GOALS AND OBJECTIVES

OVERVIEW

The transportation plan goals and objectives were developed through an open meeting/workshop process involving:

- The public.
- Policy Board members.
- Citizen's Advisory Committee members.
- Technical Advisory Committee members.
- Solicitation for input and comments to draft goals and objectives distributed via email and the MPO website.

The process of establishing the transportation plan goals and objectives was not intended, nor did it end up being, a wholesale change in theme from the 1998 transportation plan. Updating the goals and objectives began with a review of the 1998 Plan goals and objectives. The project team then provided a broader base of goals and objectives developed in planning processes outside Morgantown and Monongalia County. Using the resource material available, a revised preliminary draft set of goals was developed in a workshop with the Technical Advisory Committee (TAC). The preliminary draft goals/objectives were distributed to members of the Citizens Advisory Committee (CAC) and the Policy Board for comment and input. After receiving input from these groups, a revised draft of the goals and objectives was prepared and presented to the public for comment/input. Through the public input process, a number of iterations of modification and refinement to the goals were completed until the recommended transportation plan goals were drafted.

The definition and application of goals and objectives for the transportation planning process are related but represent two different levels of the process.

- Goals are far-reaching statements of intent, often generalized and somewhat conceptual. An example goal of a transportation plan might be "to provide a reliable transportation system that minimizes user delays". This example goal

would communicate an intention, but the goal cannot be quantified or measured to determine the relative success of plan outcomes.

- Objectives are more focused statements of specific measures or procedures, typically more tangible statements of approach related to attaining the set goals. An example objective of a transportation plan would be "to reduce travel time and delays on the roadway system". This example objective offers a concrete means of measuring the relative success of plan outcomes, the relative amount of time it takes or the level of delay experienced when traveling through an intersection / corridor / region.

Development of the study goals and objectives is a critical early step in the planning process, because to a large extent they will define the general course of the study. Table 3 outlines the general process for developing the transportation plan goals and objectives, the participants and the opportunities that were provided for broad stakeholder input.

TRANSPORTATION SYSTEM GOALS AND OBJECTIVES

GOAL 1

Develop an interconnected, intermodal transportation network that provides reliability, equity, efficiency, choice, safety, and opportunity for all potential users.

OBJECTIVES

1. Focus transportation system improvements on reducing weekday peak hour delay.
2. Create a transportation system that supports a range of travel modes (auto, bike, walk, transit) and alternate route choices between key origins and destinations.

TABLE 3: PLANNING STEP – GOALS TO ACTION

Regional Transportation Plan Element	Description	Developed By	Public Review Opportunities
<p>Goals</p> <p>→</p>	<p>General statement of direction for the multimodal transportation system</p>	<p>MPO Staff Technical Advisory Committee (TAC) Citizen's Advisory Committee (CAC) Policy Board Reviewed</p>	<p>May 2005 Public Meeting Posted on Web Site Existing Conditions Report Interim Plan</p>
<p>Objectives</p> <p>→</p>	<p>Actions needed to be completed in order to achieve goal</p>	<p>MPO Staff Technical Advisory Committee (TAC) Citizen's Advisory Committee (CAC) Policy Board Reviewed</p>	<p>May 2005 Public Meeting Posted on Web Site Existing Conditions Report Interim Plan</p>
<p>Measures of Effectiveness</p> <p>→</p>	<p>Bechmarks/Performance measures for quantifying progress towards achieving objectives</p>	<p>MPO Staff TAC Review CAC Review Policy Board Reviewed</p>	<p>Existing Conditions Report Interim Plan March 2006 Public Meeting</p>
<p>Strategies/Concepts</p> <p>→</p>	<p>Specific programs, system modifications/improvements intended to address goals</p>	<p>MPO Staff Technical Advisory Committee (TAC) Citizen's Advisory Committee (CAC) Policy Board Reviewed</p>	<p>March 2006 Public Meeting Posted on Web Site October 2006 Public Meeting</p>
<p>Actions</p>	<p>Tasks/Steps required to implement the strategies/concepts</p>	<p>MPO Staff WVDOT</p>	<p>Posted on Web Site October 2006 Public Meeting</p>

3. Provide a transportation plan project/program list that provides for long-term community support for implementation through:
 - Establishing a phasing plan based on the benefits relative to the costs provided by individual elements.
 - Equitably distributing projects between the various modes (create more win-win conditions).
4. Establish local guidelines/thresholds/definition of "acceptable" delay and accessibility.
5. Incorporate, to the extent feasible, projects that separate (under/overpasses and detached trails) pedestrian/bike facilities from auto/truck facilities.
6. Establish a regional/local goal for the reduction in crashes and investigate programs for addressing design/program changes needed to meet the identified goal.
7. Provide improved connectivity [e.g., auto to transit, auto to bike/walk, transit to bike/walk, transit (bus) to transit (PRT)].
8. Include facilities for alternate modes (bike, pedestrian, transit) into roadway projects unless constraints exist that make providing the facilities unreasonable and the constraints can be documented.
9. Develop access management standards and incorporate the standards into roadway design standards and subdivision regulations. The standards should be applied during the assessment of proposed roadway improvements and incorporate viable approaches to improving safety and operations along existing corridors.
10. Identify gateway corridors and develop aesthetic treatments to be applied within the corridors.
11. Promote expansion of mass transit, biking, and pedestrian mobility and integrate these modes to serve citizen transportation needs most effectively within existing constraints of geography, architecture and budgeting.

GOAL 2

Implement and promote transportation system improvements that support the effective movement of people and goods.

OBJECTIVES

1. Establish a multimodal transportation system to meet the needs of the whole community.
2. Incorporate maintenance costs into the financial assessment of the project/program improvements evaluated as part of the transportation plan development.
3. Identify system modifications/improvements or land development patterns that provide for more efficient use of the current transportation system.
4. When evaluating additional parking facilities and in assessment of current issues, consider the vehicle flow and pedestrian safety impacts that parking facilities create. The feasibility of remote parking with transit/ pedestrian/bicycle connections should be addressed in the transportation system improvement analysis.
5. Promote coordination of schedules (travel demand management techniques) with large employers and WVU to promote better use of transportation resources and reduce delays in moving goods and people.
6. Support transit route scheduling improvements routes and the addition of new routes where appropriate to serve transportation destinations and corridors; sustain support for advertising and promotions to encourage citizen acceptance and use.
7. Identify local/regional regulatory and funding changes that are needed in order to coordinate construction of transportation improvements (roadways, trails, transit) with land development, as with all other utilities.

GOAL 3

Provide a transportation system that supports regional economic development and that balances transportation service with potential impacts to the surrounding physical and social environment.

OBJECTIVES

1. Develop a transportation system that addresses the current unacceptable congestion into and through downtown and provides the level of access required

to maintain the vitality of the downtown business district.

2. Incorporate the potential for community/neighborhood impacts into the evaluation criteria applied in the multimodal alternatives analysis.
3. Address the potential for positive and negative environmental impacts (air quality, noise, historical properties, etc.) in the transportation alternatives analysis.
4. For expansion/improvement projects in outlying areas, assess and document the potential for impacts and benefits to the existing community.

GOAL 4

Promote efficiency in land use and development patterns.

OBJECTIVES

1. Provide a transportation improvement plan that is flexible to changes in the development market of the Morgantown area (modal and infrastructure flexibility).
2. Create policies for coordinating transportation system improvements with land development to tie road/trail/sidewalk/transit improvements to development as it occurs.
3. Incorporate transportation system needs/current facilities with regional land use planning/development decisions.

EXISTING TRANSPORTATION SYSTEM

OVERVIEW

Gaining an understanding of the current system is vital to the planning process, in that the existing system forms the underlying structure/foundation for future (2030) system needs. The particular system needs for the study area are a function of the current and horizon-year traffic levels and patterns of travel throughout the region, relative to the transportation system in place. The current transportation system for the area is composed of the following elements:

- State and federal highways and local roadway systems.
- A system of on-street and off-street multi-use trails.
- Intra-area transit.
- Intercity bus transportation.
- Rail/Freight systems.
- Morgantown Municipal Airport.

STATE/FEDERAL HIGHWAYS AND LOCAL ROADWAY SYSTEMS

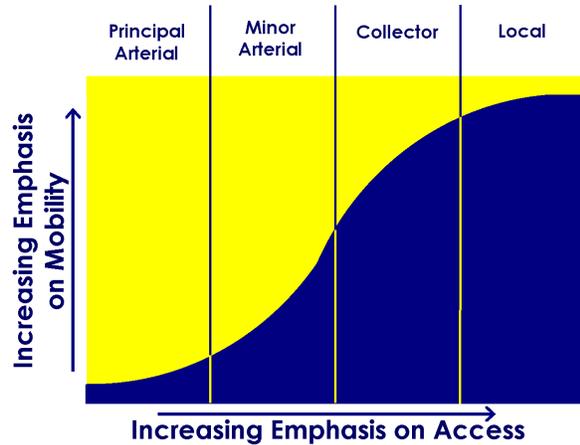
FUNCTIONAL CLASSIFICATION

Roadway functional classification groups streets and highways according to the service they are intended to provide. It helps define the role each street or road will play in serving the flow of traffic on a highway network. As a whole, the street network in an urbanized area has two distinct functions:

- Providing access to properties along a roadway.
- Providing travel mobility - getting from one point to the other.

These two functions compete with one another in that travel mobility will decline as the level of access increases and a high level of travel mobility cannot be accomplished with a high level of property access.

In the county, there are two overlapping sets of functional classification systems, including one



set established at the federal level and one at the state level. The federal classification system is represented by the National Highway Functional Classification System (NFCS) established through the National Highway Act of 1973. The state functional classification system was established by the West Virginia State Legislature in 1967.

NATIONAL FUNCTIONAL CLASSIFICATION SYSTEM OVERVIEW

Through the NFCS regions/jurisdictions are addressed as urban and rural. While the classification system applications in urban and rural areas use a similarly titled hierarchical terminology, there are fundamental differences in roadway characteristics relative to density and types of land use, travel patterns, and the number of streets or highways in the category. The rural street system includes:

- Principal Arterials (Interstates and Other Principal Arterials).
- Minor Arterials,
- Major Collectors
- Minor Collectors
- Locals

The urban system uses similar categories, however, the assumed purpose/function may be quite different than in the rural areas. Urban categories include:

- Urban Arterials.
- Minor Arterials.
- Collectors.
- Locals.

Definitions of the systems, divided into urban and rural areas, used by the WVDOT are documented in the following sections.

Urban Functional Classification Definitions

Principal Arterial System

This system serves the major centers of activity of a metropolitan area, the highest traffic volume corridors, the majority of the trips entering and/or leaving an urban area, and the through movements to bypass the central city. Principal Arterial routes carry intra-urban and inter-city bus travel, travel between major inner city communities, and travel between central business districts.

The principal arterial system includes almost all fully and partially controlled access facilities, stratified into three subsystems:

- Interstate – multi-lane routes with access fully controlled, which serve the national defense and connect the nation's principal metropolitan areas.
- Other Freeways and Expressways – non-Interstate Principal Arterials with access fully controlled
- Other Principal Arterials – arterial routes with no or less than full control of access.

Minor Arterial System

The urban Minor Arterial system provides the following functions:

- It interconnects with and supplements the urban Principal Arterial system.
- Provides service to trips of moderate length.
- Distributes travel to subareas of the county or the state (relative to the Principal Arterial system).

Land access and travel mobility are relatively balanced in priority in the Minor Arterial classification.

Urban Collector System

The urban Collector roadways provide land access service and traffic circulation within residential neighborhoods, commercial and county.

Urban Local System

The primary function of the Local system is to provide direct access to abutting land and access to the between adjacent properties and the higher order systems. Local routes offer the lowest level of mobility and are not intended to provide service to through traffic movement.

Rural Functional Classification Definitions

Rural Principal Arterial System

The rural Principal Arterial system forms a connected network of continuous routes that serve corridor movements having trip length and travel density characteristics indicative of substantial intrastate or interstate travel. The rural Principal Arterial system is stratified into two subsystems:

- Interstate – All designated routes of the Interstate System.
- Other Principal Arterials – All non-Interstate Principal Arterials.

Rural Minor Arterial System

The rural Minor Arterial system links cities and larger towns (and other larger travel generators such as resort areas that are capable of attracting travel over similarly long distances) and provide integrated support network for the interstate and inter-county service routes.

Rural Collector System

The rural Collector system primarily serves intra-county travel and is made up of those routes on which predominant travel distances are shorter than on arterial routes. The rural Collector system is classified into two subsystems:

- Major Collector – Provide service to any county seat or larger town not on an arterial route and to other traffic generators of equivalent intra-county importance (schools, county parks, etc).
- Minor Collector - Provide service to smaller communities not on an arterial route and collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road.

Rural Local System

This system provides access to adjacent or abutting lands and provides service to travel over relatively short distances.

WEST VIRGINIA LEGAL FUNCTIONAL CLASSIFICATION SYSTEM

The West Virginia Legal Functional Classification System identifies state owned routes as either an Expressway (X), a Trunkline (T), a Feeder (F), or a State Local Service (SLS) route. This classification, commonly known as the X-T-F classification, is based on the assumed trip length characteristics and both the present and expected level-of-service. A brief description of each of these functional systems follows:

- *Expressways (X)* – Serve metropolitan areas and provide major interstate and intrastate travel corridors
- *Trunklines (T)* – Intrastate network intended to serve smaller cities
- *Feeders (F)* – Serve smaller towns and industrial and recreational areas not served by the higher systems, while collecting traffic for the higher systems
- *State Local Service (SLS)* – Localized arterial and spur roads which provide access and socioeconomic benefits to abutting properties. Due to the large range of service this classification provides, it is necessary to further subclassify routes as follows:
 - *Essential Arterial* – Provides primary access between small population centers or localities.
 - *Collector* – Collects travel from the lower systems and distributes it to the higher systems.
 - *Land Access* – Provides access to any land area or associated improvement and includes the following two subsystems:
 - *Delta Road System* – Consists of those roads in the public domain by virtue of common public use over a long period of time, where title to the right-of-way is indeterminate. While these routes are considered to be part of the SLS System, due to the lack of title to the right-of-way delta roads are eligible only for routine maintenance and may not necessarily meet the standards set for SLS routes. The state is currently eliminating this classification by either including these roads in the county route system or removing them from the state road inventory.

- *State Park and Forest Roads* – Provide access within areas for recreational and/or commercial (e.g., logging, mining, etc.) purposes.
- *Occasional Use* – Represents the lowest classification of a local road; These routes provide access to a rural area on a low-volume basis.

NATIONAL FUNCTIONAL CLASSIFICATION OF THE CURRENT SYSTEM

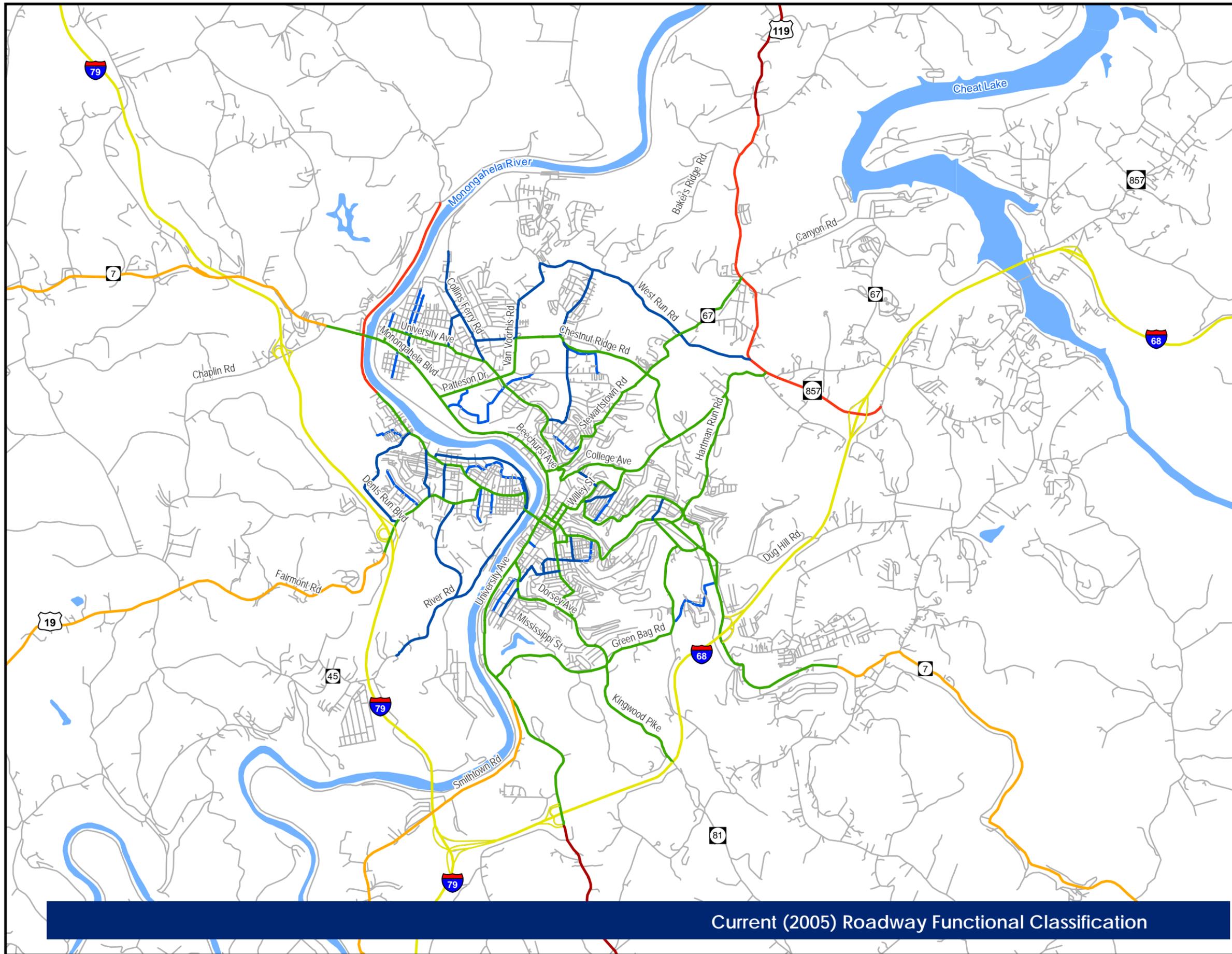
Within the study area, the roadways are grouped into five general functional categories from both the urban and rural systems:

- Interstate
- Principal Arterial
- Minor Arterial
- Collector
- Local

The current NHFC system displayed in Figure 2 was developed by the WVDOT. The facility mileage by functional class is documented in Table 4.

Also provided in Table 4 is the average mileage by functional classification observed throughout the state. Through comparison with the statewide percentages, the following were observed:

- The Morgantown area includes a disproportionately high percent of Interstate roadways relative the state as a whole. The higher level relative to other areas of the state can be explained in that Morgantown is the junction of two interstates (I-68 and I-79). The only other urban area in the state with two or more Interstate routes running through it is Charleston/Kanawha County (I-79, I-77, and I-64).
- The percentage of total mileage in the urban Collector category in Morgantown is lower than in other urban areas in the state.
- Relative to the state as a whole, the percentage of urban route miles in Morgantown currently classified as Principal Arterial is low. Within the urban area of Morgantown, routes classified as Principal Arterial are:
 - US 119 from CR 857 to the north.
 - CR 857 from US 119 to I-68.
 - WV 100 from Everly Street in Granville to the north.



- Legend**
Current Functional Class
-  Interstate
 -  Principal Arterial
 -  Minor Arterial
 -  Collector
 -  Ramp
 -  Trunkline
 -  Feeder
 -  Local

Current (2005) Roadway Functional Classification



TABLE 4: CURRENT FUNCTIONAL CLASSIFICATION MILEAGE

Functional Classification ¹	WV Statewide		Monongalia County	
	Roadway Mileage	Percent of the System	Roadway Mileage	Percent of the System
Urban Principal Arterial System				
Interstate (including the WV Turnpike)	97.16	0.25%	0	0.00%
Other Freeways and Expressways	9.37	0.02%	0	0.00%
Other Principal Arterials	203.88	0.53%	6.76	0.77%
Urban Minor Arterial System	419.65	1.10%	42.82	4.89%
Urban Collector System	445.99	1.17%	30.83	3.52%
Urban Local System	1,716.95	4.49%	16.29	1.86%
Subtotal Urban	2,893.00	7.56%	96.70	11.04%
Rural Principal Arterial System				
Interstate (including the WV Turnpike)	457.43	1.20%	32.3	3.69%
Other Principal Arterials	1,078.44	2.82%	35.8	4.09%
Rural Minor Arterial System	1,534.60	4.01%	15.8	1.80%
Rural Major Collector System	6,017.84	15.72%	92.9	10.61%
Rural Minor Collector System	2,333.65	6.09%	40.7	4.65%
Rural Local System	23,966.04	62.60%	561.74	64.13%
Subtotal: Rural	35,388.00	92.44%	779.24	88.96%
TOTAL: Urban and Rural	38,281.00	100.00%	875.94	100.00%

SOURCE: West Virginia Department of Transportation, Planning and Research Division, Roadway Records and Statistics Section. PR528 – Summary of Existing State and Local Roads and Streets Mileage Report HW2395A. Charleston, WV:2000. (Includes Federal, State and Municipal mileage.) West Virginia Division of Highways 2001 "As a Matter of Fact..."

Note: 1 - Urban system mileage reflects only WVDOT-maintained system. No city-maintained mileage.

ROADWAY GEOMETRICS

As an input the regional model development information on the number of lanes for each approach to key intersections was collected. A key intersection was defined as the junction of any two roadways functionally classified as Collector, Minor Arterial, or Principal Arterial and ramp junction intersections with an Interstate. The intersection lane geometry was collected on the basis of number of through lanes, and number of left-turn and right-turn lanes. This intersection information is a key input into determining the capacity of the current roadway system and is contained in the regional travel demand model.

TRAFFIC VOLUMES

The current study area traffic volumes are an integral component in evaluating the study area's existing transportation conditions. Average daily traffic (ADT) counts are

available from the WVDOT. The most recent available ADT data, collected in 2005, are illustrated in Figure 3. WVDOT updates daily traffic volume counts throughout the state on a three-year rotating basis and will be updating the counts in Morgantown-Monongalia County beginning in the fall of 2008.

Morgantown traffic volumes and operating conditions are highly influenced by activities at WVU. The level of traffic on areas roads increases dramatically when classes are in session relative to non-session periods. Thus, the WVDOT conducts their Morgantown area count program only when classes are in session. Counts are conducted weekdays (Tuesday through Thursday) and cover a minimum of a 48-hour period. DOT staff incorporate seasonal and day of the week adjustments into the raw data to obtain "typical" daily traffic volume estimates.

MEASURES OF CORRIDOR OPERATIONS/ ROADWAY CAPACITY

ROADWAY CAPACITY

Each intersection and the roadway links connecting intersections in the roadway network have a finite vehicle carrying capacity. The maximum number of vehicles that can be accommodated on a link or through an intersection (defined as capacity), however, is greater than the number typically acceptable to travelers in a community the size of Morgantown. The difference between the acceptable number of vehicles and the capacity is important to consider because as more vehicles attempt to flow through an intersection, the greater the level of delay resulting for all travelers through the intersection. For the Morgantown-Monongalia County study area the following assumptions have been used in determining thresholds acceptable vehicle flow:

- For corridors within the urbanized area, level of service "C" operations were assumed to be the target threshold for acceptable traffic flow, but it has been acknowledged that establishing an across the board threshold is not practical for the area. Thus, level of service "D" operations may be acceptable in corridors that have severely restricted right-of-way.
- For rural portions of the study area, level of service "C" operations were assumed to be the minimum acceptable level of operations.

Definitions of level of service are documented in Table 5 and a graphical representation of traffic flow conditions at the range of levels of service are displayed in Figure 4. Estimated capacities for different facilities are documented in Table 6 include separate figures for central business district and non-central business district areas. In the central business district the vehicle carrying capacity of a roadway is generally lower than in other non-central business district areas for the following reasons:

- Shorter blocks result in more "conflict points" per mile of roadway.
- Increased signal density.
- Higher pedestrian volumes that need to be accommodated in the signal timing.

- Generally a greater percentage of turns at each intersection than in non-central business district areas.
- Increased level of parking maneuvers.

Thus, for the transportation plan the roadway capacities in the central business district are estimated to be 10 percent lower than in the non-central business district areas.

CAPACITY DEFICIENCIES

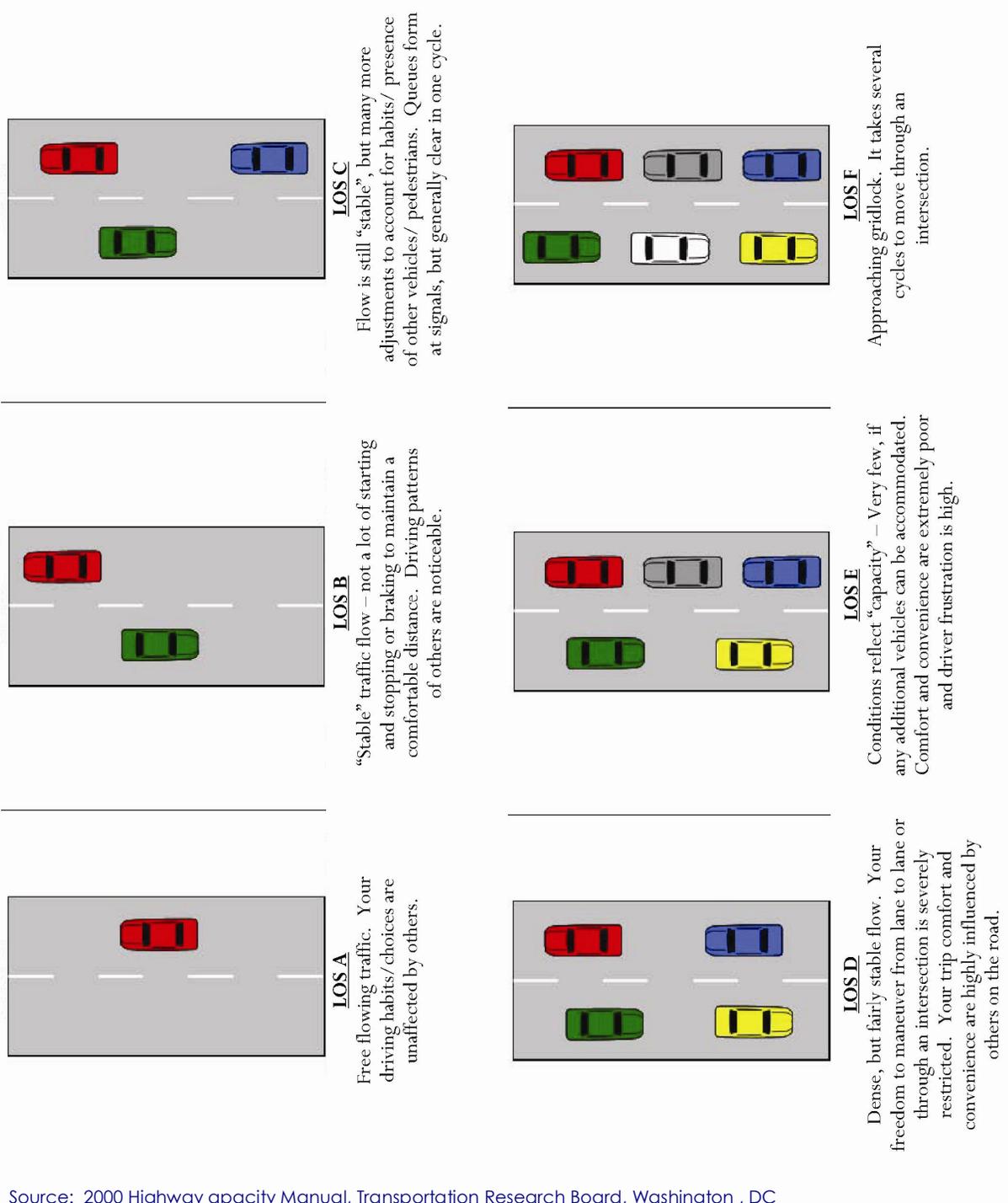
For the purposes of this study, a capacity deficiency is defined as the condition when the current daily traffic volume in a corridor exceeds either a level of service "C" or "D" flow rate in some corridors. Table 6 documented the estimated daily capacity by functional classification over the currently observed range of lane geometrics for roadways in the urban area. Traffic operations along roadway corridors in the study area, based on current (2002) traffic and the existing roadway network are displayed in Figure 5.

TABLE 5: DEFINITION OF LEVEL OF SERVICE

Level of Service	Description
A	<i>Free Flow, Insignificant Delays.</i> Very little, if any, delay incurred at intersections (< 10 seconds per vehicle). Corridor travel speed is within 10% of the free-flow operating speed (travel speed without any outside influences controlling any one drivers decision as how fast to drive).
B	<i>Stable Operation, Minimal Delays.</i> Described as reasonably unimpeded operations. A driver's ability to maneuver within the traffic stream is only minimally restricted by other vehicles. Operating speeds are within approximately 30 percent of the free-flow speed. Typical intersection delay is between 10 and 20 seconds per vehicle.
C	<i>Stable Operation, Acceptable Delays.</i> Operations with the corridor are stable, however, a one driver's ability to maneuver between lanes or make a turn, may be restricted due to needing to yield to other vehicles. Not all vehicles during every signal cycle clear the intersection (cycle failures). The average delay per vehicle at a controlled intersection ranges from 20 to 35 seconds.
D	<i>Restricted Flow, Regular Delays.</i> Reflects the limits of stable flow, and a slight change in vehicle flow may result in substantial increases in delay. The average vehicle travel speed is approximately 40 percent of the estimated free-flow speed. Queues may develop but dissipate rapidly, without excessive delays. The average intersection delay per vehicle ranges form 35 to 55 seconds.
E	<i>Maximum capacity, extended delays.</i> Volumes at or near the finite capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. Typical operating speeds in the corridor are less than 35 percent of the free-flow speed and intersection delay ranges from 55 to 80 seconds per vehicle.
F	<i>Forced flow, excessive delays.</i> Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: *Highway Capacity Manual (HCM 2000)*, Transportation Research Board, Washington, DC, 2000

FIGURE 4: TRAFFIC FLOW CHARACTERISTICS BY LEVEL OF SERVICE

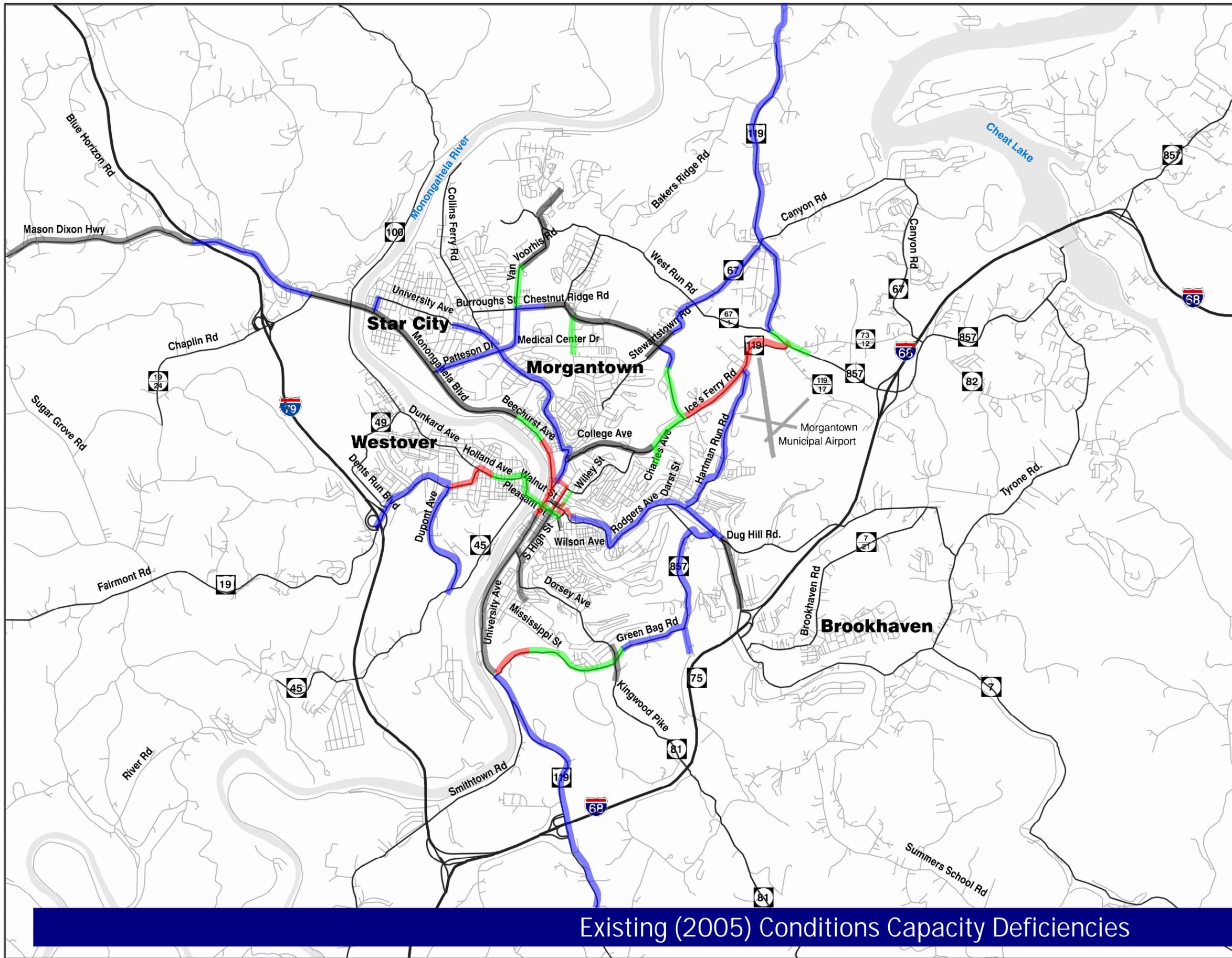


Source: 2000 Highway Capacity Manual, Transportation Research Board, Washington, DC

TABLE 6: ESTIMATED DAILY ROADWAY CAPACITY (VEHICLES PER DAY)

Functional Classification/ Lanes	Maximum Vehicles Per Hour by Level of Service					
	LOS E		LOS D		LOS C	
	CBD	Non-CBD	CBD	Non-CBD	CBD	Non-CBD
- Freeway						
4-lane	N/A	53,300	N/A	48,000	N/A	42,600
6-lane	N/A	80,000	N/A	72,000	N/A	64,000
- Principal Arterial (Urban)						
2-lane	11,600	12,900	10,400	11,600	9,300	10,300
2-Lane/Left or Right ¹	15,600	17,200	14,000	15,500	12,500	13,800
2-Lane/Left/Right ²	17,600	19,200	15,800	17,300	14,100	15,400
4-Lane (Undivided)	24,600	27,300	22,100	24,600	19,700	21,800
4-Lane Left or Right ¹	31,900	32,600	28,700	29,300	25,500	26,100
4-Lane/Left/Right ²	31,300	34,800	28,200	31,300	25,000	27,800
6-Lane/Left/Right ²	46,900	52,200	42,200	47,000	37,500	41,800
- Minor Arterial (Urban)						
2-lane	9,500	10,600	8,600	9,500	7,600	8,500
2-Lane/Left or Right ¹	12,400	13,600	11,200	12,200	9,900	10,900
2-Lane/Left/Right ²	13,600	14,900	12,200	13,400	10,900	11,900
4-Lane (Undivided)	20,100	22,300	18,100	20,100	16,100	17,800
4-Lane Left or Right ¹	23,600	26,200	21,200	23,600	18,900	21,000
4-Lane/Left/Right ²	24,800	27,500	22,300	24,800	19,800	22,000
- Collector (Urban)						
2-Lane	6,300	7,000	5,700	6,300	5,000	5,600
2-Lane/Left or Right ¹	8,500	9,400	7,700	8,500	6,800	7,500
2-Lane/Left/Right ²	9,700	10,500	8,700	9,500	7,800	8,400
4-Lane (Undivided)	13,300	14,800	12,000	13,300	10,600	11,800
4-Lane Left or Right ¹	16,000	17,700	14,400	15,900	12,800	14,200
4-Lane/Left/Right ²	17,100	19,000	15,400	17,100	13,700	15,200
- Arterial/Collector (Rural)						
2-Lane	NA	10,100	NA	9,300	NA	6,600

Note: 1 - Left and right turn lanes are assigned similar capacity for this macro-scale analysis. Right turns on red are underestimated.
 2 - Divided and undivided segments are not separated.
 Center left turn lanes and left turn lanes impact capacity to similar levels.
 Free rights and right turn lanes impact capacity to similar levels.
 LR - similar capacity as 4-Lane.



Morgantown
Area Transportation Study

- Legend**
- Level of Service A or B
 - Level of Service C
 - Level of Service D
 - Level of Service E
 - Level of Service F

Existing (2005) Conditions Capacity Deficiencies



Figure 5

Through analysis of the information included in Figure 5, it was concluded that the following corridors are operating at level of service "D" or worse:

- Beechurst Avenue from 8th Street through Pleasant Street.
- Patteson Drive from Beechurst Avenue to CR 705.
- Van Voorhis Road from CR 705 to south of West Run Road.
- CR 705 from Van Voorhis Road to Mileground Road.
- Stewartstown Road from CR 705 to US 119.
- US 119 from West Run Road to the northern urban limits.
- CR 857 from US 119 to Easton Drive (CR 73/12).
- Hartman Run Road from WV 7 to Mileground Road.
- Mileground Road/Ice's Ferry Road to CR 857.
- University Avenue from Kensington Avenue to Beechurst Avenue.
- US 19 in Westover from I-79 to the Monongahela River.
- Pleasant Street from Beechurst Avenue to Spruce Street.
- WV 7 from downtown Morgantown to Sabraton.
- Spruce Street in the Morgantown central business district.
- Willey Street in downtown Morgantown.
- High Street from Willey Street to Pleasant Street.
- CR 857 (Green Bag Road) from US 119 (University Avenue) to WV 7.
- Fairmont Avenue from US 19 in Westover to CR 45.
- WV 7 from CR 19/24 in Star City to the junction of WV and US 19 north.
- Boyers Avenue north of US 19/WV 19 (Monongahela Avenue).
- Willowdale Drive from CR 705 (Chestnut Ridge Road) to beyond Mountaineer Field.
- US 119 south of I-68.

It should be noted that the traffic operations analyses were conducted using data available from existing sources. Traffic volumes used in the analysis were obtained from the WVDOT database, which does not cover 100 percent of the system. Thus, there may be additional corridors that travelers observe to be congested that are not highlighted in Figure 5. These corridors are included in the Transportation Issues summary that documents the information collected during the public input process.

The route miles by level of service category and functional classification are displayed in Table 7. The following observations of the information are provided:

- All of the Interstate mileage is operating at a very high quality of services (level of service "A" and "B").
- Approximately 60 percent of the Principal Arterial mileage is operating at level of service "C" or better. Thus, over 40 percent of the Principal Arterial mileage is operating at a level of service D or worse, with seven percent of the mileage operating at level of service "E/F" (failing). This condition is very significant in that the Principal Arterial routes are corridors that carry (or are intended to carry) higher volumes of traffic for longer distances. Thus, the quality of flow along these routes impacts a greater percentage of all of the regional travel.
- Approximately 53 percent of the Minor Arterial mileage is operating at level of service C or better, of which approximately 21 percent in the level of service "C" category. Of the 47 percent operating at levels that approach (level of service "D") or exceed (level of service E/F) the roadway capacity approximately one-third is operating at capacity.
- The vast majority of the Collector route mileage is operating at a very high level of service ("A" or "B") and only approximately three percent is operating at or over capacity (level of service "E" or "F").

TABLE 7: EXISTING MILEAGE BY LEVEL OF SERVICE

Functional Classification	Mileage by Level of Service Category				
	A/B	C	D	E/F	Total
Interstate	32.3	0.0	0.0	0.0	32.3
Principal Arterial	4.0	0.0	2.3	0.5	6.8
Minor Arterial	13.8	8.8	13.3	6.9	42.8
Collector	28.2	0.6	1.3	0.8	30.8
Total	78.2	9.4	16.9	8.2	112.7

Functional Classification	Percentage of Mileage by Level of Service Category				
	A/B	C	D	E/F	Total
Interstate	100.0%	0.0%	0.0%	0.0%	100.0%
Principal Arterial	58.6%	0.0%	34.3%	7.1%	100.0%
Minor Arterial	32.2%	20.6%	31.1%	16.1%	100.0%
Collector	91.3%	1.8%	4.3%	2.6%	100.0%

Source: West Virginia Department of Transportation
URS Corporation, Inc.

CRASH ASSESSMENT

Safety conditions for travelers (vehicle and non-motorized) in the Morgantown-Monongalia County area were assessed using crash record information and average rate information obtained through the WVDOT. Annually, the WVDOT publishes a Crash Data report that contains summaries of crashes reported by the State Police, county sheriff departments, and municipal police departments.

Summaries of crash records for the road and street system in Morgantown and Monongalia County for the calendar year 2002 through 2003 were obtained from the WVDOT.

The key findings of the accident data review are summarized below:

- During the two years analyzed, a total of 6,135 crashes occurred throughout the county. This equates to approximately 8 to 9 crashes per day.
- As displayed in Table 8, over the same two-year period there were approximately 101,300 crashes statewide.

The percentage of statewide crashes that occurred in Monongalia County was 6.1 percent in each of the analysis years. The population of Monongalia County is approximately 4.5 percent of the state population. This indicates that crashes are more frequent per capita in Monongalia County as compared to statewide. Another way of presenting this data is there was 1 crash per 13 people in Monongalia County versus 1 crash per 18 people statewide. The fact that Monongalia County is more urbanized than most West Virginia counties does play a factor in higher crash frequencies.

- The intersections with crash rates in excess of two crashes per million entering vehicles are:
 - Collins Ferry road/Burroughs Street: 5.64 crashes/million vehicles entering.
 - University Avenue/College Avenue: 3.83 crashes/million vehicles entering the intersection.
 - Collins Ferry Road/Aspen Street: 3.47 crashes/million vehicles entering the intersection.

- US 19 (Monongahela Boulevard)/ Patteson Drive: 3.28 crashes/million vehicles entering the intersection.
- University Avenue/Stewart Street: 2.61 crashes/million vehicles entering the intersection.
- Walnut Street/Spruce Street: 2.27 crashes/million vehicles entering the intersection.

A crash rate in excess of two per million entering vehicles is typically considered high in most metropolitan areas.

Figure 6 displays the crash rate results for intersections that crash data and count data were available for the assessment period.

- The top five urban roadway segments for frequency of crashes include:
 - University Avenue: 744 crashes.
 - Patteson Drive: 252 crashes.
 - Monongahela Boulevard: 214 crashes.
 - Beechurst Avenue: 192 crashes.
 - High Street: 162 crashes.
- The five state and county highway segments with the highest crash frequency are:
 - US 119: 983 crashes.
 - US 19: 763 crashes.
 - WV 705: 462 crashes.
 - WV 7: 397 crashes.
 - I-68: 302 crashes.

The above list includes crashes on both urban and rural segments of these state and county highway facilities. Therefore, this list includes many of the same crashes previously listed for urban roadway segments.

- The WVDOT 2002 and 2003 Crash Data reports both list Monongalia County in the top 10 for highest crash rate per 100 million miles of travel.
- The proportion of injury (26.9%) and fatal (0.3%) crashes in Monongalia County

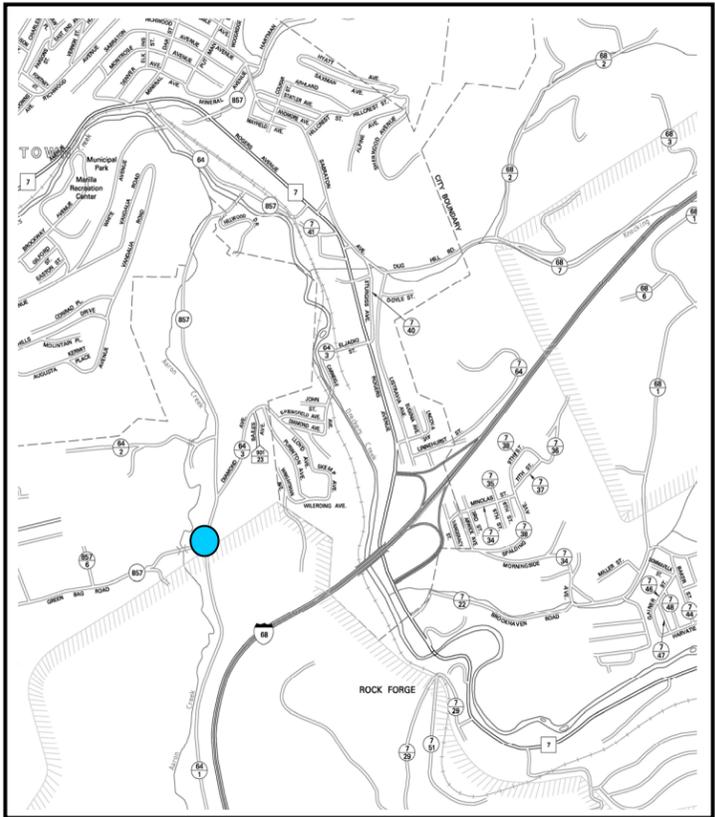
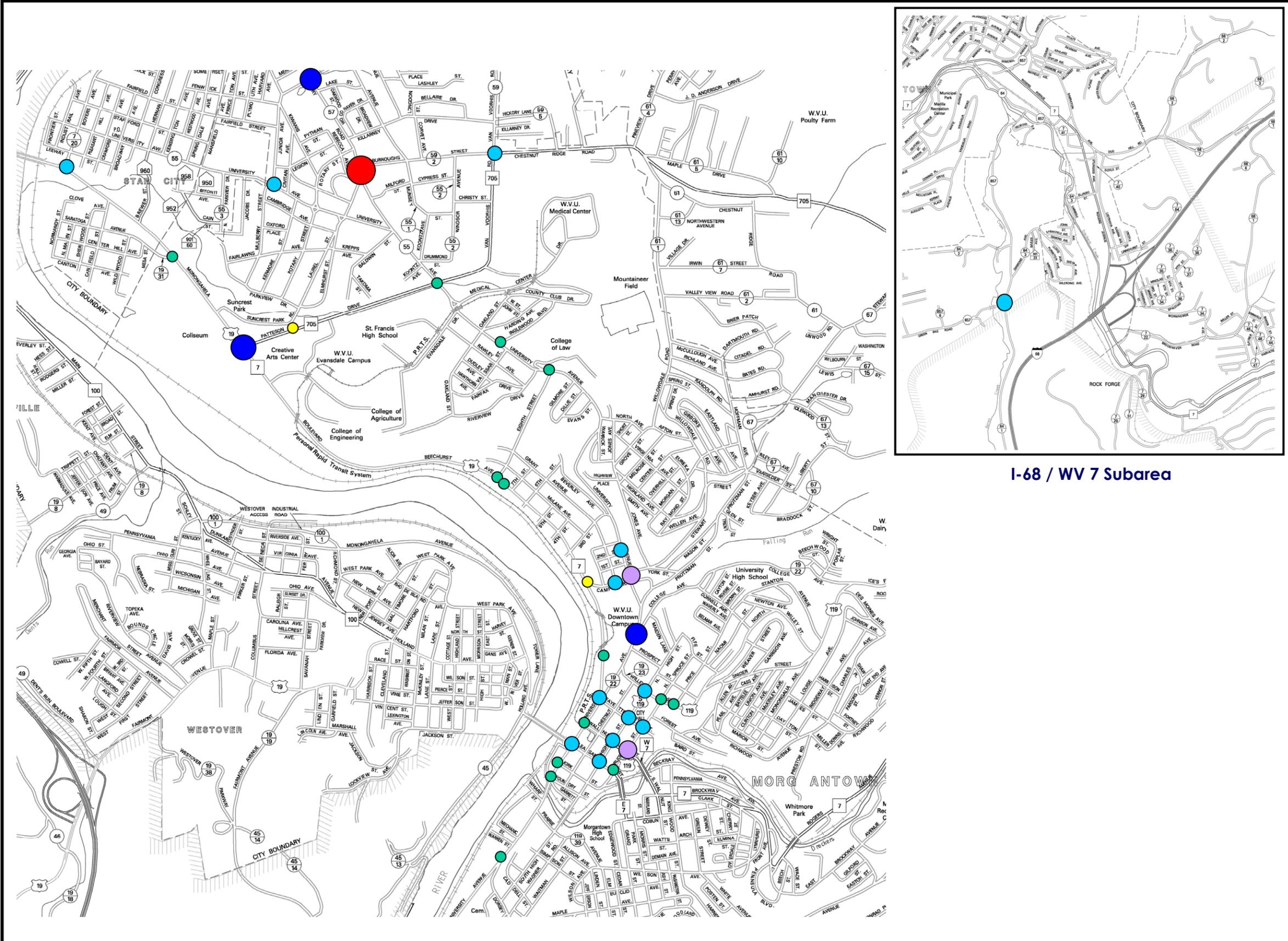
were lower than statewide rates (i.e., 33.2% injury and 0.8% fatal crashes) during this two-year analysis period. The severity rating of crashes in the county relative to the state is documented in Table 9.

- There were 20 fatal crashes with a total of 22 fatalities over the two-year analysis period. A majority of these crashes occurred on higher speed roadways or on rural segments of highways.
- A breakdown of the collision types for Monongalia County is provided below:
 - 27.1%: Single Vehicle.
 - 25.0%: Rear End.
 - 12.6%: Angle.
 - 8.6%: Sideswipe (same direction).
 - 7.4%: Left-Turn.
 - 4.4%: Sideswipe (opposite direction).
 - 3.4%: Head-On.
 - 11.5%: Other.
- The percentages for manner of collision in Monongalia County are similar to the statewide percentages. In Monongalia County, the types of collisions typically associated with intersections (i.e., rear end, left-turn, and angle) occurred at a slightly higher rate than observed in the state as a whole. Relative to the state, Monongalia County is more urban and higher rates are generally expected.
- There were 47 crashes involving pedestrians and an additional 10 crashes involving bicyclists over the two-year period. This translates to a percentage that is higher than the statewide rates, however, this county does have a major university that generates considerable foot and bicycle traffic

TABLE 8: CRASHES PER CAPITA COMPARISON (2002 AND 2003 DATA)

	Monongalia County	West Virginia
Number of Crashes	6,135	101,289
Population (2002 Estimate)	82,895	1,801,873
Crashes Per Capita	0.074	0.056

Source: WVDOT



I-68 / WV 7 Subarea

- Legend**
- - 0 to 0.8 Crashes/MEV
 - - 0.8 to 1.2 Crashes/MEV
 - - 1.2 to 2.0 Crashes/MEV
 - - 2.0 to 3.0 Crashes/MEV
 - - 3.0 to 4.0 Crashes/MEV
 - - 4 or More Crashes/MEV
- (MEV) – Million Entering Vehicles

Intersection Crash Record Assessment Summary



Figure 6

TABLE 9: SUMMARY OF REPORTED CRASHES BY SEVERITY (2002 THROUGH 2003)

Severity of Crashes	Number of Crashes		Percent of Total	
	Monongalia County	West Virginia	Monongalia County	West Virginia
Property Damage Only	4,465	66,898	72.8%	66.0%
Injury	1,650	33,622	26.9%	33.2%
Fatality	20	769	0.3%	0.8%
Total	6,135	101,289	100%	100%

Source: WVDOT

TRAVEL SURVEY

In support of the transportation plan, a survey was conducted on April 26-28, 2005 to collect general travel information on vehicular traffic entering the county. The survey approach and results are fully documented in the *Morgantown Travel Model Validation Report*, and are summarized in this report.

The survey's primary objectives were to gather a sample of traveler information that would allow for evaluation of the:

- Origins and destinations of traffic entering the study area.
- Number of persons per vehicle.
- Trip purpose of travelers entering the county.

Survey stations were established at seven locations, displayed in Figure 7, to intercept vehicles at the study area's major entry points:

- Station 1: West Virginia Highway 7 West, west of CR 31.
- Station 2: US Highway 119 North, near Pennsylvania State Line.
- Station 3: West Virginia Highway 857, at the Pennsylvania State Line.
- Station 4: West Virginia Highway 7 East, near Preston County Line.
- Station 5: County Route 81, near Preston County Line.
- Station 6: US Highway 119 South, north of County Route 119/13.
- Station 7: US Highway 19 South, near Marion County Line.

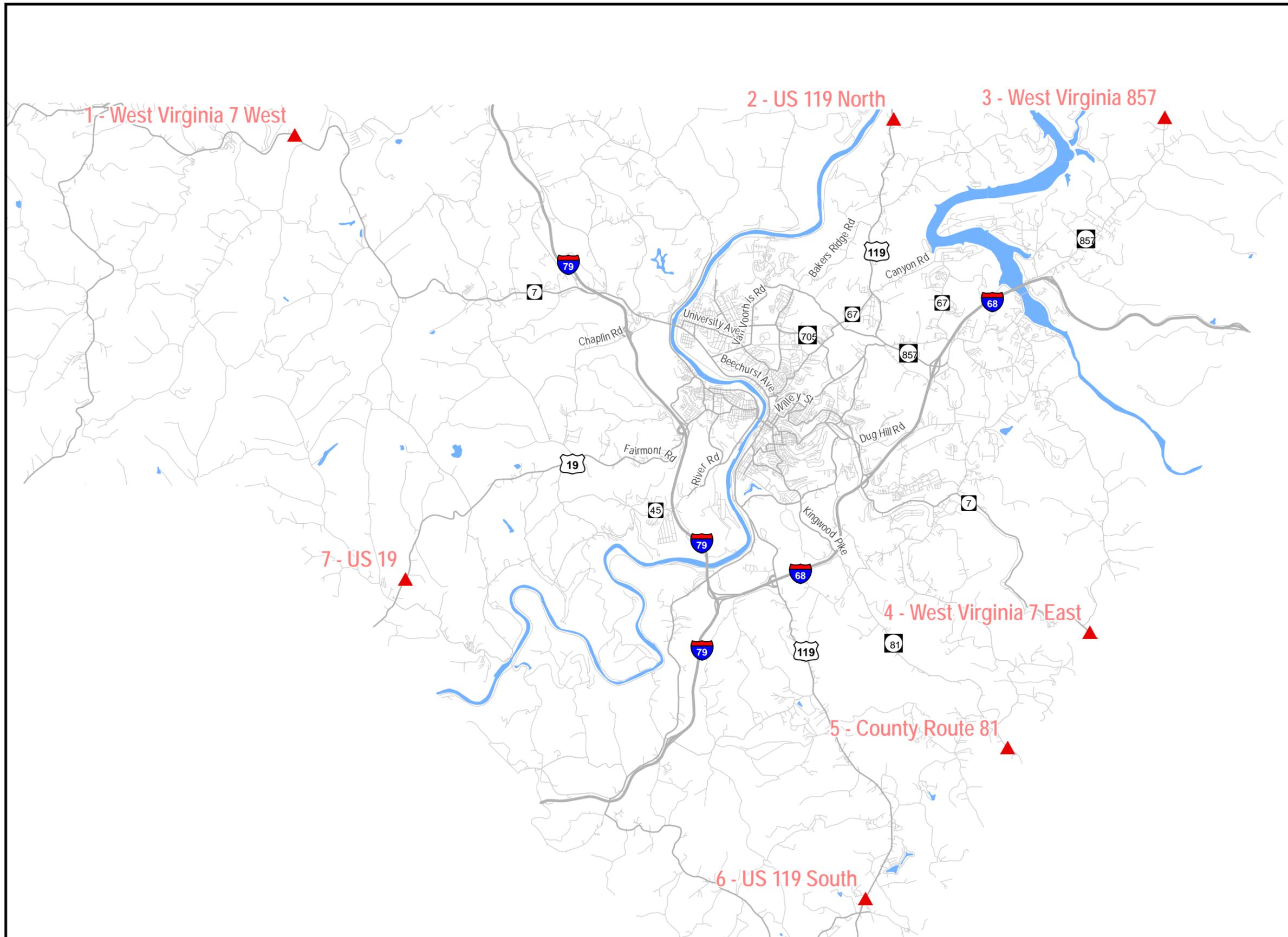
The travel survey was conducted for a single day at each station during the following time periods:



- 6:30 AM to 9:30 AM
- 11:00 AM to 1:30 PM
- 3:00 PM to 6:00 PM

The survey, distributed to vehicle drivers as they passed a survey station, was designed as a mail-back survey. The following survey questions were asked of regarding the trip being made at the time of the survey:

- Number of persons in the vehicle.
- Purpose of the trip such as:
 - Home to work.
 - Work to home.
 - School.
 - Shopping.
 - Social/Recreational.
 - Medical.
 - Other.



Legend
▲ External Survey Stations

External Travel Survey Station Locations



- Trip origin and destination. Persons were asked to provide the address of the origin and the destination. If they could not, or preferred not, provide that level of detail, the nearest major street intersections were requested.

There was a relatively high response rate to the travel survey. Table 10 documents the survey response rate of approximately 24 percent for the entire study area. This response rate allowed for a confidence interval of approximately $\pm 1.9\%$.

Summarized below are the major findings of the travel survey:

- *Vehicle Occupancy:* Drivers were asked how many persons were in the vehicle with them. The evaluation of vehicle occupancy is documented in Table 11. During the survey period, the average vehicle occupancy was 1.39 persons per vehicle. By period, the vehicle occupancies were:
 - Morning (AM) Period: 1.39 persons per vehicle
 - Midday (MD) Period: 1.54 persons per vehicle
 - Afternoon (PM) Period: 1.52 persons per vehicle
- *Trip Purpose:* Drivers were asked for the trip's primary purpose, which is documented in Table 12. The analysis of the surveyed trip purposes found that:
 - Nearly 75 percent of inbound trips during the morning period were home-to-work trips, indicating that employment opportunities in Monongalia County attract commuters from outside of the county. Monongalia County's role as a regional employment center is reinforced by the number of home-to-work trips compared the number of work-to-home trips surveyed for inbound traffic; there were significantly more inbound home-to-work trips (52 percent of all trips) surveyed than inbound work-to-home trips (10 percent of all trips).
 - During the midday period, the most frequent trip purpose for all stations was the "Medical" purpose, at 23 percent of all trips. "Other" was the second-most frequent trip purpose during the midday period.
 - During the afternoon period, the most frequent trip purpose for all stations was the "Work to Home"

purpose, at 33 percent of all trips. "Other" was the second-most frequent trip purpose during the afternoon period.

- *Trip Origin-Destination Information:* Drivers were asked where their trip began and where their trip ended.. The origin and destination of each trip was evaluated based on where the survey was handed out (tracked by the study team according to the form's serial number) and the surveyed response regarding trip destination.
- Table 13 summarizes the estimated daily traffic and internal/external travel composition by survey station. External-to-internal trips are those with a stop / trip end in the study area and external-to-external trips are those with no stop/trip end (i.e., traveling through) the study area.
- As shown in Table 13, the majority of traffic entering the study area has a destination within the study area. Approximately 13 percent of the traffic entering the study area via the sites surveyed is traveling through the Morgantown area.

TABLE 10: TRAVEL SURVEY RESPONSE RATE BY SURVEY STATION

Survey Station Location	Total Vehicles During Survey Period	Total Surveys Distributed	Total Responses	Estimated Daily Traffic (1-Way)	Responses with Usable O-D Data	Usable Response Rate ¹	Confidence Interval ²
Site 1 - WV 7 West	1,068	1,000	260	1,805	255	24%	5.4%
Site 2 - US 119 North	1,459	1,400	410	2,280	407	28%	4.1%
Site 3 - WV 857	1,781	1,671	300	2,410	297	17%	5.2%
Site 4 - WV 7 East	1,110	1,081	346	1,965	340	31%	4.4%
Site 5 - CR 81	685	641	228	1,065	227	33%	5.3%
Site 6 - US 119 South	1,712	1,543	399	3,150	396	23%	4.3%
Site 7 - US 19 (South)	964	900	187	1,725	185	19%	6.5%
All Station Total	8,779	8,236	2,130	14,400	2,107	24%	1.9%

¹ Based on comparison of responses with usable O-D data to all vehicles passing stations during survey period.

² At a 95% confidence level.

TABLE 11: PERSONS PER VEHICLE BY SURVEY PERIOD

Survey Station	Survey Period	Average Vehicle Occupancy
WV 7 West	AM	1.40
	MD	1.46
	PM	1.36
	Total	1.40
US 119 North	AM	1.27
	MD	1.64
	PM	1.36
	Total	1.33
WV 857	AM	1.29
	MD	1.59
	PM	1.76
	Total	1.39
WV 7 East	AM	1.25
	MD	1.64
	PM	1.56
	Total	1.41
CR 81	AM	1.32
	MD	1.46
	PM	1.61
	Total	1.46
US 119 South	AM	1.38
	MD	1.33
	PM	1.45
	Total	1.38
US 19 (South)	AM	1.31
	MD	1.66
	PM	1.53
	Total	1.42
All Station Average		1.39

Source: URS Corporation, Inc.

Notes: AM – Morning peak period from 6:30 AM to 9:30 AM
 MD – Midday peak period from 11:00 AM to 1:30 PM
 PM – Afternoon peak period from 3:00 PM to 6:00 PM

TABLE 12: TRIP PURPOSE PERCENTAGES BY SURVEY PERIOD

Survey Station	Survey Period	Trip Purpose						
		Home to Work	Work to Home	School	Shopping	Social / Recreational	Medical	Other
WV 7 West	AM	61%	12%	2%	3%	3%	15%	5%
	MIDDAY	21%	9%	0%	11%	8%	21%	30%
	PM	9%	49%	2%	5%	9%	8%	17%
	Total	35%	24%	2%	5%	6%	14%	14%
US 119 North	AM	83%	2%	3%	2%	2%	5%	4%
	MIDDAY	20%	2%	2%	16%	13%	20%	27%
	PM	11%	31%	2%	18%	2%	13%	22%
	Total	66%	5%	3%	6%	3%	8%	9%
WV 857	AM	75%	1%	3%	1%	2%	6%	12%
	MIDDAY	20%	7%	2%	17%	14%	24%	17%
	PM	32%	16%	4%	20%	4%	16%	8%
	Total	60%	4%	3%	6%	5%	10%	13%
WV 7 East	AM	66%	2%	3%	4%	2%	17%	6%
	MIDDAY	15%	3%	5%	15%	9%	31%	23%
	PM	15%	21%	0%	12%	17%	13%	22%
	Total	42%	7%	3%	8%	7%	19%	13%
CR 81	AM	72%	4%	5%	3%	1%	11%	3%
	MIDDAY	15%	5%	15%	10%	2%	27%	27%
	PM	10%	38%	1%	16%	18%	6%	11%
	Total	38%	18%	5%	9%	8%	12%	11%
US 119 South	AM	79%	4%	6%	2%	1%	6%	3%
	MIDDAY	17%	7%	4%	25%	9%	25%	14%
	PM	16%	37%	1%	7%	15%	6%	16%
	Total	56%	10%	5%	7%	5%	10%	8%
US 19 (South)	AM	77%	3%	5%	3%	2%	7%	3%
	MIDDAY	18%	8%	5%	24%	5%	11%	29%
	PM	19%	16%	9%	13%	13%	9%	22%
	Total	55%	6%	6%	9%	4%	8%	12%
All Station Average	Total	52%	10%	4%	7%	5%	12%	11%

Source: URS Corporation, Inc.

Notes: AM – Morning peak period from 6:30 AM to 9:30 AM
MIDDAY – Midday peak period from 11:00 AM to 1:30 PM
PM – Afternoon peak period from 3:00 PM to 6:00 PM

TABLE 13: DAILY TRAFFIC ESTIMATES AND TRAVEL COMPOSITION BY SURVEY STATION

Survey Station	Estimated Daily Trips			External-to-Internal Percentage	External-to-External Percentage
	Total	External-to-Internal	External-to-External		
Site 1 – WV 7 West	4,100	3,610	490	88%	12%
Site 2 - US 119 North	5,200	4,560	640	88%	12%
Site 3 – WV 857	6,000	4,820	1,180	80%	20%
Site 4 – WV 7 East	4,800	3,930	870	82%	18%
Site 5 - CR 81	2,500	2,130	370	85%	15%
Site 6 - US 119 South	6,800	6,300	500	93%	7%
Site 7 - US 19 (South)	3,600	3,450	150	96%	4%
All Station Total	33,000	28,800	4,200	87%	13%

Source: URS Corporation, Inc.

LOCAL TRANSIT SERVICE

The Mountain Line Transit Authority (MLTA) is the primary provider of public transit service in Monongalia County. In addition, West Virginia University operates a variety of on-campus and off-campus shuttles as well as a unique fixed-guideway transit system known as “personal rapid transit” (PRT). A student transportation fee gives WVU students access to both transit systems' services.

MOUNTAIN LINE TRANSIT AUTHORITY

DESCRIPTION OF THE SYSTEM

The MLTA was formed in 1996 and is governed by a board of directors with input from a citizens' advisory committee. The MLTA provides deviated fixed route transit service along 17 routes and provides a variety of special transit services in Monongalia County. The current routes are displayed in Figure 8.

Mountain Line passengers can board a bus anywhere along a route by flagging down the driver as the bus approaches. While the transit system does not use bus stop signs, its timetables provide scheduled timepoints so that passengers know when to expect a bus along a route. The system allows pre-approved deviation from the designated route for up to three-quarters of a mile. MLTA pre-approves all deviations to ensure that primary service along the designated route is not

disrupted by the deviation. Passengers must request a deviation at least 15 minutes before the requested pick up time.

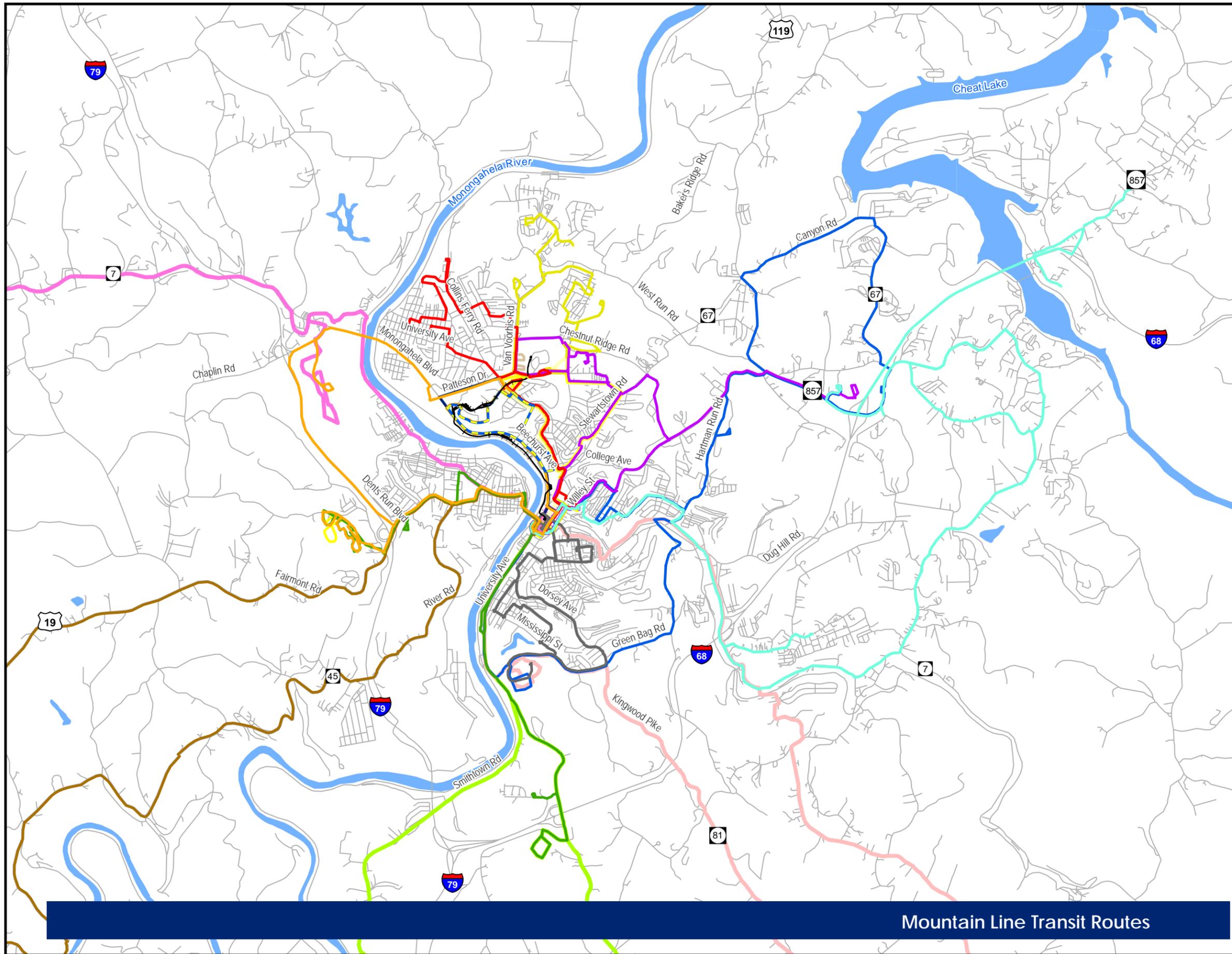
MLTA also provides several other transit services, including:

- Shuttle service to/from medical appointments for Medicaid recipients.
- The Worker-MAT service provides transportation to and from work for individuals that are disabled or that cannot use existing transit services.
- The Med-MAT program provides transportation to medical appointments for those that are disabled or that cannot use the existing system.
- WVU Football Shuttles from the Mountaineer Mall to the football stadium on football Saturdays.

For both Worker-MAT and Med-MAT, trip locations must be pre-approved and advance reservations are required.

SERVICE CHARACTERISTICS

MLTA provides transit service throughout the county with routes running Monday through Saturday from as early as 6:00 AM until approximately 6:00 PM. Recently, MLTA has been adding evening and Sunday service. The following is a summary of MLTA's fixed route services.



- Legend**
- Transit Routes
- +— PRT Route
 - Orange Line
 - Tyrone
 - Southside
 - Red Line
 - Purple Line
 - Mountain Heights
 - Grafton & Fairmont
 - Green Line
 - Gold Line
 - WVU Campus PM
 - Crown
 - Downtown/ Morgantown Mall PM
 - District Line
 - District Late Night
 - Cassville
 - Blue Line
 - Blue and Gold

Mountain Line Transit Routes



Rural Service

MLTA offers three routes that connect smaller communities and rural areas of the county with Morgantown and to Fairmont in Marion County. Connected with the rural routes are the communities of Crown, Grafton and Mountain Heights. Each of these routes only has two to three trips each day with several hours between each trip. These routes operate Monday through Saturday.

Urban Core Routes

MLTA operates a group of nine routes that serve the densely populated Morgantown area including the Blue, Cassville, Gold, Green, Orange, Purple, Red, Southside, and Tyrone Road Routes. On weekdays, most of the routes begin operation in the morning between 6:00 AM and 8:00 AM and end by 6:30 PM. Service frequency ranges from 60 to 120 minutes, depending on the route and time of day. Saturday frequency ranges from two to four hours. The Orange Route now has evening service until 12:30 AM and Sunday afternoon/evening service during regular WVU sessions. Complete route schedules can be obtained through Mountain Line Transit via their web page, located at www.buside.org.

WVU Service

Through a contract with WVU, MLTA provides a number of services that connect WVU students, faculty, and staff to key on-campus and off-campus areas. The services provided are documented below:

- The Blue and Gold Connector provides a loop that operates every 20 minutes to connect Brooke Towers, the Law School, Grant Avenue, the Life Sciences building, Beechurst Avenue, the Creative Arts Center, and the Engineering school. The Blue and Gold Connector operates until 11:00 PM during WVU semesters and until 6:30 PM during other times.
- The Campus PM route operates every 10 minutes and connects on-campus and off-campus residential areas to downtown Morgantown on Friday, Saturday, and Sunday nights from 10:30 PM to 3:10 AM.
- On Monday through Saturday evenings, the Downtown/Morgantown Mall PM route connects on-campus and off-campus residential areas with downtown Morgantown and the Morgantown Mall from 6:00 PM to 12:00 AM.

The District Service

During regular WVU semesters, MLTA operates two routes that serve the District Apartments on Van Voorhis Road. The District is a large off-campus residential complex for WVU students and the property owners sponsor the service. The District Line operates every 20 minutes Monday through Friday and connects the District to the Med Center PRT station. The District Late Night route transports District residents to downtown Morgantown on Thursday, Friday, and Saturday nights between 9:00 PM and 2:50 AM. The routes are open to the general public.

Pittsburgh Airport Service

The Grey Line is an intercity route that provides service that historically was offered in north central West Virginia through Greyhound. The route includes Fairmont and Clarksburg before traveling from Morgantown to Pittsburgh. The route serves the Pittsburgh Greyhound station and Pittsburgh International Airport. The route operates 365 days of the year and uses over-the-road coaches, offering business class amenities.

FARES

The urban core cash one-way fare is \$0.75 and requested deviation from the fixed route requires an additional \$0.50. MLTA sells monthly unlimited ride passes for \$35.00, as well as 15 tokens for \$10.00. Through a contract with WVU, students, faculty, and staff can ride the transit system by showing their University identification. Persons age 62 and older qualify for the Mountain Line Gold Card that allows them to pay half the regular one-way fare. The roundtrip fare for the WVU football shuttle is \$3.00. The one-way fare for a trip from Morgantown to the Pittsburgh International Airport on MLTA's Grey Line route is \$25.00 for general seating and \$30.00 for business class. Table 14 documents the current fares.

RIDERSHIP

MLTA provided more than 608,000 one-way passenger trips in 2006. Ridership, as shown in Figure 9, has been increasing since 2001 when MLTA began providing trips for WVU students, faculty, and staff through a contract with WVU. Ridership increased 158 percent between 2001 and 2006. According to MLTA, trips by WVU students and staff currently represent approximately 65 percent of the system's total ridership.

TABLE 14: MLTA FARE SUMMARY

Item	Fare/Cost
One-way Core Route Individual Fare (Cash)	\$0.75
Route Deviation (Core Routes/Pre-approved)	Fare + \$0.50
Transfer (One-way)	\$0.75
Senior (with Mountain Line Preferred Customer Gold Card)	One-way Cash Fare: \$0.40 Deviation - (Pre-approved): \$0.25
Medicare Cardholder	One-way Cash Fare: \$0.40 Deviation - (Pre-approved): \$0.25
15 Ride Tokens	\$10.00
Monthly Pass (Unlimited Rides)	\$35.00
Quarterly Pass (Unlimited Rides/Transfers)	\$90.00

Item	Fare/Cost
Gray Line Fares (One-way)	
Morgantown-Fairmont	General Seating: \$3.00 Business Class: \$3.00
Fairmont-Clarksburg	General Seating: \$3.00 Business Class: \$3.00
Morgantown-Clarksburg	General Seating: \$5.00 Business Class: \$5.00
Morgantown-Pittsburgh	General Seating: \$20.00 Business Class: \$25.00
Fairmont-Pittsburgh	General Seating: \$23.00 Business Class: \$28.00
Clarksburg-Pittsburgh	General Seating: \$25.00 Business Class: \$30.00
Morgantown-Pittsburgh	General Seating: \$25.00 Business Class: \$30.00
Fairmont-Pittsburgh Airport	General Seating: \$28.00 Business Class: \$33.00
Clarksburg-Pittsburgh Airport	General Seating: \$30.00 Business Class: \$35.00

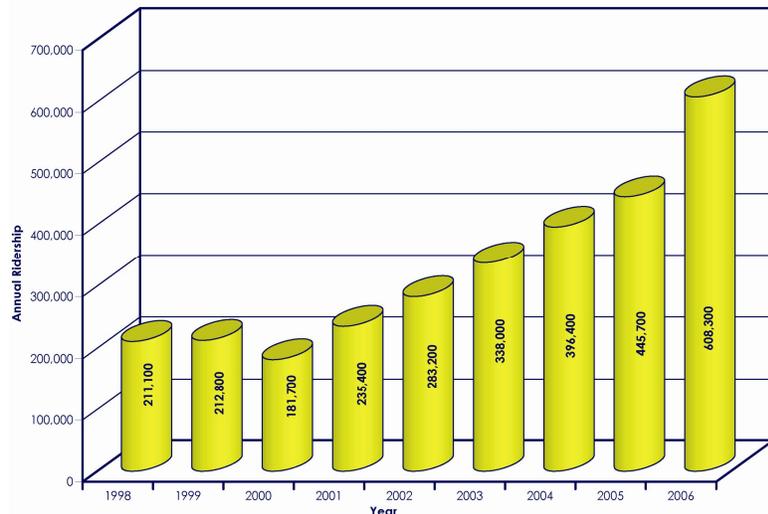
ROLLING STOCK

The MLTA vehicle inventory includes 29 revenue vehicles and 4 non-revenue vehicles. The system utilizes 13 small buses that carry 20 to 24 passengers, seven 39-passenger buses, two 30-passenger trolleys, six small transit vehicles, and one van. All revenue vehicles are wheelchair accessible.

OPERATING BUDGET

In FY 2006, the MLTA operating budget was \$2,690,000. Table 15 summarizes MLTA's sources of operating revenue. MLTA received \$570,000 in Federal operating funding which represented 21 percent of the system's total revenue. Operating assistance from Monongalia County and the City of Morgantown was 24 percent of the total revenue. Monongalia County contributed \$366,500 while the City of Morgantown contributed \$266,500. In FY 2006, the WVU operating subsidy was 21 percent of the total revenue or \$572,000. Nine percent, or \$230,000, of the system's revenue came from passenger fares.

FIGURE 9: MOUNTAIN LINE RIDERSHIP (1998-2006)



Source: Mountain Line Transit

TABLE 15: MOUNTAIN LINE FY 2006 OPERATING REVENUE

Revenue Source	Funding Amount	Percent of Total
Federal Operating (Section 5307)	\$570,000	21%
WVU Operating Subsidy	\$572,000	21%
County Operating	\$366,500	14%
City Operating	\$266,500	10%
Farebox Revenue	\$230,000	9%
Access to Jobs Grant	\$225,000	8%
Charter/Contract/Subsidy	\$150,000	6%
Federal Operating (Section 5311f)	\$120,000	4%
Medicaid	\$110,000	4%
Contingency	\$68,000	3%
Interest	\$7,000	.26%
Welfare to Work—DHHR	\$5,000	.19%
Total Revenue	\$2,690,000	100%

Source: Mountain Line Transit Authority

WEST VIRGINIA UNIVERSITY PERSONAL RAPID TRANSIT

DESCRIPTION OF THE SYSTEM

West Virginia University is served by a Personal Rapid Transit system known as PRT. PRT is a unique automated fixed-guideway transit mode that uses small computer-driven vehicles to deliver passengers to stations. The WVU PRT, funded by a Federal transportation demonstration program, was constructed in two phases in the late 1970s.

The system's alignment, shown in Figure 10, is 3.8 miles long with 8.9 total lane miles. The system has five stations. The Walnut and Beechurst stations are located on WVU's downtown campus while the Engineering, Residential Towers, and Health Sciences Center stations are located on the Evansdale campus. At each station, passengers select the destination station and wait at the appropriate boarding area for a vehicle to arrive to take them directly to that station. During peak travel times the vehicles operate according to a schedule. During off-peak periods, the vehicles operate based on demand. A trip along the entire length of the system takes approximately 11 minutes.

PRT operates six days a week throughout the year. During the fall and spring semesters, PRT operates Monday through Friday from 6:30 AM to 10:15 PM and on Saturdays from 9:30 AM to 5:00 PM. During the summer months, PRT provides trips Monday through Friday from 6:30 AM to 6:15 PM and on Saturday from 9:30 AM to 5:00 PM. PRT does not operate on Sundays or University holidays.

FARES

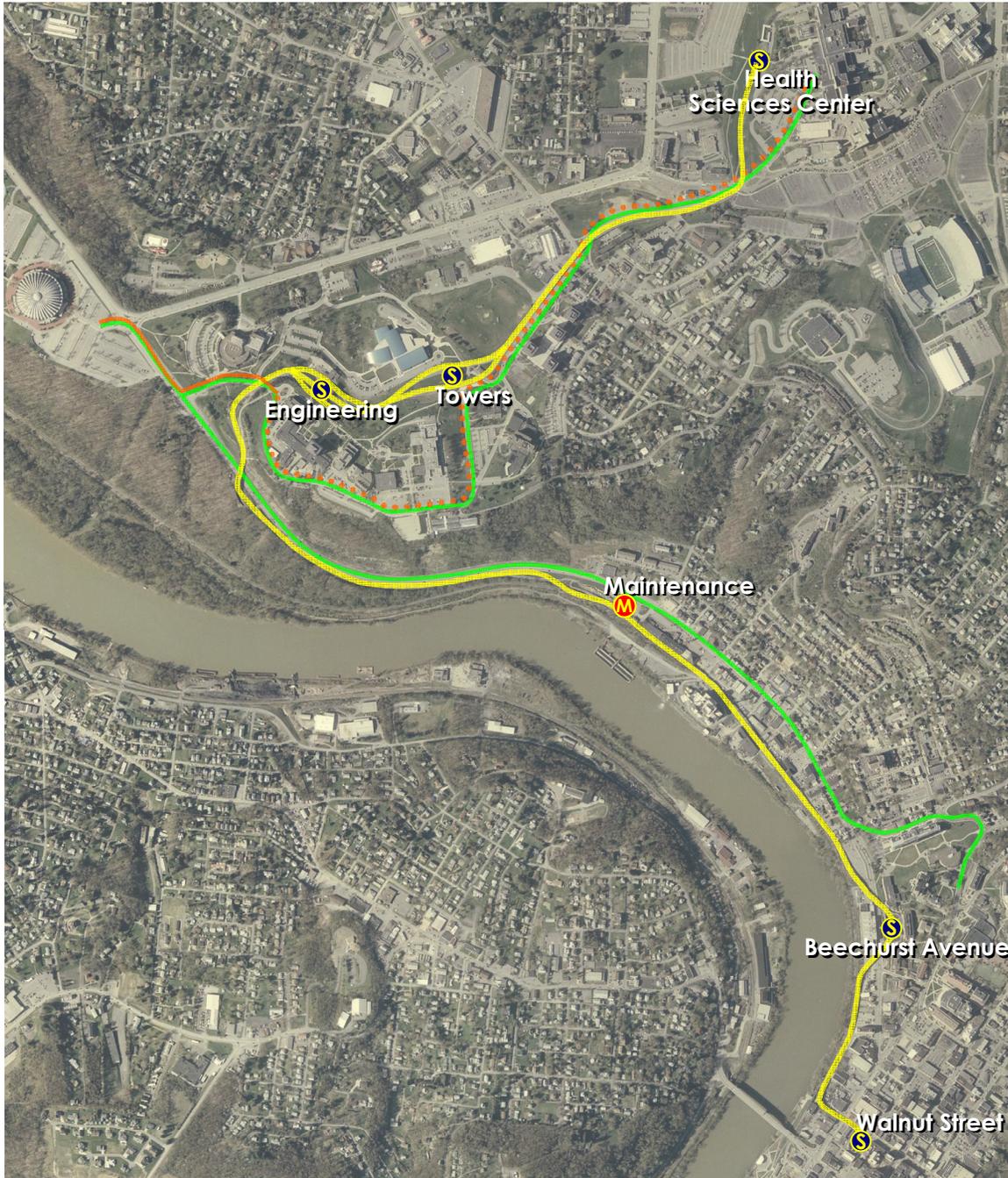
Through a student transportation fee, WVU undergraduate students can take unlimited PRT trips by showing their student identification card. WVU faculty and staff also ride for free and the general public fare is \$0.50 per trip. Graduate students that receive a tuition waiver do not pay a transportation fee and must pay a cash fare or purchase a PRT pass in order to ride PRT. A semester PRT pass is \$67.

RIDERSHIP

The PRT system, as shown in Figure 11, provided over 2.2 million one-way trips in FY 2006, which is approximately 850,000 fewer trips than in 1980 when the current system became operational. Ridership fell throughout the 1980s due to a combination of decreases in university enrollment and the development of off-campus housing in the Evansdale area that resulted in changes to student travel patterns. The pattern changes reduced the connectivity with PRT on the Evansdale campus. Ridership has been increasing since 2000 due to increasing enrollment in the period. Annual ridership from 1990 through 2006 is displayed in Figure 11

The daily and monthly total ridership on PRT varies by time of year and day of the week. During the fall semester, the average ridership for October approaches 390,000 trips per month while the monthly average in July is approximately 37,000.

On average, PRT provides approximately 15,000 one-way trips each day. Generally, the greatest number of trips originate at the Beechurst Station on the downtown campus. Approximately 42 percent of trips begin at the Beechurst Station. The second largest volume of originating trips is at Towers residence halls (29 percent of trips). The percentage of system trips by origin station is displayed in Figure 12.



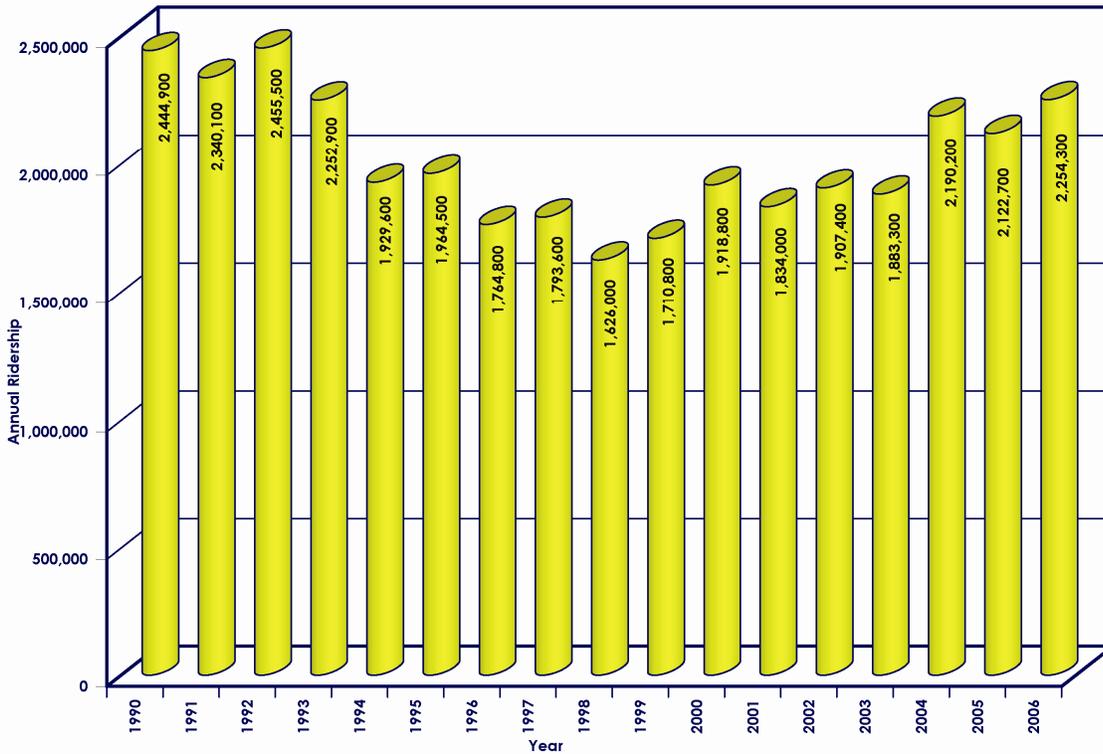
Legend

- - PRT Route
- - Coliseum to Engineering PRT Shuttle Route
- ... - Health Sciences Center Shuttle Route - Late Night
- - WVU Sunday Shuttle
- M - PRT Maintenance
- S - PRT Station

WVU Personal Rapid Transit (PRT) and Campus Shuttle Routes

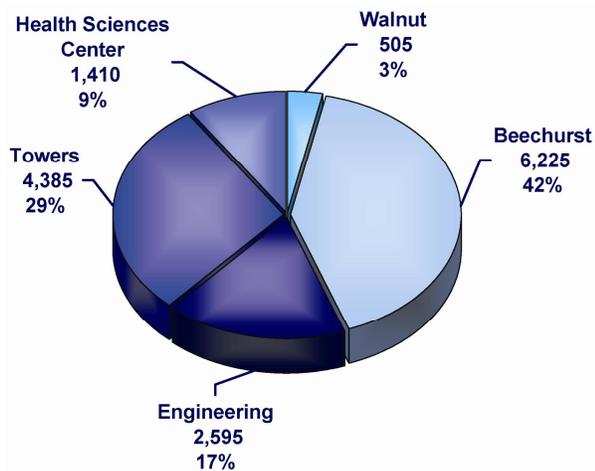


FIGURE 11: WEST VIRGINIA UNIVERSITY PRT RIDERSHIP (1990 TO 2006)



Source: West Virginia University

FIGURE 12: AVERAGE DAILY PRT RIDERSHIP BY STATION



Source: West Virginia University

VEHICLE INVENTORY

The system's vehicle inventory consists of 73 20-passenger PRT vehicles. The vehicles are 25 years old and have up to 500,000 miles on them. The vehicles are maintained and rebuilt on a scheduled basis.

OPERATING BUDGET

The PRT annual operating budget is about \$3 million. Personnel expenses represent approximately 50 percent of the operating expenses while maintenance expenses represent the remaining 50 percent of costs.

PRT is funded through a combination of student fees, passenger fares, federal grants, and WVU personnel subsidy. Of the \$63.00 annual student transportation fee, PRT receives \$46.00. The majority of the PRT student transportation fee contribution is spent on PRT operating expenses; however, \$8.00 is allocated to cost sharing for grants and \$7.00 is put towards PRT capital improvements. In FY 2004, passenger fare revenue was \$36,000.

WVU CAMPUS BUS SERVICES

In addition to WVU's PRT system and the University's contract with MLTA, the University also operates two campus shuttle transportation services throughout the school year. The shuttles do not operate on University holidays or period breaks. The following is a description of the campus shuttles that WVU operates.

COLISEUM/ENGINEERING PRT STATION SHUTTLE

WVU operates a shuttle between the free parking lot at the Coliseum and Health Sciences Center. The route is displayed in Figure 12. During the early morning through evening period (7:30 AM to 10:15 PM) the shuttle operates between the Coliseum lot and the Engineering PRT station. Monday through Wednesday from 10:30 PM to up to 2:00 AM (1:00 AM on Monday/Tuesday and until 2:00 AM on Wednesday) the shuttle is extended to the Health Sciences Center. The late night shuttle does not operate on Thursday, Friday or Saturday. The service frequency is ranges from 10 minutes during the daytime hours to 45 minutes in the late night hours. During the summer term, this shuttle operates from 7:30 AM to 6:00 PM with a 15-minute frequency.

SUNDAY BUS SHUTTLE

On Sundays, WVU provides shuttle service along a route connecting the Mountainlair, Coliseum, Engineering Building, the Evansdale Residential Complex, and the Health Sciences Center. The route, shown in Figure 12, operates every 45 minutes from 9:15 PM to 2:30 AM. The Sunday Bus Shuttle does not operate during the summer term.

RIDERSHIP

WVU does not collect ridership data for the campus shuttles.

VEHICLE FLEET

The University primarily utilizes four school buses to provide shuttle transportation. The University also owns two over-the-road coaches that are occasionally used to operate the on-campus shuttles.

OPERATING BUDGET

The annual operating expense for the on-campus bus shuttle system is approximately

\$375,000. The system is funded primarily through state funding that the University receives and a portion of the student transportation fee.

OTHER TRANSIT SERVICES

FAIRMONT-MARION COUNTY TRANSPORTATION AUTHORITY

The Fairmont-Marion County Transit Authority (FMCTA) provides fixed route and complementary paratransit services in Marion County. FMCTA operates a weekday route between Fairmont and Morgantown. The route leaves Fairmont three times per day – 7:10 AM, 11:00 AM, and 2:30 PM. The route travels I-79 north to I-68 east and then follows US 119 into Morgantown. The route has scheduled stops at the Monongalia County Courthouse, the Ruby Memorial Hospital at WVU, and at Mon General Hospital before returning to Fairmont. Passengers are allowed to board and alight at any location along the route. The route is only open to Marion County residents. FMCTA uses a 23-passenger bus to provide the service.

PRESTON COUNTY SENIOR CITIZENS, INC.

Preston County Senior Citizens, Inc. operates Buckwheat Express, a public transportation service in Preston County. In addition to the routes the agency operates in Preston County, it operates one route that transports residents into the Morgantown area. The Kingwood to Morgantown route operates Monday through Friday with departures from Kingwood each day at 7:00 AM, 8:45 AM, 2:00 PM, and 3:45 PM. In Morgantown, the route terminates at the Mountain Line Depot on Garrett Street.

NON-MOTORIZED TRANSPORTATION SYSTEM

PREVIOUS PLANNING

The Board of Parks and Recreation Commission (BOPARC) provides a comprehensive array of recreational programs and maintains parks and facilities to meet the needs of Morgantown area residents. In 2002, BOPARC adopted a Parks and Recreation Master Plan that states that "the trail systems in and around Morgantown are a tremendous community asset" and that BOPARC should "continue to expand and improve their diversity and connectivity for all to enjoy."

BOPARC has been creating new bicycle and pedestrian links among parks and recreation facilities in the area. For example, there is a path that connects Whitmore Park to the Decker's Creek Trail. Using the trail, residents can access Marilla Park, a large city park with ball fields and a swimming pool. In the long term, the agency would like to create the following bicycle and pedestrian linkages:

- Krepps Park to the Caperton Rail Trail along the Monongahela River;
- White Park to South University Avenue Park and the Caperton Trail; and
- Dorsey Knob to White Park.

CURRENT TRAIL FACILITIES

Figure 13 displays the five primary trails in Monongalia County. The Mon River Trails Conservancy (MRTC) is a non-profit agency that oversees the development and management of the Mon River Trail and the segments of Decker's Creek Trail outside the Star City and Morgantown city limits. BOPARC manages the Caperton and Decker's Creek trails within Morgantown and Star City. The Mon River, Caperton, and Decker's Creek Trails utilize abandoned CSX railroad right-of-way that is held in lease by the West Virginia State Rail Authority. The trail system was developed using a combination of Federal Transportation Enhancement funds and local donations. The following is a brief description of the trails in Monongalia County:

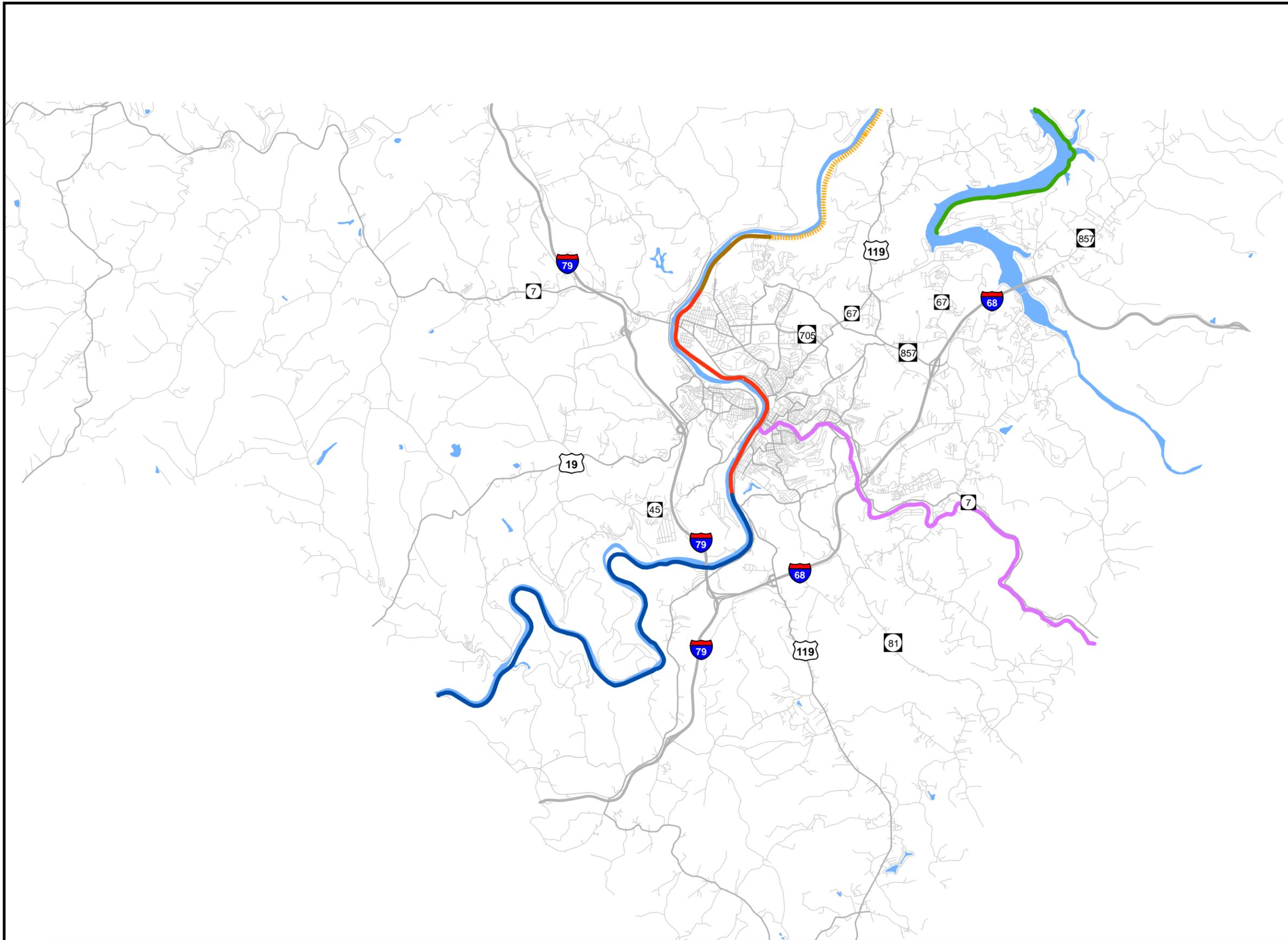
- **Mon River Trail North:** This crushed limestone trail extends six miles from the Star City city limits north along the Monongahela River to Van Voorhis Road. The MRTC's long-range plan includes

extending this trail five miles north to Point Marion, Pennsylvania where it would connect to a trail system there. Parking is available at the trailhead in Star City.

- **Mon River Trail South:** The Mon River Trail South begins at the southern Morgantown city limits along the Monongahela River and continues 18 miles south and west to Prickett's Fort State Park in Marion County. The trail has a crushed limestone surface. Parking is available at the trailheads in Uffington and Opekiska.
- **Caperton Trail:** The Caperton trail is a six-mile paved trail traveling along the Monongahela River through Morgantown and Star City. The trail provides access to several parks and destinations including the Edith Barrill Riverfront Park, the Hazel Ruby-McQuain Riverfront Park, downtown Morgantown, the downtown WVU campus, and the South University Avenue Park, among others. Parking is available at several locations along the trail.
- **Decker's Creek Trail:** The Decker's Creek trail begins at the confluence of the Monongahela River and Decker's Creek in downtown Morgantown. It extends 19 miles east and south to Reedsville in Preston County. Inside the Morgantown city limits the trail is paved. Outside the city limits the trail surface is crushed limestone. Parking is available at six locations along the trail including downtown Morgantown, Marilla Park, Masontown, and Reedsville.
- **Cheat Lake Trail:** A 4.5-mile trail extends along the shore of Cheat Lake from the Lake Lynn Dam to the Cheat Haven nature viewing area.

CURRENT BIKE LANE FACILITIES

Currently there are no designated bike lanes or signed bike routes in the Morgantown area. The primary constraint is the lack of road width adequate to construct a bike lane or provide a paved shoulder. BOPARC actively advocates for the inclusion of bike lanes and/or paved shoulders as a part of new capacity roadway projects.



Legend

Trails

-  Mon River Trail North
-  Mon River Trail North Extension
-  Mon River Trail South
-  Caperton Trail Main
-  Cheat Lake Trail
-  Deckers Creek Trail



BIKE PARKING

There are very few bike parking racks in Monongalia County. With the exception of the parking garage across from the downtown public library, the Morgantown Parking Authority does not provide bike racks at its facilities. The lack of designated parking racks results in the practice of bicyclists locking their bicycles to parking meters, trees, and sign posts. One bike rack is located near the bus depot in the Hazel Ruby-McQuain Riverfront Park. Bike racks are available at several locations on the WVU campus, including one at each PRT station. The on-campus bike racks can accommodate eight bikes.



Bike Rack at the Walnut Street PRT Station

SIDEWALKS AND CROSSWALKS

ZONING AND ORDINANCES

City of Morgantown

The Morgantown Zoning Ordinance, updated in June 2004, includes provisions regarding sidewalks. In the ordinance's regulations for residential, mixed use, business districts, and office and institutional land use districts, the ordinance states: "Sidewalks shall be constructed along the frontage of a lot upon which a use is to be constructed. New sidewalks shall be at least 6 feet wide, or the same width as an existing but incomplete sidewalk along the same side of the street."

The regulations for sidewalks in neighborhood business districts and general business districts also include additional provisions that relate to the character of the sidewalks such as paving materials, landscaping, street furniture, and lighting, among others.

City of Morgantown City Ordinance 37308 prohibits individuals from riding bicycles on sidewalks.

Monongalia County

Monongalia County has not enacted zoning ordinances and subdivision regulations in the unincorporated areas of Monongalia County. In accordance with West Virginia State Planning Enabling Law, however, the county established planning districts in Stewartstown, Cheat Neck, Cheat Lake, and West Run in 2003. Advisory committees in each of the planning districts are charged with overseeing the development of zoning regulations to achieve each community's vision for land use. Initial sections of the zoning ordinances for Cheat Neck and West Run are under review. According to the Monongalia County Planning Office Director, provisions for sidewalks will most likely be included in the regulations for high-density residential zones, mixed-use development zones, and possibly commercial zones. A timeframe for adopting the regulations is unknown at this time.

SIDEWALK REPLACEMENT AND CROSSWALK INSTALLATION

The City of Morgantown does not currently have a sidewalk replacement plan. The city repairs and replaces sidewalks, as funding and staff time is available. The determination of the need to install a crosswalk on municipal streets is made by the City's Traffic Commission. The WV DOT is responsible for installing and maintaining crosswalks on state-owned roads in the county.

SIDEWALK INVENTORY

An inventory of locations where sidewalks and paved shoulders have been provided was conducted along minor and principal arterials in the urbanized area. The inventory was limited to principal and minor arterials because these types of roadways provide connections between neighborhoods and adjacent subareas. The inventory documented the following levels of sidewalk and/or paved shoulder coverage:

- No sidewalk or shoulder
- Sidewalk – One side of the roadway
- Sidewalk – Both sides of the roadway
- Paved shoulder – One side of the roadway

- Paved shoulder – Both sides of the roadway
- Sidewalk and paved shoulder – combination of one or both sides of the roadway

Figure 14 exhibits the arterial corridors in the urbanized area with sidewalks and paved shoulders. The downtown cores of Morgantown, Westover and Star City and through the university represent areas where sidewalks are most prevalent. Paved shoulders can be found on some arterials outside of the Morgantown City Limits, including along WV 705, West Run Road, WV 7 near the I-68 interchange, US 19 near the I-79 interchange, and WV 73 near Green Bag Road.



University Avenue – WVU Campus

Paved shoulders exist on approximately 7 miles, or 37 percent, of minor and principal arterials. One percent of minor arterial mileage has a shoulder on one side of the road. There are paved shoulders on both sides of the road along five miles of minor arterial mileage, primarily along Route 705 and Monongahela Boulevard. Of the total 6.8 miles of principal arterials, paved shoulders exist along 1.6 miles of the roadways. The location of this 1.6-mile paved shoulder segment is Cheat Road between the I-68 interchange and US 119 as it turns north on Point Marion Road.



High Street Downtown Morgantown

Tables 16 and 17 provide a summary of the total miles and the proportion of minor and principal arterial mileage with sidewalk and paved shoulder coverage. Approximately 15 miles of minor arterial mileage, or 34 percent of the total minor arterial mileage, has sidewalks on one or both sides of the road. Many streets have a mixture of segments with one or both sidewalks and where there are gaps between segments with sidewalks (e.g., University Avenue and Richwood Avenue). There are no sidewalks along principal arterials in the urbanized area.



Pedestrian on Beechurst Avenue North of 8th Street

FREIGHT MOVEMENT

TRUCKS

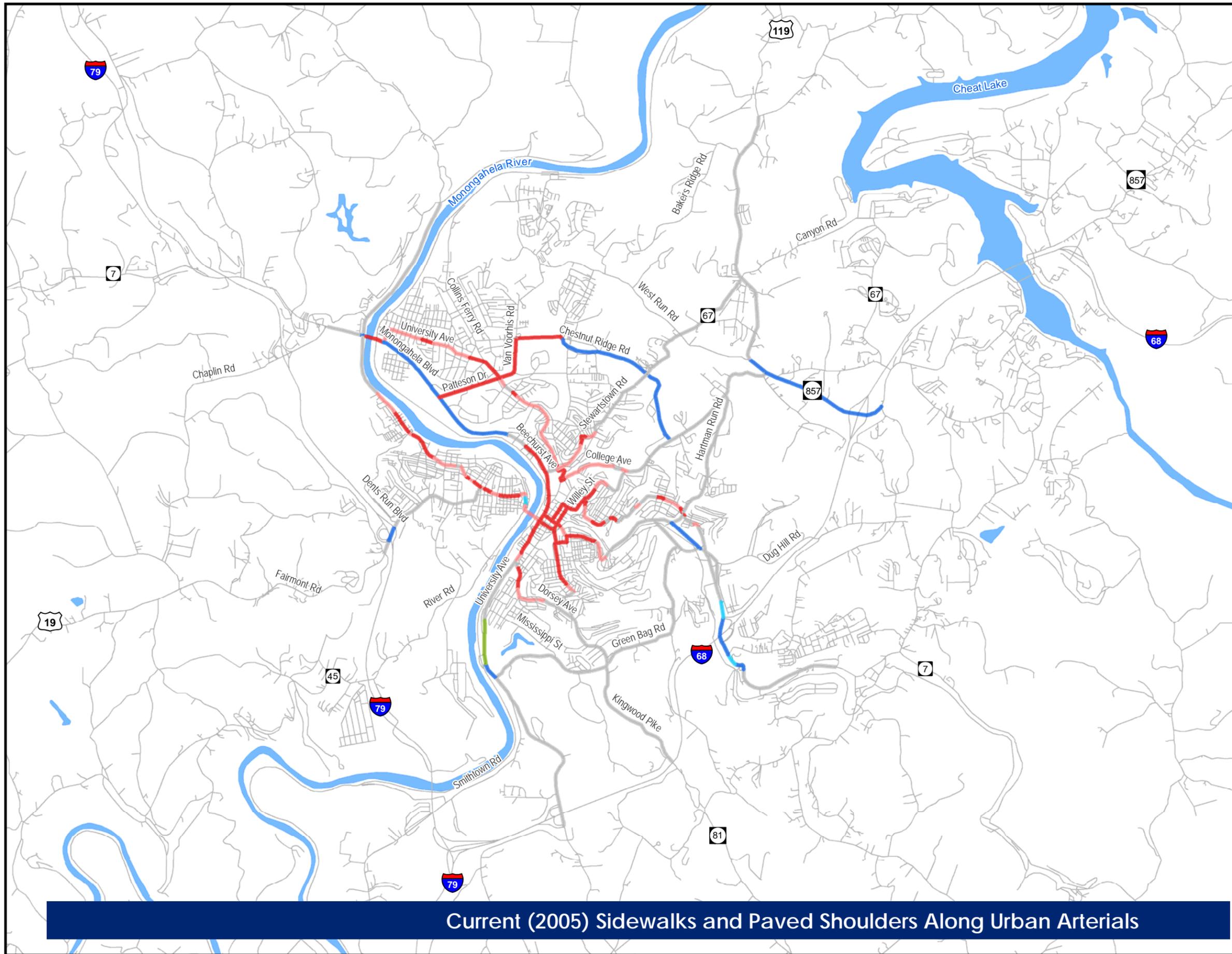
There are approximately 11 trucking companies in Monongalia County. Most of the companies have more than one transportation classification, including the following:

- Freight trucking (1).
- Heavy duty trucking (6).
- Heavy equipment movers (5).
- Miscellaneous (6).

The following are designated as truck routes in the county: I-68, I-79, US 119, US 19, WV 7, and CR 857.

RAIL

There are two active rail lines in Monongalia County. Norfolk Southern owns both lines while CSX has trackage rights to operate over the lines. Figure 15 displays the primary freight rail corridors in the county. The primary north-south CSX/NS line follows the western side of the Monongahela River along its entire length in



- Legend**
Sidewalk / Shoulder Inventory
- No Sidewalk or Shoulder
 - Sidewalk, One Side
 - Sidewalk, Both Sides
 - Shoulder, One Side
 - Shoulder, Both Sides
 - Sidewalk (One Side) and Shoulder (Both Sides)

Current (2005) Sidewalks and Paved Shoulders Along Urban Arterials



TABLE 16: SIDEWALK COVERAGE ALONG MINOR AND PRINCIPAL ARTERIALS IN THE MORGANTOWN URBANIZED AREA

Functional Classification	Total Miles	Sidewalk One Side		Sidewalk Both Sides		Total Sidewalk Coverage	
		Miles	Percent of Mileage	Miles	Percent of Mileage	Miles	Percent of Mileage
Minor Arterials	42.8	6.0	14.0%	8.6	20.1%	14.6	34.1%
Principal Arterials	6.8	0	0.0%	0	0.0%	0	0.0%

Source: URS Corporation, Inc.

TABLE 17: SHOULDER COVERAGE ALONG MINOR AND PRINCIPAL ARTERIALS IN THE MORGANTOWN URBANIZED AREA

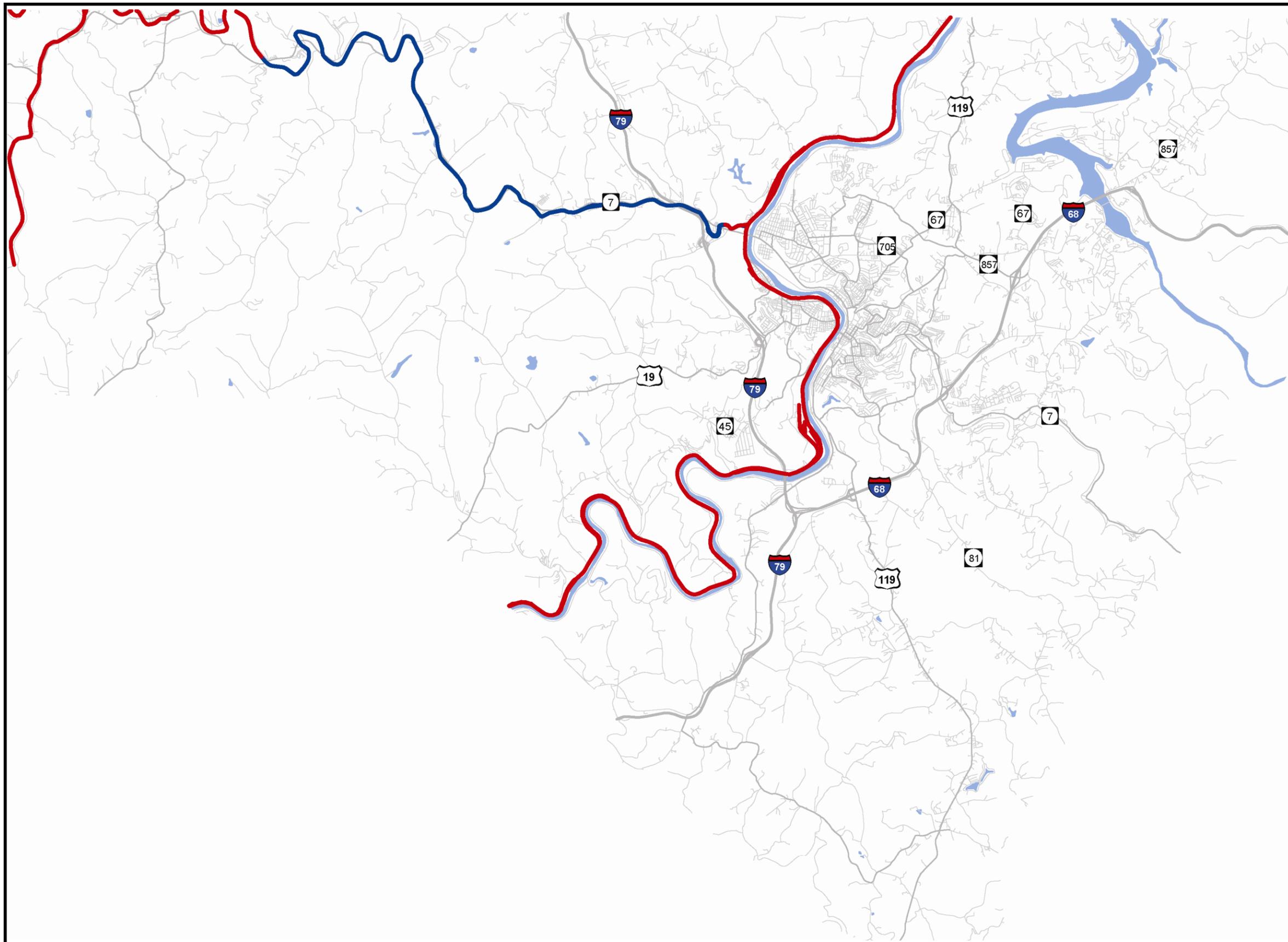
Functional Classification	Total Miles	Shoulder One Side		Shoulder Both Sides		Total Shoulder Coverage	
		Miles	Percent of Mileage	Miles	Percent of Mileage	Miles	Percent of Mileage
Minor Arterials	42.8	0.4	0.9%	5.0	11.7%	5.4	12.6%
Principal Arterials	6.8	0	0.0%	1.6	23.5%	1.6	23.5%

Source: URS Corporation, Inc.

Monongalia County. This line originates in Fairmont, Marion County and does not pick up or drop off any product in Monongalia County, while continuing north to Greene County, Pennsylvania. A rail line in the northwestern portion of the county serves three coalmines: Blacksville No. 1 at Blacksville, Blacksville No. 2 at Wana, and Federal Mine No. 2 at Miracle Run (near Bula). Blacksville No. 2 and Federal No. 2 are active coalmines. Blacksville No. 1 ceased mining operations in 1995, however, one railroad historical source notes that the railroads ship fly ash to the mine for disposal in its mineshafts. The line serving the mines continues north to Brownsville, Pennsylvania.

There is one abandoned rail line in the county. Abandoned in 1968, the former Monongahela Railway alignment extends west from the Monongahela River at Westover. The former railroad alignment that now comprises the Mon River Trails, Caperton Trail, and Deckers Creek Trail is considered rail-banked property, meaning it could be returned to a railroad use in the future.

More than 29 million tons of freight was shipped over rail lines in Monongalia County in 2003. Table 18 provides a summary of the products and volume of freight that was shipped. Along the Monongahela River line, nearly 6,400 railcars carried 610,000 tons of coal and pulpwood through the county. From the three coalmines in northwestern Monongalia County, Norfolk Southern and CSX moved nearly 289,000 rail cars and 28.7 million tons of coal.



Legend
 - Active Rail Line
 - Abandoned Rail Line

Railroad Corridors in Monongalia County



TABLE 18: FREIGHT TRAFFIC ON MONONGALIA COUNTY RAIL LINES IN 2003

Line and Railroad	Product Transported	Number of Cars (In Year)	Freight Tonnage (In Year)
Monongahela River Line			
Norfolk Southern	Coal	4,800	466,200
CSX	Coal	896	94,000
	Pulpwood	660	50,300
Subtotal		6,356	610,500
Wana and Miracle Run Lines			
Norfolk Southern	Coal for metallurgical use	1,600	172,400
	Coal for fuel/steam production	174,150	15,800,000
CSX	Coal for fuel/steam production	112,874	12,750,000
Subtotal		288,624	28,722,400
Total All Lines		294,980	29,332,900

Source: West Virginia State Rail Authority

AIR TRAVEL FACILITIES

The Morgantown Municipal Airport is located on Hartman Run Road. Commercial air service is provided by US Airways, operating five flights a day to/from Pittsburgh, Pennsylvania. The airport has 40 T-hangers and 2 large hangers that are available for rent to private plane owners. All of the hangers are currently occupied. The airport averages about 40,000 takeoffs and landings per year. The airport administration completed and adopted a master plan in 2004. The primary recommendations of the master plan include extending the runway and constructing additional corporate hangers and T-hangers.

WATER

The Monongahela River is a navigable waterway with a 9-foot channel depth. Along the Monongahela River in Monongalia County, there are 20 ports that are a part of the Port of Pittsburgh system. As shown in Table 19, there are 13 active ports and 7 inactive ports. Of the active ports, 11 ports facilitate the movement of coal, one port receives petroleum, and one

port ships crushed limestone. Eight of the active ports are considered intermodal terminals because they offer connections between transportation modes – water and highway or water and railroad.

The U.S. Army Corps of Engineers (USACE) maintains and operates three locks and dams in Monongalia County. The locks and dams at Morgantown, Hildebrand, and Opekiska are among nine similar facilities on the Monongahela River between Pittsburgh, Pennsylvania and Fairmont, West Virginia. The



Monongahela River Locks and Dam - Morgantown

USACE collects data about the volume of traffic and goods that travel through the locks and dams. As shown in Table 21, more than 1.8 million tons of coal, petroleum, and crude materials passed through the three locks and dams in 2004. More than one million tons of freight passed through the lock and dam in Morgantown.

TABLE 19: PORTS AND INTERMODAL TERMINALS ON THE MONONGAHELA RIVER IN MONONGALIA COUNTY

Name of Port	Location			Purpose	Intermodal Terminal Type (Modes Connected)
	River Mile Marker	Bank	Town		
Laurita Energy Dock	95	Left	West VanVoorhis	Shipment of coal	Highway - Water
Rosedale Coal Co., Dock No. 2	96	Left	Rosedale	Shipment of coal	Highway - Water
Anker Energy River and Rail Terminal Dock	96	Left	Maidsville	Shipment of coal	Highway-Rail-Water
Consolidation Coal Co., Humphrey No. 7 Dock.	97	Left	Maidsville	Shipment of coal	No Intermodal
Anker Energy Corp., Scotts Run Dock	98	Left	Scotts Run	Shipment of coal	Highway - Water
Guttman Oil Co. Dock.	98	Right	Star City	Receipt of petroleum products	No Intermodal
Consolidation Coal Co., Granville Dock	98	Left	Granville	Not in use	No Intermodal
Consolidation Coal Co., Arkwright Dock	99	Left	Granville	Shipment of coal	No Intermodal
Exxon Co., USA, Westover Terminal.	100	Left	Riverside	Not in use	No Intermodal
Vance Coal Co. Dock	100	Left	Riverside	Shipment of coal	Highway-Rail-Water
Greer Limestone Co., Lower Dock	100	Right	Morgantown	Not in use	No Intermodal
Greer Limestone Co., Upper Dock	100	Right	Morgantown	Not in use	No Intermodal
Consolidation Coal Co., Westover Mooring	100	Left	Westover	Not in use	No Intermodal
Kosmos Cement Co., Morgantown Dock	103	Right	Morgantown	Shipment of crushed limestone	No Intermodal
Morgantown Industrial Park, Wharf No. 1	103	Left	Morgantown	Shipment of coal	No Intermodal
Morgantown Industrial Park, Wharf No. 2	103	Left	Morgantown	Shipment of coal	Highway - Water
Consolidation Coal Co., Weirton Mine Dock	111	Right	Little Falls	Not in use	No Intermodal
Pittswick Coal Co. Dock	114	Left	National	Not in use	No Intermodal
Consolidation Coal Co., Booth Mine Dock	114	Left	Edna	Shipment of coal	No Intermodal
Mohigan Mining Co., Dock	114	Left	Edna	Shipment of coal	Highway - Water

Source: US Army Corps of Engineers, 2003
Bureau of Transportation Statistics, USDOT

TABLE 20: LEVEL OF FREIGHT SHIPPED THROUGH MONONGAHELA RIVER LOCKS AND DAMS IN MONONGALIA COUNTY, 2004

Lock and Dam	River Location (Mile Marker)	Number of Barges		Freight Tonnage by Product						Total Tonnage		
		Upbound	Downbound	Coal		Petroleum		Crude Materials				
				Upbound	Downbound	Upbound	Downbound	Upbound	Downbound	Upbound	Downbound	
Morgantown	102	816	820	4,500	377,400	0	2,100	131,700	495,100			1,010,800
Hildebrand	108	362	358	9,300	372,600	0	0	25,600	0			407,500
Opekiska	115.4	386	384	4,500	378,400	0	0	55,600	0			438,500

Source: U.S. Army Corps of Engineers

Note: Upbound = South direction

Downbound = North direction

SOCIOECONOMIC DATA FORECASTS – 2030

INTRODUCTION

Morgantown and Monongalia County have been one of a small number of West Virginia counties and/or cities that have observed a stable growth pattern over the last 20 to 30 years. Over the period from 1970 through 2000, population in the state increased from 1,744,000 to approximately 1,808,000, or by approximately 3.7 percent. In the same period, population in Monongalia County increased from 63,700 persons in 1970 to just fewer than 82,000 persons in 2000, an increase of almost 29 percent. When compared to the historical change in population for the surrounding counties in West Virginia and southern Pennsylvania, Monongalia County remains one of the brighter spots in the region. Monongalia County is the only county in the surrounding seven-county region that has observed continuous growth over the last four census periods. Table 21 displays the historical population and change for Monongalia and the surrounding counties.

For the transportation plan update, the economic outlook for the county is a critical factor to incorporate into the analysis, because future system needs will be highly influenced by the change in employment and population. If the historical population, household and employment trends reflect growth and expansion, the increment of increase in traffic volume and, more importantly vehicle miles of travel, will grow at higher rates than if the population and employment forecasts reflected little growth or declines.

TABLE 21: HISTORICAL REGIONAL POPULATION (1970 TO 2000)

County	Population				Change Per Decade		
	1970	1980	1990	2000	1970-80	1980-90	1990-2000
Monongalia	63,700	75,000	75,500	81,900	17.7%	0.7%	8.5%
Marion, WV	61,400	65,800	57,200	56,600	7.2%	-15.0%	-1.1%
Preston, WV	25,500	36,500	29,000	29,300	43.1%	-20.5%	1.0%
Taylor, WV	13,900	16,600	15,100	16,100	19.4%	-9.0%	6.6%
Wetzel, WV	20,300	21,900	19,300	17,700	7.9%	-11.9	-8.3%
Greene, PA	36,100	40,500	39,600	40,700	12.1%	-2.2%	2.8%
Fayette, PA	154,700	159,400	145,300	148,600	3.0%	-8.8%	2.3%

Source: U.S. Census Bureau

SOCIOECONOMIC DATA CHANGE (2000 TO 2030)

Travel in the region is influenced by the current level of households, population and employment and the increment of each anticipated to be in place by 2030. In addition, the relationship as to where in the county residential concentrations are relative to employment centers can greatly influence the overall level of travel. Thus, through the transportation planning process focus must also be placed developing a generalized land use concept for at least the urbanized area.

2030 COUNTY-WIDE POPULATION TOTALS

Estimates of Monongalia County population through 2030 are available from a number of sources that employ different methods and assumptions. To provide a range of concepts for local decision makers to review, estimates from the following sources were compared:

- Woods and Poole.
- A forecast prepared by the Environmental Protection Agency (EPA) for use in regional air quality analysis.
- WVU Research Institute.

The goal of reviewing forecasts from alternate sources was to provide decision-makers with information for a consistent forecasts period that used different methods and assumptions. The decision-makers could then weight the results and methods to determine which concept or concepts most likely fit with local expectations. Population forecasts for 2030 from each of the sources are listed below:

- Woods and Poole: 101,700 persons
- EPA: 101,300 persons.
- WVU Research Institute: 103,200 persons.

Through discussion with the TAC and local planning staff, it was concluded that the Woods and Poole forecasts would be the basis for the 2030 population estimates. As the forecasts from the various sources were clustered around 102,000 persons, selection of any of the alternatives could be supported.

Each of the methods includes developing trends based on historical information on the county and the region. As a result of using historical changes, it is likely that the methods would not capture the population impacts associated with WVU activities targeted at increasing enrollment at the university by approximately 3,000 students by 2011. Enrollment forecasts need to be included in the population forecasts as students are counted as residents of the county they live in on April of any given year. Thus, most WVU students should be counted as residents of Monongalia County. After adding the estimated increase in enrollment to the Woods and Poole the Monongalia County population estimate for 2030 was set at 105,300 persons.

The 2030 county population estimate of 105,300 reflects an annual increase of approximately 0.7 percent. As a comparison, the annual change in the previous 30 years from 1970 to 2000 was 0.8 percent per year. Figure 18 displays the historical and forecasted county population.

2030 COUNTY-WIDE EMPLOYMENT TOTALS

There are not as broad of a range of resources available for 2030 employment projections at the county level. Thus, projections from Woods and Poole were used as the control total for 2030.

The Morgantown and Monongalia County growth is fueled by an economic base that is focused on sectors that have proven to be more stable and have experienced more growth than the mining and manufacturing economies of the remainder of the region. Keys for growth in the Monongalia County area include:

- **WVU:** Compared to 1993 enrollment, current enrollment levels have increased approximately 12 percent for under graduates and approximately 9.4 percent for graduate programs.
- **Medical Centers:** WVU Hospitals, University Health Associates and Monongalia General Hospital all make the top ten list of employers in the county. Through the services provided by these entities, Morgantown has become a leading medical center for the region.
- **Emerging Industries:** Morgantown is the home of Mylan Industries (pharmaceuticals), Centers of Disease Control and Prevention (CDC), and National Institute for Occupational Safety and Health (NIOSH).

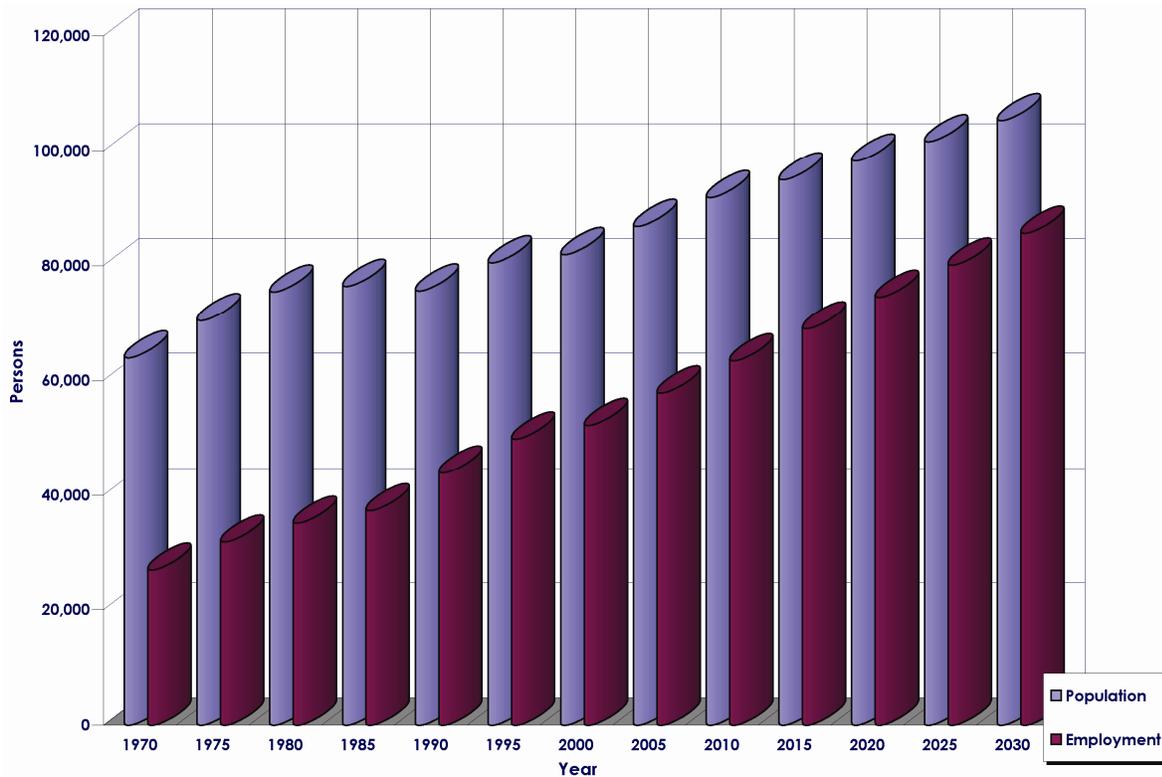
A county-wide 2030 employment forecast of 85,600 was used in the forecasting steps. Assuming a constant growth between 2000 and 2030, the control total represents an annual increase of approximately 1.7 percent per year. In the previous 30 year period (1970 to 2000) the employment growth rate his rate was 2.3 percent per year. Thus, the forecasts through 2030 are relatively conservative when compared to historical change. Figure 16 displays the historical and forecasted Monongalia county employment levels.

POPULATION AND EMPLOYMENT INCREMENT DISTRIBUTION

The approach used in distribution of the 2000 to 2030 increment of population and employment was to:

- Gather input from local planning and economic development staff as to where they would anticipate development would likely take place.
- Use the information gathered locally to establish a preliminary concept.

FIGURE 16: MONONGALIA COUNTY – HISTORICAL AND FORECASTED POPULATION AND EMPLOYMENT



Source: Woods and Poole, 2005
URS Corporation, Inc.

- Review the preliminary concept with a wider audience of city staff, county staff, DOH staff and city and county officials to obtain input as to the reasonableness of the initial distribution.
- Make adjustments to the distribution as required based on the wider review.
- Present the revised distribution to the TAC and CAC for comment and present the revised concept to the Policy Board for approval for use in the modeling.

Outlined below are the analytical steps followed in completing the distribution of the increment of dwellings and employment:

1. Identify the locations of residential and commercial/industrial development activities in the county for which the number of dwelling units or additional employees are known or can be reasonably estimated. The sources of information for completing this step are primarily site plans or information gathered from employers in the region that have reported plans for expansion

(or conversely contraction). This information was organized through discussion with city and county planning staff and the economic development authority.

2. Identify the locations of parcels where development is likely to expand, but an estimated level is not readily available. These locations generally represent parcels/areas where urban services could be assumed to be extended within the 2030 planning horizon.
3. Estimate the percent of the county-wide increments that would be distributed throughout the county to reflect "natural" expansion in the region. Completion of Steps 1 and 2 yield a product that addresses the larger and/or more intense developments in the county. Based on observed historical growth and development, however, many smaller employers will add staff (but not expand their building) and smaller one to four lot residential subdivisions will be developed

throughout the county. Thus, to account for these activities a portion of the dwelling unit and employment increments should be distributed throughout the county. The increment of natural expansion is divided into urban areas and that which is estimated to occur in the rural areas. Urban is defined as the area covered by Morgantown, Cheat Lake and areas contiguous to Morgantown likely served with municipal water and sewer prior to 2030.

The present "urban" area (2000) contains approximately 75 percent of the county's dwelling units. Based on observations of recent development patterns that reflect a large number of multi-family, or higher density apartment developments requiring urban water and sewer, it is likely that through 2030 a greater percentage of the new dwellings will be located within the urban areas than observed in the current conditions. Thus, it was assumed approximately 85 percent of the dwelling unit increment would be located within the urban areas.

In the base analysis year of 2000, approximately 90 percent of the county employment was located within the area defined as "urban". It is anticipated that this percentage will remain relatively constant over the planning period. Additional employment development outside the urban area is likely to occur along regional transportation corridors to take advantage of access provided by the corridors. The following allocation assumptions were made:

- 90 percent of the retail employment to the area defined as urban.
- 85 percent of the non-retail (office, industrial, service) employment to the area defined as urban.

Distribution of the dwelling unit and employment increments was to zones currently containing dwellings and employment and the allocation to each zone was based on the proportion of the county total currently located in the zone.

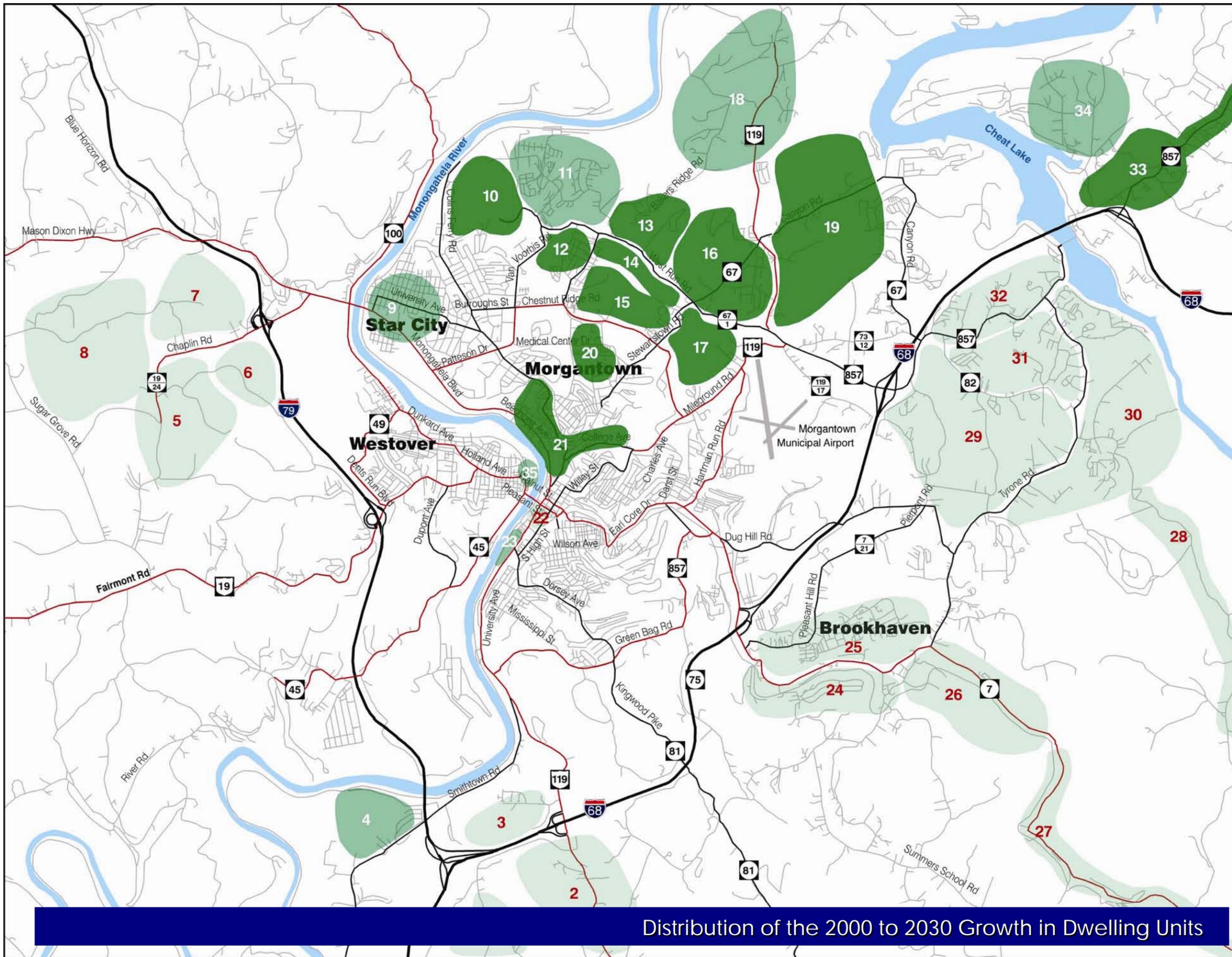
4. Allocate the remainder of the increment to the areas identified in Steps 1 and 2. This task was completed by working with local planning and MPO staff and

Monongalia County Economic Development staff.

DISTRIBUTION RESULTS

Outlined in the following bulletpoints are the results associated with completing Steps 1 through 4 listed above:

- The distribution of population and employment increments to specific regions as identified by City Planning, County Planning, Monongalia County Economic Development and the MPO is displayed in Figure 17 and Figure 18. Each of the colored areas on the maps represent the general area of a known development concept or the location of a potential development parcel. Table 22 documents the increment of dwelling units distributed to each of the colored development areas displayed in Figure 17. Table 23 documents the increment of retail and non-retail (other employment) distributed to each of the colored areas displayed in Figure 18.
- Natural Expansion Estimates. The increment of employment and dwelling estimated to be distributed throughout the county:
 - Dwelling Units: Rural Area-1,860 Units; Urban Area -1,380 Units
 - Retail Employment: Rural Area - 245 Employees; Urban Area -490 Employees
 - Non-Retail Employment: Rural Area - 4,275 Employees; Urban Area - 10,775 Employees

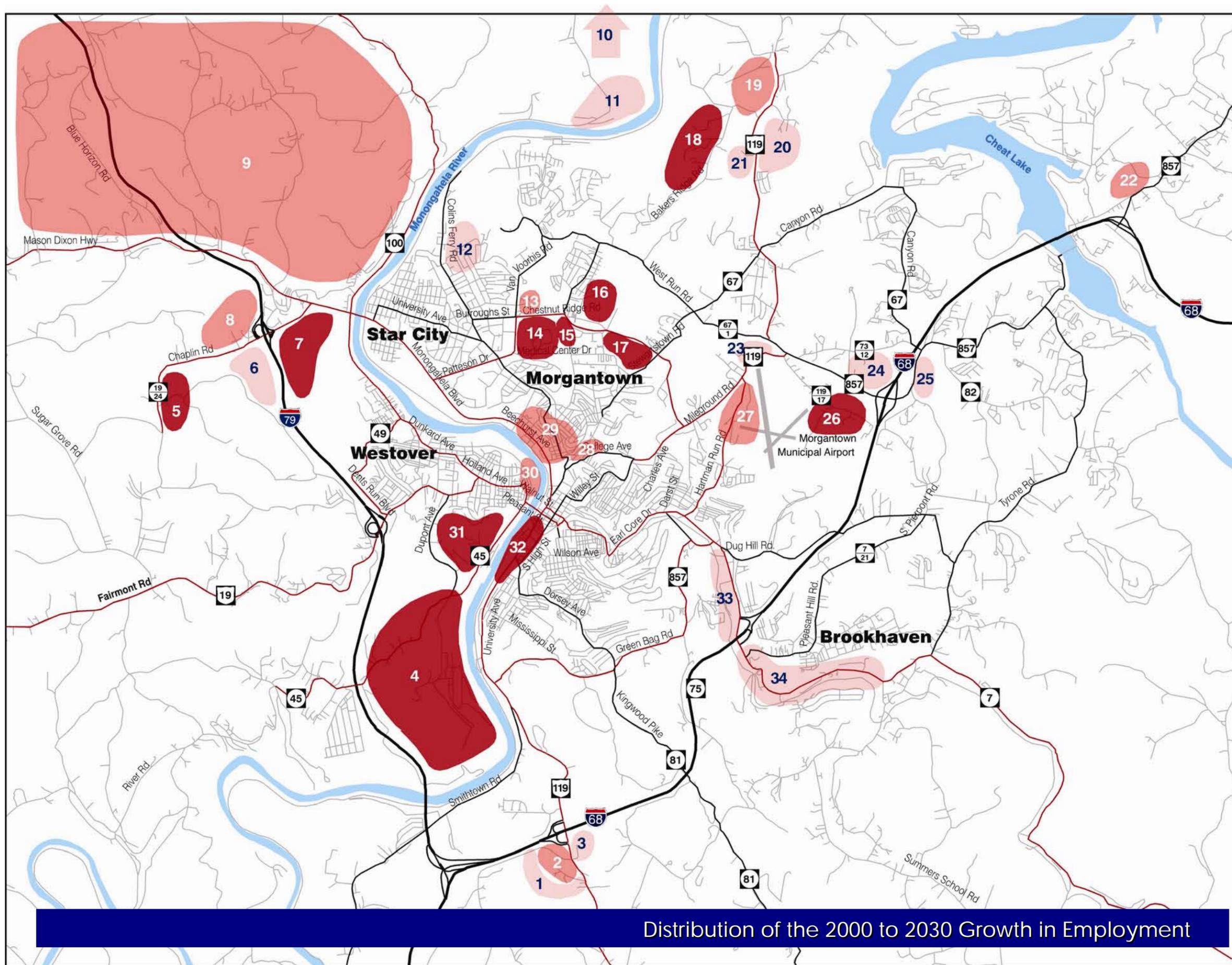


LEGEND

- Low Intensity
- Moderate Intensity
- High Intensity

Distribution of the 2000 to 2030 Growth in Dwelling Units





LEGEND

-  Low Intensity
-  Moderate Intensity
-  High Intensity

Distribution of the 2000 to 2030 Growth in Employment



TABLE 22: INCREMENT OF 2000 TO 2030 DWELLING UNITS ALLOCATED TO DEVELOPMENT AREAS

Map Location	Increment ('00 to '30)	Super Zone Percent of Urban Total	Superzone Total Unit Increment
US 119 South		3%	315
1	105		
2	105		
3	105		
Smithtown Road/I-79		2%	210
4	210		
Chaplin Road/I-79 Area		3%	315
5	95		
8	95		
7	65		
6	65		
Star City		2%	210
9	210		
West Run Road/US 119 North		40%	4,215
10	420		
11	210		
12	630		
13	420		
14	420		
15	630		
16	420		
17	420		
18	210		
19	420		
Medical Center		5%	525
20	525		
Square at Falling Run/Sunny Side		15%	1,580
21	1,580		
Wharf District		5%	525
22	185		
23	340		

Map Location	Increment ('00 to '30)	Super Zone Percent of Urban Total	Superzone Total Unit Increment
Brookhaven/WV 7 East		4%	420
25	105		
24	145		
26	125		
27	40		
East of I-68		4%	420
28	65		
29	105		
30	105		
31	65		
32	85		
Cheat Lake		7%	740
33	445		
34	295		
TOTALS	8,940	85%	8,950

Note: Remaining increment allocated on a proportional basis to those zones containing residential units in 2000.

TABLE 23: INCREMENT OF 2000 TO 2030 DWELLING UNITS ALLOCATED TO COLORED AREAS

Map Location	Increment ('00 to '30)	
	Retail	Non-Retail
1	170	0
2	340	0
3	85	0
4	0	1,000
5	170	0
6	680	0
7	255	0
8	0	100
9	0	250
10	0	3,000
11	0	500
12	0	500
13	1,020	0
14	255	100
15	215	250
16	0	500
17	340	400
18	130	25
19	0	500
20	0	150
21	0	200
22	255	100
23	85	0
24	0	200
25	170	0
26	0	300
27	0	1,000
28	0	200
TOTAL	4,170	9,275

Note: Remaining increments will be allocated on a proportional basis to those zones currently containing Retail and/or Non-Retail Employment

MODEL DEVELOPMENT AND 2030 TRAFFIC FORECASTS

OVERVIEW

A detailed review of the regional travel demand model for the Morgantown regional transportation planning process is contained in the Model Validation Report. Documented in this section is a summary of the modeling methods and assumptions used in developing the 2005 Morgantown area travel model and the 2030 daily traffic forecasts. The modeling application is an extension of the practice established as part of the 1998 transportation plan and includes extension of the model coverage to include the entire county.

The county-wide travel model was developed using the QRSII modeling package and employs a traditional four-step forecasting process of:

- Trip generation.
- Trip distribution.
- Division of trips into auto and non-auto trips (mode split).
- Traffic assignment.

The general flow of the modeling process is

displayed below.

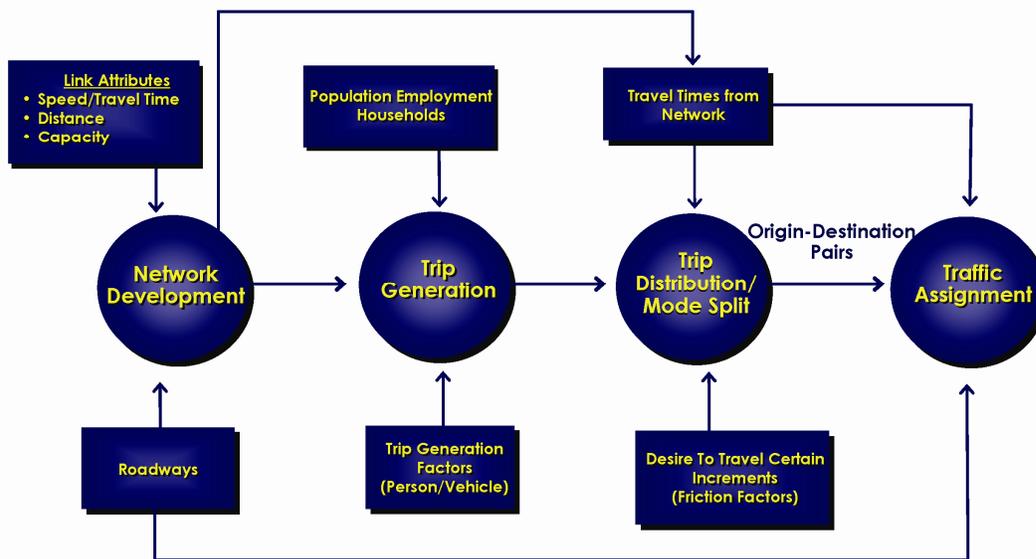
MODEL APPLICATION FLOW – QRSII PROGRAM

TRIP GENERATION

INTERNAL TRIPS

The level of daily trip generation in the county is a function of the type and level of residential and commercial/industrial development. The greater the increment of development, the greater the level/number of person trips being generated. Trip generation has been divided in to the following elements:

- Productions: The origin location of a trip. In the model, trip productions are a function of the level of residential development in the county. In the model application, the level of trip generation in a specific traffic analysis zone is a function of the average household size in the zone (persons per household) and the automobile availability (average automobiles per household).



Morgantown Regional Traffic Model Flow Process

- Attractions: Represents the destination location of a trip. Attractions were separated by purpose using the following independent variables:
 - Retail employment (RE)
 - Other employment (NRE)

The attraction formulas being applied were obtained from NCHRP Report 365 (Travel Estimation Techniques for Urban Planning, Transportation Research Board, Washington, DC, 1998) and the 1998 plan model application.

Through the model development process, attention was paid to the need for "special generator" corrections to allow the simulation to more reasonably reflect travel activities of the Morgantown area. Selected uses that historically have reflected atypical trip generation include:

- Universities.
- Regional shopping centers.
- Large medical centers.

Through the validation process, the goodness of fit between the assignments and counts in areas directly adjacent to the WVU Downtown and Evansdale campuses, the medical center area and Morgantown and Mountaineer Mall were closely assessed. Through this detailed review it was concluded that use of a specialized generation rate for the medical center area was needed.

Daily trips derived through the Trip generation module are divided into four trip purposes as defined below:

- Home-based Work (HBW) – Trips between home and work or work and home without a stop in the middle (example: Stopping at the store on the way home from work would be defined as a Non-home Based trip and a Home-based Other trip, not a Home-based Work trip).
- Home-based Other (HBO) – Trips between home and any non-work location. These trips would include shopping trips, medical trips, vacation trips, etc.
- Home-based University (HBU) – Trips between home and one of the WVU campuses for the purposes of either going to school or work.

- Non-home Based (NHB) – Trips that do not have either an origin or a destination at the driver's home.

The general breakdown by purpose of estimated 706,000 daily tripends in the model area is displayed in Figure 19.

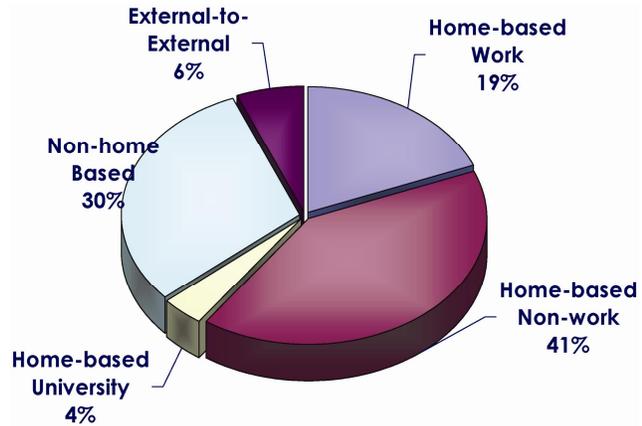


FIGURE 19: 2000 PERCENT OF TOTAL TRIPENDS BY PURPOSE

EXTERNAL TRIPS

The primary sources for the external station splits between internal (within the county) and external (outside the county) is a combination of the lower volume handout and Interstate video surveys completed as part of the data collection. External stations were established at 11 locations around the county and traffic data at each of the stations was collected.

External stations function differently in the trip generation module than do locations within the county limits. Trip generation at the external stations directly reflects the count data for the model base year, whereas trip generation internal to the county is derived from applying the trip generation rates to the level of development (measured in households and employment) in a traffic analysis zone. External trips are divided into the following categories:

- Internal-to-External (I-E): Trips (for any purpose) that have one end at an external station and other end inside the county study area.
- External-to-External (E-E): Trips at an external station that travel entirely through the model areas without stopping.

Locations of the external stations are displayed in Figure 7 in the Existing Transportation System chapter.

TRIP DISTRIBUTION/MODE SPLIT

TRIP DISTRIBUTION

Distribution of person trips between production and attraction zones was completed through application of a Gravity Model methodology. In general, the Gravity Model connects trips between origin-destination zones using two general rules:

- The number of trips between origin-destination zone pairs are INDIRECTLY proportional to the distance between the two zones. The closer the zones, the greater then level of trip interchange between the tow zones.
- The number of trips between origin-destination zone pairs are DIRECTLY proportional to the relative size (measured in trip generation) between the two zones. The larger the zones (measured in trip generation) the greater the level of trip interchanges.

The key inputs to the Gravity Model application included:

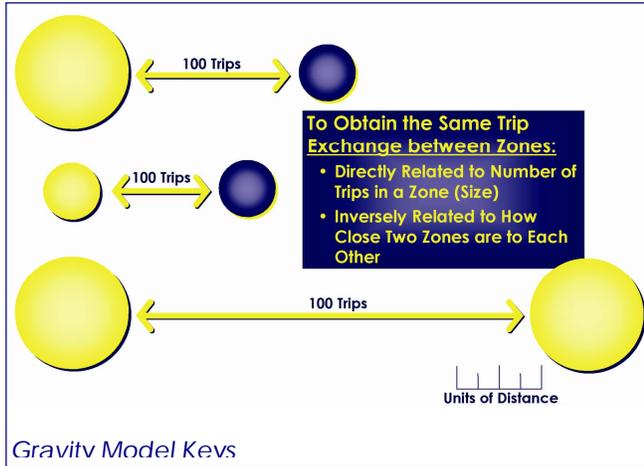
- Distribution factors (friction factors) that control the relative "desirability" for making trips of a specific length.
- Number of iterations to run the distribution model.
- Closure value between the trip generation derived zonal attractions and the estimated zonal attractions based on the distribution.
- Trip generation by traffic analysis zone.
- Distance, measured in minutes, between origin-destination zone pairs.

The friction factors documented in NCHRP Report 365 (Transportation Research Board, Washington, DC, 1998) and those included in the 1998 plan model application are being used as a starting point in the Gravity Model.

MODE SPLIT

The trip generation methodology produces person trips for the internal portions of the study area, but the final product of the modeling application is daily vehicle traffic on the

network. Thus, a mode split element is required to separate the person-trip table into auto and non-auto trip categories, with a final product of vehicle trips.



Gravity Model Keys

Within the study area it was assumed that transit trips represent a relatively small percentage of all trips (approximately one percent). Thus, development of a complex mode split model is not warranted. For the Monongalia County model a set of person trip-to-vehicle trip conversion factors (vehicle occupancy factors) was derived for each of the trip purposes. Sources for the information included:

- Results from the external survey conducted as part of the plan update.
- 2000 Census information on work trip occupancies.
- National travel behavior databases.
- Vehicle occupancy values used in the model are documented in Table #.

TRAFFIC ASSIGNMENT

Assignment of the vehicle trip table to the network is being completed using an equilibrium assignment technique. In using this methodology, a number of input assumptions are required. Documented in the following bullets are the general parameters used in the assignment process:

- Link capacities applied to the network reflected level of service C operations at the intersections along the selected routes. It has been the consultant's experience that the use of level of

service C capacities results in more reasonable multi-path assignments.

- Link travel time adjustment factors that reflect travel time adjustments associated with a range of congestion levels.

MODEL NETWORK

The travel model encompasses all of Monongalia County including collector, minor arterial and principal arterial and interstate routes. Some local roads were also included in the model network where they added unique access between the centroid connectors and the regional roadway system.

TRAFFIC ANALYSIS ZONES

The traffic analysis zone (TAZ) is the base geographic unit for establishing trip-making data in the Morgantown traffic model. The TAZ structure was developed based on several factors, including:

- *Morgantown's Census Geography:* 2000 census data was the primary source of household data for the traffic model. Where the other geography constraints allowed, TAZ boundaries were developed along census block and block group geography.
- *Roadway Network:* TAZ boundaries were developed along streets classified as a collector or higher.
- *Rivers:* The Monongahela River, the Cheat River, Decker's Creek and other streams in the county were used as boundaries for TAZs.
- *Railroad:* Rail lines through the county where barriers to access are formed were used to define many TAZ boundaries.

The Morgantown-Monongalia County traffic model includes 329 internal TAZs an increase from the 1998 plan total of 51 internal TAZs. Figure 20 displays the model TAZ boundaries.

MODEL VALIDATION

The process of "calibrating" the model is completed through an iterative process of reviewing output from the trip generation, trip distribution and traffic assignment modules, and adjusting, when required, the inputs to the

modules. Calibration criteria applied for each step in the modeling process are described in the *2000 Model Development and Validation* report. The validation results were reviewed by WVDOT Planning and Research staff, and it was concluded that the model was acceptable for use in forecasting traffic through 2030.

2030 TRAFFIC FORECASTS

OVERVIEW

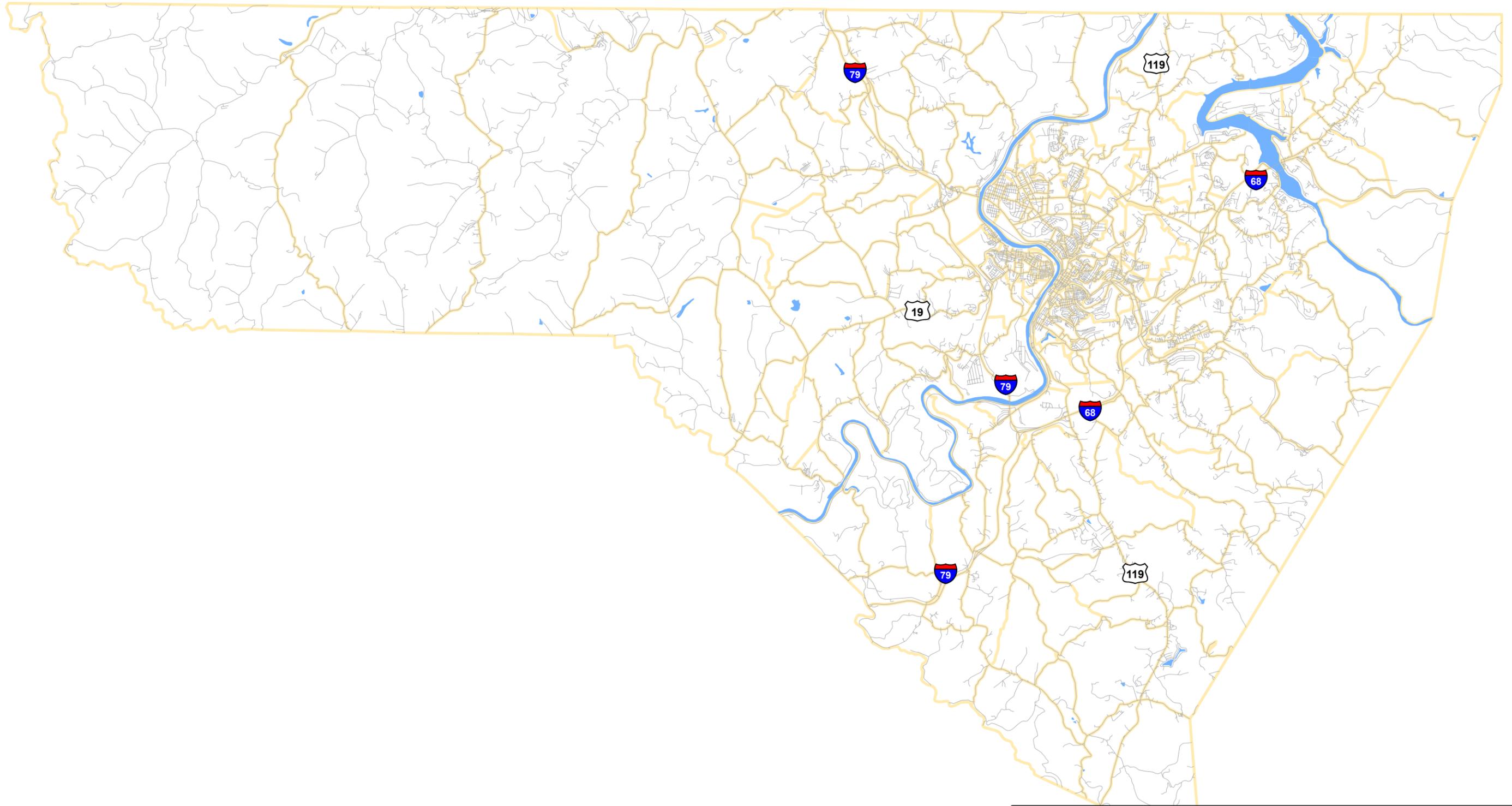
A growing/expanding county that also contains an aging infrastructure requires additional transportation choices in order to meet the mobility needs of its residents. In addition to providing adequate capacity on existing facilities, a connected non-motorized system and public transportation options will be needed to help solve future mobility and connectivity issues.

Changes in traffic volumes and vehicle miles traveled (VMT) are the primary indicators that the Morgantown area transportation system will need to add capacity and promote both transit and non-motorized travel to create a balanced transportation system.

EXISTING PLUS COMMITTED IMPROVEMENTS NETWORK

Changes to the 2000 base year roadway highway network to define the 2030 Existing Plus Committed network were limited to those projects that meet all of the following criteria:

- Project is included in the current WVDOT Transportation Improvement Program (TIP) projects list or the local capital improvement plan.
- Project results in changes in travel speed/posted speed limit in a corridor.
- Project results in increased capacity in a corridor. Many of the projects included in the TIP list are corridor maintenance projects or rehabilitation project (pavement overlays, bridge deck replacement, etc.) that do not result in additional intersection or segment travel lanes. These projects were not incorporated into the model network.



LEGEND

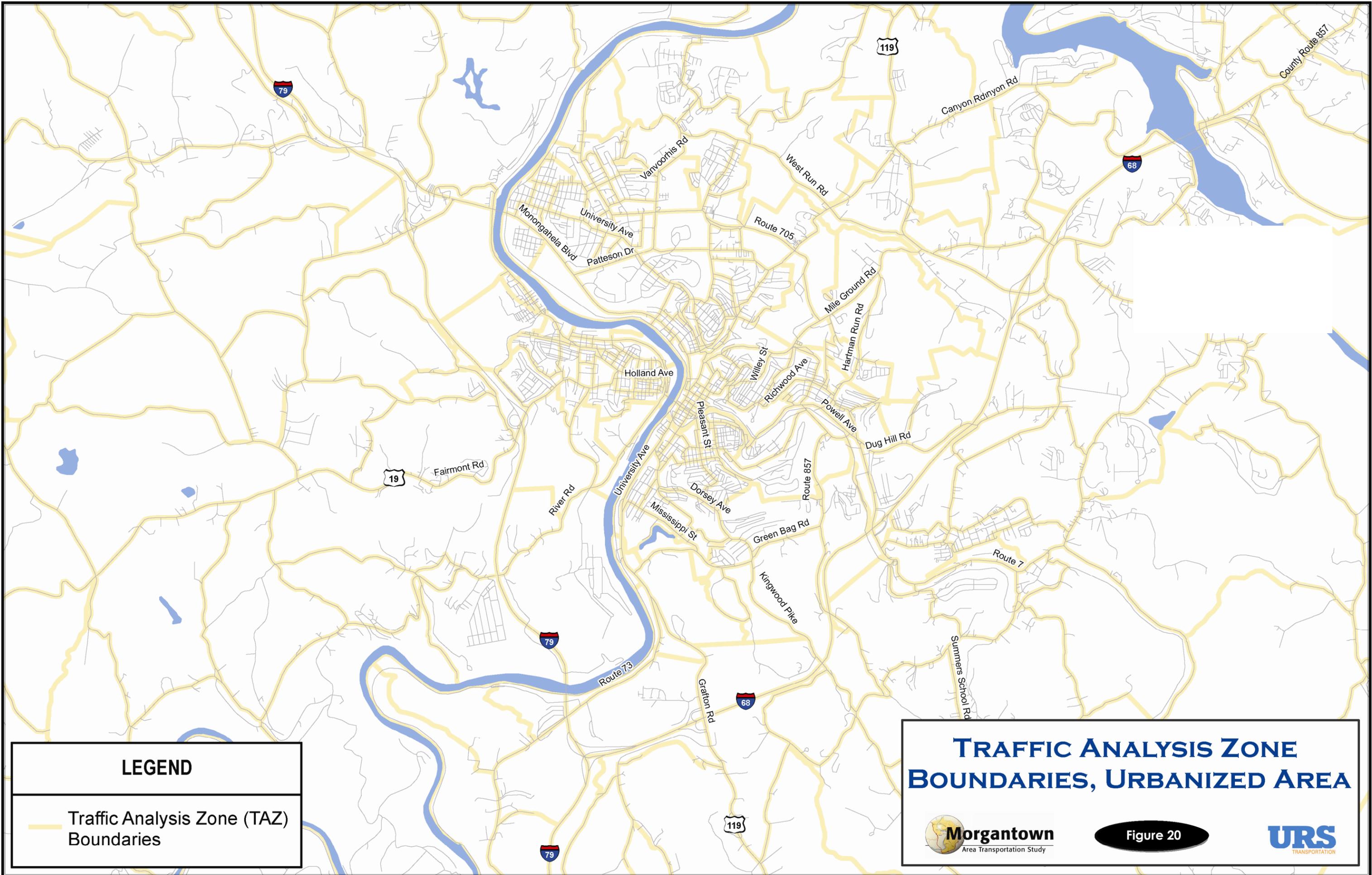
— Traffic Analysis Zone (TAZ) Boundaries

TRAFFIC ANALYSIS ZONE BOUNDARIES, COUNTY LEVEL



Figure 20





LEGEND

— Traffic Analysis Zone (TAZ) Boundaries

TRAFFIC ANALYSIS ZONE BOUNDARIES, URBANIZED AREA



Figure 20



- Project completes a connection. There are no projects meeting this criterion in the state or local plans.

Changes made to the 2000 network to create the 2030 Existing Plus Committed network are:

- Star City Bridge improvements. The base year for the model validation was 2000, which was prior to the currently constructed bridge improvement.
- Beechurst Avenue turn lanes at the US 19 WV 705 (Monongahela Boulevard/Patteson Drive) intersection - Add double left lanes.
- WV 705/CR 57 (Patteson Drive/University Avenue) - Add turn lanes.
- WV 705/CR 59 (Chestnut Ridge Road/Van Voorhis Road) - Add right-turn lane.
- WV 705/CR 61/4 (Chestnut Ridge Road/Pineview Road) - Add right-turn lane on Chestnut Ridge Road.
- CR 60 (Bakers Ridge Road) – Construct left turn lanes at US 119 (Stewartstown Road) and improve alignment to the new University High School site.
- CR 857/CR 81 (Kingwood Pike) – Install traffic signal.
- Collins Ferry Road/Aspen Street - Install traffic signal.
- Beechurst/University Avenue from Pleasant Street to Walnut Street – Construct turn lane on Beechurst Avenue. The resulting right turn lane allows for reconfiguration of the southbound route to include two through lanes.
- CR 67 (Stewartstown Road)/Suncrest Towne Center - Install traffic signal.
- Mon-Fayette Expressway – Complete the Expressway including an upgraded interchange at I-68 and a new four-lane route to the Pennsylvania State Line.
- US 119/CR 76 – Install traffic signal at Wal-Mart site entrance.

FORECASTED 2030 AVERAGE DAILY TRAFFIC ON THE EXISTING PLUS COMMITTED NETWORK

Forecasted traffic for 2030 on the Existing Plus Committed network is displayed in Figure 21.

CHANGES IN VEHICLE TRAVEL (2000 THROUGH 2030)

TRIP GENERATION

As with the 2000 base year, daily internal trip generation for the 2030 horizon year was estimated through application of trip generation rates and equations. Table 24 documents the projected production growth for 2030.

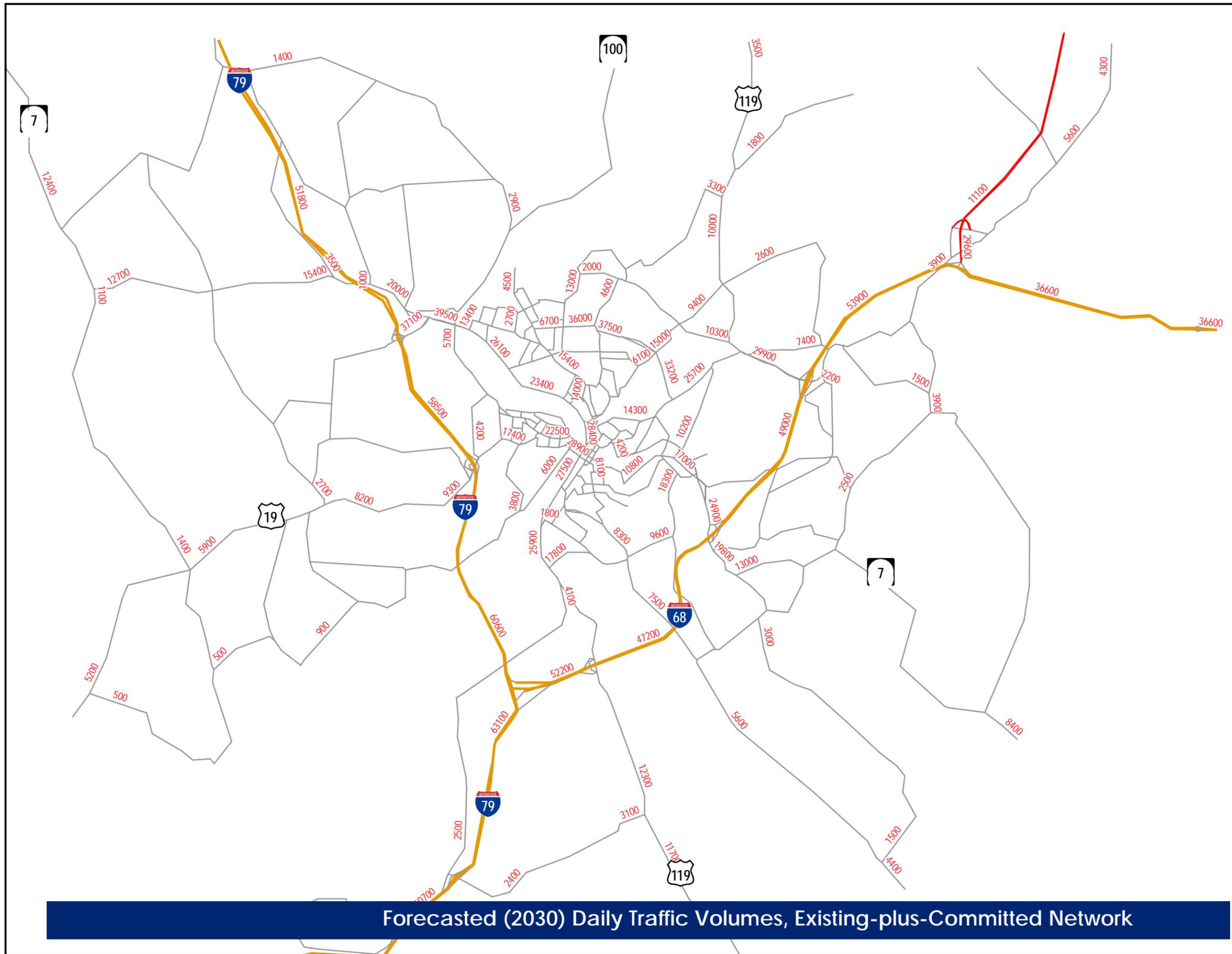
CHANGES IN VEHICLE MILES OF TRAVEL

Vehicle miles traveled (VMT) is an estimated value of the number of miles traveled by automobiles and trucks in a given time period. The daily VMT estimate is derived through the following calculation:

$$\text{Vehicle Miles of Travel (VMT)} = \text{Length of Road Segment} \times \text{Daily Volume}$$

Over the period from 2000 to 2030 VMT is forecasted to increase by approximately 63 percent. In comparing the change in VMT with the change in trip generation (47 percent), it is observed that VMT increases more than trip generation. From the difference in the VMT relative to trip generation it can be concluded that the average trip length in the region is growing at a greater rate than trips. The resulting greater growth in average trip length can be explained by:

- More of the regional development is anticipated to occur outside the currently developed portion of the region, but the primary work, shopping and recreation destinations will remain relatively similar to the current. Many of the concentrations of work and shopping areas are located more central to the region. Thus, trips will generally be longer.
- Overall, the level of congestion along key routes in the region will increase. As the model assignment procedure accounts for congestion is the system, it will assign more vehicles to longer distance routes that are less congested to avoid the more direct, but congested routes. Assignment of trips to longer routes will increase overall system VMT.



Legend

11000 Forecasted 2030 Daily Traffic Volume

Forecasted (2030) Daily Traffic Volumes, Existing-plus-Committed Network



TABLE 24: CHANGE IN PERSON TRIP GENERATION (2000 TO 2030)

Trip Purpose	2000 Total Tripends	2030 Total Tripends	Absolute Change 2000 to 2030	Percent Change 2000 to 2030
Home-based Work	132,400	200,200	70,348	51%
Home-based Non-work	288,200	404,400	118,544	40%
Home-based University	28,300	37,800	10,024	34%
Non-home Based	213,100	309,000	110,264	45%
External-to-External ¹	43,900	88,600	98,400	102%
Total	705,900	1,040,000	309,180	47%

Note: 1 - Represents only the E-to-E portion of total external station traffic.

I-to-E portion is included in the other trip purposes.

Source: URS Corporation, Inc.
Cambridge Systematics

2030 CAPACITY DEFICIENCIES ON THE EXISTING PLUS COMMITTED NETWORK

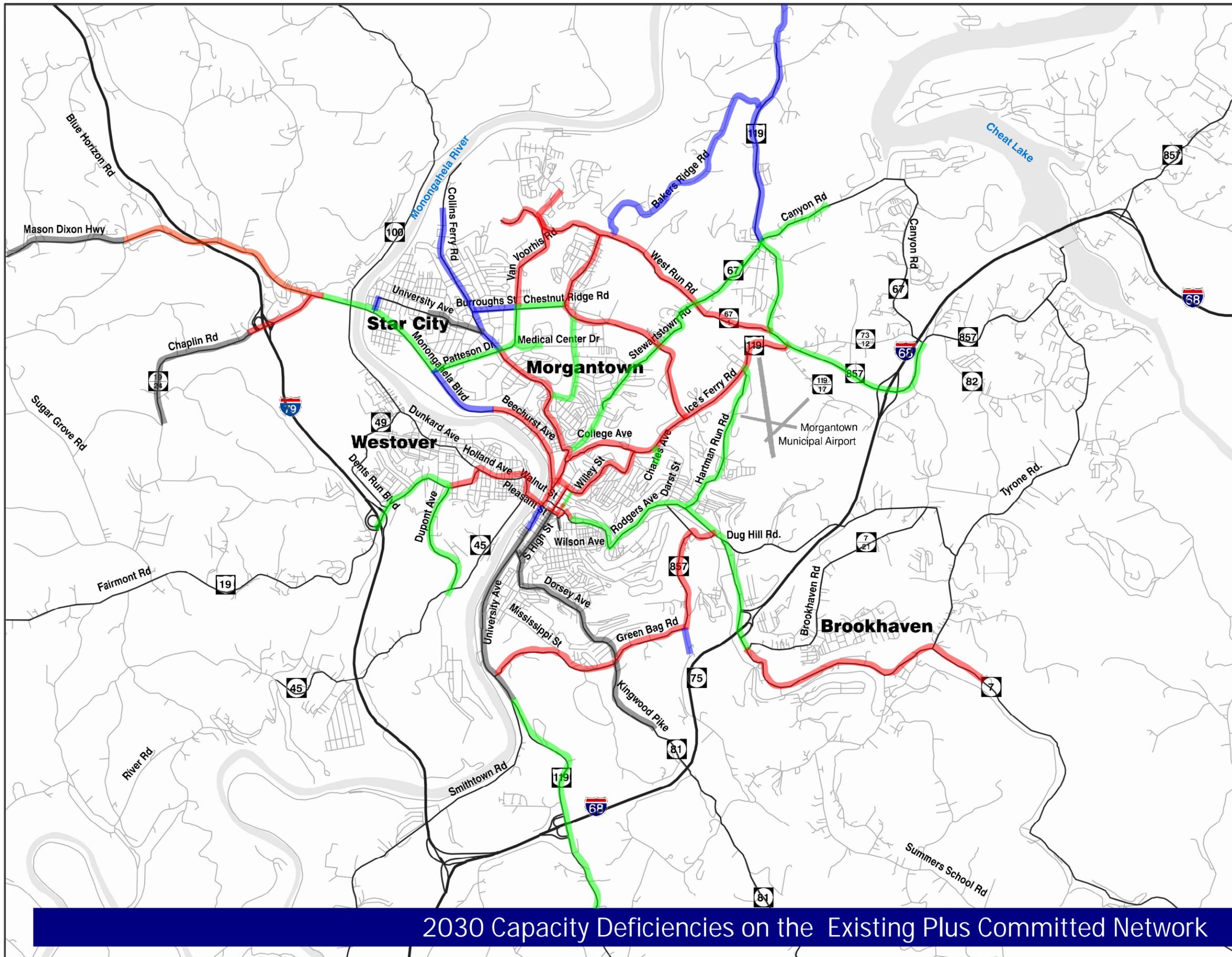
Figure 22 displays locations within the region forecasted to carry daily traffic volumes at levels approaching or exceeding the acceptable corridor volume. As with the current conditions, the acceptable link volume are representative of level-of-service C operations, with level of service D being acceptable in selected areas. Table 25 displays the congested miles by functional classification for the urbanized area.

Between 2005 and 2030 congested miles in the region (listed as level of service E and/or F), increased by almost a factor of five, from just over eight miles to over 40 miles of the system. Of primary concern is the change in congested miles in the minor arterial and principal arterial classifications, because these routes carry the vast majority of the regional traffic. Thus, if these routes are congested, a greater proportion of travelers in the region would experience delay. Congested miles in these classifications increased from approximately 7.4 miles to 30.9 miles.

TABLE 25: CONGESTED MILES BY FUNCTIONAL CLASSIFICATION (2005 AND 2030)

Functional Classification	Existing (2005)		2030 E+C	
	LOS E	LOS F	LOS E	LOS F
Local	0.1	0.1	1.3	1.9
Collector	0.8	0.0	2.3	4.8
Minor Arterial	3.4	3.5	13.6	14.7
Principal Arterial	0.5	0.0	2.6	0.0
TOTALS	4.8	3.6	19.8	21.4

Source: URS Corporation, Inc.



Morgantown
Area Transportation Study

Legend

- Level of Service A or B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

2030 Capacity Deficiencies on the Existing Plus Committed Network



MULTIMODAL ALTERNATIVES ANALYSIS

OVERVIEW

The multimodal transportation improvement alternatives analysis conducted as part of the RTP process incorporated quantitative and qualitative means in review of the range of concepts. It is desirable to develop the plan recommendations through purely analytical methods (quantitative) and testing, but very early in the process it becomes clear that it is not really feasible to do so. The community is so diverse in what are the important improvements to emphasize as priorities (build new roadway corridors, improve the sidewalk system, expand transit, etc.) that addressing the selection of improvements through by-the-numbers methods proves to be more complex than one can image. Thus, qualitative assessment based on broad community input must be brought into the process and was in the Morgantown plan.

Through the alternatives analysis the range of improvements in each of the modal systems (roadway, transit and non-motorized) included:

- Travel demand management (TDM): TDM alternatives are characterized as those intended to reduce the level of vehicle or person travel over the course of a day or in the peak travel hours. Examples of TDM measures are carpooling/ vanpooling, staggered work hours (flex-time), telecommuting, etc.
- Transportation system management: Concepts within this category of improvement alternatives included adding turn lanes to intersections, improving the efficiency of signal system operation to increase the hourly throughput capacity of an intersection or corridor, conversion of two-way streets into one-way flow, modification of transit routes or arrival/departure times at specific locations to better serve the travel needs of the population, add electronic fare collection to improve the efficiency of moving people onto transit vehicles, adding user amenities to a trail corridor, etc.
- Expansion of current facilities and/or development of new facilities:

Improvements in this category include providing additional through capacity in existing corridors, construction of new roadway or pedestrian/bicyclist routes, adding service hours along a current transit route, extending multi-use trails, increasing the frequency of buses in a corridor, etc.

As with each of the key elements of the plan, the transportation goals and objectives were incorporated into the multimodal alternatives analysis. Incorporation of the goals/objectives was accomplished through the measures of effectiveness employed in the alternatives screening. The measures of effectiveness were developed as part of the transportation goals and objectives preparation and represent the benchmark criteria against which each of potential improvement was compared. Table 26 displays where in the overall goal development process the measures of effectiveness fit.

SCREENING PROCESS

The alternatives analysis for the roadway, transit and non-motorized systems followed similar screening processes in evaluating the universe of alternatives. The steps for the non-motorized and transit systems, however, were streamlined from the process employed for the roadway system. Streamlining was possible because there was not the same level of selection between multiple improvement options to address a particular issue as was needed for the roadway system. Thus, for the non-motorized system the process jumped forward to the second level screening (documented below) and for the transit system only the first level of screening was conducted. The generalized screening process was completed through the following steps:

- Define current and future multimodal transportation needs in region. Current and future needs were defined through information gathered during the public

TABLE 26: OVERVIEW OF DEVELOPMENT AND REVIEW OF TRANSPORTATION GOALS

Regional Transportation Plan Element	Description	Developed By	Public Review Opportunities
<p>Goals</p> <p>↓</p>	<p>General statement of direction for the multimodal transportation system</p>	<p>MPO Staff TAC CAC Policy Board Reviewed</p>	<p>May 2005 Public Meeting Posted on Web Site Existing Conditions Report Interim Plan</p>
<p>Objectives</p> <p>↓</p>	<p>Actions needed to be completed in order to achieve goal</p>	<p>MPO Staff TAC CAC Policy Board Reviewed</p>	<p>May 2005 Public Meeting Posted on Web Site Existing Conditions Report Interim Plan</p>
<p>Measures of Effectiveness</p> <p>↓</p>	<p>Benchmarks/Performance measures for quantifying progress towards achieving objectives</p>	<p>MPO Staff TAC Review CAC Review Policy Board Reviewed</p>	<p>Existing Conditions Report Interim Plan March 2006 Public Meeting</p>
<p>Strategies/ Concepts</p> <p>↓</p>	<p>Specific programs, system modifications/ improvements intended to address goals</p>	<p>MPO Staff TAC Review CAC Review Policy Board Reviewed</p>	<p>March 2006 Public Meeting Posted on Web Site October 2006 Public Meeting</p>
<p>Actions</p>	<p>Tasks/Steps required to implement the strategies/concepts</p>	<p>MPO Staff WVDOT</p>	<p>Posted on Web Site October 2006 Public Meeting</p>

involvement process and through technical analysis of the system safety, traffic operations, and economic development

- Work with the TAC and CAC to identify a range of improvements that could address the transportation issue identified in the existing or committed systems. A workshop was held at the initiation of the alternatives analysis at which TAC and CAC members were solicited for input on improvement concepts to be included in the evaluation. Many of the identified improvements provided were based on subjective understanding of the system operations. Other suggestions were based on technical analysis previously prepared by the WV DOT, the City of Morgantown, Mountain Line transit or WVU.
- Working through the planning consultant, develop multimodal system improvements to supplement the ideas and concepts identified by the TAC and/or CAC. The planning consultant provided ideas that would address capacity deficiencies identified through the existing conditions analysis and/or the 2030 traffic on the Existing Plus Committed network, safety issue locations, missing connections/links in the non-motorized system, and others that could be derived through technical analysis of the transportation system data at hand.
- Prepare documentation of the range of improvements.
- Conduct an initial screening of the range of alternatives. The TAC/CAC and the consultant generated lists of potential improvements included multiple alternatives for addressing a specific need or deficiency. The goal of the RTP is to document a specific list of improvements for the region. Thus, for those locations where multiple concepts were identified to address a specified need or issue, an initial screening was conducted in order to reduce the range of potential alternatives to a preferred concept.

Analyses that covered the traffic impacts of the alternatives and a general assessment of the physical impacts to the adjacent area were conducted for individual areas of need rather than grouping them into packages of improvements. Through this individual

idea analysis, the positives and negatives of the specific concept could be documented (for example, assessment of the Inner Loop concept was independent of improvements to the Mileground or to WV 705 (Chestnut Ridge Road). By having the unique concept summaries available as system alternatives were developed (which represented combinations of individual concepts), a greater level of flexibility could be incorporated into subsequent analysis of the system. The greater level of flexibility was built in because the effects of the individual parts were already known and for many of the areas of analysis (for example, whether there were minor, moderate or significant impacts to adjacent properties, whether the alternative would result in a safety improvement, etc.). As such, the system level impacts simply reflected the summing of the individual elements. For other criteria (for example: traffic impacts), however, the benefits of the system improvement would be better observed only when the entire system improvement is in place.

The results of the initial screening were documented in a matrix format and presented to the TAC, CAC and the Policy Board prior to a screening workshop held in January 2006. Documentation of the initial screening assessment was presented at a public meeting held in May 2006.

Technical memoranda provided to document the roadway, non-motorized and transit screening are included in the Appendix.

- Conduct a second level screening through which each of the alternatives maintained through the initial screening were reviewed in greater detail. The alternatives were reviewed relative to the following perspectives:
 - Social acceptability/effects
 - Engineering feasibility; operations and safety benefits.
 - Environmental impacts.

In the second level screening a project scoring system was employed to identify a hierarchy in how each of the projects would meet the goals and objectives of the plan and how they were viewed by the community. Using the scoring system

each improvement concept was evaluated using a scale from 0 to 6 in a broad range of criteria categories. The criteria addressed the impacts/benefits of a project from the social, engineering and environmental perspectives. Categories of assessment included:

- Level of support from the local community.
- Multimodal support provided by the concept.
- Consistency with local and regional plans.
- Connectivity within the system provided by the concept.
- Level of impact to vehicle miles of travel (VMT), vehicle hours of travel (VHT) or trip generation.
- Impacts to regional air quality.
- Impacts to the adjacent properties/development.
- Economic impacts.
- Cost (qualitative estimate of order of magnitude costs relative to anticipated annual local funding levels).
- Operations and maintenance needs.
- Safety.
- Consistency with design standards.
- Feasibility to construct.
- Potential for congestion relief.

Within the categories of each of the measures of effectiveness listed above, qualitative and quantitative definitions for the scores from 0 through 6 were derived. A matrix of the scoring definitions by measure of effectiveness is documented in Table 27.

The desired product of this screening was a list of projects that addressed the transportation goals and objectives and had the support of the local community, the TAC, the CAC and the Policy Board. Not all of the higher scored projects were included in the recommended plan, because the recommended plan is required to be cost constrained and the cumulative cost of the projects maintained through the second level of assessment far exceeds the likely available transportation funding. Thus, one more step is required in selection of the plan projects. In this step various project combinations that stayed within the planning period funding constraints

were developed and screened with the TAC, the CAC, the public at two open meetings, WVDOT management, and the Policy Board.

- For each of the concepts maintained through the second level of the screening, develop a cost estimate that includes construction costs, estimates of right-of-way and associated utility improvements. The cost estimates were developed through applying generalized unit cost estimates associated with the various components of a project or program to the number of units of the particular component that would be included in the project or program. The unit costs used in the analysis were reviewed with WVDOT staff prior to completing the analysis.
- Prepare and screen a series of preliminary project/program "packages" that addressed various transportation needs and were within the anticipated funding availability through the 2030 planning horizon. Packages that focused on a range of themes were presented to the TAC and the CAC to gather input from the community. Packages were revised and modified a number of times and a hybrid of a number of the presented themes was developed and presented to the community. The hybrid reflected a concept that:
 - Incorporated elements for each of the systems; roadway, transit and non-motorized.
 - Directly addressed many of the key transportation needs in the region.
 - Supported economic expansion/stability through including projects in on-going and future development areas within the county as well as currently developed neighborhoods.
 - Supported the transportation goals and objectives.
 - Was within the anticipated funding constraints of the region, including public and private participation into funding the plan implementation.

Technical memoranda prepared and distributed to the TAC, the CAC and the Policy Board prior to the screening workshops covering the second level of the screening are included in the Appendix.

TABLE 27: ALTERNATIVES SCREENING SCORING CRITERIA

Assessment Perspective/ Measure of Effectiveness	Score / Definition			
	6	4	2	0
Social				
Local Public Support for Project/Program	Significant Community Support/Consistent with Other Plans/Guidelines	Moderate Support from Community/Leaders	Minimal Support from Community/Leaders	No/Limited Support
Multi-Modal Support	Project Includes Significant Multi-Modal Links (Transit/Non-Motorized/Roadway); Incorporated into Design	Project Includes Moderate Multi-Modal Links (Transit/Non-Motorized/Roadway)	Project Includes Minimal Multi-Modal Links (Transit/Non-Motorized/Roadway)	Project Does Not Address Multi-Modal Connectivity
Consistency with Local/Regional Plans	Supports the Planning District/Comprehensive Plan Concepts and is in TIP	Supports the Planning District/Comprehensive Plan Concepts	Not Addressed in Other Plans	Inconsistent with Planning District/Comprehensive Plan/Subarea Plans
Connectivity/Continuity	Provides Significant Connections (Roadway/Trail/Transit) Between Key Areas in Morgantown/Mon Co/Study Area	Provides Connectivity Between Neighborhoods, Limited Impact to Neighborhood Integrity	Provides Improved Circulation Within a Neighborhood, Limited Impacts to Integrity	Isolated Route (New Road)/Provides Access to Growth Area, But No Through Connection

TABLE 27: ALTERNATIVES SCREENING SCORING CRITERIA (CONT.)

Assessment Perspective/ Measure of Effectiveness	Score / Definition			0
	6	4	2	
Environmental				
Level of Impact to VMT/ VHT/Trip Generation	Positive Impact by Reducing Growth in VMT, VHT or Trips	Moderate Impact by slightly slowing the Increase in VMT, VHT and/or New Trips	Minimal Impact on Rate of Change in VMT, VHT and/or New Trips	No Impact/Increases VMT/VHT/New Trips
Air Quality Impacts	Significant Decrease in Transportation Emissions	Moderate Decrease in Transportation Emissions	Minimal Increase or Decrease in Transportation Emissions	Increase in Transportation Emissions
Impacts to Adjacent Built/Natural Environment	No/Few Impacts to Adjacent Homes, Businesses, Natural Features	Minimal Impacts to Adjacent Homes, Businesses, Natural Features	Moderate Level of Impacts to Adjacent Homes, Businesses, Natural Features	Significant Level of Impacts to Adjacent Homes, Businesses and/or Natural Features
Economic Impact	Project Would Result in Significant Improvement to Goods and People Movement/Tourism Enhancement	Supports Improvement to Movement of People and Goods/Tourism Enhancement	Project Supports Speculative/Temporary Opportunities	No Impact/Negative Impact
Cost	Low Cost (Locally) and Within the Transportation Budget Constraints	Moderate Local Cost/Within Transportation Budget Constraints	Moderate/High Cost, But Within the Transportation Budget Constraints	High Cost/Not within the Transportation Budget Constraints
Operations and Maintenance	High Maintenance Priority/Would Significantly Reduce Operations/Maintenance Costs	Moderate Maintenance Priority/Reduces Operations/Maintenance Costs	Neutral Affect on Operations/Maintenance Costs	Results in an Increase in Operations/Maintenance Costs

TABLE 27: ALTERNATIVES SCREENING SCORING CRITERIA (CONT.)

Assessment Perspective/ Measure of Effectiveness	Score / Definition			
	6	4	2	0
Engineering				
Safety	Project Targets Known High Accident Location	Project Targets Known Moderate Accident Location	Generally Safer Design Concept Relative to Existing/No Perceived Accident Problem	No Impact
Design Standards	Addresses All Deficient Standards (Width/Grade/Alignment/Surface)	Addresses Most Deficient Standards (Width/Grade/Alignment/Surface)	Addresses Some Deficient Standards (Width/Grade/Alignment/Surface)	Project Does Not Address Design Standard Deficiencies
Feasibility to Construct	Concept Plan Reasonably Reflects Design Standards/Practices. No Substantial Change in Access Required.	Critical Design Criteria Can Be Met, But Moderate Changes in Access are Needed.	Minor Design Criteria Must be Relaxed and Moderate Changes in Access are Needed.	Concept Plan Does Not Meet Design Requirements without Substantial Modification to Current Access
Congestion Relief	Mitigate Congestion in a Corridor Currently Severely Congested	Mitigate Congestion in a Corridor Currently Moderately Congested or Forecasted to be Severely Congested	Mitigate Congestion in Corridors Forecasted to be Moderately Congested	Limited/No Impact on Corridor Congestion

FUNDING THE REGIONAL TRANSPORTATION PLAN

OVERVIEW

Passage of ISTEA in 1991 transformed the long range planning process in many metropolitan areas from “needs” based analyses, with little to no consideration given to the amount of available transportation funding, to fiscally constrained project/program planning. Through ISTEA and the re-authorization of TEA-21 in 1998 and SAFETEA-LU in 2005, MPOs were required to demonstrate that projects and program activities included in the transportation plan were reasonably fundable for both the long-term and the near-term transportation improvement program (TIP).

SAFETEA-LU requires that each MPO develop a transportation improvement program (TIP) at least every two years. The Morgantown area TIP is developed and updated as part of the MPO’s transportation planning process. Preparation and maintenance of cost-constrained TIP is one of several prerequisites necessary for the continued receipt of federal assistance for transportation projects and programs.

FUNDING PROGRAMS/SOURCES

Quantifying the transportation financial resources is an important element of the Morgantown Regional Transportation Plan. The purpose of this section is to provide an overview of various federal, state and local sources from which transportation funds could be available for implementing the recommended plan improvements and to provide estimates of the funding levels.

Within the state user revenues are divided into three structure classes:

- First structure: Are revenues defined as entry fees and are fixed fees independent of the amount of highway use. Examples of these taxes are vehicle registration fees, vehicle titling fees, vehicle privilege tax, and driver licensing fees.

- Second structure: Represent taxes placed on fuels and represent fees that generally address use based on distance traveled. Taxes on gasoline, diesel fuel, gasohol and special fuels are the greatest source of highway revenue, both nationally and at the state level.
- Third structure: Are vehicle use taxes fees intended to reflect cost based on vehicle weight, as well as distance traveled. Examples include weight-distance taxes, tire taxes, and tolls.

Federal Government and the State of West Virginia are the two primary sources of highway funds expended in the state.

FEDERAL FUNDING SOURCES

While SAFETEA-LU has many distinct funding categories, the vast majority of federal funding is provided through a handful of programs. These are:

- Interstate Maintenance (IM).
- National Highway System (NHS) funds.
- Surface Transportation Program (STP) funds, including Safety and Enhancement funds.
- Congestion Mitigation Air Quality (CMAQ) funds.
- Transit capital and operating funds.
- Bridge rehabilitation, maintenance and replacement.
- Transportation enhancement program.
- National scenic byways program.
- Safe routes to school program.

It should also be noted that while the Federal government has standardized the splits in responsibility for these funding categories, most states, including West Virginia, combine federal funds designated under many of the programs with state funds. For projects funded through most of the federal programs, cost responsibilities are generally split 80 percent

and 20 percent between federal and state or local sources, respectively.

Outlined in the following sections are the general parameters of each of the federal and state funding programs likely tapped as part of the financial assessment for the long range transportation plan.

INTERSTATE MAINTENANCE

The Interstate Maintenance (IM) Program provides funding for projects on the Interstate System (I-68 and I-79) involving resurfacing, restoring, and rehabilitation of the existing roadway. The federal share for IM projects is 90 percent and the state is responsible for 10 percent. The state's percentage is funded through the Highway State Special Revenue Account.

In addition to the resurfacing, restoring and rehabilitation activities, other eligible uses of IM funds include:

- Reconstruction or rehabilitation of bridges.
- Reconstruction or rehabilitation of existing interchanges.
- Reconstruction or rehabilitation of existing over crossings.

Construction of new travel lanes, other than high occupancy vehicle (HOV) lanes, or new interchanges is not eligible for IM funding. Preventive maintenance activities are eligible when a state can demonstrate, through its pavement management system, that such activities are a cost-effective means of extending interstate pavement life.

IM funds are distributed throughout the financial districts based solely on need.

NATIONAL HIGHWAY SYSTEM

The National Highway System (NHS) funds are intended for use on an interconnected system of routes which will serve major population centers, border crossings, ports, airports, public transportation facilities, other intermodal transportation facilities, meet defense requirements, and serve interstate and interregional travel. The National Highway System includes all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway

network, and strategic highway connectors. In the Morgantown region, NHS routes include:

- I-68
- I-79
- Mon-Fayette Expressway

The federal cost share for an NHS eligible project is 80 percent and the state is responsible for the remaining share of 20 percent. The state share is funded through the Highway State Special Revenue Account.

Activities eligible for NHS funding include construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of NHS routes. Operational improvements (adding lanes, signalization, etc.) as well as highway safety improvements are eligible.

HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION (HBRR) PROGRAM

Unlike the majority of federal-aid programs, HBRR funds are not completely tied to functional classification. Since bridges are critical to the operation of all roadways, a portion (15 to 35 percent) of HBRR funds must be expended on non-federal-aid public structures (i.e., Rural Local, Rural Minor Collector, Urban Local routes). In addition to major rehabilitation or replacement, other types of work (painting, seismic retrofits, calcium magnesium treatments, etc.) are also eligible for HBRR use. HBRR funds require an 80 percent to 20 percent federal to state matching ratio.

SURFACE TRANSPORTATION PROGRAM

The Surface Transportation Program (STP) is the most flexible Federal funding program under SAFETE-LU in that it provides broad discretion for state and local governments to fund a variety of activities. The federal cost share for an STP eligible project is 80 percent and the state is responsible for the remaining share of 20 percent. Eligible activities include:

- Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for roads and bridges. Eligible programs or projects include construction or reconstruction along STP-eligible facilities necessary to accommodate other transportation modes.

- Capital costs for transit projects including vehicles and facilities.
- Carpool projects, fringe and corridor parking facilities and programs, bicycle and pedestrian facilities on any public road and the modification of sidewalks to comply with the Americans with Disabilities Act (ADA).
- Highway and transit safety infrastructure improvements and programs, hazard elimination projects, projects to mitigate hazards caused by wildlife, and railway-highway grade crossings.
- Highway and transit research and development and technology transfer programs.
- Capital and operating costs for traffic monitoring, management, and control facilities and programs.
- Surface transportation planning programs.
- Transportation enhancement activities (see enhancement section).
- Transportation control measures.
- Development and establishment of management systems.
- Habitat and wetland mitigation efforts.
- Infrastructure-based intelligent transportation system capital improvements.
- Environmental restoration and pollution abatement projects to address water pollution or environmental degradation caused or contributed to by transportation facilities.
- Transportation activities in an approved State Implementation Plan (SIP).
- Transportation control measures as defined in the Clean Air Act.
- Pedestrian and bicycle facilities.
- TEA-21 management and monitoring systems.
- Traffic signal synchronization.
- Traffic management/monitoring/congestion relief strategies.
- Transit expansion.
- Alternative fuel projects.
- Inspection and maintenance programs.
- Intermodal freight.
- Telecommunications as a travel demand management strategy.
- Project development activities for new services or programs that have air quality benefits.
- Public education and outreach activities.
- Rideshare programs.
- Establishing/contracting with transportation management associations/organizations.
- Fare/fee subsidy programs.
- Experimental pilot projects with air quality benefits.

CONGESTION MITIGATION AIR QUALITY IMPROVEMENT PROGRAM (CMAQ)

The Congestion Mitigation Air Quality Improvement Program (CMAQ) is intended to promote mitigation measures for transportation-related pollution concerns. Federal participation is dependent on the specific type of project being funded. Selected project types can be funded 100 percent federally.

Use of CMAQ funding is flexible across many modal systems and eligible projects include:

ENHANCEMENT FUNDS

Enhancements funds are intended to assist in creating an integrated multimodal transportation network or to mitigate visual or environmental impacts of transportation facilities. Considered a special set-aside from STP funds, the federal share is 80 percent. Eligible projects include:

- Provision of facilities for pedestrians and bicycles.
- Provision of safety and educational activities for pedestrians and bicyclists.
- Acquisition of scenic easements and scenic or historic sites.
- Scenic or historic highway programs including tourist and welcome center facilities.

- Landscaping and other scenic beautification.
- Historic preservation.
- Rehabilitation of historic transportation buildings, structures, or facilities.
- Preservation of abandoned rail corridors (including conversion for bicycle and pedestrian facilities).
- Control and removal of outdoor advertising.
- Archaeological planning and research.
- Environmental mitigation to address water pollution due to highway run-off or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity.
- Establishment of transportation museums.
- Safe Routes to School.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The HSIP is a new funding program created under SAFETEA-LU that begins in FY 2006. HSIP is intended to achieve a significant reduction in traffic fatalities and serious injuries on all public highways. HSIP funds will not be tied to any system of functionally classified highways and can, if needed, be expended on publicly owned bicycle and pedestrian pathways or trails. Projects typically will require a 10 percent local/state match to the federal dollars. Selected activities are eligible for 100 percent federal funding.

DISCRETIONARY OR SPECIAL FEDERAL-AID FUNDS

“Special” federal aid cannot be predicted with any certainty. These funds typically come in the form of earmarks contained in yearly federal appropriation bills, which can be used by WVDOT for the specific project described. Matching ratios for discretionary funds frequently are specified in legislation. As levels vary widely from year to year, there is no logical method for predicting what the match requirement will be in the future. To be conservative, state funds at an 80 percent federal to 20 percent state ratio is projected for future discretionary funding.

HBRR - HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION PROGRAM

This program provides funding for the rehabilitation and replacement of deficient bridges. Since bridges are critical to the operation of all roadways, a portion (15 to 35 percent) of HBRR funds must be expended on non-federal-aid public structures (i.e., Rural Local, Rural Minor Collector, Urban Local routes). In addition to major rehabilitation or replacement, other types of work (painting, seismic retrofits, calcium magnesium treatments, etc.) are also eligible for HBRR use. HBRR funds require an 80/20 federal to state matching ratio.

APPALACHIAN DEVELOPMENT HIGHWAY PROGRAM (ADHP)

West Virginia receives funds from the Highway Trust Fund for use on the Appalachian Development Highway System. This system of multi-lane, high speed, partial-access controlled highways (known as “Appalachian Corridors”) is intended to provide service to areas which have the potential for economic development, but where commerce and communication have been inhibited by a lack of adequate access. As defined by Congress, these funds are apportioned among the thirteen states within the Appalachian Region on the basis of the federal share of the cost to complete each state’s portion of the system to the cost to complete the entire system.

These funds are administered by the Appalachian Regional Commission (ARC) and are matched by a state using an 80 percent federal to 20 percent state ratio. All 55 West Virginia counties are included within the Appalachian Region.

TRANSIT FUNDING

The principal sources of transit funding within the region provided through the following sources:

- FTA Section 5307 funds
- FTA Section 5309 funds
- FTA Section 5311 funds
- Local matching funds
- Farebox revenue

Section 5307 Funds

The Section 5307 Grant Program provides public mass transportation for cities with populations of over 50,000. Federal funds will pay 80 percent of capital and planning projects, and 50 percent of deficit operating costs. The remaining match of 20 percent and 50 percent, respectively, must come from non-federal funds and from non-farebox revenue. The federal share may be 90 percent for the cost of vehicle-related equipment attributable to compliance with the Americans With Disabilities Act and the Clean Air Act. The federal share may also be 90 percent for projects or portions of projects related to bicycles.

Eligible activities/uses of the grant funding include:

- Planning.
- Engineering design and evaluation of transit projects and other technical transportation-related studies.
- Capital investments in bus and bus-related activities such as replacement of buses.
- Overhaul and rebuilding of buses.
- Crime prevention and security equipment.
- Construction of maintenance and passenger facilities.
- Capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software.

Section 5309 – Discretionary and Capital Program

The transit capital investment program (49 USC 5309) provides capital assistance for new and replacement buses and facilities. Eligible funding expenditures include acquisition of buses for fleet and service expansion, bus maintenance and administrative facilities, transfer facilities, bus malls, transportation centers, intermodal terminals, park-and-ride stations, acquisition of replacement vehicles, bus rebuilds, bus preventive maintenance, passenger amenities such as passenger shelters and bus stop signs, accessory and miscellaneous equipment such as mobile radio units, supervisory vehicles, fareboxes, computers, shop and garage equipment, and

costs incurred in arranging innovative financing for eligible projects. Funds are allocated on a discretionary basis.

Federal funds will pay up to 90 percent of the costs associated with the expenditures.

Section 5311 Funds

The goals of the non-urbanized formula program are:

1. To enhance the access of people in non-urbanized areas to health care, shopping, education, employment, public services, and recreation.
2. To assist in the maintenance, development, improvement, and use of public transportation systems in rural and small urban areas.
3. To encourage and facilitate the most efficient use of all federal funds used to provide passenger transportation in non-urbanized areas through the coordination of programs and services.
4. To assist in the development and support of intercity bus transportation.
5. To facilitate participation of private transportation providers in non-urbanized transportation to the maximum extent feasible.

Funding is apportioned by a statutory formula that is based on the latest US Census figures for areas with a population of less than 50,000 persons. The amount that the state may use for administration, planning, and technical assistance activities is limited to 15 percent of the annual apportionment. States must spend 15 percent of the apportionment to support rural intercity bus service unless the Governor certifies that the intercity bus needs of the state are adequately met.

The maximum federal share for capital and project administration is 80 percent. Exceptions to the 80 percent rule are:

- Projects to meet the requirement of the Americans with Disabilities Act (ADA).
- Projects to meet the Clean Air Act.
- Bicycle access projects.

These projects may be federally funded at a 90 percent level. The maximum federal share for operating assistance is 50 percent of the net operating costs. The local share is 50 percent, which shall come from an undistributed cash surplus, a replacement or

depreciation cash fund or reserve, or new capital.

STATE FUNDING SOURCES

The tax structure of West Virginia designates that the proceeds collected from certain state taxes and fees (e.g., State motor fuel taxes, use privilege tax, etc.) for the exclusive use of the WVDOT for maintaining and expanding the transportation system. These dedicated revenues are deposited into the State Road Fund, which is the WVDOT operating fund for maintaining state highways.

The State Road Fund is considered a special revenue fund of the State and consists of funds that are not a part of the State's General Fund. However, the State Legislature may make funds available to the WVDOT from the State's General Fund and/or authorize the sale and issuance of road bonds outstanding from previous voter-approved bond referendums.

MOTOR VEHICLES PRIVILEGE TAX

The Motor Vehicle Privilege Tax is a tax imposed upon the privilege of effecting the certification of title of a motor vehicle in the amount equal to five percent of the value of the vehicle at the time of such certification. The value of the vehicle is determined as either:

1. The actual purchase price or consideration of the purchaser, if the vehicle is new.
2. The present market value at the time of transfer or purchase, if the vehicle is used.

The tax rate is five percent of the value.

CERTIFICATE OF TITLE AND REGISTRATION FEES

A certificate of title indicates ownership of a vehicle. Registration fees are based on a vehicle's classification, defined in West Virginia as follows:

- Class A – Passenger vehicles and trucks with a gross weight of no more than 8,000 pounds.
- Class B – Trucks with a gross vehicle weight (GVW) of more than 8,000 pounds, truck tractors, or road tractors.

- Class C – all trailers and semi-trailers, except house trailers and trailers or semi-trailers designed to be drawn by Class A motor vehicles and having a GVW of less than 2,000 pounds.
- Class G – motorcycles and parking enforcement vehicles Class H (Buses) – motor vehicles operated regularly for the transportation of persons for compensation under a certificate of convenience and necessity or contract carrier permit issued by the Public Service Commission.
- Class J (Taxicabs) – motor vehicles operated for transportation of persons for compensation by common carriers, not traveling a regular route or between fixed termini.
- Class M – Every self-propelled vehicle not designed or used primarily for the transportation of persons or property over the highway but which may infrequently or incidentally travel over the highways among job sites, equipment storage sites or repair sites, including farm equipment, implements of husbandry, well-drillers, cranes and wood-sawing equipment
- Class R – house trailers Class T (Boat Trailers) – trailers or semi-trailers of a type designed to be drawn by Class A vehicles and having a GVW of less than 2,000 pounds.
- Class Farm Truck – farm trucks with a minimum GVW of more than 8,000 pounds and a maximum GVW of 80,000 pounds, used exclusively in the conduct of farming business, or engaged in the production of agricultural products.
- Antique Motor Vehicles – any motor vehicle more than 25-years-old, owned solely as a collector's item and for participation in club activities, but in no event to be used for general transportation. Antique motorcycles must be over 35-years-old.
- Driver License Fees and Permits – Driver's and commercial driver's license and instruction (learner's) permit fees are imposed as a means to verify that a person has successfully passed all appropriate parts of the driving examination and is qualified to operate a motor vehicle upon a public highway.

- International Fuel Tax Agreement (IFTA) – fuel tax reciprocity agreement among the United States and Provinces of Canada. A single fuel tax license and credential is issued by a motor carrier's base state, which allows travel into all IFTA member states without further registration. After balancing liabilities and credits for all other states on tax return, carrier pays only a net amount to the base state. IFTA tax applies only to qualified vehicles:
 1. Those with two axles and gross vehicle weight (GVW) or registered GVW of 26,001 pounds or more
 2. Those with three or more axles, regardless of weight.
 3. Those used in combination exceeding 26,000 pounds GVW.

MOTOR CARRIER ROAD TAX

The Motor Carrier Road Tax is a tax imposed upon every intrastate motor carrier with a vehicle with seats for more than nine passengers, and road tractor, tractor truck or truck having more than two axles. Tax is based upon each gallon of gasoline and special fuel, including diesel and other motor fuels, used in the carrier's operations in the state. The carrier is credited with the amount of gasoline tax paid on gasoline purchased in the state and is entitled to a refund of any excess of such credit over the amount of road tax due. The current tax rate is \$0.205 per gallon.

WHOLESALE MOTOR FUEL TAX

The Wholesale Motor Fuel Tax is a consumer sales and service tax on the sale of gasoline and special fuel, generally at the wholesale level by distributors and importers. The average wholesale price of gasoline and special fuel is determined annually on the basis of sales data supplied by distributors and from other information. The average wholesale price is the single statewide average whole sale price per gallon, rounded to the second decimal, exclusive of state and federal excise taxes, but not less than \$0.97 per gallon, times the rate of five percent. Current tax (2007) is equivalent to \$0.11 per gallon, resulting in a total State gasoline tax of \$0.315 per gallon (2007).

SALE OF BONDS

The State Legislature may authorize the issuance and sale of bonds outstanding from previous voter-approved road bond amendments.

GENERAL FUND APPROPRIATION

The General Fund is the primary revenue fund of the state and consists of revenues from various sources, such as consumer sales tax, personal income tax, and many others. A portion of the General Fund may be appropriated to the WV DOT by the Legislative branch of State Government.

INVESTMENT AND INTEREST INCOME

The West Virginia Investment and Management Board (IMB) is authorized to invest in obligations of the US Treasury and US government agencies, authorized State and municipal bonds, certificates of deposit collateralized with banks located in the State of West Virginia, and certain other bonds.

MISCELLANEOUS REVENUES

This source includes all other sources of revenues for the WV DOT.

HISTORICAL FUNDING BY SOURCE

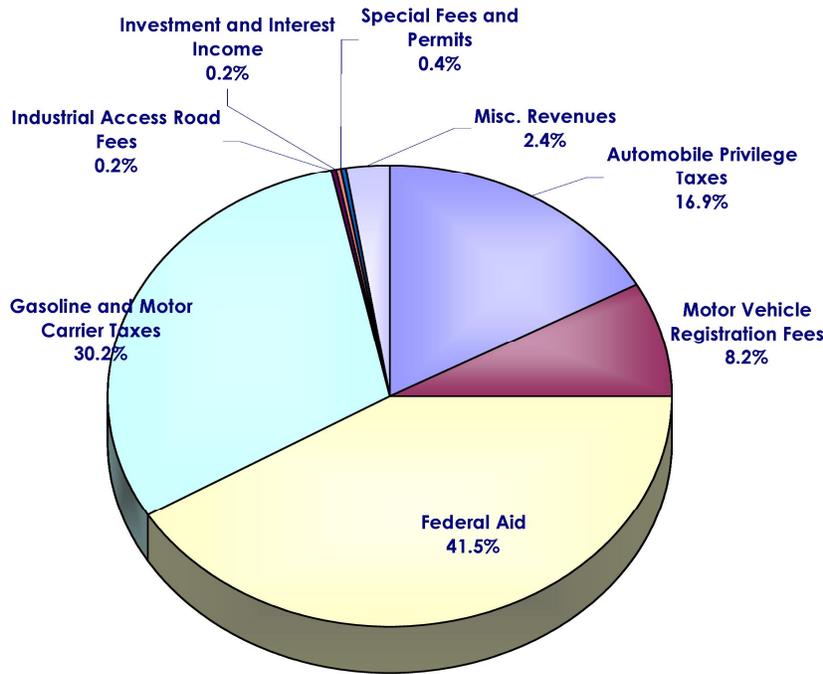
Figure 23 displays the percent of cumulative funding for West Virginia by each of the general sources described in this section.

FUNDING PROJECTIONS

Estimating future funding levels for the region is much like the process of forecasting development and/or traffic. The process requires making a number of assumptions relative to the individual components that impact the allocation of transportation dollars, including:

- Is the current Federal allocation system likely to stay about the same, change in a way that would benefit the Morgantown area, or change in a way that would negatively impact the Morgantown area?
- How do the needs identified in the Morgantown area compare with needs identified in other areas of the state?

FIGURE 23: PERCENT OF TOTAL FUNDING BY SOURCE



- From a local perspective, where do transportation needs fit in the overall need for investment into other portions of the infrastructure and other programs?
- Are there additional federal, state, and/or local funding sources that have not, but could be used for transportation system improvements?

The process and assumptions employed in developing a funding estimate through 2030 are influenced by the answers to each of these questions.

While the funding estimation process is similar to the travel forecasting process in that a number of input assumptions are required, the WVDOT has established a basic methodology for developing regional transportation plan traffic forecasts. No defined process exists, as of yet, for estimating funding levels. Thus, for the Morgantown area a multiple approach process was employed. This process will allow for verification of the reasonableness an estimate based on the results another estimate developed through a different approach with other assumptions. The anticipation is that if similar results are provided, a higher level of confidence in the product would result.

SYSTEM OPERATIONS AND MAINTENANCE

SAFETEA-LU requires that expenditures for preservation of the existing transportation system through investment in operations and maintenance (O&M) be adequately considered in the long range planning process. As the need for adding new capacity and connectivity routes to the system is assessed, improvements should be identified that can address regional transportation needs by using existing facilities more efficiently. The current TIP published by the WVDOT was reviewed to establish a baseline level of investment being made into preservation of the existing system. Projects listed in the current TIP were reviewed and divided into operations/maintenance projects and capital expansion projects. Operations and maintenance were defined to include the following types of projects:

- Guardrail replacement/installation.
- Resurfacing that does not add lanes or to correct alignment issues.
- Similar-size bridge replacements.
- Minor traffic signal replacements.
- Signage projects.
- Slide correction/abatement.
- Welcome center improvements.

Projects that included adding turn lanes, new signal installations, new route construction, and adding through route capacity were all categorized as capital expansion projects.

The breakdown of anticipated expenditures by category for Monongalia County is listed in the following bulletpoints:

- Operations/maintenance: \$36.96 million
- Capital Expansion: \$92.35 million

For the Regional Transportation Plan funding assessment, set asides for operations and maintenance were maintained at the current percent of projects included in the TIP. Thus, for each of the alternate methods for estimating a future capital expansion and program expansion funding levels, approximately 30 percent of the county-wide funding control total would be set aside for operations and maintenance.

RANGE OF METHODS CONSIDERED

Listed below are the basics of the three methods employed:

- Method 1 - Examine the 1990 to 2005 period expenditures in Monongalia County and from the historical levels, estimate a level of funding for the county that would be extrapolated through the 2030 planning period.
- Method 2 - Review the current 6-Year Highway Improvement Program to identify the programmed cost estimates associated with projects/programs for Monongalia County. Extrapolate the observed level through the planning period.
- Method 3 - For the period from 1990 through 2005, review the level of expenditure in Monongalia County as a percentage of statewide expenditures. From the historical period information, develop a percentage that would be applied to an estimate of dollars potentially available in the state to obtain an estimate of Monongalia County transportation funding.

The following sections provide documentation of the initial review of the three methods.

RESULTS OF APPLYING THE RANGE OF METHODS

Historically, WVDOT transportation expenditures in Monongalia County have averaged approximately \$15.4 million per year (2006 \$), including system operations, maintenance and expansion. In the period reviewed from 1990 through 2005 the range of annual dollars of expenditure in the county and in any one county throughout the state varied widely as significant expansion and rehabilitation projects cycled across the state. The period from 1990 through 2005 was long enough to be able to observe at least one full cycle of highs and lows in the funding. The annual funding level in Monongalia County and the entire state are displayed in Figure 24.

Documented below are a summary of each methodology:

- Method 1: Over the historical period from 1990 through the end of 2005, approximately \$200,300,000 was expended on transportation projects and programs in Monongalia County. This amount includes both operations/maintenance expenditures, system expansion and current system improvement expenditures. Operations and maintenance programs are not inherently covered in the regional transportation plan project/program list, but the funding assessment does need to discuss/document operations and maintenance as a part of total costs.

In 2006 dollars, expenditures over the period totaled \$246.1 million. The average annual expenditures in the historical period were approximately \$15.4 million (2006\$). By multiplying the annual average expenditure figure by the 25 year before the 2030 planning horizon, an overall transportation budget figure of \$384.5 million is derived. This figure includes operations/maintenance, new construction, corridor expansion, and bond repayment (including GARVEE bonds). Accounting for the portion of the total expenditures generally covered in a transportation plan, approximately \$233.0 million would be available in the transportation funding level.

- Method 2: Estimated cost information on projects/programs within Monongalia County included in the current 6-Year Program provided by the WVDOT is \$129.3 million. Of the projects in the list, the Mon-

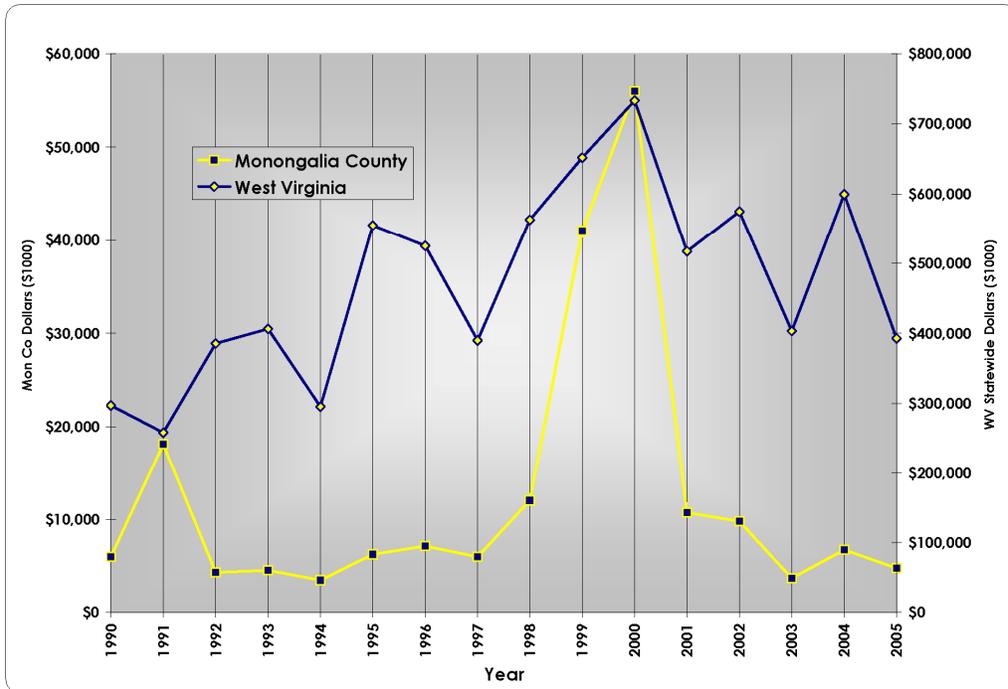
Fayette Expressway projects summed to approximately \$85.3 million of the total.

Annualizing the 6-Year Program estimated expenditures results in approximately \$21.55 million per year in Monongalia County. The portion potentially available for funding projects/programs to be included in the regional transportation plan is estimated at \$13.4 million per year or approximately \$335 million over the planning period from 2006 through 2030.

Method 3: Over the historical period from 1990 through 2005, expenditures in Monongalia County represented approximately 2.47 percent of statewide expenditures. Assuming future statewide transportation dollars remain relatively similar to the 2006 estimate of \$1,007 million, the overall annual funding level potentially available for Monongalia County would be approximately \$24.9 million. Of the \$24.9 million annual level, approximately \$15.4 million per year would be available for projects/programs generally covered by the Regional Transportation Plan. Over the planning period from 2006 through 2030, the net transportation plan funding level would be approximately \$386 million.

Historically, future transportation program funding estimates completed at a county level throughout the state have resulted in levels that in reality have been difficult to achieve. Thus, for the Morgantown Area Regional Transportation Plan it was recommended that the more conservative estimate provided through application of Method 1 (Extend Historical Funding Levels through 2030), be applied in the 2006 fundable plan development. Applying this methodology would result in approximately \$233 million in funding being available for projects and programs covered by the Regional Transportation Plan.

FIGURE 24: HISTORICAL FUNDING LEVELS – MONONGALIA COUNTY AND WEST VIRGINIA



RECOMMENDED MULTIMODAL TRANSPORTATION PLAN

OVERVIEW

Federal legislation regarding metropolitan area long range transportation plans requires balancing the area's multimodal system improvement projects with the transportation funding that can reasonably be anticipated from public and private sources. With that as the Greater Morgantown MPO's guide, the *2030 Regional Transportation Plan* has been developed to address the area's future travel needs with the expected federal, state, and local public and private funding available through the 2030 planning period.

The *2030 Regional Transportation Plan* was developed through review of numerous combinations of transportation networks and evaluating their relative effectiveness in meeting the MPO's transportation system goals and objectives and the ability to fund the included programs and projects. Alternate project and program lists were presented to the public, the Policy Board, the TAC, and the CAC to gauge the level of local support for plans that address varying levels of investment in the roadway, non-motorized and transit systems. Based on input received from each of the stakeholder groups and the technical analysis of the system plans, a multimodal improvement program for the region was developed. Elements of the system plan include:

- Current 2006 through 2008 Statewide Transportation Improvement Program (STIP) projects and projects included in the Six-Year Program for the period from 2006 through 2011.
- Roadway network improvements that address safety, congestion reduction, and connectivity/ accessibility goals.
- Non-motorized system investments that increase the level of investment in completion and expansion of trail and sidewalk facilities from historical levels.
- Transit system improvements that result in increased service levels intended to

support a wider range of the community population.

The projects included in the various Regional Transportation Plan lists and recommended programs represent those projects categorized as system improvement and expansion. Operations and maintenance of the roadway, transit and non-motorized elements of the current system are not specified as line items in any of the system improvement lists. To address the need to maintain the current system, funding for operations and maintenance has been separated from the projects included in this section. It has been estimated that over the planning period approximately \$100 million (2006 dollars) would be available for maintenance of the current system.

CURRENT (2006 THROUGH 2008) TIP PROJECTS AND SIX-YEAR PROGRAM

The WVDOT has the responsibility for maintenance and enhancement of more than 36,000 miles of roads within the state. Documents containing the strategic goals and objectives for the system and plans for system improvements are:

- The Long-range Statewide Transportation Policy Plan (2002-2022) that outlines the state's strategic goals and objectives.
- The Statewide Transportation Improvement Program (STIP): Outlines federal-aid projects scheduled to occur within the next four years.
- Six-Year Program: A document that bridges the gap between the short-term period STIP that defines the imminent projects and the more broad policy document of the Statewide Policy Plan.

Projects included in the STIP and the Six-Year Program inherently are incorporated into the RTP. Table 28 documents the Monongalia County improvement projects from the 2006 through 2011 STIP and the Six-Year Program.

TABLE 28: WEST VIRGINIA DOT STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP) AND SIX-YEAR PROGRAM PROJECTS

State Project ID	Federal Project ID	Route	Description	Cost (\$000) (2007 Dollars)	Funding Type	Development Phase	Estimated Non-Local Funding (.000) ¹					Safety Upgrade	Add Lanes / Reconstruction	Resurface / Rehab	New Facility	Bridge	Miscellaneous	Sponsor
							FY2008	FY2009	FY2010	FY2011	Post FY2011							
S311-857-10.20	BR-0857(008)E-CN	CR 857	Ices Ferry Bridge (#4763) over Cheat Lake - 0.21 mi S CO 69/8 - bridge replacement	\$800 \$60 \$10,092	BR BR BR	CP RW CN				\$640 \$48		\$8,074	X			X	X	STATE
S331-7-20.44	BR-0007(177)E	WV 7	Dunkard Beach T-Beam Bridge Over Dolls Run 0.35 miles east of CR 39 – Bridge Replacement	\$0 \$26 \$923	BR BR BR	CP RW CN	\$21						X			X		STATE
S331-7-22.13	BR-0007(183)E-CN BR-0007(182)E-RW	WV 7	Dolls Run Slab Bridge Over Dolls Run 0.06 miles west of CR 7/27 -- Bridge Replacement	\$0 \$312 \$1,300	BR BR BR	CP RW CN	\$250 \$1,040						X			X		STATE
S331-7-7.59	BR-0007(171)E	WV 7	Big Wana Truss Bridge Replacement 0.07 miles east of CR 7/23	\$0 \$0 \$1,525	BR BR BR	CP RW CN												
S331-7-13.85	NH-0007(206)E	WV 7	Blacksville-Pentress Road – resurface (1.5") WV 218 – CO30	\$0 \$0 \$624	BR BR BR	CP RW CN									X			STATE
S331-7-19.04	BR-0007(177)E	WV 7	Jake's Run Arch Bridge Replacement - 0.1 miles east of CR 31	\$0 \$0 \$2,020	BR BR BR	CP RW CN									X			STATE
S331-MOR/GA-8.00	BR-2000(024)E	NA	Hartman Run Bridge – Over CR 857 & Hartman Run on Sabraton Avenue – Replace Bridge	\$500 \$100 \$2,807	BR BR BR	CP RW CN		\$400	\$80				X			X	X	STATE
U331-19-11.26	STP-0019(262)E	US 19	Beechurst-University Avenue Pleasant St - Walnut St Construct turning lanes	\$250 \$2,000 \$1,165	STP STP STP	CP RW CN	\$200 \$1,600						X					STATE
U321-79-94.00	IMG-0792(150)	I-79	I-79 Signing – 2 mi south of Weston interchange to PA State line – Renovate signing	\$100 \$0 \$1,000	NRT NRT NRT	CP RW CN		\$100									X	STATE
S331-119-2.76 00	STP-0119(185)E	US 119	US 119 Grafton Road South – CR 83 to CR 77 – Resurface (1.5")	\$0 \$0 \$933	STP STP STP	CP RW CN									X			STATE
S331-119-17.45 00	NH-0119(194)E	US 119	US 119 Point Marion Road South – CR 857 to CR 67 – Resurface (1.5")	\$0 \$0 \$168	NH NH NH	CP RW CN									X			STATE
S331-119-18.61 00	NH-0119(180)E	US 119	US 119 Point Marion Road – CR 67 to Pennsylvania state line – Resurface (1.5")	\$0 \$0 \$715	NH NH NH	CP RW CN									X			STATE
U331-19-8.90	STPG-0019(316)E	US 19	Westover signals from intersection of Dents Run to intersection of Commerce Drive and US 19 – Renovate signals	\$60 \$0 \$556	STPG STPG STPG	CP RW CN	\$60						X				X	STATE
X331-109-0.00 00	STP-0043(125)C	WV 43	Mon/Fayette Expressway - (Sec1) I-68 to 0.33 miles north of CR 857 & CR 88/1 i/s – Construct 4 lanes, I-68 ramp, CR 69/6, box A2, bridge	\$0 \$0 \$12,593	STP STP STP	CP RW CN										X		STATE

TABLE 28: WEST VIRGINIA DOT STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP) AND SIX-YEAR PROGRAM PROJECTS

State Project ID	Federal Project ID	Route	Description	Cost (\$000) (2007 Dollars)	Funding Type	Development Phase	Estimated Non-Local Funding (,000) ¹					Safety Upgrade	Add Lanes / Reconstruction	Resurface / Rehab	New Facility	Bridge	Miscellaneous	Sponsor
							FY2008	FY2009	FY2010	FY2011	Post FY2011							
X331-109-0.00 02	EB-0043(124)C	WV 43	Mon/Fayette Expressway - (Sec2) 0.33 miles north of CR 857 & CR 88/1 I/S to 0.09 mile north of CR 857. Construct 4 lanes & 2 bridges	\$0 \$0 \$0 \$27,246	NH NH NH EB	CP RW CN CN			\$21,797					X			STATE	
X331-109-0.00 03	NH-0109(011)	CR 857	Mon/Fayette Expressway (Sec 3) – 0.09 mile north of CR 857/CR 69/6 to 0.47 mile north of CR 69/17 – Local Road Construction	\$0 \$0 \$12,601	MG MG STP	CP RW CN	\$10,081							X			STATE	
X331-109-0.00 05	STP-0109(012)C	CR 857	Mon/Fayette Expressway - Construction I-68/WV 43 Interchange	\$0 \$0 \$18,664	MG MG STP	CP RW CN				\$14,931				X			STATE	
X331-109-1.36 03	EB-0043(123)C	WV 43	Mon/Fayette Expressway - Morgan's Run Construction	\$0 \$0 \$22,462	MG MG STP	CP RW CN		\$17,970						X			STATE	
S331-7-26.01	BR-0007(196)E	WV 7	Cassville Arch Bridge over Scott's Run, 0.16 miles east of CR43 – Bridge Replacement	\$110 \$4 \$382	BR BR BR	CP RW CN			\$88	\$3	\$306	X		X	X		STATE	
S331-68-9.79	NH-0068(118)E	I-68	I-68 Cheat Lake - Cooper's Rock - E end of Cheat lake Bridge to CR 73/13 – Resurface (1.5")	\$0 \$0 \$1,757	NH NH NH	CP RW CN	\$1,406					X					STATE	
U331-60-2.67			Baker's Ridge Road - Widening, improve alignment and left turn lane at Stewartstown Road	\$0 \$0 \$675	STP STP STP	CP RW CN	\$675				X						STATE	
S331-119-0.00 00	STP-0119(181)E	US 119	US 119 Taylor County Rd - Taylor Co Line to CR 84 – Resurface (1.5")	\$0 \$0 \$457	STP STP STP	CP RW CN		\$366				X					STATE	
S331-79-149.70	IM-0793(206)E	I-79	I-79 Uffington-Westover Rd – N end of Uffington Bridge to US 19 – Resurface (1.5")	\$0 \$0 \$1,131	IM IM IM	CP RW CN	\$1,018					X					STATE	
S331-68-4.21	NH-0068(118)E	I-68	I-68 Sabraton to Cheat Lake – WV 7 to west end of Cheat Lake Bridge – Resurface (1.5")	\$0 \$0 \$2,151	NH NH NH	CP RW CN		\$1,721				X					STATE	
S331-705-0.01 00	CMAQ-0705(010)E	WV 705 CR 857 US 19	WV705 & WV 857 – i/s of WV 705 & US 19 to i/s of WV 857 & I-68 – Renovate signage	\$0 \$0 \$300	CMAQ CMAQ CMAQ	CP RW CN	\$240				X					X	STATE	
X231-705/1-0.00 02	STP-0705(009)E	NR 705	WV 705 Connector – South of i/s CR 67 & WV 705 to i/s CR 67/1 & US 119 – Environmental Assessment	\$300	STP	PR	\$240							X			STATE	
S384-STR/IP-08.00	STP-2008(007)E	NA	Roadway Striping – District wide pavement markings – Paint	\$0 \$0 \$248	STP STP STP	CP RW CN	\$198				X						STATE	
S384-STR/IP-09.00	STP-2009(008)E	NA	Roadway Striping – District wide pavement markings – Paint	\$0 \$0 \$258	STP STP STP	CP RW CN		\$206			X						STATE	

TABLE 28: WEST VIRGINIA DOT STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP) AND SIX-YEAR PROGRAM PROJECTS

State Project ID	Federal Project ID	Route	Description	Cost (\$000) (2007 Dollars)	Funding Type	Development Phase	Estimated Non-Local Funding (,000) ¹					Safety Upgrade	Add Lanes / Reconstruction	Resurface / Rehab	New Facility	Bridge	Miscellaneous	Sponsor
							FY2008	FY2009	FY2010	FY2011	Post FY2011							
S384-STR/IP-10.00	STP-2010(008)E	NA	Roadway Striping – District wide pavement markings – Paint	\$0 \$0 \$267	STP STP STP	CP RW CN			\$214			X					STATE	
S384-STR/IP-11.00	STP-2010(008)E	NA	Roadway Striping – District wide pavement markings – Paint	\$0 \$0 \$277	STP STP STP	CP RW CN				\$221		X					STATE	
U331-68-0.01	NHG-0068(133)C	I-68	I-68 renovate signing I-79 interchange to Maryland state line	\$400 \$0 \$3,461	NHG NHG NHG	CP RW CN	\$400					X				X	STATE	
U331-68-0.01	NHG-0068(133)C	I-68	I-68 renovate signing I-79 interchange to Maryland state line	\$400 \$0 \$3,461	NHG NHG NHG	CP RW CN	\$400					X				X	STATE	
U331-705-0.68	STP-0705(008)E	WV 705/ CR 61/4	Add left turn lanes	\$0 \$0 \$760	STP STP STP	CP RW CN							X				STATE	
S331-79-156.55	IM-0793(203)E	I-79	I-79 Star City to Pennsylvania state line – 0.44 miles north of US 19 to Pennsylvania state line – Resurface (1.5")	\$0 \$0 \$1,718	IM IM IM	CP RW CN								X			STATE	
S331-79-152.54	IM-0793(204)E	I-79	I-79 Westover-Star City Road – US 19 to 0.44 miles north of US 19 – Resurface (1.5")	\$0 \$0 \$1,444	IM IM IM	CP RW CN			\$1,300						X		STATE	
S331-68-9.41	NH-0068(090)E	I-68	I-68 Cheat Lake Bridge – Over Cheat Lake and CR73 – Fatigue crack retrofit, repair expansion dams, etc.	\$0 \$0 \$140	NH NH NH	CP RW CN						X				X	STATE	
U325-79-138.80	IMG-0793(219)E IMG-0793(220)E	I-79	I-79 Prickett's Fort to Goshen Road – Install cable guardrail, pave, drainage	\$0 \$0 \$1,510	IMG IMG IMG	CP RW CN						X				X	STATE	
U325-79-145.70	IMG-0793(213)E IMG-0793(214)E	I-79	I-79 Goshen Road to I-68 ramp – Install cable guardrail, pave, drainage	\$10 \$0 \$2,226	IMG IMG IMG	CP RW CN	\$10					X				X	STATE	
S331-39-0.10	STP-0039(401)E STP-0039(402)E	WV 39	Robert C Beach Bridge – over Dunkard Creek 0.9 miles east of WV7	\$100 \$0 \$1,000	STP STP STP	CP RW CN	\$80					X			X		STATE	
MGL-WVU WV-03-0034-00(FTA#)		NA	West Virginia University Intermodal Center	\$0 \$0 \$2,813 \$1,801	STP STP STP 5309	CP RW CN CN								X		X	WVU	

NOTES:

1 - Figures represent portion of total project cost funded through state and federal program sources. Remaining funding is local (city/county) responsibility.

The STIP and the Six-Year Program projects total approximately \$133,000,000 divided between a combination of maintenance and expansion projects.

RECOMMENDED PLAN PROJECTS

Projects included in the recommended multimodal transportation plan have been demonstrated to address or support a need within the region and they have been discussed in public meetings. Transportation needs within the region far outpace the locally available transportation funding estimates. Thus, the needs list has been divided into two categories:

- Fundable Improvements Plan.
- Future Needs Plan.

The entire needs plan was the topic of focus at two public meetings held at different periods in the plan development. At the first of the two meetings the merits of projects that met regional needs were discussed without addressing the cost and financial constraint issues. During the second public meeting at which the projects were discussed (the third public meeting overall), the funding constraints were introduced and discussions of the division of projects into the Fundable Improvements Plan and Future Needs Plan were held. As a result of input received at these meetings, the results of the technical analyses conducted relative to the project impacts and benefits, and input provided by the TAC and CAC membership the Fundable Needs Plan and Future Needs Plan lists were developed.

ROADWAY AND NON-MOTORIZED NETWORK IMPROVEMENTS

The goal of the transportation planning process has been to develop a regional multimodal transportation plan that integrates the roadway system, with the non-motorized system, and with the transit system. Previously transportation planning efforts have addressed each of the systems, but the level of integration of how one system impacts and needs the other systems has not been documented to the extent desired in the community.

The connectivity of the system recommendations developed through this transportation planning process is demonstrated by the

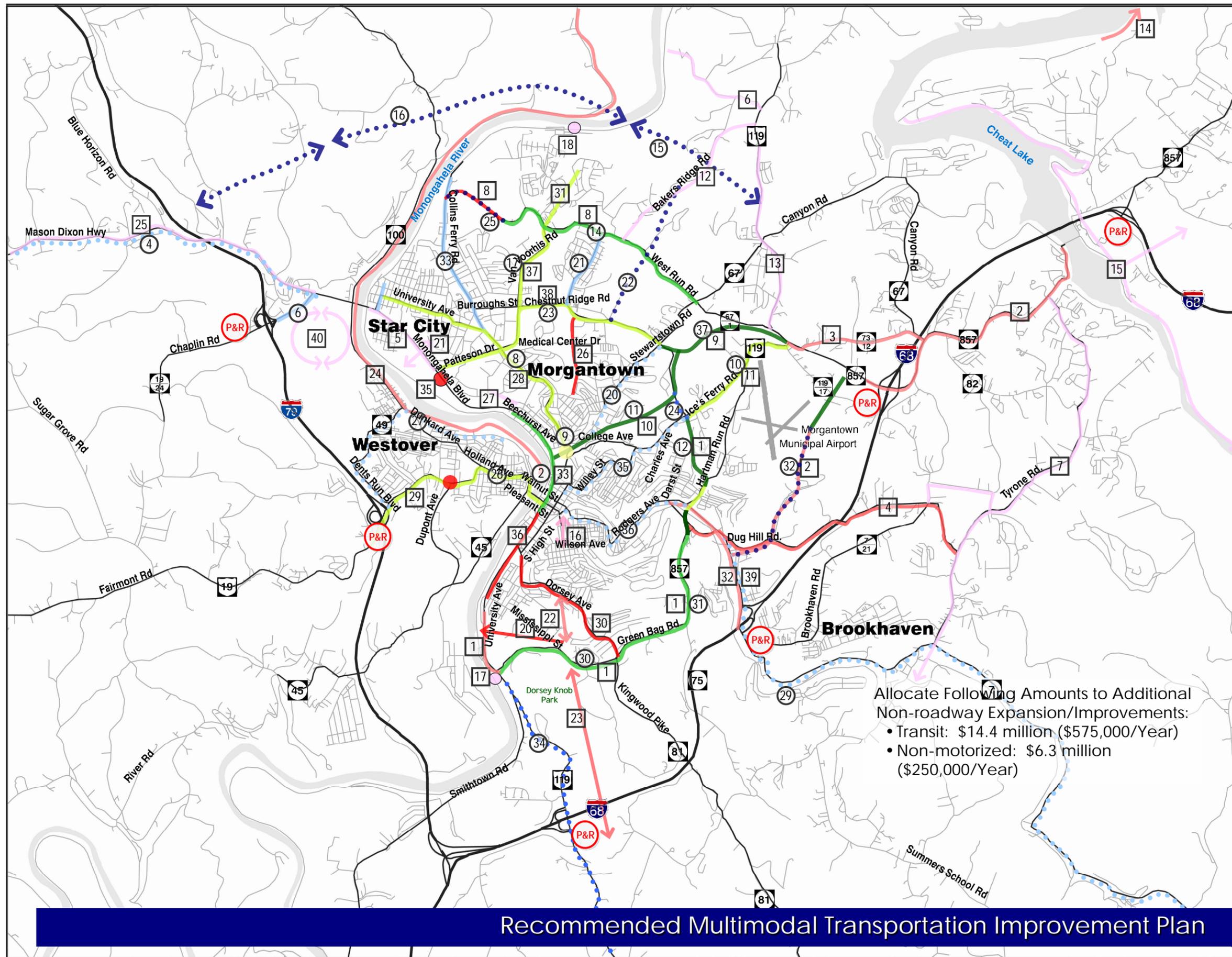
project improvement recommendations displayed in Figure 25. The intent of this figure is to allow stakeholders to observe the relationship and interdependencies between particularly the roadway and non-motorized system recommendations by seeing side-by-side the roadway improvement concepts and the non-motorized concepts. The numbered project labels correspond to the project descriptions provided in the following sections.

ROADWAY NETWORK IMPROVEMENTS

Table 27 documents the individual roadway projects that, when combined, provide the system improvements for the region through the 2030 planning horizon (the Fundable Improvements Plan) and local transportation roadway needs that are in excess of the local transportation funding limits (Future Needs Plan). The project limits and locations are displayed in Figure 29.

WV 705 Connector - Map Location #37

The proposed concept for the WV 705 Connector, also known as the Pasture Land Parkway or the Pasture Land Connector, is a 4-lane median divided arterial connecting CR 857 at the bottom of Easton Hill with WV 705 near Stewartstown Road. The concept for the roadway is a limited access, higher speed facility intended to move traffic efficiently from I-68 to the WV 705 corridor, while avoiding the Mileground corridor. The roadway design concept is presently being developed in more detail and includes the assumptions that intermediate access points would be prohibited. The type of junction on either end is currently being developed, but could be either signalized at-grade intersections, interchanges or a combination of each.



Morgantown
Area Transportation Study

- Legend**
- Fundable Improvement Plan Elements**
- Roadway Improvements**
- Management Improvement in Existing Corridor
 - Existing Corridor Expansion
 - New Facility
 - Park and Ride Lot (Addition/Expansion)

- Multimodal Corridor Improvements**
- Management Improvement in Existing Corridor
 - Existing Corridor Expansion
 - New Facility

- Future Needs Plan Elements**
(In Addition to Fundable Plan Projects):
- TSM Project
 - Existing Corridor Expansion Project
 - New Facility Project

- Non-Motorized Improvements**
- Tier 1 Project
 - Tier 2 Project
 - Tier 3 Project

- Project Number (See Description in Table)**
- ⑩ - Roadway Concept
 - 10 - Non-motorized Concept

Allocate Following Amounts to Additional Non-roadway Expansion/Improvements:

- Transit: \$14.4 million (\$575,000/Year)
- Non-motorized: \$6.3 million (\$250,000/Year)

Recommended Multimodal Transportation Improvement Plan



Figure 25
December 21, 2006

TABLE 29: RECOMMENDED ROADWAY NETWORK IMPROVEMENT PROJECTS

Map Location	Issue/Improvement Alternative	Scoring Total	Cost Estimates	RTP Status (Fundable Improvement or Future Needs Plan)
37	705 Connector (Pasture Land Connector)	N/A	\$35,000,000	●
10	Mileground TSM: - Add turn lanes at key intersections - Access Management through Commercial Areas/High Density Residential Areas (Boulevard Concept)	54	\$4,270,000	●
2	Beechurst Avenue - Expand Along Existing Alignment: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek	52	\$53,100,000	●
8	University Avenue - Boyers Avenue to Beechurst Avenue TSM: - Add turn lanes at key intersections - Access Management through commercial areas/high density residential	52	\$5,000,000	●
11	Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	52	\$48,600,000	●
24	WV 705 - Widen corridor to 4-lane divided: - Mileground to Stewart St.	52	\$9,410,000	●
23	WV 705 from Beechurst Avenue to Mileground TSM: - Signal Coordination Study/Work - Access management/control Pineview Dr. to Van Voorhis Rd. - Van Voorhis Rd. intersection improvements	50	\$1,100,000	●
31	Widen Green Bag Road Corridor - University Avenue to WV 7: - 2+ turn lanes/3-lane - Incorporate bike/pedestrian component	50	\$9,400,000	●
30	Green Bag Road Corridor - University Avenue to WV 7 TSM: - Driveway consolidation			●
34	Expand US 119 to 4-lane Divided from S. of Green Bag to S. of WalMart (Includes turn lanes)	50	\$26,300,000	●
17	Van Voorhis Road TSM - West Run Road to Chestnut Ridge Road: - Add turn lanes at key intersections	48	\$3,500,000	●
9	University Avenue/Grumbein's Island Grade Separation	48	\$3,450,000	●
4	WV 7 West of WV 100: Transportation Systems Management: - Add turn lanes at key intersections - Improve skewed intersections (i.e. View Hill Rd.) - Driveway consolidation - Improve tight curves - Widen shoulder	48	\$25,720,000	●
12	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core	46	\$27,310,000	●
33	Collins Ferry Road TSM: - Add intersection turn lanes - Signalize intersection with Burroughs St.	46	\$2,250,000	●
32	New Airport Industrial Area Route From CR 857 - Establish a continuous access route from CR 857 to WV 7	46	\$18,210,000	●
22	Add New Corridor through WVU Research Park: - New 3-Lane corridor Chestnut Ridge Rd. to West Run Rd.	44	\$14,470,000	●

Legend

- - Project is included in the Fundable Improvement Plan Element.
- - Project is defined as a need, but funding limits result in placement in the Future Needs Plan.

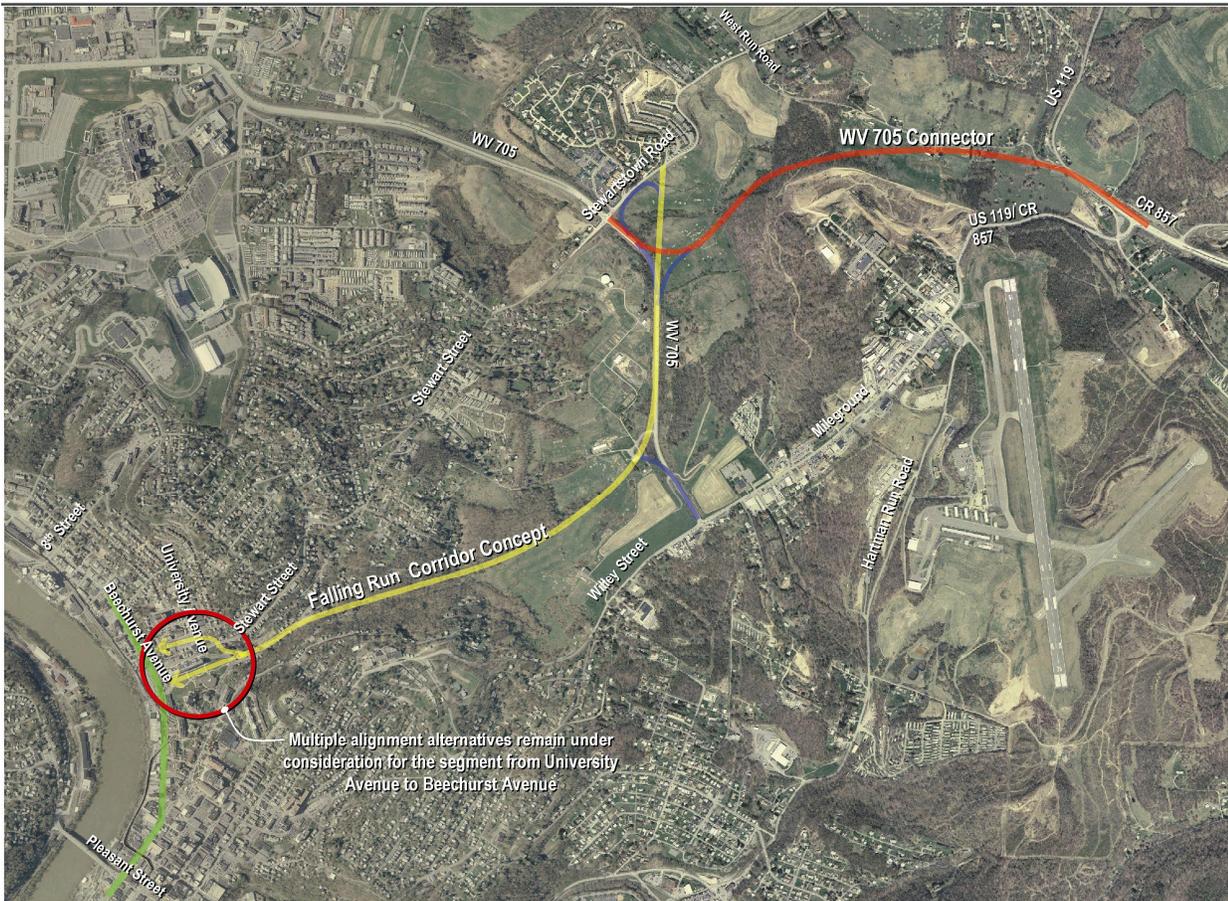
TABLE 29: RECOMMENDED ROADWAY NETWORK IMPROVEMENT PROJECTS

Map Location	Issue/Improvement Alternative	Scoring Total	Cost Estimates	RTP Status (Fundable Improvement or Future Needs Plan)
35	Wiley Street TSM: - Add turn lanes at Key intersections: - Fife Ave. - Improve Monongalia Ave. intersection - Improve College Ave. intersection	44	\$1,860,000	●
36	Earl Core Road From Downtown to Hartman Run TSM: - Improve/Reconfigure/Ad turn lanes to key intersections: - Arlington St. (Reconfigure to eliminate Overdale or Arlinton) - Access management throughout corridor	44	\$2,200,000	●
6	Osage Road/Chaplin Road (WV 19/24) WV 19 to I-79 TSM: - Signal timing improvements - Remove Signalize Approach at Sheetz/Convert to right-in-right-out	42	\$100,000	●
25	Extend West Run Road to Mon Boulevard: - Extend 2+ turn lanes from Van Voorhis Rd. to Collins Ferry Rd.	42	\$14,440,000	●
14	Widen West Run Road Corridor: - 3-lane (2-through lanes and two-way center left turn lane or intersection left turn lanes: Stewartstown Rd. to Van Voorhis Rd.	42	\$9,670,000	●
15	New east-west corridor north of West Run Road from 705 Connector to Collins Ferry Road: 2/4-lane corridor connection	42	\$61,000,000	●
20	Improve Stewart St./Stewartstown Rd: - New 3-lane corridor CBD to US 119.	42	\$10,400,000	●
29	WV 7 East/West of I-68 TSM: - Add turn lanes at signalized intersections - Driveway consolidation	42	\$650,000	●
21	Pineview Drive/Riddle Street TSM: - Add turn lanes at key intersections	40	\$2,190,000	●
26	US 19 Through Westover (I-79 to Beechurst Avenue) TSM: - Signal Coordination Study/Work - Access management/control throughout corridor - Add center left turn lane - DuPont Road to Park Avenue	40	\$6,000,000	●
27	Improved route to North Around Westover/River Crossing: - Dents Run/WV 100/New Bridge Connection - New Mon River Bridge	40	\$31,730,000	●
7	Create a Connection between Chaplin Road and US 19 West of I-79: - Upgrade Sugar Grove Road/Chaplin Road as 2-lane - Establish I-79 west side Frontage Road (Martin Hollow Road between Morgantown Mall and University Town Center)	38	\$28,480,000	●
16	New east-west corridor north of West Run Rd./Monongahela River Crossing: - 2/4-lane corridor connection	38	\$128,000,000	●
5	I-68 Extension Concept (DOH Report): - 4-lane rural divided highway - Partial controlled access (combination of at-grade and interchanges)	36	NA	●
	Morgantown CBD Flow	Maintain a more Detailed Study In RTP Recommendations		

Legend

- - Project is included in the Fundable Improvement Plan Element.
- - Project is defined as a need, but funding limits result in placement in the Future Needs Plan.

WV 705 CONNECTOR-FALLING RUN CORRIDOR CONCEPTS



Mileground (WV 705/US 119) Transportation System Management Improvements – Map Location #10

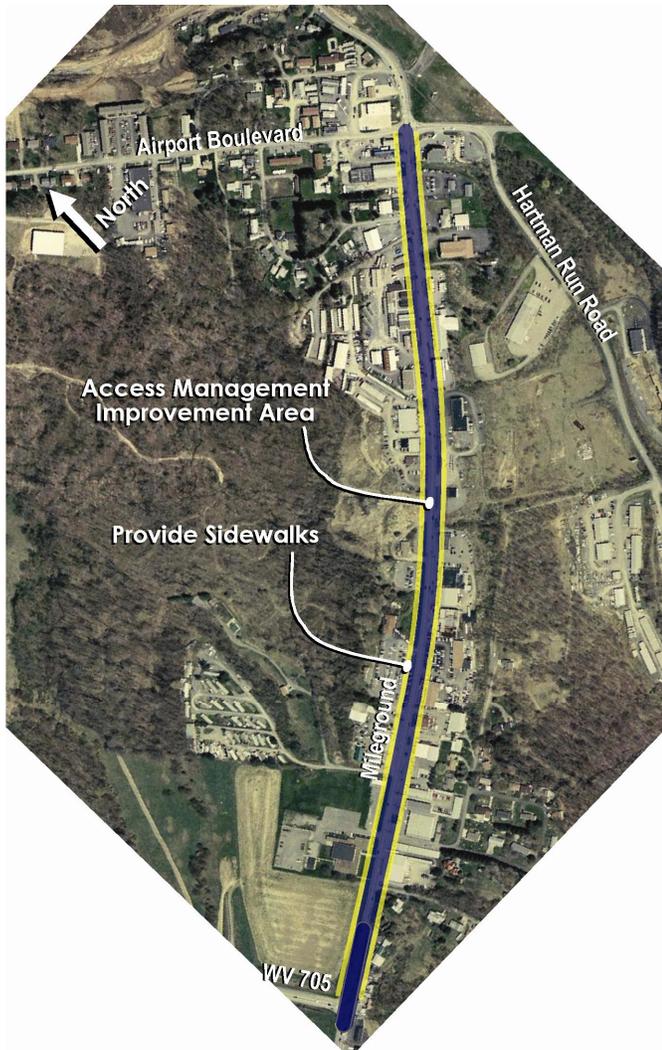
The purpose of the WV 705 Connector is to relieve much of the through traffic that is presently located on the Mileground from US 119/CR 857 through WV 705. While much of the through traffic would be removed by the WV 705 Connector, the need remains to improve safety and turning movement operations within the Mileground corridor. Transportation system management improvements recommended include:

- Complete a detailed corridor access management study to determine which driveways/private access locations in the corridor could be combined, relocated, and/or narrowed to result in a much more organized corridor. Presently, the corridor has numerous properties with the entire roadway frontage essentially acting as a driveway.

These large driveway openings increase safety concerns for vehicles and pedestrians and reduce the overall efficiency of the corridor.

- Improve the pedestrian and bicyclist facilities provided along the corridor. As the corridor is an arterial, sidewalks should be provided along at least one, and preferably both sides of the corridor.
- Determine the need for additional traffic signals. As part of the access management study it should be determined whether driveway consolidations will result in meeting signal warrants at locations between the currently signalized intersections. For those locations that may meet warrants, an analysis of the impacts on corridor traffic operations associated with adding a signal should be completed prior to developing recommendations.

MILEGROUND IMPROVEMENT CORRIDOR CONCEPT



Beechurst Avenue: 5-lanes from 8th Street through the Pleasant Street (Westover Bridge) - Map Location #2

In 2003, the WVDOT completed a concept level analysis of an alternative for widening the corridor to accommodate a 4+-lane cross section. Concepts for the 4+-lane include two through lanes in each direction and segments that could be a combination of a center left turn lane or a raised median adequate for landscaping. Through this concept study, the potential adjacent land use impacts of a corridor expansion were identified and right-of-way limit estimates were developed.

The level of detail provided in the concept study provides some insight to the issues and concerns that will arise through

implementation of the 5-lane recommendation. As part of an initial implementation phase of the RTP recommendations, the following should be completed as part of a detailed corridor study:

- Develop peak hour traffic forecasts for the corridor from 8th Street through Pleasant Street.
- Using a 4+-lane cross section template, develop an alignment, or number of possible alignments, in the corridor to determine the right-of-way impacts. Expanding the corridor outside the current curblines will result in impacts to buildings lining the corridor. Thus, it is critical to the project that the alternatives assessment includes quantification of the impacts to the adjacent properties as well as utilities along the corridor.



BEECHURST AVENUE IMPROVEMENT AREA

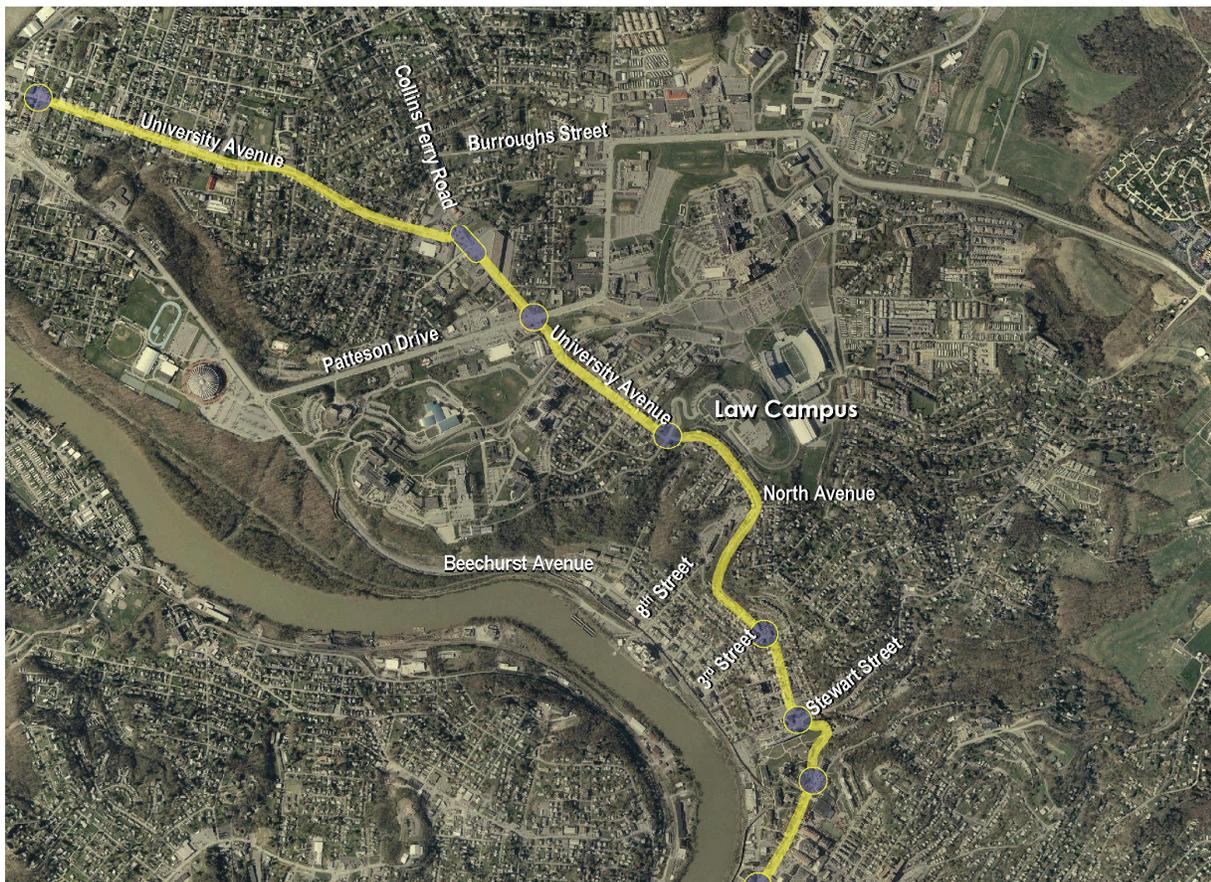
- Develop a right-of-way limit that accounts for an expanded roadway, associated landscaping, bicycles, pedestrians and transit facilities.
- Cost estimates.
- Redevelopment plans. The most feasible corridor improvement is likely to be the one that results an equitable balance between transportation facility needs and the ability to realign adjacent properties into useable properties that could be redeveloped. Thus, this element will be critical in the overall concept development.
- Pedestrian and bicycle elements. The detailed assessment will need to address movement of pedestrians and bicyclist through and across the corridor.

enhancements should be implemented. Intersections to be the focus of improvements include:

- Boyers Avenue: Turn lanes and signalization.
- Collins Ferry Road: A range of turn lane and signalization improvements, including the feasibility of roundabouts should be considered.
- Patteson Drive: Signal improvements focusing on the Patteson Drive corridor (from implementation of WV 705 TSM projects).
- Law School Drive: University Avenue left and right turn lanes approaching Law School Drive.
- 3rd Street/Beverly Avenue: Improve the site distance at the intersection and better delineate the approaches to the highly skewed intersection.
- Stewart Street/Campus Drive: Coordinate the University Avenue TSM improvements

University Avenue Transportation System Management - Map Location #8

Throughout the University Avenue corridor from Boyers Avenue to the downtown campus, intersection improvements such as turn lanes, signal improvements and crosswalk



UNIVERSITY AVENUE TSM IMPROVEMENTS CORRIDOR

with the Falling Run Corridor improvement project.

- Grumbein's Island Pedestrian Crossing: Improvements are included in the Pedestrian Improvements.

Falling Run Corridor - Map Location #11

Provide a four-lane median divided corridor connecting WV 705 to Beechurst Avenue. While the corridor concept reflects a four-lane median divided route (with a median wide enough for landscaping) classified as a principal arterial, travel speeds of 30 to 40 MPH would be assumed. Access between adjacent development parcels would be limited to public streets.

The junction with WV 705 would be coordinated with the recommendations developed for the WV 705 Connector. Key access points along the corridor include:

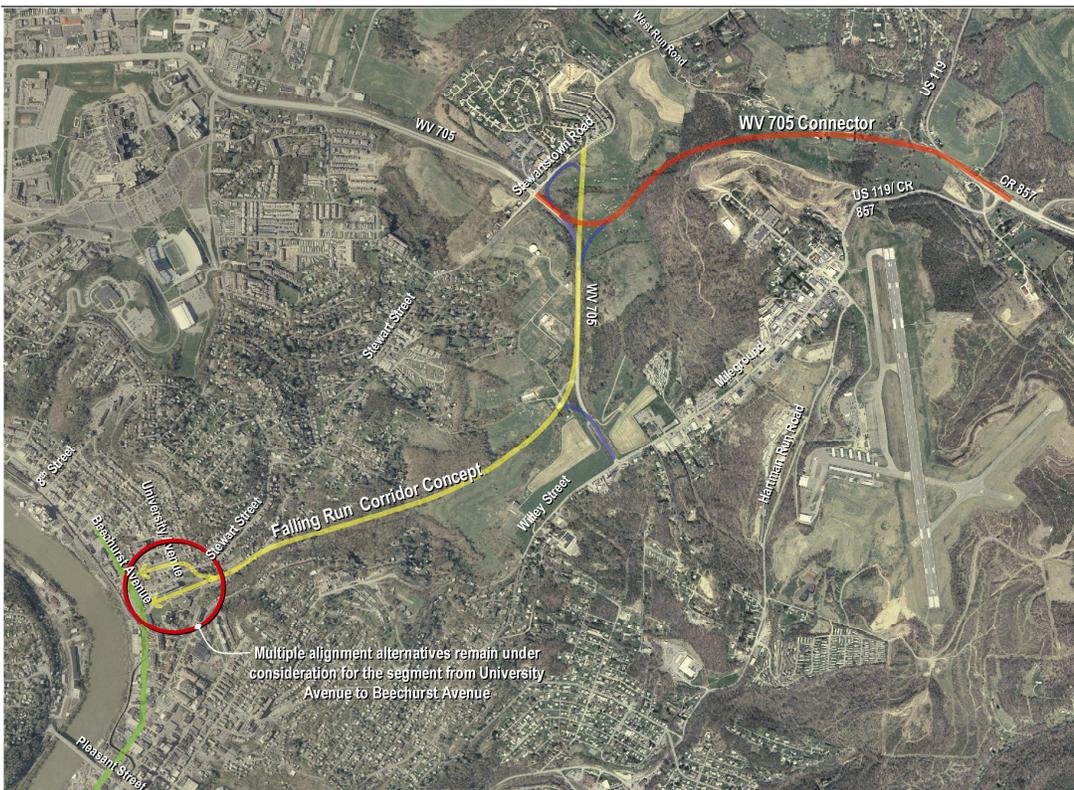
- WV 705.
- Liberty Street.
- University Avenue.
- Beechurst Avenue.

The Falling Run Corridor has been designated as a multimodal corridor (accommodating

cars, trucks, bikes, pedestrians and buses) that contains motor vehicle and non-motorized facilities. The concept anticipated along the corridor is for a multi-use trail to be located along one side of the corridor and a sidewalk along the other with designed crosswalks at each public street intersection. The right-of-way requirements for the corridor would be approximately 110 feet.

WV 705 Corridor Transportation System Management (TSM) – Map Location #23

Currently, the WV 705 corridor from Monongahela Boulevard through the Mileground is congested during the AM and PM peak periods. Following development of the WV 705 Connector, traffic operations along the segment from Stewartstown Road to the Mileground will be improved as traffic is diverted to the new corridor. Through the remainder of the corridor the current four-plus lane cross section is to be maintained. It is recommended that a detailed assessment of the peak period operations be completed, focusing on signal timing at existing intersections. The assessment should include identification of intersection level improvements to reduce corridor congestion through improving corridor signal coordination and turning movement operations and to



WV 705 CONNECTOR AND FALLING RUN CORRIDORS

WV 705 (CHESTNUT RIDGE ROAD) IMPROVEMENT LOCATIONS



better accommodate pedestrian and bicycles crossing the corridor.

commercial properties adjacent to the current intersection location.

Inner Loop/Green Bag Road Improvements – Map Location #12/30/31

A recommendation of the 1998 Long Range Transportation Plan was development of an “inner loop” along WV 705 to Green Bag Road through WV 7 and on to US 119. University Avenue/Monongahela Boulevard would form one portion of the corridor. To complete the loop connection, a new corridor would be developed from the intersection of Mileground/WV 705 to Hartman Run Road, which would be upgraded through WV 7.

If key concern in the Green Bag Road corridor is the intersections providing access to the Mountaineer Mall; establishing convenient and safe access to/from the mall will be critical to the economic viability of the retail center. Intersections of focus include:

- Green Bag Road/US 119 (South University Avenue)
- Green Bag Road/South Mall Entrance
- Green Bag Road/Mountaineer Mall Road
- Green Bag Road/Mississippi Street

The Inner Loop concept from the 1998 Plan has been maintained in concept, but has been modified from a four-plus lane corridor to a two-plus turn lane corridor. Forecasted traffic volumes along the corridor approach or slightly exceed level-of-service C traffic flows of a two-plus lane corridor, but when the adjacent land use impacts are factored into the alternatives analysis, the lower quality of traffic operations is offset by the lower level of adjacent impacts.

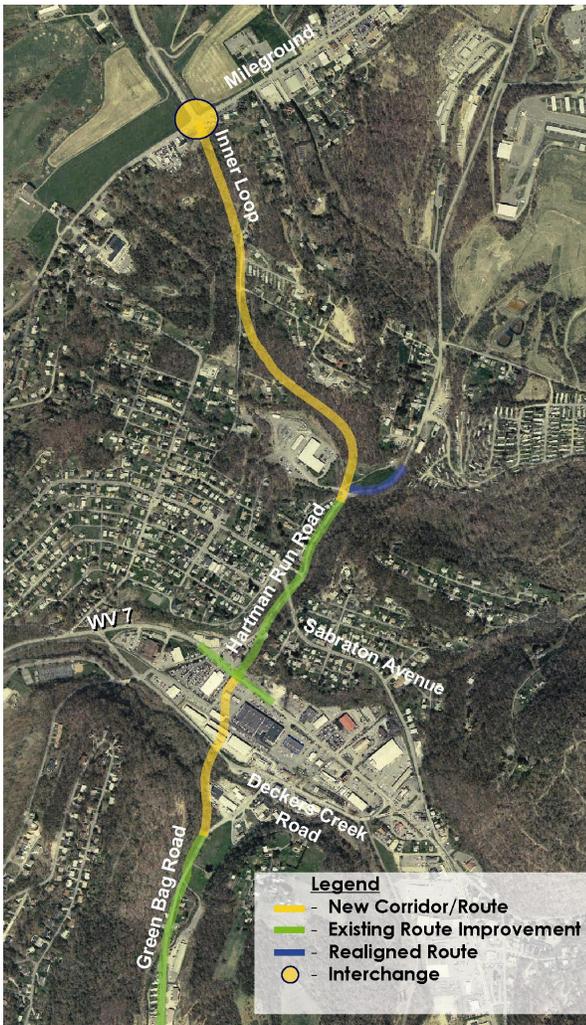
The alternative includes an improved intersection with WV 7 at Sabraton. The current circuitous route around the retail area to get from Hartman Run Road to Green Bag Road would be redesigned to create a full access intersection between the routes along a new alignment. The redesigned intersection requires acquisition of a number of retail



GREEN BAG ROAD – US 119 TO MISSISSIPPI STREET AREA

The junction with WV 705 at the Mileground would be an interchange concept, not because of the forecasted traffic, but to better accommodate the elevation change required along the new section to the east. This recommendation is consistent with the 1998 Plan recommendations.

The Inner Loop has been identified as a multi-purpose corridor intended provide an alternate to downtown routes for trucks traveling through town, it is intended to provide a connection for bike and pedestrian travel on the east-central part of town and provide an auto connection. The corridor improvements would include a multi-use trail along one side of the corridor. Providing a multi-use trail through the inner loop corridor would provide a connection to the Deckers Creek Trail.



INNER LOOP ROUTE

Van Voorhis Road Transportation System Management (TSM) – Map Location #17

Throughout the corridor from Chestnut Ridge Road/Burroughs Street to north of West Run Road, the recommendation is to maintain the current general cross section as a two-lane road. Auxiliary lanes in the form of left turn lanes, a center two-way left turn lane, or limited through lane additions, are recommended at the following intersections to improve intersection and overall corridor traffic operations:

- Chestnut Ridge Road/Burroughs Street: Additional southbound through lane. Providing this lane will result in the need to reconfigure the north and south



VAN VOORHIS ROAD IMPROVEMENT AREAS

approaches to minimize the impacts to the bank located in the northeast quadrant and commercial uses in the southwest quadrant and the proposed stormwater improvement in the northwest quadrant.

- Killarney Drive to Wedgewood Drive: Provide a center two-way left turn lane.
- West Run Road: Southbound left turn lane, northbound right turn lane and a westbound left turn lane on West Run Road.

As the corridor connects a substantial number of residential units with employment and education areas south of Chestnut Ridge, Van Voorhis Road has been identified as a multimodal corridor. In attempting to address the limited right-of-way availability in the corridor, while providing for pedestrian and bicycle use within the corridor, the corridor recommendation includes a sidewalk on one side of Van Voorhis Road.

University Avenue/Grumbein’s Island Pedestrian Grade Separation – Map Location #9

Congestion along the University Avenue corridor does not result entirely due to vehicle-to-vehicle conflicts. The heavy pedestrian volume across University Avenue between the Mountainlair and the quad conflicts with auto and truck traffic along University Avenue and vice versa. Pedestrian grade separated crossing alternatives discussed as part of the regional plan included a pedestrian overpass and an underpass, or plaza under University Avenue. Each of the concepts has merits in reducing the conflicts, but the overall feasibility of a concept balances:

- Reasonableness for use: As University Avenue is two lanes, the crossing distance is fairly short (less than 36 feet) relative to the crossing distance of an elevated overpass. If the crossing distance using the overpass is substantially longer the street level crossing, as would be the case here, a street level crossing barrier must be incorporated into the design.
- Impacts on utilities: Depressing the roadway or the pedestrian crossing is likely to impact buried utilities that would need to be relocated. Relocating utilities could substantially impact the project cost.
- Safety: Historically, due to reduced visibility, lack of adequate lighting and other security measures pedestrian underpasses have been considered less desirable than overpasses. Thus, if an underpass is selected as the preferred option, these design considerations must be incorporated, which has resulted in the open pedestrian plaza concept.

The concepts for reducing pedestrian-vehicle conflicts across University Avenue have been narrowed to constructing either a pedestrian underpass/plaza or an elevated pedestrian overpass of University Avenue. The cost estimate included in the financial analysis reflects the higher cost underpass. If the recommendation is to have pedestrians cross under University Avenue, options that elevated University Avenue and maintain the pedestrian crossing at the current location (or slightly depressed) may also be feasible. This alternative may better address balancing pedestrian safety and the level of utility impacts.

GRUMBEINS ISLAND PEDESTRIAN CROSSING



Collins Ferry Road Transportation System Management (TSM) – Map Location #33

The recommended improvements for the Collins Ferry Road corridor from University Avenue to the Mylan facilities maintain the corridor generally as a two-lane route and are intended to be sensitive to the mixed uses (residential and commercial) along the corridor. The initial recommendations for the corridor that addressed operations and adjacent impacts included intersection improvements at Farrell Street (southbound left and northbound right) and at Lawnview Drive (northbound left). Input from the neighborhood over concerns of corridor travel speed and facilitating neighborhood cut-through traffic resulted in removing these improvements from the recommended plan.

Within the corridor intersection improvements are recommended at the following locations:

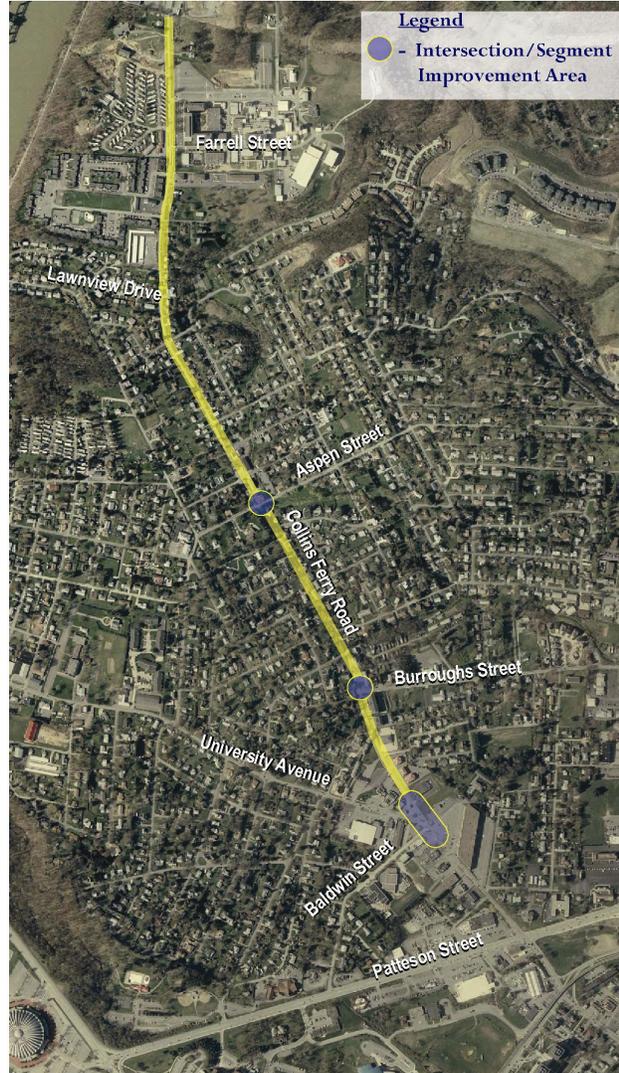
- Aspen Street: Northbound and southbound left turn lanes. Burroughs Street: Southbound left turn and northbound right turn lanes and install a traffic signal.
- University Avenue: Intersection treatments that allow for improved or continuous flow, such as a roundabout have potential to improve operations at this intersection and should be considered.

Osage Road/Chaplin Road (WV 19/24): US 19/WV 7 to I-79 Transportation System Management (TSM) – Map Location #6

Installation of signals at the University Town Centre access east of the I-79 interchange has increased congestion in the corridor and increased delay. The range of alternatives for improving operations in the corridor, short of removing the signals or constructing an urban interchange at either the WV 19/24/University



WV 19/24 FRONTAGE ROAD AT WV 7/US 19 INTERSECTION



COLLINS FERRY ROAD CORRIDOR TSM IMPROVEMENT LOCATIONS

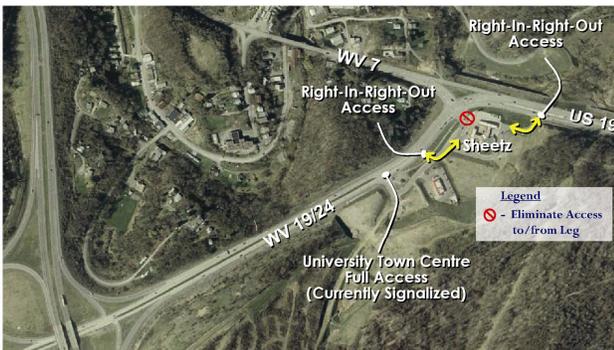
Town Centre access or at the US 19/WV 7 junction is limited. Adding more through lanes will not substantially improve operations and issues associated with vehicles stopping on the hill would remain. Construction of an urban interchange at US 19/WV 7 was considered but eliminated due to adjacent impacts and cost. An interchange is, however, the most likely alternative for providing adequate capacity at the intersection of US 19/WV 7 at WV 19/24.

The recommended improvements included in the TSM package are:

- Conduct an updated traffic analysis of the impacts of the University Town Centre development along WV 19/24 to

determine an optimal signal timing plan between the University Town Centre access and the US 19/WV 7 and WV19/24 intersection.

- Remove the frontage road/Sheetz access from the US 19/WV 7 intersection with WV 19/24. Currently, the frontage road is the fourth signalized leg of the intersection and essentially provides a direct access to the Sheetz retail development to/from the arterial intersection. By removing the leg from the intersection, including the left turn access from US 19, substantial signal efficiency can be provided because at least two phases could be eliminated from the signal cycle. Access to the Sheetz retail development would be provided to/from US 19 at the existing frontage road access to the east and from the signalized access to/from the University Town Centre.



WV 19/24 at WV 7/US 19 IMPROVEMENT AREA

Widen West Run Road to 2+Lanes/3-Lane – Map Location #14

The recommended improvements for the corridor from Van Voorhis Road through US 119 are a combination upgrading the narrow two-lane corridor to include two 11 foot travel lanes (one in each direction) and either a center left turn lane or left turn pockets at intersections where they are warranted. Determination as to whether the center left turn lane is the appropriate application of left turn pockets will be based on the density of access points that warrant lanes. With the level of residential development anticipated along the corridor, the need for increasing left turn capacity at locations between existing public streets will likely continue to grow. Left turn lanes should be provided, based on current and/or forecasted volume, when peak period left turn volumes exceed 60 vehicles. A center left turn lane would be the preferred option in locations where access density results in two back-to-back turn lanes overlapping each other. Turn lanes are recommended at the following public access locations along West Run Road:

- Van Voorhis Road.
- Riddle Avenue.
- Stewartstown Road.
- US 119.

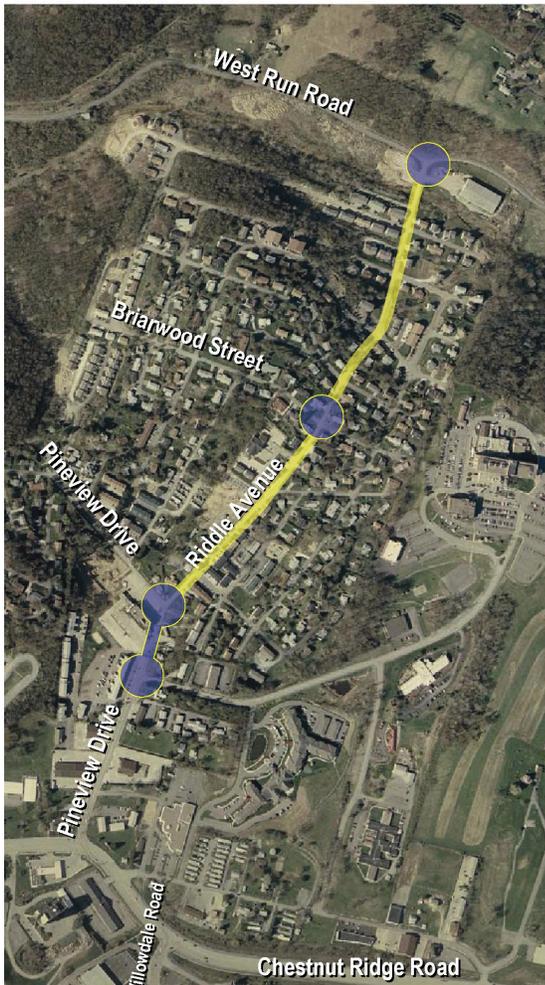


Riddle Avenue Transportation System Management (TSM) Improvements – Map Location#21

Recommended intersection improvements in the corridor from Chestnut Ridge Road through West Run Road are:

- Extend the southbound left turn lane at JD Anderson Drive.
- Pineview Drive: Add a northbound left turn lane and signalize if warrants are met.
- Briarwood Street: Add a northbound left turn lane and a southbound left turn lane.
- West Run Road: Add turn lanes to all approaches.

RIDDLE AVENUE IMPROVEMENT AREA



US 19 (Holland Avenue) Transportation System Management (TSM) Improvements – Map Location #26

Recommended improvements for the corridor reflect maintenance of the current general two-lane route, and supplementing the route with center left turn lane from east of DuPont Road through Park Avenue. The center left turn lane is recommended over public street intersection turn lanes because of the short blocks and numerous driveways through the commercial district.

Redesign of the curve at Park Avenue to form a T-intersection was considered. Based on the turning movements, however, the current configuration where the Holland Avenue traffic does not stop is recommended. Minor adjustments to the intersection are recommended to improve sight distance. With the proximity of the adjacent uses, and difference in elevation of the uses relative to the road, the revisions to the design to improve the curve design would be minor.



US 19 (HOLLAND AVENUE) CORRIDOR IMPROVEMENT AREA

NON-MOTORIZED SYSTEM IMPROVEMENTS – TIER 1 AND TIER 2

Table 30 lists the recommended improvement projects for the non-motorized network. The table provides the project type, a description of project, the technical evaluation score, and the estimated cost associated with each project. The final list of non-motorized

TABLE 30: NON-MOTORIZED SYSTEM IMPROVEMENT PRIORITIES

Map Location	Alternative	Preliminary Scoring	Total Estimated Cost of Alternative	Prioritization Tier
33	Provide enhanced pedestrian crossings along S. University and Beechurst	34	\$200,000	●
26	Install sidewalks on Willowdale Rd.	32	\$506,000	●
34	Create grade-separated pedestrian crossing at Grumbain's Island.	32	See Roadway Project #9	●
20	Trail to connect White Park to S. University Park/Caperton Trail.	30	\$504,000	●
21	Bike-ped connection from Krepps Park to Mon River Trail	30	\$207,000	●
8	Include bike-ped facilities in West Run Road corridor	30	\$250,000	●
27	Connect Grant Ave to Riverview Dr.	30	\$51,100	●
28	Enhance pedestrian connection between WVU campuses by improving existing sidewalks along University Ave. (assumes replacement/installation of sidewalk on one side of the road)	30	\$415,000	●
35	Provide pedestrian overpass at Mon Blvd and Patteson Dr.	30	\$749,000	●
36	Provide enhanced pedestrian crossings from CBD to Riverfront Park - Pleasant St., Walnut St., Foundry St.	30	\$100,000	●
29	Improve pedestrian access to the new MLTA depot (e.g., sidewalks along US 19)	28	\$1,011,000	●
30	Complete sidewalks along Dorsey Ave. (does not inc. portion with existing sidewalks)	28	\$842,700	●
1	Add bike lane/paved shoulders along S. University Ave., Green Bag Rd, and Hartman Run Rd.	26	\$3,125,000	●
31	Improve pedestrian access along Van Voorhis Rd. (partially through WVU property?)	26	\$1,483,000	●
32	Add sidewalks along WV 7 east from Darst St. to the I-68 Interchange.	26	\$1,079,000	●
9	Include bike-ped facilities along possible 705 Connector.	26	Included in Roadway Cost Estimate	●
10	Add sidewalks and/or paved shoulders along Falling Run corridor (Connecting Beechurst Ave. and WV 705)	26	Included in Roadway Cost Estimate	●
16	Construct bridge from Deckers Creek Trail to Morgantown High School	26	\$665,000	●
37	Provide pedestrian overpass at Patteson and Laurel St.	26	\$499,000	●
38	Provide enhanced pedestrian crossing along Patteson and Chestnut Ridge.	26	Included in Roadway Cost Estimate	●
39	Enhance pedestrian crossings on WV 7 from Darst Rd to I-68 with connections to adjacent neighborhoods.	26	\$100,000	●
14	Extend Cheat Lake Trail to Point Marion, PA.	24	\$455,000	●
23	Trail to connect White Park south to Dorsey Knob Park and Wal-Mart at I-68 interchange.	22	\$1,008,000	●
2	Add bike lane/paved shoulder from Cheat Lake to Mileground Rd via CR 857 and new Industrial Access Rd. Do this alternative OR #3. (Portion on Industrial Access Road will be included in Roadway Cost Estimate)	22	\$1,260,000	●
3	Add bike lane/paved shoulder from Cheat Lake to Mileground Rd via CR 857 and CR 73/12. Do this alternative OR #2.	20	\$1,714,000	●
4	Add bike lane/paved shoulder connecting Deckers Creek Trail (at Marilla Park) to Tyrone Rd. area via Dug Hill Rd.	20	\$1,714,000	●
11	Add sidewalks and/or paved shoulders along Mileground Rd.	20	\$857,000	●

TABLE 30: NON-MOTORIZED SYSTEM IMPROVEMENT PRIORITIES

Map Location	Alternative	Preliminary Scoring	Total Estimated Cost of Alternative	Prioritization Tier
24	Create new trail/path along west side of the Mon River (WV 100 and CR 53).	20	\$5,040,000	
5	Improve shoulders along Mon Blvd from Patteson to Star City Bridge.	18	\$488,880	
12	Add sidewalks and/or paved shoulders along Bakers Ridge Rd.	18	\$1,310,000	
13	Add sidewalks and/or paved shoulders along Hwy 119 North.	18	\$1,159,200	
25	Create rail-trail to the west (in vicinity of Mason Dixon Hwy).	18	\$6,552,000	
6	Add bike lane/paved shoulder along CR 119/3.	16	\$907,000	
7	Add bike lane/paved shoulder along Tyrone Road.	16	\$2,218,000	
15	Extend Cheat Lake Trail to Preston County (with link to Coopers Rock State Park).	16	\$5,040,000	
19	Create and/or add parking at Deckers Creek Trail trailheads. Cost estimate is cost per 10 parking spaces.	14	\$3,900	
40	Improve bike-ped access to/through new University Town Center shopping area (and future residential area). Assumes 2 miles of sidewalk leading up to the development.	12	\$674,000	
41	Install bike racks at important origins and destinations			Throughout Planning Period
42	Renew and improve street lighting throughout the city of Morgantown			Throughout Planning Period
43	Upgrade/replace dangerous sidewalks and install sidewalks where there are gaps in the sidewalk network.			Throughout Planning Period
44	Install Share-the-Road signage throughout the county.			Throughout Planning Period

^{1-7,11-13} Bike lane/paved shoulder cost estimate assumes 5' shoulder on both sides of road. Based on 2006 costs for a project in Brighton, PA.

¹⁴ Cost per mile based on Mon River Trail Conservancy estimates. Assumes right-of-way already secured.

¹⁵ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder.

¹⁶ Assumes bridge begins at end of Edgewood Street.

¹⁹ Based on a 2005 WVDOT Transportation Enhancement project for a gravel parking lot at a trailhead.

^{20,23} Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder.

²¹ Cost is based on a BOPARC estimate. Agency hopes to piggyback on installation of utility line.

²⁴ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder. Assumes right-of-way costs for urban areas (25%)

²⁵ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder. Assumes right-of-way costs for rural areas (1.5%)

^{26-32, 43} Based on 2006 construction costs.

²⁸ Sidewalk already exists along one side - no right-of-way required.

⁴¹ Cost of bike racks/lockers obtained from Pedestrian and Bicycle Information Center based on projects in the US.

⁴⁴ Cost of sign obtained from Pedestrian and Bicycle Information Center based on projects in the US.

Legend

- Tier 1 Project (Higher Priority/Short Term Implementation)
- Tier 2 Project (Moderate Priority/Moderate Term Implementation)
- Tier 3 Project (Lower Priority/Longer Term Implementation)

transportation projects was developed through two steps:

1. By matching non-motorized projects with appropriate roadway alternatives included in the cost-constrained roadway element.
2. By ordering the remaining non-motorized projects based on the scoring results.

Non-motorized projects have not been divided into Fundable Improvements Plan and Future Needs Plan lists. It is a recommendation of the local transportation planning process that an additional \$250,000 per year, relative to current levels, be focused on non-motorized system improvements. At this commitment, approximately one mile of additional trail or one mile of sidewalk on either side of a road would be able to be constructed.

Descriptions of the projects included in the Fundable Improvements Plan for roadways and the Tier 1 and Tier 2 non-motorized system improvements are provided in the following sections and the locations are displayed in Figure 26.

Enhanced Pedestrian Crossings along South University-Beechurst – Map Location #33

This project will address pedestrian crosswalk deficiencies by painting crosswalks at intersections or repainting crosswalks as necessary, installing pedestrian signals on traffic signals that lack them, and re-timing pedestrian signals as necessary. Raised crosswalk applications were reviewed relative to the estimated vehicle operating speeds. The speed limits in the corridor, and resulting freeflow operating speeds, would be inconsistent with the raised crosswalk concept and use of a raised crosswalk could result in a travel hazard.

At appropriate non-intersection locations, the MPO and the WVDOT could evaluate the possibility of installing median refuges to allow pedestrians to cross the roadway halfway and use the median to wait for traffic to clear in the other direction. Within Morgantown, the median refuge will likely have very limited application due to the restricted right-of-way availability for construction of a median of a width appropriate for a refuge.

The section of this project on Beechurst between 8th Street and Deckers Creek can be accomplished through the roadway improvement project proposed for the corridor.

Install Sidewalks on Willowdale Road – Map Location #26

In order to provide pedestrian access from nearby residential areas to WVU, it is recommended that sidewalks be constructed on both sides of Willowdale Road from approximately Melrose Street to Chestnut Ridge Road. The length of the project is approximately three-quarters of a mile.

Connect White Park to the Caperton Trail – Map Location #20

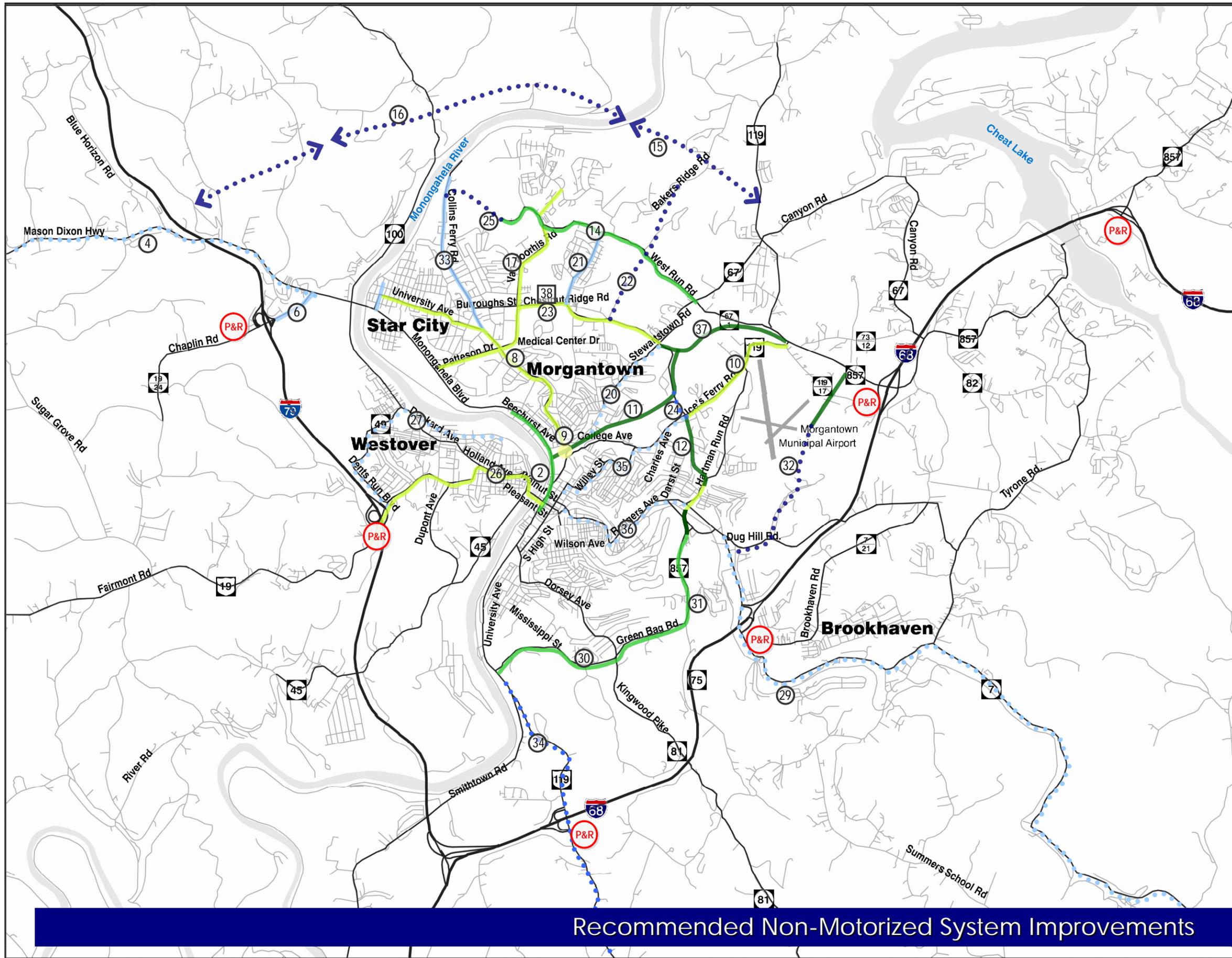
The purpose of this project is to provide a safe connection between residential areas, parks, and trails in the area. The connection will require using a combination of on-street routing, dedicated bike-ped paths, and possibly a grade-separated crossing over South University Avenue. Following development of the connection users will be able to access BOPARC's South University Avenue Park by via the Caperton Trail.

Connect Krepps Park to the Mon River Trail – Map Location #21

The purpose of this project is to provide a safe connection between residential areas, parks, and trails in the area. In Krepps Park, the trail will follow a creek that runs north-northwest through the park to Star City. The project can be coordinated with the installation of a planned new sewage line in the park. The final portion of the trail from the north end of the park to the Mon River Trail may involve some on-street routing.

Bicycle and Pedestrian Facilities in the West Run Corridor – Map Location #8

This project will ensure that bicycles and pedestrians are accommodated in the West Run Road transportation corridor and an additional connection to the Mon River Trail is provided. As part of the recommended roadway projects a bike trail is proposed along one side of the road.



- Legend**
- Fundable Roadway Improvement Plan Elements**
- Roadway Corridor Improvements**
- - Management Improvement in Existing Corridor
 - - Existing Corridor Expansion
 - - New Facility
 - P&R - Park and Ride Lot (Addition/Expansion)
- Multimodal Corridor Improvements**
- - Management Improvement in Existing Corridor
 - - Existing Corridor Expansion
 - - New Facility
- Future Needs Plan Elements**
(In Addition to Fundable Plan Projects):
- - TSM Project
 - - Existing Corridor Expansion Project
 - - New Facility Project
- Project Number (See Description in Table)**
- 10 - Roadway Concept

Recommended Non-Motorized System Improvements

The roadway component (Map Location #14) of the long-range plan includes an expansion of West Run Road to two lanes with a center turn lane or intersection turn bays from Van Voorhis Road to Stewartstown Road. The extension of West Run Road to Collins Ferry Road as multimodal corridor was included in Future Needs Plan, but it is recommended that the Funded element of the plan include development of a non-motorized corridor.

Connect Grant Avenue to Riverview Drive – Map Location #27

In order to provide pedestrian access between the WVU Downtown and Evansdale campuses, a sidewalk will be constructed to connect Grant Avenue to Riverview Drive. The length of the sidewalk is approximately 0.15 miles.

Enhance the Pedestrian Connections between WVU campuses – Map Location #28

Due to the lack of sidewalk or the poor condition of existing sidewalk along University Avenue pedestrian flow along the corridor is poor. It is recommended that sidewalks along the corridor between Patteson Drive and College Avenue be repaired or replaced. The project includes installing sidewalk on one side of University Avenue between Oakland Street and Evansdale Drive where there is currently a gap in the sidewalk network. The length of the project is approximately 1.5 miles.

Grade-Separated Crossing: Monongahela Boulevard/Patteson Drive – Map Location #35

The recommended project encompasses construction of a grade separated pedestrian crossing south of the Monongahela Boulevard/Patteson Drive intersection. The purpose of the pedestrian crossing is to improve safety for WVU students, faculty, and staff crossing from the Creative Arts Center to the parking lot at the Coliseum.

Improve Pedestrian Access to the New Mountain Line Transit Authority Transit Center – Map Location #29

Sidewalks are recommended for both sides of US 19 from Mall Road to Holland Avenue (the MLTA transit center is located at DuPont Road and US 19) in order to facilitate pedestrian access to the transit routes that serve the center. The length of the project is approximately 1.5 miles.

Complete Sidewalks along Dorsey Avenue – Map Location #30

Dorsey Avenue serves as a pedestrian connection to local schools and shopping areas, yet sidewalks in the corridor are limited. The Regional Transportation Plan recommends that sidewalks be constructed on at least one side of Dorsey Avenue from West Virginia Avenue to Green Bag Road. A short section from South University Avenue to High Street is also included in the project (the section from High Street to West Virginia Avenue has sidewalks on both sides of the street). The length of the project is approximately 1.25 miles.

Construct Bike Lane/Paved Shoulders along Green Bag Road and Hartman Run Road – Map Location #1

The plan recommends paving the shoulders along Green Bag Road and Hartman Run Road to provide a space for bicyclists, designated as either a bicycle travel lane or as a pull-off lane in case the bicyclist needs to leave the regular travel lane. This route will provide bicyclists with access to destinations around the outskirts of Morgantown without having to travel through downtown. The plan assumes a four-foot shoulder on both sides of the road for a length of approximately 5.5 miles. Construction of the non-motorized facilities would be completed as part of the recommended roadway improvements.

Install Sidewalks on Van Voorhis Road – Map Location #31

The plan recommends installing sidewalks along at least one side of Van Voorhis Road from Chestnut Ridge Road to the Mon River Trail. Adding sidewalks will improve pedestrian access to nearby residential areas and commercial areas, the WVU Medical Center, and the Mon River Trail. The length of the project is approximately 2.2 miles.

Add Sidewalks along WV 7 East – Map Location #32

To improve pedestrian access from the nearby residential areas to the commercial areas along WV 7, sidewalks are recommended along both sides of WV 7 from Darst Street to the I-68 interchange. The length of the project is approximately 1.6 miles.

Include Bicycle and Pedestrian Facilities in the WV 705 Connector – Map Location #9

This project will improve bicycle and pedestrian accommodations in the WV 705 Connector project corridor. A bicycle and pedestrian trail is recommended one side of the WV 705 Connector project.

Include Bicycle and Pedestrian Facilities along the Falling Run Corridor – Map Location #10

This project improves bicycle and pedestrian accommodations in the proposed Falling Run corridor transportation project. As a part of the project to connect Beechurst Avenue to WV 705, a sidewalk will be constructed on one side of the road and a bicycle and pedestrian trail will be built on the other side of the road.

Connect Deckers Creek Trail to Morgantown High School – Map Location #16

A short 12-foot-wide trail bridge is recommended for construction in order to connect MHS to the Deckers Creek Trail. The new trail bridge will provide additional access to the trail from the surrounding neighborhoods.

Construct a Pedestrian Overpass at Patteson Drive and Laurel Street – Map Location #37

This project would provide a pedestrian connection between the WVU Evansdale Campus, Krepps Park, and the Suncrest neighborhood. This intersection was the location of between 10 and 14 crashes in 2002 and 2003; however, the pedestrian volume here is much lower than the pedestrian volume at the intersection of Mon Boulevard and Patteson Drive. It is recommended that a detailed warrant analysis be completed before moving forward with this project.

Provide Enhanced Pedestrian Crossings along Patteson Drive and Chestnut Ridge Road – Map Location #38

At appropriate non-public street crossing locations, the MPO and the WVDOT should evaluate the possibility of installing median refuges to allow pedestrians to cross the roadway halfway and use the median to wait for traffic to clear in the other direction.

Enhance Pedestrian Crossings on WV 7 from Darst Street to I-68 – Map Location #39

The purpose of this project is to provide pedestrian connections to residential neighborhoods adjacent to the shopping and commercial areas along WV 7. This project addresses pedestrian crosswalk deficiencies by painting crosswalks at intersections or repainting crosswalks as necessary, installing pedestrian signals on traffic signals that lack them, and re-timing pedestrian signals as necessary.

Extend Cheat Lake Trail to Point Marion, Pennsylvania – Map Location #14

An extension of the Cheat Lake Trail from its current northeastern terminus off Eastlake Drive to Point Marion, Pennsylvania will provide an additional link in the regional trail system. At Point Marion, trail users will be able to connect to the Mon River Trail and travel south into Monongalia County and beyond. The length of the trail project is approximately 5.5 miles. This project will require coordination with Fayette County, Pennsylvania.

Connect White Park to Dorsey Knob Park and Wal-Mart at I-68 Interchange – Map Location #23

The purpose of this project is to connect moderate to moderate-high density residential areas (north of Mississippi Street) with recreational, shopping, and employment areas to the south. The project will require a combination of different types of facilities including on-road routing, paths through recreational areas, paved shoulders, and off-road trails. The project corridor is approximately 2 miles in length.

Construct a Bike Lane/Paved Shoulder from Cheat Lake to Mileground Road via CR 857 and CR 73/12 – Map Location #3

The paved shoulder serves as a bicycle travel lane or as a pull-off lane in case the bicyclist needs to leave the regular travel lane. The plan recommends construction of paved shoulders from the CR 857 bridge over Cheat Lake, then along CR 73/12 to the intersection with CR 857 at the bottom of Easton Hill. The approximate length of the project is 3.4 miles.

Construct a Paved Shoulder from Cheat Lake to Mileground Road via CR 857 – Map Location #2

This is an alternative to the above project. Paved shoulders would be constructed on CR 857 from Cheat Lake to South Pierpont Road (the segment South Pierpont Road to US 119 already has a paved shoulder on both sides of the road). The approximate length of the project is 2.5 miles. This alternative also includes an extension via the Airport Industrial Access road (roadway Project #32). The roadway extension project was included in the Future Needs Plan, but it is recommended that the non-motorized element of the extension be considered in the Fundable Improvements Plan.

Connect Deckers Creek Trail to the Tyrone Road Area – Map Location #4

From Marilla Park it is recommended that paved shoulders be added to WV 7, Dug Hill Road, and South Pierpont Road to make a connection to Tyrone Road. This connection will provide residents in the eastern part of the county with access to local parks and the regional trail system. The length of the project is approximately 4 miles.

Construct Sidewalks and/or Paved Shoulders along Mileground Road – Map Location #11

Depending on the availability and cost of right-of-way, sidewalks and/or paved shoulders are recommended to be constructed along Mileground Road. The purpose of the project would be to provide pedestrian and bicycle access to the commercial and residential areas along the corridor. The extent of the project is from WV 705 to CR 857 and is nearly 2 miles in length and would be coordinated with the recommend roadway TSM improvements.

Create a New Trail/Path along the West Side of the Mon River – Map Location #24

A proposed bicycle and pedestrian corridor, roughly following WV 100 and CR 53 from Westover to the state line would provide non-motorized travel options to residents on the west side of the Monongahela River. As the railroad right-of-way in the corridor is heavily used for freight movement, the project may include a combination of on-road routing, paved shoulders, and off-road trails. The length of the corridor is approximately 10 miles.

TRANSIT SYSTEM IMPROVEMENTS

OVERVIEW

The majority of the transit system improvement alternatives focused on two primary needs. The first need is to provide increased service within the existing transit service area. Ideas discussed relative to enhancing service levels within the current coverage area included:

- Extending service hours beyond the current 6:00 PM service day to 10:00 PM or 11:00 PM.
- Increasing the frequency of service from the current one hour frequency to 15 to 30 minute frequency, depending on the route.
- Increasing service hours on the weekends.

The second primary transit need in Monongalia County is providing transit service to areas that are not currently served by transit or are provided low levels of transit service.

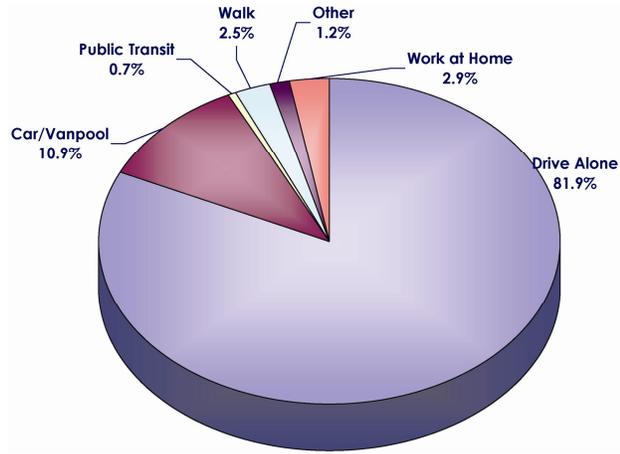
As transit funding is very limited in the area, priorities between extending/ enhancing service within the current limits will need to be evaluated relative to extending service to a greater portion of the county. A detailed assessment of the transit alternatives is beyond the limits of analysis in the RTP. As part of the plan development, however, discussions with MLTA about priorities in these general areas and ideas being evaluated by MLTA were held. The results of the discussions and a cursory evaluation of the two general improvement concepts resulted in the following recommendations:

- Identify from the range of existing service area improvements identified and discussed with MLTA, a reasonable concept to promote in the RTP. MLTA identified a range of alternatives in the current service area alternatives that ranged from maintaining the current level to what MLTA staff defined as a Good Service Concept. The Good Service Concept reflected 15 minute service headways on a core group of routes and extended hours for evening and weekend service. The range of additional annual cost estimates for the service options was from no additional dollars in the current service plan (no adjustment for inflation) to approximately \$3.25 million per year in additional operating and capital costs.

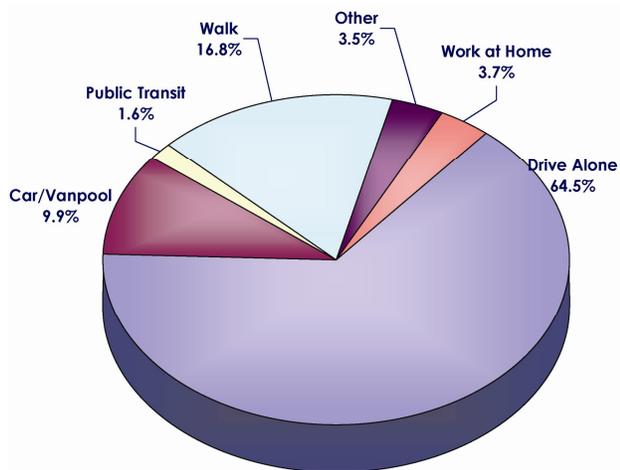
The range of alternatives is documented in Table 31.

- Identify locations within the RTP study area, but outside the current service area where it would be desirable and warranted to provide a greater level of fixed route service. Examples of these areas would include extension of service to proposed commuter park-and-ride lots along I-68 and I-79 extension of service to western portions of the Cheat Lake planning district and, to portions of the Stewartstown planning district. Extension areas discussed throughout the regional plan development process are displayed in Figure 27.
- Identify locations in the current service area where additional service mileage and or frequency are needed to provide a baseline service level. These locations would include known higher intensity development areas such as the Cheat Neck area, the Star City area and residential development areas adjacent to West Run Road. Fixed route service improvement areas discussed with MLTA are displayed in Figure 29.
- Have the MPO and the WVDOT work with MLTA on completing a comprehensive operations analysis of the transit services and needs, including development and assessment of service plans.

As part of the funding analysis, it was concluded that a reasonable level of additional transit system funding to provide incorporate into the RTP was \$575,000 per year. Support for this level of additional funding allocation, while not identified for specific projects, is intended to demonstrate the local support for increasing transit services as a means of addressing growing VMT and congested miles in the region. Increasing transit use (ridership) will require a combination of extending the service area and increasing frequency and hours of service within the current service area. Support of the \$575,000 per year additional funding level does not provide for the highest level of coverage in the range of alternatives, but rather reflects a moderate level of additional cost based on the range of alternatives reviewed.



West Virginia Mode of Travel to Work (2000)



Morgantown Mode of Travel to Work (2000)

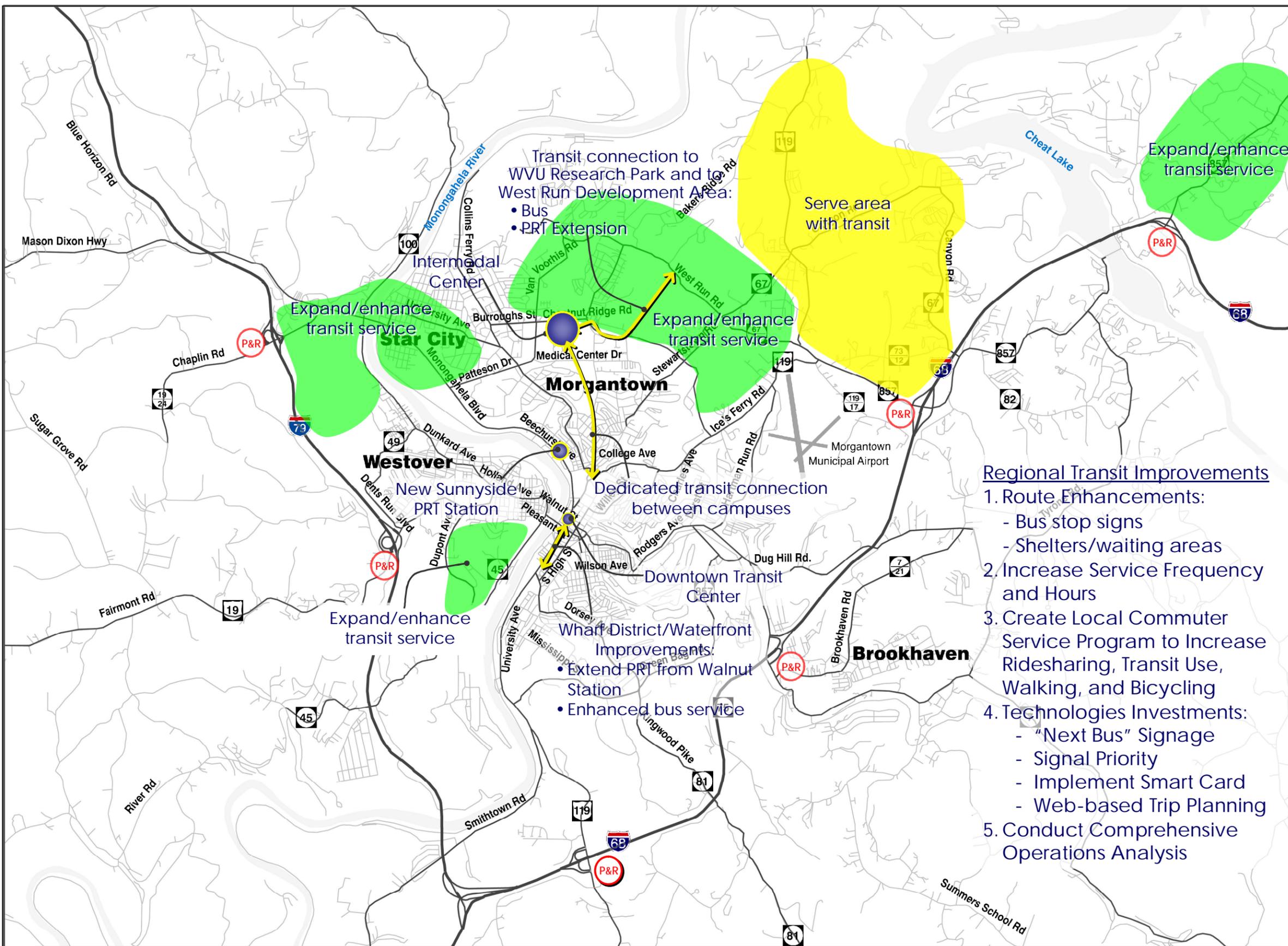
COORDINATION PUBLIC TRANSIT-HUMAN SERVICES TRANSPORTATION PLAN

SAFETEA-LU legislation contains a provision focused on streamlining area transit services and improving communication by requiring that the public transit plan be coordinated with human services organizations transportation plans/ programs. The human services transportation coordination provisions aim to improve transportation services for persons with disabilities, older adults, and individuals with lower incomes by ensuring that communities coordinate transportation resources provided through a broad range of federal programs. Coordination is intended to enhance access to transportation services, minimize duplication of services between agencies, and reduce the costs of providing services in the region.

Table 31
Range of Transit Service Enhancements Evaluated in the Transportation Plan Process

Service Level Element	Description	Quantity/Service Hours Per Year	Service Title								
			Existing Service	Existing Plus	Kid Friendly	Senior Friendly	Small Urban	Worker Friendly	Good Service		
			Annual Cost	\$150K Package Running Total	\$310K Package Running Total	\$575k Package Running Total	\$1.08 Million Running Total	\$2.1 Million Running Total	\$3.25 Million Running Total		
Current Service	As Is	50,000+ hours	\$2,640,000								
Bus Stop Signage	Bus Stop Signage Program - Includes purchase, installation and annual maintenance cost	15 lighted schedules and stop signs, installed & maintained	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	
Bus Stop Shelters	Bus Stop Shelter Program - Purchase, installation and maintenance	3 shelters per year	\$20,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	
Service Improvements	improved weekday and limited Saturday service per year - repair weekday service, add limited 1:00 Purple Line Run Added 1:00 Blue Line Added Full Saturday Red Line Service	2,200 hours of additional service	\$100,000	\$150,000							
	Full Saturday Gold Line Service	200 hours									
	Full Saturday Tyrone Service	250 hours									
	Full Saturday Cassville Service	385 hours									
	Full Saturday Purple Service	280 hours									
	Full Saturday Blue Service	280 hours									
Full Saturday Service	Provides 3,000 hours of Saturday Service per year identical to week-day service, all routes	3,000 hours	\$135,000		\$185,000	\$185,000	\$185,000	\$185,000	\$185,000	\$185,000	
Limited additional evening service	Green Line evening service, 6 days per week, 6 pm to 10 pm, Monday through Saturday	1250 hours	\$56,250		\$241,250	\$241,250					
Limited Sunday Service	Provides 1,500 hours of Sunday service, 10 am through 8 pm	1,500 hours	\$67,500		\$308,750						
	500 hours of Green Line Service Service										
	500 hours of SouthSide service										
Full Sunday Service	Provides full, day-time service on Sunday, no evening service	7,400 hours	\$333,000			\$574,250	\$518,000	\$518,000	\$518,000	\$518,000	
Full Evening Service	Provides full evening service, Monday through Sunday, 6pm to 11 pm	12,600 hours	\$567,000				\$1,085,000	\$1,085,000	\$1,085,000	\$1,085,000	
30 Minute Headways	Provides Full Service, 7 days per week, 6:00 am through 11:00 pm with 30 minute frequency on needed routes	12,600 hours	\$1,085,000					\$2,170,000	\$2,170,000	\$2,170,000	
Good Service	Limited 15 minute headways (frequency) as needed, plus Full Service, 7 days per week, 6:00 am through 11:00 pm with 30 minute frequency on needed routes	12,600 hours	\$1,085,000							\$3,255,000	
				Total hours this package: 94,900							

Source: Mountain Line Transit



Legend

- █ - Transit Improvement
- █ - New Facility/Service
- P&R - Park and Ride Lot at Interchange

Regional Transit Improvements

1. Route Enhancements:
 - Bus stop signs
 - Shelters/waiting areas
2. Increase Service Frequency and Hours
3. Create Local Commuter Service Program to Increase Ridesharing, Transit Use, Walking, and Bicycling
4. Technologies Investments:
 - "Next Bus" Signage
 - Signal Priority
 - Implement Smart Card
 - Web-based Trip Planning
5. Conduct Comprehensive Operations Analysis

Transit System – Recommended Expansion Improvements



MLTA, the Greater Morgantown MPO, the county, and local human service agencies are currently developing a human services transportation plan for the Monongalia County area. As development of the plan is a joint effort including agencies involved with the Regional Transportation, the transit element of the Regional Transportation Plan and the human service transportation plan will be coordinated consistent with the federal legislation.

WVU PERSONAL RAPID TRANSIT

Transit needs in the region also includes the PRT system. As the system is operated by the university, analysis of the needs and costs of improvements are not generally covered in the Regional Transportation Plan. Further discussions must also take place with WVU PRT to determine their plans or interest in maintaining, upgrading and/or extending the PRT system in the future.

DAILY TRAFFIC OPERATIONS – FOLLOWING PLAN IMPLEMENTATION

Corridor daily traffic operations following implementation of the roadway capacity improvement projects included in the Fundable Improvements Plan are displayed in Figure 28.

IMPLEMENTATION PHASING

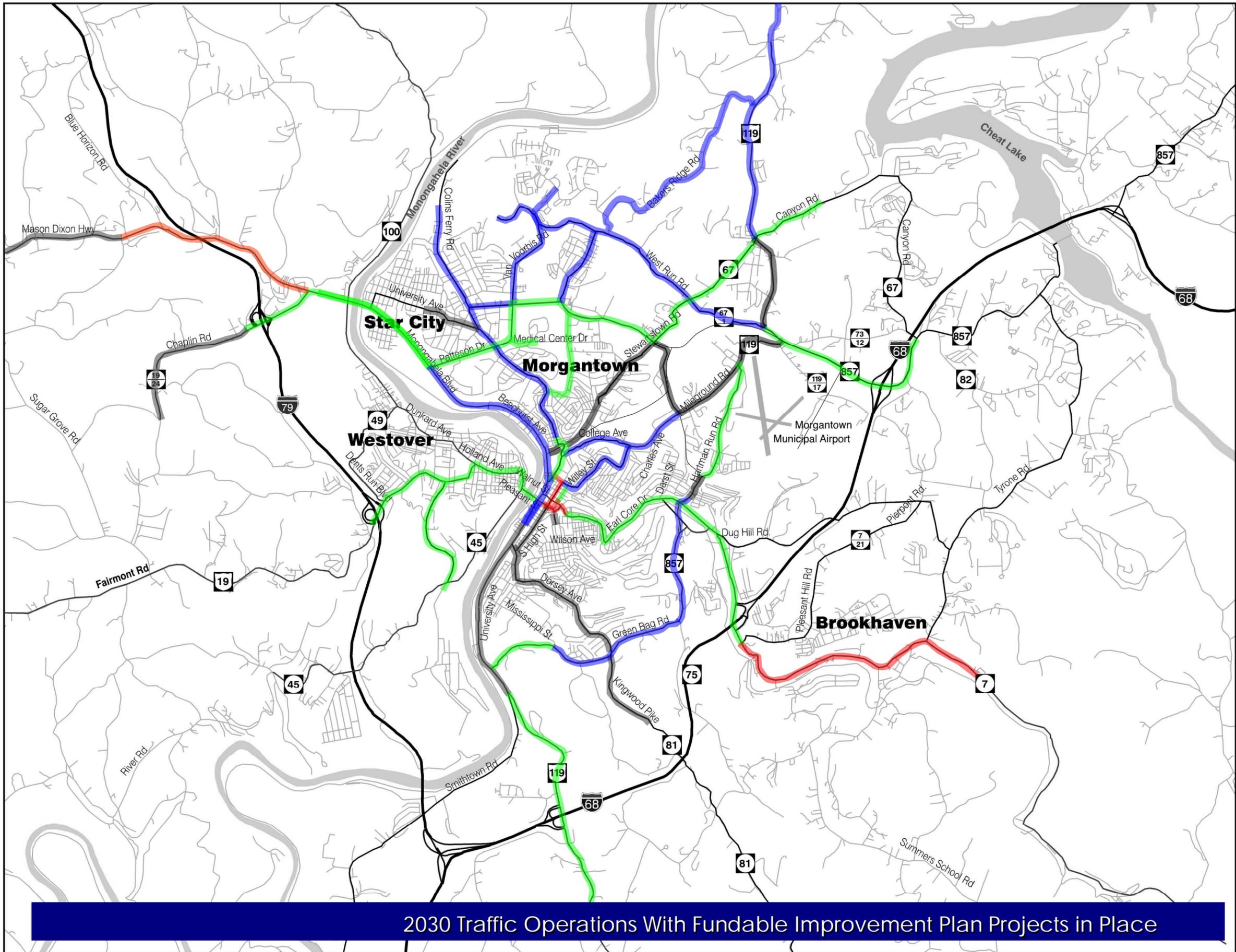
The recommended roadway improvement plan has been divided into the following categories:

- **Committed Projects:** Committed projects are included within an approved city capital improvement plan or the WV DOT state implementation program. These projects have been discussed publicly through previous long range planning efforts and/or annual budgeting discussions at the city or state levels.
- **Short-Term Projects:** These are defined as transportation system improvements that address an immediate or relatively near term need such as traffic volumes in excess of the current capacity, crash hazards, improvement needs due to land use changes, etc.

- **Mid- to Long-Term Projects:** The list of these projects include transportation system improvements that address:
 - Current needs along lower volume corridors or subareas of the region that require additional through lanes.
 - Needs identified based on the level and location of development assumed within the 25-year planning period.

This portion of the improvement list is also differentiated from the short-term list based on the timing of the need for action and, to a certain extent, level of funding assumed to be available annually in the region. It has been assumed that the level of funding available in Monongalia County in any one year could be highly variable. On average, approximately \$9.5 million per year would be available to fund transportation improvements.

- **Needs Beyond the 25-Year Funding Capacity (Future Needs Plan):** Federal guidelines require that the project list included in the MPO regional transportation plan be limited to those projects that could be funded using the a reasonable level of public and/or private sector funding available to the study area over the 25 years of the plan. Over the planning period, approximately \$230 million is projected to be available for improvement projects within the region. Transportation improvement needs in county far exceed the projected budget. In the planning process there are two general methods of addressing identified improvements that do not fit within the funding constraints in the planning period. They are:
 - Document the concept(s) in the Alternatives Analysis, but not in the Recommended Multimodal Plan section.
 - Establish a Beyond 25-Years category (Future Needs Plan) of improvements for documentation purposes. These projects are those that have been identified as needs, but for which funding sources have not been identified.



Morgantown
Area Transportation Study

Legend

- Level of Service A or B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

2030 Traffic Operations With Fundable Improvement Plan Projects in Place



For the Greater Morgantown MPO RTP, the alternative of documenting a Future Needs Plan was selected. The purpose of selecting this alternative was to ensure that the needs of the region are given proper emphasis and that the recommended plan would include additional projects if additional funding were secured. Projects included in the Future Needs Plan are displayed in Figure 29 and documented in Table 29.

Table 32 documents the recommended implementation phasing for roadway improvement projects in the Morgantown MPO area.

Improvement implementation for the non-motorized network and the transit system will require updating state funding allocation practices to address the importance that programs that focus on reducing motor vehicle use provide in the region and throughout the state. Funds recommended to implement the non-motorized and transit system improvements would require reallocation of federal dollars that come to the state in STP and CMAQ programs. While these funds can by law be allocated to non-motorized system improvements and to selected transit capital and operating programs, within the state they have traditionally been allocated to roadway projects because a greater need could be demonstrated.

On a statewide basis, prioritization of limited funds to roadway maintenance and expansion is likely the logical choice as the vast majority of travel is by auto or truck. In metropolitan areas, however, the emphasis on reducing the level of growth in VMT needs to be raised and re-allocation, or flexing, dollars to the non-motorized and transit system begins to address the desired emphasis.

Locally, the commitment to transit and non-motorized travel relative to the state as a whole has been demonstrated through higher than statewide average use of these modes for travel to work. If it can be assumed that non-work trips follow a similar pattern, it could be concluded that residents, workers and visitors to Morgantown and Monongalia County are greater supporters of transit and non-motorized travel. Through increasing the funding allocation to transit system improvements/expansion and to maintenance/expansion of the non-motorized system, the potential to

reduce the growth in vehicle travel will increase.

FUNCTIONAL CLASSIFICATION

As noted in the Existing condition section of this document, the current allocation/ definition of routes and route mileage in the urban area by functional classification category does not reflect the general mileage percentages by class for the state. While it is not a requirement that the percentage match or even very closely reflect the statewide average, it is generally expected that the percentages observed in each metro area would somewhat reflect the statewide average, unless there is a localized condition that results in a different mix. In comparing the roadway system in Morgantown with other metropolitan areas in the state, it is difficult to identify a specific reason why there would be much deviation from the typical level by classification. As previously noted, the percentage of Interstate mileage will likely be greater in Morgantown than in other metro areas because the junction of two Interstates occurs in Morgantown. Other than the Interstate mileage, there is not a specific condition that is unique in Morgantown-Monongalia County that would suggest that the percent of system miles by class should be much different than the statewide average. As a result of the review of the current condition relative to the state and relative to the functional classification definitions, a revised classification map was developed for the metropolitan area. The recommended functional classification map is displayed in Figure 29.

Following updating the classification system, the distribution of roadway mileage by class will reflect the information in Table 33.

TABLE 32: RECOMMENDED FUNDABLE IMPROVEMENT PLAN
PROJECT IMPLEMENTATION

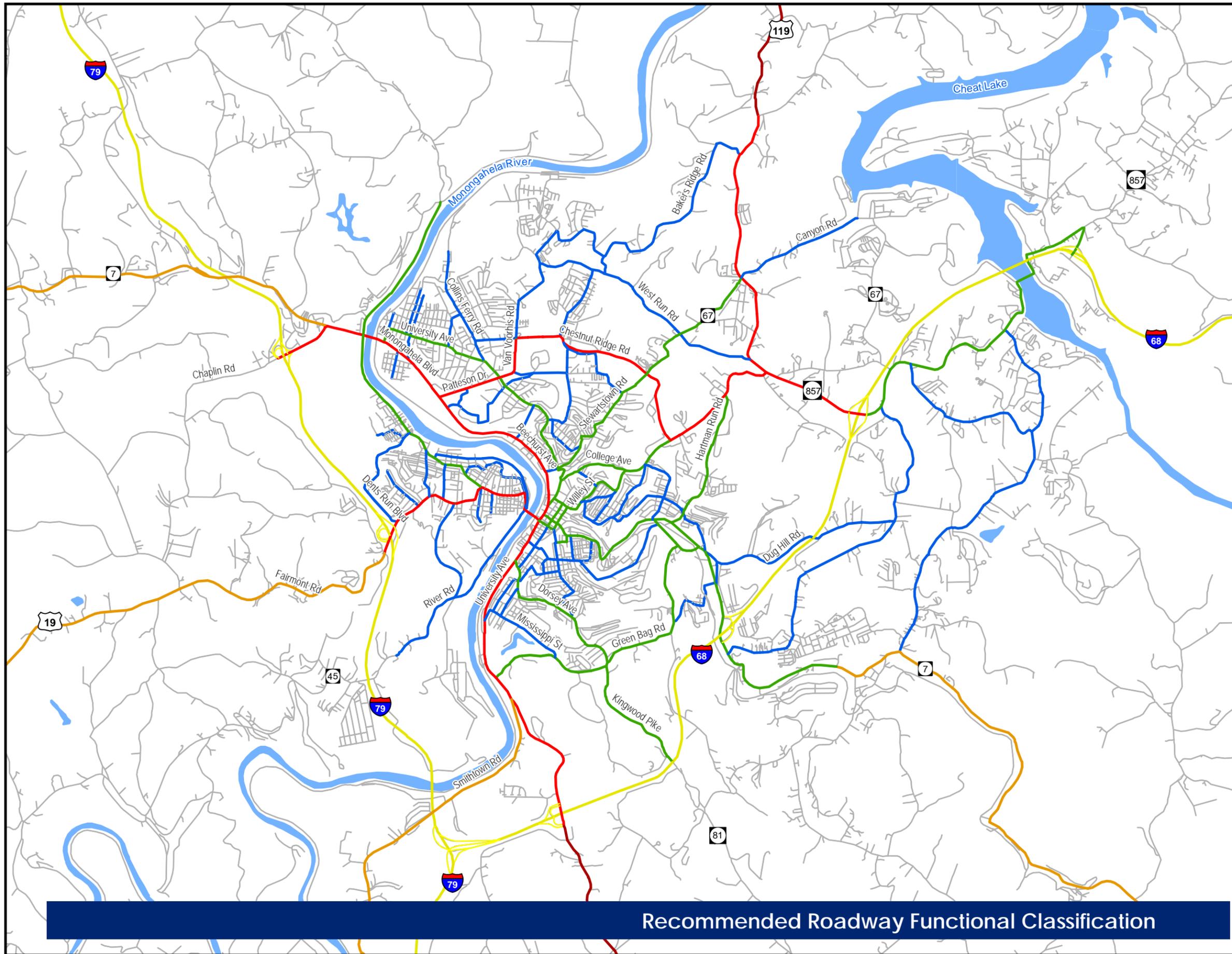
Project/Program By Period			
Short-Term	Mid-Term	Long-Term	
Beechurst Avenue 5-Lane Expansion Engineering/ROW  2 \$5,300,000	Beechurst Avenue 5-Lane Expansion ROW/Construction  2 \$47,800,000	Collins Ferry Road TSM 33 \$2,250,000	
TIP Projects \$133,000,000	University Avenue TSM 8 \$5,000,000	Green Bag Road 2+Lane Improvements 30/31 \$9,400,000	
705 Connector  Engineering/ROW/ Construction 37 \$35,000,000	Pineview Road TSM 21 \$2,200,000	WV 705 to Hartman Run Rd. Connection (Inner Loop): 12 \$26,300,000	
Town Center Road (Osage Road) TSM 6 \$100,000	West Run Road 3-Lane Expansion Construction 14 \$8,700,000		
West Run Road 3-Lane Expansion Engineering/ROW 14 \$970,000	Falling Run Corridor  Construction 11 \$46,600,000		
Falling Run Corridor Engineering/ROW 11 \$2,000,000	US 19 (Holland Avenue) TSM 26 \$6,000,000		
WV 705 (Patteson/Chestnut Ridge) TSM 23 \$1,100,000	Mileground TSM 10 \$4,270,000		
University Avenue/Grumbein's Island Grade Separation 9 \$3,450,000			
Van Voorhis Road TSM 17 \$3,500,000			
Non-motorized System Improvments \$1,250,000	Non-motorized System Improvments \$3,750,000	Non-motorized System Improvments \$1,250,000	
Transit System Improvements \$2,875,000	Transit System Improvements \$8,625,000	Transit System Improvements \$2,875,000	
TOTALS			TOTAL
TIP + Regional Plan Projects \$188,545,000	\$132,945,000	\$42,075,000	\$363,565,000
Regional Plan Projects Only \$55,545,000	\$132,945,000	\$42,075,000	\$230,565,000
	No TIP Projects These Periods		

Legend

 Period Funding Limitations Require Carry Over into Next Period

X Project map number

Note: \$133,000,000 in TIP Not Included in \$230,000,000 Improvement Estimate



- Legend**
Recommended Functional Class
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector
 - Ramp
 - Trunkline
 - Feeder
 - Local

Recommended Roadway Functional Classification



TABLE 33: RECOMMENDED FUNCTIONAL CLASSIFICATION MILEAGE VERSUS CURRENT MILEAGE

Functional Classification ¹	Existing Conditions		Recommended Conditions	
	Roadway Mileage	Percent of the System	Roadway Mileage	Percent of the System
Urban Principal Arterial System				
Interstate (including the WV Turnpike)	0	0.00%	0	0.00%
Other Freeways and Expressways	0	0.00%	0	0.00%
Other Principal Arterials	6.76	0.75%	19.5	2.17%
Urban Minor Arterial System	42.82	4.76%	31.8	3.53%
Urban Collector System	30.83	3.43%	53.1	5.90%
Urban Local System	16.29	1.81%	16.29	1.81%
Subtotal Urban	96.70	10.75%	120.69	13.41%
Rural Principal Arterial System				
Interstate (including the WV Turnpike)	32.3	3.59%	32.3	3.59%
Other Principal Arterials	35.8	3.98%	35.8	3.98%
Rural Minor Arterial System	15.8	1.76%	15.8	1.76%
Rural Major Collector System	92.9	10.32%	92.9	10.32%
Rural Minor Collector System	40.7	4.52%	40.7	4.52%
Rural Local System	561.74	62.42%	561.74	62.42%
Subtotal: Rural	779.24	86.59%	779.24	86.59%
TOTAL: Urban and Rural	875.94	97.33%	899.93	100.00%

SOURCE: West Virginia Department of Transportation, Planning and Research Division, Roadway Records and Statistics Section. PR528 – Summary of Existing State and Local Roads and Streets Mileage Report HW2395A. Charleston, WV:2000. (Includes Federal, State and Municipal mileage.) West Virginia Division of Highways 2001 "As a Matter of Fact..." URS Corporation, Inc.

Note: 1 - Urban system mileage reflects a combination of WVDOT and city-maintained mileage. Total urban mileage is greater than 2005 reported due to classification of more city-maintained miles in the Collector classification.

S

YSTEM MANAGEMENT PROGRAMS

OVERVIEW

A primary requirement of the RTP is to provide documentation of how the existing transportation system is being maintained by the responsible jurisdiction with the goal of extending the useful life of the roadways, trails, sidewalks that are in the current inventory. Integral to the process of documenting the system preservation actions is presenting information on "management" of the system including:

- Roadway pavement conditions.
- Bridge conditions.
- Congestion along roadways in the current network
- Safety along roadways in the current network.

Typically, metropolitan area management plans for each of the listed systems are developed and implemented by the state DOT, the county or the local community. For the greater Morgantown area, the vast majority of the system mileage addressed through the regional transportation plan is under the jurisdiction of the WVDOT. Thus, management systems employed by the DOT were documented and any management program gaps in the applicable systems were addressed.

SAFETY MANAGEMENT

The WVDOT developed a Safety Management System and instituted it into the operations of the Division of Highways (DOH). Through the safety management system priorities for addressing the various items within the recognized purview of roadway facility safety on the system were established. Included were items such as:

- Interagency coordination in responding to incidents/crashes and investigating the root cause of the crash.
- Data collection.
- Accident evaluation.

- Identifying accident rates, critical locations, accident type, etc.

The information collected and evaluated through the program is used to establish the parameters for the expenditure of available funds.

This Highway Safety Management (HSM) system is still being used but not in a formal manner. The cross training, the data collection accident information, etc. are being used by the DOH Safety Coordinator to establish a recommended yearly program.

Currently, the DOH is developing a Strategic Highway Safety Plan (SHSP) which will incorporate many of the features of the Highway Safety Management plan. The SHSP will be used to emphasize the following areas:

- Involvement of alcohol in an incident.
- Occupant protection.
- Lane departure.
- Emergency medical services.
- Aggressive driving.
- Highway data improvements.
- At-risk drivers.
- Commercial motor vehicles.
- Other coordinated initiatives.

Since WVDOT has responsibility of all highways other than some city streets, this information will be comprehensive for the highways and city streets within the state.

During the transition from the HSM to the SHSP, portions of both systems are being used.

PAVEMENT MANAGEMENT

The WVDOT-DOH Pavement Management System (PMS) is currently being updated and revised. Through the system implementation, pavement condition data was collected on all Interstate, US Highway, and WV State Highway signed routes in 2004. In 2006 data was collected on the National Highway System

(NHS) and the Highway Performance Monitoring System routes (HPMS).

The DOH collects the International Roughness Index (IRI), which is a measure of ride comfort, and data on pavement rutting is also collected. All data collected in 2004 and 2006 was accomplished with GPS controls which allow direct measurement of the roadway and roadside features using the GPS data. The GPS controlled pictures are taken at 0.001 mile (5.28 feet) intervals. The IRI and resulting information is collected on 0.1 mile (528 feet) intervals.

The updated system is intended to be placed in operation to provide information necessary for planning, cost estimating, prioritization, budgeting, and programming for the appropriate maintenance/renovation activities.

The information gathered for the pavement management system can also be used for several other activities within the DOH such as sign inventory, profile grade, width, offset to signs and obstructions, driveway locations, bridge widths and location, etc. They are valuable in establishing conditions at the time of the survey. This information can be used for several functions beyond the pavement management system.

BRIDGE MANAGEMENT

There are a total of approximately 6,800 bridges through the state with the WVDOT owning approximately 6,700 and cities and counties own approximately 120.

A Bridge Management System (BMS) that includes all state owned bridges, has been implemented. Through the program technical data for each bridge was collected, including:

- Structure age.
- Type of superstructure.
- Span lengths.
- Bridge width.
- Traffic volume.
- Route number on which the bridge was located.
- County in which the bridge was located.

Each of the bridges is inspected every two years (note new bridges may be on a four year cycle) and based on the condition, an updated estimate is made regarding repairs or renovations, or if appropriate an estimated cost of replacement is provided. As part of the state-wide inspection program, the DOH also inspects city and county-owned bridges.

The results of the BMP are used in reviewing and preparing the bridge portion of the annual DOH work program.

Not all components of the formal Bridge Management System as initially devised continue to be used. Primary elements in use today focus on determining the need for action relative to a specific structure. Action categories include major bridge replacement, minor bridge replacement, major bridge repair/renovation, minor bridge repair/renovation, inspection, cleaning, and painting, inspection. The needs in each category are evaluated and prioritized and the annual bridge program is established using these priorities and the availability of funds.

CONGESTION MANAGEMENT

Federal transportation legislation requires MPOs to develop and implement Congestion Management Systems (CMS) as part of the metropolitan transportation planning process (23 CFR 500). The purpose of the CMS is to provide systematic program of:

- Monitoring, measuring and diagnosing the causes of current and future congestion on a region's multimodal transportation systems.
- Evaluating and recommending alternative strategies to manage or mitigate current and future regional congestion.
- Monitoring and evaluating the performance of strategies implemented to manage or mitigate congestion.

A formal congestion management system has not be employed in the Morgantown MPO area, however, through this RTP update all of the components required to implement an informal or initiate formalization of a CMS were established and discussed through TAC, including:

1. Traffic operations thresholds for determining the need for action to

address congestion in a corridor or sector of the community.

2. A methodology for evaluating the range of potential alternatives. The two-phase alternatives analysis methodology used throughout the Regional Transportation Plan projects assessment could be used in the interim years prior to an overall update of the plan to address congestion concerns.
3. A process of determining the general prioritization for implementation of an identified locally preferred solution/recommendation for addressing a congested corridor (divided into short-term, middle-term, long-term periods of the Fundable Improvement Plan or to the Future Needs Plan).

It is recommended that the MPO develop a more formalized CMS process that incorporated many of the elements employed as part of the RTP alternatives analysis. The overall program should include the following components:

- Document specific performance measures associated with delay, corridor operating speeds, level-of-service, etc.
- Document a program for system monitoring and data collection
- Outline general congestion mitigation/management strategies for implementation.
- Employ the two-phase alternatives analysis process documented in the RTP as a means of evaluating and selecting a preferred alternative for addressing congestion in a corridor or sector of the community.
- Document a streamlined process for updating the RTP projects list at interim points in the plan update cycle.
- Schedule for review and update of the roadway system operations.

INTELLIGENT TRANSPORTATION SYSTEMS

OVERVIEW

Intelligent transportation systems (ITS) encompass a broad range of wireless and wire line communications-based information and electronics technologies focused on relieving congestion and improving traveler safety. When integrated into the transportation system's infrastructure, and in vehicles themselves, these technologies provide many of the tools necessary to address current transportation problems, particularly in the areas of safety improvements and enhanced traveler information. ITS also helps transportation officials anticipate and address future demands through an intermodal strategic approach to transportation.

ITS applies current and emerging technologies in such fields as information processing, communications, control, and electronics, into an integrated system capable of providing real-time traffic information to the traveling public. Effectively integrated and deployed, ITS technologies offer many benefits, including more efficient use of our infrastructure and energy resources, significant improvements in safety, mobility, accessibility, and productivity.

ITS is a federally supported program and was initiated with enactment of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). It continues to be supported by categorical funding through the current Federal Surface Transportation Authorization Act, SAFETEA-LU.

ITS ARCHITECTURE

It is requirement in the SAFETEA-LU legislation that each metropolitan planning area develop and maintain what is called an ITS system architecture. This architecture is a blueprint of means and methods in which the region and the state will integrate technology into the overall management of the system. Presently, an ITS architecture has not been developed for Morgantown. A statewide architecture has, however, been developed by the WVDOT and provides the similar roadmap for ITS integration throughout the state for a period of the next 20

years. When it is developed, the Morgantown area architecture will be coordinated with the plan already developed by the state.



Example – Changeable Message Sign



Pole Mounted Closed Circuit Television Camera

The statewide architecture has been developed through a cooperative effort by the state's transportation agencies, covering all modes and all roads in the state. The architecture represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the state.

The architecture is an important tool that will be used by:

- Operating agencies to recognize and plan for transportation integration opportunities in the state and, more importantly, in their specific region.
- Planning agencies to better reflect integration opportunities and

operational needs into the transportation planning process.

- Other organizations and individuals that use the transportation system in the state.

The architecture provides an overarching framework that spans all of these organizations and individual transportation projects.

The geographic scope of the statewide architecture is the entire state, and the West Virginia architecture was coordinated with similar work completed in:

- Kentucky
- Maryland
- Ohio
- Pennsylvania
- Virginia

There are no regional ITS architectures within the state, even though there are several designated MPOs. At the time that the regional architectures are developed, they will need to be coordinated with the statewide architecture, and in the case of Morgantown, the architecture will need to be coordinated with Pennsylvania work.

The timeframe considered in the statewide architecture is a 20-year outlook. This means that the architecture addresses existing ITS systems as well as those planned for development over the next 20 years. More specifically, the statewide ITS architecture focuses on systems or elements that will be deployed over the next 5 years. Still, the statewide ITS architecture represents a snapshot of the currently anticipated ITS and other projects based on information gathered from stakeholders, and research from agency websites or documents. As such, the architecture will require regular updates to ensure that it maintains accurate representation of the region.

The architecture covers services across a broad range of ITS, including traffic management, maintenance and construction operations, emergency services, transit management, traveler information, archived data management, and electronic payment, and commercial vehicle operations.

The six-year program does not include deployment of any ITS related devices

(changeable message signs, closed circuit television camera, pavement sensors, automated gates, etc. within the Monongalia County study area.

T RANSPORTATION SYSTEM SECURITY

OVERVIEW

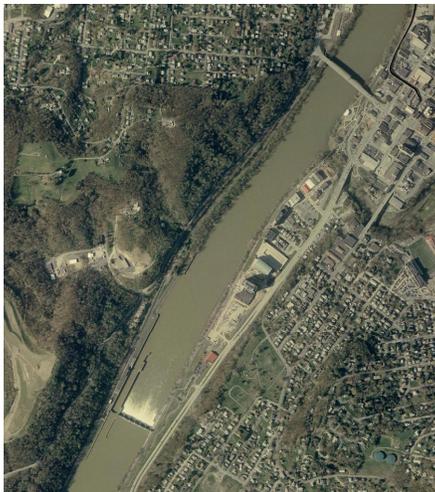
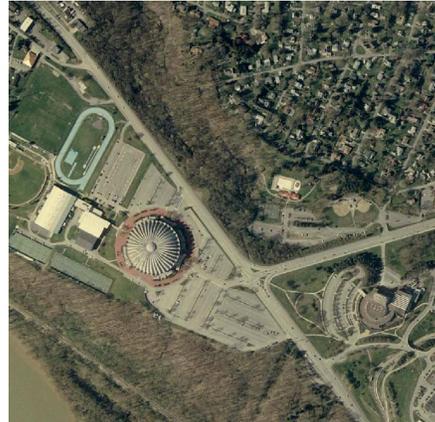
Security has been separated from safety as a planning factor established through ISTEA (1991) and maintained through TEA-21 (1996) to increase the focus on each of the factors, not just as a reaction to increased security threats throughout the world. The emphasis on transportation security results from identification of surface transportation facilities as a common target worldwide. Addressing the transportation system infrastructure's vulnerability to natural and social acts can be attributed to several features:

- Transportation infrastructure (roadway networks, vehicles, airports and transit facilities) serve high concentrations of people, thereby increasing the potential number of casualties.
- Transportation systems provide essential services to the public, thereby threatening our way of life if they are damaged and/or shut down through a natural or social act.
- Transportation systems can be used as both the delivery and escape avenue.

These features make transportation infrastructure a target of choice for those wanting to spread fear to the widest segment of society, but they also make transportation infrastructure harder to secure from terrorist actions.

Over the past five years the focus on the need to improve the security and stability of our nation's transportation infrastructure from attack has intensified. Actions taken to date across the county include:

- Determining the vulnerability of transportation infrastructure to terrorist attack.
- Developing strategies to better protect key assets from terrorist attack.
- Generating policies and procedures to mitigate the effects of terrorist events and to expedite response and recovery.



In many of the programs administered across the country security prevention and mitigation strategies are heavily oriented to facility design and retrofitting, and through these efforts it has been recognized that it is more cost-effective to begin addressing transportation infrastructure security issues when the facilities are being planned and designed. Addressing facility/asset security in the post-construction or operations phase generally makes efforts to enhance the asset protection much more expensive. Most efforts to address security issues at the metropolitan planning level have been limited to the operational aspects of facilities, with little or no consideration of security in the development of the long range transportation plans or the statewide transportation improvement programs. The purpose of separating security from the safety planning factor is to enhance the emphasis on directly addressing issues and concerns in the planning process.

RECOMMENDATIONS

Within the Greater Morgantown MPO study area transportation system security and the security of local facilities that would substantially rely on an effective transportation system in the event of an attack, have not been assessed as to their vulnerability, relative to protection from attack or process for recovery from an attack. Thus, development of an overall transportation security assessment and protection plan is a recommendation of the regional transportation plan.

Key security elements and elements of a future work program to be incorporated into the transportation planning process include:

- Working with MECCA 911, the WVDOT, the FHWA and the Department of Homeland Security to establish a definition of "security" for the transportation system.
- Improve the inter-relationships, planning processes, and communication between transportation system owners and managers and public health and safety officials and staff. Included in coordinated security planning efforts should be:
 - Police departments from each of the communities in the county.

- Monongalia County Sheriff's department.
- West Virginia State Police.
- Fire departments and rescue squads.
- Federal response agencies such as the FBI.
- Agencies within the Department of Homeland Security (DHS), such as the Federal Emergency Management Agency (FEMA), Transportation Security Administration (TSA), and the U.S. Coast Guard.
- Using the definition of security developed, establish security goals and objectives.
- Identify a list of key transportation assets, including:
 - The Osage Bridge, the Westover Bridge and the I-79 Bridge over the Monongahela River.
 - Each of the interchanges along I-68 and I-79 with particular attention to the I-79/I-68 system interchange.
 - The WVU Coliseum and Milan Puskar Stadium/Mountaineer Field, which represent facilities that house large crowds and would need to be evacuated in the event of an attack during an event or could be used as evacuation centers in the event of an attack.
 - PRT stations and the PRT line. The PRT has the potential to be used as a means of moving large numbers of people from the downtown area to the medical center complex in the event that it is required.
 - Power plants in the county.
 - Medical facilities.
 - Federal, state and local government buildings.
- Conduct a security risk assessment, including potential transportation system bottlenecks or choke points, by asset in the region.
- Evaluate the probability of an incident attempt occurrence assessment and a vulnerability assessment by transportation asset.
- Complete a risk/consequence trade-off analysis of potential action strategies, based on the probability of terrorist attacks occurring, the severity of the

consequences of such an attack, and the impact value of proposed strategies for mitigating the likelihood and consequences of terrorist attacks.

- Coordinate the planning and prioritization of security enhancement projects, both short-term and long-term;
- Establish project funding and programming, with involvement of both public and private sector stakeholders

The process and recommendations developed as part of this continued transportation planning effort should be consistent with the National Infrastructure Protection Plan (NIPP) developed through the Department of Homeland Security. The purpose of the NIPP is to provide a unified national structure for the integrated protection of the existing and future infrastructure. The NIPP provides a framework for prioritizing protection programs and investments with the goal of ensuring that government and private sector resources are applied where they offer the most benefit for mitigating risk. The intent of the plan is to identify various means of lessening vulnerabilities, deterring threats, and minimizing the consequences of terrorist attacks and other manmade and natural disasters. The NIPP risk management framework recognizes and builds on existing protective programs and initiatives.



ITS AND HOMELAND SECURITY

Intelligent transportation systems (ITS), due to its nature, can assist greatly with necessary transportation system security and Homeland Security functions. The use of cameras along critical transportation corridors can identify security threats to that infrastructure. Critical bridges, communication infrastructure, rivers and ports, industrial areas, and mass transit systems should be monitored through the use

of Closed-Circuit Television (CCTV) with the images transmitted to the appropriate agency or responsible party. The use of traveler information dissemination devices such as dynamic/changeable message signs (CMS/DMS), highway advisory radio, 511 telephone and internet systems, and the media are critical in the event of a mass evacuation scenario. The need to include the transportation and ITS community in emergency operations planning is critical and should be encouraged by all emergency responders.



CCTV Camera

INNOVATIVE FUNDING STRATEGIES

OVERVIEW

Regulations developed under ISTEA and continued through TEA-21 and SAFETEA-LU allow for discussion of non-traditional revenues and strategies for increasing transportation systems funding and closing the typically observed gap between the transportation needs and traditional source funds.

Non-traditional funding sources and cash flow management strategies, considered innovative will be investigated and used, as appropriate and acceptable. Such innovative funding strategies could be used to maximize joint development opportunities between the public and private sectors. Jurisdictions could also use the advance construction option to start a project, when necessary and be reimbursed as federal funds become available. Other strategies, identified in federal legislation, could be used together or separately to promote transportation projects in a timely fashion.

The Greater Morgantown MPO encourages the use of innovative funding strategies to leverage available funding and to create and maintain a financially constrained RTP and TIP.

The process of determining a reasonable range of concepts for increasing transportation funding at the local level necessitates answering the following two questions from the local perspective:

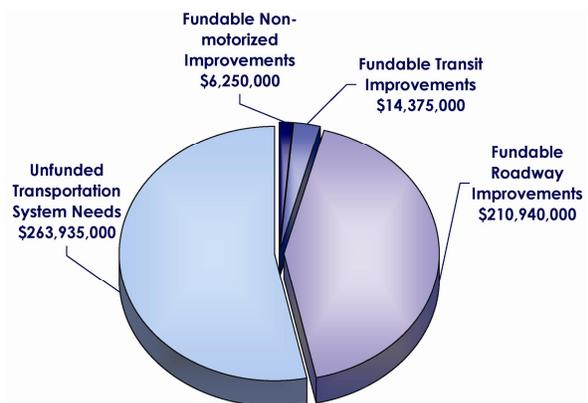
- Are system users (those that drive on the roads, walk and or bike on the trails or ride transit) willing to pay for the privilege of using an improved system?
- Is the local community, made up of residents, business owners, workers, and developers willing to pay to have access to a transportation facility/program, even if they chose not to use it?

A supporting or non-supporting response to these questions will begin to frame the range of revenue tools reasonably available for use in the community. If potential users are willing to pay or pay more than current levels to use the

portions of the transportation system, and there is a sufficient number of users willing to participate, many more revenue enhancing tools are available (i.e. tolling, user fees, public-private partnerships, etc.). On the other hand if there is enough local support for having the opportunity to use better roads, trails/sidewalks or an extended transit system, even though the individual does not on a regular basis, there are other revenue tools that could be included in the overall transportation funding toolbox (property taxes, user fees, etc.).

POTENTIAL REVENUE ENHANCEMENT CONCEPT

Closing the financial gap between baseline revenue and the identified needs will require increasing revenues and, to the extent possible, reducing expenditures in as many areas as possible. Possible sources of increased revenue and expenditure reductions are discussed below. In order to close the funding gap, the jurisdictions making up the MPO area will need to work individually and collectively take actions to increase revenues and to reduce costs. It is highly unlikely that only one alternate of those listed will be the single concept to satisfy the \$264 million gap between the identified regional transportation system needs and the estimated funding likely to be available over the transportation plan period. Thus, the action plan for developing an innovative financing program will likely include a combination of the alternatives.



2030 Regional Plan Financial Assessment

DEVELOPER CONTRIBUTIONS

A major purpose of this study was the identification of the improvements necessary to accommodate and support economic growth in the community. Faced with similar needs to expand capacity, many communities across the country have asked commercial, industrial, and residential land use developers to contribute through road-related impact fees to paying for the infrastructure impacts their development imposes.

The issue of transportation impact fees is always a controversial within a community. While the fees are intended to equitably allocate costs consistent with the development-added traffic volume impacts on the transportation system, there is the continual argument that the fees will hinder the economic growth associated with new construction.

The state permits county, but not municipal governments, to impose “impact fees” for subdivision or site plan approval and for issuance of building permits or a certificate of occupancy for new construction. The county can use the fee to make capital improvements such the construction or improvement of water, sewer, and stormwater infrastructure, roads, parks and recreational facilities, public schools, and public safety facilities. To qualify for to impose impacts fees, however, a county must meet several standards, including:

- Experiencing population growth over the last five years of at least one percent per year on average.
- The county must have an approved/adopted comprehensive plan and a process for updating it at least every five years.
- An adopted subdivision ordinance.
- A zoning ordinance.
- A building code permit and enforcement process.
- A land use development plan.
- A set of standards of service for capital improvements.
- A capital improvement list to be funded by the fee.

To date only Jefferson County has met these requirements.

While Monongalia County has not met the requirements for eligibility for imposing impact fees on development, the county and the city have been successful in working with developers to obtain voluntary participation in transportation infrastructure projects including partial or full payment of traffic signal costs, turn lane costs, right-of-way dedication in lieu of cash payments, etc.

LOCAL OPTION TAXES/FEES

This category of funding options provides a level of flexibility for a county or possibly even a municipality, to locally fund transportation system improvements either partially or entirely. Potential alternatives within this class of funding tools are:

- Income taxes focused on transportation improvements or a broader array of municipal infrastructure improvements.
- Wage taxes. At the state level legislation has been recently passed to enable Monongalia County, through a referendum vote of the electorate, to levy a fee/tax dedicated to municipal infrastructure improvements based on employee headcount. Included in the array of facility improvements is the transportation system. The county would have the capabilities of identifying projects to be funded by such a fee program and would establish a fee level required to retire bonds issued to cover the improvement costs. The revenue generated also could be used to fund the local match of specific state system projects. Under this program only capital expenditures would be covered. Thus, the program could be used to fund roadway or trail/sidewalk improvements, but could not be directly used to fund operating costs associated with adding transit service hours.
- Property taxes dedicated to transportation system maintenance and improvements, including roadway improvements to add capacity, trail/sidewalk system improvements, park and ride lots and transit service expansion.
- Local option sales taxes dedicated to funding transportation system maintenance, expansion and operations programs.

TAX INCREMENT FINANCING

Transportation system improvements that support and/or are supported by land development or redevelopment could be funded in part or whole through tax increment financing (TIF). Using this mechanism, transportation improvements would be funded through dedication of the increment of property tax revenue resulting from the added value of adjacent properties in an improved state relative to its current state. This alternative is presently used in Morgantown to assist in the financial feasibility of new development and redevelopment projects that are seen as providing a public benefit. The public benefit may be the new employment that is generated from a new development or it may be the presently blighted conditions that are replaced with new employment and/or residential activity areas. As TIF is a development/redevelopment tool that is presently being used to improve project economic viability and there is a limited amount of project related activity that can be supported through the TIF, the funding capacity for transportation facilities may be limited in some instances. This potential funding limitation needs to be considered in the assessment of TIF as a transportation improvement financial participation tool.

E NVIRONMENTAL JUSTICE ANALYSIS

OVERVIEW

Environmental justice addresses fairness of Federal actions in regards to disadvantaged persons, particularly low-income and racial minority populations. Environmental justice became an active part of Federally-funded planning activities with Executive Order 12898, issued in 1994, that required Federal agencies to examine the potential for their programs, policies and activities to have negative impacts on minority and low-income populations. The environmental justice executive order is based on Title VI of the Civil Rights Act of 1964, which required recipients of Federal aid to certify and ensure nondiscrimination. The Federal Highway Administration (FHWA) recognizes three fundamental environmental justice principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

FHWA guidance directs MPOs to produce analyses that ensure their RTP is compliant with Title VI and environmental justice. To address these concerns, this section of the report documents the allocation of improvement projects in regards to environmental justice populations in the Greater Morgantown MPO study area.

ASSESSMENT METHODOLOGY

The environmental justice analysis includes an evaluation of the location of recommended transportation improvement projects in relation to environmental justice

populations, including maps that illustrate the RTP recommended projects overlaid on the communicates of minority and low-income populations.

Environmental justice populations were identified in Monongalia County through review of 2000 Census block group data. Block group level data offers the most detailed (i.e., smallest Census geography) level of income data. There are 69 Census block groups in Monongalia County.

The 2000 Census Summary File 3 data were joined to TIGER block group shapefiles for Monongalia County. Geographic information system (GIS) procedures were implemented to analyze and present the data. The following Census information was included for identifying environmental justice populations:

- Race: This data includes a block group-by-block group summary of the number of white, black/African American, American Indian, Asian, Hawaiian or Pacific Islander, or multi-racial residents.
- Hispanic or Latino: This data is a separate category from racial background, as residents are classified as either Latino or non-Latino in addition to their racial background. For instance, a census respondent can identify themselves as Hispanic/Latino and White.
- Poverty Status: This data is determined based on the Federal government's definition of poverty, derived from the total family income in relationship to the poverty threshold appropriate for that person's family size and age composition.

Based on these three variables, census block groups were classified as either an environmental justice (EJ) block group or a non-environmental justice (non-EJ) block group.

- EJ Block Groups: The EJ block groups are characterized as Census block groups with a population that has:

- A higher percentage of households in poverty than the county average of 22.8 percent.
- A higher percentage of minority residents than the county average of 8.3 percent. For the purposes of this analysis, minority status was defined as persons that were Hispanic/Latino, non-white, or both.
- **Non-EJ Block Groups:** The non-EJ block groups were identified as having both of these characteristics:
 - A population that has the same or a lower percentage of households in poverty than the county average of 22.8 percent.
 - A population that has same or a lower percentage of minority residents than the county average of 8.3 percent.

Figure 32 illustrates the census block groups in Monongalia County and highlighted are those block groups that have a higher-than average minority population, higher-than average populations below the poverty income level, or both.

The recommended roadway and non-motorized improvement projects were added to the GIS and overlaid with the EJ data. Overlaying projects on the EJ data allows comparison of the relative level of transportation investment (roadway, transit, and non-motorized system improvements) by EJ and non-EJ population. The locations of recommended projects were analyzed in relation to the EJ status of the populations in the areas the improvements directly serve. This analysis was completed to evaluate the relative equity in the distribution of transportation improvement investments. The goal would be to be able to observe through the comparison of the projects and the EJ data a mix of improvement projects in areas defined as EJ block groups and areas defined as not being EJ block groups.

Recognizing that residents of non-EJ block groups will use transportation improvements in EJ block groups and vice versa, the core assumption in this analysis is that travelers would benefit more from improvements adjacent to their home place. Thus, this analysis documents the level of planned transportation investment in each community (EJ and non-EJ).

Figure 30 documents the block groups, their relative EJ status and multimodal improvements included in the fundable element of the recommended plan. The recommended non-motorized improvement plan does not divide projects into funded and unfunded as is done for the roadway improvements. Thus, for the EJ assessment it was assumed that only the Tier I projects would be evaluated. In the EJ assessment spatial analysis, each project was assigned an EJ status such that it was either:

- Located principally/entirely in an EJ defined area (EJ project).
- Located outside an EJ defined area (Non-EJ project).
- Located partially inside and outside an EJ defined area.

ANALYSIS RESULTS

Table 34 provides a summary of each identified improvement project, its EJ status and its associated cost estimate. Table 35 provides a summary of block groups in Monongalia County, providing the number of persons living in EJ and non-EJ block groups and the relative level of planned transportation investment within EJ and non-EJ block groups.

There are approximately the same number of persons living in identified EJ and non-EJ communities, as defined by the Census block group geography and demographic variables previously described. As documented in the tables and in Figure 31, the identified EJ communities have higher levels of direct transportation investments than non-EJ communities.

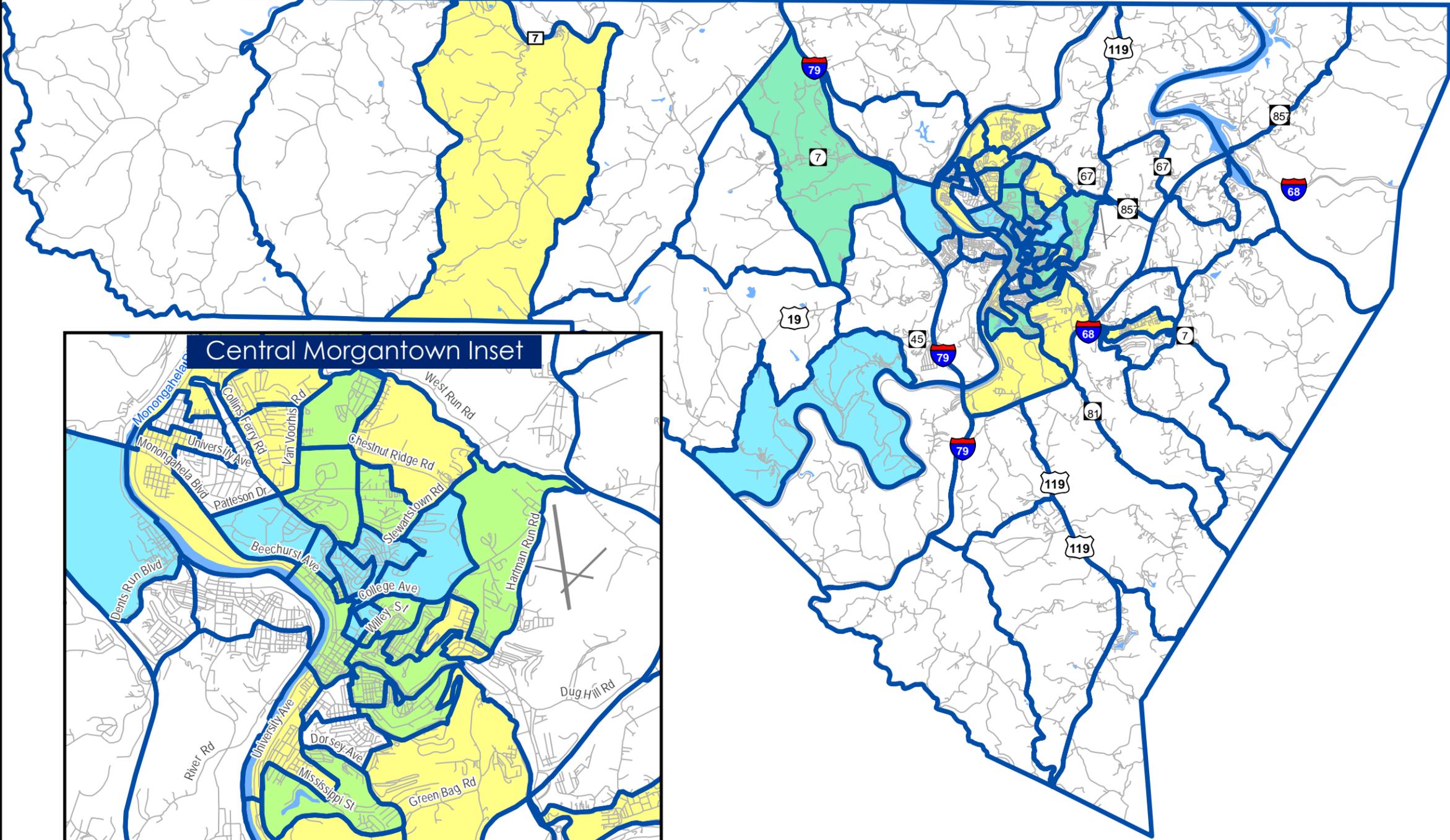
SUMMARY

Low-income and minority populations are not discriminated against in relation to the recommended RTP projects. The identified low-income and minority populations in the Morgantown MPO study area would experience higher levels of transportation investments with the Regional Transportation Plan list of recommended improvement projects than areas with lower percentages of minority and/or low income populations.



Morgantown

Area Transportation Study



Legend

Environmental Justice Status by Block Group

- Non-EJ Block-Group
- EJ Block-Group, Above Average Poverty
- EJ Block-Group, Above Average Minorities
- EJ Block-Group, Above Average Minorities and Poverty
- Census Block Group Boundaries

Monongalia County Environmental Justice Locations, by Block Group



TABLE 34: TRANSPORTATION IMPROVEMENT PROJECT COSTS BY ENVIRONMENTAL JUSTICE (EJ) STATUS

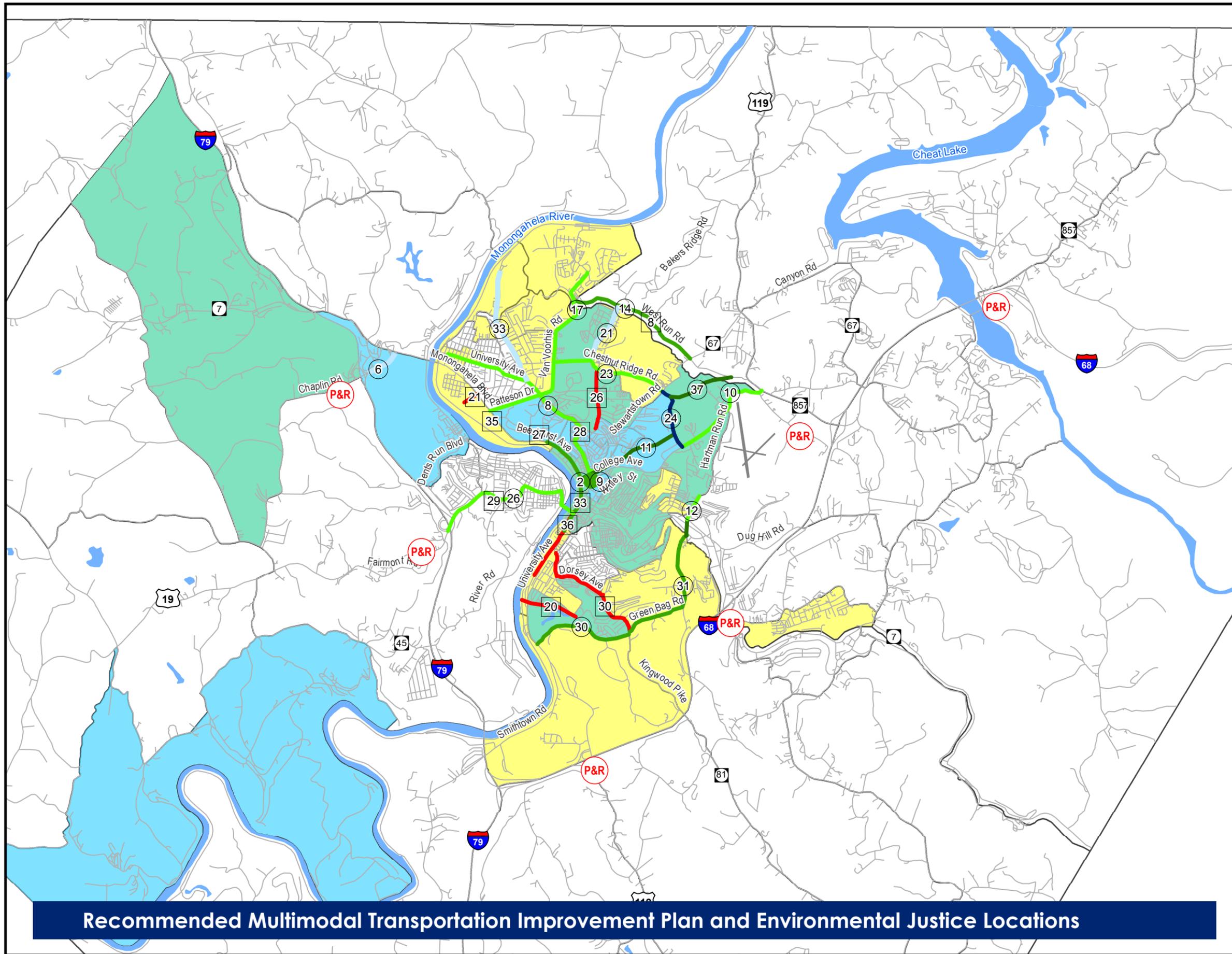
Project EJ Status	Improvement Mode	Map Location	Improvement Cost Estimate
Projects Located Principally within "EJ" Defined Districts			
	Roadway	②	\$53,100,000
	Roadway	⑥	\$100,000
	Multimodal	⑨/③④	\$3,450,000
	Multimodal	⑪	\$48,600,000
	Multimodal	⑳	\$1,100,000
	Non-Motorized	㉒	\$504,000
	Non-Motorized	㉔	\$506,000
	Non-Motorized	㉕	\$51,000
	Non-Motorized	㉖	\$415,000
	Non-Motorized	㉗	\$200,000
	Non-Motorized	㉘	\$100,000
Subtotal - Within EJ Defined Districts			\$108,126,000
Projects Located Entirely Outside "EJ" Defined Districts			
	Multimodal	⑭	\$9,670,000
	Non-Motorized	⑧	\$250,000
	Non-Motorized	㉙	\$1,011,000
Subtotal - Outside EJ Defined Districts			\$10,931,000
Projects Located Within and Outside "EJ" Defined Districts			
	Roadway	⑰	\$2,190,000
	Roadway	⑳	\$2,250,000
	Multimodal	⑧	\$5,000,000
	Multimodal	⑩	\$4,270,000
	Multimodal	⑫	\$27,310,000
	Multimodal	⑰	\$3,500,000
	Multimodal	㉔	\$6,000,000
	Multimodal	㉚/㉛	\$9,400,000
	Multimodal	㉞	\$35,000,000
	Non-Motorized	㉑	\$207,000
	Non-Motorized	㉖	\$843,000
	Non-Motorized	㉟	\$749,000
Subtotal - Within/Outside EJ Defined Districts			\$96,719,000
Total for Projects in EJ Analysis			\$215,776,000

Note: Project list includes roadway projects in the Fundable Plan and non-motorized projects in the Tier I list only. Tier I projects are reasonably fundable.

TABLE 35: SUMMARY OF PLANNED TRANSPORTATION INVESTMENT BY ENVIRONMENTAL JUSTICE (EJ) STATUS

Variables	Principally/Partially EJ-Defined Areas	Partially/Non-EJ Defined Areas	Monongalia County Total
Population	41,080	40,786	81,866
Percent of Population	50%	50%	100%
Total Improvement Project Cost Estimates	\$200,768,600 ¹	\$101,227,900 ²	\$216,255,700
Percent of Total Costs	66%	34%	

Footnote: 1 – Subtotal reflects the sum of projects principally/entirely in the EJ defined areas and projects partially in/out of EJ defined areas. 2 – Subtotal Non-EJ reflects the sum of projects partially in/out and outside of EJ defined areas.



Morgantown
Area Transportation Study

- Legend**
- Fundable Improvement Plan Elements**
- Roadway Improvements**
- Management Improvement in Existing Corridor
 - Existing Corridor Expansion
 - New Facility
 - P&R Park and Ride Lot (Addition / Expansion)
- Multimodal Corridor Improvements**
- Management Improvement in Existing Corridor
 - Existing Corridor Expansion
 - New Facility
- Non-Motorized Improvements**
- Tier 1
- 10 Non-Motorized Project Number
- 10 Multimodal / Roadway Project Number
- Environmental Justice Status by Block Group**
- Non-EJ Block-Group
 - EJ Block Group, Above Average Poverty
 - EJ Block-Group, Above Average Minorities
 - EJ Block-Group, Above Average Minorities and Poverty

Recommended Multimodal Transportation Improvement Plan and Environmental Justice Locations

E ENVIRONMENTAL MITIGATION

A discussion of potential environmental mitigation activities in metropolitan transportation plans is a requirement of SAFETEA-LU. This legislation also emphasizes consultation, as applicable, with federal and state land management, and wildlife and regulatory agencies.

This environmental mitigation chapter of the RTP contains two sections:

1. A discussion of potential environmental mitigation activities to be coordinated as part of the Fundable Improvement Plan implementation process.
2. Identification of environmental resource agencies that will be consulted.

ENVIRONMENTAL MITIGATION ACTIVITIES

Environmental mitigation activities are strategies, policies, and programs that serve to minimize or compensate for the disruption of the built and natural environment associated with implementation of recommended transportation projects. As the projects included in the Funded Improvement Plan have been defined in only very general terms (i.e. expansion from a two-lane to a three-lane route, a new corridor along an identified general alignment, etc.), the discussion of potential mitigation measures must be restricted to general elements of the built and natural environment.

In general, there are six disciplines for which potential mitigation activities may be necessary for projects:

- Wetlands.
- Noise.
- Stormwater runoff.
- Cultural resources.
- Section 4f properties.
- Threatened and endangered species.

The following sections summarize the potential mitigation activities associated with impacts within each of the six discipline areas.

WETLAND MITIGATION

Wetlands are areas where the water table stands near, at, or above the land surface for at least part of the year. Wetlands are described according to the degree of wetness and the type of vegetation that the site supports. Often times, transportation projects can negatively impact wetland areas. Mitigation measures strive to avoid, minimize, and mitigate impacts to streams and wetlands throughout the project development process as required by federal, state, and local law.

Guidelines for the development of mitigation follow requirements established by the United States Army Corps of Engineers (USACE) and the West Virginia Department of Environmental Protection (WVDEP). Mitigation provisions are outlined in the state's certification rules. Where mitigation is necessary, on-site/in-kind mitigation is the first preference, followed by off-site/in-kind (preferably in the same watershed as the impacts), on-site/out-of-kind, and finally, off-site/out-of-kind. The regulations also outline required ratios for impacts to streams, open water wetlands, emergent wetlands, scrub-shrub wetlands, and forested wetlands, and the ratios are displayed in Table 36.

Acquisition of existing wetlands may be considered in certain instances and requires greater ratios. Finally, the rules allow for in-lieu-fee mitigation and in-kind land donations if no other forms of mitigation are achievable.

Monitoring is required for all mitigation sites until "success criteria" outlined in the restoration plan have been met. Monitoring reports must be submitted annually "until the project has been determined complete and successful for three concurrent years." Both WVDEP and WVDNR must review and approve mitigation plans.

TABLE 36: REQUIRED WETLAND MITIGATION RATIOS

Wetland Type	Mitigation Ratio for Impacts	
	Partial Acquisition	Full Acquisition
Open Water Wetlands	1:1	5:1
Emergent Wetlands	2:1	10:1
Scrub-Shrub and Forested Wetlands	3:1	15:1

Sources: West Virginia Code of State Rules, Title 47, Series 5A (47 CSR 5A)

ENFORCEMENT

Enforcement of state water quality certification requirements is available under West Virginia's water quality laws. In practice, the U.S. EPA takes the lead on enforcement under the Section 404 program.

NOISE MITIGATION

For noise mitigation, freeway projects that add lanes or replace the pavement (such as from asphalt to concrete) should include an investigation of the noise levels. The possibility of mitigation with noise walls or other buffers may be necessary. The level of roadway traffic noise depends on three conditions:

1. Volume of the traffic.
2. Speed of the traffic.
3. Number of trucks in the flow of traffic.

Generally, the level of traffic noise increases with rises in traffic volumes, higher speeds, and greater numbers of trucks. Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The loudness of traffic noise can also be increased by defective mufflers or other faulty equipment on vehicles. Any condition (such as a steep incline) that causes laboring of motor vehicle engines will also increase traffic noise levels.

Noise reduction measures that are possible include:

- Creating buffer zones.
- Planting vegetation.
- Constructing barriers.
- Restricting truck traffic along certain routes or in certain periods of the day.
- Enforcement of muffler restrictions.

Buffer zones are undeveloped open spaces bordering a roadway and creating a setback between the roadway noise source and sensitive receivers. Vegetation barriers are vegetation planted along the highway dense enough that they cannot be seen over or through. It should be noted that very dense vegetative cover is required to obtain a noticeable reduction. Noise barriers are solid obstructions built between the roadway source and adjacent sensitive land uses. Barriers can be formed from earth mounds along the road or can be manmade vertical walls. Earth berms have a natural appearance, but can require large amounts of land. Vertical walls take less space and can be built of wood, stucco, concrete, masonry, metal, and other materials. Noise walls require maintenance, and negative reactions may include a restriction of view, a feeling of confinement, a loss of air circulation, a loss of sunlight and lighting, and could be visually displeasing. The key with the noise barrier is to break the line of sight between the roadway source and the adjacent receiver. This can be difficult to accomplish (within an economical means) in locations where the adjacent area is at a higher elevation than the roadway source.

STORM WATER MITIGATION

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces such as driveways, sidewalks, and streets prevent the runoff from naturally soaking into the ground. Stormwater can pick up debris, chemicals, and other pollutants as it flows to the storm sewer system or directly to a lake, stream, river, or wetland. Stormwater runoff can pollute water bodies and also cause them to overflow and flood. There are multiple mitigation techniques that can be used to curb storm water runoff. These techniques can include bioretention, detention ponds, grass swales, and filter strips.

Grass swales are planted areas that line a ditch or channel near impervious surfaces and are designed to capture stormwater run off and filter it into the ground. For post-construction stormwater management in new development and redevelopment, the use of grass swales, where feasible, should be used in median and drainage ditches. These are low cost stormwater conveyances.

Vegetative filter strips and buffers are areas of land with vegetative cover that are designed to accept stormwater runoff from upstream development. They can be constructed, or existing vegetated buffer areas can be used. Unlike grass swales, vegetative filter strips are effective only for areas with no defined channels.

Bioretention is a practice that manages and treats storm water runoff using a planting soil bed and specific planting materials to filter runoff stored within a shallow depression. The method combines physical filtering and adsorption with biological processes to retain and treat surface runoff before it leaves a site. Detention ponds are used to capture large amounts of water and slowly filter it back into the ground. Detention ponds are usually used in developments containing large areas of impervious surface.

STREAMS AND WETLANDS

The Greater Morgantown MPO study area includes numerous water resources including rivers, streams and limited potential wetlands. Many transportation projects may cross or run alongside a stream or river or touch a wetland area. In these cases it is a goal to avoid, to the fullest extent practicable, any activity that adversely impacts streams or wetlands during the design, construction, or maintenance of the transportation facility. As nearly all of the projects in the Fundable Improvement Plan will use state or federal funds, they will follow the WVDOT's project development process that includes assessment of the potential for stream and wetland impacts.

The WVDOT takes appropriate action throughout the project development steps to avoid, minimize, and mitigate impacts as required by federal, state, and local law. In the event that impacts to streams and wetlands are unavoidable, the WVDOT considers a wide variety of mitigation strategies, which always begins with evaluation of on-site opportunities (e.g., natural channel design techniques, bankfull culverts, wetland creation, etc.) within the project work area. If the on-site (within the project area) resources are exhausted, the search for mitigation opportunities off-site is initiated.

Mitigation opportunities may include mitigation banking, stream and wetland creation, restoration, and/or preservation, and possibly

even preservation of upland buffers adjacent to stream and wetland resources.

Impact analysis and mitigation are integral parts of the project development process. Early review and analysis of project alternatives by regulatory and resource agencies combined with effective inter-office coordination are required to develop successful transportation projects. WVDOT follows guidelines for the development of mitigation as required by the U.S. Army Corps of Engineers (USACE) and West Virginia Department of Environmental Protection (DEP). The USACE mitigation guidelines to be followed are outlined in the USACE Regulatory Guidance letters that are periodically updated and should be reviewed as projects advance through the implementation process.

A general procedure for securing required mitigation for stream and wetland impacts that is recommended for each significant project to be implemented includes:

1. Determine mitigation needs.
2. Analyze potential mitigation opportunities within the project area and/or close proximity (one mile) to where the impacts are anticipated to occur.
3. Develop preferred plan of action for mitigation.
4. Select mitigation site(s); [on-site, off-site, or mitigation banks].
5. Provide funds to the partnering organization(s) for mitigation projects.
6. Pursue conservation easements.
7. Develop a conceptual mitigation plan/report.
8. Coordinate the conceptual mitigation plan/report with resource and regulatory agencies.
9. Submit the approved conceptual mitigation plan/report with waterway permit applications.
10. Develop a final mitigation plan for submission to agencies prior to permit authorization.
11. Develop construction plans.
12. Procure conservation easements as necessary.
13. Provide funds to partnering agencies.
14. Construct mitigation project if needed.

15. Monitor mitigation project.

SECTION 4(f) MITIGATION

Section 4(f) of the Department of Transportation Act requires that special effort be made to preserve public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) specifies that federally funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge or land of significant historic site can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.

As projects are advanced through the project development process, Section 4(f) properties may be identified as impacted areas. If Section 4(f) resources are impacted it is required that specific measures to minimize harm or mitigate the impacts be identified and evaluated. These activities involve close coordination with the officials that have jurisdiction of the specific resources.

In cases where projects have Section 4(f) impacts and there is no feasible and prudent alternative to avoid use of the resource, it is required that project sponsors consider "all possible planning to minimize harm." Minimization of harm may entail both alternative design modifications that lessen the impact on 4(f) resources and mitigation measures that compensate for residual impacts. Minimization and mitigation measures should be determined through consultation with the official or the agency owning or administering the resource. Neither the Section 4(f) statute nor regulation requires the replacement of 4(f) resources used for transportation projects, but this option is appropriate as a mitigation measure for direct project impacts.

Mitigation measures involving public parks, recreation areas, or wildlife and waterfowl refuges may involve a replacement of land and/or facilities of comparable value and function, or monetary compensation, which could be used to enhance the remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the historic integrity of the site and agreement by FHWA. In any case, the cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the

Section 4(f) resource in accordance with federal requirements.

Reasonable mitigation for impacts to Section 4(f) resource impacts may be:

- Improving access to or expansion of parking areas.
- Landscape or screening the resource.
- Installation of enhancements such as park benches, trash receptacles, signage, etc.
- Rerouting of traffic to reduce the impact.
- Minimizing construction noise or limiting construction to specific times.
- Direct compensation for improvements to on-site resources.
- Modify the transportation facility design.

CULTURAL RESOURCES MITIGATION

The WVDOT project development process requires that cultural resources be considered during the development of highway projects in the state. An element of that consideration involves consulting with various entities, including the Federal Highway Administration (FHWA), the State Historic Preservation Office (SHPO), local Historic Preservation Offices, local public officials, local organizations, and the public.

Mitigation measures developed through a Section 106 Memorandum of Agreement consultation process provide ways to avoid, minimize, or mitigate adverse effects to historic properties (i.e., those listed in or eligible for listing in the National Register of Historic Places (NRHP)) impacted by projects. These mitigation measures are carried through as environmental document commitments and must be completed and reconciled with SHPO and FHWA before the memorandum of agreement fulfilled. Failure to meet all stipulations can potentially jeopardize a project sponsor's funding or other agreements or projects.

A plan for mitigating an adverse effect is site/property specific and requires a separate research design or approach for each historic property impacted by the project.

Mitigation measures may involve a variety of methods including, but not limited to aesthetic

treatments, avoidance, archaeological data recovery, salvage and re-use of historic materials, informing/ educating the public and Historic American Buildings Survey (HABS)/ Historic American Engineering Record (HAER) documentation. Approaches may vary widely depending on the type of historic property, the qualities that enable the property to meet the NRHP Criteria of Eligibility, the location of the historic property with respect to the project, etc. Mitigation plans should be developed in consultation with WVDOT, SHPO, FHWA, consulting parties (i.e., local officials, organizations, public), federally recognized Native American Indian tribes, as applicable.

THREATENED & ENDANGERED SPECIES

Eleven species of animals and four species of plants found in West Virginia are listed as endangered. Four species of animals and two species of plants are listed as threatened. Throughout the state, land use change has been one of the largest causes for decline in species range and diversity. Contamination and degradation of natural waters has also contributed to loss of habitat. Loss of wetlands and forests has contributed largely to the federal listing of plants and animals within state, including a variety of mammals, birds, reptiles and amphibians, mollusks, insects, fishes, and plants. West Virginia does not have state threatened and endangered species legislation, the species listed as either threatened or endangered in the State are those found on the US Fish and Wildlife Service's list of federally threatened and endangered species.

The West Virginia Wildlife Diversity Program (WDP) is an on-going, computer assisted ecological inventory. A part of the WV Division of Natural Resources Wildlife Resources Section, the WDP follows methodologies used nationally by the Natural Heritage Network. The WDP maintains files on rare, threatened and endangered plants and animals, as well as unique natural communities.

Federally and state funded projects, through the project development process, are reviewed and must comply with the Endangered Species Act. The rules and regulations associated with this law dictate that WVDOT will build and operate their roadway projects with no, or minimal impacts to protected species and their habitat (including potentially unoccupied habitat).

Throughout project development the WVDOT coordinates with numerous regulatory agencies to determine if protected species are likely to be encountered within the project area. If a threatened or endangered species is suspected of existing within the project area a specific survey is often undertaken to determine presence.

There are a variety of commitments and mitigation techniques that can be utilized to assist in protecting listed species. These differ depending on the habitat and the species that are to be protected. The more common commitments and mitigation regarding protecting federal-listed species include:

- Restricting the clearing of trees during sensitive roosting periods.
- Relocation of listed plant species out of construction areas.
- Restricting blasting activities during sensitive roosting periods.
- Timely removal of carcasses from roadways to minimize the potential of vehicles striking scavenging bald eagles.
- Inclusion of "critter crossings" to allow species to pass across roadways.
- Measures to ensure that all equipment is in proper working order to minimize construction noise and reduce the risk of equipment spills and leaks.

SAFETEA-LU GAP ANALYSIS

OVERVIEW

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) signed into law on August 10, 2005, replaces the Transportation Equity Act for the 21st Century (TEA-21) as authorization of the federal surface transportation programs for highways, highway safety, and transit. SAFETEA-LU retains many of the goals and programs found in TEA-21, but there are a number of modified and/or new requirements that MPOs must address through the long range transportation planning process. The purpose of this section of the Greater Morgantown RTP is to provide documentation of how the updating process initiated in January 2005 addresses the issues and/or how the MPO and local, state and federal transportation system providers will be addressing the requirements. Evaluation of the changes between the TEA-21 legislation and the SAFETEA-LU legislation is generally referred to as a “gap” analysis.

The following sections examine the SAFETEA-LU planning and programming requirements that have been revised or added to the TEA-21 transportation bill requirements. The planning and programming requirements are as follows:

- Regional transportation plan and transportation improvement program update cycles.
- Annual listing of projects.
- Metropolitan and statewide transportation planning factor modifications.
- Strategic highway safety plan local and state coordination.
- Environmental mitigation activities.
- Consultation with agencies.
- Transit major capital project improvement review/approval process.
- Management/maintenance of existing facilities.
- Congestion management process

- Public participation plan/program
- Coordinated public transit/human services transit plans.
- Air quality conformity analysis.

This SAFETEA-LU Gap Analysis review is divided into two subsections:

- The first subsection is a discussion of the USDOT rules contained in the Federal Register of February 14, 2007 and a determination of whether or not a gap exists in the Greater Morgantown MPO process.
- The second subsection, the Gap Assessment/Reconciliation, includes a discussion of how the Greater Morgantown MPO is complying with the SAFETEA-LU requirements, or a description of the actions underway to bring the region into compliance at the earliest possible time.

REGIONAL TRANSPORTATION PLANNING REQUIREMENTS – SAFETEA-LU VERSUS TEA-21

Table 37 documents the key SAFETEA-LU planning and programming requirement changes relative to those found in the TEA-21 legislation. Included in the table is a determination as to whether a gap exists in the Greater Morgantown MPO planning efforts.

For the most part, the MPO through the 2006 RTP process has addressed the metropolitan planning requirement changes adopted as part of SAFETEA-LU. Those key change areas that will require additional, or on-going assessment include:

- Annual listing of projects: The STIP focuses mainly on highway maintenance, rehabilitation and expansion projects. Working with the WVDOT, Monongalia County and the local municipalities the project listing will be supplemented with pedestrian sidewalk and trail projects to be completed throughout the region.

TABLE 37: SAFETEA-LU GAP ANALYSIS SUMMARY

Analysis Areas	TEA-21 Requirements/Period	SAFETEA-LU Requirements/Period	Does a Gap Exist?
Planning Cycle for Updating the Regional Transportation Plans (RTP)	Due every 5 years in air quality attainment areas	Due every 5 years in air quality attainment areas	No
Planning Cycle for Transportation Improvement Programs (TIP)	Due every 2 years and contains listing of projects/strategies covering the next 3 years	Due every 4 years and contains listing of projects/strategies covering the next 4 years	No
Annual Listing of Projects	Must address: <ul style="list-style-type: none"> ▪ Roadway ▪ Transit ▪ Other 	Must address: <ul style="list-style-type: none"> ▪ Roadway ▪ Transit ▪ Other ▪ Pedestrian Walkways ▪ Bicycle Transportation Facilities 	Yes
Planning Factors in Regional Transportation Plan	<ol style="list-style-type: none"> 1. Support Economic Vitality 2. Increase Accessibility and Mobility 3. Protect the Environment 4. Enhance Modal Integration 5. Promote Efficient System Management 6. Preserve the Existing System 7. Increase Safety and Security 	<ol style="list-style-type: none"> 1. Support Economic Vitality (expanded definition) 2. Increase Accessibility and Mobility 3. Protect the Environment 4. Enhance Modal Integration 5. Promote Efficient System Management 6. Preserve the Existing System 7. Increase Safety 8. Increase Transportation Security 	No
Strategic Highway Safety Plans (SHSP)	Not found in TEA-21	RTP should refer to goals and objectives in the state-adopted SHSP (WVDOT is currently developing)	No, as no state program exists
Environmental Mitigation	Not found in TEA-21	RTP must include a textual discussion of the types of potential environmental mitigation activities and potential locations for these activities, to restore and maintain environmental functions that could be affected by the RTP.	No

TABLE 37: SAFETEA-LU GAP ANALYSIS SUMMARY

Analysis Areas	TEA-21 Requirements/Period	SAFETEA-LU Requirements/Period	Does a Gap Exist?
MPO Consultation with certain agencies	Not expressly referred to in TEA-21.	RTP could refer to the procedure for consulting with the following state and local agencies: <ul style="list-style-type: none"> Environmental protection Tribal government Wildlife management Land management Historic preservation 	Yes
Transit major capital improvements	Basic criteria for rating projects: <ol style="list-style-type: none"> Alternatives Analysis Justification Local Financial Commitment 	Basic criteria for rating projects: <ol style="list-style-type: none"> Alternatives Analysis Justification of Project Local Financial Commitment Economic Development Potential Reliability of Ridership and Cost Forecasts 	No
Existing Transportation Facilities	Not found in TEA-21	RTP should include written discussion of strategies to improve the performance of existing facilities.	No
Congestion Management Process/System	Named "Congestion Management System"	Named "Congestion Management Process," and given a more central emphasis in plans and TIPs.	No, as no state program exists.
Public Participation Plan (PPP)	Not a separate section in TEA-21	SAFETEA-LU requires a stand-alone, written plan for collecting public comments to MPO documents.	No
Coordinated Public Transit Human Services Transportation Plans	Not found in TEA-21	Written plan for agencies who will receive funding for transportation disadvantaged transit programs.	No
Transportation Air Quality Conformity	3-year cycle for transportation conformity determination for RTPs and TIPs.	4-year cycle for transportation conformity determinations for RTPs and TIPs. Not applicable as Morgantown and Monongalia County are attainment.	No

- Non-motorized system needs and projects list were generated as part of the regional transportation planning process, and could be used as a source of information.
- Strategic Highway Safety Plan/Congestion Management Plan: While these program areas were not specifically called out as “gaps”, there is in fact a gap at the state level that needs to be addressed to provide direction to the MPO.

GAP ASSESSMENT/RECONCILIATION

METROPOLITAN PLAN CYCLES

Revised TEA-21 Provision: Amended 23 U.S.C. 135/49 U.S.C. 5304 (f)(1).

Objective: Metropolitan transportation plans in air quality standard attainment areas shall be updated at least every five years. The update cycle for non-attainment areas for air quality standards has been revised to at least every four years.

Requirement: To align the MPO adoption of the transportation plan in non-attainment and maintenance areas and conformity determinations, the date of the FHWA/FTA conformity determination on the transportation plan is to be used as the basis for tracking update cycles in non-attainment and maintenance areas. It should be noted that Morgantown and Monongalia County are air quality attainment areas.

MPO Policies, Procedures and Analyses: The current RTP states on page 1 that the MPO is responsible for updating the RTP at least every five years.

TIP CYCLES AND SCOPE

Revised TEA-21 Provision: Amended 23 U.S.C. 134/49 U.S.C. 5303 (j)(1)(D).

Objective: Metropolitan area TIPs must be updated at least every four years and must contain at least four years of projects and strategies.

Requirement: The 4-year update frequency cycle and the 4-year scope requirements go hand-in-hand and must be implemented

together, for any metropolitan TIP adopted after July 1, 2007.

MPO Policies, Procedures and Analyses: Page 1 of the RTP contains the statement that the MPO and the WVDOT are responsible for updating the TIP at least every four (4) years and that the approved TIP includes short range projects covering four years.

ANNUAL LISTING OF OBLIGATED PROJECTS

Revised TEA-21 Provisions: 23 U.S.C. 134/49 U.S.C. 5303(j)(7)(B) and 23 U.S.C. 135/49 U.S.C. 5304(g)(4)(B).

Objective: SAFETEA-LU specifies that the development of the annual listing “shall be a cooperative effort of the state, transit operator, and MPO”. In addition, the list is required to include the following project breakouts:

- Roadway improvements/modifications.
- Transit improvements.
- Pedestrian walkways.
- Bicycle transportation facilities.

The legislation requires that the projects included in the list are those which federal funds have been obligated in the preceding year.

Requirement: The annual listing of obligated projects shall be developed no later than 90 calendar days following the end of the program year.

MPO Policies, Procedures and Analyses: The annual listing of obligated projects for which federal funds have been obligated is essentially the first year of the TIP. The TIP is publicly-accessible through the MPO website (www.planttogether.org). The presently published TIP does not specifically call out the non-motorized system portion of roadway projects, nor does it list federally funded sidewalk and trail projects.

For 2008, the listing provided will include pedestrian and bicycle facility projects funded with federal dollars.

METROPOLITAN AREA TRANSPORTATION PLANNING FACTORS

Revised TEA-21 Provisions: 23 U.S.C. 134/49 U.S.C. 5303(h)(1) and 23 U.S.C. 135/49 U.S.C. 5304 (d)(1).

Objective: Separate and emphasize security of the transportation system and system safety. Signaling an increase in importance from prior legislation, each of the areas would be stand-alone planning factors.

Requirement: This new requirement must be in place prior to MPO and State adoption/ approval of transportation plans addressing SAFETEA-LU provisions.

MPO Policies, Procedures and Analyses: The federal legislation regarding the desire to separate safety and security was anticipated as the Greater Morgantown RTP goals and objectives were being developed. Thus, unique goals, objectives, and strategies for addressing the newly individual factors were incorporated into the planning process from the earliest stages.

The potential for an alternative to maintain and/or improve the transportation system safety (in each of the systems of roadways, transit and non-motorized) was one of the key evaluation criteria used in the Alternatives Assessment process.

A separate *Transportation System Security* chapter of the RTP documents ideas of facilities for which security plans and programs will be developed subsequent to the regional plan.

STRATEGIC HIGHWAY SAFETY PLANS (SHSP)

Revised TEA-21 Provision: Not Addressed in TEA-21.

Objective: Provide for a statewide plan/ program for systematically incorporating projects that address safety issues into the project development and prioritization process.

Requirement: The MPO RTP must reference and be consistent with the adopted SHSP (which is/will be a statewide document).

MPO Policies, Procedures and Analyses: At the time that the WVDOT adopts a SHSP the MPO will review the policies in the SHSP relative to the process employed in the RTP Alternatives

Assessment to determine whether there is a need to modifications the process used to select projects included in the Funded Improvement Plan.

Furthermore, the MPO encourages that the state program reflects the six part FHWA National Safety Strategy, including:

1. Encourage the implementation of strategic safety programs at the state and local levels. Implementation of this strategy will result in state and local decision-makers having the necessary data and analysis tools to consider safety benefits in conjunction with other factors when prioritizing proposed transportation improvements.
2. Protect vehicle occupants. FHWA supports federal, state, and local efforts to increase seat belt use nationally.
3. Prevent roadway departures. Concepts to help drivers stay on the road focus on enhancements to roadway visibility and installation of effective warning systems to alert drivers to lane departure situations.
4. Minimize the consequences of roadway departures. Some roadway departures will occur, although there are many ways to reduce the number. Elements that could be part of a state's program include aggressive action to improve clearzone characteristics on priority roadway classes, enhancing safety design of new projects and rehabilitation projects, systematic use of road safety audits, and speed management programs.
5. Conduct comprehensive intersection analyses. Under this strategy, states could conduct operational studies that evaluate a targeted set of intersections and then allocate resources toward improvement actions such as:
 - Cost-effective countermeasures for addressing problems at unsignalized intersections, especially in rural areas.
 - Installation of traffic signal progressive movement timing.
 - Installation of turn lanes and other geometric improvements.
 - Enforcement of red light running, including consideration of automated enforcement cameras

where warranted and supported by state/local legislation.

6. **Systematic approach to community safety.** The goal of this strategy is to foster a more systematic approach to community safety, including implementation of comprehensive pedestrian safety programs. Elements proposed to support this strategy include:
 - Increasing public and political awareness of pedestrian safety issues.
 - Educating and training for state and local officials on pedestrians safety issues.
 - Improved design elements for safe pedestrian accommodations and widely distributing analytic tools such as the Pedestrian and Bicycle Crash Analysis Tool.
 - Emphasizing pedestrian safety within MPOs and other organizations such as the Association of Metropolitan Planning Organizations and the National Association of Regional Councils.

ENVIRONMENTAL MITIGATION

Revised TEA-21 Provisions: 23 U.S.C. 134(i)(2)(B) and 23 U.S.C. 135(f)(4) and a similar provision for transit appear in the amended 49 U.S.C. 5303(i)(2)(B) and 49 U.S.C. 5304(f)(4).

Objective: To enhance early coordination with agencies and consideration of the potential for environmental impacts of transportation projects, metropolitan transportation plans must include a discussion of types of potential environmental mitigation activities to be developed in consultation with federal, state and tribal wildlife, land management, and regulatory agencies as appropriate and applicable.

Requirement: The environmental mitigation requirement must be in place prior to MPO adoption/approval of transportation plans addressing SAFETEA-LU provisions.

MPO Policies, Procedures and Analyses: The alternatives assessment process incorporated the potential for environmental impacts associated with each of the concepts identified in the analysis. Thus, in general terms the potential for impacts to the physical and

built environment associated with each concept/improvement idea has been addressed. In the Multimodal Alternatives Analysis section, the RTP provides documentation of the range of mitigation measures that could be addressed as projects are evaluated in more detail in the future. It is the recommendation of the MPO that the first order of mitigation be avoidance of sensitive areas of the built and physical environment.

The following variables were assumed to be included in the Potential for Environmental Impacts evaluation conducted as part of the two phase multimodal alternatives assessment:

- **Cultural Resources** – Does the project have the potential to impact known historic structures, archaeological sites, or cemeteries?
- **Water Resources** – Does the project affect streams and rivers, lakes and reservoirs, wetlands, or other aspects of the water environment?
- **Parks and Natural Areas** – Will the project affect either publicly and privately owned sensitive lands such as parks, fairgrounds, golf courses, wildlife areas, or stream easements?
- **Wildlife or Unique Habitats and Natural Features** – Does the project have the potential to impact unique habitats such as rare and endangered plants and animals, exposures of geologic features, scenic vistas, waterfalls, and champion trees?
- **Vegetation** – Does the project have the potential to impact trees, shrubs, wooded areas, herbs, field crops, aquatic plant species, or other aspects of the natural environment?
- **Property Impacts** – Does the project have the potential to significantly affect residential areas, public and semi-public facilities such as schools, hospitals, and airports, and commercial and industrial areas?
- **Noise** – Does the project have the potential to affect the overall noise level and specific sensitive receptors (i.e. residences, schools, hospitals, libraries, etc.) within screening distance?
- **Utilities** – Are there known surface/underground utilities such as gas pipelines, sewer and water systems,

electric transmission lines, or landfill areas that would be affected by the project?

MPO CONSULTATION WITH CERTAIN AGENCIES

Revised TEA-21 Provisions: 23 U.S.C. 134/49 U.S.C. 5303(g) and (j)(4) and (j)(1)(C). 23 U.S.C. 135/49 U.S.C. 5304(f)(2) and (f)(2)(D) and (g)(2).

Objective: In developing the long range plan, the MPO must consult "as appropriate" with state and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation.

Requirement: the MPO must develop a process for incorporating the following agencies into the transportation planning process:

- Environmental protection.
- Wildlife management.
- Land management.
- Historic preservation.

MPO Policies, Procedures and Analyses: This requirement has been addressed through:

- The FHWA Environmental Specialist has been involved in each of the key steps/decisions in the process of updating the RTP.
- The National Park Service has representation on the CAC.

The RTP document will be made available to the appropriate agencies for review. In addition, the MPO will modify its mailing list for distribution of the Technical Advisory Committee material to include the appropriate agencies. It has been interpreted that providing material and the reasonable opportunity to review and comment on the material addresses the spirit of the federal legislation.

MAJOR CAPITAL INVESTMENT PROJECTS (NEW STARTS)

Revised TEA-21 Provision: Amended Section 5309.

Objective: Economic development should be added as a criterion for application and

selection of New Starts projects. Further, an analysis of the reliability of ridership and cost forecasts is required. "Alternatives Analysis" is defined in SAFETEA-LU as a study using an established planning process.

MPO Policies, Procedures and Analyses: The transit recommendations do not include New Starts projects. Thus, no action is required.

EXISTING TRANSPORTATION FACILITIES

New SAFETEA-LU Provision: Not Addressed in TEA-21.

Objective: Include operational and management strategies that improve the performance/quality of existing multimodal facilities

Requirement: The RTP should include written discussion of strategies to improve the performance of existing facilities. The strategies should reduce overall congestion and facilitate the flow of people and goods.

MPO Policies, Procedures and Analyses: Preservation of the existing transportation system has been integrated as a primary theme throughout the MPO regional transportation planning process, including:

- Incorporating a focus on existing facilities into the objectives listed for all four of the transportation goals.
- Developing the system improvement packages. The primary theme of the package of improvements included in the Fundable Improvement Plan was to improve/maintain the current system in support of the transportation goals.
- Distribution of the transportation expansion project funding levels. In developing an estimate of the dollars potentially available for projects in the Fundable Improvement Plan the historical funding split between existing system maintenance and system expansion was evaluated. Approximately 40 percent of the transportation dollars expended in Monongalia County in the historical period were allocated to existing system maintenance projects. These funds do not include annual patching, snow removal, signal maintenance, etc. The historical percent was removed from the

estimated 2007 to 2030 funding levels prior to allocating dollars to any expansion projects.

\$24.4 million of the approximately \$210 million allocated to roadway system improvements was assigned to transportation system management (TSM) projects along existing corridors.

CONGESTION MANAGEMENT PROCESS/SYSTEM (CMP) IN TRANSPORTATION MANAGEMENT AREAS (TMAs)

Revised TEA-21 Provisions: Amended 23 U.S.C. 134(k)(3) and 49 U.S.C. 5303(k)(3).

Objective: Within a metropolitan planning area serving a TMA, there must be "a process that provides for effective management and operation" to address congestion management. The intent of this planning provision is to make the CMP more meaningful by fostering a better linkage to the planning process.

Requirement: Each TMA (with input from the FHWA Division Offices and FTA Regional Offices) should assess the extent that the TMA's existing CMS meets the new statutory requirements for a congestion management process.

MPO Policies, Procedures and Analyses: Morgantown is not a TMA. Thus, the provision does not apply.

PUBLIC PARTICIPATION PLAN (PPP)

Revised TEA-21 Provisions: Amended 23 U.S.C. 134(i)(6) on plans and 23 U.S.C. 134(j)(7)(a) on TIPs, and for transit, amended 49 U.S.C. 5303(i)(6) and 49 U.S.C. 5303(j)(7)(a).

Objective: MPOs shall publish or otherwise make available for public review transportation plans and TIPs "including (to the maximum extent practicable) in electronically-accessible formats and means, such as the World Wide Web."

Requirements: These publication requirements must be in place prior to adoption of transportation plans and TIPs addressing SAFETEA-LU provisions.

MPO Policies, Procedures and Analyses: The MPO Policy Board has approved a public participation program and has placed policy on their website. The policy can be found at www.plantgether.org/documents/MPO/MPO-public_participation.hmt.

COORDINATED PUBLIC TRANSIT-HUMAN SERVICES TRANSPORTATION PROGRAM

New SAFETEA-LU Provision: 23 U.S.C. 134(i)(5)(A) and 49 U.S.C. 5303(i)(5)(A). (1) Special Needs of Elderly Individuals and Individuals with Disabilities [49 U.S.C. 5310(d)(2)(B)(i) and (ii)]; (2) Job Access and Reverse Commute [49 U.S.C. 5316(g)(3)(A) and (B)]; and (3) New Freedom [49 U.S.C. 5317(f)(3)(A) and (B)].

Objective: Mass transportation services to elderly and individuals with disabilities have traditionally been provided by a number of service agencies that may, or may not coordinate their efforts. Duplicative service arising from limited/no coordination results in inefficient service provision.

To improve the mobility and cost-effectiveness of providing transit, increased coordination between public transit providers and human services agencies is highly encouraged.

Requirement: In preparing the local public transit-human service transportation plans, service providers seeking assistance under federally funded programs should demonstrate coordination with the applicable metropolitan planning processes. As a condition for receiving formula funding under FTA programs, proposed projects must be derived from a locally developed public transit-human services transportation plan. The plan must have been developed through a process that included representatives of public, private, and non profit transportation and human services providers, as well as the public.

MPO Policies, Procedures and Analyses: A public transit-human services transportation plan has been developed in a coordinated process with Mountain Line Transit, Scott's Run Settlement House, Fairmont-Morgantown Housing Authority, the Department of Health and Human Services, In Touch and Concerned, Senior Monongalians, Caritas House, Inc., Morgantown Cab Company/ R&R Transit, Pace-Tec, The Ronald McDonald House, Monongalia County Development Authority,

and the City of Morgantown. The document and recommendations are incorporated as an appendix to the RTP.

AIR QUALITY CONFORMITY

Revised TEA-21 Provision: Amended 23 U.S.C. 134(i)(3).

Objective: Within non-attainment areas the MPO must demonstrate a program for attaining conformity to the CAAA through the end of the planning period.

Requirements: On a four-year cycle the MPO long range transportation plan must be updated and the air quality attainment analysis must also be revised..

MPO Policies, Procedures and Analyses: As the Greater Morgantown MPO study area is attainment within the definition of the CAAA, the four-year cycle for updates does not apply.

APPENDIX A – MODEL VALIDATION REPORT

Morgantown/Monongalia County

Travel Demand Model 2000 Base Year Validation

■ Background/Purpose

The purpose of this memorandum is to provide documentation of:

- The regional travel model development parameters and methods used in expanding and updating the original 1995 Morgantown/Monongalia County travel demand model to encompass the entirety of Monongalia County.
- The set of parameters used in the development of the updated base-year (2000) travel demand model and the notation of changes from the original 1995 model structure.
- The validation criteria applied.
- The “goodness of fit” to the validation criteria of the validated 2000 base-year highway network traffic assignment and trip table.

This update of the Morgantown regional travel demand model has included a revision of the socioeconomic data to 2000 levels, the incorporation of new internal-external and external-external travel survey data, the development of an expanded roadway network which includes the entire Monongalia County study area, and the addition of substantial detail to the traffic analysis zone (TAZ) geography. The results of the external travel survey are included for reference in the appendix.

■ Methods/Assumptions

The updated and enhanced year 2000 countywide travel demand forecasting model has been developed from the original Morgantown urbanized area focused model which was developed and applied in the 1995-1998 timeframe by Barton-Aschman Associates, Inc. (Parsons Transportation Group) as an element of the Morgantown/Monongalia County Long Range Transportation Plan (1998). The 1998 long-range transportation plan (LRTP), with a horizon year of 2020, was developed on behalf of the West Virginia Department of Transportation. The 2020 plan was developed in anticipation of the Morgantown/Monongalia County urbanized area being designated as a Census urbanized area following the Year 2000 Census, as actually happened.

The 1998 LRTP effort included the conduct of internal travel surveys of local residents and West Virginia University students, faculty and staff to determine local travel patterns and trip characteristics for both home-based and non home-based trips. This original model effort did not include the conduct of external travel surveys to determine the magnitude,

trip purpose, and spatial distribution of trips entering and leaving the county. However, some portion of the total internal-external travel market was included in the surveys conducted to determine the characteristics of home based and non-home based trips. The basic elements of the internal-internal trip generation and trip distribution components of the earlier 1995 model were incorporated into the updated year 2000 travel demand model.

As another element of the 2000 base year model development process, a series of external travel surveys were conducted in order to obtain a better understanding of the magnitude, spatial distribution, and characteristics of the internal-external, external-internal, and external-external travel on the county highway system. The results of these external travel surveys were also used in the validation of the enhanced and expanded 2000 base year travel demand forecasting model.

Initial Model Input Parameters

Roadway Network

The 2000 roadway network contains all of the roadways that were in the 1995 modeled network. Additional network detail was added to the 2000 network to correspond with the more detailed traffic analysis zone structure. Capacities and speeds were assigned based on the 1995 network, known geography/topography, and from knowledge gathered from field visits. The consultant team also gathered information about intersection geometry which was incorporated into the model in “approach codes”, from field visits. . Table 1 gives a general over view of the entire roadway network.

Table 1. Year 2000 Base Highway Network Characteristics

	Freeway	Major Arterial	Minor Arterial	Collector	Local	Other	Overall
Number of Links	148	413	533	9	347	53	1,503
<i>Capacity</i>							
Minimum	1,600	300	300	300	300	600	300
Maximum	3,600	3,500	3,200	700	1,800	3,600	3,600
Average	3,451	1,339	711	478	532	1,581	1,141
<i>Speed</i>							
Minimum	30	10	8	15	10	15	8
Maximum	65	65	55	30	35	65	65
Average	62	37	29	22	24	33	33

A significant amount of detail was added to the 2000 network . Figures in Appendix B depict the changes in the amount of detail.

In addition to the use of numerous one-way and two-way links, the roadway network is characterized by the inclusion of a large number of centroid connectors, connecting trips from TAZ centroids to the network. Centroid connectors were assigned speeds and terminal times based on four area-types: (1) West Virginia University, (2) Central Business District (CBD), (3) Urban, and (4) Non-Urban. Centroid connectors were assigned essentially unlimited capacities. Terminal times represent the average time spent walking and parking at the start or end of a trip and are added to over-the-road travel times in the trip distribution process. Table 2 shows the speeds and terminal times used for each of these area types.

Table 2 Centroid Connector Characteristics

Area Type	Speed	Terminal Time
West Virginia University	15	4
Central Business District	10	2
Urban	15	1.3
Non-Urban	20	1

The intrazonal travel time was calculated as a function of the area of the respective traffic analysis zone and the intrazonal travel speed and terminal times. The intrazonal travel speed and terminal times were determined by area type.

$$\text{Intrazonal Travel Time} = \text{Terminal Time} + \frac{\sqrt{\text{area}(\text{sqmiles}) * 60(\text{min/ hour})}{\text{TravelSpeed}(\text{miles / hour})}$$

Trip Generation

Productions

Trip production rates were computed from the data obtained through the 1995 Monongalia County Household Travel Survey and the 1995 Monongalia County Student Travel Survey (Barton-Aschman Associates, Inc., 1995). The model estimates travel for home-based work (HBW), home-based university (HBU), home-based non-work (HBNW) and non-home based trips (NHB), following the conventions developed in the 1995 model. The trip rates were computed using household size and auto ownership as the primary cross-classification variables. The final trip rates used in the model and which are shown in Tables 3 through 6 represent the trip rates from the survey. Additionally, several table cells were filled in with the help of information from the 2001 Nationwide Household

Transportation Survey (NHTS) and NCHRP 365. Trip production rates that were derived from the student travel survey and not used in the 1995 model are italicized.

Table 3. Total Daily Home-Based Work Trip Production Rate by Household Size and Number of Vehicles in Household

Household Size	1	2	3	4+
Zero-Auto Household	0.23	0.54	0.88	1.02
1-Auto Household	0.71	0.76	1.1	1.27
2-Auto Household	0.71	1.26	2.07	1.76
3+-Auto Household	0.71	1.31	1.58	2.02

Table 4. Total Daily Home-Based Non-Work Trip Production Rate by Household Size and Number of Vehicles in Household

Household Size	1	2	3	4+
Zero-Auto Household	0.85	2.29	3.26	5.63
1-Auto Household	1.67	3.19	4.05	7.04
2-Auto Household	1.67	3.1	4.29	8.44
3+-Auto Household	1.67	3.21	4.46	7.46

Table 5. Total Daily Home-Based University Trip Production Rate by Household Size and Number of Vehicles in Household

Household Size	1	2	3	4+
Zero-Auto Household	0.15	0.46	0.14	0.12
1-Auto Household	0.28	0.64	0.17	0.15
2-Auto Household	0.28	0.65	0.29	0.24

3+-Auto Household	0.28	0.67	0.97	0.85
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Table 6. Total Daily Non-Home-Based Trip Production Rate by Household Size and Number of Vehicles in Household

Household Size	1	2	3	4+
Zero-Auto Household	0.65	1.17	1.51	2
1-Auto Household	1.05	1.64	1.88	2.5
2-Auto Household	1.05	1.58	2.29	3.23
3+-Auto Household	1.05	1.64	2.27	3.18

Attractions

Total daily trip attractions by trip purpose were developed for the 1995 Morgantown Regional Transportation Planning Study from the 1995 Monongalia Household Survey (Barton-Aschman Associates, Inc.). The following attraction rates were used for both the 1995 and 2000 models:

- HBW Attractions = $1.2 \times RE + 1.2 \times NRE$
- HBNW Attractions = $4.2 \times RE + 0.8 \times NRE + 2.4 \times HH$
- NHB Attractions = $3.2 \times RE + 0.9 \times NRE + 0.5 \times HH$

In each of these equations, HBW represents home-based-work trips, HBNW represents home-based non-work trips, NHB represents non-home-based trips, RE is retail employment, NRE is non-retail employment, and HH is the number of households in each traffic analysis zone.

Attractions for the HBU trip type (students going to West Virginia University) were determined by factoring up Home Based University Attractions (HBU As) for the 1995 Morgantown model. The 1995 HBU Attractions were derived from the Monongalia County Student Travel Survey (Barton-Aschman Associates, Inc., 1995). Two transformations were necessary to transfer this information from 1995 to 2000 and from the old to new TAZ structure. To transfer from the old (1995) to the new (2000) zone structure, attractions were allocated from the old zone structure to new zones based on university maps of parking lot and building locations (attractors). To transfer the zonal attractions from 1995 to 2000, the attractions were factored up by the change in WVU enrollment. WVU enrollment for 2000 was 21,987 compared to 21,517 in 1995.

$$HBUA_{2000,i} = HBUA_{1995,i} \frac{Enrollment_{2000}}{Enrollment_{1995}} = HBUA_{1995,i} \frac{21,987}{21,517} = HBUA_{1995,i} * 1.02$$

Base Year, Household, and Employment Data

Base Year Household Data

The year 2000 U.S. Census is the source of base year household data used in the Morgantown/Monongalia County travel demand model. Information at the Census block and block group level was aggregated as necessary to match the geographic boundaries of the defined 2000 base year traffic analysis zone system. Table 7 illustrates the 1990, 1995, and 2000 total population and households for Monongalia County. Information for the years 1990 and 2000 is derived from the U.S. Census data for those years, while information for the year 1995 is from the 1998 LRTP prepared by Barton-Aschman Associates, Inc.

Table 7. Population and Household Estimates, 1990-2000; Monongalia County, WV

Year	Total Population	Group Quarters Residents	Net Household Population	Occupied Housing Units	Persons Per Household
1990	75,509	5,615	69,894	29,087	2.40
1995	NA	NA	NA	32,867	NA
2000	81,866	5,688	76,178	33,446	2.28

Source: 1990 and 2000 data from U.S. Census; 1995 data from Morgantown/Monongalia County Long Range Transportation Plan (1998)

Base Year Employment Data

The initial base-year employment records for the Morgantown/Monongalia County region were obtained from two sources provided by the West Virginia DOT, West Virginia Employment Security Commission's (WVESC) employment database, and data from Woods and Poole, private economic forecasting firm. The data used in the 1995 Morgantown model served as an additional guide.

The WVESC provided employment data for the first quarter of calendar year 2000 for compatibility with the timing of the 2000 U.S. Census on April 1 of that year. The data were first edited to remove duplicate records, and the remaining records were matched to traffic analysis zones using the TransCAD modeling software's GIS capabilities. After

matching the employment locations, employment numbers were assigned to traffic analysis zones and further aggregated by Standard Industrial Classification (SIC) code to either retail or non-retail employment. Table 8 presents the resulting total estimated number of employees by county using these two sources and a comparison of these estimates to those independently prepared by Woods & Poole.

Table 8. Total Unadjusted Study Area Base-Year Employment

Source	Retail Employment	Non-Retail Employment	Employment Totals
Initial TAZ Allocation (2000)	5,881	31,058	36,939
Woods and Poole Totals (2000)	8,623	43,303	51,926

The employment data in the Woods & Poole database were used as a guide to establish county-level employment control totals for the model. The Woods & Poole data are generally considered to be a complete measure of the number of full-time and part-time jobs by place of work. The Woods & Poole employment data include hourly wage and salary workers, proprietors, private household employees, and miscellaneous workers. There are three other commonly used government sources for employment data: the Bureau of Labor Statistics (BLS), the Bureau of the Census, and the National Income and Product Accounts (NIPA). These sources of employment data are generally much lower than the Woods & Poole data because agricultural workers, the military, proprietors, households, and miscellaneous employment are not included; of these, the exclusion of proprietors from the BLS data is the most significant difference. Data from the Census (and some survey data from the BLS) are based on employment by place of residence and differ fundamentally in concept from the Woods & Poole employment data by place of work; Census data are generally lower than Woods & Poole data, but not always. Employment data in the National Income and Product Accounts are close to Woods & Poole data, except that part-time proprietors and certain miscellaneous employees are excluded; therefore, these data are usually lower.

The Woods & Poole data and the 1995 model employment data were used to validate the distribution and magnitude of employment throughout the region. Data used in the 1995 model served as a “minimum total” by employment type for an equivalent region of the Monongalia County study area in the 2000 model. A total of 6,688 retail jobs and 10,463 non-retail jobs were added to various zones to meet these minimum totals. In addition, it was assumed that employment in these zones would have grown some since 1995 so a growth of 1.25% and 4.0% for retail and non-retail employment respectively was applied. In all, this resulted in total employment exceeding the target total guidelines from Woods and Poole. The year 2000 was chosen to be consistent with the household data obtained from Census 2000. The resulting revised total base-year employment numbers by county are shown in Table 9.

Table 9. Total Adjusted Study Area Base-Year Employment after Scaling the TAZ Allocation

Source	Retail Employment	Non-Retail Employment	Total Employment
Adjusted TAZ Allocation (2000)	12,653	41,940	54,593
Woods & Poole (2000)	8,623	43,303	51,926

Employment numbers by TAZ and employment category (retail, non-retail) used in the development and validation of the travel demand model are provided in the appendix.

Through the validation process several locations were evaluated as potential special generators. The use of a special generator would allow the model to more reasonably reflect trip rates at selected uses. The locations that were closely reviewed as potential special generators were:

- West Virginia University Medical Center and Mon-General Hospitals;
- West Virginia University (Downtown and Evansdale Campuses); and
- Morgantown and Mountaineer Malls.

After an examination of all available data, it was determined that only the WVU Medical Center and Mon-General Hospital land uses needed to be considered as “special generator.”

Trip Distribution

Calibration

The trip distribution model was calibrated to data on vehicle trips originating and ending in the study area from the 1995 home interview survey.. The average travel times for trips originating and ending in the study area were derived from the internal travel surveys areas follows:

- 22.7 minutes for home-based-work trips,
- 12.7 minutes for home-based non-work trips,
- 8.6 minutes for home-based university trips, and
- 10.0 minutes for non-home-based trips.

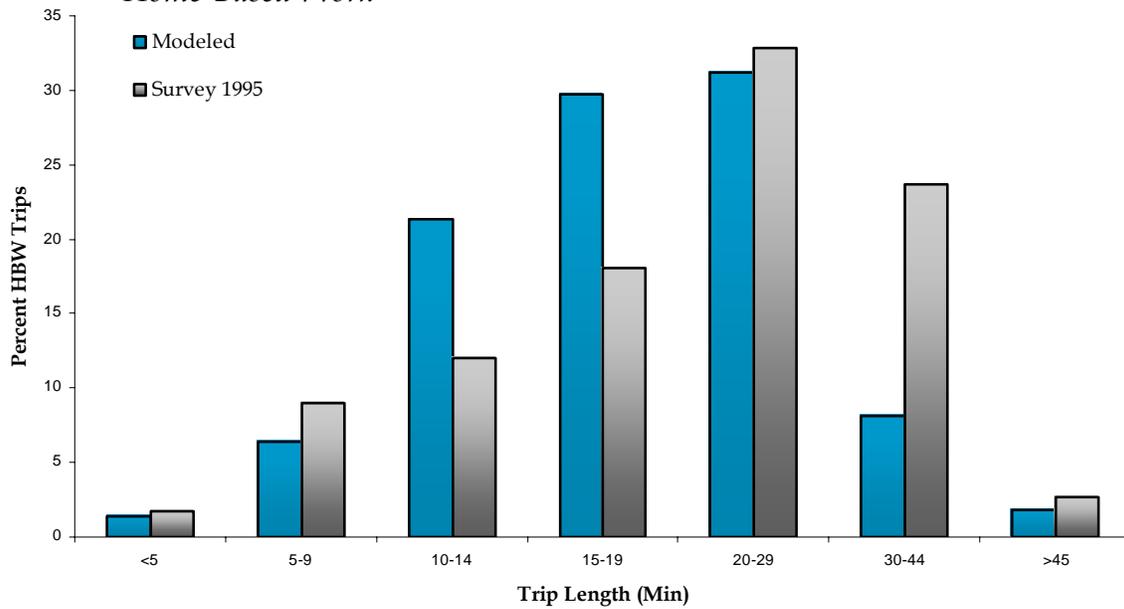
Two criteria were used in calibrating the revised trip distribution or friction factors for the 2000 base year model. First, model average travel times should closely match the average travel times from the household survey and census values. Second, the coincidence ratio,

which is a measure of how close the distributions of travel times from the model and the survey are should be reasonably close to a value of 1.00. The friction factor function used has a “negative exponential” form, which means that the factor decreases as travel times increase. The calibrated exponents are (absolute values):

- 0.01 for home-based-work,
- 0.14 for home-based non-work,
- 1.30 for home-based university, and
- 0.18 for non-home-based trips.

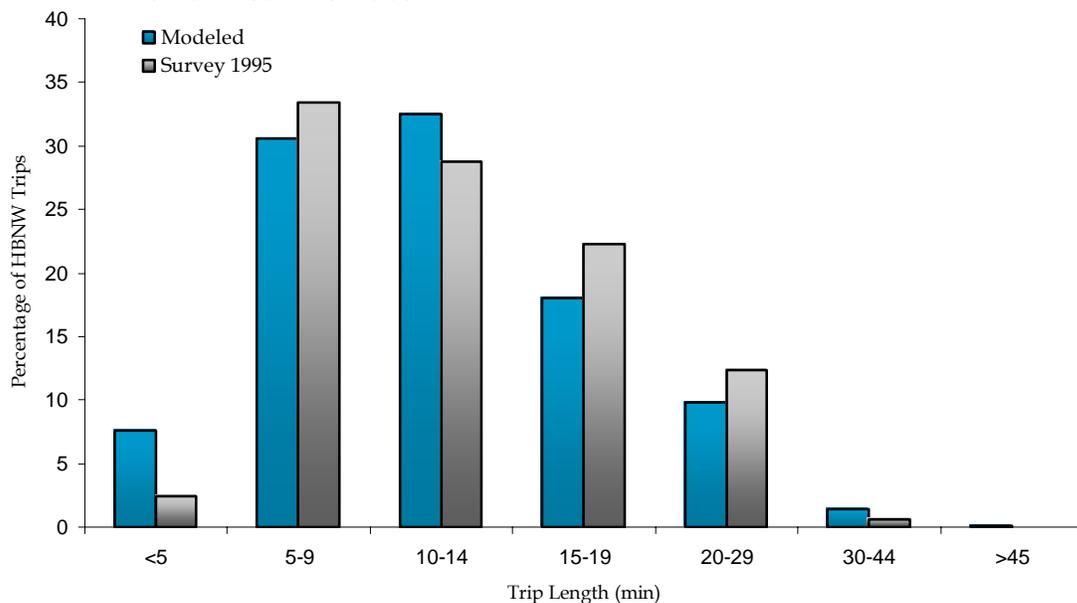
Figures 1, 2, 3, and 4 show the distributions of travel times obtained from the newly calibrated base year 2000 model and the 1995 survey (for trips within the study area) after calibrating the trip distribution model, for home-based-work, home-based non-work, home-based university and non-home-based trips, respectively.

**Figure 1. Trip Length Distribution for Home-Based Work Trips
(within the Study Area) from the 2000 Model and the 1995 Survey**
Home-Based Work



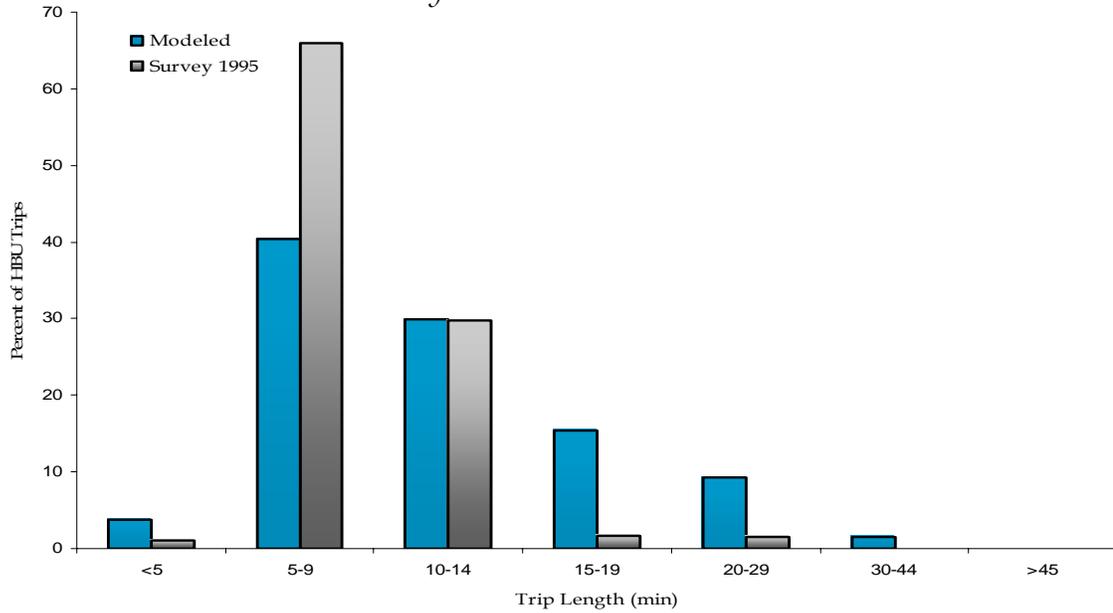
Notes: Reported (survey) average trip length = 18.2 minutes.
Model average trip length = 22.7 minutes.
Coincidence ratio = 0.53.

**Figure 1. Trip Length Distribution for Home-Based Non-Work Trips
(within the Study Area) from the 2000 Model and the 1995 Survey**
Home-Based Non-Work



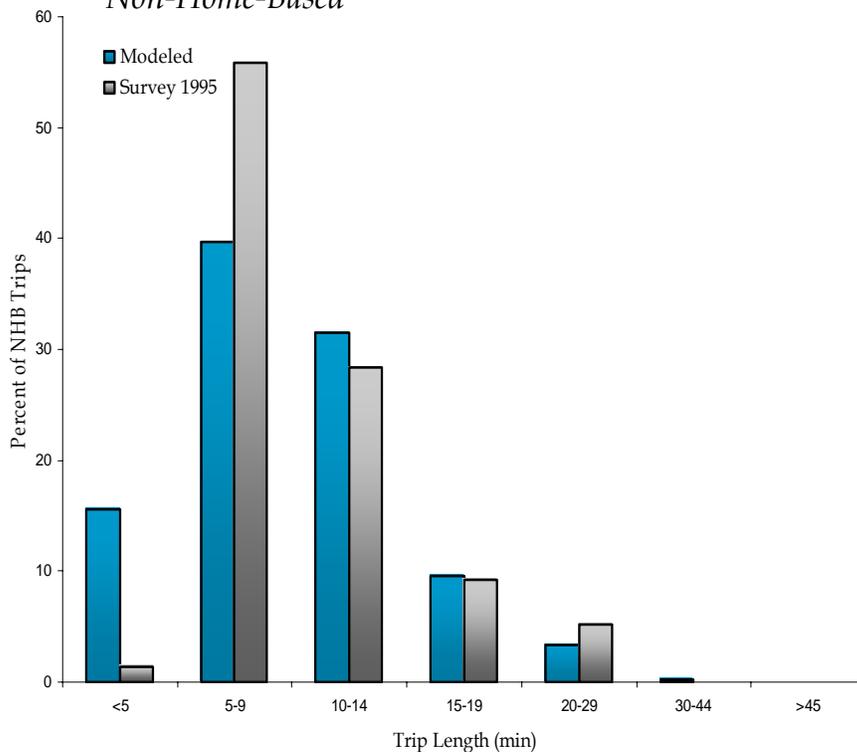
Notes: Reported (survey) average trip length = 12.7 minutes.
Model average trip length = 12.1 minutes.
Coincidence ratio = 0.74.

Figure 1. Trip Length Distribution for Home-Based University Trips (within the Study Area) from the 2000 Model and the 1995 Survey
Home-Based University



Notes: Reported (survey) average trip length = 8.6 minutes.
Model average trip length = 11.8 minutes.
Coincidence ratio = 0.51.

**Figure 1. Trip Length Distribution for Non-Home-Based Trips
 (within the Study Area) from the 2000 Model and the 1995 Survey**
Non-Home-Based



Notes: Reported (survey) average trip length = 10.0 minutes.
 Model average trip length = 9.4 minutes.
 Coincidence ratio = 0.61.

Modal Split

Mode Shares

Almost all trips reported in the travel diaries from the household survey were conducted by auto. Thus, our modeled trips reflect only auto trips. This notably excludes most of the intra-university trips that use the University’s Personal Rapid Transit (PRT) system.

Auto Occupancy

The average auto occupancy reported by survey respondents is 1.12 for home-based-work trips, 1.46 for home-based non-work trips, 1.22 for home-based university trips, and 1.33 for non-home-based trips. These numbers are very close to the vehicle occupancies reported in the NPTS 1990 that are also summarized in NCHRP Report 365 of 1.11 for home-based-work, 1.44 for home-based shopping, 1.66 for home-based social, 1.67 for home-based-other, 1.66 for non-home-based, and a 1.49 average overall auto occupancy for an urban area size of 50,000 to 199,999.

Traffic Assignment

For the Morgantown/Monongalia County travel demand model, an equilibrium assignment technique was applied in allocating daily vehicle trips to routes on the roadway network. The equilibrium assignment process assures that all travelers between a given origin and destination have the same travel time, regardless of the route they choose for their trip. In the QRSII software, the process toggles iteratively between traffic assignment and trip distribution and assures that the output travel times from the traffic assignment are as close as possible to those used as inputs to the trip distribution model. In using this methodology, a number of input assumptions were required. The general parameters used in the assignment process included:

- Link capacities applied to the network reflected level of service E-traffic conditions. Default QRSII Parameters for QRSII Version 6.1 were used except where noted. Most of these reflect the HCM 1997 values.
- Adjustments were made to the Bureau of Public Roads (BPR) coefficient used in the traffic assignment calculations, to get a reasonable amount of route diversion with the given capacities. These values are shown below in Table 10

Table 10. Traffic Assignment Parameters by Functional Class

Functional Class	V/C Multiplier	V/C Exponent
Freeway/Expressway	0.88	9.8
Arterials	0.84	5.5
Collectors/Local	0.84	5.5
Other	1.0	1.0

- Ten iterations of the assignment were completed prior to reaching an optimum result. The assignment technique applied is a “Method of Successive Averages” approach, where the traffic volume on each link is based on a weighted average traffic loading for all 10 iterations.

■ Model Validation Parameters

The process of validating the 2000 base year model was completed through an iterative process of reviewing output from the trip generation, trip distribution and traffic assignment modules, and adjusting, when required, the inputs to the modules. Validation criteria used to evaluate each step in the modeling process are described below.

Trip Generation

Trip generation validation checks included:

- Trip production rates: Trip production rates derived from the household survey should be comparable to trip rates from similar areas.
- Total productions to total attractions by trip purpose: A maximum deviation of ± 10 to 15 percent between pre-normalized productions and attractions is the goal.

Roadway Network

The following reviews of the network data were performed:

- The network attributes used to develop the model were compared to field data collected.
- The model's ability to replicate actual travel times was checked by comparing average modeled trip lengths to information obtained from the survey.

Trip Distribution

The results of the trip distribution module were compared against data from similar areas and to information in standard reference materials to determine its reasonableness. Model statistics reviewed include:

- *Average trip lengths* – average trip lengths should be within ± 15 percent of the average travel times obtained from the household survey.
- *Intrazonal trips* – The percentage of intrazonal trip making should be evaluated relative to percentages documented in reference materials. The percentage of total trips in the intrazonal category is a function of the TAZ size in the study area. Larger, mixed-use zones should contain a higher percentage of intrazonal trips than smaller more homogeneous zones. Zones in the Morgantown model were developed to reduce the number of intrazonal trips. An acceptable level of intrazonal travel throughout the region would be less than four percent of all trips.

Traffic Assignment

The following reviews were conducted throughout the iterative validation process. All benchmarks cited are a slightly modified version of those listed in the *1997 FHWA Model Validation and Reasonableness Manual*:

- The total summation of all actual link counts was compared to the summation of the daily assignments on the links with daily traffic counts. The assigned volume total should be ± 5.0 percent of the actual link count total.
- The total actual traffic count value was compared to the base-year assigned volumes by functional classification group. Deviation by functional class, should not exceed:
 - Freeway: ± 7 percent;
 - Minor Arterial: ± 15 percent; and
 - Collector: ± 25 percent.

No K factors were applied to the distribution tables to alter the distribution or magnitude of vehicular travel between sub-areas of the region.

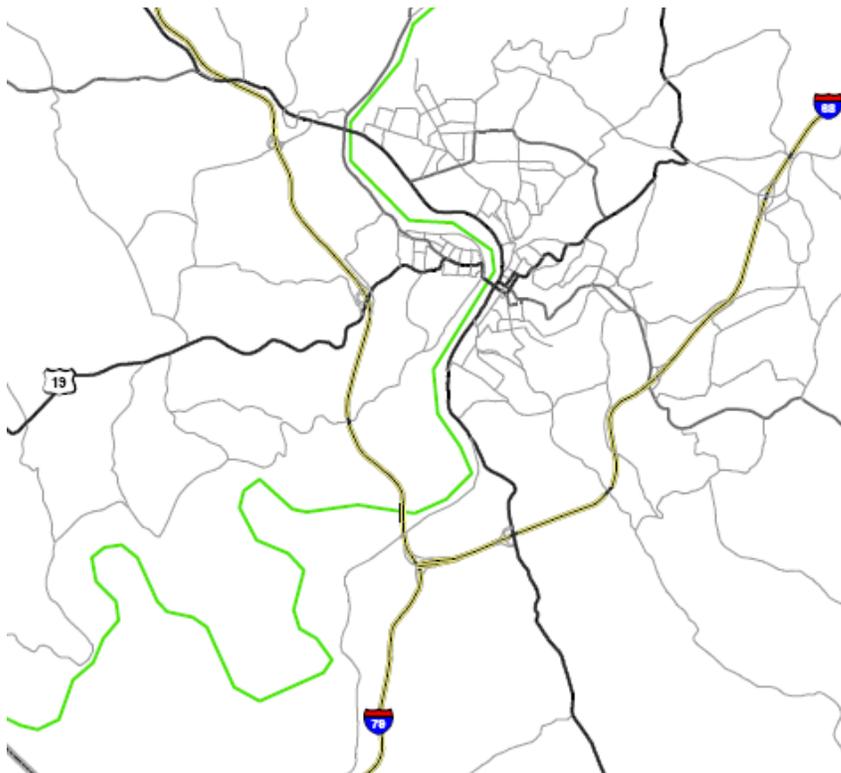
- The cumulative model assignment vehicle miles of travel (VMT) should be within approximately ± 5.0 percent of cumulative daily traffic count-based VMT. The cumulative VMT for this comparison includes only those network links with available count data. Thus, the reported VMT will be less than the number typically reported for the region.
- The desired deviation of selected screenline assignment totals to screenline daily traffic count totals is ± 5.0 percent. For the 2000 base year model, a single regional screenline of the Monongahela River was used. The location of this regional screenline is illustrated on Figure 5.
- Compare external cordon-line assignments to actual counts. Assignment totals and count totals should be virtually identical.
- The percent root mean square error (RMSE) was calculated for the entire study area and for the summation of those links with traffic counts in various volume-range categories. The total acceptable error for all links with counts is 35 percent. RMSE limits for various link volume categories are documented in Table 11.

Table 11. Percent Root Mean Square Error Guidelines

Link Volume Capacity (ADT)	Deviation Limit
Less Than 5,000	45 to 100%
5,000 to 9,999	35 to 45%
10,000 to 19,999	20 to 25%
Greater Than 20,000	15%
All Links	35%

- Calculate the correlation using pairs of assigned and counted volumes. A correlation coefficient (r) goal of at least 0.88 should be set.

Figure 5. Regional Screenline Map - Monongahela River



■ Validation Results

The following section documents the results of the various validation tests for the draft travel demand model. A summary of the results is provided.

Roadway Network

Network attributes were reviewed against data collected in the field. In the base-year model network, all intersections are coded as intersections without delay.

The travel model network region was expanded from the model applied for the 1998 plan to include all of Monongalia County. The expanded network included all roadways with a two-digit WV route number (county secondary routes) and higher functional classes. Local roads were included in locations where there were significant gaps in the roadway network to improve the model's ability to replicate observed traffic levels. This was especially the case in the downtown areas of Morgantown and Westover.

Traffic analysis zones (TAZ) are the base geographical unit of analysis for the Morgantown/Monongalia County travel demand model. The TAZs in the Morgantown model generally have boundaries defined by adjacent:

- Functionally classified streets;
- Census blocks and block groups;
- Homogenous land uses;
- Railroad facilities; and
- Natural barriers to access, such as Monongalia River, Cheat Lake, and Deckers Creek.

The expanded Monongalia County zone structure includes 329 TAZs, which are represented by centroids in the network, placed in the center of each TAZ to represent the entire zone. Centroids are the origin and destination for any trip entering or leaving an internal zone. The number of households by household size, employment by retail, service and other categories and intrazonal travel times were calculated for each TAZ. Figures of the 1995 and new 2000 zone structures can be found in Appendix B.

Trip Generation

Comparison of Morgantown Trip Generation Rates to NCHRP Report 365 Rates

To ensure that the trip generation rates used in the travel demand model for the Morgantown study area are within the typical range for similar areas, those rates are compared to the trip generation rates obtained from NCHRP Report 365 for urban areas with population ranging from 50,000 to 200,000. According to Census 2000, the total population of Monongalia County was equal to 81,866 persons. Table 12 compares the NCHRP rates by household size and auto ownership to the rates used in the 2000 model.

Table 12. Total Trip Rates for Morgantown Data in Comparison to NCHRP 365 Trip Rates

Category	NCHRP (Urban Areas of 50,000 - 199,999)	2000 Morgantown Model
Average trips per household	9.2	7.6
Average daily person trips by household size		
1-person households	3.7	3.4
2-person households	7.6	6.2
3-person households	10.6	8.2
4-person households	13.6	13.0 (4+)
5+-person households	16.6	
Average daily person trips by auto ownership		
0-auto households	3.9	3.2
1-auto households	6.3	6.1
2-auto households	10.6	8.0
3+-auto households	13.2	9.2
Home-based-work trip rates by household size		
1-person households	0.7	.6
2-person households	1.7	1.0
3-person households	2.0	1.5
4-person households	2.6	1.7 (4+)
5+-person households	2.8	
Home-based non-work trip rates by household size		
1-person households	2.0	1.8
2-person households	4.1	3.7
3-person households	5.9	4.5
4-person households	7.9	7.3 (4+)
5+-person households	10.3	
Non-home-based trip rates by household size		
1-person households	1.0	1.0
2-person households	1.8	1.6
3-person households	2.7	2.1
4-person households	3.1	3.1 (4+)
5+-person households	3.5	

Note: The NPTS rates are obtained from records in a number of urban areas across the country.

While the observed trip rates in the Monongalia County study area are generally somewhat lower than those reported in NCHRP 365 for metropolitan areas with populations between 50,000 and 200,000 persons, they appear to be generally reasonable and logical. This conclusion is based on the combined influences of West Virginia University and the area's topography and relatively high development density compared to typical isolated communities with populations of 50,000 to 200,000.

Deviation between Unbalanced Productions and Attractions

A maximum deviation of ± 10 to 15 percent between pre-normalized productions and attractions by trip purpose is desirable. Table 13 shows the pre-normalized total productions, attractions, and their deviations by trip purpose for the Morgantown/Monongalia County region.

Table 13. Deviations between Pre-normalized Productions and Attractions

	Home-based work	Home-based non-work	Home-based university	Non-home-based
Total productions	73,783	144,626	14,087	67,823
Total attractions	97,688	191,908	26,184	110,248
% Difference	32%	33%	86%	63%

Based on the review of selected uses for potential special generator applications, special generators were established at both hospitals Mon General and West Virginia University Hospital. The hospitals were assumed to generate traffic at the rates published in ITE Trip Generation 7th Edition. The review of trip levels adjacent to the remaining uses previously documented indicated that the model's general trip rates and distribution parameters were appropriate.

Trip Distribution

Statistics used to validate the trip distribution model include comparing modeled and reported average trip lengths and computing the percentage of intrazonal trips.

Average Trip Lengths

Modeled average trip lengths should be within ± 15 percent of the home interview survey results. Table 14 shows that for each trip purpose the average model travel times (vehicle trips) are within ± 30 percent of the average reported travel times (vehicle trips).

Table 14. Comparison of Average Model and Reported Travel Times

Trip Purpose	Model Travel Time	Reported Travel Time	Percent Difference
Home-based-work	18.22	22.07	-21%
Home-based non-work	12.07	12.70	-5%
Home-based university	11.75	8.58	30%
Non-home-based	9.38	10.0	-7%

In the case of home-based work trips, the differential of -21 percent appears to be most reflective of the significant growth in local employment that was determined to have taken place between 1995 and 2000. This increase in local job opportunities, combined with continued local population growth, would logically contribute to the observed reduction in average travel time of approximately four minutes, from about 22.1 minutes to about 18.2 minutes.

The modeled work trip distribution results match Year 2000 journey-to-work trip length distributions from the U.S. Census more closely than the 1998 survey results. According to the survey, the average work trip travel time is 20.6 minutes, a difference of 13 percent from the model results.

Similarly, in the case of home-based university trips, essentially student travel, the differential of +30% is reflective of the significant growth in student oriented housing that was observed over the 1995-2000 period in the Van Voorhis Road/West Run area. With the majority of new student oriented rental housing being constructed in these areas further removed from traditional housing concentrations, the change in average trip length of approximately 3.2 minutes, from about 8.6 minutes in 1995 to about 11.8 minutes in 2000, appears to be both reasonable and logical.

The close matches for the average trips lengths of -5% for home-based non-work and -7% for non-home based trips indicate that the updated year 2000 model is accurately representing the travel patterns associated with these trip purposes.

Intrazonal Trips

An acceptable level of intrazonal travel throughout the Morgantown/Monongalia County region would be less than 4.0 percent of all trips. The total number of estimated intrazonal vehicle trips from the model is equal to 7,276 and the total estimated number of vehicle trips from the model is equal to 522,742. The resulting percentage of intrazonal trips is equal to 1.39 percent, which is significantly less than the target value of 4.0 percent.

Traffic Assignment

Base-year traffic assignments for the Morgantown/Monongalia County travel demand model were completed using 10 iterations of an equilibrium assignment technique. Overall, the base-year traffic assignment performed well and met the independently defined validation criteria. The validation results for the traffic assignment are presented below.

Traffic Count to Model Assignment Comparison

Comparisons of available base-year ADT counts to the model assignments are summarized in Table 15. This includes a summary of link counts and model assignments by functional classification category, and a summary of the total for all links. As documented, the base-year model count to assignment comparison met validation goals.

Table 15. Total Volume Comparisons by Functional Classification Category

Functional Classification	Daily Traffic Counts	Model Daily Assignment	Guideline	Deviation
Interstate	1,363,500	1,345,472	+/- 7%	-1.3%
Arterial	990,300	1,028,704	+/- 15	+3.9
Collector/Local	120,200	94,513	+/- 25	-21
All Links	2,489,000	2,468,689	+/- 5	-0.99

The total volume comparisons by roadway functional classification category are all below the specified calibration guideline values. In the case of the most important interstate and arterial categories, the deviations between total daily observed traffic counts and modeled volumes are much lower than the specified guidelines, indicating a high degree of correlation.

Screenlines

One major regional screenline through the study area was established, and is illustrated in Figure 5. The validation goal for the screenline was a deviation between observed and estimated daily traffic volumes of ± 5.0 percent, which was achieved. The results of the summation of the screenline assignment volumes compared to the count volumes are shown in Table 16.

Table 16. Screenline Results - Monongahela River

Screenline Location	Daily Traffic Counts	Model Daily Assignment	Absolute Difference	Percent Difference
Star City Bridge	20,000	22,931	2,931	14.7%
Westover Bridge	24,000	29,103	5,103	21.3%
I-79 Bridge	30,000	24,184	(5,816)	(19.4%)
Screenline 1: Monongalia River	74,000	76,218	2,218	3.0%

The total screenline deviation of +3% is well within the validation goal of +/- 5 percent.

The calibrated model represents actual traffic counts at the external stations reasonably well. Table 17 summarizes the comparison between model assignments and actual traffic counts at the model cordon.

Table 17. External Station Comparison

External Station Number and Location	Base-Year Daily Traffic Count	Daily Model Assignment
E I-79North	23,500	25,251
E US-119North	5,200	5,588
E WV-857 North	6,000	6,700
E WV-7West	4,800	4,442
E I-68 East	18,500	16,643
E US-19 South	3,600	4,392
E WV-7 East	4,800	5,259
E CR-81South	2,500	2,847
E I-79 South	30,500	32,779
E US-119 South	6,800	7,344

Other Statistical Analyses

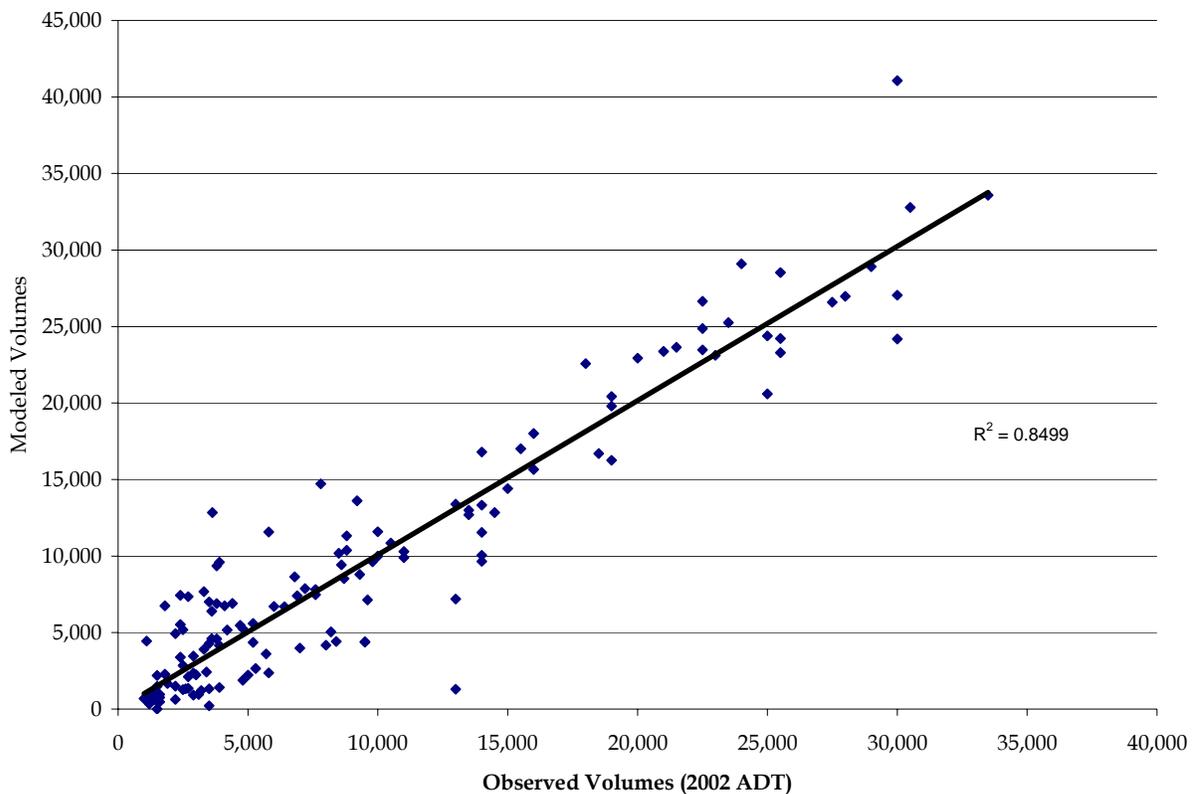
Table 18 summarizes the results of the root mean square error (RMSE) analysis test for those links in the base-year network for which traffic counts were available. The model calibration goals for each volume group category were met.

Table 18. Volume Root Mean Square Error (RMSE) Deviation

Link Volume Capacity (ADT)	Root Mean Square Error	Deviation Goal
Less Than 5,000	94%	45 to 100%
5,000 to 9,999	39	35 to 45
10,000 to 19,999	23	20 to 25
Greater Than 20,000	14	15
Areawide	31	35

Through the validation process, a correlation coefficient (r) of 0.85 was calculated using model assignment volumes in comparison to actual traffic counts. This comes close to the validation criteria goal of 0.88. A scatter plot of the relationship between model assignment and actual traffic counts is shown in Figure 6.

Figure 6. Comparison of Actual Traffic Counts to Model Assigned Traffic



■ **Summary**

This memorandum documents the results of applying the defined validation criteria to the various model components and estimated traffic volumes associated with the base-year Morgantown/Monongalia County, West Virginia travel demand model. Based on the validation criteria and model performance documented, it is the consultant team's considered opinion that the model is performing reasonably well. This means that the application of this year 2000 validated travel demand model would be able to reasonably estimate the traffic volume levels and travel patterns on any future-year highway network associated with any future-year land use concept.

We would suggest that future-year traffic assignments be refined to account for the relatively modest base-year model deviations from observed traffic count volumes described previously. Further guidance on this refinement methodology is documented in NCHRP 255: Highway Traffic Data for Urbanized Area Project Planning and Design.





Appendix A

Base Year (2000) TAZ Households and Employment

TAZ Households and Employment

Tables 19 and 20a-d shows the households and employment numbers by traffic analysis zone and category used in the validation of the 2000 base-year travel demand model.

Table 19. Adjusted TAZ Employment

TAZ	Retail Employment	Non-Retail Employment
1	0	25
2	0	162
3	4	0
4	6	0
5	0	1
6	193	636
7	193	636
8	0	115
9	0	431
10	0	39
11	0	0
12	0	0
13	0	0
14	67	52
15	67	48
16	0	0
17	0	29
18	50	574
19	0	0
20	0	0
21	31	11
22	31	19
23	32	57
24	0	10
25	0	620
26	159	133
27	146	236
28	7	6
29	0	5
30	186	543
31	0	8
32	10	164
33	0	87
34	140	75
35	129	27
36	0	182

37	0	0
38	0	0
39	0	157
40	90	135
41	6	206
42	21	132
43	0	7
44	0	3
45	165	52
46	6	17
47	320	257
48	6	55
49	0	317
50	8	2
51	130	1904
52	24	3
53	316	276
54	316	282
55	0	12
56	0	0
57	0	0
58	241	356
59	6	157
60	15	1477
61	0	23
62	1	9
63	1	374
64	8	12
65	12	33
66	4	10
67	0	0
68	0	1
69	194	3311
70	21	1620
71	0	7
72	122	1864
73	5	0
74	120	0
75	0	2
76	0	0
77	8	3
78	360	150
79	68	246
80	634	1466
81	0	22
82	3	50
83	0	120
84	59	6

85	158	242
86	0	48
87	115	22
88	13	7
89	0	28
90	0	5
91	0	0
92	436	423
93	88	225
94	40	3316
95	0	0
96	0	233
97	100	84
98	0	61
99	0	1
100	0	1
101	370	142
102	0	13
103	621	1379
104	13	11
105	44	23
106	0	300
107	88	178
108	96	50
109	51	347
110	0	0
111	750	172
112	152	57
113	0	67
114	0	42
115	8	8
116	3	47
117	4	65
118	0	0
119	131	250
120	35	55
121	40	252
122	18	135
123	80	430
124	0	176
125	0	0
126	0	0
127	0	0
128	50	79
129	0	0
130	0	0
131	0	3
132	606	500

133	0	0
134	8	0
135	5	0
136	0	4
137	0	172
138	0	86
139	749	823
140	5	118
141	0	300
142	3	375
143	0	13
144	21	124
145	397	97
146	13	29
147	52	600
148	95	60
149	79	54
150	122	248
151	0	50
152	0	10
153	0	95
154	54	175
155	16	1248
156	10	92
157	0	0
158	0	16
159	0	44
160	468	178
161	0	0
162	0	63
163	0	45
164	0	0
165	17	104
166	25	5
167	0	34
168	0	4
169	20	35
170	1	2
171	10	20
172	11	151
173	45	387
174	0	0
175	0	0
176	0	63
177	0	0
178	0	0
179	0	2
180	206	19

181	0	0
182	297	510
183	63	32
184	25	4
185	11	230
186	0	13
187	0	213
188	0	2
189	0	0
190	10	343
191	0	0
192	9	0
193	0	0
194	6	1
195	0	8
196	0	15
197	0	41
198	0	0
199	0	0
200	65	383
201	32	116
202	0	10
203	19	28
204	0	1
205	34	0
206	0	0
207	1	60
208	7	1
209	1	55
210	6	35
211	0	30
212	5	4
213	0	0
214	0	0
215	7	0
216	0	3
217	0	0
218	0	0
219	0	25
220	0	120
221	162	17
222	57	521
223	0	117
224	0	38
225	17	48
226	0	3
227	151	673
228	0	0

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229	0	0
230	0	8
231	0	58
232	0	0
233	0	4
234	0	3
235	53	269
236	0	69
237	0	0
238	0	15
239	0	3
240	0	23
241	0	10
243	0	35
244	0	0
245	13	32
246	4	0
247	0	0
248	0	2
249	0	86
250	7	0
251	0	40
252	3	17
253	0	5
254	0	5
255	0	2
256	0	0
257	0	15
258	0	15
259	0	1
260	0	15
261	0	55
262	0	25
263	0	41
264	0	39
265	0	0
266	0	66
267	5	32
268	0	0
269	12	60
270	0	1
271	0	65
272	0	0
273	0	0
274	0	0
275	0	0
276	0	6
277	0	4

278	0	0
279	7	30
280	0	4
281	23	18
282	0	27
283	0	10
284	0	5
285	8	0
286	0	0
287	0	110
288	8	20
289	0	100
290	0	15
291	11	136
292	11	136
293	0	2
294	0	30
295	0	0
295	214	21
296	0	0
297	0	0
298	0	1
299	2	40
300	0	21
301	0	5
302	0	0
304	0	27
305	0	12
306	0	51
307	0	25
308	0	58
309	0	160
310	0	48
311	0	0
312	0	0
313	0	0
314	0	33
315	0	20
316	0	0
317	0	5
318	0	0
319	0	0
320	0	2
321	0	3
322	0	0
323	0	17
324	0	0
325	0	209

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326	0	63
327	0	24
328	4	122
329	0	15

Table 20a. TAZ One-Person Households with Auto Ownership

TAZ	1 Person, No Autos	1 Person, 1 Auto	1 Person, 2 Autos	1 Person, 3 Autos
1	10	18	9	0
2	3	4	2	0
3	11	19	9	0
4	5	9	5	0
5	4	5	3	0
6	2	2	1	0
7	3	6	3	0
8	6	5	3	0
9	0	0	0	0
10	146	48	14	0
11	0	0	0	0
12	3	5	2	0
13	2	4	2	0
14	4	6	2	0
15	0	0	0	0
16	0	0	0	0
17	0	2	2	1
18	5	7	3	0
19	2	18	6	1
20	3	50	14	2
21	40	80	40	3
22	78	86	26	2
23	25	43	23	0
24	4	13	12	2
25	1	5	5	1
26	4	15	13	2
27	2	8	6	1
28	0	0	0	0
29	1	1	1	0
30	4	7	6	1
31	5	10	11	3
32	3	16	10	3
33	0	1	2	0
34	9	14	7	0
35	47	84	48	1
36	12	45	36	1
37	18	49	40	3
38	10	23	27	6
39	7	28	26	2
40	2	24	7	1
41	41	83	53	4
42	16	32	19	2
43	1	15	16	2
44	1	11	11	1

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45	2	27	29	3
46	7	11	13	3
47	3	14	8	2
48	3	12	7	1
49	27	52	32	1
50	6	15	15	3
51	39	97	81	10
52	16	53	55	9
53	0	1	0	0
54	5	4	1	0
55	3	11	4	1
56	5	35	16	4
57	3	14	5	1
58	5	26	23	3
59	5	25	30	6
60	8	38	43	5
61	8	23	18	3
62	1	1	1	0
63	8	11	11	2
64	8	14	16	4
65	2	7	5	1
66	1	5	3	1
67	6	11	40	2
68	1	4	2	0
69	5	48	34	4
70	100	75	42	2
71	29	85	71	5
72	3	16	12	1
73	1	2	0	0
74	5	4	1	0
75	7	7	1	0
76	1	4	2	0
77	3	20	9	2
78	0	0	0	0
79	9	27	27	7
80	3	12	14	4
81	15	35	21	2
82	10	31	24	3
83	7	15	10	1
84	0	0	0	0
85	1	1	2	0
86	6	10	11	3
87	4	18	11	3
88	2	8	5	1
89	2	8	5	1
90	2	6	3	1
91	2	10	6	1
92	1	5	3	1

93	5	25	21	5
94	64	75	49	3
95	34	92	70	5
96	14	75	58	5
97	9	38	16	5
98	0	1	1	0
99	14	22	24	4
100	6	8	8	1
101	1	2	3	1
102	0	1	1	0
103	2	7	8	3
104	0	2	1	0
105	21	51	33	2
106	11	21	12	1
107	0	0	0	0
108	0	0	0	0
109	0	0	0	0
110	2	4	4	1
111	0	1	1	0
112	13	59	29	7
113	3	11	6	1
114	10	42	19	5
115	1	4	2	0
116	1	6	2	0
117	1	7	4	1
118	0	0	0	0
119	2	7	5	1
120	1	4	3	1
121	3	13	9	1
122	5	22	19	3
123	6	59	51	12
124	9	54	46	4
125	0	0	0	0
126	0	1	2	1
127	0	0	1	0
128	3	4	4	1
129	3	5	5	1
130	0	0	0	0
131	1	3	3	0
132	0	0	0	0
133	0	1	1	0
134	0	0	0	0
135	0	0	0	0
136	0	1	0	0
137	0	0	0	0
138	0	0	0	0
139	0	1	0	0
140	1	4	1	0

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141	0	1	1	0
142	1	0	0	0
143	2	4	5	1
144	6	14	18	3
145	3	5	6	1
146	0	0	0	0
147	5	9	5	1
148	20	25	12	2
149	7	13	7	1
150	10	45	35	6
151	3	12	8	1
152	1	7	5	1
153	10	43	32	5
154	11	80	69	14
155	5	23	17	2
156	1	3	4	1
157	0	0	0	0
158	2	11	14	3
159	1	15	17	3
160	0	3	3	1
161	0	4	3	2
162	0	6	4	2
163	0	6	3	2
164	0	2	2	0
165	8	11	12	2
166	1	8	10	2
167	1	7	10	1
168	0	6	6	2
169	1	4	4	0
170	3	7	10	1
171	1	1	3	0
172	0	2	1	0
173	13	83	32	10
174	0	1	0	0
175	2	5	9	1
176	5	9	11	3
177	1	3	2	0
178	2	4	4	1
179	0	1	1	0
180	1	1	1	0
181	1	2	2	0
182	11	29	21	1
183	4	13	10	1
184	9	30	23	3
185	10	50	38	5
186	0	10	12	1
187	2	34	37	3
188	2	23	28	4

189	4	39	46	12
190	4	30	30	7
191	0	0	0	0
192	0	0	0	0
193	4	22	23	6
194	3	14	23	6
195	0	0	0	0
196	0	1	1	0
197	2	29	36	6
198	2	10	9	2
199	2	7	7	2
200	5	21	24	5
201	7	26	34	6
202	2	23	13	6
203	3	20	26	4
204	2	26	24	6
205	0	3	2	0
206	4	28	28	4
207	6	29	35	3
208	1	9	11	1
209	16	8	9	2
210	2	3	7	1
211	0	0	0	0
212	2	3	5	1
213	1	2	1	0
214	0	0	0	0
215	0	0	0	0
216	0	0	0	0
217	2	3	3	1
218	1	1	1	1
219	0	1	1	0
220	6	8	4	1
221	0	1	1	0
222	5	21	16	2
223	5	23	17	3
224	7	27	17	2
225	13	54	30	3
226	1	1	0	0
227	4	41	40	9
228	0	0	0	0
229	2	8	6	2
230	5	26	24	6
231	2	15	21	4
232	0	1	1	0
233	1	7	9	2
234	1	1	1	0
235	2	12	10	3
236	1	22	15	7

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237	1	4	4	1
238	6	16	21	4
239	3	8	12	2
240	1	2	2	0
241	1	1	4	1
243	4	4	9	1
244	4	4	6	1
245	3	3	5	1
246	0	18	16	3
247	0	6	5	0
248	0	7	7	1
249	0	4	3	0
250	0	1	1	0
251	2	6	10	2
252	5	9	9	2
253	0	0	0	0
254	3	4	5	1
255	3	5	6	2
256	1	1	0	0
257	1	0	1	0
258	3	4	6	2
259	7	17	9	2
260	2	9	5	1
261	0	5	6	1
262	0	1	1	0
263	1	6	9	2
264	1	3	2	0
265	0	2	3	1
266	4	4	6	1
267	6	4	8	1
268	2	6	8	2
269	3	7	7	2
270	0	0	0	0
271	0	1	2	1
272	1	4	6	3
273	1	3	4	2
274	3	7	13	2
275	2	6	11	1
276	1	3	3	1
277	2	2	2	1
278	1	2	3	1
279	5	8	10	3
280	1	2	1	1
281	1	1	1	0
282	3	4	3	1
283	1	2	2	1
284	6	11	14	4
285	3	6	7	2

286	2	6	4	1
287	3	18	16	3
288	1	5	5	1
289	1	5	5	1
290	0	2	2	0
291	0	3	3	1
292	2	9	8	2
293	1	7	5	1
294	0	0	0	0
295	4	11	14	3
295	2	21	35	7
296	4	11	14	4
297	0	1	1	1
298	4	14	12	2
299	11	34	29	9
300	2	12	11	2
301	1	2	3	1
302	0	0	1	0
304	1	7	6	1
305	0	1	1	0
306	0	2	2	0
307	0	4	6	1
308	1	5	3	1
309	6	27	18	5
310	4	17	12	3
311	0	0	0	0
312	1	3	3	1
313	0	1	1	0
314	2	1	1	0
315	2	1	1	0
316	2	3	4	1
317	1	12	39	5
318	0	3	8	1
319	2	5	6	2
320	1	2	2	1
321	2	4	5	3
322	2	7	10	1
323	4	8	9	3
324	2	1	3	1
325	5	7	9	3
326	13	27	44	11
327	4	17	15	3
328	9	33	43	9
329	8	28	25	10

Table 20b. TAZ Two-Person Households with Auto Ownership

TAZ	2 Person, No Autos	2 Person, 1 Auto	2 Person, 2 Autos	2 Person, 3 Autos
1	3	6	2	0
2	7	7	3	0
3	4	8	4	0
4	3	7	3	0
5	2	3	1	0
6	2	2	1	0
7	2	4	2	0
8	11	11	4	0
9	0	0	0	0
10	71	27	7	0
11	0	0	0	0
12	1	2	1	0
13	2	4	2	0
14	2	4	2	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	10	15	7	0
19	4	37	10	2
20	3	55	13	3
21	41	96	42	5
22	26	34	9	1
23	13	26	12	0
24	3	10	8	2
25	0	3	3	1
26	4	16	12	3
27	1	4	3	1
28	0	0	0	0
29	1	2	2	1
30	3	4	5	1
31	4	8	8	3
32	3	14	8	3
33	0	0	0	0
34	6	12	5	0
35	41	83	42	2
36	10	42	29	0
37	18	57	41	6
38	10	27	27	9
39	8	35	30	4
40	3	37	10	2
41	36	87	48	6
42	15	36	19	2
43	1	14	14	3
44	1	20	19	4

45	2	29	26	5
46	5	11	10	4
47	2	9	5	2
48	5	21	10	4
49	13	28	15	1
50	11	30	27	8
51	34	98	74	13
52	14	52	47	12
53	1	2	2	0
54	3	3	0	0
55	3	10	3	1
56	5	46	20	7
57	4	17	6	2
58	5	27	21	4
59	5	30	34	10
60	9	54	54	10
61	10	34	23	5
62	1	2	2	1
63	11	19	16	5
64	6	12	12	5
65	2	7	3	1
66	2	9	5	1
67	4	16	13	1
68	1	4	2	0
69	4	41	26	5
70	82	72	36	2
71	30	100	73	8
72	1	7	5	1
73	0	0	0	0
74	6	6	1	0
75	7	8	1	0
76	2	7	3	1
77	3	16	6	3
78	0	0	1	0
79	11	35	32	12
80	5	22	23	11
81	16	44	23	3
82	8	26	17	4
83	7	17	11	1
84	0	0	0	0
85	1	1	2	0
86	3	7	7	2
87	3	12	7	2
88	3	10	6	2
89	1	5	2	1
90	3	14	7	2
91	3	14	7	3
92	1	3	2	1

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93	1	3	2	1
94	12	17	10	1
95	21	67	45	5
96	7	44	29	4
97	7	34	13	5
98	0	0	0	0
99	9	17	17	5
100	5	8	7	2
101	2	3	4	1
102	1	1	1	1
103	2	9	9	4
104	1	3	4	2
105	18	50	28	4
106	7	15	8	0
107	0	0	0	0
108	0	0	0	0
109	0	0	0	0
110	3	6	6	3
111	0	1	0	0
112	10	51	21	8
113	4	16	7	3
114	8	40	15	6
115	1	5	3	1
116	2	8	3	1
117	1	3	2	1
118	0	0	0	0
119	2	9	6	2
120	1	6	4	1
121	3	17	12	3
122	5	23	17	4
123	4	50	39	14
124	3	26	20	3
125	0	1	0	0
126	0	1	2	1
127	0	0	1	0
128	3	6	5	1
129	6	9	8	2
130	0	0	0	1
131	2	3	3	1
132	0	0	0	0
133	0	0	1	0
134	0	0	0	0
135	0	0	1	0
136	0	1	1	0
137	0	0	0	0
138	0	0	0	0
139	2	2	1	1
140	0	2	0	0

141	0	2	1	0
142	1	4	1	0
143	7	14	15	4
144	11	27	31	8
145	3	9	9	2
146	1	3	3	1
147	6	12	5	2
148	16	24	10	3
149	3	7	3	1
150	10	53	37	10
151	5	19	11	3
152	3	14	10	2
153	10	49	33	8
154	9	76	57	18
155	6	33	22	3
156	0	2	3	1
157	0	0	0	0
158	3	18	20	7
159	2	22	22	4
160	0	4	4	1
161	0	0	0	0
162	1	10	5	4
163	1	7	4	3
164	2	8	8	2
165	7	12	11	3
166	2	12	15	3
167	1	9	11	3
168	1	9	8	3
169	1	4	4	1
170	5	13	17	3
171	1	1	2	0
172	1	6	1	0
173	3	23	8	4
174	0	0	0	0
175	4	10	14	3
176	8	17	18	7
177	1	7	3	0
178	3	8	8	2
179	1	1	2	0
180	0	1	1	0
181	0	1	1	0
182	10	32	20	2
183	3	8	5	1
184	7	29	19	3
185	8	40	20	7
186	0	18	18	2
187	3	53	52	7
188	1	25	27	7

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189	3	37	38	16
190	4	44	38	13
191	0	2	2	1
192	0	0	0	0
193	4	23	21	8
194	2	15	22	9
195	0	0	0	0
196	0	3	3	1
197	2	36	40	9
198	2	10	9	3
199	1	7	6	2
200	6	34	34	11
201	9	46	51	15
202	2	38	20	14
203	6	40	47	11
204	2	39	32	13
205	1	9	6	2
206	3	32	29	7
207	6	36	38	5
208	2	11	12	1
209	25	15	13	4
210	8	7	17	3
211	2	3	5	1
212	2	5	8	2
213	0	1	1	0
214	0	0	0	0
215	0	0	0	0
216	0	0	0	0
217	5	11	11	4
218	1	1	2	1
219	1	2	1	1
220	5	9	4	1
221	1	3	2	1
222	3	11	7	1
223	5	23	14	3
224	7	32	18	4
225	8	39	19	3
226	0	0	0	0
227	5	53	45	16
228	0	1	1	0
229	2	10	8	3
230	5	31	26	10
231	3	36	45	13
232	2	7	4	2
233	1	10	14	4
234	0	1	1	0
235	4	22	16	7
236	1	26	16	12

237	1	4	4	1
238	9	30	34	10
239	4	15	19	6
240	3	5	4	1
241	4	5	12	2
243	10	12	25	5
244	5	7	10	3
245	4	6	8	2
246	0	18	13	4
247	0	11	7	2
248	0	10	7	2
249	0	5	4	1
250	0	2	1	0
251	3	12	17	4
252	9	17	17	6
253	4	9	10	4
254	4	6	6	2
255	3	5	5	2
256	0	1	1	0
257	1	2	1	1
258	2	5	5	3
259	5	12	6	2
260	3	11	6	2
261	1	7	8	2
262	0	0	1	1
263	0	6	6	2
264	1	4	3	1
265	1	1	3	1
266	5	8	11	3
267	10	8	11	3
268	2	5	6	2
269	7	21	20	6
270	1	2	3	1
271	1	3	2	2
272	3	9	10	7
273	2	3	4	3
274	5	17	25	5
275	3	10	16	4
276	2	5	5	2
277	2	3	2	1
278	1	1	1	1
279	8	13	16	7
280	3	5	3	2
281	2	5	4	2
282	4	9	6	4
283	3	5	6	2
284	9	18	20	9
285	2	3	3	1

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286	2	9	4	2
287	4	26	22	7
288	2	9	8	2
289	1	8	6	2
290	1	4	3	1
291	1	4	6	2
292	3	16	15	5
293	1	8	5	2
294	0	0	0	0
295	6	17	19	7
295	2	24	35	11
296	4	15	16	6
297	0	0	0	0
298	5	28	20	6
299	10	36	27	14
300	3	16	14	4
301	4	9	8	4
302	0	1	2	0
304	2	10	9	3
305	0	2	2	0
306	1	6	7	2
307	1	7	9	3
308	2	8	5	2
309	7	34	21	8
310	4	18	11	4
311	0	1	0	0
312	1	3	3	1
313	1	3	5	2
314	7	5	4	1
315	3	1	1	0
316	5	8	8	2
317	2	20	59	12
318	0	9	27	5
319	3	10	11	5
320	2	5	6	4
321	3	12	12	9
322	3	8	12	3
323	3	6	6	3
324	2	3	3	1
325	9	17	18	8
326	21	50	72	27
327	5	32	24	8
328	18	72	85	28
329	13	57	45	30

Table 20c. TAZ Three-Person Households with Auto Ownership

TAZ	3 Person, No Autos	3 Person, 1 Auto	3 Person, 2 Autos	3 Person, 3 Autos
1	0	3	1	0
2	1	9	3	0
3	0	1	1	0
4	0	0	0	0
5	0	3	1	0
6	0	3	1	0
7	0	1	0	0
8	1	16	7	0
9	0	0	0	0
10	3	21	5	0
11	0	0	0	0
12	0	1	0	0
13	0	0	0	0
14	0	2	1	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	6	3	0
19	0	26	7	2
20	0	22	6	1
21	2	57	25	5
22	1	28	8	2
23	0	14	7	0
24	0	6	5	2
25	0	1	1	0
26	0	3	3	1
27	0	1	1	0
28	0	0	0	0
29	0	1	1	1
30	0	5	5	3
31	0	2	2	1
32	0	4	2	1
33	0	0	0	0
34	0	3	1	0
35	2	75	38	3
36	0	16	11	1
37	1	35	26	5
38	0	19	19	10
39	0	11	10	2
40	0	35	10	2
41	1	40	22	4

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42	0	15	8	2
43	0	6	6	2
44	0	5	6	1
45	0	12	12	3
46	0	4	4	2
47	0	2	1	1
48	0	8	4	2
49	0	12	7	1
50	0	13	12	5
51	1	47	35	11
52	0	18	17	7
53	0	1	1	0
54	1	2	0	0
55	0	8	3	2
56	0	14	6	4
57	0	11	4	3
58	0	16	13	3
59	0	14	15	8
60	0	18	19	5
61	0	15	11	4
62	0	1	1	1
63	0	11	10	5
64	0	3	3	2
65	0	4	2	1
66	0	3	1	1
67	0	6	30	1
68	0	2	1	1
69	0	19	11	4
70	2	48	23	2
71	0	20	14	2
72	0	1	1	0
73	0	1	0	0
74	0	6	1	0
75	1	6	1	0
76	0	3	1	1
77	0	10	4	3
78	0	0	0	0
79	0	18	16	9
80	0	10	10	8
81	1	23	12	2
82	0	18	12	4
83	0	11	7	1
84	0	0	0	0
85	0	0	0	1
86	0	2	2	1
87	0	5	3	2
88	0	8	4	2
89	0	2	1	1

90	0	8	4	2
91	0	5	2	1
92	0	2	1	1
93	0	2	1	1
94	0	1	1	0
95	1	26	17	2
96	0	17	12	2
97	0	12	4	3
98	0	0	0	0
99	0	13	12	5
100	0	9	9	3
101	0	1	1	0
102	0	1	0	0
103	0	5	5	4
104	0	3	3	2
105	0	25	14	3
106	1	18	9	2
107	0	0	0	0
108	0	0	1	0
109	0	0	0	0
110	0	2	2	1
111	0	0	0	0
112	0	25	11	7
113	0	8	4	2
114	0	24	9	6
115	0	1	1	0
116	0	4	2	1
117	0	2	1	1
118	0	0	0	0
119	0	5	3	1
120	0	3	3	1
121	0	1	1	0
122	0	11	8	3
123	0	11	9	5
124	0	3	2	1
125	0	0	0	0
126	0	1	0	0
127	0	0	1	1
128	0	4	4	1
129	0	6	5	2
130	0	0	0	0
131	0	2	1	1
132	0	0	0	0
133	0	0	0	0
134	0	0	0	0
135	0	0	0	0
136	0	0	0	0
137	0	0	0	0

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138	0	0	0	0
139	0	2	1	0
140	0	1	1	0
141	0	0	0	0
142	0	2	1	1
143	0	9	10	4
144	0	14	15	7
145	0	6	6	3
146	0	1	1	0
147	0	7	3	1
148	1	21	10	4
149	0	3	1	2
150	0	24	16	7
151	0	9	6	2
152	0	3	2	1
153	0	12	8	3
154	0	34	25	12
155	0	13	9	2
156	0	4	5	2
157	0	0	0	0
158	0	10	11	6
159	0	15	15	6
160	0	1	1	1
161	0	0	0	0
162	0	3	2	2
163	0	3	2	2
164	0	3	3	1
165	0	9	8	3
166	0	5	7	3
167	0	5	6	2
168	0	5	4	2
169	0	1	1	0
170	0	13	18	4
171	0	1	2	1
172	0	2	0	1
173	0	1	0	0
174	0	0	0	0
175	0	6	8	2
176	0	13	14	8
177	0	9	4	2
178	0	3	2	1
179	0	1	1	1
180	0	1	0	0
181	0	1	1	0
182	0	14	9	1
183	0	5	3	0
184	0	8	6	1
185	0	15	10	4

186	0	7	8	2
187	0	16	15	3
188	0	9	10	4
189	0	9	10	6
190	0	20	17	9
191	0	2	3	1
192	0	0	0	0
193	0	13	12	7
194	0	7	10	6
195	0	0	0	0
196	0	0	1	0
197	0	20	21	8
198	0	7	6	4
199	0	5	4	2
200	0	16	16	8
201	0	31	34	16
202	0	22	11	12
203	0	19	24	8
204	0	19	15	10
205	0	4	3	2
206	0	19	17	6
207	0	32	34	7
208	0	6	7	2
209	2	15	14	6
210	1	9	21	7
211	0	3	4	1
212	0	1	2	1
213	0	0	1	0
214	0	0	0	0
215	0	0	0	0
216	0	0	0	0
217	0	7	7	4
218	0	1	2	1
219	0	1	1	1
220	0	5	2	1
221	0	1	1	1
222	0	5	3	1
223	0	10	6	2
224	0	12	6	2
225	0	8	4	1
226	0	1	1	0
227	0	26	23	12
228	0	1	1	0
229	0	7	5	3
230	0	16	13	8
231	0	14	18	8
232	0	2	1	1
233	0	4	5	2

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234	0	2	1	1
235	0	6	4	3
236	0	12	7	8
237	0	1	1	0
238	0	19	22	10
239	0	11	13	6
240	0	3	4	2
241	0	3	6	2
243	0	7	16	6
244	0	8	12	5
245	0	6	7	3
246	0	8	6	2
247	0	7	5	2
248	0	6	5	2
249	0	2	2	1
250	0	1	0	0
251	0	7	10	4
252	0	14	14	8
253	0	4	5	3
254	0	7	6	4
255	0	5	5	4
256	0	1	1	0
257	0	2	1	1
258	0	2	2	1
259	0	11	6	4
260	0	9	5	3
261	0	5	6	2
262	0	0	0	0
263	0	1	2	1
264	0	4	2	1
265	0	2	2	1
266	0	9	13	5
267	1	8	11	4
268	0	5	4	3
269	0	11	10	5
270	0	1	2	1
271	0	2	2	2
272	0	4	4	5
273	0	4	4	5
274	0	5	7	2
275	0	3	5	1
276	0	3	3	2
277	0	2	1	1
278	0	1	1	1
279	0	10	13	8
280	0	3	3	2
281	0	3	1	2
282	0	7	4	4

283	0	5	6	4
284	0	8	9	7
285	0	2	3	2
286	0	4	2	1
287	0	12	10	5
288	0	10	8	4
289	0	5	4	1
290	0	3	3	1
291	0	2	3	2
292	0	11	9	5
293	0	7	5	3
294	0	0	0	0
295	0	12	14	8
295	0	10	15	8
296	0	6	7	4
297	0	1	1	1
298	0	18	13	7
299	0	14	11	9
300	0	10	8	4
301	0	6	6	4
302	0	1	1	0
304	0	8	7	3
305	0	1	1	1
306	0	3	3	2
307	0	4	6	2
308	0	6	3	2
309	0	16	9	6
310	0	11	7	4
311	0	1	0	10
312	0	2	2	1
313	0	1	1	1
314	0	6	6	2
315	1	4	3	1
316	0	6	7	3
317	0	10	29	10
318	0	3	8	3
319	0	6	7	5
320	0	3	4	4
321	0	5	5	6
322	0	4	7	2
323	0	4	5	3
324	0	5	6	4
325	0	6	6	4
326	1	31	45	27
327	0	22	18	8
328	0	29	35	18
329	0	27	22	22

Table 20d. TAZ Four+-Person Households with Auto Ownership

TAZ	4 Person, No Autos	4 Person, 1 Auto	4 Person, 2 Autos	4 Person, 3 Autos
1	0	0	0	0
2	0	0	1	0
3	0	0	1	0
4	0	0	0	0
5	0	1	1	0
6	0	0	0	0
7	0	0	0	0
8	0	2	2	0
9	0	0	0	0
10	2	11	10	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	1	1	0
19	0	6	5	2
20	0	10	9	2
21	1	25	39	7
22	0	9	9	2
23	0	8	13	0
24	0	1	4	1
25	0	1	3	0
26	0	1	2	1
27	0	1	2	1
28	0	0	0	0
29	0	0	1	1
30	0	1	5	3
31	0	1	4	2
32	0	1	2	1
33	0	0	0	0
34	0	1	1	0
35	1	33	61	3
36	0	7	17	1
37	0	14	36	7
38	0	1	5	2
39	0	5	14	2
40	0	5	5	1
41	1	18	37	6
42	0	10	20	3
43	0	1	5	1
44	0	2	9	2
45	0	5	17	4

46	0	1	5	3
47	0	1	2	1
48	0	4	7	3
49	0	5	10	1
50	0	3	11	4
51	0	13	34	8
52	0	5	18	6
53	0	0	1	0
54	8	110	50	21
55	0	3	3	2
56	0	8	11	6
57	0	5	7	3
58	0	5	14	3
59	0	6	23	10
60	0	9	32	8
61	0	4	11	3
62	0	0	1	1
63	0	6	20	9
64	0	2	6	3
65	0	2	3	1
66	0	2	3	1
67	0	1	4	1
68	0	2	3	1
69	0	6	13	3
70	1	19	34	3
71	0	1	4	1
72	0	2	4	0
73	0	0	1	0
74	7	110	52	22
75	6	112	55	23
76	0	1	1	1
77	0	3	5	3
78	0	0	0	0
79	0	10	31	16
80	0	3	12	7
81	0	10	20	3
82	0	7	16	5
83	0	2	4	1
84	0	0	0	0
85	0	0	1	0
86	0	2	6	3
87	0	2	3	2
88	0	1	2	1
89	0	1	2	1
90	0	2	4	2
91	0	3	4	2
92	0	1	3	1
93	0	1	2	0
94	0	0	0	0
95	0	8	20	3

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96	0	10	24	3
97	0	5	6	3
98	0	0	0	0
99	0	3	12	4
100	0	2	7	2
101	0	0	2	1
102	0	0	2	1
103	0	2	7	4
104	0	0	1	1
105	0	9	17	3
106	0	7	14	2
107	0	0	0	0
108	0	0	0	0
109	0	0	0	0
110	0	1	3	1
111	0	0	0	0
112	0	12	18	10
113	0	4	7	3
114	0	14	19	10
115	0	1	1	1
116	0	3	4	2
117	0	1	2	1
118	0	0	0	0
119	0	2	4	1
120	0	1	2	0
121	0	3	7	3
122	0	2	5	2
123	0	3	7	4
124	0	1	3	0
125	0	1	1	0
126	0	0	0	0
127	0	0	0	0
128	0	1	5	2
129	0	2	8	3
130	0	0	0	0
131	0	1	3	1
132	0	0	1	0
133	0	0	0	0
134	0	0	0	0
135	0	0	0	0
136	0	0	0	0
137	0	0	0	0
138	0	0	0	0
139	0	0	1	1
140	0	0	0	0
141	0	0	0	0
142	0	1	2	1
143	0	4	17	6
144	0	5	22	8
145	0	2	10	3

146	0	1	2	1
147	0	3	5	2
148	0	9	15	6
149	0	1	2	1
150	0	9	21	8
151	0	5	11	3
152	0	2	4	1
153	0	9	23	7
154	0	13	37	15
155	0	11	24	4
156	0	1	4	2
157	0	0	0	0
158	0	8	33	15
159	0	6	22	7
160	0	0	2	0
161	0	0	0	0
162	0	4	7	7
163	0	3	5	4
164	0	3	10	3
165	0	3	11	4
166	0	4	17	5
167	0	2	9	3
168	0	1	4	2
169	0	1	6	1
170	0	6	30	6
171	0	0	3	1
172	0	1	1	0
173	0	0	0	0
174	0	0	0	0
175	0	3	16	4
176	0	3	13	7
177	0	4	5	2
178	0	4	13	4
179	0	0	1	1
180	0	0	0	1
181	0	0	0	0
182	0	6	14	2
183	0	2	4	0
184	0	3	8	2
185	0	8	15	6
186	0	3	12	2
187	0	10	34	6
188	0	2	10	3
189	0	3	9	5
190	0	13	39	18
191	0	0	2	1
192	0	0	0	0
193	0	3	9	5
194	0	1	9	5
195	0	0	0	1

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196	0	0	1	1
197	0	7	26	8
198	0	2	6	3
199	0	2	6	3
200	0	10	35	15
201	0	19	80	30
202	0	15	28	26
203	0	11	48	14
204	0	8	23	12
205	0	4	11	4
206	0	11	36	11
207	0	14	54	9
208	0	2	10	2
209	1	10	33	12
210	0	3	23	6
211	0	0	2	1
212	0	0	2	1
213	0	0	0	0
214	0	0	0	0
215	0	0	0	0
216	0	0	0	0
217	0	3	10	5
218	0	0	2	1
219	0	0	2	1
220	0	4	5	2
221	0	0	0	0
222	0	1	2	0
223	0	3	6	2
224	0	8	17	5
225	0	3	7	1
226	0	1	1	0
227	0	10	31	15
228	0	0	2	1
229	0	3	9	4
230	0	9	27	13
231	0	9	43	17
232	0	3	8	3
233	0	2	12	5
234	0	0	1	1
235	0	1	2	1
236	0	5	11	11
237	0	1	7	3
238	0	14	58	22
239	0	4	19	8
240	0	3	9	4
241	0	1	9	3
243	0	5	37	10
244	0	3	13	4
245	0	2	10	3
246	0	5	13	4

247	0	5	12	3
248	0	2	6	2
249	0	2	4	1
250	0	0	2	0
251	0	2	8	3
252	0	5	20	10
253	0	1	6	3
254	0	4	12	7
255	0	3	11	6
256	0	0	0	1
257	0	1	3	2
258	0	1	7	5
259	0	5	9	5
260	0	5	10	5
261	0	4	17	6
262	0	0	1	0
263	0	1	6	3
264	0	1	3	2
265	0	1	2	1
266	0	3	14	5
267	0	4	20	7
268	0	3	10	4
269	0	9	33	14
270	0	0	1	0
271	0	1	4	4
272	0	2	9	9
273	0	2	6	6
274	0	4	21	6
275	0	2	11	3
276	0	1	4	2
277	0	1	4	2
278	0	1	4	3
279	0	4	20	11
280	0	1	2	1
281	0	1	3	2
282	0	1	4	3
283	0	1	3	2
284	0	5	18	12
285	0	2	7	4
286	0	3	6	3
287	0	9	27	11
288	0	4	11	4
289	0	4	11	5
290	0	1	4	2
291	0	1	5	3
292	0	2	7	4
293	0	7	16	7
294	0	0	1	0
295	0	4	16	7
295	0	3	15	7

Morgantown/Monongalia County
 2000 Base Year Travel Demand Model Validation

296	0	4	16	8
297	0	0	1	1
298	0	11	30	12
299	0	6	16	11
300	0	3	10	5
301	0	2	7	3
302	0	0	0	0
304	0	3	11	4
305	0	0	1	1
306	0	2	7	3
307	0	2	9	4
308	0	3	6	3
309	0	8	17	9
310	0	5	10	5
311	0	0	1	1
312	0	1	5	2
313	0	1	4	1
314	0	4	13	5
315	0	2	5	2
316	0	5	21	7
317	0	3	28	8
318	0	1	15	4
319	0	3	12	8
320	0	1	6	6
321	0	3	13	13
322	0	2	12	3
323	0	2	8	5
324	0	2	7	4
325	0	6	25	14
326	0	17	89	45
327	0	9	26	11
328	0	16	70	30
329	0	17	48	40

Table 21. Time of Day Parameters

Beginning Hour	HBW		HBNW		HBU		NHB	
	Direct	Reverse	Direct	Reverse	Direct	Reverse	Direct	Reverse
0	0.06	0.48	0.03	0.48	0.31	0.00	0.11	0.11
1	0.00	0.06	0.02	0.31	0.00	0.15	0.00	0.00
2	0.00	0.05	0.00	0.10	0.00	0.00	0.02	0.02
3	0.08	0.14	0.00	0.08	0.00	0.15	0.00	0.00
4	0.75	0.35	0.07	0.04	0.00	0.00	0.06	0.06
5	2.40	0.00	0.27	0.16	0.15	0.00	0.02	0.02
6	9.36	0.37	2.66	0.36	1.08	0.31	0.69	0.69
7	19.63	0.77	7.57	0.92	5.56	0.31	1.95	1.95
8	10.36	0.24	5.45	1.09	8.35	0.62	2.59	2.59
9	2.25	0.30	2.70	1.02	7.11	1.55	2.01	20.1
10	1.61	0.50	2.31	1.38	3.71	2.94	3.08	3.08
11	0.72	0.88	1.46	2.00	2.01	3.40	4.45	4.45
12	1.82	2.54	2.10	2.40	3.25	3.09	5.51	5.51
13	1.78	0.68	1.71	2.26	3.40	1.55	4.24	4.24
14	0.83	1.57	2.51	4.81	2.94	5.10	3.88	3.88
15	0.83	5.88	2.41	6.94	2.47	4.79	6.04	6.04
16	0.43	11.24	2.89	4374	2.32	2.63	3.90	3.90
17	0.43	10.85	3.87	4.37	2.94	5.10	3.63	3.63
18	0.41	2.06	5.12	3.55	4.17	2.78	2.96	2.96
19	0.34	1.59	3.20	4.21	2.01	2.94	2.09	2.09
20	0.11	1.23	1.13	4.48	0.46	2.47	1.88	1.88
21	0.29	1.35	0.45	3.55	0.46	3.55	0.65	0.65
22	0.68	0.88	0.40	1.72	0.15	2.16	0.13	0.13
23	0.06	0.77	0.19	0.50	0.00	1.55	0.12	0.12



Appendix B

Base Year (2000) TAZ and Road Network Structure

TAZ Households and Employment

Figure 6 2000 Network - Morgantown

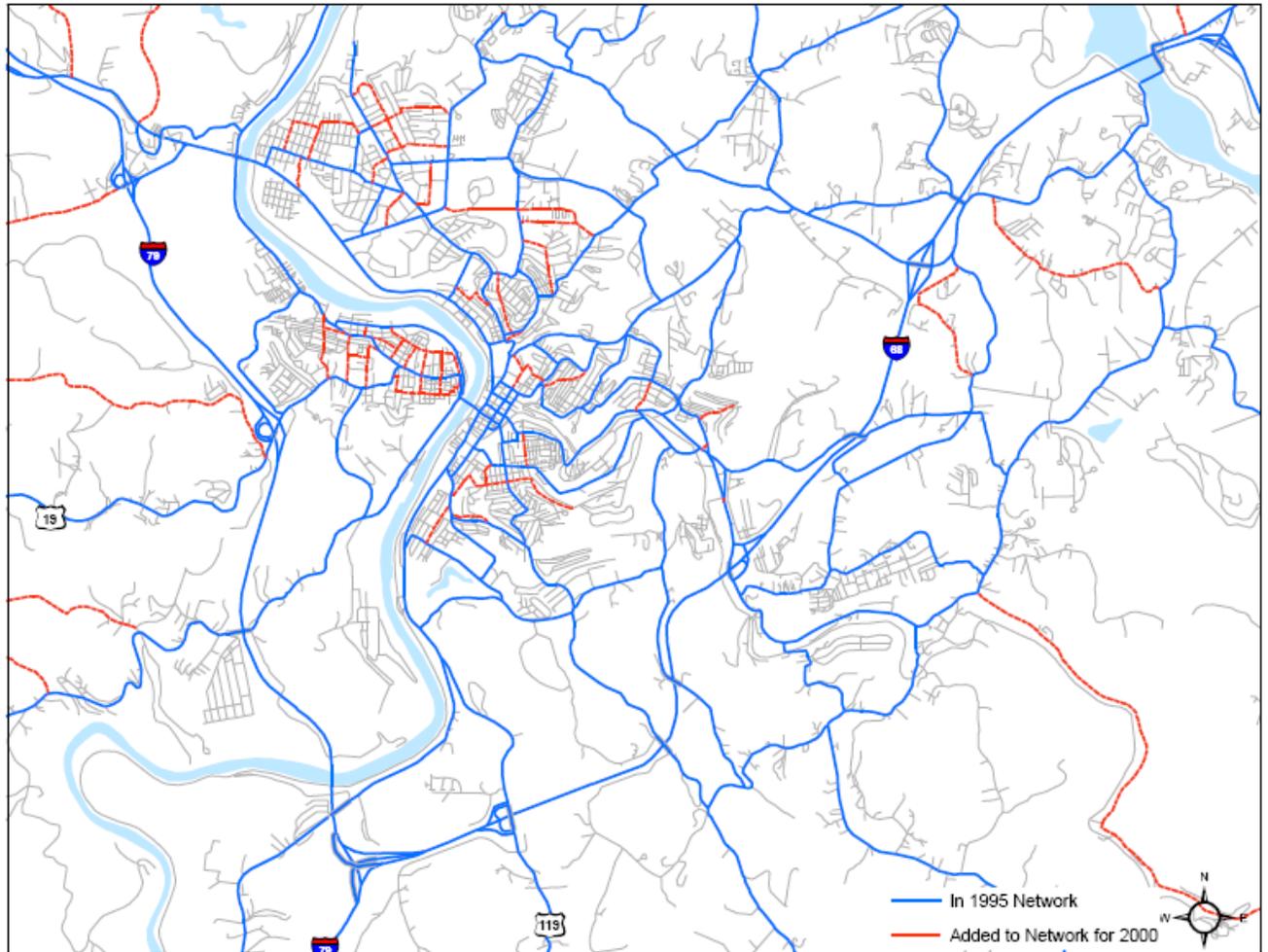


Figure 7 2000 Network - Monongalia County

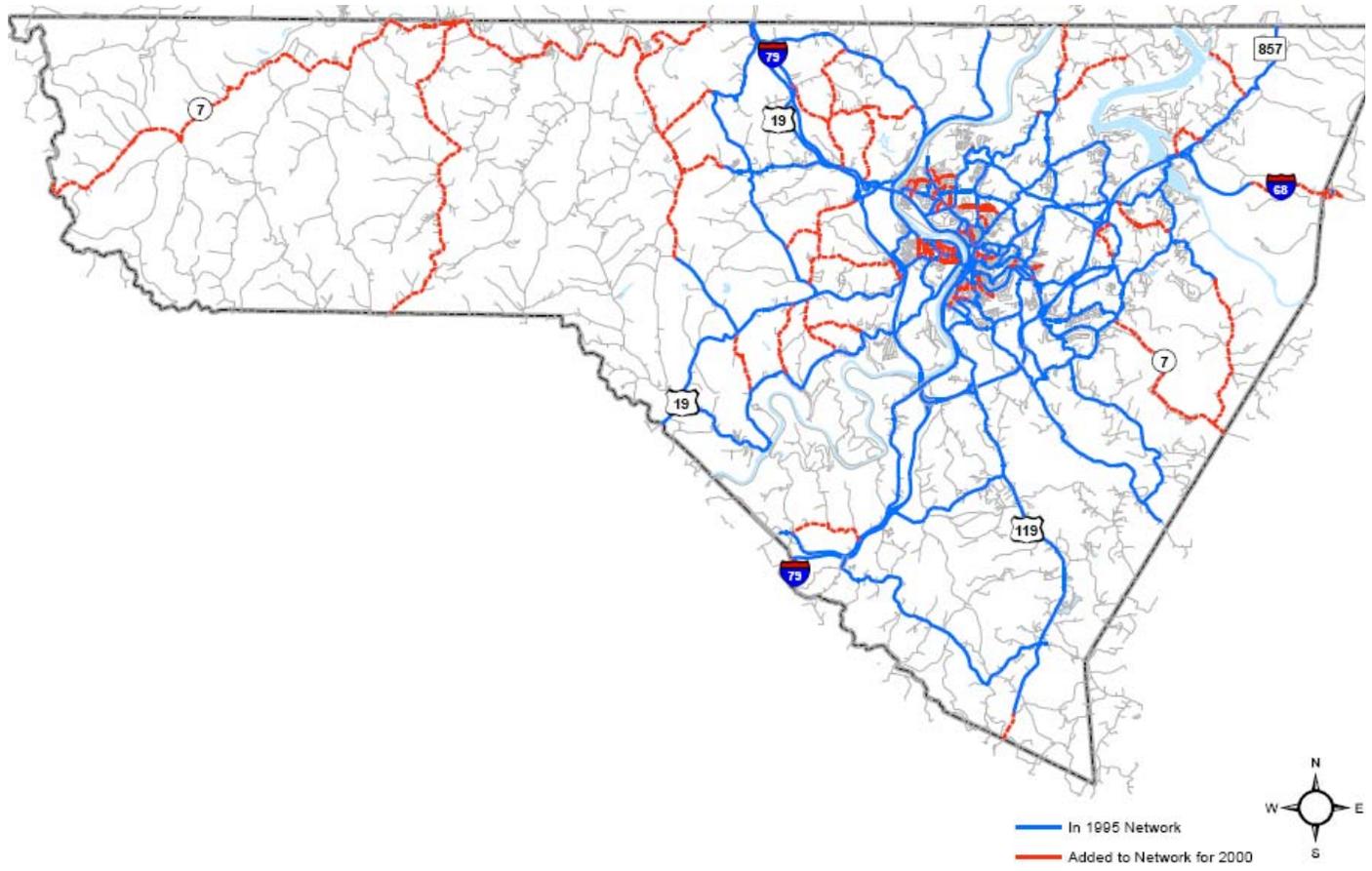


Figure 8 1995 TAZs - Morgantown

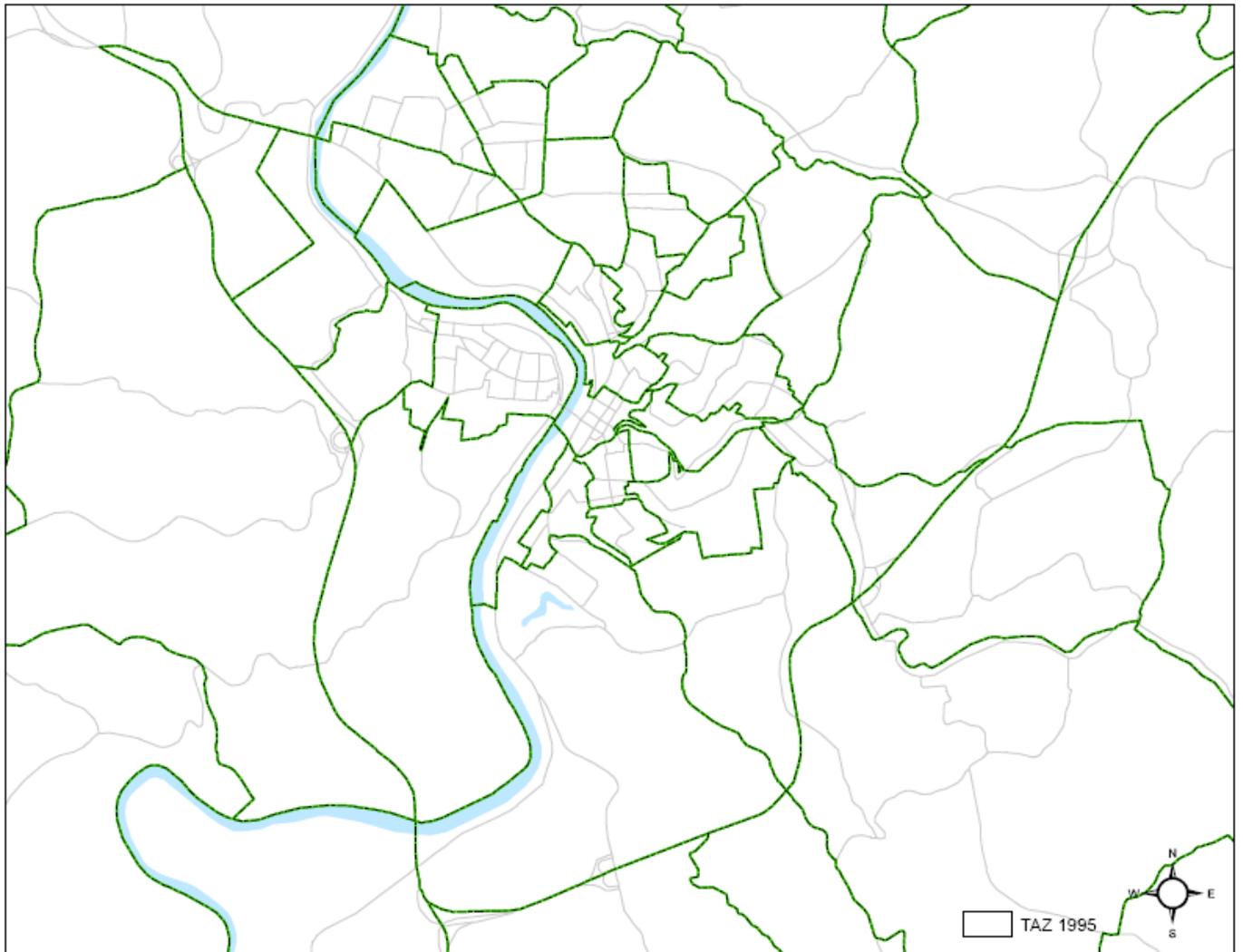


Figure 8 2000 TAZs - Morgantown

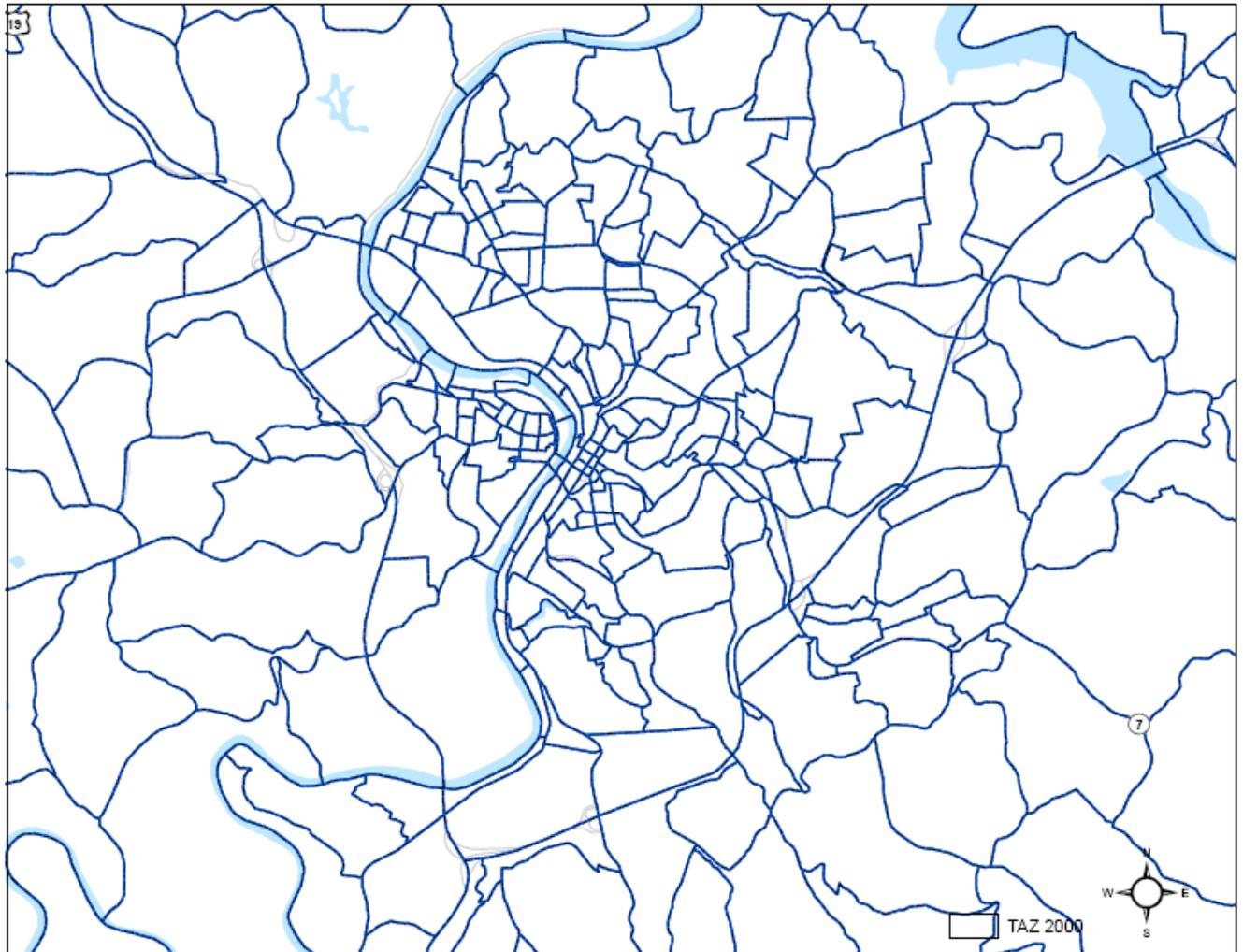


Figure 9 1995 TAZs - Monongalia County

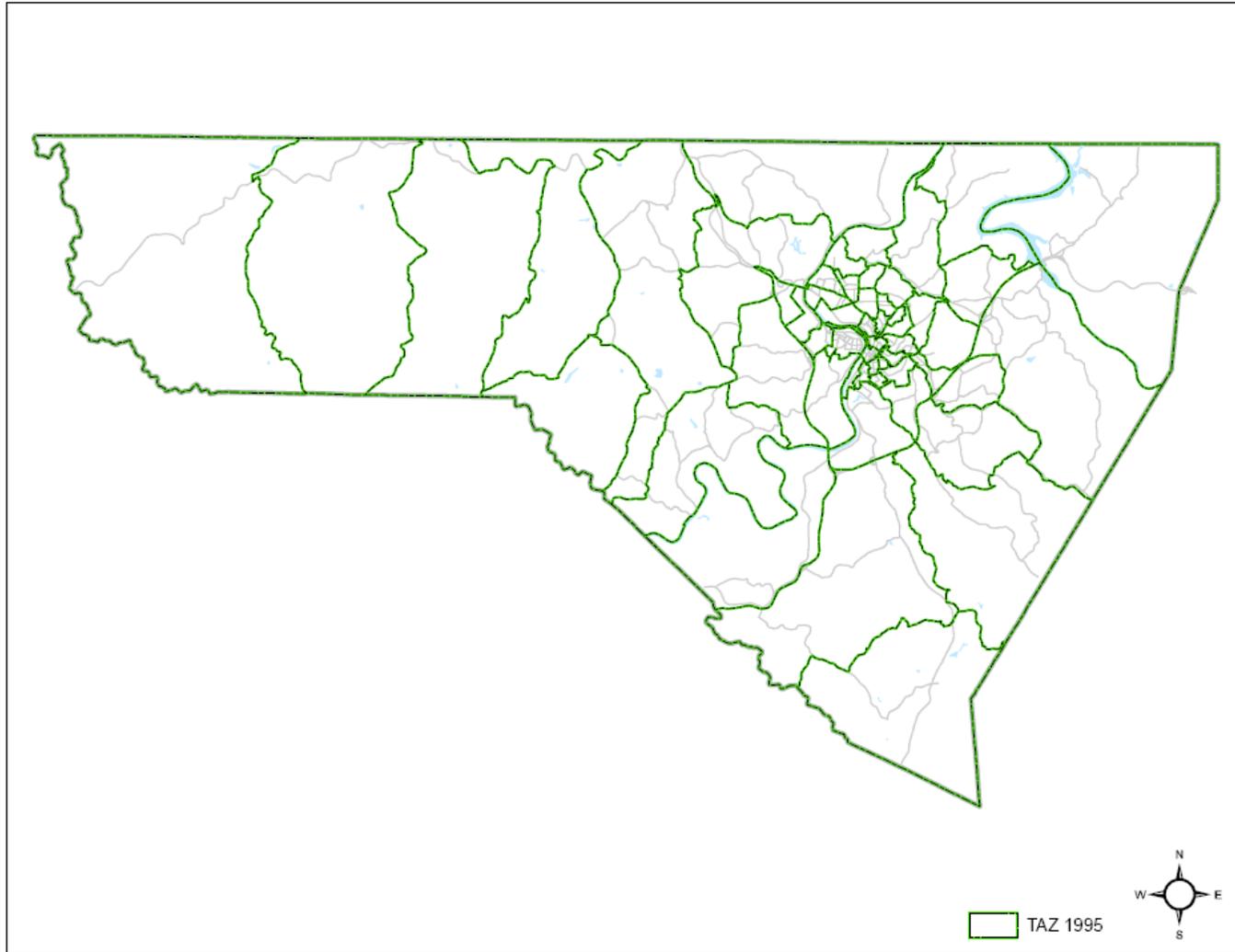
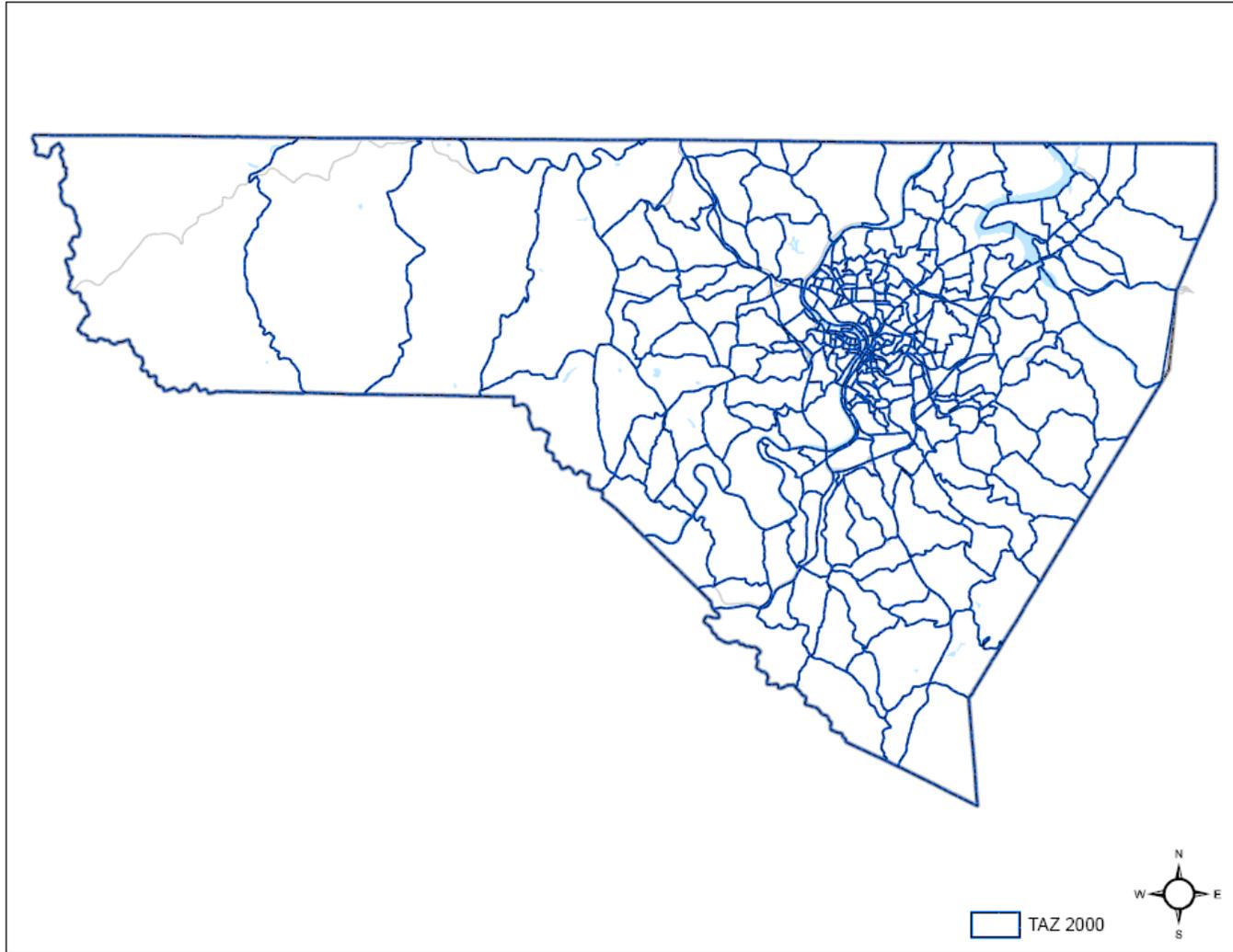


Figure 10 2000 TAZs - Monongalia County



APPENDIX B – ALTERNATIVES ANALYSIS MEMORANDA



MEMORANDUM

William Troe, AICP
Vice President

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To: Chet Parsons, AICP
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee

Date: April 1, 2006

Subject: Roadway Improvement Alternatives – Initial Screening

BACKGROUND/PURPOSE

The alternatives analysis underway as part of the Morgantown-Monongalia County long-range transportation plan update has included reviews of the transit system, the trail/pedestrian system and the roadway system. The purpose of this memorandum is provide documentation of the roadway system, including:

- Network capacity deficiencies based on existing conditions traffic (2005).
- Network capacity deficiencies projected through 2030.
- Alternatives reviewed as mitigation for the current/future capacity deficiencies.
- An overview refresher of the alternatives assessment process.
- The evaluation criteria used in the initial screening o the alternatives.
- A summary of the initial assessment of the alternatives reviewed.

The information included in this memorandum is intended to be a summary of the material to be discussed at the Alternatives Analysis Workshop scheduled for April 18, 2006. The intent of providing this memorandum prior to the meeting is to provide committee members with an idea as to the alternatives and many of the basic positive and negative elements of each alternative ahead of the meeting so that you will have time to review the material. We have not included detailed traffic forecast maps of each alternative evaluate using the newly developed model, but can if it is warranted.

CURRENT CONDITION CAPACITY DEFICIENCIES

Documentation of the current condition capacity deficiencies is included in the Existing

Conditions Report provided to committee members and updated based on the 2005 traffic counts collected and reported by the WVDOT. As is documented in the Existing Conditions report, a capacity deficiency is defined as the condition where current daily traffic volumes (2005) approach or exceed the estimated daily capacity at level-of-service C for much of the region and level-of-service D in the central core.

Locations in the current network where current traffic volume approach or exceed the acceptable capacity thresholds based on area type, lanes available and the functional classification are displayed in Figure 1.

2030 CAPACITY DEFICIENCIES

Locations within the region forecasted to carry daily traffic volumes at levels approaching or exceeding the acceptable corridor capacities are displayed in Figure 2.

ROADWAY ALTERNATIVES ANALYSIS

OVERVIEW

Alternatives reviewed in the initial analysis were intended to:

- Address locations where current and/or future capacity deficiencies were observed.
- Address locations where local planning and programming documents have identified potential corridor extensions and or improvements.
- Safety concerns identified through the public involvement process and through the analyses completed by the study team.
- Roadway improvements/extension into areas identified as residential and employment growth/expansion areas for the 2005 through 2030 period.
- Provide for a regional system of transporting goods and persons efficiently within and through the metropolitan area.

While the process of determining the most appropriate action for addressing a specific transportation capacity issue can be quite complicated because the technical process interacts with the public involvement process, identification of the universe of roadway improvement alternatives can be fairly straightforward. The possible alternatives ***generally*** fall into one, or a combination of, the following categories:

- Expand the deficient corridor by adding the through or turning lanes adequate to substantially reduce or eliminate the identified capacity or gap deficiency. This category also includes smaller scale, or spot, intersection improvements that do not result in

significant additions to through capacity (transportation system management).

- Develop alternate corridor(s) that would share a part of the traffic load currently or forecasted to be within the deficient corridor.
- Improve (through adding capacity or increasing the level of connectivity and/or continuity) adjacent or complementary corridors that would share the traffic load currently carried with the deficient corridor.
- Create one-way pairs. If the deficient corridor carries traffic in both directions, additional capacity can be created by converting the corridor to one-way flow and pairing it with a complementary route that also carries traffic in only one direction.
- Upgrade the type of intersection treatment employed at the junction of two routes. The improvements could include upgrading a Stop controlled intersection to signal control, modifying a Stop or signal controlled intersection to a roundabout (depending on the traffic patterns and levels), or upgrading an at-grade intersection to a grade separated interchange.
- Reduce the increment of development assumed/allowed in either the region or within the travelshed of the deficient corridor. This alternative is most appropriate for corridor located outside the mature areas of the community.

OVERVIEW OF ALTERNATIVES REVIEW

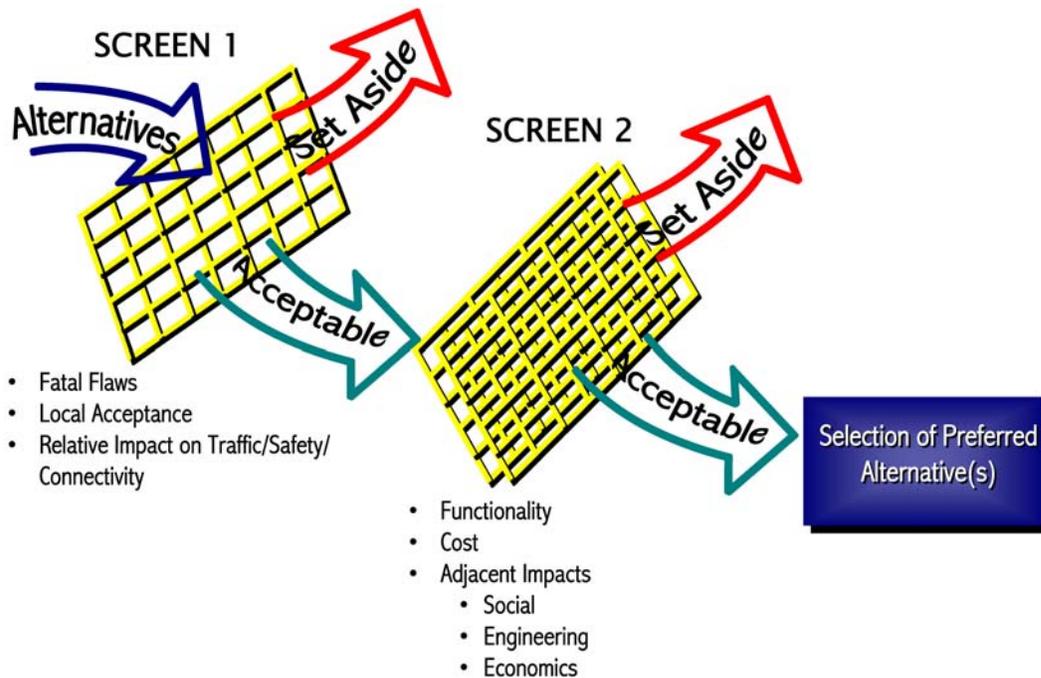
As we have outlined in the original scope of work and discussed in detail at the December 2005 TAC and CAC meetings, the alternatives screening process being employed to obtain the recommended improvement concepts involves a two-step review process. The information in this memorandum is intended to support the initial screening. As was described in the original project work scope and in the December 2005 meetings, the two-step screening is intended to allow us to review a broad range of concepts and complete the entire alternatives assessment in a reasonable time frame.

To accomplish both goals (review of a broad range of alternatives and complete the assessment in a reasonable time frame) the first step in the screening includes review of the alternatives using more broadly described measures intended to determine whether an alternative has a fatal flaw. A fatal flaw generally falls into one of the following categories:

- The alternative ultimately does not address the issue intended or another issue.
- The concept being evaluated results in a substantial impact on the adjacent surroundings (either built or natural) that cannot be reasonably mitigated.
- The estimated cost of a concept exceeds the transportation improvement budget estimate for the metropolitan area.
- The concept cannot be reasonably constructed using current engineering standards or

through allowing reasonable exceptions to the standards.

It should be noted that those alternatives maintained following the *initial screening* does not necessarily reflect the set of concepts that the consulting team believes should be included in the recommended long range transportation plan. Those alternatives maintained through the initial screening will next be reviewed in greater detail to establish whether the concept meets the transportation goals and could reasonably be funded over the planning period. Many of the concepts/ideas that are maintained through the initial screening could very well be eliminated, or set aside, through completion of the second level of the screening analysis. The recommended plan will not be identified until after the second level of analysis.



ALTERNATIVES ANALYSIS SUMMARY

Documentation of the alternatives has been organized based on each of the corridors that require attention based on current or forecasted congestion levels or observed system deficiencies. The alternatives have been evaluated relative to a subset of the measures of effectiveness universe developed earlier in the study process. Only those measures that that would allow reviewers to reasonably determine a difference between the alternatives were used. For example, very few of the roadway alternatives would like result in a mode split shift. Therefore the measures addressing mode shift/mode split were not used in the initial review. Those measures may be used

in the second phase of the assessment. The measures of effectiveness used in the initial assessment were:

- Impacts to Adjacent Land Uses: A general review of the alternatives was completed through field review and analysis of the routes using aerial photography and topography mapping. The number of residences, commercial buildings or acres of park/agricultural land were not (and will not be) quantified for each of the concepts.
- Potential safety affects. The potential for an alternative to result in a reduction (or an increase) in crash rate was reviewed. Estimates of the level of reduction (or increase) were not developed and are not warranted for this assessment.
- Cost. Costs were categorized as Low, Moderate or High.
- Potential for the alternative to reduce/eliminate congestion in the target corridor. Comparing the forecasted corridor traffic after implementation with the post improvement capacity developed this determination.
- Constructability. While it may be *possible* to design an improvement concept for each focus area, the bigger question is at what cost. The cost may be measured based on impacts to the adjacent environment or the dollar costs associated with earth movement, concrete and steel or right-of-way relative to the positive benefits associated with the improvement.

The alternatives reviewed in the initial phase of the screening are displayed in Figure 4. Most of the alternatives that added significant capacity or assumed new routes were incorporated into the regional travel model and new model assignments were created. The potential traffic impacts associated with the concept were quantified through comparing the assignments with the concept in-place to the 2025 existing plus committed network assignments.

SUMMARY OF THE ANALYSIS BY EVALUATION PERSPECTIVE

The results of the initial screening are provided in Table 1. We have attempted to provide as much of a description as is reasonable in this format. As part of the workshop, a brief summary of each concept tested in the screening will be provided. Any questions required to provide additional clarity can be asked at that time, or prior to the meeting if desired.

In the summary table, the benefits and impacts of the alternatives have been summarized from the social, engineering and environmental perspectives. The definition of each of these was covered in the December 2005 TAC and CAC meetings. A brief description is provided below:

- Social: Included in this category are:
 - What is the extent of impact to residential and commercial/industrial properties?
 - What is the extent of impacts to parks and schools?
 - How does the alternative support the anticipated development plan/concept?
 - How does the concept support/impact on-going redevelopment plans?

- Engineering: Included in this category are:
 - Does the idea/concept address capacity issues identified for the current and /or future conditions?
 - Does the concept/idea address safety issues identified?
 - How does the idea/concept fit in to the physical constraints of the adjacent built and natural environment and can the concept reasonably be constructed within that environment?
- Environmental: Included in this category area:
 - Is there the potential for significant impacts to the physical natural and/or built environment associated with implementation of the idea/concept.

The table is divided into the following columns:

- Column 1: Contains a description of the issue to be addressed and a description of the various concepts identified to address the issue. Each of the concepts is numbered (unique numbers for each issue) and key details of the concept description are included below the numbered concept title.
- Column 2: Summary of the potential social perspective impacts/benefits.
- Column 3: Summary of the potential engineering perspective impacts/benefits.
- Column 4: Summary of the potential environmental perspective impacts/benefits.
- Column 5: Cost category estimate.
- Column 6: Preliminary recommendation as to maintain or eliminate the concept from further study in the second level of the screening analysis.

GENERAL OBSERVATIONS DEVELOPED THROUGH ANALYSES PERFORMED IN THE INITIAL SCREENING

As the study team has been completing the traffic modeling, engineering assessment and alternatives screening, we have extensively reviewed travel patterns observed in the model and in traffic counts (daily and a limited number of hourly intersection turning movements reported in traffic impact study documents) and the physical constraints in the region. Listed below are several of the key observations that will assist providing logical support for decisions made in the screening process:

- If there is an “obvious missing link” in the transportation network when viewed in two dimensions, there is likely a significant constraint associated with the third dimension (elevation change/topography). There are numerous locations throughout the Morgantown region that is seems so obvious that if you were to add a corridor where one does not exist today, that a substantial existing bottleneck would be resolved. In our analysis we studied a

number of these locations and in almost all it required looking at the topography of the area to determine why a corridor/connection had not been made in the past. In almost all cases there were severe elevation changes through the corridor; making design of a facility difficult and likely unreasonable.

- There are a limited number of intense traffic generation areas. Throughout most of the study area the development density is fairly low and if the entire study area were developed to that density, few congestion issues would exist. Within the region there are a handful of intense generators, including:
 - WVU Downtown Campus.
 - WVU Evansdale Campus.
 - WVU/Mon General/Ruby Medical Center area.
 - Multi-family residential areas north of Chestnut Ridge Road (WV 705) and between Van Voorhis and just east of Riddle/Pineview Drive.
 - Sunnyside.
 - Downtown Morgantown.
 - To a lesser extent the Morgantown Mall and University Town Center retail areas.
 - To a lesser extent the WV 7 corridor west of I-68.

For the most part, these high intensity trip generation areas are located within one mile of the central core of the urban area. Observed from this pattern and the results of the initial round of alternatives screening are:

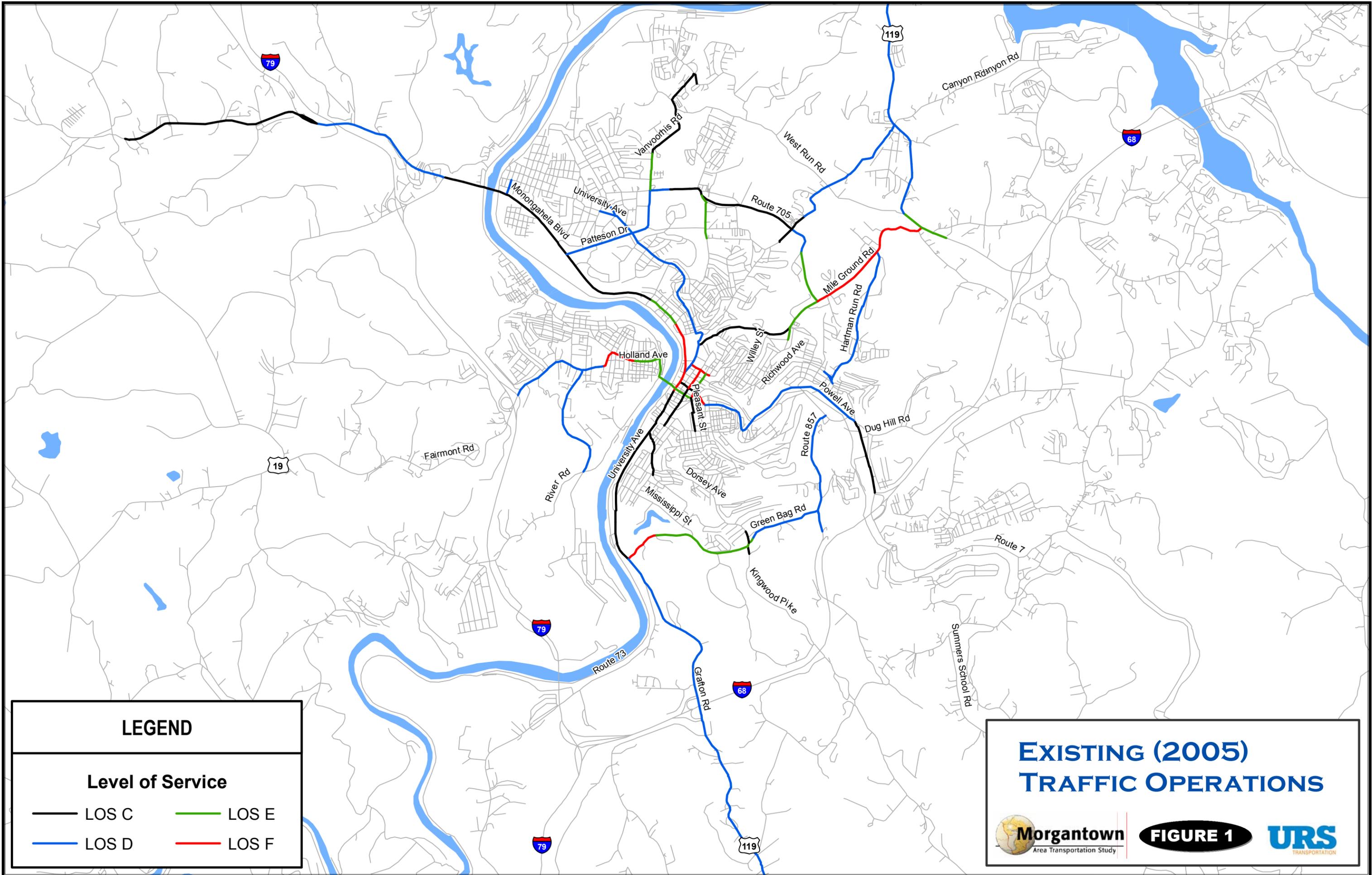
- Radial routes connecting or improvements to current routes these high intensity activity centers will likely provide the greatest benefit to reducing congestion.
- Circumferential routes will aid in the process of reducing congestion, but for the most part cannot be reasonably provided in areas where they may do the most good at reducing congestion/relieving bottlenecks (physical impacts are too great).
- Improvements to radial routes will be costly from an adjacent impact perspective.
- Circumferential routes will not reach their maximum utility unless they are coupled with radial routes improvements.
- Many of the high activity centers are proximate to each other, which provides opportunities for transit and non-motorized alternatives to truly be a part of the overall solution.
- Topography will be the ultimate controller of the overall plan. Most of the likely key improvements require overcoming a physical barrier, which will require high unit cost improvements.

Memorandum
Chet Parsons
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee
April 1, 2006

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ACTION REQUESTED

The April 18, 2006 combined TAC and CAC meeting will be dedicated to reviewing the initial screening results for the roadway concepts, the transit concepts and the non-motorized system concepts. The desired product of the meeting will be a list of concepts to be maintained in development of the long range plan project list and a list of those ideas/concepts that will be dismissed or set aside.



LEGEND

Level of Service

- LOS C
- LOS D
- LOS E
- LOS F

**EXISTING (2005)
TRAFFIC OPERATIONS**

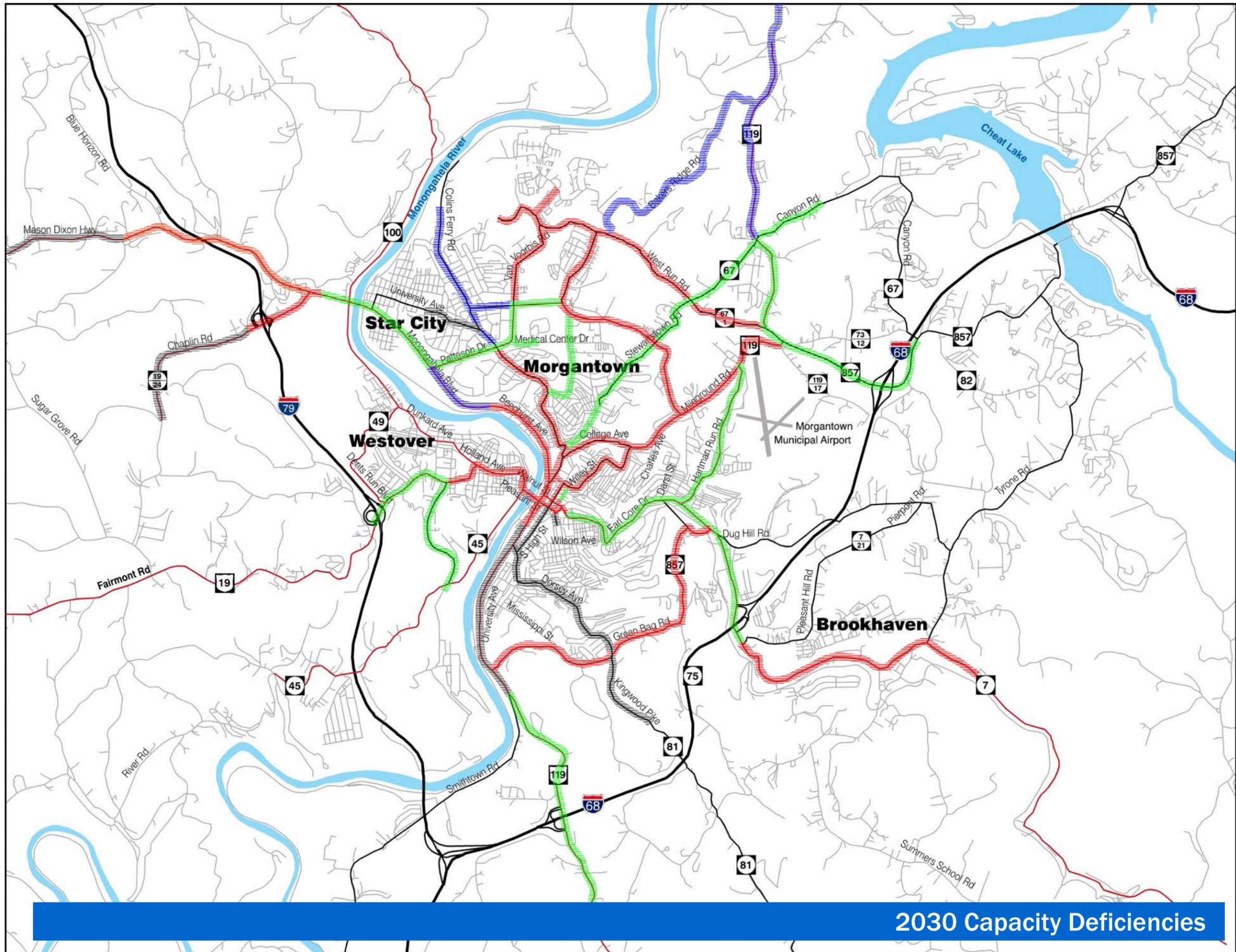


Morgantown
Area Transportation Study

FIGURE 1



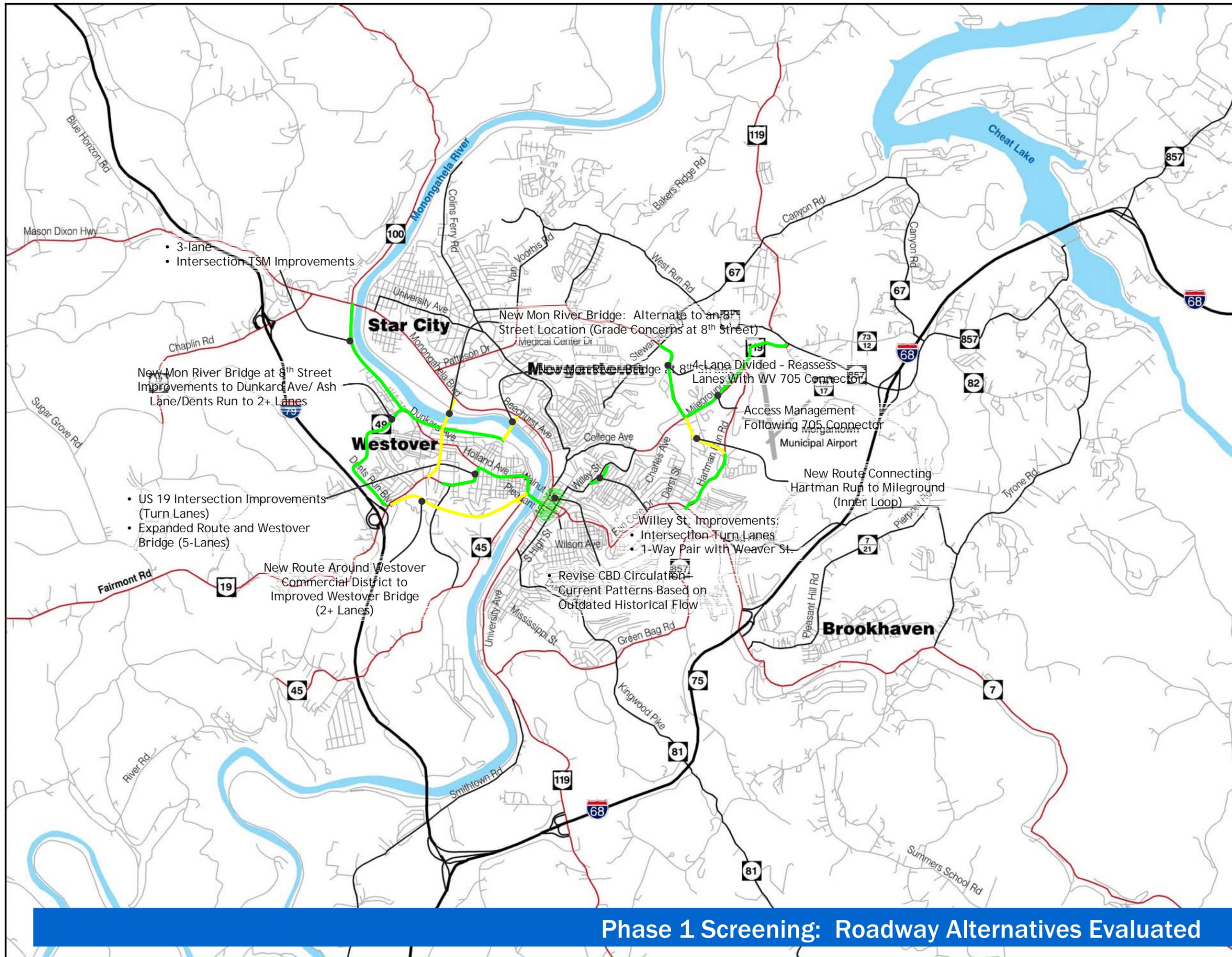
URS
TRANSPORTATION



- Legend**
-  - Level of Service A or B
 -  - Level of Service C
 -  - Level of Service D
 -  - Level of Service E
 -  - Level of Service F

2030 Capacity Deficiencies





Legend

- - Corridor Improvement
- - New Facility

Phase 1 Screening: Roadway Alternatives Evaluated



Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
Congestion Along Beechurst Avenue					
1. Transportation Systems Management: - Add turn lanes at signalized intersections - Mid-block access control (median) - Driveway consolidation/reconfiguration	Limited impacts to adjacent properties - Intersections only/Mainly within current ROW. Slight negative impact to those properties with only mid-block access	Does not provide adequate capacity through 2030 Reducing access points - Improves safety	Minimal	Low-Moderate	Maintain
2. Transportation Systems Management - Established "Unbalanced" 3-Lane	No additional ROW Negative impact on access, turn lane becomes shared turn/through.	Does not provide adequate capacity through 2030. Negative impact on safety with shared through/left lane	Minimal	Low	Eliminate
3. Expand Along Existing Alignment: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek.	Substantial number of property acquisitions Lower income residents impacted (likely)	5-Lane provides adequate capacity through 2030 4-Lane volume approaches capacity Assume consolidation of access - Safety improvement Reduces congested miles by 1 mile (a critical mile in the system)	Physical - Minor Social - Minor, with substantial to properties	High	Maintain
4. Develop New Route: - One-way segment 8th St through Campus Dr/ Univeristy Ave - Expand to 5-Lanes from Unversity Ave. to Decker's Creek. - Expand to 4-Lanes from Campus Dr. to Hough St.	Substantial number of property acquisitions - Very similar to 5-lane expansion alternative. Lower income residents impacted (likely) Relative to 5-lane: Reduced level of impact to development along the east side of Beechurst. Would there be adequate potential to redevelop area between one-way routes? If limited redevelopment potential, there would be a substantial negative impact.	Provides adequate capacity through 2030 Assume consolidation of access - Safety improvement Reduces congested miles by 1 mile (a critical mile in the system) Reduced access to properties in one-way section Potential for conflicts with PRT (over/under)	Physical - Minor Social - Minor, with substantial to properties Viewshed from/to river negatively impacted	High	Eliminate
5. Improve Existing Routes - Divert from Beechurst Ave.	Routes were reviewed. No complementary route(s) were identified. Few continuous routes that coul/should accept diverted arterial route traffic. Most others are non-continuous local streets				Eliminate
6. 8th Street Mon River Crossing: - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19	Diverts traffic from Beechurst (Arterial) to locals in both Morgantown and Westover. Bigger issue in Westover. Property takes at the approaches.	Topography and location of the PRT. It would be VERY difficult to provide an at-grade access at Beechurst/8th St and get over/under PRT and provide river clearance. Westover - Best to provide access to WV 100, but it does not conveniently connect with through routes. Need to improve local/collector routes on either side. Beechurst volume drops: 4,200 8th to Westover Bridge. Still at/over capacity of current.	River impacts: Piers	High	Eliminate
7. New Mon River Crossing North of 8th Street - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19		Location: Approx. half way between 8th St. Evansdale Circle. More reasonable based on controlling elements of road/PRT and River. Beechurst/Bridge intersection likely signalized: On hill (negative) Need to improve local/collector routes on either side. Westover - Best to provide access to WV 100, but it does not conveniently connect with through routes. Beechurst volume drops: 4,000 VPD from 8th to Westover Bridge. Still at/over capacity of current cross section.	River impacts: Piers Through traffic on local/collector routes (larger issue in Westover)	High	Maintain

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
Congestion Along WV 7 West of WV 100					
1. Transportation Systems Management: <ul style="list-style-type: none"> - Add turn lanes at key intersections - Improve skewed intersections (i.e. View Hill Rd) - Driveway consolidation - Improve tight curves - Widen shoulder 	Limited ROW impacts at intersections and at tight curves. No building impacts.	2030 Daily Traffic: 6,000 to 14,000 VPD east of Little Indian Creek Road (CR 41). Adding turn lanes will reduce congestion, but with maintaining one through lane per direction, still LOS D in peaks. Intersection of US 19/WV/Osage Rd is large bottle neck (need to consider more lanes or possibly an interchange).	Minor	Moderate - Highly dependent on Extent of improving curves.	Maintain
2. I-68 Extension Concept (DOH Report): <ul style="list-style-type: none"> - 4-Lane rural divided highway - Partial controlled access (combination of at-grade and interchanges) 				High	Maintain, but likely lower priority due to limited state/federal funding
Congestion Along Chaplin Road (WV 19/24) WV 19 to I-79					
1. Transportation Systems Management: <ul style="list-style-type: none"> - Signal timing improvements - Remove Signalize Approach at Sheetz/Convert to right-in-right-out 	Minor Sheetz access reduced	Removing Sheetz signalized approach, increases intersection capacity without more road. 2030 volumes still exceed capacity.	Minor	Moderate	Maintain
2. 8th Street Mon River Crossing <ul style="list-style-type: none"> - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19 	Diverts traffic from Beechurst (Arterial) to locals in both Morgantown and Westover. Bigger issue in Westover Property takes at the approaches.	Topography and location of the PRT. It would be VERY difficult to provide an at-grade access at Beechurst/8th St and get over/under PRT and provide river clearance. Westover - Best to provide access to WV 100, but it does not conveniently connect with through routes. Need to improve local/collector routes on either side of river before full impact is achieved. Diverts approx. 2,500 VPD from Chaplin Road. Drop not enough to eliminate operations issues. Beechurst volume drops: 4,200 8th to Westover Bridge. Still at/over capacity of current.	River impacts: Piers	High	Eliminate
3. New Mon River Crossing North of 8th Street <ul style="list-style-type: none"> - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19 		Location: Approx. half way between 8th St. Evansdale Circle. More reasonable based on controlling elements of road/PRT and River. Beechurst/Bridge intersection likely signalized: On hill (negative) Diverts approx. 3,500 VPD from Chaplin Road. Drop not enough to eliminate operations issues. Need to improve local/collector routes on either side. Westover - Best to provide access to WV 100, but it does not conveniently connect with through routes. Beechurst volume drops: 4,000 8th to Westover Bridge. Still at/over capacity of current.	River impacts: Piers Through traffic on local/collector routes (larger issue in Westover)	High	Maintain
4. Create a Better Southern Connection to US 19 West of I-79 <ul style="list-style-type: none"> - Upgrade Sugar Grove Road/Chaplin Road as 2-lane - Establish I-79 West Side Frontage Road (Martin Hollow Road between Morgantown Mall and University Town Center) 	Rural residential developments near Sugar Lane Terrace and Sweet Pea Lane possibly impacted (including property acquisition). Provides a secondary access to regional commercial and planned residential/industrial. Minor/moderate adjacent rural residential impacts along Martin Hollow Rd.	Traffic diversion from WV 7/US 19: Minor - but every bit helps. WV 7 to Soloman Rd - Very rough terrain, requiring cuts/fills (no showstoppers, but higher cost). Martin Hollow Rd - Unimproved today/Terrain will result in cuts/fills Limited impact on Chaplin Road volume, but big improvement to access for development west of I-79.	Minor - Improvement is two lane generally along existing ROW. Development exists along most of each corridor (area disturbed) No observed significant concerns	Moderate	Maintain

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
University Avenue Congestion - Patteson Drive to Beechurst Avenue 1. Transportation Systems Management: - Add turn lanes at key intersections - Access Management through commercial areas/high density residential	Intersection widening likely impacts properties in all cases and buildings in selected locations Driveway consolidation - Slight reduction in mid-block access	Minor corridor capacity improvements. Removal of selected bottle necks will provide some corridor relief. Overall, volume still greater than capacity. Access management focus: Patteson to Riverview Dr. Terrain from North Ave to 3rd Street Limits improvement options.	Minor - Most improvements will be limited to intersections.	Moderate	Maintain
2. Widen corridor to 3-Lane	Commercial areas: Impact off-street parking both sides. Residential areas: Limited areas of building impacts/for a number of multi-family uses off-street parking impacted. In residential areas: Environmental justice may be a concern. Campus Dr to 8th St: Possible to coordinate with Sunnyside Up Plan. Not likely acceptable through WVU campus.	3-lanes: Volume continues to exceed capacity. Historical soil stability issues 8th St to Riverview, impacts constructibility. 8th St to Riverview: constructibility concern with large cuts.	Most significant concern is environmental justice if there is ROW acquisition. Many parcels in the corridor meet age requirement for historical properties (caution). Adjacent cuts into hills concern.	High	Eliminate
3. Widen corridor to 5-Lane	Commercial areas: Significantly impact off-street parking both sides. Residential areas: Limited areas of building impacts/for a number of multi-family uses off-street parking impacted. In residential areas: Environmental justice may be a concern. Campus Dr to 8th St: Possible to coordinate with Sunnyside Up Plan. Not likely acceptable through WVU campus.	3-lanes: Volume continue to exceed capacity. Historical soil stability issues 8th St to Riverview, impacts constructibility. 8th St to Riverview: constructibility concern with large cuts.	Most significant concern is environmental justice if there is ROW acquisition. Many parcels in the corridor meet age requirement for historical properties (caution). Adjacent cuts into hills concern.	High	Eliminate
4. Expand Beechurst Avenue to Divert Volume: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek.	Substantial number of property acquisitions Lower income residents impacted	5-Lane provides adequate capacity through 2030 4-Lane portion volume approaches capacity With consolidation of access - Safety improvement Reduces Univ. volume by 1,00 VPD Little positive impact on congest VMT or miles.	Physical - Minor Social - Minor, with substantial to property impacts	High	Maintain
5. Close University Avenue to Through Traffic on WVU Campus	Pushes Collector/Arterial traffic on to more local routes. Maiden Lane receives much diverted traffic. Ped/Bike/Auto conflicts on Univ. substantially reduced Ped/Bike/Auto conflicts move to Maiden Lane. Reduced traffic on University perceived as negative by businesses along corridor.	More traffic on Beechurst Ave. (Already congested) University Ave. "corridor" traffic drops 2000 to 3000 VPD. Still congested from Patteson through approximately Stewart St. Maiden Lane: Traffic increases approximately 8,000 to 9,000 VPD. Maiden Lane: Highly congested/pedestrian crossing concerns.	Minor - Most significant will be traffic related impacts along local routes that receive more traffic.	Minor/Moderate - Highly dependent on closure treatment.	Eliminate
6. University Ave/Grumbein's Island Grade Separation	Must be attractive and safe - likely slightly raise University and create under crossing (plaza) If cannot provide "open" condition - safety issues arise Reduce bike accessibility between University Ave. and campus (assuming bike traffic is on road).	Must completely restrict peds from accessing road. Potential for utility impacts (high cost item). Snow removal is a slight issue.	Minor	High	Maintain

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
Mileground/College Avenue/Willey Street Congestion					
<p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Add turn lanes at key intersections - Weaver/Willey One-way Pair: Weaver to Oak St/Ice St - Access Management through commercial areas/high density residential (Boulevard Concept) 	<p>On Mileground - CR 857 to WV 705 volume drop due to 705 Connector provides opportunity for increased ped/bike use Driveway consolidation will be perceived as negative (not supported with facts).</p> <p>ROW impacts most significant on Willey:</p> <ul style="list-style-type: none"> - Monongalia Ave: Flatten curve - Cornell: Turn lanes - Weaver/Prospect Ext: Turn lanes/Roundabout <p>One way: In residential accessibility concern by neighbors More traffic on Weaver St.</p>	<p>With 705 Connector: Mileground volumes drop 15,000 to 16,000 VPD</p> <p>Resulting 2030 Volume: Within the 3-lane capacity. Willey/Weaver 1-ways: Improves operations at south junction at very little ROW cost.</p>	Minor	Low	Maintain
<p>2. Widen corridor:</p> <ul style="list-style-type: none"> - Mileground Road to 5-lane - College Avenue to 2+ turn lanes/3-lane - Willey Street to 2+ turn lanes/3-lane 	<p>Substantial ROW impacts. Will require building acquisition along Mileground, Willey St and College Ave.</p> <p>College/Willey: Potential environmental justice concern.</p> <p>Age of properties: Could be historical</p>	<p>More capacity on Mileground than needed if 705 Connector is provided.</p> <p>Willey St: 3-lane provides adequate capacity.</p> <p>College Ave: 3-lane provides adequate capacity</p>	<p>Significant due to ROW impacts.</p> <p>Cultural resources: Not likely an issue.</p>	High	Eliminate
<p>3. Square at Falling Run Corridor:</p> <ul style="list-style-type: none"> - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705 	<p>North end: Terminus with 705 Connector could impact WVU Organic Farm property.</p>	<p>New Route Volume: 15,000-16,000 VPD</p> <p>Adequate capacity/Some reserve for additional growth.</p> <p>Limited impact on Mileground north of WV 705.</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 3500-4700 VPD - College Ave: 2000 VPD - Stewart St: 1500-2000 VPD - Chestnut Ridge: 1000-2000 VPD - Willowdale: 1000-2000 VPD 	<p>Minor</p> <p>Trees removed for ROW.</p>	High	Maintain
<p>4. Square at Falling Run Corridor:</p> <ul style="list-style-type: none"> - 2+ turn lanes/3-Lane from Beechurst Ave. to WV 705 	<p>North end: Terminus with 705 Connector could impact WVU Organic Farm property.</p> <p>Property acquisition required: Beechurst to University.</p> <p>Opportunities to coordinate with Sunnyside Up.</p>	<p>New Route Volume: 15,000-16,000 VPD</p> <p>At/Exceeds capacity of 2-lane/3-lane</p> <p>Limited impact on Mileground north of WV 705.</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 3500-4700 VPD - College Ave: 2000 VPD - Stewart St: 1500-2000 VPD - Chestnut Ridge: 1000-2000 VPD - Willowdale: 1000-2000 VPD <p>Connection to Beechurst is key to providing utility.</p>	<p>Minor</p> <p>Trees removed for ROW.</p>	High	Maintain

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
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5. WV 705 to Hartman Run Rd. Connection (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core	Provides an arterial/collector alternative to Hampton/Darst: Removes through traffic from neighborhood.	New Route Volume: 12,000-15,000 VPD At/Exceeds capacity of 3-lane Reduces volume in congested corridors: - Willey St: 2000-2500 VPD - College Ave: Minimal impact - Stewart St: Minimal impact - Neighborhood Routes: 3000-4500 VPD - Beechurst: 1000 VPD - Mileground: Little change - diversion into and out of the corridor seems to balance out. Terrain: Impacts constructibility/cost - Need Mileground/705 interchange.			
West Run Road Congestion					
1. Transportation Systems Management: - Add turn lanes at key intersections	Minimal: Improvements limited to intersections. An improved two-lane along segments will require reconstruction and widening of the current narrow section.	Provides adequate capacity through 2030. Turn lanes at: - Van Voorhis Rd. - Riddle St. - Stewartstown Rd. Concept should include turn lanes at access drives to higher density residential developments. Based on traffic patterns - Turn lanes provide as much of a benefit as more through capacity.	Minimal	Low/Moderate	Maintain
2. Widen corridor: - 4-lane plus turn lanes: Stewartstown Rd to Van Voorhis Rd - New 4-lane plus turn lanes: Van Voorhis Rd to Collins Ferry Rd	Adequate ROW along current alignment may not be available without impacts to recently constructed residential/commercial uses.	Likely more capacity than is "required" to accommodate demand Diverts little traffic from other routes. Extension to Collins Ferry reduces traffic on Collins Ferry: - Collins Ferry: -1000 VPD - Van Voorhis: -500 to 1000 VPD - Pineview: -2500 VPD near WV 705 to +1000 VPD near West Run - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3000 VPD Reconstruct W. Run Rd/Van Voorhis intersection to have W. Run Rd be a through movement. Improves operations on West Run Road to acceptable LOS	From Van Voorhis to Collins Ferry - New alignment. Vegetation removal and conversion of open space would be primary concerns.	Moderate/High	Eliminate

Table 1: Alternatives Analysis Summary



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<p>3. Widen corridor/Extend to Mon Boulevard:</p> <ul style="list-style-type: none"> - 4-lane plus turn lanes: 705 Connector to Van Voorhis Rd. - Extend 2+ turn lanes/4+ turn lanes from Van Voorhis to Mon Boulevard. 	<p>Adequate ROW along current alignment may not be available without impacts to recently constructed residential/commercial uses.</p>	<p>Likely more capacity than is "required" to accommodate demand</p> <p>River crossing adds to traffic volume diversion from other routes. Route carries 10000 to 21000 VPD</p> <ul style="list-style-type: none"> - Collins Ferry: -500 near WV 705 to +1500 VPD near West Run Rd - Van Voorhis: -4000 near WV 705 to +3000 near West Run Rd - Pineview: -2000 near WV 705 to +1000 VPD near West Run Rd - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3500 VPD <p>Improves operations on West Run Road to acceptable LOS.</p> <p>No obvious engineering constraints along potential new route. Volume Van Voorhis to Mon Blvd. reflects 2-lane need.</p>	<p>From Van Voorhis to Collins Ferry - New alignment. Vegetation removal and conversion of open space would be primary concerns.</p>	<p>Moderate/High</p>	<p>Eliminate</p>
<p>4. Square at Falling Run Corridor:</p> <ul style="list-style-type: none"> - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705 	<p>North end: Terminus with 705 Connector could impact WVU Organic Farm property.</p>	<p>New Route Volume: 15,000-16,000 VPD</p> <p>Adequate capacity/Some reserve for additional growth.</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 3500-4700 VPD - College Ave: 2000 VPD - Stewart St: 1500-2000 VPD - Chestnut Ridge: 1000-2000 VPD - Willowdale: 1000-2000 VPD <p>Reduces volume on West Run Rd:</p> <ul style="list-style-type: none"> - West End: 500 VPD - East End: 1000 VPD 	<p>Minor</p> <p>Trees removed for ROW.</p>	<p>High</p>	<p>Maintain</p>
<p>5. Square at Falling Run Corridor:</p> <ul style="list-style-type: none"> - 2+ turn lanes/3-Lane from Beechurst Ave. to WV 705 	<p>North end: Terminus with 705 Connector could impact WVU Organic Farm property.</p> <p>Property acquisition required: Beechurst to University.</p> <p>Opportunities to coordinate with Sunnyside Up.</p>	<p>New Route Volume: 15,000-16,000 VPD</p> <p>At/Exceeds Capacity</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 3500-4700 VPD - College Ave: 2000 VPD - Stewart St: 1500-2000 VPD - Chestnut Ridge: 1000-2000 VPD - Willowdale: 1000-2000 VPD <p>Connection to Beechurst is key to providing utility.</p> <p>Reduces volume on West Run Rd:</p> <ul style="list-style-type: none"> - West End: 500 VPD - East End: 1000 VPD 	<p>Minor</p> <p>Trees removed for ROW.</p>	<p>High</p>	<p>Eliminate</p>

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<p>6. WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided:</p> <ul style="list-style-type: none"> - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St. 	<p>Provides an arterial/collector alternative to Hampton/Darst: Removes through traffic from neighborhood.</p>	<p>New Route Volume: 12,000-15,000 VPD At/Exceeds capacity of 3-lane Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 2000-2500 VPD - College Ave: Minimal impact - Stewart St: Minimal impact - Neighborhood Routes: 3000-4500 VPD - Beechurst: 1000 VPD <p>Terrain: Impacts constructibility/cost</p>			
<p>7. New east-west corridor north of West Run Road:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection 	<p>Northerly alignment required to avoid substantial residential land use impacts. Residential/Commercial/Industrial impacts at primary cross routes:</p> <ul style="list-style-type: none"> - Bakers Ridge Rd. 	<p>Capacity requirement reflects need for new 2-lane plus turns. Traffic diversion from other routes. Extension to Collins Ferry reduces traffic on:</p> <ul style="list-style-type: none"> - Collins Ferry: -1000 VPD - Van Voorhis: -500 to 1000 VPD - Pineview Dr: -2500 VPD - Riddle St: +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3000 VPD <p>Would still need to upgrade existing West Run Road as a 2-lane with turn lanes.</p>	<p>Vegetation removal and conversion of open space would be primary concerns.</p>	Moderate	Maintain
<p>8. New east-west corridor north of West Run Road/Mon River Crossing:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection 	<p>Northerly alignment required to avoid substantial residential land use impacts. Residential/Commercial/Industrial impacts at primary cross routes:</p> <ul style="list-style-type: none"> - Bakers Ridge Rd. - WV 100 	<p>Capacity requirement reflects need for new 2-lane plus turns. River crossing: Possibly 4 lanes.</p> <p>Diverts approximately 3,000 VPD from West Run Road. Diverts little traffic from other routes. Extension to I-79 diverts traffic such that:</p> <ul style="list-style-type: none"> - Chestnut Ridge (WV 705): -2700 VPD - Pattenon Dr: -4500 VPD - Collins Ferry: -500 to +1500 VPD - Van Voorhis: -4000 to +3000 VPD - Pineview Dr: -2000 VPD - Riddle St: +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3500 VPD <p>Does not preclude the need to improve West Run Road. If terminate at I-79 Osage interchange, need interchange at US 19/WV7/RC 19/24 Likely I-79 junction 1-2 miles north of WV 7 underpass. East side of Mon River much higher an elevation (requires cuts to get to river crossing elevation) West side of Mon River terrain: Impacts constructibility/cost</p>	<p>Vegetation removal and conversion of open space would be primary concerns.</p>	High	Maintain

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<p>9. Far North Mon River Crossing and Corridor to I-79: - 2/4-lane corridor connection</p>	<p>Minor: Little development in area.</p>	<p>2030 ADT: - West of Bakers Ridge: 8000 VPD - River Crossing: 8000 VPD - WV 100 to I-79: 5000 to 7000 VPD Volume reflects 2-lane need. Limited reduction on any one current route. East side of Mon River much higher an elevation (requires cuts to get to river crossing elevation) West side of Mon River terrain: Impacts constructibility/cost If terminate at I-79 Osage interchange, need interchange at US 19/WV7/RC 19/24 Likely I-79 junction 1-2 miles north of WV 7 underpass.</p>	<p>Vegetation removal and conversion of open space would be primary concerns. Cost is very high relative to the benefit.</p>	<p>High</p>	<p>Eliminate</p>
Congestion Along Van Voorhis (West Run Rd. to Chestnut Ridge)					
<p>1. Transportation Systems Management: - Add turn lanes at key intersections</p>	<p>Selected intersection improvements could result in building impacts: - Bakers Ridge Road (need to realign) - West Run Road (need to realign)</p>	<p>Corridor benefits from access management: - White Oak Circle/Private Drive - CR 59/Wedgewood Circle - Killarney Dr/Hickory Lane - Van Voorhis/Chestnut Ridge/Burroughs St. Turn lanes do not provide for all capacity needs.</p>	<p>Relatively minor impacts.</p>	<p>Moderate</p>	<p>Maintain</p>
<p>2. Widen corridor: - 3-lane from Chestnut Ridge to n. of West Run Rd.</p>	<p>Adjacent impacts range from minor to moderate: - Loss of parking at likely at commercial uses north of Chestnut Ridge to Crescent Heights Trailer Court - Potential for loss of parking at retail uses south of West Run Rd.</p>	<p>With improvement also employ access management to: - Better define commercial access to convenience stores/gas stations - Line up cross routes: - White Oak Circle/Private Drive - CR 59/Wedgewood Circle - Killarney Dr/Hickory Lane - Van Voorhis/Chestnut Ridge/Burroughs St. Provides adequate capacity through 2030. Safety improvement (left turns in their own lane) Potential building impacts at West Run Road (assumes intersection realignment)</p>	<p>Minor: Relocation of parking/conversion of open space to ROW</p>	<p>Moderate/High</p>	<p>Eliminate</p>
<p>3. Improve Pineview/Riddle Rd: - 3-Lane from Chestnut Rd. to West Run Rd.</p>	<p>Riddle Rd - Adjacent uses are mainly residential. Increased volume would be through traffic in neighborhood (Negative) Requires property acquisition (including buildings): - JD Anderson Dr to Ford St - Ford St to Fremont St</p>	<p>Corridor traffic: - Increases by 1500 VPD - 2030 ADT with improvement: 7700 to 13,4000 VPD Provides adequate capacity through 2030. Traffic diversion: - Van Voorhis St: -500 to -1000 VPD - Stewartstown Rd: -500 VPD</p>	<p>Area is developed. Primary impacts are to residential uses. Overall, impacts to the natural environment is minimal. Impacts to built environment - Moderate</p>	<p>Moderate</p>	<p>Eliminate full 3-lane. Maintain improvements to key intersections.</p>

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<p>4. Improve Stewart St./Stewartstown Rd:</p> <ul style="list-style-type: none"> - New 3-Lane corridor CBD to US 119. 	<p>If provide new alignment from West Run Road to south (see map alignment) residential impacts minor.</p>	<p>Corridor traffic:</p> <ul style="list-style-type: none"> - Increases by 1000 VPD - 2030 ADT with improvement: 7,000 to 10,000 VPD <p>Provides adequate capacity through 2030.</p> <p>Traffic diversion:</p> <ul style="list-style-type: none"> - Van Voorhis St: -200 VPD - Riddle Rd/Pineview Dr: -800 VPD <p>Need to coordinate with 705 Connector.</p>	<p>Conversion of open space to ROW - Minor.</p>	<p>Moderate</p>	<p>Maintain</p>
<p>5. New east-west corridor north of West Run Road/Mon River Crossing:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection 	<p>Northerly alignment required to avoid substantial residential land use impacts.</p> <p>Residential/Commercial/Industrial impacts at primary cross routes:</p> <ul style="list-style-type: none"> - Bakers Ridge Rd. - WV 100 	<p>Capacity requirement reflects need for new 2-lane plus turns.</p> <p>Changes along Van Voorhis Rd traffic:</p> <ul style="list-style-type: none"> - North of WV 705: +2000 VPD <p>Changes along other adjacent routes:</p> <ul style="list-style-type: none"> - West Run Rd: -3,000 VPD - Chestnut Ridge (WV 705): -2700 VPD - Patteson Dr: -4500 VPD - Collins Ferry: -500 to +1500 VPD - Pineview Dr: -2000 VPD - Riddle St: +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3500 VPD <p>Actually increases Van Voorhis traffic. Many destinations at Van Voorhis/Chestnut Ridge.</p> <p>If terminate at I-79 Osage interchange, need interchange at US 19/WV7/RC 19/24</p> <p>Likely I-79 junction 1-2 miles north of WV 7 underpass.</p> <p>East side of Mon River much higher an elevation (requires cuts to get to river crossing elevation)</p> <p>West side of Mon River terrain: Impacts constructibility/cost</p>	<p>Vegetation removal and conversion of open space would be primary concerns.</p>	<p>High</p>	<p>Maintain</p>
Congestion Along Pineview/Riddle Street					
<p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Add turn lanes at key intersections 	<p>Riddle Rd - Adjacent uses are mainly residential. Increased volume would be through traffic in neighborhood (Negative)</p> <p>Requires property acquisition for turn lanes (no buildings):</p> <ul style="list-style-type: none"> - JD Anderson Dr - Pineview Dr - West Run Rd 	<p>Corridor traffic:</p> <ul style="list-style-type: none"> - Increases by 1500 VPD - 2030 ADT with improvement: 3600 to 11,4000 VPD <p>Provides adequate capacity through 2030.</p> <p>Traffic diversion:</p> <ul style="list-style-type: none"> - Van Voorhis St: -500 to -1000 VPD - Stewartstown Rd: -500 VPD 	<p>Area is developed. Primary impacts are to residential uses.</p> <p>Overall, impact to the natural environment is minimal.</p> <p>Impacts to built environment - Minimal</p>	<p>Low</p>	<p>Maintain</p>
<p>2. Widen corridor to 3-lane:</p> <ul style="list-style-type: none"> - Chestnut Ridge to West Run Rd. 	<p>volume would be through traffic in neighborhood (Negative)</p> <p>Requires property acquisition (including buildings):</p> <ul style="list-style-type: none"> - JD Anderson Dr to Ford St - Ford St to Fremont St 	<p>Corridor traffic:</p> <ul style="list-style-type: none"> - Increases by 1500 VPD - 2030 ADT with improvement: 3600 to 11,4000 VPD <p>Provides adequate capacity through 2030.</p> <p>Traffic diversion:</p> <ul style="list-style-type: none"> - Van Voorhis St: -500 to -1000 VPD - Stewartstown Rd: -500 VPD 	<p>Area is developed. Primary impacts are to residential uses.</p> <p>Overall, impacts to the natural environment is minimal.</p> <p>Impacts to built environment - Moderate</p>	<p>Moderate</p>	<p>Eliminate full 3-lane. Maintain improvements to key intersections.</p>

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<p>3. Improved Van Voorhis Rd:</p> <ul style="list-style-type: none"> - 3-Lane from Chestnut Ridge Rd. to West Run Rd. 	<p>Adjacent impacts range from minor to moderate:</p> <ul style="list-style-type: none"> - Loss of parking at likely at commercial uses north of Chestnut Ridge to Crescent Heights Trailer Court - Potential for loss of parking at retail uses south of West Run Rd. 	<p>With improvement also employ access management to:</p> <ul style="list-style-type: none"> - Better define commercial access to convenience stores/gas stations - Line up cross routes: <ul style="list-style-type: none"> - White Oak Circle/Private Drive - CR 59/Wedgewood Circle - Killarney Dr/Hickory Lane - Van Voorhis/Chestnut Ridge/Burroughs St. <p>Does little to divert traffic from Riddle/Pineview. Provides adequate capacity through 2030. Safety improvement (left turns in their own lane). Potential building impacts at West Run Road (assumes intersection realignment)</p>	<p>Minor: Relocation of parking/conversion of open space to ROW</p>	Moderate/High	Eliminate
<p>4. Add New Corridor through WVU Research Park:</p> <ul style="list-style-type: none"> - New 3-Lane corridor Chestnut Ridge Rd. to West Run Rd. 		<p>New corridor between WV 705 and West Run Rd would carry 3,500 to 6,000 VPD, diverting traffic from:</p> <ul style="list-style-type: none"> - Pineview Dr/Riddle St: -1000 VPD - Van Voorhis: -500 to -1000 VPD - Stewartstown Rd: -500 VPD <p>Would not substantially divert volume from Pineview. New corridor between WV 705 and new Bakers Ridge Rd would carry 4,000 to 8,500 VPD, diverting traffic from:</p> <ul style="list-style-type: none"> - Pineview Dr/Riddle St: -1500 VPD - Van Voorhis: -1000 VPD - Stewartstown Rd: -500 VPD <p>Would not substantially divert volume from Pineview.</p>		Low/Moderate	Maintain
WV 705 Congestion (Beechurst Ave. to Mileground)					
<p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Signal Coordination Study/Work - Access management/control Pinewood Ave. to Van Voorhis Rd. - Van Voorhis Ave. intersection improvements 	<p>No/Very limited adjacent impacts. Limited to Chestnut Ridge Rd intersection. Access management - Slight reduction direct access to WV 705.</p>	<p>Access management improvements result in better peak period corridor flow. Offsets reduction in direct access. Does not provide adequate capacity to accommodate 2030 traffic. Access management changes - improves corridor safety.</p>	Minimal	Low/Moderate	Maintain
<p>2. Widen corridor to 4-lane divided:</p> <ul style="list-style-type: none"> - Mileground to Stewart St. 	Minimal - Limited construction directly adjacent to corridor.	<p>Increases capacity to approximately 27,000 VPD Provides adequate capacity through 2030 (assumes 705 Connector in place). Without 705 Connector - 2030 volume approaches capacity. Provides safety improvement:</p> <ul style="list-style-type: none"> - Left turn lanes. - Eliminates lane drop at Stewartstown Road (current creates "trap"). <p>Northbound dual left turn possible from Mileground (Improves operations). Little diversion from other corridors. Coupled with extension to Hartman Run, create continuous corridor.</p>	Minimal - 4-lane was considered by WV DOT when the western 4-lane was done. Funding limitations delayed project.	Moderate/High	Maintain

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<p>3. Square at Falling Run Corridor:</p> <ul style="list-style-type: none"> - 4-Lane Divided from Beechurst Ave. to WV 705 - 3-Lane from Beechurst Ave. to WV 705 	<p>North end: Terminus with 705 Connector could impact WVU Organic Farm property.</p> <p>Property acquisition required: Beechurst to University.</p> <p>Opportunities to coordinate with Sunnyside Up.</p>	<p>New Route Volume: 15,000-16,000 VPD</p> <p>At/Exceeds Capacity</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: -3500-4700 VPD - College Ave: -2000 VPD - Stewart St: -1500-2000 VPD - WV 705 (Chestnut Ridge): -1000-2000 VPD - Willowdale: -1000-2000 VPD <p>Connection to Beechurst is key to providing utility.</p> <p>Reduces volume on West Run Rd:</p> <ul style="list-style-type: none"> - West End: 500 VPD - East End: 1000 VPD 	<p>Minor</p> <p>Trees removed for ROW.</p>	<p>High</p>	<p>Maintain</p>
<p>4. WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided:</p> <ul style="list-style-type: none"> - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St. 	<p>Provides an arterial/collector alternative to Hampton/Darst: Removes through traffic from neighborhood.</p> <p>Potential for residential impacts.</p>	<p>New Route Volume: 12,000-15,000 VPD</p> <p>At/Exceeds capacity of 3-lane</p> <p>Reduces volume in congested corridors:</p> <ul style="list-style-type: none"> - Willey St: 2000-2500 VPD - College Ave: Minimal impact - Stewart St: Minimal impact - Neighborhood Routes: 3000-4500 VPD - Beechurst: 1000 VPD <p>Terrain: Impacts constructibility/cost</p>		<p>High</p>	<p>Maintain</p>
<p>5. Widen West Run Road corridor (Divert WV 705 traffic):</p> <ul style="list-style-type: none"> - 4-lane plus turn lanes: Stewartstown Rd to Collins Ferry 	<p>Adequate ROW along current alignment may not be available without impacts to recently constructed residential/commercial uses.</p>	<p>Likely more capacity than is "required" to accommodate demand</p> <p>Diverts 1000 to 1500 VPD from WV 705.</p> <p>Diverts some traffic from other routes, such that:</p> <ul style="list-style-type: none"> - Collins Ferry: -1000 VPD - Van Voorhis: -500 to 1000 VPD - Pineview/Riddle: +1000 to -2500 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3000 VPD <p>Does not dramatically improve WV 705 operations.</p> <p>Reconstruct W. Run Rd/Van Voorhis intersection to have W. Run Rd be a through movement.</p> <p>Much of WV 705 traffic has origins/destinations in corridor. So, little diversion.</p>	<p>From Van Voorhis to Collins Ferry - New alignment.</p> <p>Vegetation removal and conversion of open space would be primary concerns.</p>	<p>Moderate/High</p>	<p>Eliminate</p>

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
<p>6. Widen West Run Road corridor and Extend to Mon Boulevard:</p> <ul style="list-style-type: none"> - 4-lane plus turn lanes: 705 Connector to Van Voorhis Rd. - Extend 2+ turn lanes/4+ turn lanes from Van Voorhis to Mon Boulevard. 	<p>Adequate ROW along current alignment may not be available without impacts to recently constructed residential/commercial uses.</p>	<p>Likely more capacity than is "required" to accommodate demand. River crossing adds to traffic volume diversion from other routes. Route carries 10000 to 21000 VPD</p> <ul style="list-style-type: none"> - Collins Ferry: -500 to +1500 VPD - Van Voorhis: -4000 to +3000 VPD - Pineview: -2000 to +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3500 VPD - WV 705: -1000 to -2000 VPD <p>Does not dramatically improve WV 705 operations. Reconstruct W. Run Rd/Van Voorhis intersection to have W. Run Rd be a through movement.</p> <p>No obvious engineering constraints along potential new route. Volume reflects 2-lane need.</p>	<p>From Van Voorhis to Collins Ferry - New alignment. Vegetation removal and conversion of open space would be primary concerns.</p>	<p>Moderate/High</p>	<p>Eliminate</p>
<p>7. New east-west corridor north of West Run Road:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection 	<p>Northerly alignment required to avoid substantial residential land use impacts. Residential/Commercial/Industrial impacts at primary cross routes:</p> <ul style="list-style-type: none"> - Bakers Ridge Rd. 	<p>Capacity requirement reflects need for new 2-lane plus turns. Traffic diversion from other routes includes:</p> <ul style="list-style-type: none"> - WV 705 (Chestnut Ridge/Patteson): -1500 VPD - Collins Ferry: -1000 VPD - Van Voorhis: -500 to -1000 VPD - Pineview: -2500 to +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3000 VPD <p>Would not result in acceptable operations on WV 705.</p>	<p>Vegetation removal and conversion of open space would be primary concerns.</p>	<p>High</p>	<p>Maintain</p>
<p>8. New east-west corridor north of West Run Road/Mon River Crossing:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection 	<p>Northerly alignment required to avoid substantial residential land use impacts. Residential/Commercial/Industrial impacts at primary cross routes:</p> <ul style="list-style-type: none"> - Bakers Ridge Rd. - WV 100 	<p>Capacity requirement reflects need for new 2-lane plus turns. Diverts smaller increments of traffic from many routes:</p> <ul style="list-style-type: none"> - WV 705 (Chestnut Ridge/Patteson): -1500 to -3200 VPD <p>Changes along other routes:</p> <ul style="list-style-type: none"> - Van Voorhis Rd: +2000 VPD - West Run Rd: -3,000 VPD - Chestnut Ridge (WV 705): -2700 VPD - Patteson Dr: -4500 VPD - Collins Ferry: -500 to +1500 VPD - Pineview Dr: -2000 VPD - Riddle St: +1000 VPD - Stewart St: +500 VPD - Stewartstown Rd: +2000 to +3500 VPD <p>Should combine with improvements to Van Voorhis Rd. If terminate at I-79 Osage interchange, need interchange at US 19/WV7/RC 19/24</p> <p>Likely I-79 junction 1-2 miles north of WV 7 underpass. East side of Mon River much higher an elevation (requires cuts to get to river crossing elevation)</p> <p>West side of Mon River terrain: Impacts constructibility/cost</p>	<p>Vegetation removal and conversion of open space would be primary concerns.</p>	<p>High</p>	<p>Maintain</p>

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
<p>US 19 Through Westover (I-79 to Beechurst Ave.)</p> <p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Signal Coordination Study/Work - Access management/control throughout corridor - Add turn lanes at key intersections 	<p>I-79 to Dupont - Primary access management that will reduce the number of access points per mile; perceived by property Dupont Rd to Holland St - Increase driveway setbacks at Holland; perceived by property owner as negative. Adding turn lanes will require increased ROW; impacts are generally to parking. Roundabout at Fairmont St/Holland St may result in acquiring gas station on corner.</p>	<p>2-lane plus turn lanes: Over capacity in 2030. Roundabout at Fairmont Ave/Holland St. may increase capacity of intersection. Turn lanes from Dupont Rd to Westover Bridge improve safety along segments and at intersections. Increasing capacity would not result in substantial changes to traffic volumes. Close drives/street accesses within 50 to 100 feet of bridge, public street intersections, etc.</p>	<p>Minimal - Adjacent impact area already disturbed. Potential for environmental justice issues.</p>	<p>Moderate/High</p>	<p>Maintain</p>
<p>2. Widen corridor to 5-lane:</p> <ul style="list-style-type: none"> - I-79 to Westover Bridge 	<p>Substantial ROW acquisition, including building acquisition from east of I-79 through Mon River. Longer pedestrian crossing time.</p>	<p>Provides adequate capacity through 2030. Additional through lane and left turn lanes improve safety. Intersection of US 19/west Park Ave - Likely needs to be true T-intersection with US 19 stop (grades)</p>	<p>Business and residential property conversion to ROW is most significant impact. Age of buildings likely quality as historical, but not likely based on integrity/uniqueness.</p>	<p>High</p>	<p>Eliminate</p>
<p>3. New Mon River Bridge/New Direct Corridor Connection</p> <ul style="list-style-type: none"> - 2-lane with turn lanes assumed (volume dependent). - Morgantown terminus is north of 8th Street <p>Westover terminus is the on US 19 between Columbus and Maple Grove</p>	<p>Substantial impacts to Westover residential and commercial businesses along route. Impacts include acquisition of approximately 20 properties. Increased (substantially) traffic in residential areas.</p>	<p>Route volume:</p> <ul style="list-style-type: none"> - River Crossing: 15,000 VPD - Mon River to US 19: 12,000 VPD - US 19 to I-79: 27,000 VPD (increase of 6,000 VPD) <p>Diverted Volume to/from Alternate Routes:</p> <ul style="list-style-type: none"> - Beechurst Ave: -4000 to +5000 VPD - Westover Bridge: - 8500 VPD - US 19: Mon River to Columbus: -4000 VPD <p>Volume reflects 2-lane plus left turn lanes. Improves operations on US 19 from Mon River Bridge to Columbus. On US 19 Columbus to I-79: Need more capacity.</p>	<p>Bridge pier impacts in Mon River. Environmental justice concerns in residential areas.</p>	<p>High</p>	<p>Maintain</p>
<p>4. Improved route to North Around Westover/River Crossing:</p> <ul style="list-style-type: none"> - Dents Run/WV 100/New Bridge Connection - New Mon River Bridge 	<p>Park located along Dent Run west of WV 100.</p>	<p>Route is circuitous - Must decrease travel time substantially in order to create diversion from US 119 alignment. Operating speed must exceed: 35-40 MPH. Route distance (Mon River to I-79):</p> <ul style="list-style-type: none"> - Current: 1.8 miles - Concept: 3.1 miles <p>Little diversion</p>	<p>Minor: Area is primarily industrial</p>	<p>Moderate</p>	<p>Eliminate</p>

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
<p>5. New corridor I-79 to Green Bag/Green Bag Improvements:</p> <ul style="list-style-type: none"> - 2/4-lane corridor connection - New I-79 Interchange - Mon River Bridge - Expand Green Bag to 3-lane 	<p>Minor. Most of the area that would be converted to ROW is open. Reduces traffic on I-68 (Not overly congested) more than US 1</p>	<p>Elevations either side of the Mon River are substantially different. Route volume (2030):</p> <ul style="list-style-type: none"> - I-79 to Mon River: 13,000 to 17,000 VPD - Mon River Crossing: 15,000 VPD - US 119 to Kingwood Pike (CR 81): ### VPD - Kingwood Pike (CR 81) to Decker's Creek Road: ##### VPD <p>Diversion Route Impacts:</p> <ul style="list-style-type: none"> - US 19 Through Westover: -2900 to -4500 VPD - I-68 from I-79 to US 119: - 10,800 VPD - Star City Bridge: -800 VPD - WV 119 South of Westover Bridge: - 3800 to -6500 VPD - Beechurst North of Westover Bridge: -200 VPD <p>Impact on congested miles/VMT: Minor</p>	<p>River crossing issues: Piers, navigation, etc. Route goes through industrial area, are hazardous materials an issue?</p>	<p>High</p> <p>High</p>	<p>Maintain - But as an Illustrative Project</p>
Congestion Along WV 7 East of I-68					
<p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Add turn lanes at signalized intersections - Driveway consolidation 	<p>Minor adjacent property impacts as ROW is acquired. Not a substantial amount</p> <p>Consolidation of residential drives requires establishing frontage roads. Requires ROW acquisition and will be property impacts.</p>	<p>Through Richard - 3-lane section to provide access to residential and commercial</p> <p>Left turn lane at CR 7/30</p> <p>3-lane section CR 7/30 to CR 75</p> <p>Left turn lane/Right turn lane at CR 75</p> <p>Provides adequate capacity if considered "urban"/Must of the eastern portion of the corridor rural in 2030.</p>	<p>Minor. More substantial improvements are through developed/disturbed areas.</p>	<p>Low/Moderate</p>	<p>Maintain</p>
<p>2. Widen Corridor:</p> <ul style="list-style-type: none"> - 4-Lane rural divided highway - Limited access 	<p>On current alignment - substantial residential impacts through CR 75.</p>	<p>4-lane provides adequate capacity through 2030, with reserve capacity.</p> <p>4-lane demand is warranted from I-68 to approximately CR 75. To east, not likely warranted.</p> <p>Most traffic has origins/destinations directly adjacent to the current alignment.</p> <p>New alignment to avoid existing development would not draw much traffic (~2500 VPD).</p> <p>Terrain: New alignment proximate to current would be difficult to construct. Many cuts/fills.</p>	<p>Substantial ROW acquisition.</p> <p>Conversion of open space to ROW.</p> <p>Severe cut/fills are negatives.</p>	<p>High</p>	<p>Eliminate</p>
Congestion Along Green Bag Rd Univeristy Ave. to WV 7					
<p>1. Transportation Systems Management:</p> <ul style="list-style-type: none"> - Add turn lanes at signalized intersections - Driveway consolidation 	<p>Minor. Limited property acquisition.</p>	<p>Can an alternate access from Green Bag be provided for the trailer court opposite the Training School? All traffic on to Green Bag adds to congestion.</p> <p>Add left turn lanes at Dorsey St/Kingwood Pike (See DOT signalization recommendation).</p> <p>Remove Luck Lane access south of Mountain View School.</p> <p>Consolidate access to Church Drive and two properties to the north.</p> <p>Bring Arrons Creek Road into Green Bag as T. Presently, it is skewed.</p> <p>Improve Diamond Ave intersection to remove skew.</p> <p>Improve intersection with Decker's Creek Road to establish T-intersection.</p>	<p>Minor</p>	<p>Low/Moderate</p>	<p>Maintain</p>

Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
2. Widen Corridor: - 2+ turn lanes/3-lane	Would require additional ROW that would impact property, but little or no building impact. Limit 3-lane section to developed portions of the corridor: - West of Arron Creek Rd. - Commercial/Industrial north of John Poole Rd.	Volumes warrant 3-lanes. Much of corridor has not been developed. Establish corridor access management by using turn lanes at key locations, not continuous 3-lane.	Minor	Moderate	Maintain
Morgantown CBD Flow 1. Revise Flow Patterns into/through/out of the Downtown Area					
Airport Industrial Access 1. New Route From CR 857	Minor	Volume warrants 2-lane with left turn lanes on CR 857 and on access road.	Minor	Low/Moderate	Maintain



MEMORANDUM

William Troe, AICP
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To: Chet Parsons, AICP
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee

Date: April 1, 2006

Subject: Transit system Improvement Alternatives – Initial Screening

BACKGROUND/PURPOSE

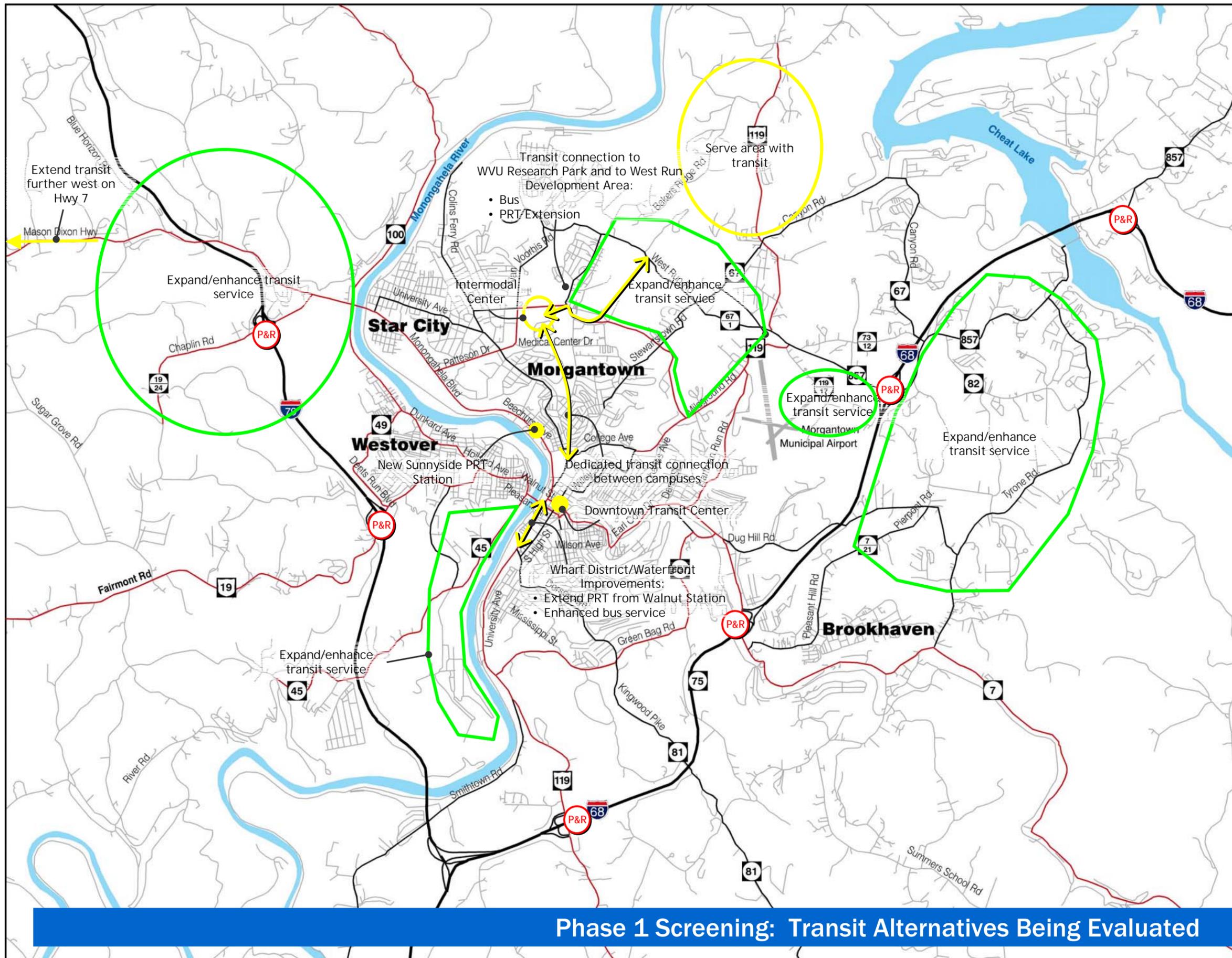
The screening process that was employed to evaluate the transit alternatives sought to identify advantages and disadvantages of the proposals as well as estimate costs to implement the alternatives. The advantages and disadvantages relate to the alternative's potential to increase transit ridership, serve areas with population and employment, provide or improve access to major activity centers, facilitate intermodal connections, reduce traffic congestion, and require capital or operating investments among others.

The consultant team worked with representatives of Mountain Line Transit Authority and WVU PRT to screen the transit alternatives. All transit alternatives will move forward into the next phase of alternatives evaluation. During that phase, the capital and operating cost estimates will be more fully developed and the alternatives will be evaluated based on the benefit they can provide given the funding that is projected to be available for transit over the next 20 years.

The attached table summarizes the first phase of transit alternatives evaluation.

ACTION REQUESTED

The April 18, 2006 combined TAC and CAC meeting will be dedicated to reviewing the initial screening results for the roadway concepts, the transit concepts and the non-motorized system concepts. The desired product of the meeting will be a list of concepts to be maintained in development of the long range plan project list and a list of those ideas/concepts that will be dismissed or set aside. It is requested that members of the committees review the material in this memorandum and provide their input at the meeting.



Transit System

- Legend
- - Transit Improvement
 - - New Facility/Service
 - P&R - Potential Park and Ride Lot at Interchange

1. Transit enhancements
 - Bus stop signs
 - Shelters/waiting areas
2. Increase service frequency and hours of service
3. Create local commuter services program to increase ridesharing, transit use, walking, and bicycling.
4. Conduct master planning effort to develop service expansion plans.
5. Implement transit technology





Transit Alternatives Analysis Summary

Alternative	Advantages	Disadvantages	Estimated Cost (High, Medium, Low)	Initial Screening Recommendation
Improve Transit Operations				
1. Conduct master planning effort to develop service expansion plans.	Allows transit system to develop plans for implementing and phasing service expansion.		Low	Maintain
2. Increase hours/days of service and service frequency in the urban core. (includes Airport area and Osage/Granville area) Service Frequency - 15 to 30 minutes Hours per day - 6:00 a.m. to 11:00 p.m. Days per week - Monday through Sunday Bus Stop Signage and Shelter Program Purchase additional vehicles for service	This level of service facilitates work/education trips. Provides higher level of trip opportunities throughout urban core. Frequent service is more attractive to choice riders.	Significant increase in operating expenses. Requires purchase of additional vehicles.	Medium	Maintain
Expand Transit Service (or Enhance Service) in West Run/WVU Research Park Development Areas (Residential/Employment Areas 13-17) **				
1. Enhance Service on MLTA Routes	This can be provided through urban core service expansion proposal. Low cost means of providing additional service. Route alignment can be easily modified if necessary to respond to development changes.	May require transfer to another route or to PRT to complete trip.	Low	Maintain
2. Extend PRT System	Can provide single seat ride from West Run/Research park area to any PRT station. May reduce traffic on WVU campuses and downtown. Potential to reduce transit travel time.	Requires construction of new PRT alignment. May require property acquisition. May require manufacture of additional PRT vehicles.	High	Maintain
Extend Transit Service to US 119 North				
1. Extend MLTA Transit Service Service Frequency - 30 minutes Hours per day - 6:00 a.m. to 11:00 p.m. Days per week - Monday through Saturday	Serve employees and students at the new high school, both day and evening activities. Serve as a commuter route from Pt. Marion.	Projected 2030 residential density is low (less than 2 dwelling units per acre); Overall employment density is low; moderate around the school.	Low	Maintain
Expand Transit Service (or Enhance Service) East of I-68/Tyrone Area (Residential Areas 29-32) **				
1. Provide additional MLTA service Service Frequency - Dial-a-Ride Hours per day - 7:00 a.m. to 6:00 p.m. Days per week - Monday through Saturday	Serve growing residential area.	Projected 2030 residential density is low (less than 2 dwelling units/acre)	Low	Maintain



Transit Alternatives Analysis Summary

Alternative	Advantages	Disadvantages	Estimated Cost (High, Medium, Low)	Initial Screening Recommendation
Extend Transit Further West on Hwy 7				
1. Provide MLTA Service Service Frequency - Dial-a-Ride Hours per day - 7:00 a.m. to 6:00 p.m. Days per week - Monday through Saturday	Service is not currently available beyond Cassville.	Projected 2030 residential and employment density is low. No demand when service was previously provided.	Low	Maintain
Expand Transit Service (or Enhance Service) to Morgantown Industrial & Research Park (Employment 4, 31) **				
1. Provide MLTA Service	Service is not currently available in this area.	Projected 2030 employment density is low.	Low	This can be provided through urban core service expansion proposal.
Expand Transit Service (or Enhance Service) near Wharf District/Waterfront (Residential 22-23, Employment 32) **				
1. Provide additional service on MLTA Routes	This can be provided through urban core service expansion proposal.	May require transfer to another route or to PRT to complete trip.	Low	Maintain
2. Extend PRT System	Can provide single seat ride from Waterfront area to any destination on PRT to HSC. May reduce traffic on WVU campuses and downtown. Potential to reduce transit travel time. Does not require manufacture of additional PRT vehicles.	Requires construction of new PRT alignment. May require property acquisition.	High	Maintain
Lack of Direct Transit Connection Between WVU Campuses				
2. Create a dedicated transit route between the campuses (e.g. Bus Rapid Transit) Service Frequency - 15 minutes Hours per day - 6:00 a.m. to 11:00 p.m. Days per week - Monday through Sunday	Provides another bus transit route option between campuses. Part of the alignment can use existing streets. Direct connection between Sq. at Falling Run, Law School, Football field, Intermodal center (future), Towers PRT Station.	Requires dedicating some public streets to transit only. Requires purchasing additional vehicles.	High	Maintain



Transit Alternatives Analysis Summary

Alternative	Advantages	Disadvantages	Estimated Cost (High, Medium, Low)	Initial Screening Recommendation
3. Construct PRT Station in Sunnyside.	<p>Potential to reduce traffic between campuses and downtown. Provides convenient transit connections.</p> <p>Included in the Sunnyside Master Plan. Minimal increase in PRT operating costs.</p> <p>Does not require manufacture of additional PRT cars.</p>	Requires construction of some structure for new station.	Medium	Maintain
Encourage Transit Use, Ridesharing, Walking and Bicycling to Work				
<p>1. Conduct Park-and-Ride Master Plan Study</p> <p>Conduct planning study to identify potential park-and-ride lot sites, assess property acquisition costs, estimate revenue potential. Potential sites include:</p> <p>I-79 and Chaplin Rd (Star City) I-79 and Hwy 19 (Westover Area) I-68 and US 119 South I-68 and WV 7 I-68 and CR 857 (Airport Area) I-68 and CR 857 (Cheat Lake Area) CR 857 and Mileground Rd.</p>	<p>Allows for assessment of potential park-and-ride sites.</p> <p>Estimates costs for purchasing/leasing land for park-and-ride.</p> <p>Estimates revenue potential.</p>		Low	Maintain
<p>2. Implement Park-and-Ride Program</p> <p>Construct one or more park-and-ride lots in the region.</p>	<p>Can generate additional revenue for the transit system.</p> <p>Reduces traffic in the urban core by linking park-and-ride at fringe with transit and/or shuttle service.</p>	Requires land purchase or lease.	Medium	Maintain
3. Create local commuter services program.	<p>Can encourage ridesharing by establishing programs to help commuters form carpools and vanpools and learn about alternative means of commuting (MLTA, PRT, bicycling, walking, etc.)</p>	Need to identify agency to implement and operate the program.	Low	Maintain
<p>4. Construct Downtown Transit Center</p> <p>Construct transit center to facilitate transfers between transit routes and PRT. To include restrooms and customer service.</p>	<p>Provide better access to downtown destinations and throughout the region via easier transfers.</p> <p>Weather-protected waiting area for passengers.</p> <p>Could eliminate current transfer depot at Riverfront Park - allowing for re-use/redevelopment of the site.</p> <p>Employment/residential density in this area is high.</p>	One site has been identified. There may be few other potential sites available.	Low	Maintain



Transit Alternatives Analysis Summary

Alternative	Advantages	Disadvantages	Estimated Cost (High, Medium, Low)	Initial Screening Recommendation
5. Implement Transit Technology Smart Card fare technology Next Bus Arrival Time Information at shelters and stations Traffic Signal Priority/Pre-emption Internet Passenger Trip Planning	Makes transit easier to use and easier to understand. Next Bus information reduces uncertainty of bus arrival. Traffic signal priority/pre-emption can reduce transit travel times.	May require upgrades to traffic signals to allow signal priority/pre-emption	Low to Medium	Maintain



MEMORANDUM

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To: Chet Parsons, AICP
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee

Date: April 11, 2006

Subject: Initial Screening Addendum Material for Distribution

BACKGROUND/PURPOSE

As we have continued to review the material for the TAC/CAC meeting next week, we have observed a couple of locations where we were not complete and you have also forwarded us several comments on locations where changes to the material were suggested. The purpose of this memorandum is to provide documentation to the entire TAC/CAC of those items.

ADDENDUM TO THE NON-MOTORIZED ALTERNATIVES MAP

Outlined below and in the attached map are adjustment/corrections to the non-motorized system improvement assessment summary:

1. On the map, the project described as a Bike Lane/Paved Shoulder along CR 119/3 should have been drawn showing a direct connection to the future University High School to be located west of US 119.
2. During the alternatives development phase, a project was suggested that included developing a trail/safe bike route that would connect a potential park-and-ride lot at Easton Hill to the Deckers Creek Trail (via Dug Hill Road). That alternative is shown in yellow on the map addendum.

During the alternatives screening process, the screening evaluation committee developed an alternate route to initial concept. It is shown as a green dotted line of the map addendum. This alternate routing turns south of CR 857 to avoid Easton Hill Road and to utilize the proposed industrial access road. It would follow the industrial access road to Hartman Run Road. If Hartman Run Road is improved with paved shoulders, the screening committee felt it would provide excellent access to the Deckers Creek Trail.

Memorandum
Chet Parsons
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee
April 11, 2006

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As an element of the trail improvement concept there was discussion of providing a connected park and ride facility. Initially, a proposal for a facility at US 119/CR 857 was suggested. An alternate to the suggested location is at the junction of I-68 and CR 857. This adjustment is suggested primarily because an added level of utility of the park and ride lot is provided by capturing the users as early in their trip as is feasible when you are balancing convenience and travel time savings. The initially proposed site at US 119/CR 857 would be located at an intersection that in 2030 is forecasted to be congested. Thus, it would be desirable to capture users prior to this intersection and the junction of I-68/CR 857 is the most logical location and it also would be accessible via the trail extension proposal.

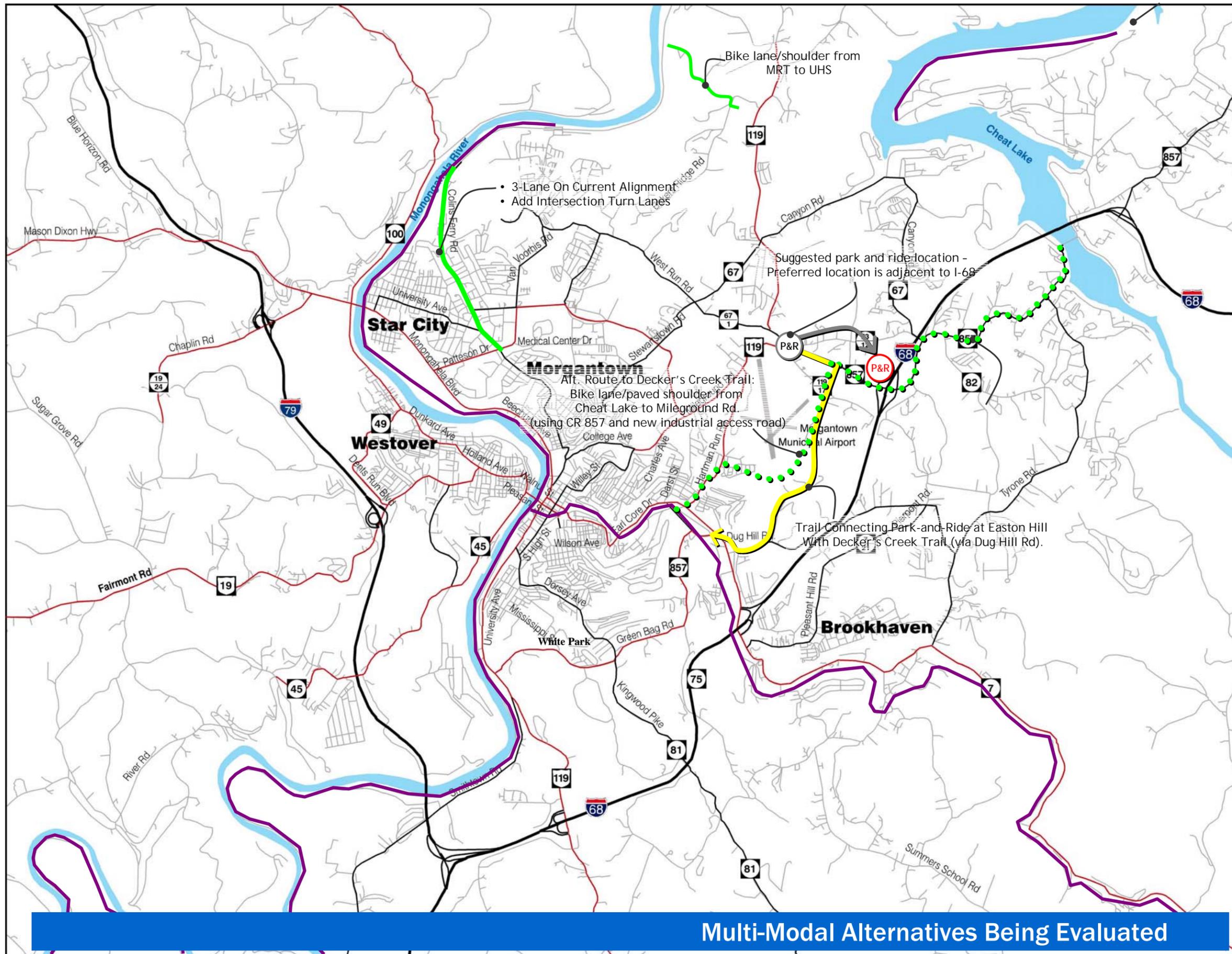
ADDENDUM TO THE ROADWAY ALTERNATIVES

In the roadway alternatives screening, improvements to Collins Ferry Road from Chestnut Ridge through the Mylan development was omitted. The route is displayed on the attach map and the potential alternatives are summarized in the attached table.

ACTION REQUESTED

As was stated in the original memo, the April 18, 2006 combined TAC and CAC meeting will be dedicated to reviewing the initial screening results for the roadway concepts, the transit concepts and the non-motorized system concepts. The desired product of the meeting will be a list of concepts to be maintained in development of the long range plan project list and a list of those ideas/concepts that will be dismissed or set aside.

If you have any questions, please contact me at 402-952-2522.



Legend

- - Corridor Improvement
- - New Facility
- - Existing Trail



Table 1: Alternatives Analysis Summary



Issue / Improvement Concept/ Elements	Evaluation Criteria Perspective				Initial Screening Recommendation
	Social	Engineering	Environmental	Cost Estimate	
Collins Ferry Road Congestion 1. Transportation System Management - Add intersection turn lanes. - Signalize Burroughs Street.	Minor Appears to be adequate areas adjacent to roadway for most improvements. Limited parking area improvements if add turn lane at Mylan/Mobile Home Park entrance.	2-lane plus left turn lanes would provide adequate capacity through 2030. May want to improve the junction of University/Collins Ferry to better designate a through movement. Could be an opportunity for a roundabout.	Minor	Low/Moderate	Maintain
2. Expand Corridor to 3-Lane (2-lane plus Center Turn Lane)	Moderate Property acquisition would be needed throughout the corridor. Not likely any complete acquisitions, but a strip from numerous properties. Potential for parking area impacts south of Meridan St., north of Burroughs St.	2-lane plus continuous left turn lane would provide adequate capacity through 2030. May want to improve the junction of University/Collins Ferry to better designate a through movement. Could be an opportunity for a roundabout. Benefits mainly observed in peak hours. Do operations improvements warrant land use impacts?	Minor	Moderate	Maintain



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To: Morgantown MPO Technical Advisory Committee and Citizen's Advisory Committee

Date: June 12, 2006

Subject: Alternatives Screening – Phase 2 Preliminary Roadway Summary

BACKGROUND/PURPOSE

The alternatives analysis process being employed as part of the Regional Transportation Plan update incorporates a two-phased screening of the universe of alternatives for addressing identified transportation system issues. As part of the two level process the following were included in the scope:

- Phase 1 – Review each of the multimodal alternatives relative to a set of criteria that reflect the local transportation system goals and the federal MPO planning factors to identify potential fatal flaws. Those alternatives identified as containing fatal flaws would be set aside/dismissed from further consideration and reasons for eliminating them would be documented.
- Phase 2 – For each of the concepts that were maintained through the Phase 1 assessment, conduct additional assessment of the positive and negative aspects of the concept relative to an established set of criteria. The product of this stage of the alternatives analysis is a prioritized listing of the projects included in the transportation plan. The prioritized listing is based on how well an individual alternative (or combination of alternatives) scored compared to the other alternatives. Each of the alternatives, by mode, was scored using similar general criteria and rating scale. The criteria for the roadway system are documented in the appropriate section of this memorandum.

The purpose of this memorandum is to:

- Summarize for review the Phase 2 screening methodology for the roadway system.
- Provide documentation of the Evaluation Criteria employed in the Phase 2 scoring. Through the process a number grade was assigned to each alternative relative to how it did or did not meet the goals associated with the specific criteria.
- Document the results of the scoring for each of the roadway assessment locations.

PHASE 2 SCREENING METHODOLOGY

OVERVIEW

Alternatives included in the Maintain list developed as part of the Phase 1 screening were those that provide utility in meeting the transportation goals and in addressing identified transportation issues/concerns/deficiencies. This is not to say that all of the alternatives should be implemented, nor should it be concluded that there is overwhelming local and regional consensus for implementation of each idea/concept on the Maintain list and carried into the Phase 2 assessment. Many of the ideas/concepts will be eliminated in this phase of the overall screening. What can be said is that the alternatives included in the second phase provide at least a baseline level of utility in meeting the long range transportation goals for the system and it can be stated that they do not contain obvious fatal flaws (for example, it is likely that each could physically be constructed and meet current roadway design standards, but to meet the standards current access may need to be modified, current grades may need to be modified, substantial earthwork in a new corridor may be required, property would need to be acquired for right-of-way, etc.). It should also be noted that not all of the alternatives included in the list have the level of community support that will be required to see them through to implementation. Thus, will be eliminated or placed very low on the priority list.

The purpose of the second phase of the alternatives screening process is to shift through each of the remaining ideas/concepts and prioritize them such that those alternatives likely to be implemented by 2030 provide a transportation system that supports the regional transportation goals and is cost constrained. Development of the prioritized list will require completing several iterations of review through the scoring summary provided. The desired product of the various iterations is listed below:

- **Initial Iteration:** The Maintain list developed through the Phase 1 screening contains multiple improvement concepts for selected issues. The first iteration through the Phase 2 scoring results is completed with the goal of selecting the locally preferred concept for addressing a particular corridor. For example, several concepts remain for addressing congestion on Beechurst Avenue, including widening the corridor to a five-lane arterial to increase the capacity and construction of another bridge across the Monongahela River to divert traffic from the current congested corridor. Through the first iteration the desire is to identify which of these two ideas/concepts is the preferred. The intent has been to provide a range of evaluation criteria broad enough and well enough defined to allow for selection of a preferred concept through the scoring results. In the example provided, the preferred improvement concept for the Beechurst Avenue corridor would be to widen the corridor to a 5-lane cross section (score of 52). The initial iteration will be the focus of the July 2006 TAC and CAC meeting.
- **Subsequent Iteration(s):** As the Regional Transportation Plan needs to be cost constrained, and as the transportation system goals are multi-faceted, and as there is not a single-minded focus of what is needed in the community, the committees will be required to make some difficult trade-offs and decisions as to which projects will be included in the funded list and which will not. The committees, the Policy Board, and the community are

required to make the decision as to the projects and programs that will make up the recommended list. The scoring summary information can be used to assist in prioritizing the project/program list. Those projects scoring the highest, in the case where the scoring is used as the primary determinant, would be included in the list as the highest priorities.

It is highly unlikely that the fundable list will be developed through simply reviewing the project scoring, but it can be used as a tool in making some hard decisions. As the scoring incorporates a very broad range of criteria, the results of the scoring can be reviewed by the committees as we discuss the recommended list and it is possible/acceptable to provide a weighting to the various criteria to reflect the importance of each. The importance-weighted scoring could very well be used in resolving debates on qualitative topics that could come up through the continued assessment.

METHODOLOGY

The scoring criteria applied in the Phase 2 assessment incorporate a broad range of inputs that cover the social, engineering and environmental perspectives. Incorporating these perspectives into the transportation assessment process is a requirement of SAFETEA-LU in addressing the metropolitan long range planning factors. Through the proposed methodology, numerical values are assigned to specific criteria associated with each of the perspectives. The numerical values are tied to a definition of the level to which a particular goal (such as reducing congestion, vehicle hours of travel, number of congested miles, etc.) is met. In this application, higher numerical values reflect a more favorable or positive association and lower numerical values reflect less favorable or negative conditions. Thus, when the numbers are summed, the concept(s) with the highest cumulative number would reflect a greater all around addressing of the community transportation goals relative to the other ideas/concepts.

URS staff have reviewed each of the improvement concepts relative to each of the criteria and have provided our initial opinions as to scoring in each of the categories. The initial scoring was briefly reviewed by MPO staff and adjusted by URS staff. It needs to be emphasized that some of the scoring values are open to interpretation and it is very likely that through the local review process the scores recorded in any one or numerous cells could be adjusted. It is our intent to discuss the scoring results with the TAC and CAC at the July meeting. Thus, we ask that members review the material beforehand and be prepared to provide input.

Scoring Criteria Definitions

While the entire assessment process would be easier if it were possible to use only criteria that could be discretely quantified, it is not really possible when we need to include elements that can only be measured through more qualitative means (such as community support, consistency with plans, etc.). Thus, working with the MPO staff, the consultant team developed definitions for each of the score cells in the overall Phase 2 scoring matrix. The definitions for each are documented in Table 1.

PHASE 2 SCREENING RESULTS

The results of evaluating each of the concepts/ideas that were maintained through the Phase 1 screening are displayed in Table 2. Included in this table are:

- A listing of the issue to be addressed.
- Brief descriptions of the alternatives identified to address the transportation issue.
- A preliminary scoring summary for each of the alternatives using each of the criteria. Scores on the 0 to 6 scale for each of the criteria are included. For all of the criteria 6 reflects the highest score (most consistent, greatest relative positive impact, least relative negative impact, etc.) and 0 the lowest.
- Summation of the score in each criteria category.

GENERAL NOTES ON THE INITIAL SCORING

Listed below are some general notes that we ask that you consider/think about as you review the material:

- The public acceptance scores were filled in by URS staff and briefly reviewed by MPO staff. The scores reflect input we have gathered through the process and could very well need to be adjusted. This category represents the one that we need to most input. Our interpretation of comments may not reflect a broad enough cross section of the population to be the final source for a score. Thus, please review the information closely relative to this evaluation criterion and provide any updates you feel are necessary. The final result of the scoring needs to be a collaborative effort with a broad level of input.
- The cost estimates and funding assessment work is on-going. Thus, there could be minor changes to the scoring in this category if a project that we initially thought would be relatively low cost ends up being a high cost project and vice versa. Additionally, as the scores are tied also to funding, the overall scores might change if the estimated funding is dramatically different than the ballpark estimates we have been using.
- Depending on the corridor/issue, we will likely maintain multiple improvement concepts in selected corridors. For example, if the recommendation is to widen the Beechurst Avenue corridor to 5-lanes, the concept for transportation systems management (spot intersection improvements, consolidation of driveways, etc.) may still be a part of the overall plan. In the Beechurst Avenue case, widening the corridor may only be a part of the solution.
- If additional information on each of the alternatives is needed, please refer back to the memoranda that were circulated for the April 2006 TAC meeting. Each of these alternatives are included in that documentation and the previous documentation was used to provide source data for items such as the level of reduction in congested miles, diverted traffic, etc.).
- In subsequent iterations of the scoring/prioritization, we will be incorporating the non-

motorized system projects and the transit system projects in the overall listing. This list needs to be const constrained.

ACTION REQUESTED

It is the URS team's desire that TAC and CAC members review the information provided in the tables and begin preparing for the next TAC/CAC meeting to be held in July (date to be determined). It is our intent that the discussion be informal and that we gather as much input as possible.

If you have any questions, please contact Bill Troe at (402) 952-2522 or via email at Bill_Troe@urscorp.com.

Table 1
Transportation System Improvement Prioritization Criteria

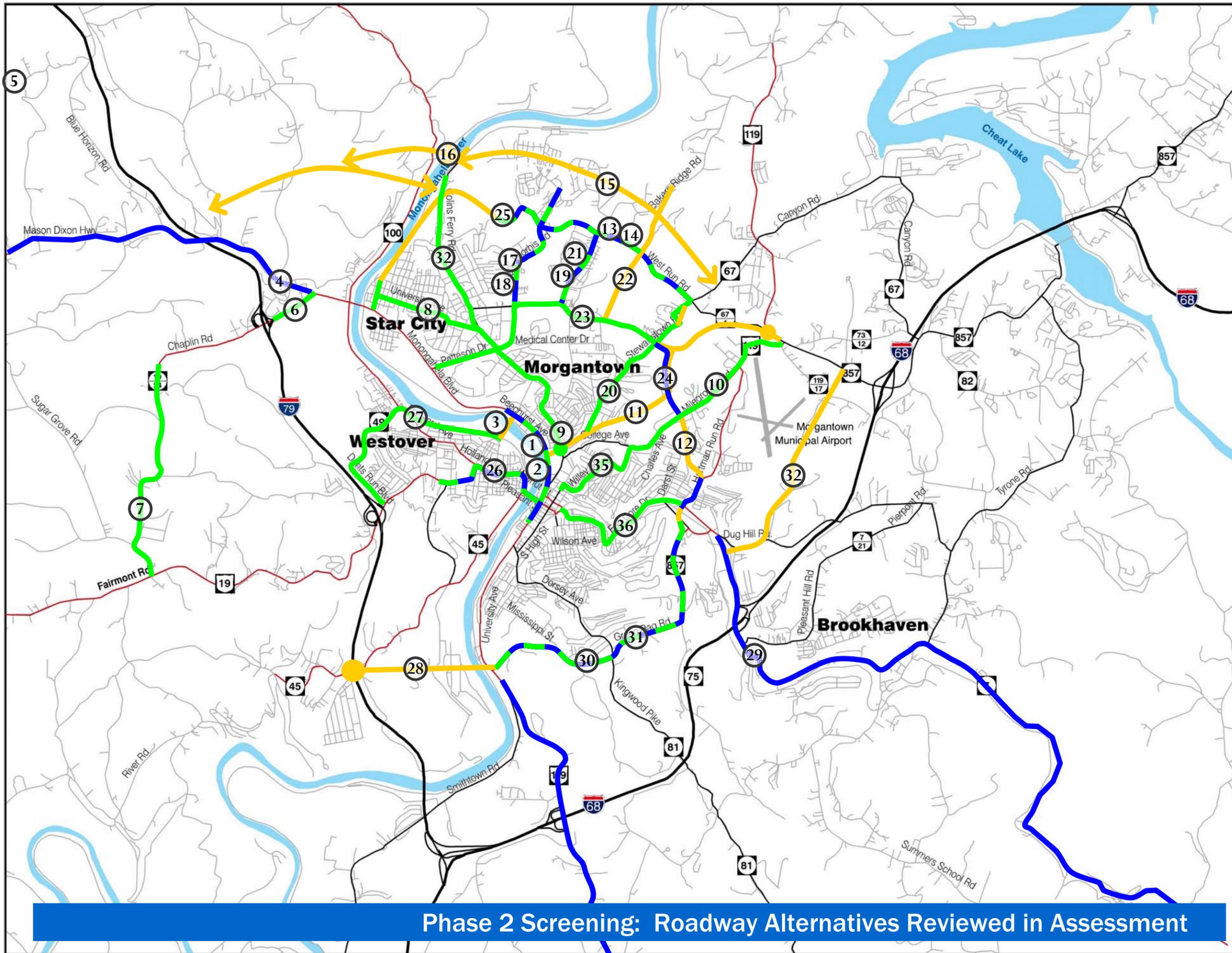
Assessment Perspective/ Measure of Effectiveness	Score / Definition			
	6	4	2	0
Social				
Local Public Support for Project/Program	Significant Community Support/Consistent with Other Plans/Guidelines	Moderate Support from Community/Leaders	Minimal Support from Community/Leaders	No/Limited Support
Multi-Modal Support	Project Includes Significant Multi-Modal Links (Transit/Non-Motorized/Roadway); Incorporated into Design	Project Includes Moderate Multi-Modal Links (Transit/Non-Motorized/Roadway)	Project Includes Minimal Multi-Modal Links (Transit/Non-Motorized/Roadway)	Project Does Not Address Multi-Modal Connectivity
Consistency with Local/Regional Plans	Supports the Planning District/Comprehensive Plan Concepts and is in TIP	Supports the Planning District/Comprehensive Plan Concepts	Not Addressed in Other Plans	Inconsistent with Planning District/Comprehensive Plan/Subarea Plans
Connectivity/Continuity	Provides Significant Connections (Roadway/Trail/Transit) Between Key Areas in Morgantown/Mon Co/Study Area	Provides Connectivity Between Neighborhoods, Limited Impact to Neighborhood Integrity	Provides Improved Circulation Within a Neighborhood, Limited Impacts to Integrity	Isolated Route (New Road)/Provides Access to Growth Area, But No Through Connection

Table 1
Transportation System Improvement Prioritization Criteria

Assessment Perspective/ Measure of Effectiveness	Score / Definition			
	6	4	2	0
Environmental				
Level of Impact to VMT/VHT/Trip Generation	Positive Impact by Reducing Growth in VMT, VHT or Trips	Moderate Impact by Slightly Slowing the Increase in VMT, VHT and/or New Trips	Minimal Impact on Rate of Change in VMT, VHT and/or New Trips	No Impact/Increases VMT/VHT/New Trips
Air Quality Impacts	Significant Decrease in Transportation Emissions	Moderate Decrease in Transportation Emissions	Minimal Increase or Decrease in Transportation Emissions	Increase in Transportation Emissions
Impacts to Adjacent Built/Natural Environment	No/Few Impacts to Adjacent Homes, Businesses, Natural Features	Minimal Impacts to Adjacent Homes, Businesses, Natural Features	Moderate Level of Impacts to Adjacent Homes, Businesses, Natural Features	Significant Level of Impacts to Adjacent Homes, Businesses and/or Natural Features
Economic Impact	Project Would Result in Significant Improvement to Goods and People Movement/Tourism Enhancement	Supports Improvement to Movement of People and Goods/Tourism Enhancement	Project Supports Speculative/Temporary Opportunities	No Impact/Negative Impact
Cost	Low Cost (Locally) and Within the Transportation Budget Constraints	Moderate Local Cost/Within Transportation Budget Constraints	Moderate/High Cost, But Within the Transportation Budget Constraints	High Cost/Not within the Transportation Budget Constraints
Operations and Maintenance	High Maintenance Priority/Would Significantly Reduce Operations/Maintenance Costs	Moderate Maintenance Priority/Reduces Operations/Maintenance Costs	Neutral Affect on Operations/Maintenance Costs	Results in an Increase in Operations/Maintenance Costs

Table 1
Transportation System Improvement Prioritization Criteria

Assessment Perspective/ Measure of Effectiveness	Score / Definition			
	6	4	2	0
Engineering				
Safety	Project Targets Known High Accident Location	Project Targets Known Moderate Accident Location	Generally Safer Design Concept Relative to Existing/No Perceived Accident Problem	No Impact
Design Standards	Addresses All Deficient Standards (Width/Grade/Alignment/Surface)	Addresses Most Deficient Standards (Width/Grade/Alignment/Surface)	Addresses Some Deficient Standards (Width/Grade/Alignment/Surface)	Project Does Not Address Design Standard Deficiencies
Feasibility to Construct	Concept Plan Reasonably Reflects Design Standards/Practices. No Substantial Change in Access Required.	Critical Design Criteria Can Be Met, But Moderate Changes in Access are Needed.	Minor Design Criteria Must be Relaxed and Moderate Changes in Access are Needed.	Concept Plan Does Not Meet Design Requirements without Substantial Modification to Current Access
Congestion Relief	Mitigate Congestion in a Corridor Currently Severely Congested	Mitigate Congestion in a Corridor Currently Moderately Congested or Forecasted to be Severely Congested	Mitigate Congestion in Corridors Forecasted to be Moderately Congested	Limited/No Impact on Corridor Congestion



Morgantown
Area Transportation Study

- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - Remaining Alternatives Combination of Expansion and/or Management
 - 10 - Numbered Concept in Scoring Summary Table

Phase 2 Screening: Roadway Alternatives Reviewed in Assessment



Table 2
Phase 2 Alternatives Assessment Summary - Preliminary Assessment

Map Location	Issue/Improvement Alternative	Assessment Criteria														TOTALS
		Social				Environmental						Engineering				
		Support for Project	Multi-Modal Support	Consistency with Local/ Regional Plans	Connectivity/ Continuity	Level of Impact to VMT	Air Quality Conformity Impacts	Impacts to Adjacent Built/ Natural Environment	Economic Impact	Cost	Operations and Maintenance	Safety	Design Standards	Feasibility to Construct	Congestion Relief	
	TRANSPORTATION DEMAND MANAGEMENT															
		Travel Demand Management Concepts have not been Identified to this Point. The area will be reserved in case TDM Alternatives Need to be Added.														
	ROADWAY IMPROVEMENTS															
	Beechurst Avenue Congestion Reduction/Relief															
①	Transportation Systems Management: - Add turn lanes at signalized intersections - Mid-block access control (median) - Driveway consolidation/reconfiguration	6	2	4	4	4	2	4	2	4	2	2	6	6	2	50
②	Expand Along Existing Alignment: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek.	2	4	2	4	4	6	0	6	2	4	4	4	4	6	52
③	8th Street Mon River Crossing: - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19	2	2	2	4	4	4	2	4	0	2	4	4	4	2	40
	Congestion Along WV 7 West of WV 100															
④	Transportation Systems Management: - Add turn lanes at key intersections - Improve skewed intersections (i.e. View Hill Rd) - Driveway consolidation - Improve tight curves - Widen shoulder	4	0	2	2	4	4	4	4	4	4	6	4	4	4	50
⑤	I-68 Extension Concept (DOH Report): - 4-Lane rural divided highway - Partial controlled access (combination of at-grade and	2	2	2	4	2	2	2	4	0	0	6	4	2	4	36
	Congestion Along Chaplin Road (WV 19/24) WV 19 to I-79															
⑥	Transportation Systems Management: - Signal timing improvements - Remove Signalize Approach at Sheetz/Convert to right-in-right-out	4	0	2	2	4	4	4	4	4	4	4	4	4	2	46
⑦	Create a Better Southern Connection to US 19 West of I-79 - Upgrade Sugar Grove Road/Chaplin Road as 2-lane - Establish I-79 West Side Frontage Road (Martin Hollow Road	4	2	2	4	2	2	2	2	2	2	4	4	4	2	38
	University Avenue Congestion - Boyers Avenue to Beechurst Avenue															
⑧	Transportation Systems Management: - Add turn lanes at key intersections - Access Management through commercial areas/high density residential	4	2	4	4	4	4	4	4	2	4	4	4	4	4	52
②	Expand Beechurst Avenue to Divert Volume: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek.	2	4	2	4	4	6	0	6	2	4	4	4	4	6	52
⑨	Univeristy Ave/Grumbein's Island Grade Separation	4	6	4	4	4	4	2	4	2	2	6	4	2	4	52

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	Mileground/College Avenue/Wiley Street Congestion															
⑩	Transportation Systems Management: - Add turn lanes at key intersections - Access Management through Commercial Areas/High Density Residential Areas (Boulevard Concept)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	56
⑪	Square at Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	4	4	4	6	6	4	2	4	0	2	4	4	4	4	52
⑫	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	4	4	4	4	4	4	2	4	0	2	4	4	2	4	46
	West Run Road Congestion															
⑬	Transportation Systems Management: - Add turn lanes at key intersections	4	2	4	4	2	4	4	4	4	4	4	4	4	4	52
⑭	Widen West Run Road corridor (Divert WV 705 traffic): - 3-lane (2-Through Lanes and Two Way Center Left Turn Lane)	4	4	4	2	2	2	2	4	2	2	4	4	4	2	42
⑪	Square at Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	4	4	4	6	6	4	2	4	0	2	4	4	4	4	52
⑫	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	4	4	4	4	4	4	2	4	0	2	4	4	2	4	46
⑮	New east-west corridor north of West Run Road: - 2/4-lane corridor connection	4	4	4	2	4	2	2	4	0	2	4	4	4	2	42
⑯	New east-west corridor north of West Run Road/Mon River Crossing: - 2/4-lane corridor connection	4	4	2	4	4	2	2	4	0	0	4	4	2	2	38
	Congestion Along Van Voorhis (West Run Rd. to Chestnut Ridge)															
⑰	Transportation Systems Management: - Add turn lanes at key intersections	4	2	4	2	2	2	4	4	4	4	4	4	4	4	48
⑱	Widen corridor: - 3-lane from Chestnut Ridge to N. of West Run Rd.	2	2	4	2	4	2	2	4	2	4	4	4	4	4	44
⑲	Improve Pineview/Riddle Rd: - 3-Lane from Chestnut Rd. to West Run Rd.	4	2	4	2	4	2	2	4	4	4	4	4	4	2	46
⑳	Improve Stewart St./Stewartstown Rd: - New 3-Lane corridor CBD to US 119.	4	2	2	2	4	2	2	4	0	4	4	4	4	4	42
⑯	New east-west corridor north of West Run Road/Mon River Crossing: - 2/4-lane corridor connection	4	4	2	4	4	2	2	4	0	0	4	4	2	2	38
	Congestion Along Pineview/Riddle Street															
㉑	Transportation Systems Management: - Add turn lanes at key intersections	4	0	2	2	2	2	4	2	4	4	4	4	4	2	40
⑱	Improved Van Voorhis Rd: - 3-Lane from Chestnut Ridge Rd. to West Run Rd.	2	2	4	2	4	2	2	4	2	4	4	4	4	4	44
㉒	Add New Corridor through WVU Research Park: - New 3-Lane corridor Chestnut Ridge Rd. to West Run Rd.	2	4	4	4	2	2	4	4	4	2	4	4	4	2	46

Table 2
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		Support for Project	Multi-Modal Support	Consistency with Local/ Regional Plans	Connectivity/ Continuity	Level of Impact to VMT	Air Quality Conformity Impacts	Impacts to Adjacent Built/ Natural Environment	Economic Impact	Cost	Operations and Maintenance	Safety	Design Standards	Feasibility to Construct	Congestion Relief	
	WV 705 Congestion (Beechurst Ave. to Mileground)															
23	Transportation Systems Management: - Signal Coordination Study/Work - Access management/control Pinewood Ave. to Van Voorhis Rd. - Van Voorhis Ave. intersection improvements	4	2	4	2	2	4	4	4	4	4	4	4	4	4	50
24	Widen corridor to 4-lane divided: - Mileground to Stewart St.	4	4	4	4	2	4	4	4	2	4	4	4	4	4	52
11	Square at Falling Run Corridor: - 4-Lane Divided from Beechurst Ave. to WV 705	4	4	4	4	6	4	2	4	0	2	4	4	2	4	48
12	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	4	4	4	4	4	4	2	4	0	2	4	4	2	4	46
14	Widen West Run Road corridor (Divert WV 705 traffic): - 3-lane (2-Through Lanes and Two Way Center Left Turn Lane): Stewartstown Rd to Collins Ferry	4	4	4	2	2	2	2	4	2	2	4	4	4	2	42
25	Widen West Run Road corridor and Extend to Mon Boulevard: - 2-lane plus turn lanes: 705 Connector to Van Voorhis Rd. - Extend 2+ turn lanes from Van Voorhis to Mon Boulevard.	4	4	4	4	2	2	2	4	2	2	4	4	4	2	44
15	New east-west corridor north of West Run Road from 705 Connector to Collins Ferry Road: - 2-lane corridor connection	4	4	4	2	4	2	2	4	0	2	4	4	4	2	42
16	New east-west corridor north of West Run Road/Mon River Crossing: - 2/4-lane corridor connection	4	4	2	4	4	2	2	4	0	0	4	4	2	2	38
	US 19 Through Westover (I-79 to Beechurst Ave.)															
26	Transportation Systems Management: - Signal Coordination Study/Work - Access management/control throughout corridor - Add turn lanes at key intersections	4	2	2	2	0	2	4	2	4	4	4	4	4	2	40
27	Improved route to North Around Westover/River Crossing: - Dents Run/WV 100/New Bridge Connection - New Mon River Bridge	2	2	2	4	2	2	2	2	2	4	4	4	4	2	38
28	New corridor I-79 to Green Bag/Green Bag Improvements: - 2/4-lane corridor connection - New I-79 Interchange - Mon River Bridge - Expand Green Bag to 3-lane	2	4	2	4	4	4	0	2	0	2	4	4	2	2	36
	Congestion Along WV 7 East of I-68															
29	Transportation Systems Management: - Add turn lanes at signalized intersections - Driveway consolidation	4	2	2	2	2	2	4	2	4	4	4	4	4	2	42
	Congestion Along Green Bag Rd Univeristy Ave. to WV 7															
30	Transportation Systems Management: - Add turn lanes at signalized intersections - Driveway consolidation	4	2	4	4	2	4	4	2	4	4	4	4	4	4	50
31	Widen Corridor: - 2+ turn lanes/3-lane - Incorporate Bike/Ped Component	4	4	4	4	2	4	2	4	2	4	4	4	4	4	50

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		Social				Environmental						Engineering				
		Support for Project	Multi-Modal Support	Consistency with Local/ Regional Plans	Connectivity/ Continuity	Level of Impact to VMT	Air Quality Conformity Impacts	Impacts to Adjacent Built/ Natural Environment	Economic Impact	Cost	Operations and Maintenance	Safety	Design Standards	Feasibility to Construct	Congestion Relief	
	Morgantown CBD Flow	Maintain a more Detailed Study in RTP Recommendations														
	Airport Industrial Access	Maintain a more Detailed Study in RTP Recommendations														
32	New Route From CR 857 - Establish a continuous access route from CR 857 to WV 7	4	4	4	4	2	2	2	4	2	2	4	4	4	2	44
	Collins Ferry Road Congestion	Maintain a more Detailed Study in RTP Recommendations														
33	Transportation System Management - Add intersection turn lanes. - Signalize Burroughs Street.	2	2	4	4	2	2	4	4	4	4	4	4	4	2	46
	Congestion on US 119 - South of Green Bag to South of Proposed WalMart	Maintain a more Detailed Study in RTP Recommendations														
34	Expand US 119 to 4-lane Divided from S. of Green Bag to S. of WalMart (Includes turn lanes)	4	4	4	4	2	2	4	4	2	4	4	4	4	4	50
	Congestion/Safety Issues on Willey Street: Downtown Morgantown Through WV 705	Maintain a more Detailed Study in RTP Recommendations														
35	Transportation System Management - Add turn lanes at Key intersections - Fife Avenue - Improve Monongalia Avenue Intersection - Improve College Avenue Intersection	2	2	4	2	2	2	4	4	4	4	4	4	4	2	44
11	Square at Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	4	4	4	6	6	4	2	4	0	2	4	4	4	4	52
12	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	4	4	4	4	4	4	2	4	0	2	4	4	2	4	46
	Congestion/Safety Issues on Earl Core Road: Downtown Morgantown Through Hartman Run Rd	Maintain a more Detailed Study in RTP Recommendations														
36	Transportation System Management - Improve/Reconfigure/Ad Turn Lanes to Key Intersections: - Arlington Street (Reconfigure to Eliminate Overdale or Arlinton) - Access Management Throughout Corridor	2	2	4	2	2	2	4	4	4	4	4	4	4	2	44
11	Square at Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	4	4	4	6	6	4	2	4	0	2	4	4	4	4	52
12	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	4	4	4	4	4	4	2	4	0	2	4	4	2	4	46



MEMORANDUM

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To: Chet Parsons, AICP
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee

Date: September 6, 2006

Subject: Initial Screening Addendum Material for Distribution

BACKGROUND/PURPOSE

In April 2006, the MPO and URS issued a preliminary screening of the long-range plan's non-motorized alternatives from which the recommended system would be developed. The screening process employed a methodology that compared each of the concepts relative to a number of general measures of effectiveness. The measures of effectiveness reflect the transportation planning goals of providing an interconnected trail/path/sidewalk system within the region. As with the roadway system assessment, a scoring system of 0 to 6 was used across a range of criteria. The evaluation criteria used in evaluating each proposed concept are documented below:

- Concept's potential to fill in a missing link in the non-motorized system.
- Level of connectivity provided to other modes of transportation.
- Potential to serve areas of population and employment.
- Reasonableness to address a safety problem or concern.
- Consistency with actions/tasks identified in a local plans.
- The level of access provided to major activity centers.

Over the past months, the initial range of alternatives was screened using the criteria and scoring system and URS has developed conceptual cost estimates of the non-motorized alternatives.

Over the last several weeks, the MPO, URS and members of the CAC have developed a prioritized list of improvement concepts. The list is documented in Table 1. URS staff have divided the list into three tiered levels based on the scoring. The tiered levels approximately divide the 44 concepts listed in the table into thirds (13 projects in Tier 1, 16 projects in Tier 2 and 15 projects in Tier 3) equal numbered projects. Those projects in Tier 1 are considered to be the highest priority for implementation. Projects in Tier 2 are the second level of priority and

Tier 3 projects are the lower priorities. The tiered projects are displayed in Figure 1. The numbers included on the figure correspond with the project descriptions included in Table 1.

The list has not been compared to a plan budget. This step will be completed after the September 2006 TAC and CAC meetings. At this time, URS would like the TAC and CAC membership to review the prioritized listing and come to the next scheduled meetings with comments and adjustments that should be incorporated into the final listing.

COST ESTIMATES

Table 1 also contains the summaries of the project cost estimates. Notes at the end of table provide additional background information on the basis for the cost estimates. Cost estimates for each of the alternatives were developed based on the following methodology:

- Develop generalized unit cost estimates for the various major components of a project. The unit costs were derived from recently designed and/or constructed projects by URS, the Mon River Trails Conservancy, and the West Virginia Department of Transportation. URS also utilized the Pedestrian and Bicycle Information Center for cost estimates of bike parking racks and share-the-road signs among other.
- Estimate the number of units for each of the alternatives. This generally involved estimating the length of a trail segment, bridge, sidewalk, or paved shoulder among others using Geographic Information System mapping.
- Apply the unit cost to the estimate of units.
- Apply factors to the construction cost subtotal to account for:
 - Right-of-way costs: A factor of 25 percent of construction costs was used in urban areas and a factor of 15 percent in rural areas.
 - Engineering and design: Estimated at 10 percent of construction costs.
 - Utility relocation costs: Estimated at 5 percent of construction costs.
- Apply a contingency factor of 20 percent to the construction cost to account for the very preliminary stage and roughness of the cost estimates.
- Sum the construction and contingency cost, right-of-way costs, engineering and design costs, and utility costs to obtain the estimated project cost.

ACTION REQUESTED

It is the URS team's desire that TAC and CAC members review the information provided and be prepared to discuss the ideas and concepts at the next meetings. If any members of the TAC or CAC have specific questions regarding the projects, the priorities or the methods employed,

Memorandum
Chet Parsons
MPO Technical Advisory Committee
MPO Citizen's Advisory Committee
September 6, 2006

Page 3

please contact Bill Troe at 502-952-2522 or Ann Ogoreuc at 412-503-4583.

Table 1: Non-Motorized Alternatives Preliminary Cost Estimates



Map Location	Alternative	Preliminary Scoring	Project Length	Unit Cost	Project Construction	Contingency	Construction Subtotal	Utility Cost Component	Right-of Way Cost Component	Engineering Cost Component	Total Estimated Cost of Alternative
Bike Lane/Paved Shoulder											
1	Add bike lane/paved shoulders along S. University Ave., Green Bag Rd, and Hartman Run Rd.	26	6.2 miles	\$300,000/mile	\$1,860,000	\$372,000	\$2,232,000	\$111,600	\$558,000	\$223,200	\$3,124,800
2	Add bike lane/paved shoulder from Cheat Lake to Mileground Rd via CR 857 and new Industrial Access Rd. (Portion on Industrial Access Road will be included in Roadway Cost Estimate)	22	2.5 miles	\$300,000/mile	\$750,000	\$150,000	\$900,000	\$45,000	\$225,000	\$90,000	\$1,260,000
3	Add bike lane/paved shoulder from Cheat Lake to Mileground Rd via CR 857 and CR 73/12.	20	3.4 miles	\$300,000/mile	\$1,020,000	\$204,000	\$1,224,000	\$61,200	\$306,000	\$122,400	\$1,713,600
4	Add bike lane/paved shoulder connecting Deckers Creek Trail (at Marilla Park) to Tyrone Rd. area via Dug Hill Rd.	20	3.4 miles	\$300,000/mile	\$1,020,000	\$204,000	\$1,224,000	\$61,200	\$306,000	\$122,400	\$1,713,600
5	Improve shoulders along Mon Blvd from Pateson to Star City Bridge.	18	0.97 miles	\$300,000/mile	\$291,000	\$58,200	\$349,200	\$17,460	\$87,300	\$34,920	\$488,880
6	Add bike lane/paved shoulder along CR 119/3.	16	1.8 miles	\$300,000/mile	\$540,000	\$108,000	\$648,000	\$32,400	\$162,000	\$64,800	\$907,200
7	Add bike lane/paved shoulder along Tyrone Road.	16	4.4 miles	\$300,000/mile	\$1,320,000	\$264,000	\$1,584,000	\$79,200	\$396,000	\$158,400	\$2,217,600
Bike and/or Pedestrian Facilities											
8	Include bike-ped facilities in West Run Corridor	30	Included in Roadway Cost Estimate								
9	Include bike-ped facilities along possible 705 Connector.	26	Included in Roadway Cost Estimate								
10	Add sidewalks and/or paved shoulders along potential new road connecting Beechurst Ave. and WV 705.	26	Included in Roadway Cost Estimate								
11	Add sidewalks and/or paved shoulders along Mileground Rd.	20	1.7 miles	\$300,000/mile	\$510,000	\$102,000	\$612,000	\$30,600	\$153,000	\$61,200	\$856,800
12	Add sidewalks and/or paved shoulders along Bakers Ridge Rd.	18	2.6 miles	\$300,000/mile	\$780,000	\$156,000	\$936,000	\$46,800	\$234,000	\$93,600	\$1,310,400
13	Add sidewalks and/or paved shoulders along Hwy 119 North.	18	2.3 miles	\$300,000/mile	\$690,000	\$138,000	\$828,000	\$41,400	\$207,000	\$82,800	\$1,159,200
Trail Extensions											
14	Extend Cheat Lake Trail to Point Marion, PA.	24	5.5 miles	\$60,000/mile	\$330,000	\$66,000	\$396,000	\$19,800	\$0	\$39,600	\$455,400
15	Extend Cheat Lake Trail to Preston County (with link to Coopers Rock State Park).	16	10 miles	\$300,000	\$3,000,000	\$600,000	\$3,600,000	\$180,000	\$900,000	\$360,000	\$5,040,000
Trail Access											
16	Construct bridge from Deckers Creek Trail to Morgantown High School.	26	220' long by 12' wide	\$150/sq.foot	\$396,000	\$79,200	\$475,200	\$23,760	\$118,800	\$47,520	\$665,280
17	Create new trailhead at S. University Avenue and Green Bag Rd.	18	Alternative eliminated during preliminary screening due to elevation differences between the road and the trail.								
18	Create new trailhead at Van Voorhis and Mon River Trail North.	14	Alternative eliminated during preliminary screening due to lack of available land.								
19	Create and/or add parking at Deckers Creek Trail trailheads.	14	10-space parking lot	\$2500/10-spaces	\$2,500	\$500	\$3,000	\$150	\$450	\$300	\$3,900

Table 1: Non-Motorized Alternatives Preliminary Cost Estimates



Map Location	Alternative	Preliminary Scoring	Project Length	Unit Cost	Project Construction	Contingency	Construction Subtotal	Utility Cost Component	Right-of Way Cost Component	Engineering Cost Component	Total Estimated Cost of Alternative
New Trail Projects											
20	Trail to connect White Park to S. University Park/Caperton Trail.	30	1 mile	\$300,000/mile	\$300,000	\$60,000	\$360,000	\$18,000	\$90,000	\$36,000	\$504,000
21	Bike-ped connection from Krepps Park to Mon River Trail	30	1.2 miles	-	\$150,000	\$30,000	\$180,000	\$9,000	\$0	\$18,000	\$207,000
22	Bike-ped connection from Dorsey Ave. to White Park	24	Alternative eliminated during preliminary screening because connection already exists.								
23	Trail to connect White Park south to Dorsey Knob Park and Wal-Mart at I-68 interchange.	22	2 miles	\$300,000/mile	\$600,000	\$120,000	\$720,000	\$36,000	\$180,000	\$72,000	\$1,008,000
24	Create new trail/path along west side of the Mon River (WV 100 and CR 53).	20	10 miles	\$300,000/mile	\$3,000,000	\$600,000	\$3,600,000	\$180,000	\$900,000	\$360,000	\$5,040,000
25	Create rail-trail to the west (in vicinity of Mason Dixon Hwy).	18	14 miles	\$300,000/mile	\$4,200,000	\$840,000	\$5,040,000	\$252,000	\$756,000	\$504,000	\$6,552,000
Sidewalks/Pedestrian Access											
26	Install sidewalks on Willow Dale Rd.	32	1.5 mile (.75 mile/side)	\$38/linear foot (assumes 5' sidewalk)	\$300,960	\$60,192	\$361,152	\$18,058	\$90,288	\$36,115	\$505,613
27	Connect Grant Ave to Riverview Dr.	30	.15 mile	\$38/linear foot (assumes 5' sidewalk)	\$30,400	\$6,080	\$36,480	\$1,824	\$9,120	\$3,648	\$51,072
28	Enhance pedestrian connection between WVU campuses by improving existing sidewalks along University Ave. (assumes replacement/installation of sidewalk on one side of the road)	30	1.5 mile	\$38/linear foot (assumes 5' sidewalk)	\$300,960	\$60,192	\$361,152	\$18,058	\$0	\$36,115	\$415,325
29	Improve pedestrian access to the new MLTA depot (e.g., sidewalks along US 19)	28	3 miles (1.5 miles/side)	\$38/linear foot (assumes 5' sidewalk)	\$601,920	\$120,384	\$722,304	\$36,115	\$180,576	\$72,230	\$1,011,226
30	Complete sidewalks along Dorsey Ave. (does not inc. portion with existing sidewalks)	28	2.5 miles (1.25 miles/side)	\$38/linear foot (assumes 5' sidewalk)	\$501,600	\$100,320	\$601,920	\$30,096	\$150,480	\$60,192	\$842,688
31	Improve pedestrian access along Van Voorhis Rd. (partially through WVU property?)	26	4.4 miles (2.2 miles/side)	\$38/linear foot (assumes 5' sidewalk)	\$882,816	\$176,563	\$1,059,379	\$52,969	\$264,845	\$105,938	\$1,483,131
32	Add sidewalks along WV 7 east from Darst St. to the I-68 Interchange.	26	3.2 miles (1.6 miles/side)	\$38/linear foot (assumes 5' sidewalk)	\$642,048	\$128,410	\$770,458	\$38,523	\$192,614	\$77,046	\$1,078,641
Pedestrian Crossings											
33	Provide enhanced pedestrian crossings along S. University and Beechurst	34	Included in Roadway Cost Estimate								
34	Create grade-separated pedestrian crossing at Grumbein's Island.	32	Included in Roadway Cost Estimate								
35	Provide pedestrian overpass at Mon Blvd and Patteson Dr.	30	240' long by 10' wide	\$150/sq.foot	\$480,000	\$96,000	\$576,000	\$28,800	\$86,400	\$57,600	\$748,800
36	Provide enhanced pedestrian crossings from CBD to Riverfront Park - Pleasant St., Walnut St., Foundry St.	30	Included in Roadway Cost Estimate								
37	Provide pedestrian overpass at Patteson and Laurel St.	26	200' long by 8' wide	\$150/sq.foot	\$320,000	\$64,000	\$384,000	\$19,200	\$57,600	\$38,400	\$499,200
38	Provide enhanced pedestrian crossing along Patteson and Chestnut Ridge.	26	Included in Roadway Cost Estimate								

Table 1: Non-Motorized Alternatives Preliminary Cost Estimates



Map Location	Alternative	Preliminary Scoring	Project Length	Unit Cost	Project Construction	Contingency	Construction Subtotal	Utility Cost Component	Right-of Way Cost Component	Engineering Cost Component	Total Estimated Cost of Alternative
39	Enhance pedestrian crossings on WV 7 from Darst Rd to I-68 with connections to adjacent neighborhoods.	26	Included in Roadway Cost Estimate								
40	Improve bike-ped access to/through new University Town Center shopping area (and future residential area). Assumes 2 miles of sidewalk leading up to the development.	12	2 miles	\$38/linear foot (assumes 5' sidewalk)	\$401,280	\$80,256	\$481,536	\$24,077	\$120,384	\$48,154	\$674,150
Other											
41	Install bike racks at important origins and destinations		Quantity Undetermined	\$200 - \$1000 per rack							
42	Renew and improve street lighting throughout the city of Morgantown										
43	Upgrade/replace dangerous sidewalks and install sidewalks where there are gaps in the sidewalk network.		Undetermined	\$38/linear foot (assumes 5' sidewalk)							
44	Install Share-the-Road signage throughout the county.		Quantity Undetermined	\$200 - \$250 per sign							

^{1-7,11-13} Bike lane/paved shoulder cost estimate assumes 5' shoulder on both sides of road. Based on 2006 costs for a project in Brighton, PA.

¹⁴ Cost per mile based on Mon River Trail Conservancy estimates. Assumes right-of-way already secured.

¹⁵ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder.

¹⁶ Assumes bridge begins at end of Edgewood Street.

¹⁹ Based on a 2005 WVDOT Transportation Enhancement project for a gravel parking lot at a trailhead.

^{20, 23} Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder.

²¹ Cost is based on a BOPARC estimate. Agency hopes to piggyback on installation of utility line.

²⁴ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder. Assumes right-of-way costs for urban areas (25%)

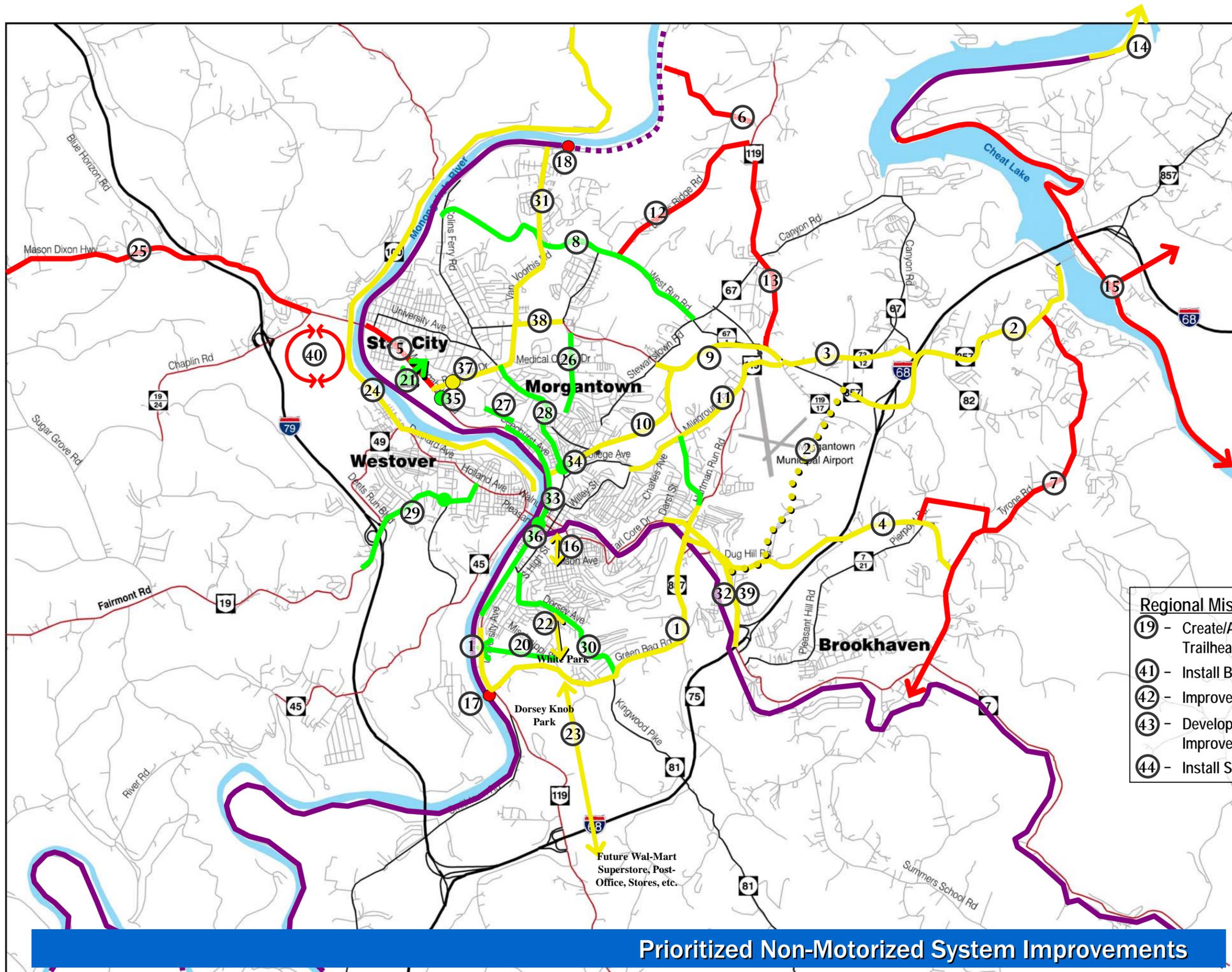
²⁵ Assumes combination of on-road and off-road routing. Used cost estimate for paved shoulder. Assumes right-of-way costs for rural areas (15%)

^{26-32, 43} Based on 2006 construction costs.

²⁸ Sidewalk already exists along one side - no right-of-way required.

⁴¹ Cost of bike racks/lockers obtained from Pedestrian and Bicycle Information Center based on projects in the US.

⁴⁴ Cost of sign obtained from Pedestrian and Bicycle Information Center based on projects in the US.



Non-Motorized System

- Legend**
- - First Tier Project
 - - Second Tier Project
 - - Third Tier Project
 - - Existing Trail
 - - - - Trail Extension in Baseline Plan
 - - Non-motorized Project Tied to a Roadway Project that Would not be in the Constrained Improvement Plan

- Regional Miscellaneous Improvements**
- ①⑨ - Create/Add Parking to Deckers Creek Trail Trailheads
 - ④① - Install Bike Racks at Key Locations
 - ④② - Improve street lighting
 - ④③ - Develop/Complete Regional Sidewalk Improvement/Expansion Program
 - ④④ - Install Share The Road Signage

Prioritized Non-Motorized System Improvements





MEMORANDUM

William Troe, AICP

Vice President

12120 Shamrock Plaza

Suite 300

Omaha, NE 68154

(402) 334-8181

(402) 334-1984 (Fax)

To: MPO TAC and CAC

Date: August 28, 2006

Subject: Transportation System Improvement Concepts and Final Scoring Summary

BACKGROUND/PURPOSE

At the August 14, 2006 TAC meeting a series of preliminary Monongalia County-Morgantown transportation system improvement concept packages were provided and discussed. In all, eight concept packages were prepared by URS for discussion. The goal of the meeting was to narrow the packages to a small number of alternatives. URS staff desired to cut the number to one or two concept packages.

As part of the broad ranging discussion, a TAC member asked how the elements in the various system improvement concepts compared against the project ranking (based on scoring) completed as part of the Phase 2 screening. An action item generated from the discussion was the request to URS to provide documentation of how each of the concept packages compared to the Phase 2 scoring.

The purpose of this memorandum is to provide documentation of the results of the comparison.

COMPARISON RESULTS

After deliberating over alternate methods of conveniently displaying the results of the comparison, URS staff focused on a tabular format that would allow for display of the Phase 2 scoring results and documentation of the elements included in each of the packages. As a refresher, the original eight system improvement packages are displayed in Figures 1 through 8. As was included in the memos circulated prior to the August 14, 2006 TAC, the attached maps display the element initially included in each of the "themed" concepts (shown as solid colored lines) and those elements that were eliminated from each package in order to be consistent with the \$230 million transportation budget limit.

At the meeting it was moved that Concept 8 be maintained for additional analysis in conditions where the Beechurst Avenue corridor from 8th Street through Pleasant Street was expanded to a five-lane section and where only TSM improvements are provided at key signalized intersections. In addition, the Northern Bypass was discussed as a priority project for the MPO Policy Board. The project addressed the locations of "greatest travel intensity" associated with

the Concept 8 theme. Thus, the project was added to the initial list of projects in the concept. The Northern Bypass was removed from the final list due to the cost constraints in the planning horizon (the project would be included as an Illustrative Project). As a result of the discussion, Concepts 8A and 8B were developed. These concepts are displayed in Figures 9 and 10.

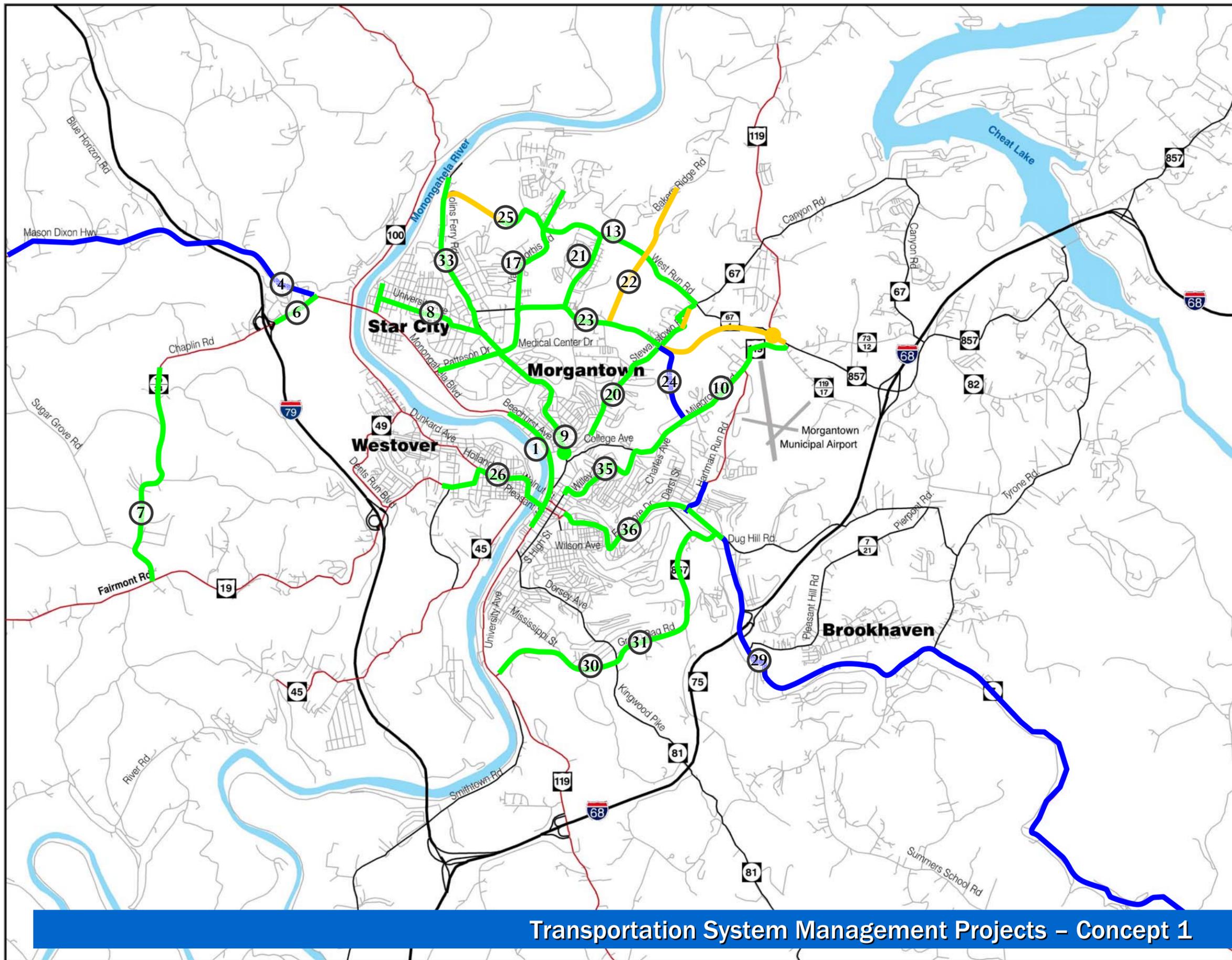
Following the TAC meeting a table documenting the ranking of each of the project elements through the Phase 2 scoring was developed. The table is included in this memorandum as Table 1. Included in the table are:

- Project descriptions.
- Phase 2 screening scoring summary associated with each project. The scoring reflects adjustments to the URS scoring that were made following receiving comments from the TAC and the CAC during July 2006.
- Matrix of which project elements were included in each of the system improvement concept packages (Concept 1 through concept 8B). A project is included in the concept if the applicable matrix cell contains a dot symbol.

ACTION REQUESTED

I ask that all individuals that receive this memo review the information and provide any comments. Presently, URS staff is preparing revised traffic forecasts and operations analyses of the revised Concepts 8A and 8B.

You can provide me with your comments via email at bill_troe@urscorp.com or by phone at 402-952-2522.

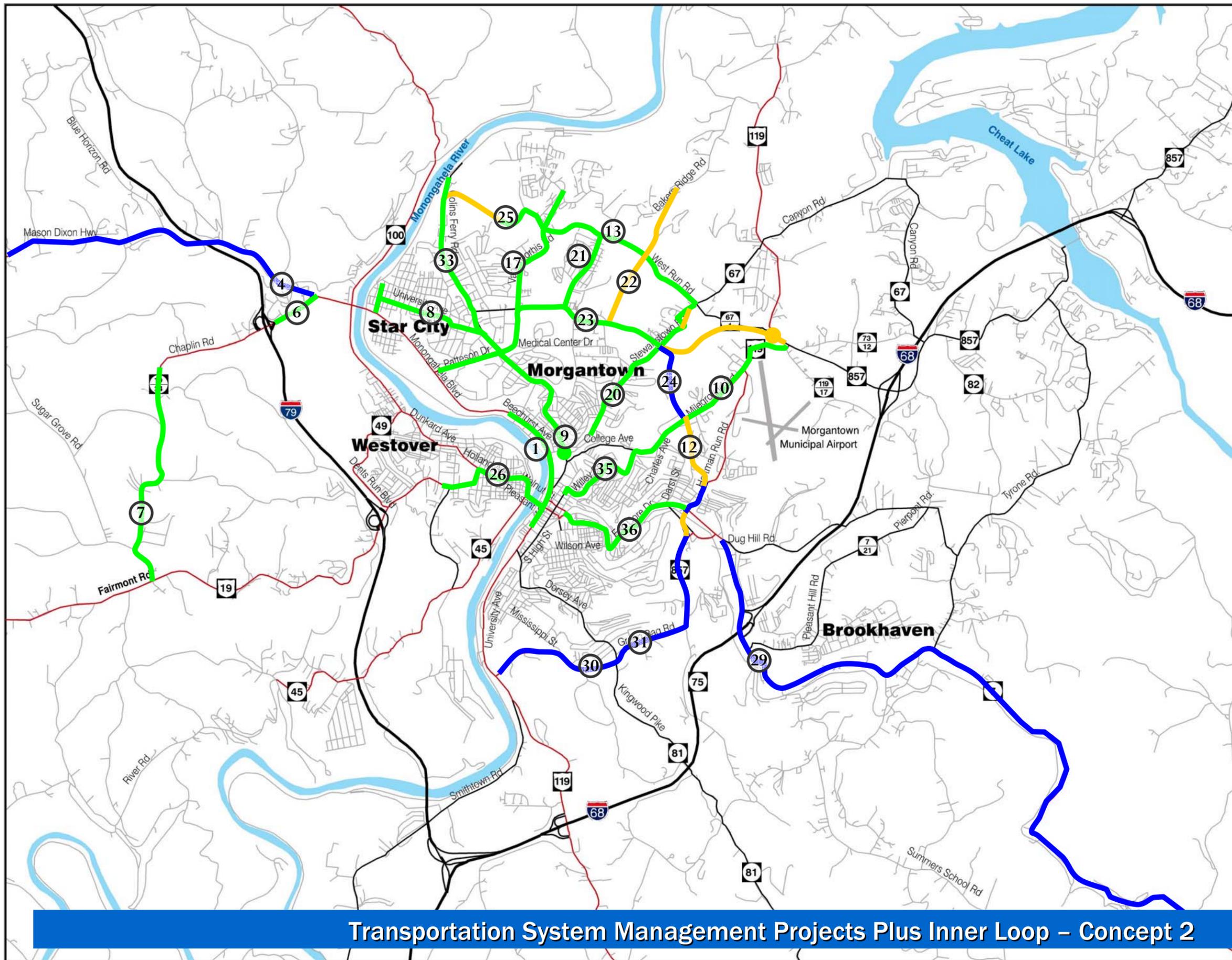


- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - ⋯ Eliminated Corridor Expansion Project
 - ⋯ Eliminated TSM Project
 - ⋯ Eliminated New Facility Project
 - 10 - Numbered Concept in Scoring Summary Table

Project Total: \$194.9 million

Transportation System Management Projects – Concept 1





- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - Eliminated Corridor Expansion Project
 - Eliminated TSM Project
 - Eliminated New Facility Project
 - 10 - Numbered Concept in Scoring Summary Table

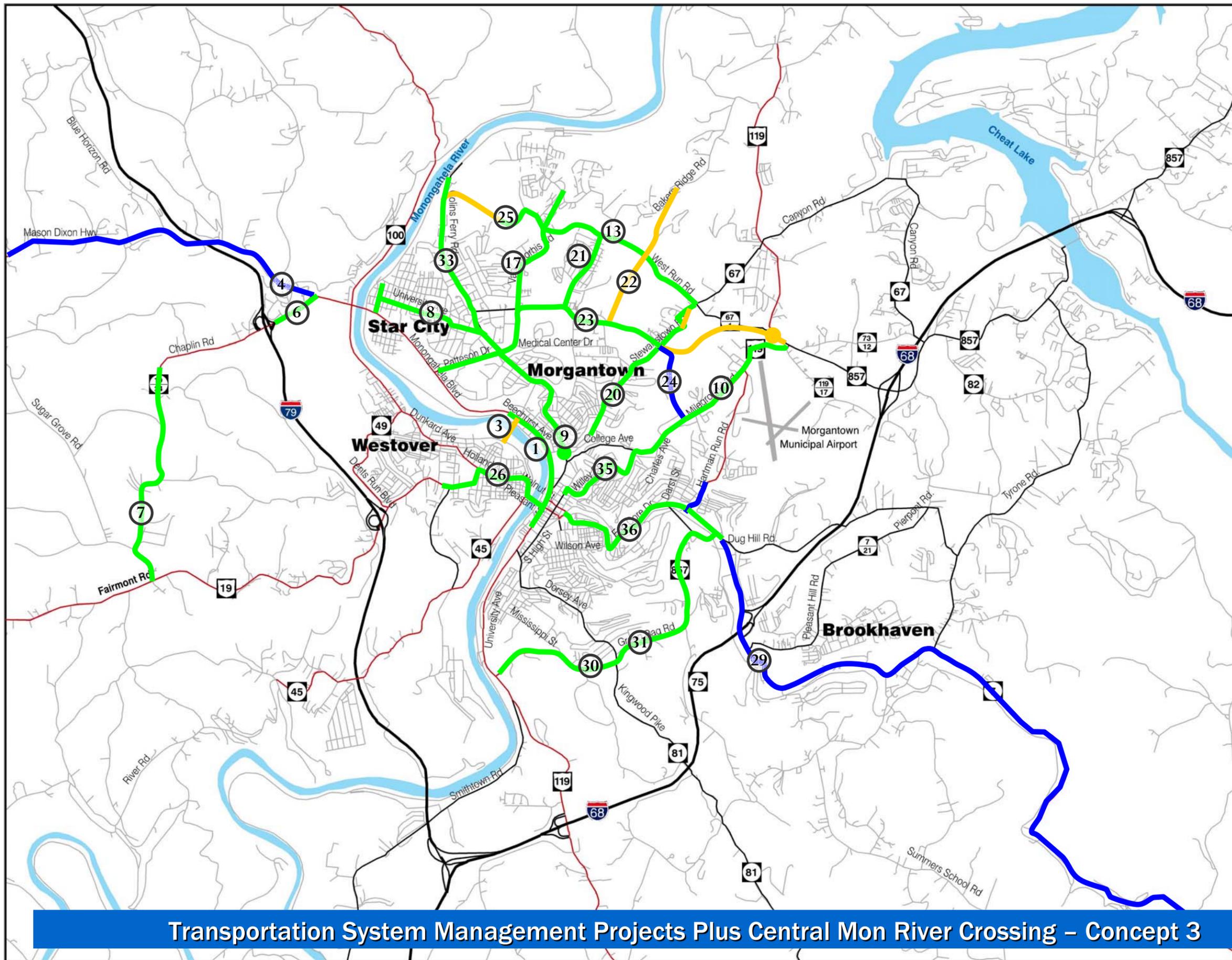
Project Total:

- TSM (Concept 1): \$194.9 million
- "Inner Loop": \$35.7 million
- **TOTAL: \$230.6 million**

Transportation System Management Projects Plus Inner Loop – Concept 2



Figure 2



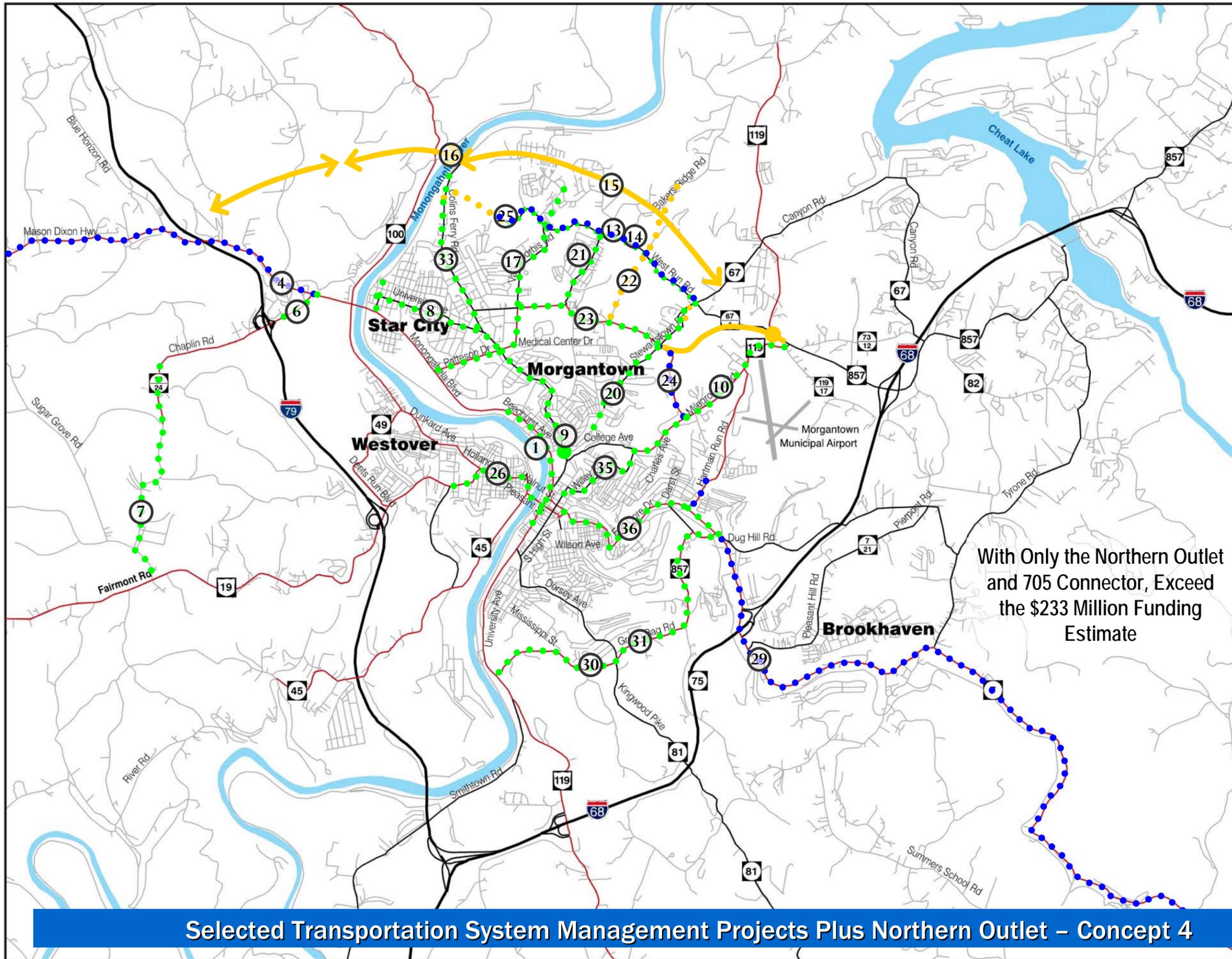
- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - Eliminated Corridor Expansion Project
 - Eliminated TSM Project
 - Eliminated New Facility Project
 - 10 - Numbered Concept in Scoring Summary Table

Project Total:

- TSM (Concept 1): \$194.9 million
- Mon Crossing (3): \$33.3 million
- **SUBTOTAL: \$228.2 million**

Transportation System Management Projects Plus Central Mon River Crossing – Concept 3





Legend

- Existing Corridor Expansion
- Management Improvement in Existing Corridor
- New Facility
- Eliminated Corridor Expansion Project
- Eliminated TSM Project
- Eliminated New Facility Project
- ⑩** - Numbered Concept in Scoring Summary Table

Project Total:

• TSM (Concept 1):	\$194.9 million
• "Northern Outlet"	\$190.0 million
SUBTOTAL:	\$384.9 million

Must Eliminate: \$151.9 million

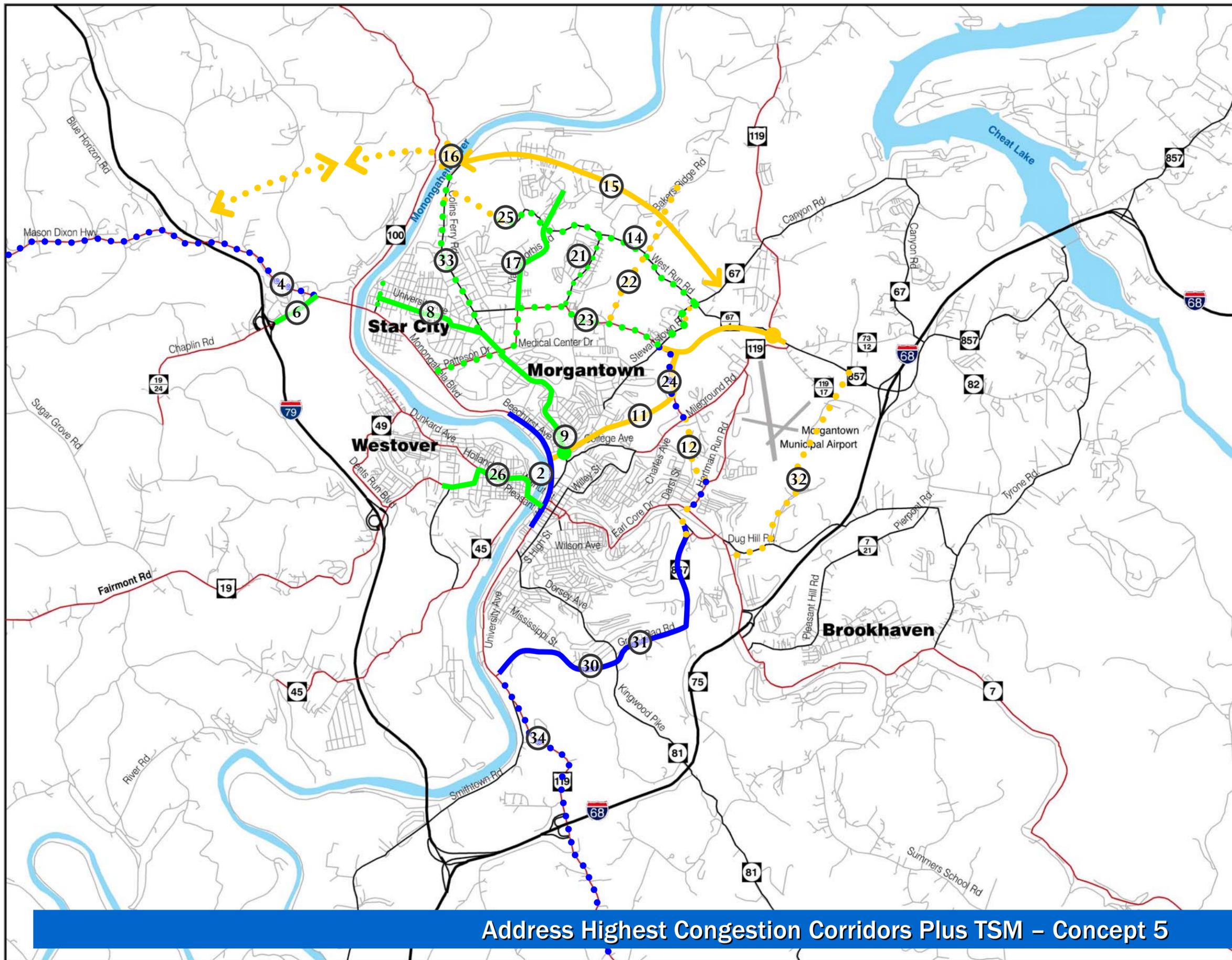
• 25	\$14.4 million
• 4	\$25.7 million
• 23	\$1.1 million
• 7	\$28.5 million
• 33	\$3.3 million
• 24	\$9.4 million
• 22	\$14.5 million
• 10	\$4.3 million
• 35	\$1.9 million
• 17	\$2.5 million
• 9	\$4.3 million
• 36	\$2.2 million
• 13	\$1.9 million
• 8	\$5.0 million
• 30/31	\$8.4 million
• 26	\$3.5 million
• 29	\$0.7 million
• 21	\$2.2 million
• 20	\$10.4 million
• 1	\$0.6 million
• 6	\$0.1 million
TOTAL	\$139.9 million

With Only the Northern Outlet and 705 Connector, Exceed the \$233 Million Funding Estimate

Selected Transportation System Management Projects Plus Northern Outlet – Concept 4



Figure 4



- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - ⋯ Eliminated Corridor Expansion Project
 - ⋯ Eliminated TSM Project
 - ⋯ Eliminated New Facility Project
 - 10** - Numbered Concept in Scoring Summary Table

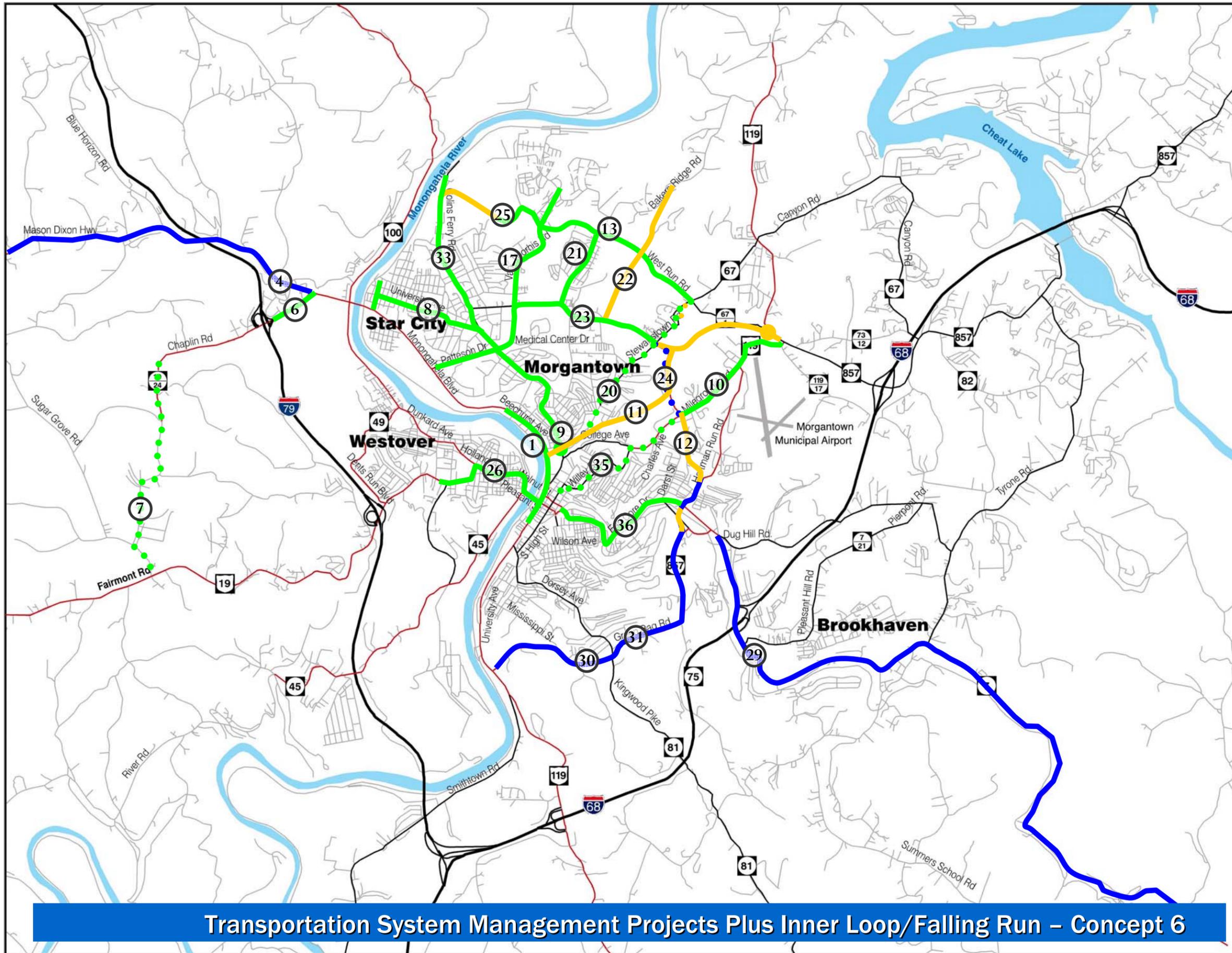
Project Total:

- Initial Total for All Included as Solid and Dotted: \$515.1 million
- Funding Limit: \$233.0 million

Must Eliminate: \$282.1 million

• 16 -	\$128.0 million
• 25 -	\$14.4 million
• 34 -	\$27.3 million
• 33 -	\$3.3 million
• 4 -	\$25.7 million
• 32 -	\$18.2 million
• 23 -	\$1.1 million
• 24 -	\$9.4 million
• 21 -	\$2.2 million
• 22 -	\$14.5 million
• <u>Inner Loop:</u>	<u>\$35.7 million</u>
• TOTAL	\$278.7 million

Address Highest Congestion Corridors Plus TSM – Concept 5



- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - Eliminated Corridor Expansion Project
 - Eliminated TSM Project
 - Eliminated New Facility Project
 - 10 - Numbered Concept in Scoring Summary Table

Project Total:

• TSM (Concept 1):	\$194.9 million
• "Inner Loop":	\$35.7 million
• Falling Run:	\$52.6 million
TOTAL:	\$283.2 million

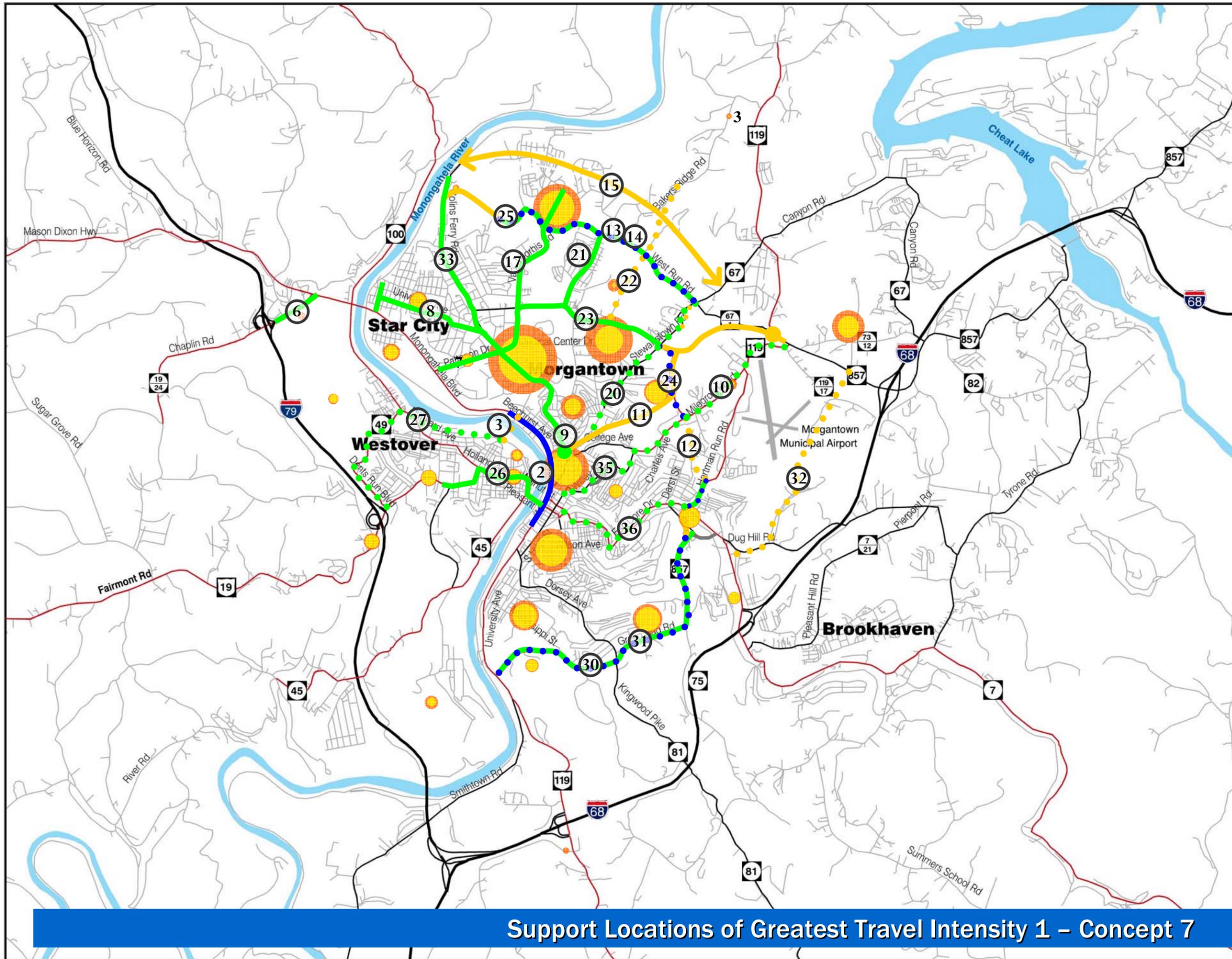
Must Eliminate: \$50.2 million

• 20 -	\$10.4 million
• 7 -	\$28.5 million
• 24 -	\$8.4 million
• 35 -	\$2.9 million

Transportation System Management Projects Plus Inner Loop/Falling Run – Concept 6



Figure 6



- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - ⋯ Eliminated Corridor Expansion Project
 - ⋯ Eliminated TSM Project
 - ⋯ Eliminated New Facility Project
 - ⑩** - Numbered Concept in Scoring Summary Table

Project Total:

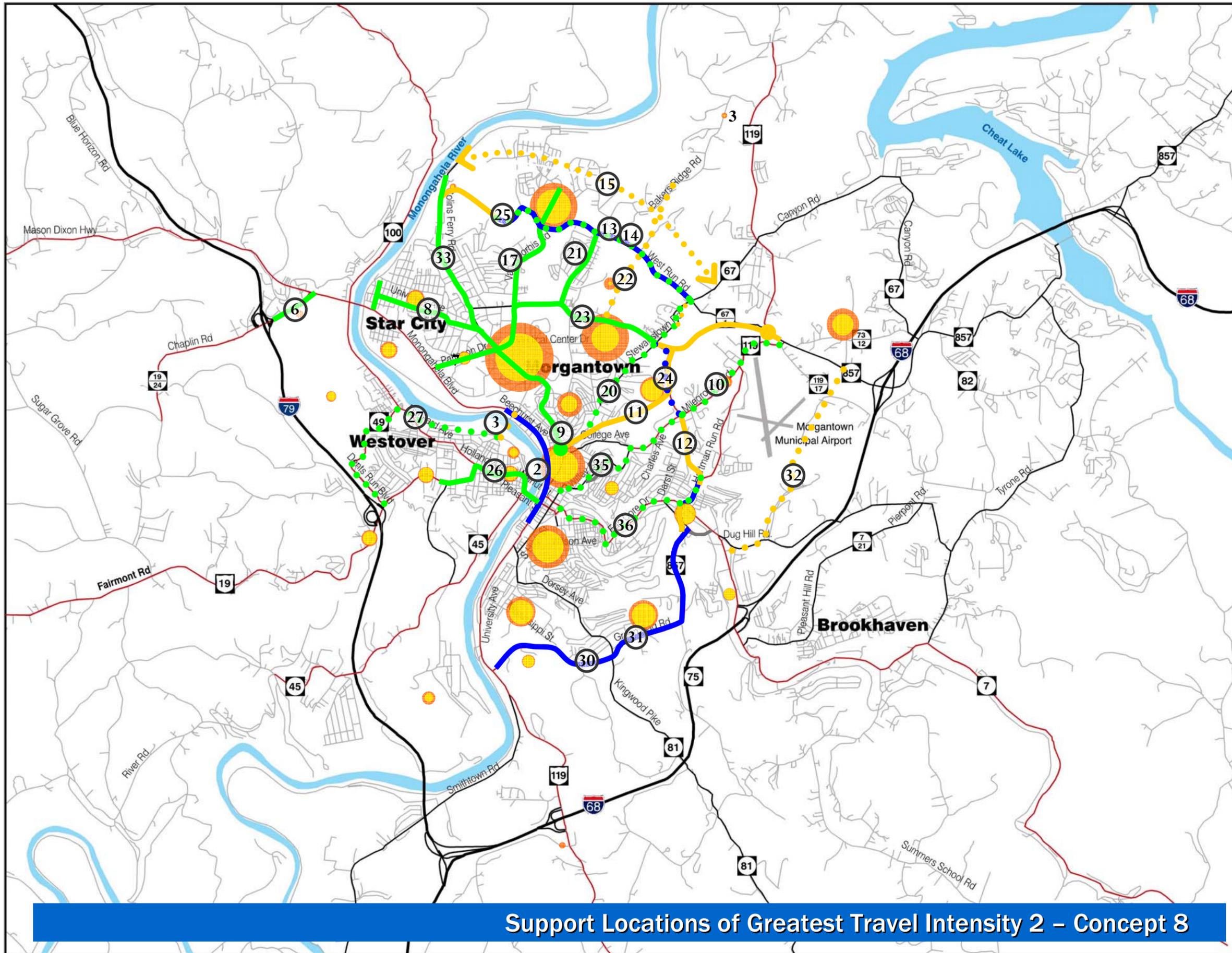
- Initial Total for All Included as Solid and Dotted: \$428.1 million
- Funding Limit: \$233.0 million

Must Eliminate: \$195.1 million

- 32 - \$18.2 million
- 35 - \$2.9 million
- Replace 14/25 with 13 Only: \$21.2 million
- 27 - \$31.7 million
- 3 - \$33.3 million
- 20 - \$10.4 million
- 24 - \$9.4 million
- 31/30 - \$8.4 million
- 22 - \$14.5 million
- 9 - \$4.3 million
- 10 - \$4.3 million
- 12 - 35.7 million

SUBTOTAL: \$194.3 million

Support Locations of Greatest Travel Intensity 1 – Concept 7



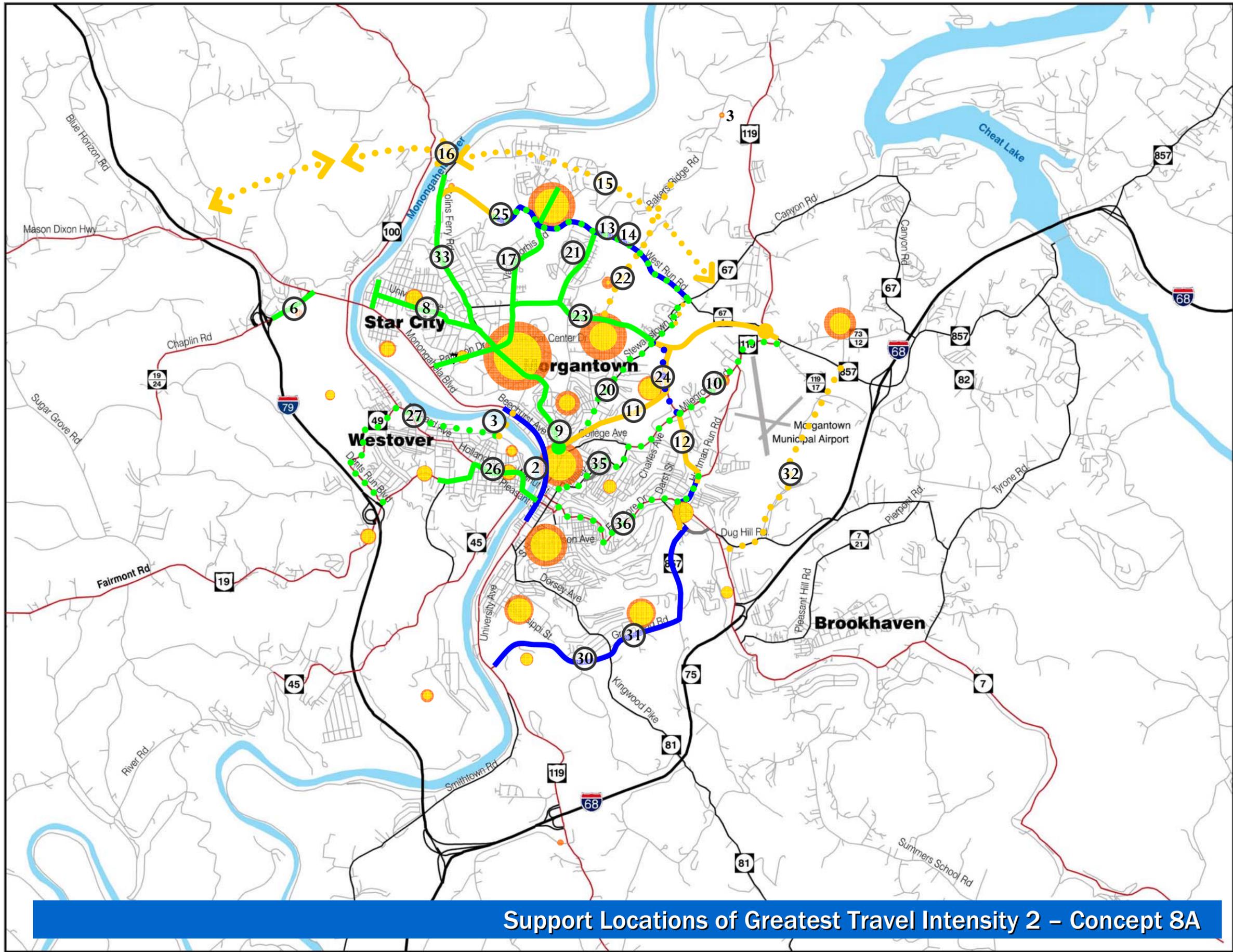
- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - · · Eliminated Corridor Expansion Project
 - · · Eliminated TSM Project
 - · · Eliminated New Facility Project
 - ⑩** - Numbered Concept in Scoring Summary Table

Project Total:

- Initial Total for All Included as Solid and Dotted: \$428.1 million
- Funding Limit: \$233.0 million

Must Eliminate:	\$195.1 million
• 15 -	\$61.0 million
• 36 -	\$2.2 million
• 35 -	\$2.9 million
• 27 -	\$31.7 million
• 3 -	\$33.3 million
• 20 -	\$10.4 million
• 24 -	\$9.4 million
• 22 -	\$14.5 million
• 9 -	\$4.3 million
• 10 -	\$4.3 million
• 32 -	\$18.2 million
SUBTOTAL:	\$192.2 million

Support Locations of Greatest Travel Intensity 2 – Concept 8



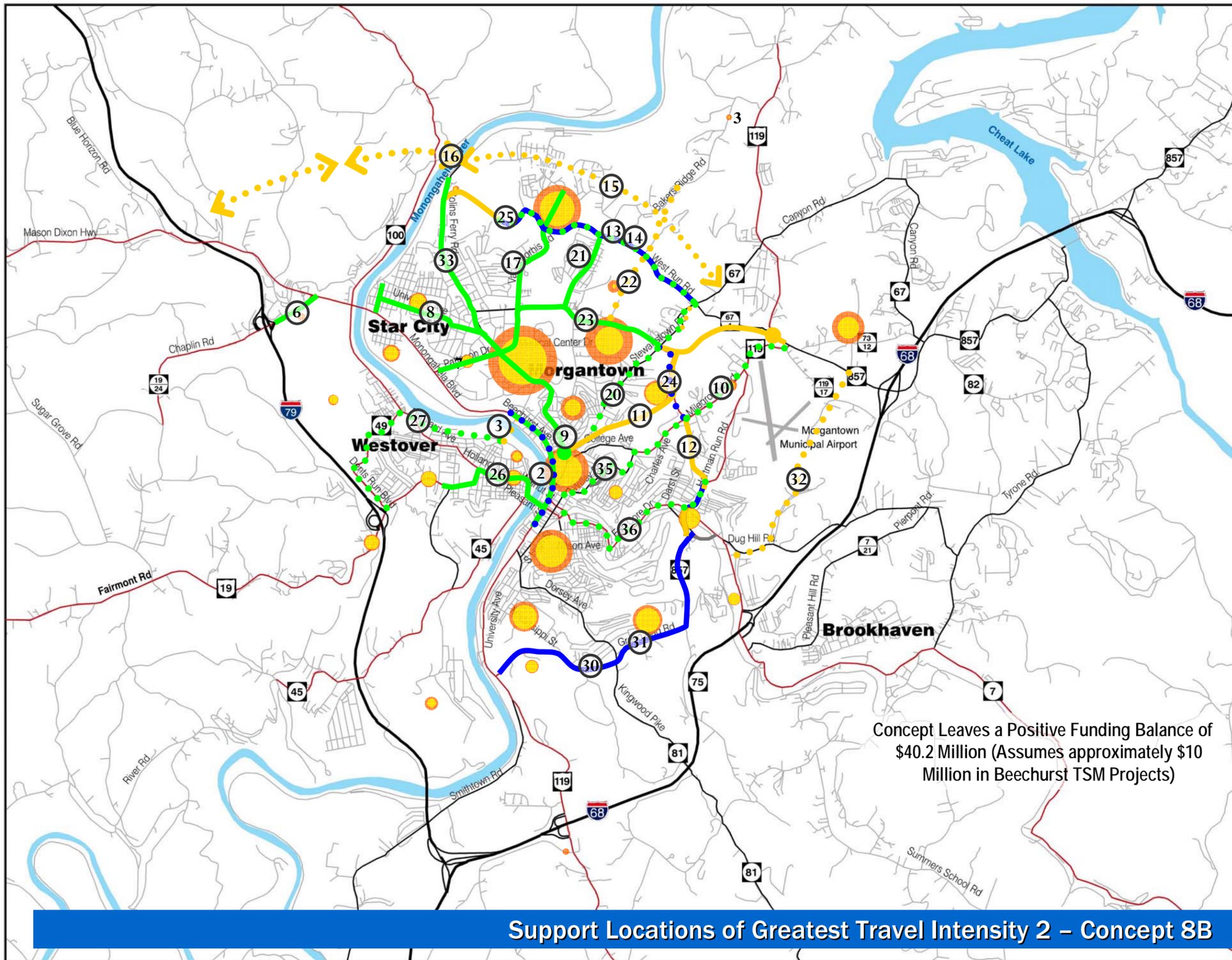
- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - ⋯ Eliminated Corridor Expansion Project
 - ⋯ Eliminated TSM Project
 - ⋯ Eliminated New Facility Project
 - 10 - Numbered Concept in Scoring Summary Table

Project Total:

- Initial Total for All Included as Solid and Dotted: \$5561 million
- Funding Limit: \$233.0 million

Must Eliminate:	\$323.1 million
• 16 -	\$128.0 million
• 15 -	\$61.0 million
• 36 -	\$2.2 million
• 35 -	\$2.9 million
• 27 -	\$31.7 million
• 3 -	\$33.3 million
• 20 -	\$10.4 million
• 24 -	\$9.4 million
• 22 -	\$14.5 million
• 9 -	\$4.3 million
• 10 -	\$4.3 million
• 32 -	\$18.2 million
SUBTOTAL:	\$320.2 million

Support Locations of Greatest Travel Intensity 2 – Concept 8A



- Legend**
- Existing Corridor Expansion
 - Management Improvement in Existing Corridor
 - New Facility
 - ⋯ Eliminated Corridor Expansion Project
 - ⋯ Eliminated TSM Project
 - ⋯ Eliminated New Facility Project
 - ⑩** - Numbered Concept in Scoring Summary Table

Project Total:

- Initial Total for All Included as Solid and Dotted: \$5561 million
- Funding Limit: \$233.0 million

Must Eliminate: \$323.1 million

• 16 -	\$128.0 million
• 15 -	\$61.0 million
• 36 -	\$2.2 million
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• 27 -	\$31.7 million
• 3 -	\$33.3 million
• 20 -	\$10.4 million
• 24 -	\$9.4 million
• 22 -	\$14.5 million
• 9 -	\$4.3 million
• 10 -	\$4.3 million
• 32 -	\$18.2 million
• Replace 2 with TSM Only -	
Balance	\$43.1 million

SUBTOTAL: \$363.3 million

Concept Leaves a Positive Funding Balance of \$40.2 Million (Assumes approximately \$10 Million in Beechurst TSM Projects)

Support Locations of Greatest Travel Intensity 2 – Concept 8B



Figure 10

Table 1
 Ordered Project Scoring and Summary of Projects by Concept

Map Location	Issue/Improvement Alternative	Projects by Concept										
		TOTALS	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Concept 7	Concept 8	Concept 8A	Concept 8B
	ROADWAY IMPROVEMENTS											
10	Mileground TSM: - Add turn lanes at key intersections - Access Management through Commercial Areas/High Density Residential Areas (Boulevard Concept)	54	●	●	●				●			
2	Beechurst Avenue - Expand Along Existing Alignment: - Expand to 5-Lanes 8th St. through Campus Dr. - Expand to 4-Lanes Campus Dr. to Hough St. - Expand to 5-Lanes Hough St. to Decker's Creek.	52					●		●	●	●	
8	University Avenue - Boyers Avenue to Beechurst Avenue TSM: - Add turn lanes at key intersections - Access Management through commercial areas/high density residential	52	●	●	●			●	●	●	●	●
13	West Run Road TSM: - Add turn lanes at key intersections	52	●	●	●				●	●		
11	Falling Run Corridor: - 4+ turn lanes or boulevard from Beechurst Ave. to WV 705	52							●	●	●	●
24	WV 705 - Widen corridor to 4-lane divided: - Mileground to Stewart St.	52	●	●	●							
1	Beechurst Avenue - TSM: - Add turn lanes at signalized intersections - Mid-block access control (median) - Driveway consolidation/reconfiguration	50	●	●	●				●			●

Table 1
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		TOTALS	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Concept 7	Concept 8	Concept 8A	Concept 8B
23	WV 705 from Beechurst Avenue to Mileground TSM: - Signal Coordination Study/Work - Access management/control Pinewood Ave. to Van Voorhis Rd. - Van Voorhis Ave. intersection improvements	50	●	●	●			●	●	●	●	●
31	Widen Green Bag Road Corridor - University Avenue to WV 7: - 2+ turn lanes/3-lane - Incorporate Bike/Ped Component	50	●	●	●		●	●		●	●	●
30	Green Bag Road Corridor - University Avenue to WV 7 TSM: - Add turn lanes at signalized intersections - Driveway consolidation	50	●	●	●		●	●		●	●	●
34	Expand US 119 to 4-lane Divided from S. of Green Bag to S. of WalMart (Includes turn lanes)	50										
17	Van Voorhis Avenue TSM - West Run Road to Chestnut Ridge: - Add turn lanes at key intersections	48	●	●	●		●	●	●	●	●	●
9	Univeristy Ave/Grumbein's Island Grade Separation	48	●	●	●		●	●	●	●	●	●
4	WV 7 West of WV 100: Transportation Systems Management: - Add turn lanes at key intersections - Improve skewed intersections (i.e. View Hill Rd) - Driveway consolidation - Improve tight curves - Widen shoulder	48	●	●	●			●				
12	WV 705 to Hartman Run Rd. Connection/WV 705 Expansion to 4-Lane Divided (Inner Loop): - New 3-Lane corridor Mileground to Hartman Run Rd. - Upgrade Hartman Run Rd. to a 3-Lane to Earl Core - Upgrade WV 705 to 4-Lane Divided from Mileground to Stewart St.	46		●				●		●	●	●
19	Improve Pineview/Riddle Rd: - 3-Lane from Chestnut Rd. to West Run Rd.	46										
33	Collins Ferry Road TSM: - Add intersection turn lanes. - Signalize Burroughs Street.	46	●	●	●			●	●	●	●	●

Table 1
 Ordered Project Scoring and Summary of Projects by Concept

Map Location	Issue/Improvement Alternative	Projects by Concept											
		TOTALS	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Concept 7	Concept 8	Concept 8A	Concept 8B	
32	New Airport Industrial Area Route From CR 857 - Establish a continuous access route from CR 857 to WV 7	46											
18	Widen Van Voorhis Avenue - West Run Road to Chestnut Ridge: - 3-lane from Chestnut Ridge to N. of West Run Rd.	44											
22	Add New Corridor through WVU Research Park: - New 3-Lane corridor Chestnut Ridge Rd. to West Run Rd.	44	●	●	●				●				
35	Willey Street TSM: - Add turn lanes at Key intersections - Fife Avenue - Improve Monongalia Avenue Intersection - Improve College Avenue Intersection	44	●	●	●								
36	Earl Core Road From Downtown to Hartman Run TSM: - Improve/Reconfigure/Ad Turn Lanes to Key Intersections: - Arlington Street (Reconfigure to Eliminate Overdale or Arlinton) - Access Management Throughout Corridor	44	●	●	●				●				
6	Chaplin Road (WV 19/24) WV 19 to I-79 TSM: - Signal timing improvements - Remove Signalize Approach at Sheetz/Convert to right-in-right-out	42	●	●	●			●	●	●	●	●	●
25	Extend West Run Road to Mon Boulevard: - Extend 2+ turn lanes from Van Voorhis to Mon Boulevard.	42	●	●	●				●	●	●	●	●
3	8th Street Mon River Crossing: - 2-4 Lane Bridge (volume dependent) - Improved corridor(s) to get to US 19	42			●								
14	Widen West Run Road corridor (Divert WV 705 traffic): - 3-lane (2-Through Lanes and Two Way Cener Left Turn Lane: Stewartstown Rd to Collins Ferry	42								●	●	●	
15	New east-west corridor north of West Run Road from 705 Connector to Collins Ferry Road: 2-lane corridor connection	42					●	●		●			

Table 1
 Ordered Project Scoring and Summary of Projects by Concept

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		TOTALS	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Concept 7	Concept 8	Concept 8A	Concept 8B
20	Improve Stewart St./Stewartstown Rd: - New 3-lane corridor CBD to US 119.	42	●	●	●							
29	WV 7 East/West of I-68 TSM: - Add turn lanes at signalized intersections - Driveway consolidation	42	●	●	●			●				
21	Pineview Avenue/Riddle Street TSM: - Add turn lanes at key intersections	40	●	●	●			●	●	●	●	●
26	US 19 Through Westover (I-79 to Beechurst Avenue) TSM: - Signal Coordination Study/Work - Access management/control throughout corridor - Add turn lanes at key intersections	40	●	●	●		●	●	●	●	●	●
27	Improved route to North Around Westover/River Crossing: - Dents Run/WV 100/New Bridge Connection - New Mon River Bridge	40										
7	Create a Connection between Chaplin Road and US 19 West of I-79: - Upgrade Sugar Grove Road/Chaplin Road as 2-lane - Establish I-79 West Side Frontage Road (Martin Hollow Road between Morgantown Mall and University Town Center)	38	●	●	●							
16	New east-west corridor north of West Run Road/Mon River Crossing: - 2/4-lane corridor connection	38				●						
5	I-68 Extension Concept (DOH Report): - 4-Lane rural divided highway - Partial controlled access (combination of at-grade and interchanges)	36										
28	New corridor I-79 to Green Bag/Green Bag Improvements: - 2/4-lane corridor connection - New I-79 Interchange - Mon River Bridge - Expand Green Bag to 3-lane	36										
Morgantown CBD Flow		Maintain a more Detailed Study In RTP Recommendations										



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Morgantown, WV 26505

For More Information:
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